The geography of health in Libya : accessibility to, utilisation of and satisfaction with public polyclinics in Benghazi.

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by

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Abstract

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The Libyan government has used oil revenues as a basis for investing in social and economic development projects. This has included considerable amounts of money being spent at all levels of administration to widen and improve Benghazi's network of public health care services to match, at least, in quantitative terms, health care provision in the developed world. Little has been published thus far about the accessibility and utilisation of health care services in Libya, despite the wide distribution of various types of health services. Thus, apart from a few studies, essential data on accessibility and patterns as well as the determinants of services utilisation are still deficient. This study aims to start address this deficiency.

The main findings of this research were:

1. Respondents of both institutional and household surveys carried out in this study had in general good physical access to public services of the polyclinics.

2. The overall level of service utilisation has been increasing with time, reaching an annual consultation rate of about 4.2 visits per person per year–a high level by international standards.

3. The study indicated that a sort of variation in use of health care services still exists, connected mainly with variations in the level, nature and type of sickness, distance travelled to reach polyclinics, demographic variables and socio–economic factors.

4. Five major groupings of disease were identified for which polyclinics were preferred: internal diseases and disease of the digestive system, cold, sense organs, skin diseases, and respiratory conditions.

5. Satisfaction with care was predicted best by four variables, staff behaviour, availability of drugs, free choice of preferred doctors and availability of parking facilities around each polyclinic (Tested by two statistical measures, namely Chi–square and Kruskal–Wallis tests).

The potential implications of the findings of this study are strongly consistent with the planning notion of providing central primary care services such as polyclinics into communities or neighbourhood centres.

DEDICATION

– To the purified spirit of my beloved late father who passed away without being able to see the completion of this work.

– To my mother who kept me in her womb nine months with all kinds of suffering and raised me until I became independent.

– To my three children Hana, Khaled and Houda, who suffered a lot by being away (in Libya) from their passionate parents for three years. To them all, I dedicate this thesis.

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I am also obliged to thank very much the genuine assistance given by Mr A Al–Rabty– Director of the Institute of Social Service in Benghazi, who made the whole facilities of the Institute at my disposal during the whole period of field work (July–September 1992). Elsewhere, I must deeply thank Mr Mohamed Jebrel, lecturer at the Maths Department, Faculty of Science and General Director of the Jouf Company for kindly lending me a small car during the whole period of my field study.

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Chapter I

INTRODUCTION

The discovery of oil, its rapid growth and exploitation have had an indelible impact on Libya, both economically and socially. Libya from 1959 onward has faced the problem of an economy stimulated by oil revenues which was wide open for investment and development. Before that date, the Libyan economy was heavily, if not entirely, dependent on its agricultural sector. It is true that, despite the negative consequences that might have occurred due to oil development, Libya without oil would have never enjoyed its present prosperity which enabled it to carry out its developmental programmes at a much faster rate than would have otherwise been possible.

While the cities, particularly the two dominant port-administrative cities of Tripoli and Benghazi, gained in many ways from this oil boom, their growth and expansion were mostly chaotic and unplanned. Benghazi thus became a model for Libya and for North Africa, exemplifying both the benefits and the drawbacks of rapid development.

The wide range of boom town activities drew large numbers of immigrants to Benghazi, seeking work and other opportunities in the rapidly expanding economy. The past thirty years of immigration, and a corresponding high birth rate, have brought the city's present population to more than 500,000 with an annual growth rate of over 3.6%. Needless to say, this fast pace of growth has placed a tremendous burden on the administration to supply appropriate social services such as health care facilities.

Health care delivery planning is one of the areas in which geographers have made significant contributions to solving people's problems, especially in the developed world. An attempt has been made by geographers to locate health care centres for improving the accessibility of each and for ensuring that patients can easily reach a facility within a short time. While geographers and planners have

made wide strides in improving availability, accessibility and quality of health care services in the developed world, the case is totally different in the developing world, where deficiency of health care services is manifested by the lack of availability, inaccessibility and low quality of health care facilities and delivery planning which can offer basic services in both urban and rural areas. The situation is compounded by high mortality rates, particularly among children, dispersion of rampant diseases, lack of potable water and a hygienic environment, and a shortage of skilled manpower, funds and other resources. Moreover, most health care systems in the developing world are still focusing on curative rather than preventive health care. In the light of these factors and considering the fact that most health care provision is centred in urban areas, where doctors and hospitals are in greater numbers, one plausible solution would be an investment in primary health care (PHC), particularly when one notices that in the Middle East

> up to 80% of the rural communities have no access to health services .... Over three quarters of doctors work in cities where three quarters of the health budget is spent; but three quarters of the population and three quarters of ill–health are in rural areas (Simon 1980:83).

The World community has adopted a PHC programme via a reputed conference held in Alma Ata, 1979 (former USSR) to provide comprehensive health coverage for all by the year 2000. Prior to, and consistent with this declaration Libya considered PHC delivery as a basic right that everybody should maintain. Thus, the State attempted to fulfill this objective by selecting the proper means for achieving the highest possible level of health care at the minimum possible cost. The objective has always been to create health care systems that are in accord with the geographic environment, demographic, cultural and socio–economic circumstances, and political aspirations.

The main purpose of this thesis is to enquire into these crucial problems such as accessibility, use of and satisfaction with the services provided at polyclinics and the question of consumer demand and attitudes towards public health care facilities in general in the city of Benghazi.

1.1 Statement of the problem

As is the case in most Third World cities, Benghazi's urban growth has outpaced infrastructural development. The unexpected rapid growth generated many typical urban problems, particularly in the area of provision and use of primary health care. Thus a proliferation of projects and hence new urban jobs gave a false picture of urban areas into which people moved in great numbers. The consequences are an enormous pressure on urban support systems (including health care services), particularly as plans to alleviate these crucial problems have failed in most cases. This situation has led to pressure on use of primary health care services. The high usage of polyclinics' services in particular is worrying and might mirror unsatisfactory health care services provided to the population of Benghazi. The high rate of utilisation might reflect an abuse of services' use and/or an ill–health of the concerned people, requiring immediate action to be taken as a response to a high morbidity level. A suboptimal use is often attributed to the absence of appointment systems and the widespread use of self–referral. Self–referral is very common in Benghazi's health care delivery system, which not only leads to inefficient use of public health care services, but also to squandering the resources of both health care institutions and patients.

Although some data on service use are routinely collected within the health care institutions, essential epidemiological information on the pattern of health care utilisation is still deficient and inadequate for evaluative purposes. Moreover, though health care coverage in terms of health care availability and staff seems reasonable, it is not yet clear whether all people at different sites of the city have roughly equal access to the various public health care facilities. Considering these factors, conventional wisdom has dictated certain policies towards developing and improving public health care services. Accordingly, an examination of the provision and use of PHC services in Benghazi, in relation to socio–demographic, socio–economic and spatial variables of the population is needed. As a contribution to the greater understanding of PHC provision and use discussed above, this study is designed to examine in depth some essential factors related to accessibility, morbidity, and use of and satisfaction with the services of five polyclinics provided to five selected communities in the city. The research represents an investigation of the background causes of Benghazi's health care problems concerning accessibility

and use as well as the variables involved in planning solutions for the range of problems associated with this condition. This work was designed to investigate the background, effect and interaction of these variables on accessibility and use of the five public polyclinics mentioned above. The study also describes the changing dynamics of Libyan society and the oil economy as factors which interact with the infrastructure of Benghazi and affect the potential development of the city. Any viable solution must involve the planning process in relationship to both the technical and social dimensions in a manner that generates both feasible and acceptable outcomes.

1.2 Reasons for choosing the topic

Several factors form the basis and justification for selecting this topic. These factors can be summarized as follows:

1) The maldistribution of current health care facilities in the city of Benghazi, particularly the polyclinics, which can be attributed mostly to neglecting the social and geographical aspects of planning.

2) Benghazi has never been the subject of a satisfactory and comprehensive study in this regard. Most of the studies that have been carried out are either too old or were made by foreign consultants, not conversant for the most part with social and local economic problems of citizens and thus neglecting many important facts during the stage of planning the locations of health care services in the city.

3) The research may be used as a starting point and important tool for the continuing analysis of health care problems which are present in a fast-growing city like Benghazi.

4) As time goes on it will be increasingly difficult to provide health facilities with the quality of care that people need without substantial and costly expenditure. Thus, the study forms an essential background for the formulation of future plans regarding health care services and their use in Benghazi.

As a whole, it is intended to contribute to the whole body of research data and materials on urban health care problems in similar areas of the country and elsewhere.

1.3 Selection of the study area

The city of Benghazi was selected as an area of study for the following reasons:

1. Benghazi presents valuable research opportunities for examining the spatial dimensions of health care delivery systems in some detail. It has in general a good standard of health care provision equivalent or better than other health regions in the country.

2. The manner in which health care services is organised is representative of that dominant in most urban areas in the rest of Libya.

3. The city's status and outstanding ranking in the matrix of Libyan cities as it comes second only to Tripoli–the capital, and has a population estimated currently at more than 500,000.

4. Availability of current population census and Benghazi city map with its subdivisions, referred to as "Quarters".

5. Familiarity of the researcher and his research assistants with the study population and the fact that they had grown up in this city made it quite easy to communicate with people and to discuss health matters with more confidence and trust.

6. Conducting a Master's degree thesis on the urban growth and transportation problems of the city, the author had been substantially introduced to numerous problems of urban growth and regional development, of which health care was prominent.

7. In certain respects Benghazi city is representative of other important cities in Libya. Its population is relatively homogeneous in its cultural background and way of thinking because of the unique origins of nomadic tribes. Exceptions to this generalisation may be applicable for non–Libyans.

8. It is further expected that the results of this research will have useful applications not only in comparable cities of Libya but also elsewhere in urban areas of the developing world.

1.4 The objectives of the study

The ultimate aims of this research are:

1) To investigate the current distribution of health care facilities in the city of Benghazi, and to evaluate the locations of the existing facilities according to their geographic locations and ease of delivery of health care services to all citizens of Benghazi.

2) To examine the major factors influencing access and use of polyclinics rather than other health care facilities.

3) To identify factors that were thought to have a bearing on the use of these services and thus giving a better understanding of patient health and illness behaviour.

4) To elicit the opinions and viewpoints of respondents on selected parts of the frequented health care facilities (polyclinics) to substantiate the personal evaluation of care that can not be discovered by mere direct observation or by routinely collected data.

5) Drawing upon the results of this research, a set of recommendations are suggested to improve the use of both current short of resources and health care services, in a manner that avoids squandering of valuable resources and generates viable and satisfactory outcomes.

1.5 Assumptions

This research is mainly based on the following assumptions concerning the existing situation of polyclinics in Benghazi:

1) The majority of respondents use private cars for seeking health care.

2) A great number of respondents prefer a trip time of less than ten minutes.

3) The majority of health facility users prefer using public polyclinics.

4) The proximity of a polyclinic to residential address plays an important role in its use.

5) Most of the respondents do not see wide differences in services among the public polyclinics.

6) Most of the respondents' emergency cases are taken to the public polyclinics.

7) The lack of a reliable public transportation system is a significant problem hindering usage of public polyclinics, particularly in the peripheral areas of the city.

8) The higher status income respondents tend to go to private care and the lower status to rely heavily on the closest public polyclinic.

As an essential part of the overall aim of this study, one general hypothesis was thought of great value and thus was selected to be tested, namely the influence of **distance** on use of polyclinics' services. This hypothesis is stated as follows:

there is an inverse relationship between distance to home address and the use of health care facilities for all people in the city of Benghazi, that is, the use of health care services decreases with an increase of distance and vice versa.

1.6 Sources of Information

The central focus of this study is to investigate and to analyse the most significant factors affecting accessibility and use of PHC facilities in Benghazi. This theme of urban health problems undertakes certain areas of inquiry into the social, economic and physical factors affecting existing conditions and future plans for the city. Thus, as a foundation for this inquiry, previous planning studies for Benghazi since 1951 have been examined in order to compare and assess population and health care services, urban growth patterns, and land consumption forecasts. The approach to this inquiry and the review of Benghazi's planning studies essentially follows a descriptive method of content analysis and field observations.

The process of collecting data on health care or other social services in a developing country like Libya proved difficult (Timaeus *et al.*, 1988). There is no central detailed source of information on health in Libya and almost nothing on their patterns of use. As a result four sources of data collection were adopted in the preparation of this thesis:

(1) Official publications and statistics of the Secretariat of Health and the Secretariat of Planning in the country along with the WHO reports and other national sources.
(2) Unpublished reports, records and statistics available in Benghazi's health care institutions.

(3) Informal field observations and discussions.

As none of these three sources provided detailed information on Benghazi's health care delivery system, a field work survey was considered as *sine qua non.* Therefore, the fourth source was a field work survey to fill the gap of unavailable information. Two questionnaires were carried out during the period July–September 1992; one an institutionally–based study and the other a community–oriented study. These intensive field surveys included questions to elicit data on various characteristics of the users and non–users alike and their perception of the health care services provided. The methods used for selecting samples and other field procedures are described in more detail in chapters six and seven.

1.7 Field work

1.7.1 The First Stage

The methodology used in the study began with examining and evaluating published and unpublished planning documents produced by foreign consultants. These documents represented several years of studies ranging from civil engineering to urban design, commissioned by the Libyan government, mainly after the oil discovery in 1959. Likewise, professional journals and other academic publications were examined as part of the literature search inherent in initiating this work. In the course of this period, the author prepared a framework for the field study. Moreover, much of the work was done before the author's first return to Libya in June 1992, after obtaining the official approval of the Secretariat of Education to carry out the field work in Benghazi.

1.7.2 The Second Stage

Before starting the field work, the author made several visits to the appro-

priate agencies, interviewing planning and other professionals concerned with the problem outlined in this study, in an attempt to fill the gap of unavailable data. Furthermore, the researcher drew upon his experience as a long time resident of the city (since 1960) to assess many of the factors which were of concern to the study and posed a "health and urban service user" perspective as an appropriate set of criteria for evaluating the material in the various sources. Arrangements were made with the University of Garyounis for providing transport to facilitate mobility of the interviewers between the University and the sites of the survey. Prior to this, preliminary visits were made by the author to the selected health care institutions and the communities in which household surveys were to take place. These were made as introductory and exploratory visits. In the course of these visits, the nature and objectives of the study were fully explained to the appropriate people and information on health care institutions, and their distribution, administrative boundaries and their daily work was collected. The aims of the research were also made clear within the communities so that the household survey would not be met with suspicion. Finally, the boundaries of the selected areas were identified and fixed and thus the study was practically divided into two separate studies:

(a) The first is concerned with obtaining data from a sample of 250 users of five known public polyclinics. The details of this study are the subject–matter of chapter six of this thesis.

(b) The second is a household interview survey carried out on a systematic random sample of 400 households served by the above mentioned polyclinics within the same area of study. The details of this part of the study are presented in chapter seven.

A schedule was made and the data collection work by the author and assistant interviewers started on 30th July 1992. The first work began on outpatient users of the five polyclinics for a period of two weeks, followed by three weeks' work on the community–based study (household interview survey).

1.8 Treatment of data and selecting tests of measurement

After the field data had been collected, the next step was to code them and assign numbers to allow them to be processed and analysed statistically. Each vari-

able, sample area and polyclinic was given a code number. The choice of analytical methods and statistical tests were appropriately varied, reflecting the diverse nature of the research questions. Every attempt has been made to document the interview survey as accurately and carefully as possible. In so doing, the author sought to adopt the most commonly appropriate and applicable methods utilised in social science research. As the focus of research was on accessibility and total utilisation of polyclinics' services, the analysis was centred on three groups of variables related to **household characteristics** (type of household, education of each member of the household etc.,), **individual characteristics** (age, sex, and sickness), and **organisational characteristics** (locational dimensions, availability of drugs, satisfaction with services, distance etc.,). Therefore, two of our research instruments need statistical techniques to be used for examination and interpretation. The first are the determinants of access and use of services provided by local health centres and by private clinics. The second is the perception of respondents towards health provision in general and the care they receive in particular. In order to reach an acceptable result in this regard, two points must be considered: the different levels of measurements and what we intend to obtain from the data. To clarify the importance of the first point Norusis (1987:81) argues that:

> the way in which you analyse your data depends on how you have measured it. Certain analyses make sense with certain types of data. Even something as simple as interpreting cumulative percentages requires you to know what scale your data are measured on.

Consequently, since the bulk of the data collected in this research are ordinal in nature, rated as scales of importance, or through attitude scales using gradations of agreement, the only suitable statistical inferential tools to be used were non–parametric statistics. Accordingly Siegel (1956:33) emphasised that

> if data are inherently in ranks, or even if they can only be categorised as plus or minus (more or less, better or worse), they can be treated by non–parametric methods, whereas they can not be treated by parametric methods unless precarious and perhaps unrealistic assumptions are made about the underlying distributions.

Therefore, parametric statistics were ruled out, while non–parametric methods were adopted in this research. As non–parametric statistics do not require so powerful a level of measurement as that needed by parametric tests, the only plausible tests to serve the purpose of this research are non–parametric. As highlighted above, the selection of proper tools among the many non–parametric tests

is determined by the aims and intentions of what should be worked out of the data. After careful consideration of the various non–parametric tests, the only suitable and reliable tests to address the inquiries and questions of this research were **Kruskal–Wallis** and **Chi–square** tests along with **frequency tables** and **cross–tabulations**. The strength of the Kruskal–Wallis test, though not widely used by geographers, may lie in its application as a useful alternative to analysis of variance (Ebdon 1977). It can be used to test the null hypothesis of no association for samples chosen from populations with identical distributions. Therefore, differences (if they exist) among samples must be attributed to a matter of chance occurring during the process of sampling. The null hypothesis is a hypothesis of no difference. If it is rejected, the alternative hypothesis may be accepted. The alternative hypothesis assumes that the samples have been selected from populations with non–identical distributions, so that discrepancies among the samples mirror the real differences between populations.

The **Chi–square** test measures whether a difference between two or more groups is significant. In the case of the current study, the binary groups of data concerning male/female, chronic/acute, and public/private are considered the subject–matter of this test. Moreover, patients may be classified according to whether they are "pro" or "con" or "indifferent" to some statements of opinion to enable the researcher to test the hypothesis that the responses will differ in frequency (Siegel 1956). Briefly speaking, the Chi–square test could be used to determine whether there are significant differences among the five sites in the cross–tabulation distributions of respondents of the polyclinics' services and selected variables such as respondent's age, sex, income and level of education.

Frequency Tables are used to demonstrate the respondents by areas in relation to their various demographic and socio–economic attributes.

Cross–tabulation is included here because it is one of the simplest and most frequently used ways of identifying the presence or absence of a relationship between two variables (Ebdon 1977). Cross–tabulations, which are sometimes referred to as contingency tables, are concerned with data that have various combinations of characteristics and usually consist of counts of people and places (Upton 1978). Such data emerge naturally from summarising surveys and analysing the

results of questionnaires as in the present study. The units of a sampled population in such circumstances are cross–classified according to sets of categorical variables such as **Sex** (male, female), **Age** (young, middle–aged, old), or **Sort of sickness** (chronic, acute). Thus, looking at several categorical variables coincidentally, it is apparent that they formulate a multi–dimensional contingency table, with each variable conforming with one dimension of the table. It seems apparent from the preceding discussion that cross–tabulation is of significant importance as a method of analysis suiting the data collected in this research.

1.9 Limitations of the study

Considering the fact that this research is the first of its kind to be carried out in Libya, it was hard to escape a number of shortcomings. The literature on health care provision and use in Libya is very limited and whatever statistical data are available, are of dubious quality or more likely are estimates. Although collection and compiling of data have improved dramatically in recent years, statistical data are still stigmatised by variability, political orientation and inconsistency even among government sources.

Data collection by interview surveys bristles with various shortcomings. The first shortcoming encountered in this study was the short period assigned for carrying out the field work. Because of social, financial and political restrictions, the study was not allowed to extend more than three months. Financially, to obtain the necessary funds to carry out the field study properly, would need at least three or four weeks of passing through tedious and strenuous administrative and bureaucratic procedures, which may not end in success. Politically, Libya was subject to economic sanctions, and its relationship with the West, in particular the UK, was highly tense. Therefore, in the course of this period obtaining a British visa was very difficult indeed and even if it was granted, never exceeded six months. Considering all of these factors, the author was obliged to conduct the field work during the hot summer months of 1992; a period not appropriate at all for health care surveys. Because of the unsuitability of conducting such a field study during this hot summer season, a high non–response rate, particularly for children was to be expected. Thus, some patients frequenting outpatient polyclinics, as soon as finishing their consultations with doctors, particularly those escorting children, refused

to be interviewed and left the premises of the polyclinic immediately. Hence, the exclusion of such patients may have introduced some bias in this study.

One further problem was that the city's internal boundaries of quarters have been changed many times, particularly in the last two decades or so, making it extremely difficult to evaluate population distribution or other relevant data properly.

In addition, the data collected in outpatient polyclinics have a number of limitations, including the frequent unavailability of some of the research assistants working with the author; the occasional delay of the car assigned to carry the study team to sites of work; and most seriously of all, the difficulties involved in making proper appointments with the patients among the different specialties available at each polyclinic. The last problem is mainly due to the absence of an organised and well prepared administration to facilitate such work. Therefore, the successful selection of required samples from each polyclinic was quite difficult. Nonetheless, a sample of 250 patients was drawn randomly from institutions included in the sampling design (50 from each polyclinic).

The interview survey depended largely on people's reporting of their health status and the reaction they took in response to sickness. The survey results may be limited or biased due to any of the following sources:

(a) **False or spurious information provided by users.** This could be related to whether a respondent is willing to cooperate, whether he or she understands the questions posed and whether he or she is honest in answering the questions.

(b) **Reporting by proxy.** While it would be unwise to place too much faith in the reliability of proxy reporting (being liable to more errors than self–reporting), it should be realised that proxy reporting for children was inevitable.

(c) **Interviewing a sample rather than the whole population.**

(d) **Under– and over–reporting.** This springs from the fact that some people may appear to exaggerate events for one reason or another in the hope that they may make some gains. An example of this is respondents over–reporting the

problem of congestion at their polyclinics, believing that the author and his assistants are government employees who will transfer their claims to health authorities in the hope of providing more facilities in their communities.

(e) **Praising health care services.** Some respondents showed reservations in criticising health care services, thinking that the interviewers were working for the Secretariat of Health and thus any criticism may have caused embarrassment to them. Fortunately, the conservative group was small and the vast majority of respondents were open and more critical than we had anticipated.

(f) **Use of more than one investigator.** The disadvantages of using many interviewers rather than solely the author himself for interviewing people was yet another negative aspect of potential bias to be introduced in this study. This problem could not be avoided, however, due to the time and financial constraints mentioned earlier. Without the assistance of other interviewers, data for this research would never have been collected.

(g) **Transferring data to computer.** Finally, errors may have been introduced during the process of coding and feeding the data into the computer. Although considerable efforts were made to avoid such errors taking place, and many checks were undertaken at different stages, the study seems likely not to be totally immune to such mistakes.

In order to minimise bias and to make the available data serve the purpose of the research, four factors were considered:

1. Oral answers to a written questionnaire were adopted in an attempt to facilitate filling in the questionnaire from different people and different levels of education. This will, according to Fink and Kosecoff (1985), help those who can not read well or those who are illiterate, to produce better results.
2. The questionnaire was kept as short as possible in order that users should not get bored, choose not respond, or leave some parts of it unanswered.
3. The questions were kept as simple and straightforward as possible so that respondents could answer them easily.
4. Well–trained postgraduate and research students from the Departments of Geography and Sociology (University of Garyounis at Benghazi) were recruited to

carry out the field work. In addition to their previous experience in conducting such surveys, they were given extra courses by the author to explain and clarify every point in the current questionnaire.

1.10 Structure and organisation of thesis

The thesis falls into nine chapters. The first introductory chapter begins with a demonstration of the principal objectives, the area of study and methods of analysis. Chapter two examines the current literature on locational analysis, and accessibility and utilisation of health care delivery in cities. The focus is mainly on research contributions that have been made by geographers and others in the field of health care delivery in the last two decades. These studies offer a useful conceptual framework for this study as well as suggesting techniques which may be used for planning systems of health care delivery in urban areas of the developing nations.

Chapter three discusses the location, physical environment, founding and growth of the study area, Benghazi. An examination of the historical and geographical background of the urban development of Benghazi shows its similar characteristics in comparison with other Third World port cities. Elaboration of the past growth and functions of the city is necessary to understand the interrelationships of the present transportation infrastructure and various geographical features, which certainly affect the location of the health care delivery system.

Chapter four deals with one of the most crucial issues directly affecting health care services and other public facilities, namely population. Thus, Benghazi's population size, past growth and future demographic predictions are examined.

Stressing the importance of health care services for every inhabitant in Libya in general and the city of Benghazi in particular, Chapter five analyses the current patterns of use of health care services and conditions of urban accessibility, while Chapter six is devoted to the analysis of the role of polyclinics in serving most of the population of the city. Help–seeking behaviour, use of and satisfaction with polyclinics' services are also analysed.

Chapter seven examines the demographic and socio–economic characteristics

of the survey sample along with morbidity and living physical environment, while chapter eight analyses the accessibility, utilisation and spatial pattern of polyclinics.

Conclusions and recommendations drawn from the foregoing discussions and analysis of the problems; possible solutions; obstacles to those solutions and strategy for implementation are presented in the concluding chapter nine.

Chapter II

Review of the literature

The last quarter of this century has witnessed a great number of research contributions by geographers and non-geographers alike in the field of health care delivery and planning. However, in stressing the importance of location theory for defining exactly the sites of publicly determined facilities which presumably play a major role in shaping both the form of cities and the quality of life, Teitz (1968:36) perceptively asserts that:

> Modern man is born in a publicly financed hospital, receives his education in a publicly supported school and university, spends a good part of his life travelling on publicly built transportation facilities, communicates through the post office or the quasi-public telephone system, drinks his public water, disposes of his garbage through the public removal system, reads his public library books, picnics in his public parks, is protected by his public police, fire and health systems; eventually he dies, again in a hospital, and may even be buried in a public cemetery.

The focus of location theory in the past has been with private sector, industrial, residential, and commercial decisions (Haggett *et al.* 1977). Obviously we must be concerned with the patterns of use if we are to choose sites providing the best possible services to as many people as possible within the constraints of available budgets. But no location is ever "optimum" nor ever provides complete satisfaction in the general and wider context (Cox 1965).

It is obvious that the supply of public services by governments has greatly contributed to the overall welfare of many societies. Therefore, the location of supply sites and the spatial organisation of service areas strongly influence the efficiency of the services. Clearly, geographers have to play a radical part in defining areas by offering their expertise and knowledge on this subject for societies to use as seems more appropriate (Massam 1975).

Generally speaking, the main objective of much locational planning in health care delivery is to maximize accessibility and to optimize spatial distribution, particularly when resources are limited. Thus, a number of spatial allocation models

and spatial searches have been used (Massam 1975). Moreover, the practical shortcomings of many models for optimizing accessibility in the developing nations and the dearth of reliable data have all worked together to influence resource allocation and health services utilisation (Phillips 1990). Most models have attempted to interpret and explain major variables that predispose or enable utilisation, with the explicit intention of reducing any obstacle identified.

Locations of health care services are of great significance to people of different classes, ages and levels of income. Hunter (1974) put it in perspective by stressing that locational planning must take into consideration the scope of services to be provided, the dimensions of the population and the rate of increase in the number of residents within the planned area.

In determining the optimum location of such services as clinics and hospitals, the relevant literature shows that many factors need to be examined. These include:

a) centrality to the target population.

b) accessibility and utilisation (to ensure that service locations are as close as possible to the density and distribution for any metropolitan area).

c) optimization that satisfies the demand for services and thereby avoids underutilisation of facilities (Jakle *et al.* 1967).

Further, Brunn (1977) has indicated that social geographers can make substantial contributions to public policy by examining the accessibility of the public to physicians, clinics, hospitals and other social services. Providing an efficient and equitable delivery system has been the central focus of location theory as mentioned earlier.

However, as construction and maintenance of hospitals implies an enormous proportion of expenditure in a health service programme, it is vital that funds be wisely employed and that decisions concerning the selection of sites should take into consideration the spatial distribution of demand.

Applying operations research to health care planning in a study of locating health centres in Zambia, Massam *et al.* (1986) have demonstrated clearly that

the choice of a location for a facility will often depend on a trade–off between many factors, including not only its physical accessibility for the users but also its cost to the providers and its political implications to local leaders.

Public health care must be seen as the main health structure by which all health activities are chanelled. From the economic point of view, building more hospitals all over the Third World has proven unattractive (Segall and Vienonem 1987). Almost all of the indicators show clear downward trends of building new hospitals now and probably for the years to come.

However, if PHC is perceived and applied as a *"cheap and easy "* solution it will certainly face severe obstacles and may fail to satisfy the desired objective–health for all by 2000 (Fendall 1987).

In their study of health care planning Abrantes *et al.* (1988) have succinctly demonstrated the importance of micro–computers for health planners and the like, who wish to forecast population and health trends as a foundation for rational, operational decisions and for the planning of the best use of meagre resources. With the aid of computers, certainly the time and effort needed to fulfill such analysis can be minimised.

2.1 Hierarchy of health care delivery systems

The provision of health care services in the advanced industrial countries was an integral part of their development as technology, industry and social change went hand in hand. Hence, the provision of health care services was conceptualized in a hierarchical type of configuration. Both geographers and health care planners in those developed nations have made great strides towards making universally available primary and family health care services at the bottom (the foundation) with the more specialized services at the upper tiers of the system (Phillips 1990). Naturally, these higher levels usually exist in the large settlements such as capitals and large cities based on generalized rules of urban size ranking.

To illustrate this pattern of hierarchical system in the developed world, it is essential to provide a European perspective by quoting Phillips as follows:

> even in the developed world, there exists no single, uniform hierarchy with a fixed division of functions and referral paths between strata. The great variety

> of health care delivery systems (arising under different professional, political and socioeconomic arrangements) means that there are numerous international differences in hierarchies and access to their various levels (Phillips, 1990:106)

It should be further asserted that the concept of hierarchy in health care is mainly based upon the central place theory, whereas certain threshold populations within a defined travel distance are sustained with a specified pattern of care. As health care services are generally characterised by a hierarchy of services, therefore, a great deal of studies (Morrill and Earickson 1968; Shannon *et al.,* 1975) have shown that all hospitals everywhere are categorised according to :

(a) their size and number of beds.
(b) size of medical staff.
(c) scope of facilities.
(d) population distribution in cities.
(e) types of programmes offered.

However, in a study of the need for identifying and classifying each hospital within the Chicago area, Morrill and Earickson (1968) used a principal component analysis for 99 variables and discovered nine major dimensions that were significant:

(1) the character of the service area; (2) the service volume; (3) the quality of care and length of stay; (4) the emphasis upon obstetrics and pediatrics; (5) competition; (6) recent service capacity surveys; (7) services for non–white patients or minorities; (8) the range of personnel, expense per bed and the proportion of public aid patients; (9) the emphasis on elderly patients. Under such considerations Morrill and Earickson classified Chicago hospitals into the following categories:

(a) teaching and research hospitals.
(b) large regional or district hospitals.
(c) regional or district hospitals.
(d) community hospitals.
(e) very small hospitals.

Hospitals with highly specialised services are often found in larger towns and usually in the capital or largest city, and close to modes of transport and centres of population growth (Shannon *et al.,* 1975). On the whole, it should be realised that while the incremental increases in specialisation is deeply rooted in the developed world's model of hierarchy, this is not the case, for the most part, in most countries of the developing world. In these nations, the rigid triangular hierarchy is necessarily the norm or the required model. Accordingly, in a theoretical system clarifying this image in the developing world Fry (1979) has attempted to simplify the health care hierarchical levels and functions as illustrated in (Figure 2.1).

In criticising the quantitative and qualitative inadequacies of facilities and maldistribution in Bangladesh, Paul (1983) has introduced another supportive viewpoint of the failure of administrative levels of that country (Figure 2.2). To substantiate this notion a little further, Phillips (1990:109) has quite clearly confirmed that:

> For most developing countries, however, a planning system that is highly facility–oriented and that aims to provide a formal hierarchy and fixed referral system can result in administrative attention being paid to less immediately important aspects of service delivery. It can, for example, result in doctors and nurses spending a great deal of time on administrative matters related to referrals or being drawn into the bureaucratic machinery. It can also allow political rivalries between settlements, as those of certain sizes attempt to exert political pressure for a health service to be provided.

Considering this matter in all its merits, it seems obvious that the dominant feature of the health care hierarchy in most developing countries is concentrated primarily in urban centres while the villages of the rural areas are almost entirely neglected.

The development process of a top–down system of health care delivery in many Third World countries can be interpreted only through the imposition of modern, extraneous systems that have prevailed for many years under colonial domination. This phenomenon can be clearly seen in the contemporary structure of modern medical systems which focus mainly on curative rather than preventive medicine-reflecting a colonial legacy in a number of African countries, such as Nigeria, Kenya, and Ghana (Fosu, 1986; Muganzi, 1989). Likewise, Akhatar and Azhar (1986) pointed out that medical services were mostly assigned to port cities and

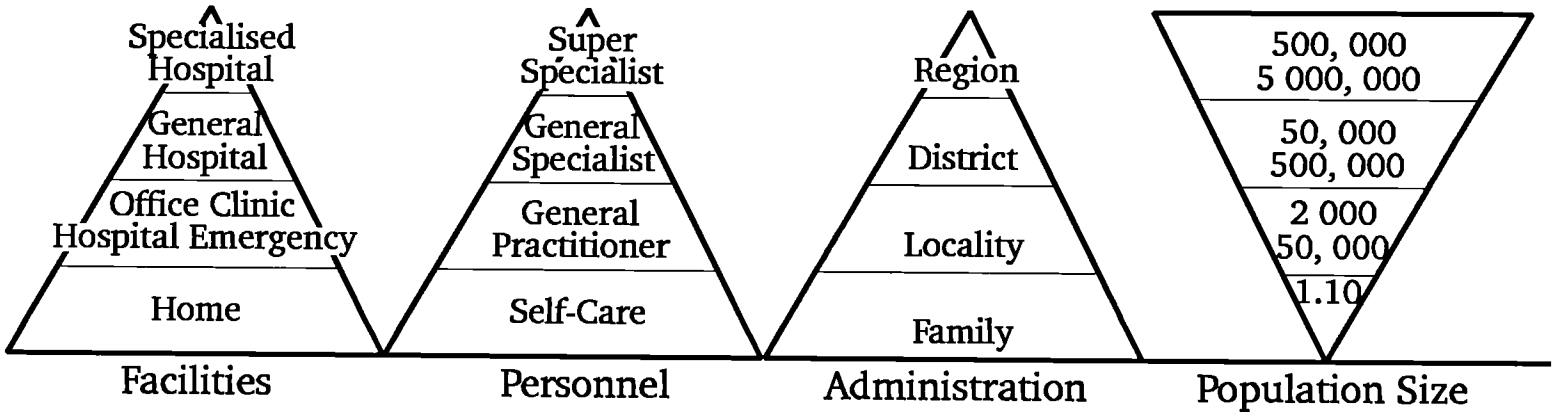


Fig 2.1 The Health Care Hierarchy: Levels and Services in a "Theoretical" system (from Phillips 1990, after Fry 1979), p.107

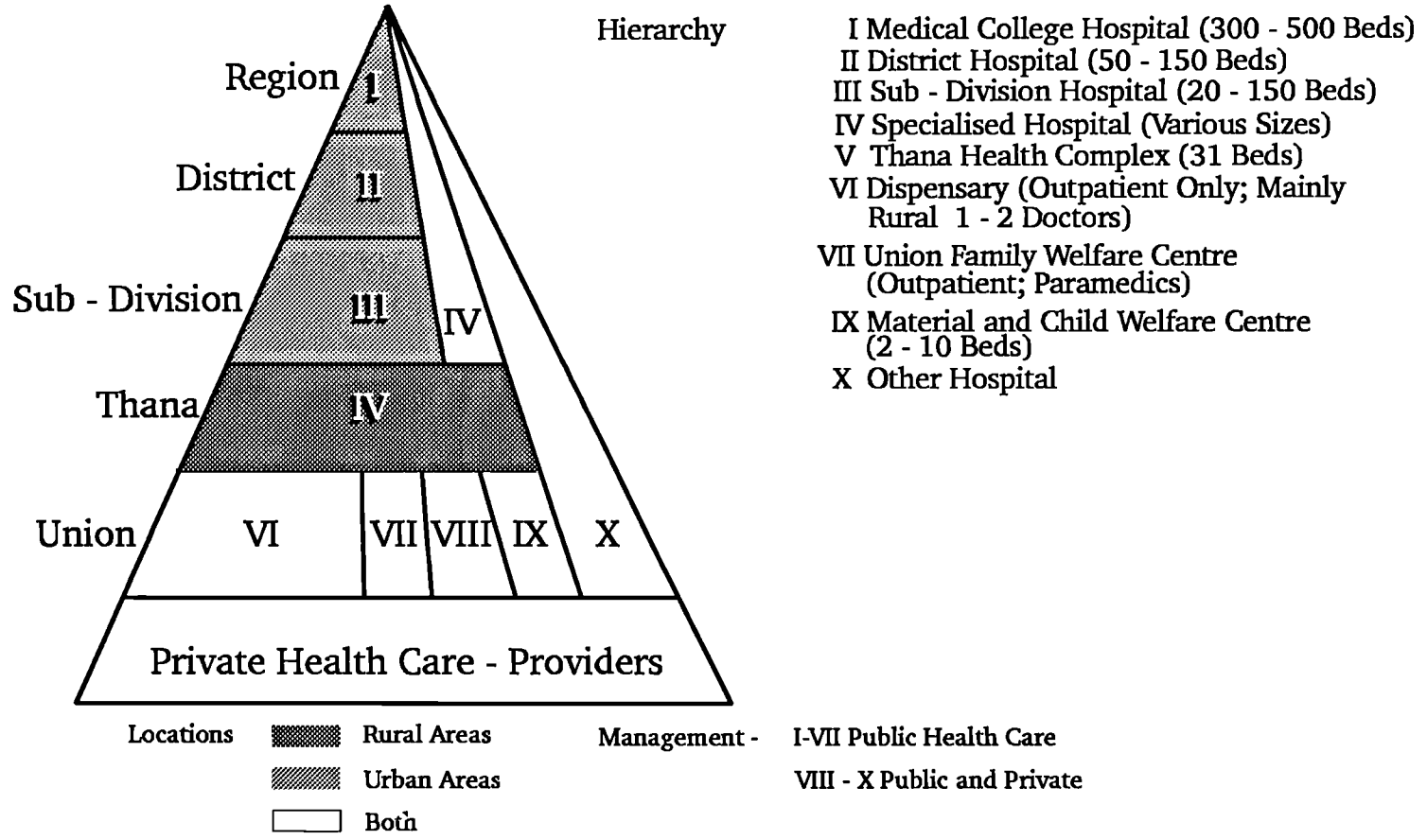


Fig 2.2 The Health Care Hierarchy in Bangladesh (after Paul 1983), p.190

strategic sites, fostering the status of western style medicine to a degree that exceeds even the needs of the colonizers and their elites, in such a way that left the rural population almost entirely deprived of those vital services. Historically, towns and cities were the essential administrative centres, which typically became the major attraction of facility development (a similar situation is repeated in Libyan cities as can be seen later). Further, contributing to the exacerbated situation of creating wide inequalities between urban and rural areas is the taxation of farmers and the subsidization of urban investment particularly in societies that still have a large agricultural sector (Harpham *et al.,* 1988). The identification of disparities between different parts of countries has been a focal point of research. Hence, the highly centralised structure of governments, the colonial factor and the lack of funds, power and resources in the hands of regional and local municipalities have all interacted together to concentrate resources and facilities in national capitals (Harpham *et al.,* 1988). For instance, in Ghana as in many other colonial countries, Fosu (1986) confirmed that the inherited administrative system was categorised as: one teaching hospital, eight regional hospitals and thirty–two district hospitals, representing, in towns over 20,000 persons, an imbalance of doctors/ population ratio. Thus, he suggested two hierarchies; one of expenditure and one of population to be served, but inversely related to one another (Figure 2.3). As a response to this negative trend, a number of developing nations have adopted new policies which impose compulsory rural services for medical students and new graduates in an attempt to substitute the shortage of their need on the one hand and to gain their first training on their rural compatriots on the other hand (Reforma 1977; Rakowski and Kastner 1985).

The process of persistent inequality between urban and rural regions in terms of health services in most developing countries led Warner (1978) and others to launch an outright denial of the dominant opinion and paramount role of prominent professionally trained workers; namely doctors and specialists. Thus, realizing the fact that community health workers are part of the community and their role is to serve and not to make money (as the doctors do) from the illness and misery of their fellows, Warner (1978) strongly stressed their importance as members of the health team and the doctors as the auxiliary to be called in only when necessary. Therefore, the community health worker, according to Phillips (1990) will take the lead with doctors "**on tap and not on top**". In this respect, the Chinese

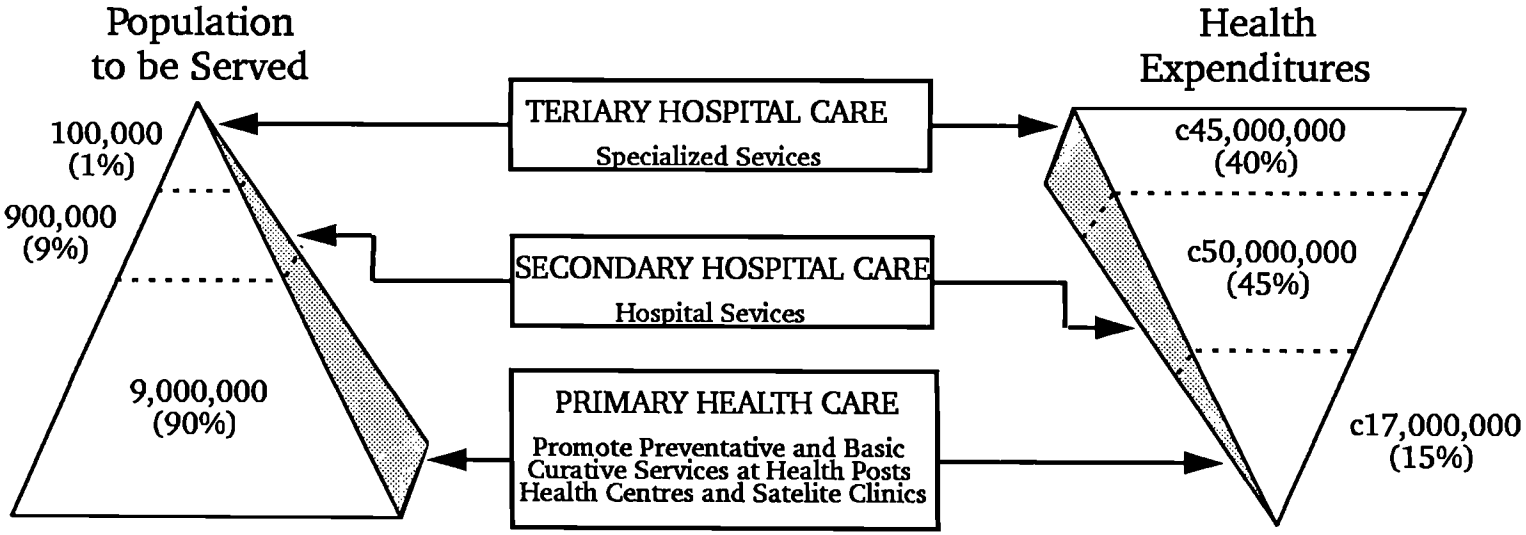


Fig 2.3 The Health Care Hierarchy and the Inversion of Expenditure to Population Served in Guana (after Fosu 1986), p.267

experience can be seen as a successful model of community–based primary health care because it is claimed that 100% of the population are accessible to a rural barefoot doctor or his/her urban equivalent. The rural health care system in China during the early 1980s was classified into five categories according to Phillips (1990: 127–128)

"*1. production brigade health station.*
2. commune hospital.
3. district central commune hospital.
4. county hospital.
5. county bureau of public health. "

By this sort of equitable system of health care services, people will enjoy both traditional and modern medicine.

The most striking characteristic of disparity (within rural areas) can easily be seen within Third World rural districts, particularly those large settings such as the Kibwezi of Kenya. For example, Ferguson *et al.* (1986) observed important differences in access to health care facilities within a single rural area of Kibwezi. They added that only inhabitants who were near the main transportation routes were lucky enough to have had greater access to higher order services in the main cities should that be required. In contrast, the dwellers of the hilly areas were far from the services and hence had to travel long distances to the urban centres to satisfy their needs. This situation according to Phillips (1990) has drastically changed since the early 1980s in this area due largely to considerable improvement in the provision of both a centrally located health centre and a community–based health care programme.

Generally speaking, it is the poor who are most often illiterate, ignorant, and lack access to communications and social services in large cities. The gravest consequences have always been felt by the poorest people in the poorest countries. Therefore, it seems reasonable to support extending PHC and the services of community health workers to the far–distant rural areas so that people will be equally served. In spite of some successful attempts made by some developing countries

to reduce the regional inequalities in terms of health provision and proximity to services, the overall level of coverage is still far below what is desirable.

2.2 Accessibility and utilisation

Accessibility and utilisation are two interrelated phenomena and it is extremely difficult to differentiate between them. Accessibility has been defined as physical (potential) accessibility and revealed or effective accessibility–utilisation (Phillips 1990). Additionally, there are other major objectives which need to be considered when accessibility and utilisation are meant to be clear; namely equity and equality as well as quantity and quality of service provision.

These concepts have received considerable attention in both medical and social sciences. However, to begin with accessibility, it is essential that one distinguish between locational accessibility which is a criterion of physical proximity measured mostly in distance terms, and effective accessibility which depends on getting the ability, mobility and time to reach a service (Moseley 1979). Again, potential accessibility means that once a facility exists within a specified distance of a contingent user, it may be utilized.

Research over a number of years has stimulated attention to geographic measures and other non-geographic considerations concerning the need to use a facility in terms of staff qualities, socio–cultural characteristics, and the economic ability to use facilities (charges, transport costs, and the like). The interpretation of the influence of such matters has been a significant research focus in both the developed and the developing world. It is realised by geographers in particular that simple physical distance between clients and providers of health care is an outstanding component of accessibility. Distance for example can be calculated in many ways according to Scarpaci (1985): (a) travel cost, (b) travel distance, (c) linear distance, (d) travel time, (e) total elapsed time.

In measuring types of distance, one can point out that usually a certain desirable maximum distance for people to travel to a facility is set and based upon that a system is operated. For example, a recent study conducted on mobile clinics in a commercial farming area in Zimbabwe revealed that 35% of the population has

poor access to health care, especially those who are living more than 8 km from a static clinic post and more than 3 km from a mobile clinic post (Vos *et al.* 1990).

In the Arabic world a survey carried out in Iraq by Habib and Vaughan (1986) strongly emphasized that the most important explanatory variable after sickness was distance to the nearest care facility.

On the contrary, in the Philippines distance did not prove to be a major obstacle especially in poor urban areas where public *barangay* health stations substitute for traditional care and supply a network of readily accessible health care (Wong *et al.* 1987).

In the developing countries where economic constraints are likely to be severe, it is assumed that many people and perhaps the majority walk to health care facilities (Jackman 1972). In supporting this assumption Kloos (1990) in his updated study on Ethiopia mentioned that 85% of all health station polyclinic patients, 92% of all centre patients and 53% of the hospital out–patients travelled on foot, or used horses or mules to reach health care.

Travel time is another crucial factor of spatial friction. It is often thought that time has no meaning in non-western societies, but this idea has proven untrue and time spent on searching for health care and taken away from other tasks has been considered. For example the peasants of Ethiopia tend to seek distant health facilities only during the period immediately after harvest, because they only then have available time and money (Kloos 1990). Moreover, peasants appear to look for medical care as part of multipurpose trips to urban areas, mainly to visit markets, relatives or government offices.

However, Annis (1981) appraised geographic accessibility in West Guatemala, attributing that to the rational and wise planning of the Ministry of Health which located facilities in rural market places that are central gathering points for the population in their daily activities. Moreover, the poor quality of some roads and slow travel times were not major problems impeding accessibility in West Guatemala.

In order to provide better accessibility for stationary populations Vos *et al.* (1990), in their study of a commercial farming area in Zimbabwe, recommended

a number of clinic sites that would theoretically cover a maximum number of people with poor access to static health services. Similarly, providing health care facilities to small groups of nomadic people, wandering widely in various places in the developing world, requires a special study of spatial dynamics. Therefore, Prothero (1972) reminded us that in such conditions health care services must be located along the nomads' customary routes or follow these people as they travel about.

However, the concentration of planning in most developing countries has been as yet mainly on improving physical accessibility which means an emphasis upon curative rather than preventive and promotive services which, in these countries, is still limited in scope and needs to be extended further.

It is vital to cite some examples from the enormous amount of material written about the obstacles facing people seeking health care in the developing world. Probably the best example summarising the whole spectrum of the many problems of the developing countries in this regard is the study carried out by Rakowski and Kastner (1985) on Caracas in Venezuela. The major objective was to extend the use of central public and maternity hospital services to be accessible and acceptable locally and regionally. There was a strong commitment to concentrate on preventive rather than curative service *per se*, and to promote client participation in health oriented programmes. The experience of one health service centre, namely *El–Libertador*, located in a *barrio* serving a sphere of influence ranging from 21,000 to 24,000 persons, is of great importance. The major problems identified by the authors were as follows:

a) The Ministry of Health and Social Welfare was not fully satisfied with the idea of extending health care services to remote rural areas.

b) The rigidity of administration, information flow and logistical difficulties were other facets of the problem.

c) Failure of the plan which was aimed at providing the rural areas with family planning, emergency, in–patient care, pre– and post–natal care as well as vaccination.

d) Having been without previous administrative experience and medical training, the physicians appointed to work at that centre have aggravated the situation and yet failed even to tackle small medical problems such as family planning and skin disorders.

e) Above all, the lack of water, shortage of even a little cash to manage the daily expenses of the centre, difficulty to maintain and staff the transport as well as the lack of citizen participation are all further phases of the problem, and this situation may be repeated in many countries of the developing world.

The low degree of accessibility to modern health care facilities in most developing countries can be attributed to numerous factors as can be understood from the following studies:

A recent study conducted on rural Bangladesh (Wolffers 1988:50) indicated that traditional practitioners have a much better coverage than the modern ones. According to Wolffers:

> Women fear that the strong modern medicine will harm their tender organs. They will burn their uterus, impairing their possibilities of surviving because a woman who does not give her husband sons runs the risk of being divorced.

Another contemporary study made on rural Malaysia (Phillips 1990) pointed out that although governmental health care services are in some ways well-developed, high travel costs and long waiting times remain major difficulties which cause reduction in demand for modern services and thus traditional medicine has become the only form of care accessible.

In rural Ghana, Fosu (1981) confirmed that modern medicine was usually used only for serious illnesses such as communicable diseases and digestive conditions while folk medicine and self–medication were mainly used for musculoskeletal problems.

On the contrary for rural Tanzania, Ethiopia and the Ivory Coast, Kroeger (1983) indicated that the improvement in accessibility has resulted in the abandonment of traditional services and the utilisation of modern medicine.

Another study in Kuwait, one of the Gulf States of the Arab World, showed that the major cause of communication barriers between population and foreign

physicians was the language difference (Meleis 1979).

In reflecting the relationship between physicians and their patients as a measure of accessibility, Lasker (1981) reported that in the Ivory Coast, there was little talk between patients and doctors during medical check-ups. The patients tend to be hesitant in asking questions of their physicians. Not only that, but also a number of young doctors asserted that there was no need even to explain certain matters to their clients. Elsewhere in Latin America, Kroeger (1983) has cited a survey conducted on four Indian populations in Ecuador, indicating that the most voiced reason causing a negative effect on using modern health care facilities was the perception of the physicians' superiority.

Health care, like other social services, is not always equally available to all people. The maldistribution of such services may be ascribed, for the most part, to geographic barriers. Thus, the complete availability would stand only if every inhabitant had direct and uninterrupted access to sites supplying needed services. Unfortunately, this condition can not be verified in reality as mentioned earlier. It can only exist according to Joseph and Phillips (1984:52) "*in the minds of science fiction writers and other savants* ".

It seems obvious that supply of a service is a precondition for accessibility. Therefore, unless services are available, there would be no possibility whatsoever to other factors, geographic or otherwise, impeding people from reaching required services.

Other barriers which influence effective accessibility can be classified to include: inconvenience, personal preferences, facility opening times or the days of provision which must synchronize with the times at which people can get to a service centre, and must accordingly take into account other obligations such as availability as well as transport costs (Carlstein *et al.* 1978). The question of access, physical, economic, and social, is crucial to health care planners and medical geographers. However, the previous constraints may form very complicated and crucial obstacles particularly in the areas of more voluntary nature such as preventive and promotive services.

2.3 Location–allocation models

The principal contributions, which geographers can make in understanding and helping to solve the problem of resource maldistribution are usually through location–allocation modelling. The location of health care facilities is the most crucial issue of any health care service operation. Thus, theoretical models and their practical applications have been perceived as being significant, particularly in maximizing accessibility to a given quantity of resources and optimizing spatial distribution (Daly 1972).

However, as this research entails an understanding of the reasons for developing location–allocation models and how models have been used to solve specific problems, it is better to begin with a distinction between two kinds of models, mathematical and non–mathematical. The former is typically derived from already established principles like graph theory and linear programming while the latter, although it may have a theoretical basis, is worked out with less mathematical interest (Haynes and Fotheringham 1984).

It should be strictly emphasised, however, that most of the work in this field was principally developed and then tested in the Western world where necessary and reliable data are usually available (Blumenfeld *et al.* 1988). Nevertheless, some modest attempts have been made in the developing world to modify some of the innovative ways of those models to suit local needs and probably further to stimulate the thinking of both geographers and health care planners in those countries. Thus, planning of urban services has been considerably dependent on the use of mathematical models to predict the behaviour of potential users of such services (Daly 1972). The central focus has always been to provide urban services in such locations and having suitable capacities and delivery systems so that the services will be ideally utilized by the target population.

The principal aim in mathematical location–allocation models is to locate a set of facilities in space and then assign a set of populations to them in a way that results in some kind of ideal interaction between populations and places of health care provision (Haggett *et al.* 1977).

Probably the best known application of mathematical allocation modelling

was made by the geographer Godlund (1961), who pinpointed several alternative sites for regional health care centres and hospitals in Sweden, by using different techniques. Demographic, economic, transportation and travel time constraints to various centres were taken into consideration and hence sites were selected as efficiently as possible to minimize travel time.

Allocation of resources to serve population to best effect has also been carried out in different sorts of mathematical models, tending to look at the location–allocation problem through measuring facility supply and population demand. Thus, in supporting this idea Schneider (1967) and Abernathy *et al.* (1972) argued that locational efficiency is a function of the cost of operating a hospital in a given location and the users' costs measured in terms of minimising time and money to get to that hospital.

Applying central place theory in a heuristic approach to Chicago, Morrill *et al.* (1970a) explained the optimum allocation of health care facilities. A simulation model was suggested in which the probabilities of patients from various areas visiting different hospitals were calculated from a modified construct of an initial estimate of hospital use. Similarly, considering four factors related to hospital case–mix–patterns, namely, treatment costs, hospital size, patients' residence and the sites of physicians' offices, as physicians usually refer people to hospitals, Schneider (1968) suggested an outward decentralization plan for the hospitals' systems and physicians of Cincinnati to match the distribution of patients who were not equally dispersed throughout the city.

Where financial and other resources are scarce, as they definitely are in most developing countries, health care services must be located in such a way that the population they serve can reach them within a minimum time and with less overall cost. Phillips (1990) claims that not only are resources insufficient but also they are not optimally distributed with respect to population accessibility. Additionally, various personal and institutional setbacks are not easily modelled due to the fact that their variables are either not measurable or are changeable from time to time. Variables such as travel time and costs, comfort, personal attitudes, satisfaction with physicians, the nature of a facility, its credit and the like can all cause considerable debate and are critical matters to be considered.

However, to utilize scarce health care resources fairly in a developing country (India) Mahadev and Thangamani (1984) developed a modified Western–type model to optimise accessibility with realistic monetary and accessibility constraints. The adjusted western type models to be applied in the developing countries so as to meet local needs appear feasible, although such adjustments may, in practice, be difficult to verify. Moreover, in Latin America as late as 1971 Fuller (1971) complained that while industry, transport, and other economic activities were remarkably well planned, social services were not, indicating that the maldistribution of family planning clinics in Chile is mainly attributed to poor locations rather than to the influence of traditional beliefs.

Elsewhere in Latin America, Gould and Leinbach (1966) applied a very well known mathematical method, linear programming, to locate three regional hospitals on five potential sites in Western Guatemala. During the process of planning, certain areas of interest were considered such as transport costs, network structure and the locations as well as capacities of those hospitals. This model was primarily designed to minimise time and travel costs to the lowest possible point. Likewise, in a study of the need for overcoming resource utilisation inequalities caused by political motives in Guatemala City, Mulvihill (1979) used a location–allocation model to assign patients to a set of existing primary health care dispensaries. Slight relocations and capacity changes were suggested for certain existing dispensaries, while some of the bigger dispensaries could not possibly be moved owing to variation in capacity and other physical barriers like ravines.

In the Arab World, Al–Ghamdi (1981) similarly applied a linear programming model for planning the sites of a public health care delivery system in Jeddah, Saudi Arabia. Al–Ghamdi determined the locations of governmental–health care service dispensaries to be within access and minimum travel time for every inhabitant of Jeddah and yet a minor relocation of previously existing dispensaries was recommended as they were not equally distributed.

As long as we deal with political influence, corruption and other similar factors that have played a great part in bringing about the present–day unequal distribution of facilities in developing countries, it is quite reasonable to give an African perspective by quoting Fadayomi and Oyeneye (1984:793)

> It is still common to find a major proportion of the health budget being expanded on the construction of modern hospitals in a few privileged areas, as a reward for the political support or as an inducement to such support.

However, in order to minimise imbalance of resource distribution in Latin America, Roemer (1964) strongly confirmed that it would not come about except by replacing the current approach, based mainly on class structure, to the geographical regionalisation of health care services.

Allocation of resources to fit population distribution has also been worked out in a number of ways without using the sort of sophisticated spatial models that were discussed earlier. A rather less complicated type of analysis than mathematical models can be applied to determine areas that are well served or not served in health care terms. Thus, simple catchment–area models have been regarded as remarkably suitable for measuring facility supply and population demand as well as improving local accessibility. Enormous efforts have been made to take practical and logical decisions without resorting to the complexity of mathematical models and this may often be more feasible for developing countries. The application of this kind of model can be clearly seen in Pikine suburbs of Dakar, Senegal, which was divided hypothetically into three types of area: zones less than 500 metres from a facility, zones more than 500 metres from a health care centre and zones covered by more than one facility (Laloe *et al.* 1986 as cited in Phillips 1990).

A rather similar way of using this method was applied in the densely settled Mulanje district of southeast Malawi, where the purpose was to predict the potential population catchment areas at possible new health centre sites within an acceptable travel distance, not to exceed 5 miles (Phillips 1990). Therefore, Phillips estimated an acceptable travel distance of 5 miles from health care facilities in most rural areas of the developing world, considering modifications of communication, local topography and existing facilities. Some problems may arise in applying this approach, as many services, especially in intra–urban areas, are found to have overlapping and even competing catchment areas (Joseph and Phillips 1984).

Obviously the usage and application of mathematical models are not always the optimal solution for planning new health care facilities in urban areas, but rather they are used as points of departure for further geographic analysis (Pyle

1974). Therefore, in examining 43 out of 49 Primary Health Care Operations Research "PRICOR" funded studies in the developing countries, it was shown that in suggesting solutions to the operational problems introduced by those studies, only eight used some kind of classical mathematical models, while the rest utilized a heuristic–type approach (Blumenfeld *et al.* 1988). Moreover, the authors stressed the significance of heuristic methods in particular for rational and appropriate analysis of many problems facing primary health care delivery systems in the developing countries.

Generally speaking, in spite of all attempts at modelling, there are still many shortcomings to be considered which have some bearing on final location–allocation decisions and make it extremely difficult to predict. Chief among those factors is the resource distribution, which is for the most part, a consequence of political processes that may or may not be rational (Fendall 1987).

In summary, models in themselves do not provide an ideal answer to the questions raised of how and why people demand and use health care services. But rather it appears that their greatest value lies in making researchers aware of the great range of potential impacts on utilisation which may operate in any given circumstances.

In general, the problem of developing nations is basically manifested in acute shortages of resources necessary to develop health care delivery systems. These countries spend a very high portion of their public capital expenditure on health care facilities so that many other equally important urban problems are not included at all, due to lack of funds even to study them. Again, because expertise, as well as the hardware itself, must be imported, this increases the inequality in exchange and high proportional cost of health care services. The cost of foreign expertise is proportionally much more than labour costs of local manpower, even in the professional ranks. Hence, inadequate education, housing, public transportation, power, industry and general infrastructure all contribute to weak public health care delivery systems and make them incomparable with the developed world (Morely 1988).

The major factor adding to severe urban health care problems in various studies is the acute shortage of resources necessary to develop adequate systems.

This includes not only capital shortages, but the related necessity of importing most of the technology, which causes further pressures on weak foreign exchange and inflation, due to the lack of internal capacity to produce the needed health care equipment (Fendall 1981). Added to this is the lack of skilled design and planning manpower, coupled with poor infrastructure capacity to organize the necessary health care delivery systems. Besides, changing people's daily habits from one way of living to another is desperately hard.

On the whole, there are six major factors that developing countries suffer from and perhaps have in common, though they are present in varying degrees and naturally affect the planning of health care delivery systems. These factors according to Fendall (1981:388) are:

(a) Limited financial resources.

(b) Inadequate educational reservoir and inappropriate health manpower.

(c) Excessively wasteful fertility patterns.

(d) Epidemiological pattern of communicable and vector-borne diseases affecting the child.

(e) Malnutrition.

(f) Traditional cultures and rural societies.

In contrast to the developing world, the developed countries have made significant contributions in the field of health care delivery in the last thirty years of this century.

Finally, it must be emphasized that the previous studies have certainly provided a useful conceptual framework for this research as well as suggesting techniques that might be used for planning systems of health care delivery in other urban areas of the developing world.

Chapter III

Benghazi: An historical-geographical overview

3.1 Location and Physical Features

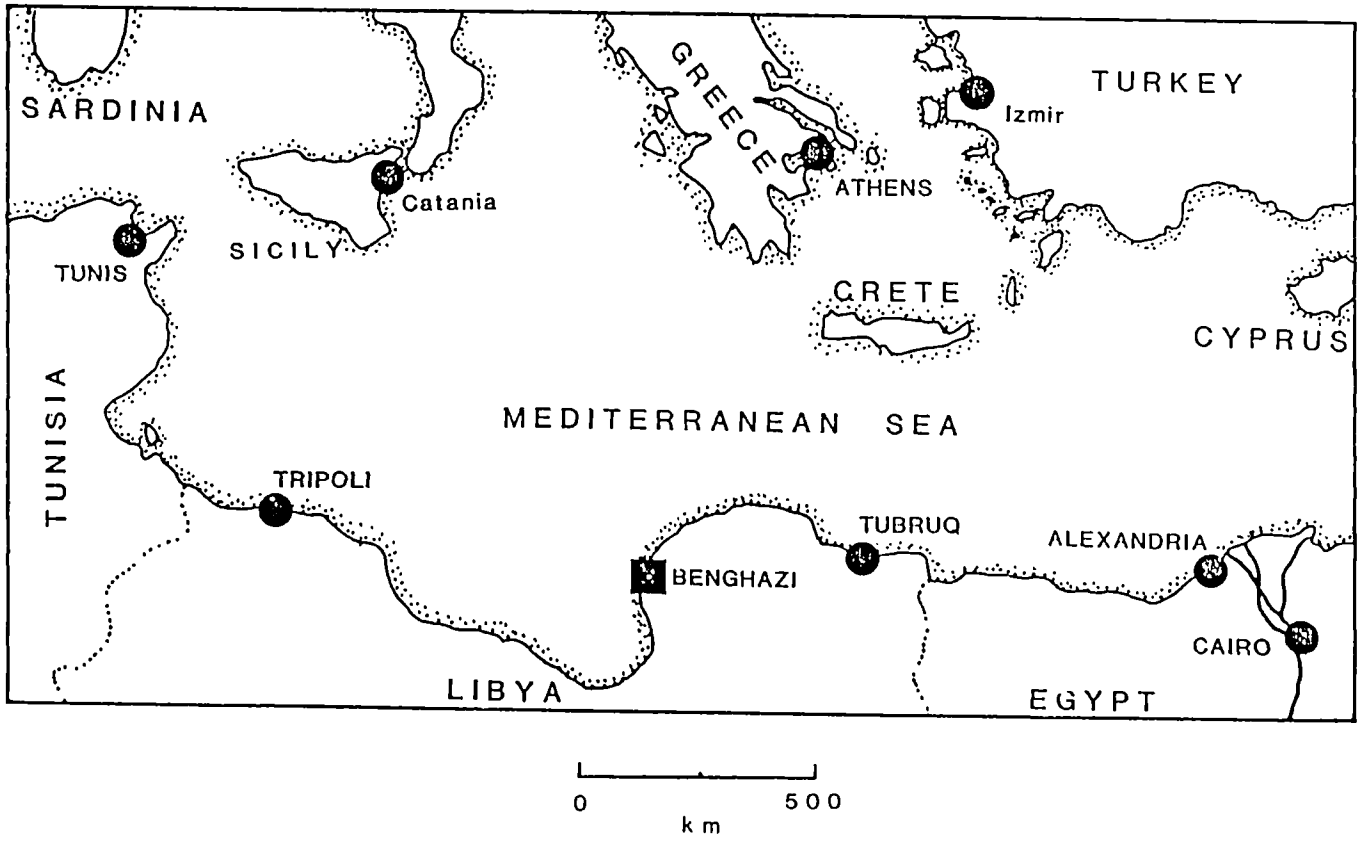
Benghazi is situated on the southern Mediterranean coast half way between Tripoli to the west and Alexandria to the east (Figure 3.1).

The exact position of the city is 32 degrees 11 minutes N. and 20 degrees 3 minutes E. Benghazi is the primary city in the Cyrenaica region and the only major city in Eastern Libya. As a port it is second only to Tripoli - the capital - in cargo handling and imports destined to meet the interior region's needs. Through its long history Benghazi has been troubled by surrounding salt marshes (Sebkha, in Arabic), as can be seen from (Figure 3.2). This Sebkha was originally a lagoon which connected the ancient port of Euesperides to the Mediterranean sea. Later, under the Turkish administration, this lagoon was cut off from the sea by building a causeway linking the old settlement of Benghazi to Berka. With the improvement and development of the isthmus during this century by the Italians, the lagoon has hosted new residential settlements, particularly around Berka and Assabri (now Al-Salam).

Precisely identifying the historical city boundary, one would describe a line to the northeast about one hundred metres long between the track to the fort of El-Munastir, and the track of El-Nakhil on the main road to El-Merg. Its eastern boundary forms a straight line from El-Merg road to Fuehat, while to the south about one hundred metres from the ring road, the southern boundary runs from Fuehat to the sea (Thwaite 1969)

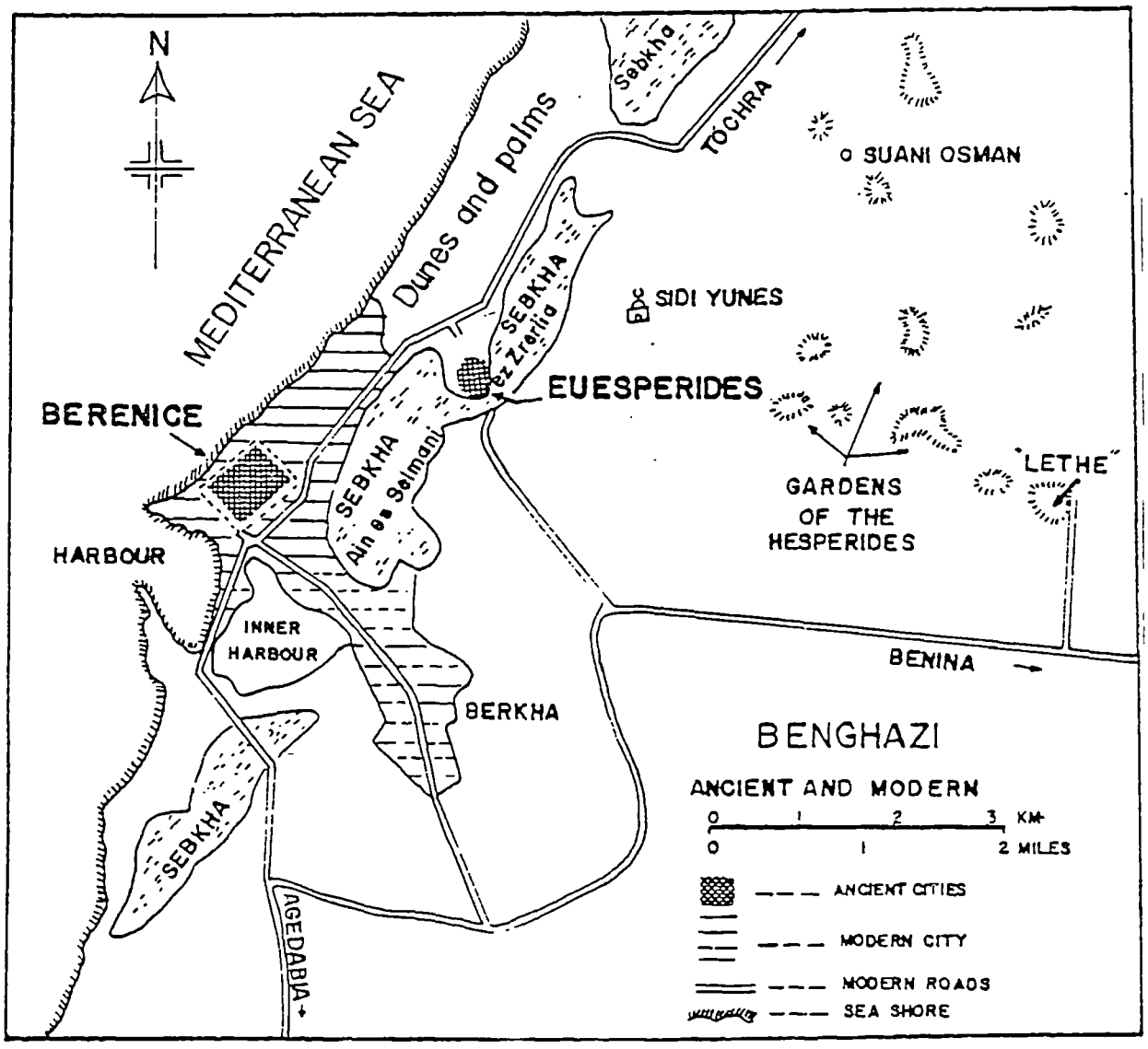
The approximate Municipal area of Benghazi, as laid down by the Municipal Law of 1953, is thirty square kilometers, of which half is considered developed and the rest swampy land. The city proper, however, remained quite small, accounting for only about two square kilometers in total (Bulugma 1968). Most of the

Fig. 3.1 Map of Mediterranean Area Showing Location of Benghazi.



Source: W. Doyel *et al.*, (1964), p. 32.

Fig. 3.2 The location of Sebkha (Salt Marshes).



Source: Richard Goodchild (1962), p. 30.

remaining developed land contained the four major suburbs of As-sabri, Sidi Hussein, Berka, and Fuehat. The city proper has since rapidly expanded outwards, reaching 10.35 square kilometers in 1971 (Municipality Report, 1972) and probably three times or more for the time being. Thus, within a period of about four decades, the city had tripled in size and population. Of all the towns along the Arab Mediterranean coast, Benghazi stands out as unique in its unfavorable position, shortage of rainfall, and relatively poor hinterland. This is entirely different from the old history of Benghazi. During the Greek era, Herodotus, the famous historian, had praised the territory of Euesperides (Benghazi) as having been exceptionally fertile and rich with cultivation of cereals and olives (Jones 1971). Not only that, but it is said that Euesperides with Cyrene eventually rescued several Greek cities during periods of famine that were occasionally taking place (Jones 1971).

Despite its salt marshes, sand, and impression that the ground is always wet, Benghazi has managed to provide building sites solid enough to support multistory buildings. Moreover, while having moderate rainfall compared to Tripoli's 370mm, or to Alexandria's scarce 184mm, it enjoys a lower humidity level and warmer winter than Tripoli and a cooler summer than Alexandria. Benghazi's annual average relative humidity is 56 percent, as compared to Alexandria's 73 percent and Tripoli's 67 percent. Generally speaking, Benghazi is blessed with a favorable climate.

3.2 Benghazi's Early Founding and Historical Growth

Studying the urban settlement in North Africa, one is struck by the high degree of urbanization, where about one person in three is a city dweller (Beaumont 1976). This phenomenon is strongly supported by the city's modern role as social and economic exchange centre, although historical studies indicate that urban influences in the region have been extremely strong even in times when the actual levels of urbanization were quite low.

Keeping in mind these characteristics of Benghazi and the strong urban influences in the region, its origins as a settlement go back to some time before 515 B.C., when it was known as Euesperides. Although no exact reasons appear in records for its distance from the Greek cities of the Jebel Al-Akhader (the Green

Mountain), some historians suggest that its role was as a place of refuge from the frequent conflicts between settlements in Cyrene (an old Greek city located about 220 km Eastern Benghazi).

Another theory proposes that it functioned as a port for exporting agricultural produce and the debatable Silphium by-products (Jones 1971). However, Euesperides probably developed for a number of reasons: as a refuge, as a port, as an agricultural settlement able to tap the productive potential of protected depressions, and as a fortified post for remote Cyrene (Bulugma 1968). During its long history as a Greek settlement, it never became the region's capital, nor did its population ever reach more than two thousand.

The city continued to maintain its name - Euesperides - until the third century B.C. when it was rebuilt and renamed Berenice in honor of the Egyptian King Ptolemy III's Cyrenaican wife (Goodchild 1962). Most of the archaeological evidence of Berenice as a city has been wiped out or overlain by the Islamic city that has developed since the fifteenth century A.D. However, the name Bernik, from Berenice, was used by Arab geographers until the second half of the sixteenth century, when the name Marsa Ibn Ghazi appeared.

According to Goodchild, this full name - Marsa (harbour) Ibn Ghazi - appeared in 1579 on a map by Ali Ibn Ahmed Esh-Sherafi of Sfax (Goodchild 1962). It was not until 1638, however, when a Turkish military mission, blown by an ill wind into the inadequate harbour, established Ottoman control over Cyrenaica. From this time, the city of Ibn Ghazi was chosen as the regional religious and administrative centre. However, the Turks, like the Greeks before and the Italians following them, found that the interior and its indigenous population offered continuous hostility to occupying forces. While the interior has never been blessed with plenty, it has always remained a stronghold of fierce independence and a pillar of Libyan nationalism.

Up to the present era, no pronounced economic significance or urban growth developed in Benghazi. It was Italian colonization which brought about the resurgence of the city following their capture of the region from the Turks, making Benghazi their national political and military capital for the Libyan colony.

After their conquest of Benghazi in 1911, the Italians made drastic changes in the city's landscape despite the poor physical features of the area, its salt marshes and semi-arid, infertile plain. Although Benghazi and other coastal settlements became Italian bases, the colonialists did not gain control of the province proper until some twenty years later. This continuous war between Italy and the Cyrenaican Arab population under the leadership of Omar Al-Mukhtar molded the character of both Cyrenaica and the modern nation of Libya.

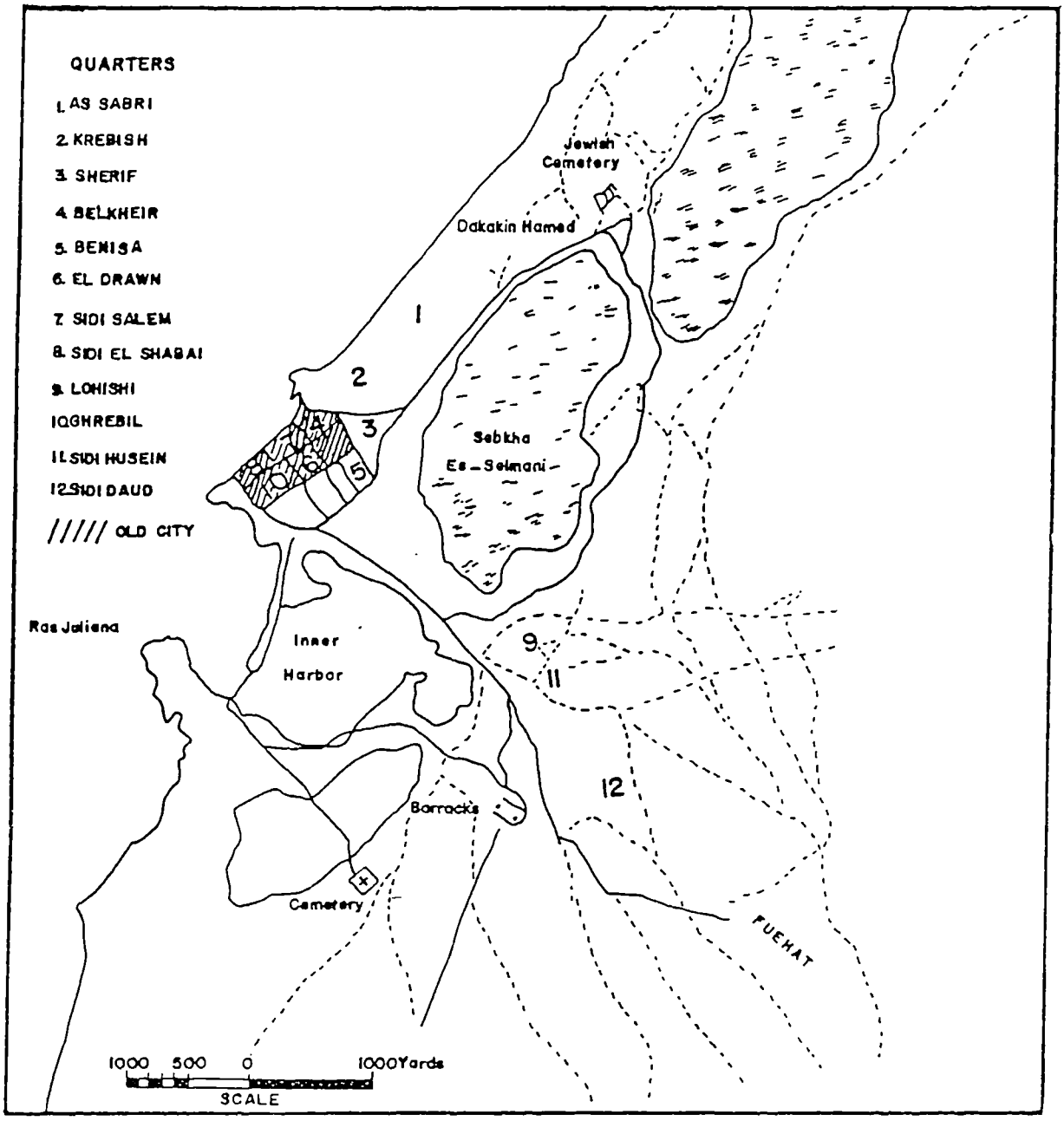
Italian settlement and expansion into the Tripolitanian interior was quite easy due to the nature of the terrain, which did not provide an adequate cover for the resistance, and due to intensive preparation by the Italians to penetrate into the hinterland of that region. However, the differing situation in Benghazi in terms of terrain contributed to its pattern of urban growth. This pattern reflected the essentially military character of changes in the Turkish urban pattern of Benghazi. The defense requirements entailed immediate construction of a strong city wall to protect the occupation forces and colonial settlers from attack. Inside the walls, the major changes were construction of the Municipal (Balaydia) Square and a main street Via Roma - later renamed Sharia' Omar Al-Mukhtar (Bulugma 1964). Otherwise, the Italians left the old town virtually intact. This Italian policy of leaving the old town intact and building European-styled new towns has contributed to the cleavage in architectural styles and spatial organization in Benghazi.

The first Italian town plan of Benghazi after Turkish withdrawal (Figure 3.3), indicates somewhat the limited changes at that time, the total area being around 700,000 square meters (Bulugma 1964).

The most striking aspect of Benghazi's development under Italian rule was the population growth, which rose from about 16,500 in 1911 to over 50,000 in 1937, nearly one-third of this last figure being Italian civilians (Bulugma 1964). The urban population was classified into two major distributions: Italians and wealthy Jews occupying the new properties of modern Benghazi, and Arab Libyans occupying the rest of the old city, with the exception of the remaining Jewish population settled around the synagogue in their traditional quarter behind Baladiya Square.

Within a half century, the Italians succeeded in making new Benghazi into a city resembling many Italian coastal towns. On the other hand, they failed to

Fig. 3.3 The Early Italian Map of Benghazi.



Source: Hadi M. Bulugma (1968), p.58.

make any improvements in the old town, its typical features being narrow twisting streets, single-story buildings constructed of cheap materials, absence of gardens and open spaces, high population density, and widespread poverty. Thus Benghazi as a whole reflects the values inherent in Italian colonial architecture, planning and administration. Summarizing this background description of Benghazi, it is useful to provide a Libyan perspective by quoting Bulugma:

> Despite its poorly documental history and its unfavourable position, despite its fluctuating role and its present awkwardness, Benghazi is a city well worth studying. It might be taken as a symbol of Libya's own history, and as a portent of the future (Bulugma 1968: 15).

3.3 The Oil Boom and Urban Growth

Rapid urban growth in the Middle East and North Africa has occurred during the past two decades even in countries without oil resources, yet in Libya's case the oil industry is almost entirely responsible for the huge increase in urban population. Between 1954 and 1966 Libya's urban population increased from 18 percent to 25 percent, and in 1972 it reached 30 percent (Hartley 1972).

Libyan urban structure has always been dominated by its two major coastal cities - Tripoli and Benghazi - which contained four-fifths of the urban population even before the oil boom. Examining the period between the censuses of 1954 and 1964, we find Benghazi's population has jumped from 70,000 to 137,000 an average growth rate of 9.6 percent per year. While in recent years this rate has decreased, the city is still growing more rapidly than the natural rate of increase as a result of in-migration.

This growth in Benghazi has, for the most part, been a function of a mushrooming tertiary sector expanding in response to the needs of industrial development. As the second major city, port, and administrative centre in the country, it could hardly have escaped this phenomenon. The pattern of investments in Benghazi has created a vast difference between the old Arab town, Turkish buildings, and Italian commercial and residential quarters. Moreover, with the oil boom and oil company headquarters being transferred to Benghazi, rents and land values have soared; new construction as well as renovation of existing buildings have all combined to create a new skyline and economic direction within the city (Thwaite

1969). This rapid phase of urban expansion can not long endure, even though the city is the second growth pole in the country, after Tripoli, attracting many immigrants. This rapid immigration has created situations of urban blight beginning with shantytowns springing up around the outskirts of Benghazi in the late 1950s, bringing with them problems of sanitation, water supply, and general public health. The main shantytown area has tended to cluster in the north of the city in the cemented sand area of As-Sabri, which at least localizes the problem and facilitates solutions (Clarke 1963).

This problem has its antecedents, however, in earlier migrations to Benghazi due to drought and severe economic problems in the rural interior areas, where waves of immigrants arrived in 1940, 1947, 1959, and 1960. These precedents for shantytown development set the foundation for the present location and patterns of urban blight. A similar pattern exists in Tripoli, the problems there arriving earlier than in Benghazi, and brought about several attempts to solve the problem through forced return of immigrants, resettlement, and public housing projects.

Benghazi's evolution since independence in 1951 falls into two distinct phases of growth. The first phase (1951-1959) can be characterized as one of very limited expansion. Principal efforts were concentrated on reconstruction of housing damaged during the Second World War. In the course of this period, Benghazi experienced a severe devastation, described by Bulugma in 1964 as "*the first of its kind in the whole of North Africa, similar only to Berlin's destruction in recent years.*" Thus, the initial efforts of the government were made through creation of departments for residential and public works and development of administrative infrastructure; a few public buildings, schools, dispensaries, and a gas power station were also constructed.

The second phase (1960 onwards) is associated with oil discoveries in the area south of Benghazi, which affected the city due to the relative proximity of the oil fields. This proximity made Benghazi an important supply centre for the oil fields and a favoured place for oil company offices.

During these two phases, three major factors appear to have contributed to Benghazi's evolution. The first of these factors was Benghazi's administrative role after independence, as a local provincial capital, and as a seat of the federal

government after its transfer from Tripoli (Bulugma 1964). During this stage no major construction work was undertaken due to economic difficulties and the short supply of money, the exceptions being minor public works in rehabilitation of Italian period buildings. The second and most important factor in Benghazi's recent growth has been the presence of many oil companies and their investments in the area. The impact of these foreign companies and their operations has developed to the degree that they have become the backbone of city life and the city's economy. However, even without these influences of oil-related capital, the city would have grown, though either much more slowly or more sporadically. Also internal expansion tended to be vertical, adding stories to existing structures or building high-rises, due to the limited ground space (being hindered by the Sebkha; marsh lands).

Finally, the establishment of major federal government projects was an important factor in Benghazi's development. The Libyan University, the Military Academy, the Health Centre, and reconstruction schemes for the Harbour and Benina Airport all contributed to diversifying the economic and social base and to the importance of the city.

Following the expulsion of Italian colonial rule, the discovery of oil transferred domination from one colonial elite to a new foreign neo-colonial elite, continuing to segregate the population according to income and status. Americans, British, and other Europeans occupy the old elite residential areas such as Fuehat and elsewhere in the city where new and expensive construction has taken place. This encouraged the Libyan elite to copy the European taste and manners in housing, thus creating enclaves of wealth and affluence. Adrian Pelt Street (now Riyadh Street) can be taken as an obvious example of this phenomenon. This socio-spatial stratification has encouraged lower and middle-class concentrations on the city's outskirts.

3.4 Patterns of Urban Development in Benghazi

Since the initial period of oil production, Benghazi has faced a second phase of urban growth. The Italians pioneered the first phase of Benghazi's modern urban growth by introducing a European style of planning and architecture during their colonial rule of Libya (Bulugma 1968). The features of this modern urban

landscape were new to North Africa and conflicted with the progressive evolution of the traditional Arabian environment.

With the rise of Fascist ideology, the Italian political aspirations grew beyond mere colonialization and turned towards visions of incorporating the conquered territories into a new Roman Empire, a **"Greater Italy"**. Along with this ideological vision grew an imperialist approach to architecture and planning, thus creating a modern, separate part of Benghazi and dividing the city into two sections– the Arab and the Italian, the traditional and the modern. The superficiality of this scheme lies in its neglect of the indigenous population's needs and sensibilities including health care facilities, and therefore after liberation Benghazi was a bifurcated city in need of integration.

Benghazi's current growth phase has followed two patterns: a vertical development of the modern, Italian section and a horizontal suburbanization spreading mainly towards Fuehat, the east and the south east. The importance of these past physical characteristics of Benghazi and their evolutionary trends is seen in their influence on the city's two master plans. Over the past quarter century, these two master plans have in turn influenced the city's development, particularly in terms of land use distribution and the balance between the natural environment and the built-up areas.

3.4.1 Change in the Size of Built-Up Areas

The past twenty-five years have brought rapid changes in every aspect of human activities in Benghazi, transcending in amount and degree almost any known development. This uncontrolled growth of what appeared to be more of a medieval town than a modern city has led to an urban expansion at the expense of neighboring areas (Ragheb 1969). Accordingly, serious problems have emerged as conflicts between the structural pattern of human activities and the constructed physical environment within which these activities take place.

There is a pattern to contemporary growth in Middle Eastern cities, especially those in oil-producing nations. Most cities in this region have doubled their size over the past decade or two, and some, like Kuwait, have welded together a new spatial complex by merging with adjacent towns (Abu–Ayyash 1980). Benghazi's

characteristics follow the general pattern described above, as its urban area has expanded from two square kilometers in 1953, to about 10.5 square kilometers in 1971 and probably three times the latter as of 1993.

Due to physical constraints, Benghazi has expanded towards the southeast and northeast, as it is bounded by the sea to its west and north-west. In the process of its growth, old Benghazi was dismembered as traditional quarters were demolished, giving way to an urban renewal that built more modern types of structures and changed the more ecologically balanced urban landscape of the past. The great bulk of rehabilitated land made possible an unexpected invasion of automobiles occupying the newer open spaces and roadways and showing off the affluence of the city's new oil-wealthy society.

The surrounding hinterlands were used largely for more urban sprawl as the town's uncontrolled growth moved away from the constraints of the sea and spread out in a haphazard development. Yet being second only to Tripoli as Libya's major port, Benghazi has always played a leading role in serving the economic growth of the country, and the port itself has contributed to the city's urban development. Moreover, consequences of this urban growth - mounting land values, congestion and housing scarcity - have tended to push some entrepreneurs and industries toward the suburbs and outer fringes of the city. Thus, the population movement toward the areas beyond the old city limits began to increase with the location of jobs in the suburbs and the problems associated with the city, creating new residential suburbs ringing the city in a pattern similar to Beirut or Kuwait City (Abu–Ayyash 1980).

These two cities - Beirut and Kuwait - represented an open system in their urban growth and are expected to continue expanding into their hinterlands, merging with neighboring towns. However, Benghazi's master-plan produced by the Municipal government suggests that further sprawl be stopped so as to preserve agricultural land and maintain a rural belt surrounding the city. Thus, further expansion of the city was prohibited in 1981 in an attempt to save agricultural lands on which the city depends for its daily food needs of vegetables and fresh produce.

3.4.2 Change in the Internal Physical Structure

The most prevalent trait characterizing Libya's modern growth as well as that of most Middle Eastern cities is the admixture of land uses which makes it difficult to trace any clear pattern of spatial organization (Beaumont 1976). In this environment, it is difficult to find any residential area not dominated by workshops or commercial activities, particularly when space is available and building such establishments is encouraged. Even when land use legislation exists and specifies segregation of residential and commercial activities, it is not strictly enforced. Indeed, Benghazi represents just such an example of mixed land use common to the region's cities. Thus it is apparent from all its history that the city has not been designed to any one single, consistent plan, nor does it follow any particular zoning pattern.

Because of its physical location, Benghazi's development has been concentric, particularly since the reclamation of Es-Salmany marshes (Sebkha), during the late 1960's. Moreover, being located on the seashore, it could only expand inland. Until now, the major government offices and commercial activities remained concentrated in the old city, while by the mid–1960's, the first new concentric ring of residential development was built at the outskirts of the city. Since then other concentric rings have continued to be built rapidly in keeping with the general city plan. In this plan, six concentric ring roads will be constructed not later than 1996 and connected to radial arterial roads radiating from the city core towards the suburbs.

In examining land uses in Benghazi, it is apparent that the commercial zone is located near the port and is built with a mixture of residential and government office buildings. Adjacent to the port area is a quasi-residential, commercial zone. This area contains the major governmental offices, some educational institutions, apartment houses, and shopping markets. Thus, the pattern of Benghazi's physical structure and development would best be characterized as concentric-linear in response to its natural surroundings.

3.5 Current Land Uses of the City and Future Growth

As urbanisation in most developing countries accelerates, the customary known

problem is the absence of rational planning and yet appropriate social services become increasingly a hard nut to crack. In the present area of study, Benghazi, one intrinsic social service is felt to be desperately needed in its urban areas - namely a felicitous health care delivery system.

Undoubtedly, the wide range of boom town activities have attracted large numbers of immigrants to Benghazi, searching for work and other opportunities in the rapidly expanding economy. The past thirty years of constant immigration and corresponding high birth rate have placed a tremendous burden on the administration to supply necessary social services such as health care facilities. As planning of such social services entails improving availability, accessibility and quality of health care services processes which are definitely problematic, it is essential to start our land use analysis in Benghazi with the transportation network and its impact on the spatial distribution of these crucial services.

Most urban transportation research today is concerned with predicting travel patterns and spatial distribution. Predicting travel patterns assumes a given spatial distribution of human activities usually measured in land use terms (Martin *et al.,* 1961). On the other hand, the prediction of spatial distribution is usually carried out through land use models using a given transportation network and its simulated travel patterns. Preparing a plan for the city's future of primary health care needs requires a basic knowledge of those factors which affect land use. Consequently, studies should be undertaken to determine the city's geographic characteristics, its physical limitations, land use regulations (zoning, subdivision regulations, etc.), and distribution of land uses as they are located in relationship to other activities (Martin *et al.,* 1961). However, only by isolating and understanding the many interacting factors affecting adaptation of land for particular uses can planners establish a sound basis for forecasting types and locations of future developments for health care services.

In such an analysis, Benghazi's central business district (C.B.D) and other major commercial centres command special emphasis because they represent major concentrations of both economic and human activities attracting further development potential. As a result, these areas have a considerable impact upon

the ultimate community form, the transportation system, the health care delivery system and other facilities which serve them.

The amount of residential development and social services can be most meaningfully expressed in terms of population, or numbers of dwelling units involved. Evaluating and examining all these factors as they relate to Benghazi showed the following significant relationships influencing population growth (Doxiadis 1981): (a) the amount of available land for residential development in each part of the city, (b) the relative accessibility of each area to health care services, and other social services, (c) the income and occupations of each area's residents, (d) the area's housing conditions, and (e) the size of residential lots. Of these five factors, the amount of land available for residential development and its accessibility to social services were about twice as important as the other three factors in explaining the 1973 to 1988 population growth in Benghazi (Doxiadis 1989).

Economic activity may be expressed in terms of land area or space consumed, employment, or other similar measures. Many studies have shown that among these factors, employment was the most meaningful and significant from the standpoint of relating economic activity to trip–generating characteristics. Also the most important categories of economic activity, based on their share of total employment were found to be: (a) manufacturing, (b) comparison retail, and (c) office services (Black 1981). Besides being important in themselves, the first two also act as magnets in attracting other activities to nearby sites.

An analysis of present manufacturing industries' location was made to determine what factors significantly influenced their choice of spatial location. These factors included: (a) land availability, (b) proximity of good highway and transportation facilities, (c) relative accessibility to raw materials and labour, and (d) the impact of industrial locations on the general health of the population of Benghazi.

An evaluation of the current urban conditions in Benghazi would indicate that the most severe land use problems are located in the central business district, the central market, and other commercial districts in the city centre. Congestion and traffic problems are destined to give problems to these C.B.D. areas because of the disorderly admixture of adjacent land uses.

Secondly, the industrial zone along the Benina road, immediately adjacent to the residential districts, poses an environmental nuisance due to incompatibility of the two uses. Finally, the harbour, Jamahyria Hospital and the 7th October Hospital are hampered by poor accessibility, either due to considerable traffic flows along access roads or due to the limited number of roads.

While no district is in such desperate straits as to require immediate and complete redevelopment, the older central areas need partial and gradual work, while the newer peripheral areas need less attention. Large parts of the old town need redevelopment due to multiple deficiencies appearing at different levels. Likewise, a large number of traditional Arab houses and old-type structures necessitate upgrading of some residential areas.

Moreover, the townscape elements are generally underutilized, as in the case of the lack of coordination between built-up space and the urban landscape. This necessitates the conservation of the few planted areas dispersed throughout the city, agricultural land, and areas of natural interest. Included in these latter areas, the Mediterranean beaches and coastline need to be both conserved and properly developed, so as to respond to the population's recreational needs and positively reflect a healthy state of those inhabitants.

Furthermore, the generally sporadic nature of development over very extensive areas has slowed down the provision of such services as sewage, telephones, roads and health care centres. The service providers, unable to keep up with the demand and pace of horizontal development, have not as yet reached all of the outlying areas. The city government has, however, passed an ordinance banning urban sprawl so as both to protect agricultural lands and to slow down growth so that the services can catch up with the periphery.

This Municipal ordinance has banned sprawl-type development beyond what has been designated the "green belt" surrounding the city, in an attempt to maintain the rural surroundings. This policy implies directing further growth into smaller towns or new satellite communities.

Considering these and other factors, the Municipality of Benghazi has laid out certain regulations restricting further development of the city. In 1981, after this

restriction, the planning consultant, Doxiadis (1981), was appointed to provide a set of clear alternatives for development according to the following objectives:

1. Conservation of agricultural land.
2. Respect for the rural belt.
3. Maximum exposure to the positive qualities of the seashore.
4. Minimum commuting distance to work places and social services.

Fulfillment of these objects would also relieve the following problems:

1. Pressures of rapid development on the existing city.
2. Congestion in the city centre.
3. Duplication of services.
4. Optimal potential for future expansion.

Given these criteria, Doxiadis came up with five alternative strategies in his report of April 1981. Although the Municipality accepted his proposal, some differences arose, particularly over the location of the industrial zone to the north. In the preceding master plan, the industrial site was proposed for the south, while the north was regarded as more suitable for residential and recreational development because of its access to the sea. The author is in total disagreement with the former plan because of two significant points: namely, the swampy nature of this area and its vulnerability to winds. The experience of the researcher, who has lived in such an area, is that the machinery located near to such salt marshes has a short lifespan due to high oxidation, the effects of which can be seen on residential dwellings where the walls are saturated with salt and are deteriorating rapidly. Regarding the effects of heavy winds in that location on industry, the trade winds usually blow polluted air into the eastern suburbs of the city, namely Al-Maheshi and the area adjacent to the traffic gate leading to Jebel Al-Akhdar.

This disagreement implies a continued problem within the planning community, and it is especially important that the Municipality be a strong and well-organized administrative and planning unit. A well-integrated city infrastructure and development relies upon a strong Municipal organization able to coordinate agencies involved in implementing the city plan. The development process should

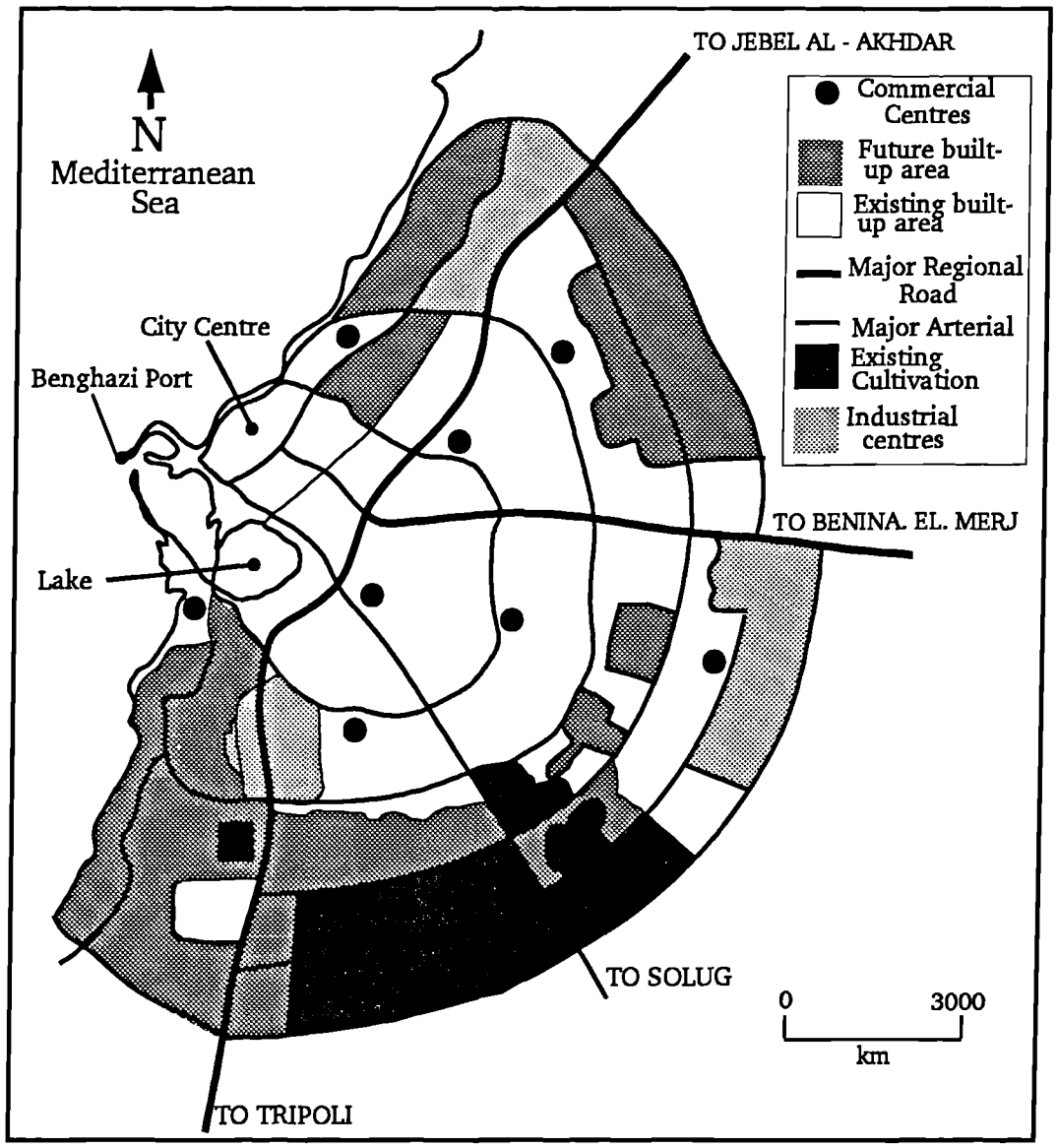
include positive forward planning, developmental control, and use of social and economic motivations. Thus, the Municipality should be responsible both for achieving long-term goals and for tackling the more immediate problems of city growth. This, of course, implies a movement towards more effective integration of the many functional agencies that affect the urban process and problems. What is needed is teamwork on the broadest scale. If this integration is not achieved, the results will be an administration incapable of either planning or implementing any plan, a situation leading to a gloomy future of urban chaos.

In brief, the city needs as Morris (1969) has recommended: *"talented planners equipped with broad vision, courage, intelligence, and the capability to inspire confidence and enthusiasm in others."* This means expert, successful planners with experience in design, application, and operation of facilities with full understanding of economic realities and the feasibility of major projects (Morris 1969). Above all, these ideal planners should be able to get things done effectively. While every city in the world would like to have such a team of super-planners and an efficient bureaucracy, in the case of Benghazi, it is sorely needed. For the time being, the Libyan government is able to afford the costs of building and training such a staff. Therefore, cooperation between foreign consultants, local planners, and those educational institutions training planners is crucial to the future of such an ideal.

In conclusion, in combining the four types of previously discussed activity (i.e. the road network, housing expansion, commercial growth, and industrial development) to form a spatial perspective of Benghazi's land use, a mosaic of distribution exists and can clearly be seen.

Figure 3.4, presents the major types of land uses which are considered as indicators of Benghazi's urban growth. It reflects both the present and the expected future expansion of the city's infrastructure. Yet it is expected that the city will face even further expansion, reaching even to the neighboring villages unless strong measures are taken to protect the surrounding agricultural lands as a rural "green belt." However, due to clear-cut physical barriers, the future urban growth of Benghazi will follow four main directions:

Fig. 3.4 Present and Predicted Land Use Distribution in Benghazi.



Source: Extracted from Doxiadis's Final Report on the Master Plan 1989 and Other Maps of Municipality of Benghazi, 1990.

1) Towards Quifia in the north east.
2) Towards Benina in the east.
3) Southward towards Gwarsha.
4) and to the southeast towards Nawagia.

3.6 Benghazi Road Network

The old road network of Benghazi goes back to the Italian era, as Bulugma indicated in 1968 that "*to call it a modern infrastructure was more of an exaggeration than a fact.*" During the past colonial period, several reasons contributed to the lack of improvement in the road system. Chiefly, the slow growth of the old sections of town - the Arab quarters - located in an isolated area contributed to the difficulty of urban integration and designation of proper areas for expansion. Secondly, but of almost equal importance, were the social, cultural, and security considerations which led to continued heavy use of the existing network with little attempt at future planning for an integrated urban transportation system. These relatively narrow and infrequently paved streets provided barely enough capacity for the existing vehicles to move through them at a congested and slow pace. Moreover, the mix of old and new vehicles, small and large, fast and slow, within this tight road system contributed to poor mobility and inefficient traffic flow. To add to the problem, the available area for road and parking construction or improvement was severely limited, thus condemning the old city to continued congestion - a legacy of Italian colonialism with its dual standards. Furthermore, with the rapid increase in automobile ownership and general vehicle use, the situation became nearly intolerable.

The Municipal authorities tried to alleviate the most serious of these problems by continuous efforts to improve the existing system. However, their efforts could not keep up with the rate of traffic increase. Although the national road system as a whole was quite primitive, as was Benghazi's, prior to the oil boom, the late 1960's brought about a dramatic change. The investment of newly acquired capital in a national road building programme aimed at improving accessibility between urban and rural areas and also within the urban areas. Thus, by 1978 the national road network increased to over 8,800 kilometers of road surface, of which more than

half was paved (Nelson 1979). By 1987, or eight years later, it had increased to about 15,930 kilometers of road surface. This rapid increase in road construction would indicate a great potential for both Benghazi and the nation as a whole in further development of its transportation system.

The major problems seem to be intermittence in route continuity, distractions from commercial frontage, and lack of cleaning and maintenance. Moreover, the most serious problem of all is the lack of coordination between transportation operators and the public works department, or other concerned agencies. Indeed, the phenomenon of digging, constructing, and redigging of public service infrastructures such as telephones, sewage pipes, power wires, etc. has been the greatest problem dominating the city landscape for many years. In this regard, while the ambitious efforts of local authorities to overcome these obstacles should not be slighted, it must be pointed out that their existence must be eradicated as soon as possible if the road projects are to be effective and successful, for serving social services in general and health care facilities in particular.

The past history of Benghazi's road system reads like most developing countries: a modern city overlays a traditional urban core, and little comprehensive planning has been done to integrate the different layers into a unified transportation system. However, its first attempts to modernize the road system consisted of merely paving existing road surfaces and widening or improving main routes. Even during the 1960's, no clear master plan existed, and improvements were made on an *ad hoc* basis. From these years of trial and error, the need to formulate comprehensive plans was felt, and consequently recent years have brought about major studies and planning attempts to fill the city's needs. These studies brought in international consulting groups to work with the Municipality and national governmental agencies to formulate long range plans for regional, national, and urban transportation systems. The problems can generally be summarized as follows: the absence of reliable machinery for road maintenance, and of adequate continuity in scheduling maintenance; poor road markings; inadequate or non-operable traffic signals; and narrow streets coupled with lack of cleaning, affecting traffic capacity, driving habits and safety. Ove Arup's (1978:32) report critically evaluates these problems and concludes with the following statement:

> Although it is difficult to calculate the loss in traffic capacity with any degree of accuracy it would not be an overstatement to say that a twenty percent improvement could be achieved if regular maintenance and cleaning were carried out.

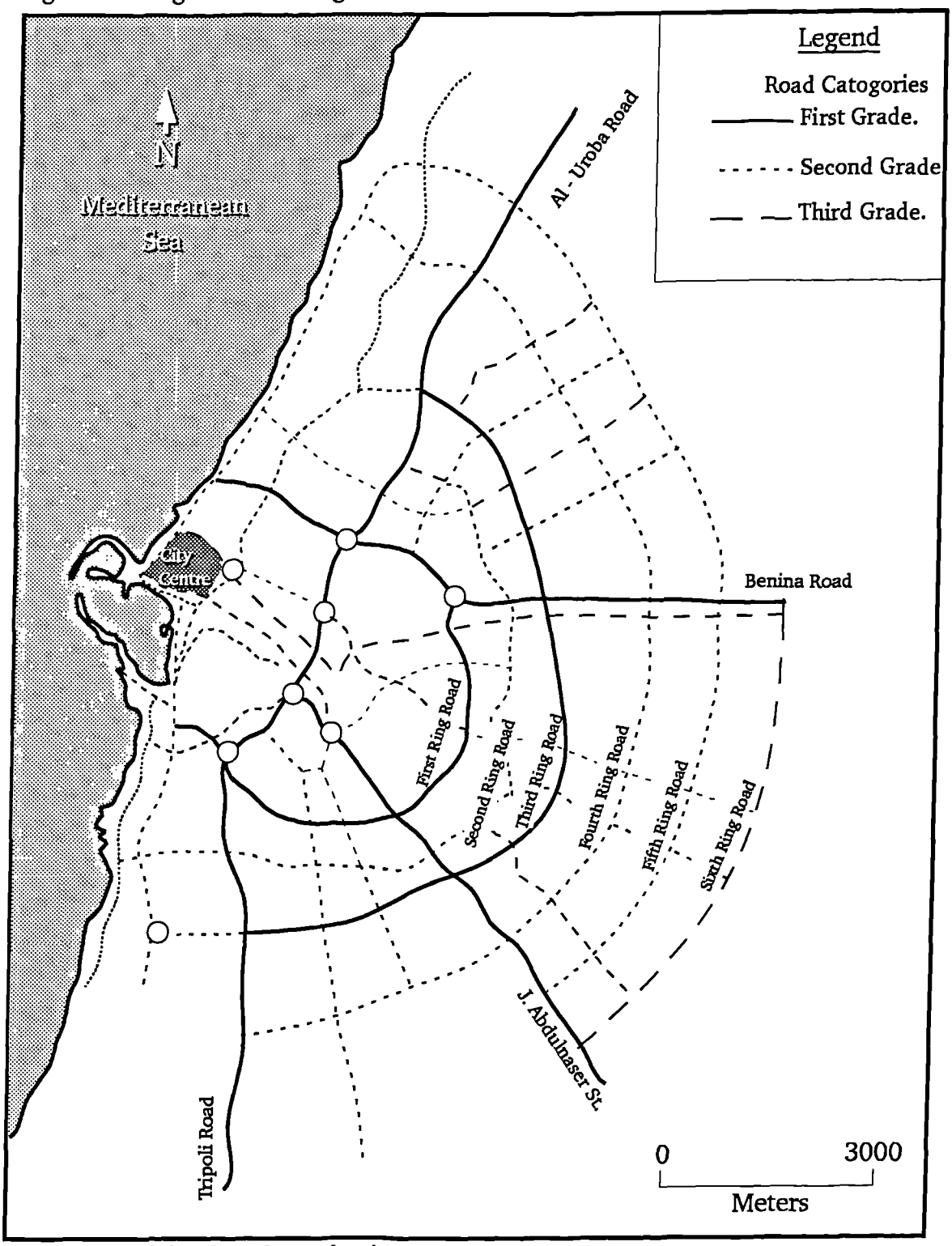
Ove Arup further described the four radials together with the first, third, and fourth ring roads as category I roads, or primary distributors, while the rest were described as category II, or district distributors (Figure 3.5).

In order to give a fair estimate of the present and future plans for a comprehensive road network, Ove Arup and Associates' Master Plan of 1978 for Benghazi's Municipality must be carefully considered. This plan was predicated upon the assumption that the city core would be linked to the rest of the city by a series of radial roads connecting with six concentric ring roads running around the city at different distances from the centre as shown in Figure 3.5.

To a large extent, the master plan suggested by Ove Arup in 1978 has been successfully carried out, and some roads have already been built, particularly those lying within the second ring road. In addition, road projects were begun to upgrade the existing narrow streets and construct overpass bridges at congested intersections, as has already been done at Tripoli and Benina roads. Meanwhile, it was estimated that Benghazi with its current trend of population growth by the year 2000 would require devoting about 30 percent of its urban area for transportation. The first stage of new road construction would include 30 percent of the total needs and was to be performed within the first five year plan or 1981-85 period. Likewise, the remaining 70 percent was to be undertaken through three periods; 40 percent in the 1986-1990 plan; 20 percent in the 1991-1995 plan, and the rest in the course of the 1996-2000 plan (Doxiadis 1980).

It is assumed that these new road schemes will absorb traffic pressure and alleviate growing congestion resulting from an increase in vehicle ownership and use. This increase in vehicle ownership reflects the rising living standard of the general population and cheap automobile prices due to low import taxes and duties. Statistics show that the total number of cars registered in Benghazi increased from approximately 30,000 in 1967, to more than 108,000 in 1978, or an increase of nearly 260 percent in the number of licensed autos during that period (Ove Arup 1978). Besides this, the pattern of dramatic increase in private auto ownership alone is

Fig. 3.5. Benghazi's Existing Road Network 1990.



Source: Municipality of Benghazi, 1992

expected to continue, as seen in the predictions shown in Table 3.1, unless new policies can be established which limit car ownership.

Table 3.1: Car ownership forecast until 2000

Year	No of total private cars
1985	174,000
1990	265,000
1995	372,000
2000	500,000

Source: Ove Arup & Company, Libya Ltd.,*Benghazi Transportation Study, Main Report* (London: September 1978) pp A5-A6.

Accordingly, this large and unpleasant increase in the number of automobiles using the urban space means that the city's landscape has been drastically altered so that by the year 2000, the roads and streets will have reached saturation point (Ove Arup 1978).

In conclusion, the major objectives for transportation planning in Benghazi are as follows : (a) providing a skeleton system for major highways that would alleviate serious traffic congestion on major existing roads; (b) easing movement to the main activity centres including health care facilities, providing high accessibility to them by improving existing roads and establishing new links and feeder roads to the major highways; (c) imposing constraints on private auto use, particularly in areas leading to the city centre so as to disperse auto flow and provide adequate parking in the central area; (d) creating a balanced demand distribution on the whole transportation network; (e) improving and extending public transportation services to all over the city (Salem 1983).

3.7 The Importance of Public Transportation

Probably the major benefit that could be obtained from public transit, as the literature has revealed, seems more likely to be the ability of transit systems to

provide all people with mobility, equality of service and access to their employment, cultural, health and educational needs in urban areas (Smerk 1974). Public transportation is mainly designed to serve certain groups in any given society, specifically the young, the handicapped, the old, those who choose not to drive and those who can not afford a car (Clark 1974).

Experience also has shown that transit use is proportional to the distance of health care facilities from the central business district (Morrill *et al.*, 1970); the use of public transport declines with distance, with higher income and with higher status as can be seen later when public transportation is discussed further in relation to Benghazi.

Environmentalists and ecologists are also greatly concerned with the impact of the private automobile on the biosphere. The problem of harmful pollutants in the atmosphere has attracted serious attention and certain measures have been taken to minimize emissions from motor vehicles. Noise pollution from large-scale highways, and air pollution have been a direct outcome and hence, public transportation, particularly electrified rapid transit, has become increasingly required to ameliorate such conditions (Ayres 1972). It was discovered that motor vehicles use three times as much energy per person move as public transport (Ayres 1972).

The mounting increase in private automobile use has brought about much deterioration of the urban environment and is creating and perpetuating many seemingly unsolvable problems such as : congestion, lack of parking facilities (especially around health care services) waste of time, and money and frustration (Douglass 1971). A nearly universal response directed towards relieving these and other related problems was a shift from private automobiles to public transportation (Douglass 1971).

It should be stressed that in recent years, a growing belief that the automobile must not continue to be the prevalent mode of transport has accelerated among city planners and managers (Armstrong–Wright 1993). This decision, for the most part, has been the result of the favorable social and economic impacts that a transit system generates and the many detriments, outweighing advantages, caused by private automobiles to the urban environment.

In summary, the case for mass transport can be justified on the basis of its potential passenger capacity, preservation of social and economic values, and the possibility of conserving valuable space and environment (Smerk 1974).

Therefore, it should be realized that improvement of public transportation will certainly add to the accessibility of public health care services in Benghazi and reduce the negative impact of emissions and exhaust gases generated by the great number of private cars on the health conditions of the population.

Undoubtedly, improved public transport will lead to strengthening the value of community ties and interaction and further provide a good travel alternative for those who don't own private transportation and need to access health care services.

3.7.1 Public Transportation in Benghazi

Benghazi at the present time embraces four principal modes of public transportation: public buses, Romis (public conveyances carrying about seven passengers, usually French-made Peugots), taxis, and others (pick–ups, vans and mini–buses). It is worth noting that the present public transportation system of Benghazi consists fundamentally of buses and taxis on a line network, with the two services operating in almost inseparable form. Both run on all major routes, and there are only a few parts of the city where one or the other prevails.

It is also important to observe that in Benghazi, as is the case in many cities in the world, usage of taxis is more expensive and indicates a higher status than the use of the public bus. The streets of Benghazi and its suburbs are also utilized by other forms of public transport, namely pick-ups and vans. However, while some of these forms of public transportation are authorized, others are not. Furthermore, Romis' operational services are mostly assigned to serve the outlying villages and towns. They usually wait at certain known posts to collect a load of passengers going in the same direction at a fixed fare. Romis are prohibited from operating on the major streets, particularly in the city centre in order to protect buses and taxis from competition. A few mini-buses are available but they are primarily used for commercial activities and other business transactions. These vehicles are also available for hire when needed. The limited service of buses in outlying areas has

encouraged a considerable amount of illegal carriage of passengers to take place, particularly by pick-up trucks and private mini–buses.

Since buses and taxis represent the overwhelming majority of transportation modes dominating the city landscape, it is reasonable to discuss them in some detail. The taxi is the equivalent of the private automobile. This form of private transportation is distinguished from the bus by being convenient and flexible, especially for those who can afford it. Even for those who can't afford frequent taxi usage, a taxi might be used as the only alternative to extremely limited mobility and lack of access to the necessities of life. Taxi operations account for about 39.9 percent of the transportation trips in Benghazi. Taxi use is concentrated along major routes and around the city centre. In general, the service provided by taxis is not adequate; the fare difference between them and buses suggests that they are not competing directly to any great extent. Taxis do not appear to serve further destinations, since demand is present everywhere within the city. Moreover, drivers prefer to operate their own vehicles on well–paved C.B.D. streets and in the adjacent areas.

Benghazi transit serves the incorporated area with twenty-six routes operating Saturday through Thursday, with diminishing service on Friday (the official holiday). The bus service usually begins at 5:00 a.m. and continues until 2:00 p.m. when the morning shift changes to the evening shift which, in turn, continues up to 10 p.m. However, the routing system has for the most part been adjusted to serve the major shopping centres, residential neighborhoods, and educational institutions such as the University of Garyounis and the high schools.

The bus fleet consisted of 127 vehicles in 1990, operating on twenty routes as shown on Figure 3.6. In addition, there are six other routes which are not functioning at present due either to shortages of manpower (drivers and technicians) or to the fact that areas through which they pass are undergoing road construction. Of the previously mentioned total, the corporation is responsible for running fifteen buses through six external routes to serve the adjacent villages and towns around Benghazi. In addition to the 127 buses owned by the Corporation of Transport, another fifteen buses have been rented to meet the continuous demand and to increase mobility for a greater number of city dwellers. Moreover, forty-five buses out

of the general total (owned and rented buses) were assigned to serve educational institutes, mainly girls' schools.

Although there is no clear development plan due to the scarcity of detailed studies dealing precisely with rider characteristics and real location of demand, the modest efforts of the Corporation towards developing bus services have been appreciated, particularly when the situation is fraught with many administrative and technical setbacks.

Since a bus is assumed to be equivalent to three passenger car units in terms of space (Heggie 1973), it is therefore more realistic and rational to invest capital in an effective bus system capable of overcoming many urban transportation problems and of increasing mobility in many parts of the city. Whether or not accepted, public transportation, particularly buses, will increasingly become the principal mode of transportation in Benghazi and a vital tool for the participation of Libyans in the activity system. There is no doubt that serious research efforts are required to determine the adaptation of an urban form which was shaped to a considerable extent by private cars to an activity system generally based on a newly introduced bus system.

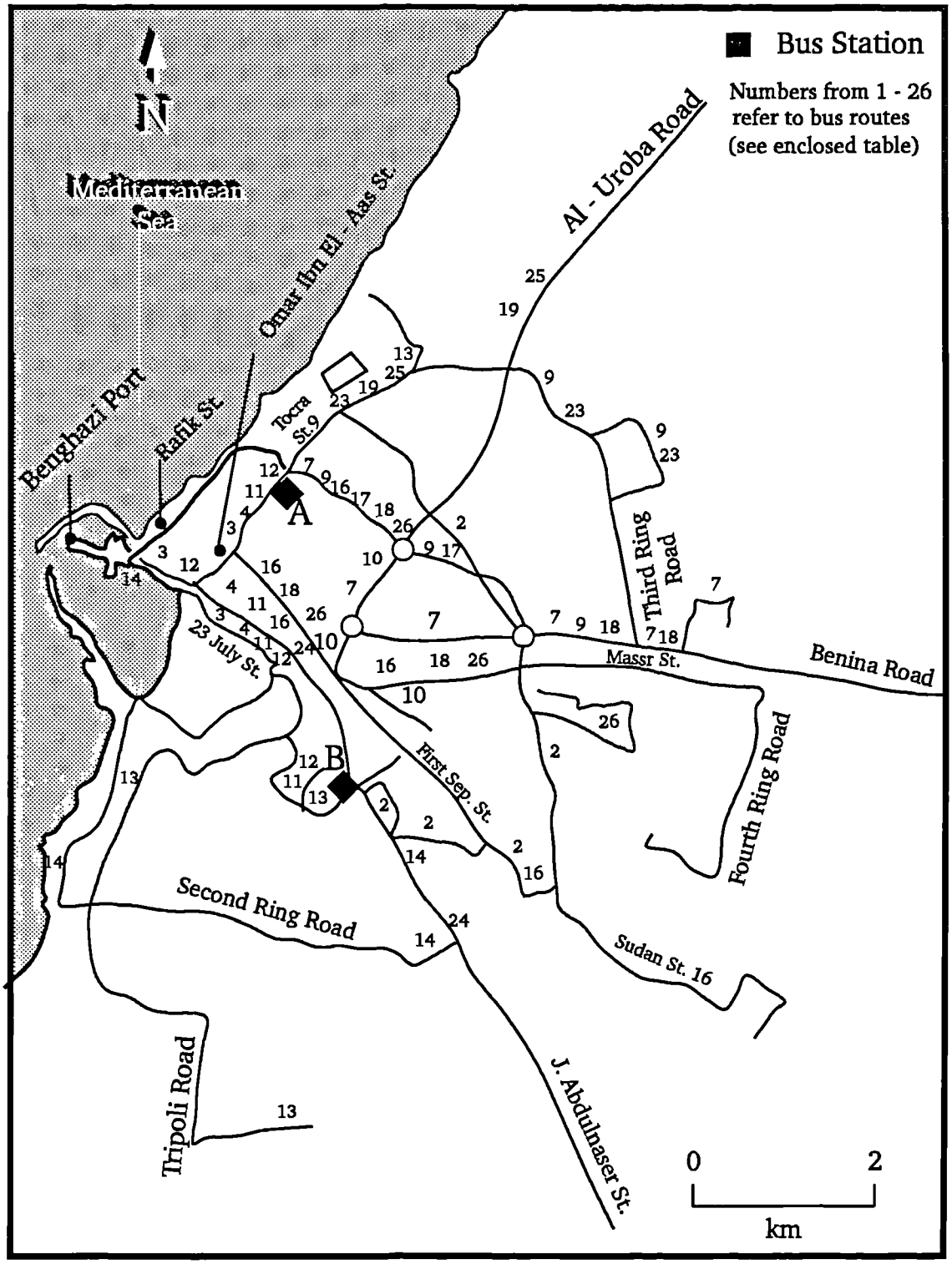
Figure 3.6 Existing Bus Routes

Legend

A–Main Bus Station	**B–Al–Berka Station**
From Main Station	**To Destination**
1	Al–Salam
2	Al–Berka
3	Al–Berka
4	Al–Berka
7	Industrial Housing
9	Sidi Younis
10	Al–Majori
11	Al–Keish through Rafik street
12	Al–Keish through Omar Ibn El–Ass
14	Al–Berka
15	Al– Thama
16	Buhdaimeh
17	Al–Ansar
18	Al–Matar
19	Deryanah
23	Al–Muhaishi
24	Solug
25	Al–Agoriyah
26	Al–Fateh
From Al–Berka	**To:**
13	Al–Gwarsha

Buslines which are not in service at present (not shown on Fig. 3.6): 5,6,8,20,21,22.

Fig. 3.6. Existing Bus Routes 1990



Source: The General Company for Public Transport Benghazi Branch, 1990.

Table 3.2: Reasons for not using public transportation modes

Reasons	% Bus	% Taxi	% Romis
Too expensive	0.41	26.61	13.58
Waiting too long at stops	24.98	21.72	9.45
Destination not served	10.83	15.46	23.80
Route far from home	16.16	9.82	16.51
Overcrowded vehicles	24.88	4.88	6.34
Socially unacceptable	6.29	3.86	9.35
Ownership of private vehicle	16.45	17.65	20.99
Total percentage	100	100	100

Source: *Doxiadis Associates International, Benghazi Region Urban Traffic Study*, Report No.6, (Athens, Greece: 1980) P.45

As it has been intensively discussed by outstanding planners (Owen 1969), the general problem is that there is no clear alternative - usage of private automobiles will continue unless people are forced to get out of them, urgently. To show the dominance of private automobiles and the neglect of public transportation, one could confidently refer to Table 3.2, which clearly demonstrates this fact.

The role of Romis as public conveyance inside the city is very minor, as can be observed from the above (Table 3.2). Again, the survey made by Doxiadis (1980a) showed that the great majority of responses did not support Romis' usage on the basis of their high fares, unorganized routes, and erratic schedules. But it is debatable whether Romis have ever been given the opportunity to operate within the city limits, due largely to a policy of protecting the bus service from working at a loss. However, if this form of intermediate public transportation is to be improved, it could become an efficient and cheap means of transport, particularly helpful in easing the heavy pressure on buses to serve the far-reaching outskirts of the city. Moreover, if Romis proved to be reliable and a better alternative to the bus service, people would surely react positively to pay the higher fare.

In view of the preceding examination, the author confidently suggests that improvement and development in the transportation sector be devoted entirely to buses and Romis because of their complementary nature - buses operate on fixed routes and schedules, while Romis have some flexibility to reach areas inaccessible by buses. In addition to their potential role with buses in decreasing demand for parking spaces in the central area, Romis might further bring about traffic reduction and decreases in congestion, thus preventing delays for both private automobiles and bus riders.

3.7.2 The major problems affecting Benghazi's bus service

One of the most notable features of life in urban areas over the last quarter of this century has been the unprecedented disruption and chaos brought about by traffic congestion. Bus services in Benghazi are no exception and have been an easy victim of this chronic urban disease.

Since the great bulk of bus mileage is in urban areas, the efficiency of bus operations depends to a large degree upon the ease of bus mobility throughout city streets. It is thus very important for the bus corporation in Benghazi to reconsider this problem carefully and to cooperate more effectively with the Municipality and with traffic police in controlling and regulating traffic flow in the city.

There is no question that the degree of efficiency depends to a large measure upon the concern and knowledge of officials charged with this duty and the amount of money assigned to regulatory equipment and street improvements. Keeping all of this in mind, the Benghazi bus service has been remarkably impeded by unorganized pedestrians, lack of decent driving behaviour, unlimited curb parking, street breakdowns, lack of reliable traffic signals, and many other related factors. These deficiencies are mainly notable around the city centre, Al-Fonduk area, Al-Berka and the major arterial routes.

Another survey conducted by the Municipality of Benghazi in 1986 has revealed that 44.1 percent of the bus lines are graded as good, 47 percent as fair, and 9 percent as poor (Engineering consulting bureau 1986). No line was reported to have been very poor. The study also concluded that the lowest grade line was the one serving the area extending from Al-Fonduk through Al-Berka and ending

in Al-Corniesh (the area through which passes the line of Rafik street as can be seen from (Figure 3.6). This line together with the extension of Ahmed Rafik, was reported to have been severely hampered by automobile congestion and by the shortage of operated buses to keep up with the increase in demand. Moreover, another poor line has been Massr Street, particularly the part which leads to Al-Fonduk and passes through Al–Sabri polyclinic and Jamahyria Hospital.

Plainly, it can be asserted that overcoming these deficiencies entails continuous efforts of coordination and cooperation between the Municipal authorities and traffic police through the application of well-known and previously tried methods in the advanced world.

Another problem is the long waiting time which has been found to have great impact on reducing bus ridership. The average waiting time, however, was found to differ from line to line, depending on the severity of congestion. In general, it is considered to be high, although it varies from 10.4 minutes to 63.7 minutes (Salem 1989).

Through oral discussion with the director of the bus corporation in Benghazi (1992), the author has concluded that two major problems must be given priority if the bus system is to be as effective and successful as intended: (a) the lack of professional drivers and (b) the lack of maintenance staff and spare parts. The corporation director complained that these two factors together with the poor road surface in some places form the key problems for the promotion of bus service in Benghazi. Depending on non-Libyan drivers and technicians (mostly from the Sudan) was another major problem. These employees, though active and faithful in performing their jobs, are influenced by political and social considerations at home which affect their sojourns in Libya and work life continuity. As a consequence of these circumstances and others, four lines of the operating bus network were out of operation in 1977-78 (Ove Arup 1978). The solution to this obstacle can be found through training Libyans and raising their salaries to match those of other well-paid sectors of the working population.

The lack of bus routes in the newly built suburbs is another shortcoming, creating an inability to keep up with escalating demand. The portion of the population dispersed in the fringe areas of Benghazi is really difficult to serve with any

mode of transportation other than the automobile. Therefore, it has been difficult for the bus corporation to establish a bus line that provides decent and acceptable service at reasonable fares which offset operation expenses. Accordingly, if there is any bus service at all in the far-scattered areas of Benghazi, it is often restricted to a few trips per day mainly during the peak hours. Thus, it has to be admitted that people are not to blame for using their own automobiles, since there is no alternative but to use them.

Another major cause affecting bus ridership is social status. Most upper class Libyans such as doctors, engineers, and businessmen, are strongly attached to their private cars and view bus riding as inferior. Further, due to cultural and moral considerations associated with the present regrettably overcrowded buses, women, particularly young ones, refrain from riding buses to any destination. The author in 1983 noticed that most of the bus customers were mainly non–Libyans, due either to their low incomes or to their unwillingness to buy a car for a temporary sojourn in the country (Salem 1983). Hence, it is true that the automobile, as Smerk (1974) put it, "*is a powerful symbol of both self and success.*" The ownership of private automobiles has unfortunately become a symbol of pride and wealth, particularly among the young people of Benghazi.

It is woeful that throughout the city, there is no single and reliable source of information whatsoever illustrating bus routes, services, or schedules, as if people were born with previous knowledge of Benghazi bus lines and their directions. This deplorable situation should no longer prevail; a first priority should be the printing and distributing of schedules and busline maps.

Finally, the absence of prediction and future planning for passengers is another serious problem hindering the development of a reliable bus system. The number of people utilizing a bus service varies considerably from day to day, month to month, and even from season to season. Thus, the amount of necessary service to be provided is changeable and depends to a large degree upon accurate knowledge of the riding habits of the city. For instance, information about the opening and closing times of stores, knowledge about working days and hours, and detailed schedules of special events, such as sporting activities, conventions, visiting hospitals, and the like, can act as essential indicators for locating the required service.

Therefore, it is advised that the bus corporation be aware of the preceding factors in maintaining and developing an adequate and efficient service to the public, undertaking further precise and detailed studies for the exact location of bus demand in the city, particularly in serving the health care facilities, the subject matter of this research. Towards this end, positive efforts have already been made, and others are underway to achieve the following objectives:

1. Respond to passenger increases through improving and promoting current service.

2. Expand routing to meet the newly built areas at the fringes of the city.

3. Provide the hardware for new routing and establish new required terminal facilities to match the constant city growth.

4. Finally, a most essential objective, to overcome the shortcomings of professional bus drivers and mechanics.

The last objective derives its urgency from the fact (if not exaggerated) that, in 1978, about 50 percent of the city operated buses were not functioning well, due to lack of drivers and maintenance staff (Ove Arup 1978). The author made a visit to the responsible company for these buses in 1992 in Benghazi to check whether there were tangible changes ever since, he was disappointed as the conditions have not changed that much.

Chapter IV

Urbanisation and Patterns of Population Growth in Benghazi

4.1 Introduction

Libya is a fast growing country. About thirty years ago the entire economy was dependent on both agrarian and pastoral sectors. In a period of three decades, Libya changed remarkably from a poor, little known country, which had nothing, to a country possessing almost every thing at least in materialistic terms. Today it has one of the highest per capita incomes in the world due to its oil revenues. The economic development and social changes that have taken place in the course of this period have dramatically affected the structure and distribution of population all over the country (The Economist Intelligence Unit, 1993).

A population study of Benghazi is important in order to develop an understanding of its urban expansion, functions and future planning of health care facilities. It is not only essential for health care planners but also for the administrators and decision-makers to provide better and successful programmes for the needs of the city. An important feature of the ever–growing city has been its urban expansion and population upsurge. An example of its rapid extension is to be seen in its growth from a small population in the early 1950's to over 457,000 inhabitants in 1988. However, the health care needs of this continually developing urban centre were relatively neglected until after the late 1970's, when the government allowed the establishment of a health care delivery system of polyclinics (each polyclinic intended to serve 50,000 inhabitants).

Although services are still below what is desirable, it seems that the acquisition of health care facilities have been poorly matched with modern health care requirements, either because their growth has taken place in a haphazard, unplanned way, outstripping the official provision of facilities or because of an absolute shortage of capacity. Unfortunately, when population is considered, the emphasis has

always been on absolute numbers rather than on structure, population distribution and the nature of components of population growth, each of which is essential to the success of a solid health care development programme.

In a developing, wealthy city like Benghazi, if health is to be deemed a basic need, the demographic factor requires health planning to provide facilities and trained personnel to meet the constant growing population. Health care planning usually revolves around a distribution of facilities serving a population or involves harmonising the relationship between a theoretical distribution of facilities and a population served by those facilities (Rushton and Clark 1969). But the question always posed is whether the distribution of a facility is becoming more or less accessible to the distribution of users (Curry 1966). Sadly, the general misunderstanding of the role of population and its integration into health planning has made even modest breakthroughs in this sector practically ineffective.

In short, awareness of the impact of demographic elements on social, economic and health care planning in Benghazi will be examined so as to establish a network of health care services incorporating adequate facilities and trained manpower for the delivery of basic health care needs, particularly at the grass-roots level. The problems of attaining this objective will be analysed in the light of the following points:

1. Urban Population growth
2. Natural increase
3. Migration

a. internal migration
b. returned Libyan expatriates
c. non-Libyans

4. Population composition

a. age composition
b. sex structure

5. Population projections to the year 2000

4.2 Urban Population Growth

One of the most outstanding features of modern life in Libya has been the in-

creasing proportion of the population concentrated in metropolitan areas. In 1960, Libya was considered one of the most urbanized populations among African countries, being one of twelve countries which has 15 or more percent of the population living in locations of more than twenty thousand people (Farley 1971). This rapid growth of urban centres within relatively narrow geographic areas would have been most difficult to deal with successfully without major development in urban public services. Urban growth is attributable to the pull forces of economic opportunity in the cities as opposed to push forces in rural areas embodied in less development, and to social as well as cultural factors.

Reviews of demographic trends and of health, economic and social problems in fast growing urban areas of Libya, reveal that, in future, a sizeable number of people will be living in dubious conditions hampering the achievement of health and other social requirements. Health issues in urban areas are strongly associated with demographic change and other social and economic factors like education, employment, housing, environmental conditions and communications. Given the magnitude of urban health burdens in Benghazi and the obligation of the State to the objective of the "Health For All by the Year 2000" through primary health care, the challenge for health planners, politicians, and decision-makers is substantial.

According to the Declaration of Rome 1980 on population and urban futures, the world in the two coming decades was to experience, as a result of the urbanisation process "*the most radical changes ever in social, economic and political life* " (United Nations 1980). Luckily, this chaotic, uncontrolled and unbalanced growth of urban areas has become the point of departure towards social reform, economic and cultural progress adopted by political leaders, social scientists and administrators of the developing world ever since.

This new trend of population upsurge is dramatically contrasted with demographic transition theory which postulates that once death rates had decreased, people would tend naturally to lower their fertility (Teller 1981). Sadly, experience has shown the opposite, and even if this is true, the change is often very slow.

However, the common interpretation of the process of urbanisation in Libya is similar to that of the industrialised world's model and is mainly grounded on the following two points:

1. Dependency on modern technology related specifically to the oil industry.

2. A shift in the demand for labour from the agricultural to the non- agricultural sector. As a result, a geographical imbalance between labour demand and labour supply brought about various pushes and pulls between the urban and the rural areas. This process has contributed enormously to redistributing population concentrations from rural to urban sites through unlimited internal migration, causing an increase in the proportion of the population living in the cities to the various levels that prevail today.

Instead of being a source of development, as in the industrialised world model, urbanisation in Libya has become a major barrier to economic progress. The resources needed to meet the ever–increasing demand for facilities and public services become unavailable for potential productive investment elsewhere in the economy.

Analysis of population growth in Libya after independence in 1951 was facilitated by the presence of four official censuses held in 1954, 1964, 1973 and 1984. The first census of 1954 has put the total population of Libya at over one million in an enormous area of 1.75 million km^2. A decade later this number jumped to 1,564,000 or an increase of 43.7%. Before 1954 most of the statistics are unreliable and their accuracy has been repeatedly questioned. Nonetheless, they do give us some impression of the scale of the population growth in Libya. During the Italian occupation, two censuses were undertaken, but there are doubts about the validity of their results for two reasons:

(1) the first Italian census of 1931 was carried out at a time when the indigenous population was under constant threat of being drafted into military or other obligations imposed by the Italian government;

(2) it is also thought that the Italians, in their endeavour to contain Libya, deliberately tried to lower the Libyan population and increase the Italian counterpart.

Moreover, recent growth rates, compared to those of adjacent Arab countries or African nations, seem rather high if a product of natural growth alone (El Mehdawi and Clarke 1982). There are two plausible explanations of why this is so: either the figures given by the censuses were somehow distorted by inadvertent

errors or the natural increase was mixed with an illegal immigration. In fact, in Libya's case both of these possibilities must be considered.

However, following the oil discovery and exploitation in the late 1960's, Libya has hosted a considerable number of foreign immigrants who filled the gap in the demand for labour that the Libyan population has not been able to meet (El Mehdawi and Clarke 1982). Also the return of many Libyan repatriates who fled abroad during the Italian era has helped to increase the population particularly in the two main cities, Tripoli and Benghazi. The high population growth rate is primarily attributed to the return of numerous Libyan expatriates from neighbouring countries, the high degree of natural increase and the constant stream of foreign manpower attracted by the potential for employment.

However, due to tremendous improvements in health care and welfare services that were made available free of charge for everyone living in the country since independence in 1951, the high rate of natural increase grew substantially from 26 to 47 per thousand between 1964 and 1984 respectively, while the crude death rate stabilised at between 5 and 6 per thousand during the same period (Ghanous *et al.* 1988). Furthermore, unlike its neighbouring Arab countries, Libya has not yet witnessed any fertility decline. In comparing Libya with other selected Arab countries, notorious in terms of high fertility rates, Libya scored the second highest rate after Saudi Arabia (Table 4.2). According to the 1984 census the fertility rate was estimated at 200 per thousand as opposed to 100 per thousand in the whole of Europe (Ghanous *et al.* 1988). The 1973 census also revealed that there were approximately 1,430 children for every 200 women or an average of seven children per woman (Ghanous *et al.* 1988). In no other part of the world did this exceed six children per woman. Certainly, this had a marked impact in increasing the population under 15 years, raising the age dependency ratio even more, and thus increasing the economic burden that the productive population must bear. This has been the case in Benghazi, as results obtained by Abudejaja *et al.* (1987) in their study on a family clinic in the same city reveal. They came up with similar findings to those mentioned earlier– a largely young population with an average family size of 7.1, and a high dependency ratio.

Although the population density for the country at large varies considerably

from one place to another, the average population density for Libya was put at 1.32 persons per km^2. in 1973, one of the most thinly peopled countries in Africa and also among the most unevenly populated (El Mehdawi and Clarke 1982). The population is heavily concentrated in the north-west and north-east regions and in the two major cities, Tripoli and Benghazi. Benghazi and Tripoli have become increasingly predominant due to their importance as ports and as commercial, industrial, administrative and educational centres. Indeed, both reflect their former positions as primate cities in the previous provinces of Tripolitania and Cyrenaica. This process of concentration in the two major urban growth poles has resulted in a spatially dualistic system, creating considerable and acute problems of regionalism and unification (El Mehdawi and Clarke 1982).

However, there was deep dissatisfaction with the persistent growth of the two large urban centres, with an overload on public services, the inadequacy of the social infrastructure, congestion, noise, pollution of air and drainage systems, an inadequate infrastructure and poor public transportation networks, a marked shortage of housing, an inadequacy of sewage facilities and above all, a lack of potable water, and garbage collection in outlying suburbs. Gaps are widening enormously between large and small urban areas, between need and provision, and between "haves" and "have nots". This aggravated situation of imbalance among urban centres in Libya can only be offset by a deliberate and strict policy of decentralisation enforced by the government and accepted by the people.

Looking at the spatial distribution of population from another angle (distribution of Municipalities) one can still see that the northern Municipalities in general and the north–western in particular represent the areas of highest population density in the whole country. In contrast, the southern and midland Municipalities with large extents of desert, have average density of 0.05 persons per km^2. (Ghanous *et al.*, 1988). The most striking proportions of high densities were found in Tripoli and its adjacent satellites (Municipalities) of Ez Zawia, El Khums, and Misurata in the north–west and Benghazi in the north–east (Table 4.1). The Municipality of Tripoli alone in 1984 recorded the highest population density ever known in the whole country, estimated at 583 persons per km^2. while Benghazi was just 48 persons per km^2.

Table 4.1: Population density per km^2 according to Municipality in 1984

Municipality	Population	Area in Km^2	People per Km^2
Tobruk	94,006	83,860	1.1
Derna	105,031	19,630	5.4
Jebel Akhhdar	120,662	7,800	15.5
El fateh	102,763	14,000	7.3
Benghazi	485,386	9,980	48.3
Ijdabia	100,547	200,290	0.5
Khalij Sirte	110,996	164,570	0.7
Souf Al jeen	45,195	66,748	0.7
Al Kufra	25,139	483,510	0.0
Misurara	178,295	2,270	78.5
Zliten	101, 107	2,470	40.9
El Khums	149, 642	1, 980	77.1
Tarhounah	84,640	3,820	22.2
Tripoli	990,697	1,700	582.8
Al Aziziah	85,068	2,290	37.1
Ez Zawia	220,075	2,760	79.7
Al Nekhat Al Khams	181,584	5,830	31.1
Gherian	117,073	65,802	1.9
Yefren	73,420	9,310	7.9
Ghadams	52,247	65,050	0.8
Sebha	76,171	15,330	5.0
Al Shati	46,749	97,160	0.5
Ubari	48,701	104,590	0.5
Murzuq	42,294	349,990	0.1

Source: Ghanous S (ed.) (1989) Libya, the revolution: the social, political and economic changes in twenty years 1969–1989. University of Garyounis, Benghazi, Libya, P. 47.

Summarizing the overall population distribution among the 24 Municipalities in 1984, the most striking feature is that by far the greatest absolute and relative increases occurred in the two major Municipalities of Tripoli and Benghazi, accounting together for 40% of the total population growth of Libya (Ghanous *et al.*, 1988).

Examining the situation in Benghazi in relation to the overall Libyan popula-

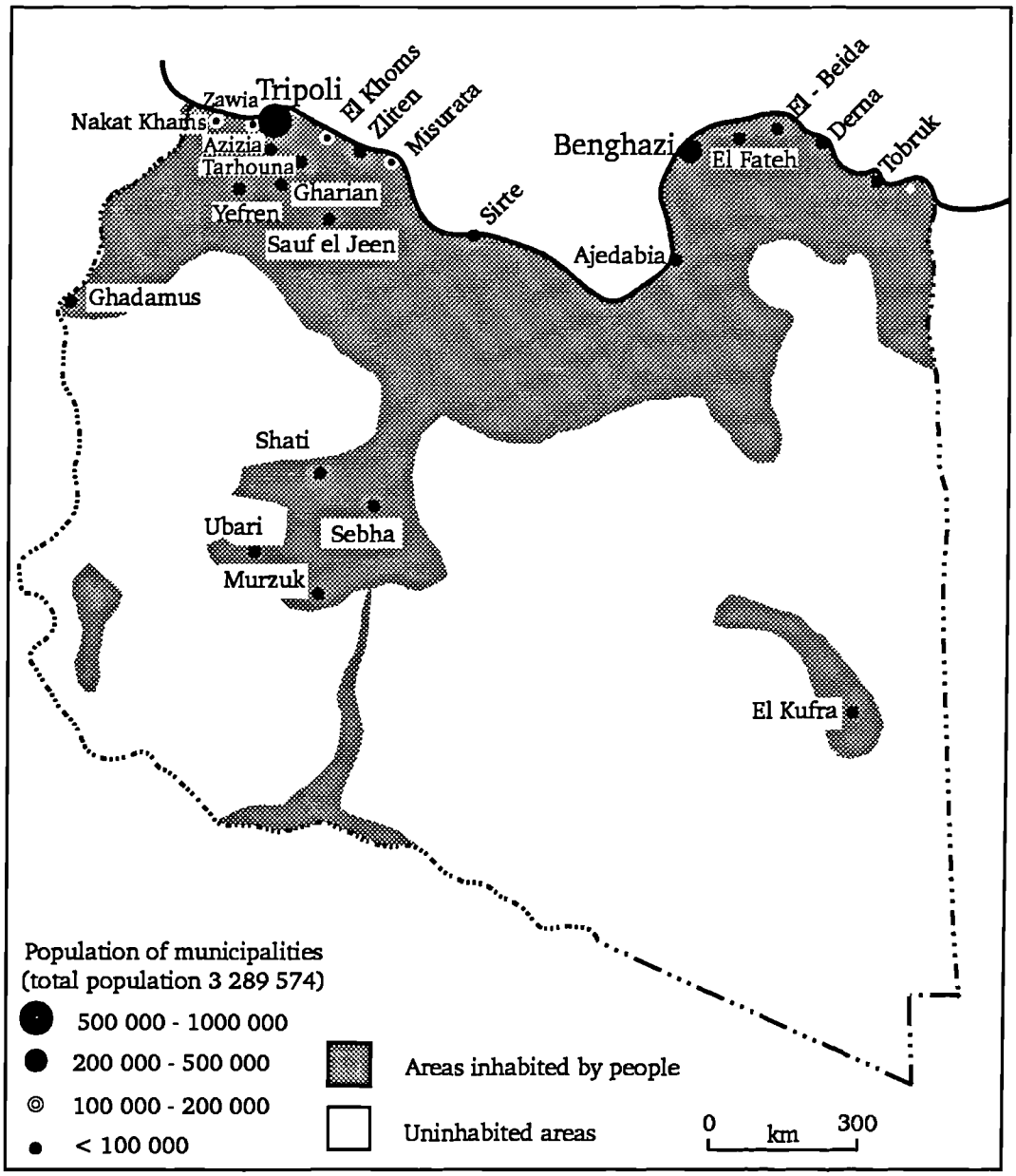
tion (Fig. 4.1) clearly reveals that this city and its neighbouring areas represent a great part of the whole population, though it is not the most populated area in the country. The area extending between Zawia and El Khums on the northwestern coast including Tripoli is considered the most densely populated area. Apart from this zone, Benghazi and the adjacent areas emerge as the major centre of population concentration. Meanwhile, having been a business centre, with residential, commercial, and manufacturing activities, Benghazi has played a substantial role in acting as a population magnet, attracting people to move to the city at the expense of small rural towns. However, if the existing trends are allowed to continue uncontrolled in the years to come, they certainly will affect various vital sectors and the development process *per se*. In this context, it seems likely that the health care delivery system will be the first to be affected, and consequently the necessary sources of health care services within or outside the city will be affected as well.

The land required to serve a population's needs and the spatial location of developable land are closely associated with the size of that population and its characteristics. Thus, in estimating Benghazi's future land use activities and health care needs, some forecasting of future population growth is necessary. Forecasting human activities and their distribution becomes necessary in predicting utilisation patterns of health care services so as to plan precisely for meeting those needs.

Over the past twenty-five years Benghazi's rate of population growth has far exceeded planners' predictions, a phenomenon largely attributable to development generated by oil revenue and expanding employment potential that has drawn large numbers of immigrants to the area. Benghazi has been growing faster than any other Libyan city in its role as regional centre and as an oilfield supply depot. Between 1964 and 1973, the population rose from 137,295 to 266,196, an increase of 52%. The population has continued to increase at a rate of over 4% per annum, reaching slightly more than 457,000 in 1988.

The previous discussion has drawn attention to the magnitude and complexity of urbanisation as a social phenomenon, its negative and positive consequences, and its implications for health care planning. Above all, it serves to criticise the lack of social relevance and equity in the way that health care delivery systems are organised and administered.

Fig. 4.1 Libyan Arab Republic: Geography and Population (1984 Census)



Given the aforementioned points, it seems quite clear that multisectoral co-operation and political commitment is the only way to approach the health care problems of Benghazi's urban area at their roots and to solve them in a permanent manner.

4.3 Natural Increase

The following statement best expresses the situation concerning urban population expansion which we are examining:

> The problem is not urbanization, not rural-urban migration, but human multiplication. It is a problem that is new in both its scale and its setting, and runaway city growth is only one of its painful expressions (Kingsley 1969:19).

City dwellers in Benghazi and Tripoli have multiplied more than ever before, contributing greatly to the population increase, a fact largely attributable to a disproportionate share of public health funds going into these two cities. The lack of a balance between birth and death rates accounts for population growth or decline. In the United Nations report prepared by Benjamin Higgins in 1953, the Libyan birth rate was put at 5.3 percent, while the death rate was 4.2 percent, a 1.1 percent rate of population growth (Farley 1971).

Comparing Libya to other Arab countries in terms of population growth rates (Table 4.2), we see that they represent an overall annual increase of between 23.8 and 34.8 per thousand. Libya has the second largest rate of increase after Iraq. Like many other developing countries, registration of deaths is incomplete, yet according to published data as cited in Zagallai, the 1966 death rate varied among regions, from 3.9% in Jebel Al-Akhdar to 8.4% in Benghazi (Zagallai 1973). For Libya as a whole the crude death rate increased from 4.2% in 1964 to 5.9% in 1966 (Zagallai 1973). While these statistics seem to indicate a different trend, to accurate statistics, were not yet available, leading to much error in the forecasting and planning process. Attempts to study and analyse natural increase in urban centres are often frustrated by the lack or scarcity of data. Additionally, modern procedures of data collecting have not been introduced to Libya until recently, so that the data base is still less satisfactory than in other parts of the developed world.

Table 4.2: Summary of vital statistics and expectation of life at birth from some selected Arab countries : latest available year(1985-1990).

Country	Crude B. R.	Crude D. R.	Natural inc.	Fertility
Algeria	35.5	8.3	27.2	5.4
Egypt	43.8	19.6	24.2	5.1
Libya	44.0	9.4	34.6	6.8
Morocco	35.5	18.5	26.5	6.1
Sudan	44.6	15.8	28.8	4.5
Tunisia	31.1	7.3	23.8	4.5
Iraq	42.6	7.8	34.8	6.4
Jordan	38.9	6.4	32.5	6.2
Kuwait	26.8	2.2	24.6	4.0
Saudi Arabia	42.1	7.6	34.5	7.2

Source: United Nations, Statistical Yearbook, 1985-1990 (New York: United Nations, 1990).

In examining the Benghazi Municipality's statistical data, El-Kekyah (1975) concluded that the average natural increase had grown from 2.6% in 1954 to 3.5% in 1964, a 0.9% increase in ten years. Meanwhile, he estimated the average birth rate to have been 38 per thousand and 42 per thousand for those same years (El-Kekyah 1975). In comparing three major cities in Libya over the period 1976-78 (Table 4.3), Benghazi registers a decline in crude death rates, presumably one of the major reasons contributing to Benghazi's population increase over the last two decades. Further investigation of Table 4.3 reveals that the drop in crude birth rate in Benghazi between 1976-78 to 44.9 per thousand is more likely a direct result of assimilating the idea of using contraception and the delaying of marriage among young people. Meanwhile, the decreased rate of deaths at 5.4 per thousand from 7.8 in the same period is strongly related to a substantial improvement in

medical facilities and improved conditions of hygiene. From these data we can easily conclude that much of Benghazi's growth reflects its high natural population increase.

Table 4.3: Crude death and birth rates in three major cities in Libya during 1976-78.

City	Crude Birth Rate			Crude Death Rate		
	1976	1977	1978	1976	1977	1978
Benghazi	48.6	44.9	44.9	7.8	6.1	5.4
Tripoli	50.2	48.4	45.0	7.1	6.5	5.7
Sebha	50.7	42.1	43.1	5.9	3.2	5.7

Source: Extracted from census and statistics dept., Tripoli, Libya, 1978.

4.4 Migration

The movement of population in space is a strikingly diverse phenomenon. Population movements are deeply woven through the structure of human history, often in response to political, economic, religious, educational, or racial discrimination. To put this matter in perspective, it is better to quote Mitchell's words (1982: 50) as follows:

> The analytical obduracy of the phenomenon lies, I suggest, in the disjunction between the fact of migration and the range of widely diverse circumstances which lead to its manifestations. The simple fact that an individual on some specific occasion moves from place A to place B may reflect a great number of different circumstances. The fact of migration is, in fact, a very complex phenomenon and for a reasonably adequate explanation of it in relation to some specific person it requires an equally complex analysis.

Recently, the focus on the extent, causes and magnitude of migration has widely gained interest. The consequences of migration, particularly rural-urban and urban-to-urban migration, have also received much consideration. The process of migration can be conceptualized in terms of its positive or negative consequences. On the positive side, rural-urban migration in particular is identified as an essential corresponding component of industrialisation and modernisation. On the negative

side, it is often thought that the urbanisation may be outstripping the growth of the economy (United Nations 1973) . The problem of unemployment or under-employment that immigrants usually suffer from in their concentration in cities and towns, in addition to their severe social and economic consequences, have become the most crucial issue in both developed and developing countries. Another important aspect of migration, apart from its economic and social consequences, is its significant role in population change. Migration can also cause increasing or decreasing populations by influencing fertility and mortality in the areas of origin and destination (United Nations 1973).

Libyan population movements are not isolated from this pattern and are characterized both by their size and variability. Hartley (1972) wrote that as of 1964, over 600,000 Libyans, nearly 40 percent of the total population, had changed their residence during their lifetime, and half of these were nomads or semi-nomads. Moreover, Hartley adds that more than half the population was living in Tripoli and Benghazi. The migration trend in Libya seems very likely to coincide with that of the world, in that immigrants prefer the very largest cities of the country, transcending those of moderate and small size. Therefore, El Mehdawi and Clarke (1982:55) have ascertained this fact as follows:

> The two cities of Tripoli and Benghazi are far outstripping all other towns ... In contrast to the growing momentum in the development of Tripoli and Benghazi, most of the other towns of Libya ... have experienced either stagnation or decline.

Undoubtedly such a complex mobility pattern has been the outcome of the real and drastic socio-economic changes brought about by the high revenues of the oil sector.

4.4.1 Internal Migration

Internal migration is a concept defined by Kpedekpo (1982: 58) as

> changes of residence within a nation are defined in terms of residential moves across boundaries which are often taken as the boundary or minor divisions of districts or regions of the country.

Therefore, statistics on internal migration are necessary for evaluating the nature and magnitude of any problems which arise as a consequence of such movements and for designing plans intended to tackle those problems. Further, information is

also required for the scientific analysis of the nature and causes of migration and its effects. Internal migration varies in terms of three major parameters: space, time and incentives, which have been found to interact individually or collectively to categorise observed movements (Kpedekpo 1982). In Libya, for instance, the following broad classifications of internal migration are well determined. Rural-urban or urban-urban movements take place at all points along the temporal continuum from short-term urban stay, short visits and daily commuting to long-term urban residency. Hence, concentrations of urban-bound migrants usually build up in large cities. As a result, the rate of urbanisation accelerated and migrants converged on the two major population growth poles, Tripoli and Benghazi. These immigrants place high demands on overloaded urban services as well as on the general scarcity of employment opportunities for unskilled workers.

Due to the absence of regional planning and shortsighted policies of the government before 1970, most of the development budget was spent on Tripoli and Benghazi for building houses, health care facilities and educational establishments, while the needy regions of the interiors were almost entirely forgotten. Thus, Parks (1974) has indicated that by assigning massive scale development projects in these two advanced regions and neglecting rural regions, the government has played a radical part in increasing the wide gap in income differentials between the rural and urban sectors. This irrational policy followed by the government during that time and after, has not only led to income differentials but has also provided urban-bound migrants with unproductive jobs, thus contributing notably to the neglect of agriculture and employment decline in that important sector (Taboli 1976). Because of the high wages provided in major urban centres, agriculture has become a relatively unproductive occupation and probably for the foreseeable future it will become almost obsolete, especially among Libyans.

A careful analysis of the allocation of the actual expenditures on ten former provinces "Muhafadat" of Libya as shown in Table 4.4 demonstrates that the percentage of development outlays assigned to Tripoli and Benghazi regions make up 33.6% and 21.7% respectively of the total expenses, while the other deprived and depressed regions receive the remainder of the total budget. Accordingly, most of the actual budget assigned for development went to the eminently prosperous

regions of Tripoli and Benghazi. In all, they have received more than 50% of the total expenses allotted for developing infrastructure (Taboli 1976).

Table 4.4: The percentages of the expenditures of the development budget in 1972-73.

Muhafada*	A	B	C	D
Tripoli	33.6	31.4	31.9	35.6
Benghazi	21.7	14.6	19.5	24.5
Sebha	4.4	5.0	5.0	3.7
Zawia	9.0	10.8	11.0	6.6
Gherian	3.8	6.9	4.4	3.1
Misurata	6.9	7.9	7.7	5.8
Khums	3.0	7.3	2.7	3.5
El Khaleej	6.3	4.8	7.9	4.4
J. Akhdar	6.4	5.9	5.5	7.4
Derna	4.9	5.4	4.4	5.4

***Muhafada means a province.**

A) % of expenditures
B) % of population
C) % of expenditure on economic infrastructure
D) % of expenditure on service infrastructure

Source: Taboli A (1976) An economic analysis of internal migration in the Libyan Arab Republic. (Unpublished Ph.D dissertation, Oklahoma State University), P.29

In brief, more than 50% of the total expenditures spent on economic and social service infrastructure was spent in Tripoli and Benghazi, while the regions desperately needing such important services received the remainder of the total budget. Migration from rural areas has provided more than half of the population growth in Benghazi. Political policies and economic innovation have contributed to the growth of industry and urbanization. The rapid growth of the city has

disrupted traditional social patterns and the previous population distribution. But industrial urbanization means more than just a shift in population from rural to urban areas, from land-bound peasantry to urban concentrations, and more than increasing population densities and economic differentiation (Kuper 1965). It also entails changes in the distribution of power, interests , institutional arrangements, norms of conduct and social values. This process of increasing complexity cannot be isolated from the more general context of social growth (Kuper 1965).

Briefly elucidating the major factors affecting rural-to-urban migration, the apparent increase in income differential between towns and villages can be viewed as the decisive element in the growth of exodus to the cities. The income benefits from development tend to favour salaried and wage earning groups, mainly found in urban areas, at the expense of the non–wage-earning population, mostly found in the rural areas (Sjaastad 1962). During the European industrial revolution the cities grew quickly, contributing to economic development through taking surplus manpower from the countryside and using it in the cities. This process increased the production of goods and services by urban-based industries which in turn helped to enhance agricultural productivity. But in today's post-industrial era, urban growth in the less-developed nations has increasingly become unhinged from economic development, and hence from rural-urban migration.

Benghazi, a city influenced by the aforementioned factors, has gained a tremendous increase in population during the past half century. Tracing this growth since 1954, the first year of available demographic statistics after independence, the population of 69,718 for that year jumped to 144,233 in the next ten years and to 264,491 in the following decade 1963-1973 (El-Kekyah 1975). Excluding internal migration from the adjacent areas such as Jebel Al-Akhadar and Derna region, Benghazi has received a great number of immigrants from the Tripolitanian region, mainly from Misurata. Besides, according to Hartley (1972), the north–eastern region scored a high level of inmigration and the rate of inmigration from the north–east accounts for 36 percent of the national total. Like Tripoli, Benghazi had the overwhelming majority of the regional total, though the other towns of Tobruk, Derna and Beida received almost as many migrants. Meanwhile, Cyrenaica had gained a net immigration of four thousand persons from Fezzan, the southwest region (Hartley 1972). While population movements from rural to

urban areas are not a recent phenomenon in Libya, the volume and direction of migration to Benghazi has been motivated by the following three major factors:

1. Discovery and exploitation of oil resources, which has undoubtedly attracted thousands of workers into the city looking for employment and better opportunities in life. Both skilled and unskilled workers left their agricultural employment, heading for Benghazi where wages were higher and job opportunities more available. Moreover, the establishment of warehouses, repair shops, governmental offices, and construction projects were the key factors responsible for bringing in an inflow of capital and people. This phenomenon has resulted in consumer oriented industries and service activities, thus encouraging more immigrants to join the city life.

2. Attraction of the city as a magnetic pole, being the major centre for health, education, employment, entertainment, and overall an entirely different way of life (Ragheb 1969). Indeed, it is these pull factors that have enormously contributed to Benghazi's population upsurge over the last thirty years.

3. Accessibility, the improvement of transportation methods together with newly built roads has also greatly enhanced and activated migration flow into Benghazi. Truly, it is the massive improvement in the road network and communications that has widened the horizons and hopes for the urban-bound migrants and further has bridged the gap between the north and the south and between the large cities and remote oases in the heart of the desert.

Libya's population has reflected the rural-urban migration pattern before 1970; the seven major cities–Tripoli, Benghazi, Derna, Ijdabia, Tobruk, Beida, and Barce increased their share of the nation's population from 22.9% in 1954 to 27.4% in 1964. During the same period, the two cities with over eighty thousand in population increased their share of the population, from 18.8% to 22.4% (Zagallai 1973).

During the late seventies, Libya witnessed a new phase of urban-to-urban migration. This process was enhanced by the return of some former migrants to their towns of origin. Khalfallah (1979) found that over 66% of urban-bound migrants have come either from a city or a town. Kezeiri (1984) in his analysis of aspects

of change and development in the small towns of Libya examined the volume and magnitude of population movements in the ten Libyan "Muhafadat". Kezeiri mentioned that of the 58,000 migrants to Benghazi Muhafada, almost half came from Misurata and Jebel Akhdar, while the remainder came from El Khalij, Derna, El Khums, and Tripoli Muhafadat. The movement of population among Muhafadat, as extracted from the 1973 census, is shown in Table 4.5.

Table 4.5: Population flow between Muhafadat in 1973*

Muhafadat	in–migration	out–migration	net–migration
Derna	16,600	14,800	- 4,200
Jebel Akhdar	15,800	16,000	- 200
Benghazi	58,000	21,000	+ 37,000
El Khalij	7,100	15,000	- 7,900
Misurata	6,300	29,000	- 22,700
El Khums	4,000	44,000	- 40,000
Tripoli	115,000	33,000	+ 82,000
Ez Zawia	27,000	25,000	+ 2,000
Gherian	5,000	50,000	- 45,000
Sebha	7,000	8,600	- 1,600

***These figures refer to Libyan nationals only and exclude non-Libyans.**

Source: Kezeiri S (1984) The aspects of change and development in the small towns of Libya. Unpublished Ph.D thesis, University of Durham, P 234.

From the above table, we can conclude that Benghazi's role as a magnetic pole for population growth seems to be more recent than ancient in its development, probably more closely associated with the oil boom years –1965 onwards.

4.4.2 External Migration

Beginning in the late 1950's, Benghazi entered a new stage of development characterized by rapid post-oil boom changes affecting many aspects of social life within the area. This situation was compounded by the large numbers of foreign workers who were attracted to the area and city because of oil related employment. Moreover, as cited in Zagallai (1973), officials estimated that Libyan expatriates returning from Tunisia alone numbered about 27,000 during the 1954-1963 decade. About 80 percent of these returnees settled in Tripoli, the rest mostly in Benghazi and surrounding towns. The magnitude of the government's problem in resettling these repatriates is evident from their number: by 1963, about 57,000 or 4 percent of the total Libyan population had returned from abroad (Zagallai 1973). During the years following (1964-67), a further 21,000 repatriates arrived from surrounding countries.

Table 4.6: Returned Libyans, 1964-67

Place of Entry	1964	1965	1966	1967
Tripoli	5,356	3,664	1,780	3,790
Benghazi	834	985	29	680
Fezzan	289	1,075	1,384	1,210
Total	6,488	5,724	3,195	5,680

Source: Faisal Zagallai, (1973) Recent urban trends in the Libyan Arab Republic,1954-1964. Master's thesis, Fort Collins: Colorado State University), p.63.

As shown in Table 4.6, 69 percent of the returning Libyans entered the Tripoli metropolitan area and many presumably settled there, 12 percent in Benghazi, and 19 percent in the Fezzan region. Moreover, in 1973, Libya received 52,248 returned expatriates. From this total, Tripoli alone accounted for 74.1 percent, Benghazi 18.1, and Fezzan only 7.8 percent. However according to the population census of 1973, the Municipality of Benghazi hosted about 54,183 immigrants (non-Libyans) or 20.5 percent of the total population of the Municipality. Both rural–

urban migration, repatriation, and immigration of foreign workers brought about this peak level as a spin-off from a real socio-economic revolution attributable to increased revenues produced by the oil sector.

4.4.3 Non-Libyans

There is no doubt that the oil economy has activated an enormous effort in economic and social development which was clearly reflected in planning for industrial and agricultural self-sufficiency as well as provision of welfare and social services. As a result, a large scale development programme took place and thus a great number of non-Libyans have penetrated into the country, looking for work and a better life in the promising land of employment. They were estimated by Birks and Sinclair (1978) to have exceeded 400,000 persons, not to mention the illegal migration from neighbouring countries and the dependents of the economically active manpower, so that the total migrant population may have surpassed half a million in the late seventies. Moreover, unlike some oil countries, Libya has never issued any laws preventing foreign workers from bringing their families to the country. On the contrary, some establishments have encouraged foreign labourers to be accompanied by their dependents by covering the costs of their travel tickets from their origins to Libya and vice versa. Accordingly, many skills and important professions for the new development programmes, which were not available among the Libyan manpower, were provided by those immigrants. It is true then that the numerous development projects would never have materialised had they not relied heavily on foreign workers, as the Libyan population during that period was far too small to meet the magnitude of labour demand. Additionally, there were two other factors that weakened the participation of Libyans in the large manpower market:

1. Females were not numerous in the workforce and constituted just 7% of the economically active population in the 1973 census.

2. The government's policy of providing irrelevant educational programmes, has resulted in constant dependence on foreign manpower. In other words, the misconduct of both the educational institutions and curricula has been for many years to graduate unneeded specialities.

Naturally, this incoming migration has stimulated radical changes in urbanisation and the spatial redistribution of the population of the whole country. Not surprisingly, the major concentrations of these aliens were, as anticipated, in the two major urban centres of Tripoli and Benghazi because of their importance as cores of industrial and economic activities.

Further, an analysis of the 1973 census is in order, because of its significance in terms of detailed statistics for multipurpose studies on population. The results of this census have indicated that the number of non-Libyans was 197,000 and nationals more than 2,000,000 . This meant that 9% of the total population were foreigners, of whom between 85–90% were Arabs, 5% Europeans and the rest from Asia, Africa, and South and North America. The majority of the non-Libyans were Egyptians in 1973 as is the case today after the improvement of relations and the opening of borders between Egypt and Libya. Hence the eastern Muhafadat of Derna, Jebel Akhdar, and Benghazi, being the nearest destinations, have received a higher number of Egyptians over other nationalities. The total spatial distribution of the different nationalities according to Muhafadat in 1973 is shown in Table 4.7.

Table 4.7: Non-Libyans as a percentage of the total population in each Muhafadah in 1973.

Muhafadah	Percentage
Derna	11.9
Jebel Akhdar	9.4
Benghazi	19.5
El Kalij	6.3
Misurata	3.9
El Khums	2.9
Tripoli	12.3
Ez Zawia	4.6
Gherian	3.2
Sebha	7.0

Source : Kezeiri S (1984) The aspects of change and development in the small towns of Libya. Unpublished Ph.D thesis, University of Durham P, 206.

By examining Table 4.7 a little further, one can realize that more than 40% of the non-Libyans were working in the eastern Muhafadat, where the Benghazi Muhafadah alone recorded about 20% of the total non-Libyans working in the whole country. According to the latest available data (1988) Benghazi city has embraced more than 22,000 immigrants, although this is probably underestimate in view of lifting of restrictions upon border movements with Egypt and Tunisia. This fact is consistent with the nationalistic approach adopted by the government that **"Libya is the Land of All Arabs "**, and has led to encouraging numerous immigrants, many of whom take any job available in Benghazi and form a source of cheap manpower. This situation affects Benghazi's present pattern of industrial and service growth, further accelerating the problems of over-rapid growth. Solutions to these problems will be difficult without adequate planning and a definite programme to redistribute the city's population spatially in a pattern that

corresponds to its real economic activities, and also to its service and industrial locations.

4.5 Population Composition

The age and sex structure of a population at any given time is the reflection of past experiences in fertility, mortality and migration. These forces are not entirely separated and any change in one may eventually influence the other two. The age and sex distribution of a population has many important connotations, probably the most essential one being to define the limits of the nation's reproductive potential (United Nations 1973). This structure is the fundamental demographic determinant of a country's workforce supply and it affects needs for various essential goods and services.

Given the diversity of roles and needs as established in each society, variations in the composition of a population by sex and age can have far-reaching social, economic, and political implications. In Libya, for instance, women have generally played a negative role in the economically active population, which tends to be the result of cultural conditioning rather than to a natural aversion on their part. Further, the numbers of persons aged 15-64 years have much bearing on the size of the labour force and changes therein. Hence, the larger the proportion of 15 years and below and over 64, the greater is the proportion of national income which must be spent to provide for their needs, such as education and health care facilities. Applying this situation to Benghazi, the high annual investment in health which is required to prevent a deterioration in standards has made it extremely difficult for the city planners, with a rapidly increasing child population, to furnish adequate health facilities. The needs of health care facilities and trained personnel are closely associated with the two groups of young and elderly people, as will be explained later.

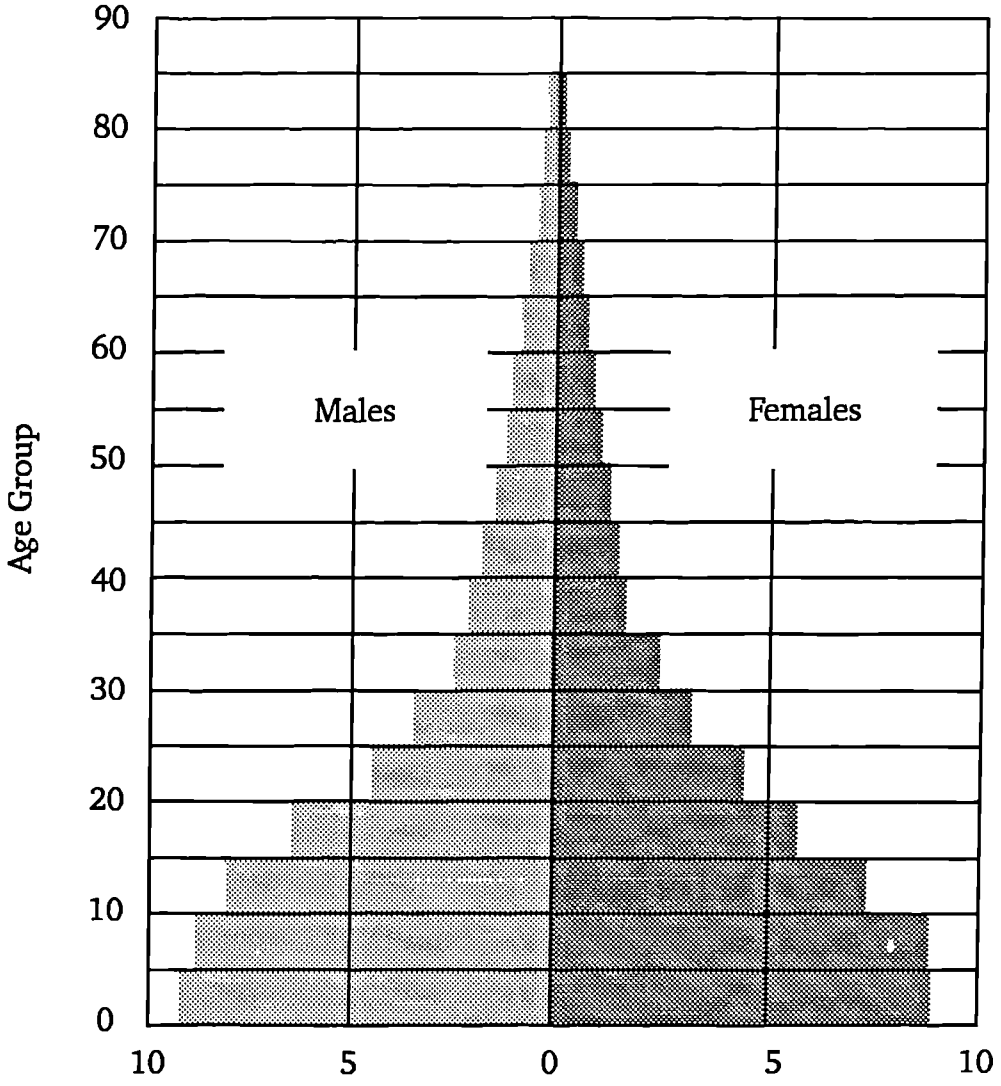
In short, given its important demographic, economic and social implications, the dynamics of a population's sex and age composition forms a central focus in demographic analysis. Therefore, this section is assigned to examine age and sex structures consecutively:

4.5.1 Age Structure

Benghazi's population is mainly characterised by the predominance of children and young people. With high fertility rates, the population reflects the typical pattern of a rapidly developing country. This appears to have come about from a very high birth rate and a declining death rate, both of which are considered good indicators of improved medical services and a better way of life, enhanced by government intervention. With the explosive growth rate of 3.8%, it is not surprising at all that the city age structure is persistently weighted at the base and tapered at the top as illustrated in Figure 4.2. Continuing high growth rate results not only from constant high fertility rates and an increase in life expectancy, but also from the age structure of the population. In Benghazi's Municipality about 51% is under 15 years of age, 47% between 15-64 and only 2% is 65 years or older. However, in a study of a family clinic at Benghazi, composed of a population of approximately 5,000 persons, Abudejaja *et al.* (1987) pointed out that the proportion of those less than 15 years was put at 58.2% of the total population as compared with 51.4% for the entire country. In contrast, the age structure of the non-Libyans is distinguished by a very high rate in the productive age group and the dominance of males. Furthermore, it can be asserted that among the working non-Libyan age groups, young male immigrants (15-44) represent the great majority, contributing to 43.7% of the total foreign manpower of the Municipality of Benghazi in 1984. The available age structure statistics for Benghazi have shown very little change from one census to another, except when immigration has taken place on a large scale. The pattern of high percentages of children and low percentages both of adults of working age and aged dependents, has continued throughout the period for which any information is available. This large size of a young (under 15) population means growing demands not only for health care and education but also for food, shelter, and many more requirements.

Undoubtedly, all these basic needs increase pressure on limited natural resources and make economic development even more difficult. The Libyan policy of total dependence on oil revenue should come to an end as oil is being continually threatened by external forces. The oil prices may fluctuate (as happened between 1980 and 1990, with prices peaking during the former year and declining by the

Fig. 4.2 The Libyan Population Pyramid by Age and Sex in the Municipality of Benghazi in 1984



Source: Municipality of Benghazi; 1992.

latter) due to unanticipated external factors lying beyond OPEC's control. Accordingly, an economy heavily dependent on the oil sector alone is likely to narrow growth prospects in various fields of development.

4.5.2 Sex structure

The sex ratio (percentage of males to females) of a population is the most fundamental of all demographic characteristics and affects directly the occurrence of births and marriages. Migration rates, professional structure and essentially all other population characteristics may be influenced by the different ratios between the sexes. The sex structure of the population in Libya as a whole, has shown the pattern of a higher proportion of males to females, at 53% and 47% respectively in 1973. The Tripoli and Benghazi Municipalities as usual had above the national average in all censuses undertaken since independence in 1951, which is presumably a consequence of their locations as the primary destination of migrants.

In 1984 the total population of Libya was 3.237 million inhabitants, of which 1.653 million were males, or 51% of the total, while 1.584 million were females, representing 49% of the total population. Generally, the sex ratio for the whole country was 104 males to 100 females in 1984, but this ratio is changeable from one place to another, increasing in urban areas like Tripoli and Benghazi, where the ratio was 106/100. One of the most outstanding population characteristics of the non-Libyans is the preponderance of males in urban areas. According to two official censuses held in the Municipality of Benghazi, the trend of the sex ratio for non-Libyans over a period of eleven years (1973-1984) has revealed a remarkable decline from 191.3 to 163.7 respectively as opposed to a slight decline from 108.6 to 105.7 for Libyans in the same period. It appears clear that for non-Libyans, even with this clear decline between the two censuses, the predominance of males over females can not be explained independently of selective migration.

The Libyan population of Benghazi city alone was placed at 434,579 inhabitants in 1988, of whom 210,925 (or 48.5%) were females and the remaining 223,654 (or 51.5%) were males. The official number of non-Libyans during the same period was 22,743 persons, not including the unlimited clandestine immigration that had occurred after 1988 due to reasons stated elsewhere (P.99). Of the previous number 60.5% were males, and the remaining 39.5% were females. Altogether, (Libyans

and non-Libyans) the total population of the city in 1988 was put at 457,322, of which just 5% were non-Libyans. The author is in total disagreement with the figures provided on non-Libyans, especially regarding the Arabs who consider Libya their homeland and are therefore not deemed as foreigners, which gives an impression that the above figures are far below reality. It is also worth noting that the preponderance of masculinity in the total population is still repeated, though it is more obvious among the non-Libyans than Libyans.

To conclude this section one is inclined to emphasize that the structures of age and sex have drastically changed over the years in response to factors such as high fertility rates, internal migration, a constant stream of foreign migrants, and thus high population growth, all of which were stimulated by the government and its development programmes.

4.6 Population Projections to the Year 2000

Population projections provide a fundamental tool for more accurately predicting demands for various types of medical facilities, such as hospital beds, other health care needs, and for specialised medical and health personnel. As medical needs vary remarkably with age and relatively with sex, the sex and age structure of the future population is particularly relevant. Different health schemes have to be developed for young children-the group most subject to illness– for workers in particular occupations and industries, and for aged persons as well as women who constitute an increasing proportion of the city population (Abudejaja *et al.* 1987). However, demographers can not predict the future size of the population with certainty especially beyond the immediate future as it is hard to forecast precisely developments in the longer term that may have an effect on the net balance of the numbers of births, deaths and migrants (United Nations 1973). Projections provide a mechanism for examining the effects of changes on birth and death rates on the age composition, dependency ratios etc., so that projections and demography have become almost an inseparable subject in contemporary studies of population.

Benghazi's population is growing strikingly. If this trend of high fertility and incoming migration continues uncontrolled, the population, at present around 460,000, could be as high as 750,000 by the turn of the century, as estimated

by Doxiadis (1989). Certainly, this high population growth rate will have significant implications (positive or negative) for the city's health care services. Thus, for planning reasons, the need to analyse the relation of population size, density, growth and structure to procurable resources and high standards of health care development, has become completely indispensable.

This section is concerned with the realistic projections that are most commonly required for health care planning as well as for understanding possible population changes in the future.

Estimating the number of people living and working in Benghazi and its hinterland during the period 1978 to 2000 is of great concern to the planning process, as infrastructure, social services, and transportation must all be developed to meet the needs of a certain size of population. The planning consultants, Doxiadis and Italconsult, have traced the city's demographic data on births, deaths, and migrations based on existing (usually inadequate) records, and made some forecasts for the Libyan government. These forecasts will be used as the basis for further monitoring population changes and modeling demographic trends, as shown in Table 4.8. Certainly, population and health problem projections for certain population groups and the need for certain services are significant for long-term planning of resources. Accordingly, in using an appropriate software programme that is useful for such predictions, and considering Benghazi's economic structure as well as the very high average rate of population growth, Doxiadis (1989) has produced the most probable population projections, for the city of Benghazi and the two expected future extensions of Al Kuwayfiah and Al Gwarshah (Table 4.8). Furthermore, as the central government decided to impose a green rural belt encircling the city in an attempt to protect the agricultural land from further exploitation for housing projects, the potential was inevitably towards the north and south. The proposed green belt was designed to form a ring around the city from the north–east to the south–east, leaving growth towards the north and south, banning almost completely any urban expansion towards the east of the city. This policy led to urban development projects to be directed towards the northern area of Al Kuwayfiyah because of its attractiveness as a promising residential suburb of Benghazi. As can be seen from Table 4.8 the potentiality of this area is reflected in its anticipated high increase of the population annual growth rate, from

2.6% in 1990 to 2.9% in 2000. On the contrary, as the southern settlement of Al Gwarsha is not suitable for urban development, it is assigned for industrial and storage purposes. As a consequence, the annual growth rate of the population in this settlement is expected to fall from 1.8% 1990 to 1.6% in 2000 (Table 4.8).

According to a study by Ove Arup (1978), the average growth rate over the previous ten years has drastically increased the population figures. Comparing this result with Whiting Associates (1967) estimates of the growth rate, Ove Arup's predictions are considerably higher. Perhaps this difference can be accounted for by the exaggeration of Ove Arup's consideration of immigration and repatriation. Thus, Ove Arup's predictions as can be understood from Table 4.9 are 250,000 too high for the present population.

Table 4.8: Benghazi agglomeration–population forecasts Year 1990–2000

Year	Benghazi City		Al Kuwayfiyah		Al Gwarshah		Total	
	Pop.	G.R*	Pop.	G.R	Pop.	G.R	Pop.	G.R
1990	548,500	(3.2%)	2,900	(2.6%)	1,610	(1.8%)	553,010	(3.2%)
1995	642,000	(3.0%)	3,300	(2.9%)	1,760	(1.6%)	647,060	(3.0%)
2000	743,500		3,800		1,900		749,200	

***G.R stands for growth rate.**

Source: Doxiadis associated international, Benghazi final report on the master plan, part 2 vol.5 (Athens, Greece,1989),p.118.

From the data in Table 4.9, it seems obvious that the dual factors of high natural growth rates and urban immigration resulted in the dramatic population increases shown there.

Table 4.9: Benghazi's population forecasts 1990–2000

Year	A–Natural Increases	A+B(Immigration) Total	Whiting's Forecasts
1990	601,000	723,000	471,000
1995	768,000	962,000	571,000
2000	977,000	1,262,000	679,000

Source: Ove Arup and company Libya, ltd., (1978) Benghazi transportation report (London: september p:34).

However, it also seems a well-established fact that future urban population growth will be oriented to the suburbs due to government policies. The distribution of economic activities in a more equitable spatial pattern outside the central business district has become a policy adopted by the government. This policy began to be implemented through establishing new public markets in every neighborhood, as growth centres oriented towards serving increasing local demands. Moreover, the policy assures that some kind of employment and settlement will be generated in those outlying areas and that the greatest demand for health care facilities will also occur in these areas currently lacking arterial transportation networks that are sufficient to meet projected demands.

4.7 Summary and Conclusion

Urbanisation and population size and growth patterns are important elements for future planning in many aspects, particularly in terms of planning health care facilities. Benghazi offers an excellent example of a remarkably wealthy region, experiencing the processes of economic and social change and development which are influenced by and result in changes of population distribution.

Since Libya began to export oil in the early 1960's, the country was transformed from one of the poorest in the world to one holding the fourth position among the Middle East and North African producers of oil in 1973 (The Economist

Intelligent Unit 1993). The rapid rise in oil production and revenues has stimulated large scale development projects which in turn have attracted considerable numbers of foreign workers due to marked shortages in the indigenous labour force. The main destination of those immigrants have been to urban centres, thereby affecting the population composition of those areas. The proportion of non–Libyans in the total labour force of Libya was put at 562,100 in 1983, declining to 136,000 in 1987 due to economic austerity imposed by collapsing world oil prices at the end of 1985. Consequently, population growth estimates are complicated by the fluctuating volume of foreign manpower owing to significant changes in economic conditions. The Libyan central bank estimated the current growth rate for Libyan nationals at 3.9% annually, while the World Bank predicted an overall growth of 3.6% annually between 1988 and 2000 (The Economist Intelligence Unit 1993). Benghazi's population growth is consistent with this prediction and the city is considered to have one of the highest growth rates in the world, and the population under 15 years of age has formed more than 39% in three official consecutive censuses undertaken in the country since 1964. In general, the northern regions of Tripolitania and Cyrenaica accounted for 80% of the population. Population density is over 50 persons per km^2 in the two regions, while in the rest of the country, it falls below 1 person per km^2 (EIU 1993).

After 1960 the government was highly interested in how redistribution of population would increase the efficiency of the economic system and the welfare of people. The massive socio–economic changes that have been continually activated by the State with its high revenues and revolutionary policies had brought about an acceleration in internal migration in the country as a whole and to Benghazi in particular. Furthermore, oil wealth had allowed the government to make remarkable advances in health care which were reflected in a profound decline in mortality rates, especially among young children, and a high and stable natural increase. These two factors in concert with in–migration and the return of Libyan repatriates account for nearly all population growth in Benghazi after the early 1960's. As commonly known large scale migration to Benghazi started following the oil price explosion during the early 1970's. This process had dramatically intensified by the end of the 1970's due to massive projects adopted by the government which inevitably demanded a great number of both skilled and non–skilled labourers from abroad. Before 1970 the great majority of immigrants were mainly

Arabs from neighbouring countries like Egypt and Tunisia as well as Syria, subsequently, increasingly Asian workers and those from the socialist countries were permitted to work in Libya. The attractiveness of Libya during the modern era has been the result of the oil discovery and the economic and political push factors in the labour–exporting countries. These factors were major forces in attracting migrants from several Arab and non–Arab countries. However, those with highly specialised professions and/or belonging to countries with favourable political relationships to the host country, tend, as a general rule, to stay in Libya for as long as their contracts permit. Accordingly, the puzzle of this population upsurge exerted by immigration presented considerable difficulties for those responsible for preparing the city's first comprehensive plan of 1967. The implications of this master plan and its viable application have dictated that many skilled and semi–skilled foreign workers be brought into the city to participate in building and developing its infrastructure. It is important to assess the extent of this need, and the problems underlying migration in terms of the growing needs for social services like education, health care facilities, shelter, water supply and electricity. It seems obvious that the need for foreign manpower now and in the foreseeable future is inescapable and a precondition for development in Libya . Therefore, several consultant companies have predicted that the population of Benghazi will rise from approximately 460,000 in 1992 to about 750,000 by the turn of this century. Obviously, from a small population after the end of the Second World War, Benghazi is rapidly becoming one of the major cities in North Africa, though it is, of course, still much smaller than Tunis, Tripoli, Algiers, Casa–blanca and Alexandria.

Urban population growth has always outstripped general population growth owing to a constant stream of rural to urban migration while urban infrastructure is growing much less rapidly than the population it is intended to serve. Migration tides overpower the capacity of urban planners and decision–makers to provide adequate services and facilities especially in areas such as housing and health care facilities. In a small country (in population size) like Libya, the two major cities of Tripoli and Benghazi come to dominate the entire fabric of the country to such an extent that the development of complementary urban centres is effectively blighted. This process, of course, took place in the absence of a coherent national development policy and a policy subset regarding urbanisation *per se* which

is the primary problem facing Libya in general and Benghazi in particular. Unfortunately, as Benghazi's predicted future is that it will remain the major urban centre, not only to serve the Benghazi region, but also to serve the whole of eastern Libya, decentralisation measures intended to serve a more balanced distribution of population suggested by the Consultant Doxiadis in 1989 will not be viable and promising. There is potential for social and economic differentials in Libyan cities if the present living conditions and maldistribution of income persist. Although the condition of urban structure in Benghazi has not as yet deteriorated, unchecked and unbalanced urbanisation may cause a further degradation of the physical and social environment. Accordingly, Benghazi's urban future can be better than its present situation if wise and carefully applied measures are considered now concerning population maldistribution.

The distribution of the total population of Benghazi by sex and age according to the 1988 census has revealed the preponderance of males over females, a situation clearly relevant to immigration from inland and abroad. Although this ratio is remarkably high among the non-Libyans (163/100), it is also reflected to a smaller extent in the Libyan population among which males also surpass females (106/100). As regards the distribution of the population by age, while the pyramid of the Libyan population is fairly normal and smooth, the dominance of males in the working age groups (15–64) among the non–Libyan population has shown its impact on the pyramid for the total population of the city in 1984.

In conclusion, then, the population of Benghazi city, like the population of major cities in the developing world, has grown very rapidly particularly in the last three decades. However, having been the major seat of government offices and services, a centre for economic activities, educational, social and cultural services and above all for job opportunities in the eastern part of Libya, Benghazi has extended its influence far beyond the country's borders in attracting foreign immigrants. Its growth was a response to several factors exemplified in high rates of natural increase, immigration of both Libyans and foreigners as well as the returned Libyans who fled during the Italian occupation. The high natural increase is attributed mainly to the substantial decline in mortality rates and the almost constant level of fertility rates. These factors and the negative trend of the Libyan State in adopting rigorous policies of child spacing or family planning to reduce

the persistent high fertility rates, are all significant elements leading to the general youthfulness of the population. Moreover, the age–sex structure and the dependency ratio of the population in Libya at large and Benghazi in particular show that the great majority of the population is young. Therefore, the dependency ratio has enormously increased from 38.5% in 1964 to 46% in 1984, reflecting primarily the differences and changes in the proportion of population under 15 years old rather than the population of 64 years and over.

As in many other oil–producing countries, a sizeable proportion of the Libyan manpower is still made of foreign workers. Such workers are needed not only in highly professional occupations and for technical expertise, but also in semi–skilled and other jobs which Libyan workers are not, at present, willing to undertake for example construction, street sweeping and garbage collection. The government has made wide strides in the process of training Libyan citizens in various fields of technical expertise and other professions to reduce the semi–dependence on foreign manpower, even if it was at the risk of slowing down national economic growth rates. The overall problem of skilled manpower shortage in Libya seems to remain unsolved, however, and will be a prime concern for the government and planners at least for the next two decades.

In analysing the economic characteristics of Benghazi city and Libya as a whole, one tends to confirm the low Libyan labour–participation rate which is attributed mainly to the large proportion of young people in the total population combined with a low labour participation rate among women. Both of these factors formulate a heavy burden imposed on the economically active workers and add more pressure on economic resources because of their growing demands not only for health care services and education but also for food, housing and many other pressing needs. This heavy burden tends to increase consistently over the years with economic prosperity and high fertility rates. However, owing to cultural, religious and other factors, the extended family system is more likely to continue at the expense of the nuclear family system and probably will not change very rapidly for the near future. Yet, there might be a slight reduction in the birth rate among educated women who need to work and hence minimize the number of their children.

In brief the outstanding attributes of the population of Benghazi are high percentages of children under 15 years, returning Libyan repatriates, low infant and childhood mortality rates, high selective in–migration on age and sex and above all high dependency ratios.

It seems likely that the city's future growth will depend principally on the oil sector and its market. As oil prices rise we assume, as experience has shown, that the government will continue to support the economic development projects in the city and attract more immigrants from inside and abroad.

Chapter V

The Health Care Delivery System in Libya

5.1 General Introduction

The Libyan government provides health care services through the Secretariat of Health at no cost in hospitals and with only a token fee for curative services in other health care services. It provides such care for the entire population, without distinguishing between Libyans and non–Libyans. As every country is free to forge its national policies, strategies and plans of action in order to develop its own health care delivery system appropriate to its unique determinants of health and disease, Libya likewise has always aimed at directing its health priorities to meet the health requirements of every family and every individual. With this in mind, the State during its Five Year Development Plan (1981–1985) has expanded health networks and enlarged the medical workforce to meet continuous and mounting demand for health care services.

In short, the Secretariat of Health has adopted a strategy to extend health care coverage to meet basic community requirements in line with promoting health, preventing the most rampant diseases and providing the highest levels of health care services needed for social and economic progress. Clearly the healthier a person is (physically and mentally) the more he or she becomes capable of working, producing and thus verifying the objectives of development and progress. Almost everywhere in Libya, especially in major cities, there is a polyclinic, a local hospital or a health centre staffed by a doctor, a dentist, a certified nurse, auxiliary nurses, a pharmacist, laboratory technicians, nurses' aides, X–ray technicians, and cleaners. Polyclinics and health care centres offer curative as well as preventive and promotive medical services. Integrated mother and child care services are also available, including growth monitoring, ante–natal and post–natal care delivery services, child spacing and vaccination. In addition to governmental basic health care services, there is also an intricate and expensive private medical system in the main cities, accessible only to those who can afford it or who have social security

coverage. Private health care is not accessible for those who are not employed. The private sector is assumed at least to provide some basic advice and access to medicine, but it does not undertake preventive measures and public health activities. These activities are left to the public sector, and make further heavy demands on resources.

The total expenditures on the health sector alone during the Economic and Social Change Plan (1981–1985) were put at 402.1 million Libyan dinars *. Consistent with this high expense, the Secretariat of Health has established 103 hospitals (rural, specialised and public) provided with advanced equipment, 40 polyclinics, 248 health care centres, 1038 community health units and 210 maternal and child health centres to provide basic health care for its estimated 4 million population in 1988 (Ghanous *et al.*, 1989). In the course of this period (1969–1988) more than 43 medical schools and institutes were established in addition to two universities of medicine, one in Tripoli (the capital) and the second in Benghazi. Another medical school was also constructed in Sebha to serve the southern regions. The main aim in establishing such medical institutions has been to allow local manpower to become self–sufficient and to dispense with foreign manpower on which this vital sector has been reliant for a long time. Table 5.1 shows the number of medical graduates from abroad in relation to those from local universities and other medical institutes.

* One Libyan dinar approximately equals to £2

Table 5.1: Number of medical staff graduated from Libyan universities and technical institutes, and from abroad in 1988

Staff by type	No. of graduates		Total in 1988
	From Libya	From abroad	
General practitioner	1575	400	4858
Dentist	792	120	912
Pharmacist	462	64	526
Assistant of pharmacist	1250	–	1250
General nursing	4512	23	4535
Lab. technician	929	–	929
X–ray technician	382	43	425
Tech. of natural therapy	96	131	227
Public health personnel	497	–	497
Tech. of mouth health	43	247	290
Health inspection	836	–	836
Total	11283	1028	15195

Source: Secretary of general popular committee of health and general administration for health planning and manpower development, 1988.

Available data show that the physician population ratio was 1: 706 in 1988, very much less than the target doctor population ratio of 1: 10,000 recommended for developing countries by the World Health Organisation (Fadayomi and Oyeneye 1984). This physician to population ratio is considered one of the best in the world and comparable to that of the wealthy Arab nations and developed countries. The number of beds in hospitals belonging to the Secretariat of Health has also increased remarkably from 3.6 in 1969 to 5.8 in 1988 for every 1,000 inhabitants (Ghanous *et al.* 1989).

It is clear from this introduction that concentration on extending health care services through successive plans has always been the foremost concern of the Secretariat of Health in Libya. Unfortunately, the siting of health care services has never been fully considered in those planning strategies and policies. Thereupon, one of the prime objectives of this study is to examine this vital issue in depth, particularly with regard to polyclinics in Benghazi as can be seen in chapter nine.

5.2 General strategy for the health sector since the early 1970s

The strategy or philosophy of development in the health care sector has crystallized around a wide range of objectives as follows:

1. To provide the population in every region with an integrated and comprehensive system of non–profit medical services, particularly the deprived and peripheral areas of the country.

2. To improve and develop health care services in both quantitative and qualitative terms in order to reach high standards similar, at least partly, to those of the advanced nations, particularly in terms of hospital beds, qualified health manpower and health care facilities.

3. To distribute the use of immunisation in order to encourage prevention and control of locally endemic diseases such as tuberculosis, trachoma, bilharzia and others.

4. To improve management and any relevant arrangements in the health care sector; to expand skilled manpower, services of hospitals, polyclinics, health centres, and health units; and to enhance health education.

5. To encourage the private sector to work side by side with the public sector to furnish medical services for local citizens and foreign residents working in great numbers in the country.

6. To increase the number of scholarships for students sent abroad to undertake higher education or further training in certain specialties of the medical profession. The aim is to improve their skills and proficiency to take up medical careers that have previously been occupied by foreigners.

7. To encourage and enhance the medical health care institutions that use the most advanced and sophisticated equipment for advanced treatment.

8. To enhance and widen exchanges of medical expertise between Libya and other Arab countries as well as the international health organisations such as the WHO.

9. To extend medical schools and institutes to meet the mounting need for qualified manpower to operate the newly built health care facilities and support the existing ones.

10. To encourage and enhance scientific studies and research on a large scale in the health sector, particularly in terms of social, psychological and economic factors which influence health status so that planners and decision–makers can benefit from this and improve health services in the future.

11. To enhance health education programmes and relevant procedures on all levels and by all types of media to spread health awareness among all people of the country.

12. To strengthen the existing traditional primary health care (PHC) system for local populations with a few simple, cheap, modern and scientific health measures of proven effectiveness. The objective of PHC has always been to include at least health education, family planning, maternal and child care, provision of important drugs, adequate supply of water and basic sanitation and, most importantly, to place greater emphasis on preventive medicine and environmental health programmes.

The implementation of the above recommended strategy suggested by the Secretariat of Health since the early 1970s was not difficult technically, but culturally, economically and politically.

5.3 Economic Influences on The Development of Health Care In Libya

In 1951 Libya was the first State to be granted independence in north Africa under the auspices of the United Nations. At that time, it was considered one of the poorest nations on earth. Although no major epidemics had been detected since the early decades of the last century, some poverty–related diseases were being reported. Diseases such as enteritis, tuberculosis, tetanus and trachoma were the significant causes of death and blindness. Thus, according to Bulugma (1964) out of 2,534 operations carried out in 1962, eye operations accounted for 1,292 or over half of the total. During the same period, it was reported that one person in three was complaining of signs of active or semi–active eye infection. In addition, over-

crowding, malnutrition, lack of potable water, lack of hygienic housing conditions and widespread illiteracy, particularly among mothers, were the main causes of the incidence of tuberculosis. In 1958, statistics for the eastern part of Libya, known then as Cyrenaica recorded 1,192 cases of tuberculosis amounting to more than 4% of all deaths in the province, not to mention the numerous unrecorded cases (Bulugma 1964). The Benghazi general hospital , the only government hospital known then in the city had accommodation for 453 patients. Although medical treatment was supposedly free for all people, only a few benefited from it, such as government officials and those who were recommended. Hence, lower class and poor people or the groups at risk were almost totally deprived of these vital services. The high costs of private health services together with expensive drugs made medical treatment far beyond the reach of most people and thus precluded equal opportunities for the vast majority. This situation was greatly altered by the discovery of oil in the early 1960s and the ensuing "boom" years (1970–1980). Certainly, oil wealth has allowed the State to make remarkable advances in health care, education and other social services. The impact of oil wealth was greatly felt in the health sector, where the ratio of one doctor per 3,860 people in 1965 has dramatically dropped to just one doctor to 500 people in 1990, and from 850 people per Libyan nurse in 1965 to only 320 per Libyan nurse in 1990, close to rates in the OECD countries (EIU 1993). More important was the sharp decline of infant mortality rate from 160 per thousand in 1960 to 78 per thousand in 1989 (EIU 1993). The massive investment in education has also brought down the illiteracy rate from 60% for the Libyan population as a whole and 90% for women in 1973 to just 5% for men and 10% for women in 1988 (EIU 1994).

Oil revenues brought prosperity and welfare to the country and much needed capital for developing social and economic development projects. Thus, the government has spent considerable amounts of money at all levels of administration to extend and improve the country's network of public health care services; a process that is anticipated to continue for a number of years to come. This process reached its acme during the oil price boom between the 1970s and early 1980s, annual revenues peaking at more than $20 bn in 1980 (EIU 1994). Since then revenues have fallen drastically to $5.4 bn in 1986 and $5.2 bn in 1988 due to collapsing world oil prices, which took place after 1985. During the boom period of oil, the State

adopted a strategy to spread the benefits of that wealth among all sectors of society including the health care sector under several five year change plans as shown in Table 5.2. This table demonstrates the numerous giant economic and social change plans, of short and prolonged terms between 1970 and 1985. Government expenditure under these plans of change has increased enormously from 50.9 million L.D. in the first plan period (1970–1972) to over 402.1 million L.D. in the fourth plan period (1981–1985) more than eight times the first plan.

Table 5.2: Government expenditure in the health sector during the four development plans (1970–1985)

The plan	Period	Amount in million L.D.	% of growth
First plan	1970–1972	50.9	-
Second plan	1973–1975	66.2	30.1
Third plan	1976–1980	313.1	373
Fourth plan	1981–1985	402.1	28.4

Source: Ghanous *et al.*, (1989:P.453)

The data displayed above show clearly the formidable expenditures on the health sector, which have grown so rapidly and far out–paced the growth of population and inflation. The increase in the health care budget particularly during the period between 1976 and 1980 was enormous and rose from 66.2 million L.D. to 313.1 million L.D., a 5 fold increase in only five years. By 1985, at the end of the fourth plan the total outlays amounted to nearly eight times those of the first plan only 13 years earlier. In the course of this period, some significant aims were pursued, notably:

1. Improving health service provision and expanding health training programmes to obtain dependable medical manpower.

2. Expanding preventive and curative services to peripheral areas of the country.

3. Promotion of food supply and nutrition, health education, provision of important medicine and appropriate treatment of rampant diseases as well as controlling locally endemic diseases.

4. Establishing and strengthening an appropriate health research base to improve health care policy and management and foster innovation and experimentation to identify and deal with major health problems.

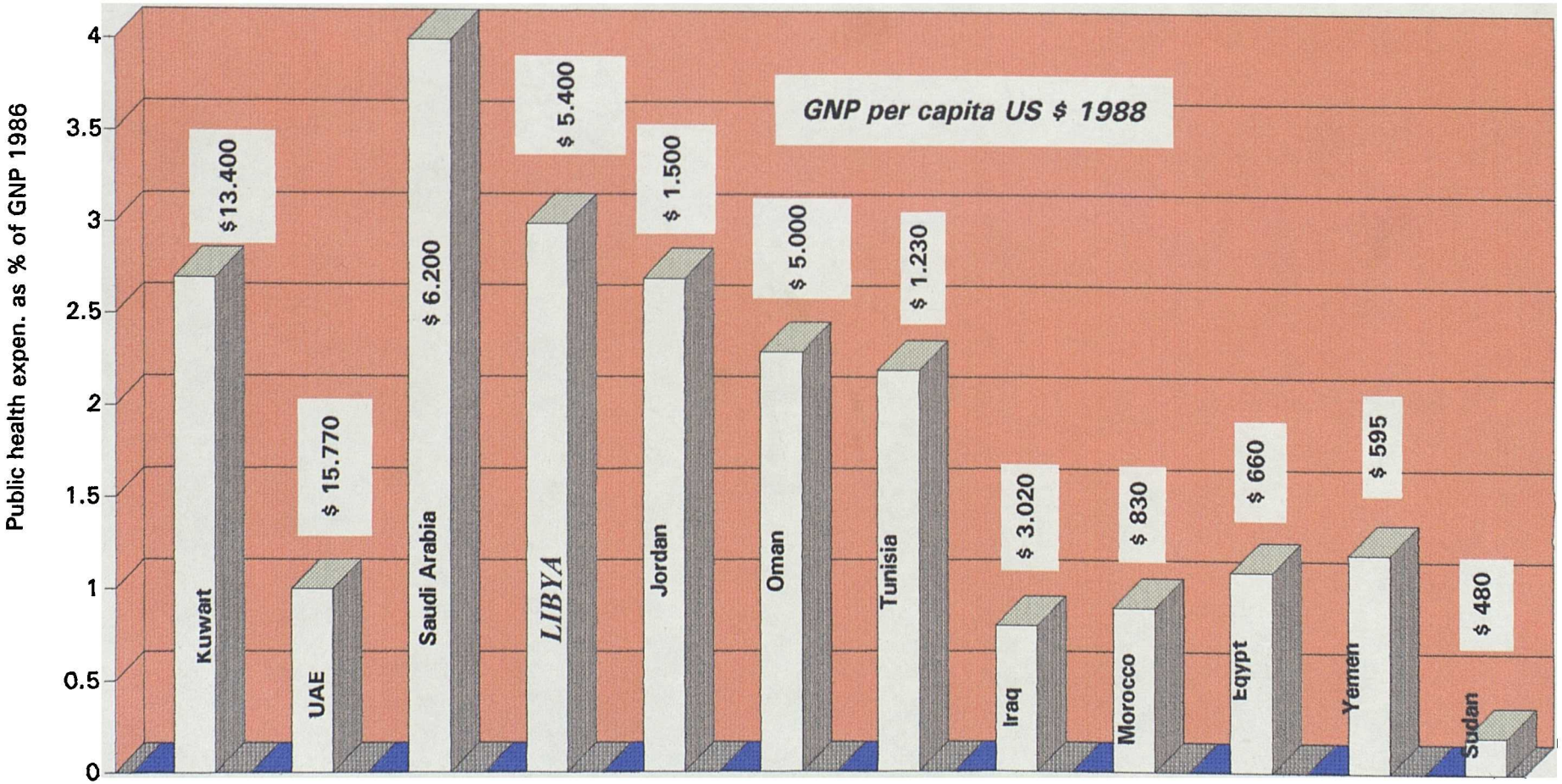
It is worth recalling that even after the recent declines in the national budget, the State has made some modest efforts to protect the funds of the Secretariat of Health so as to keep up with the target objective of the fourth plan of developing the social sector of the economy rather more than the physical infrastructure. Therefore, the public sector of the economy including education, welfare and health received more than 16% of the total government expenses in the period 1969–1988, (Ghanous *et al.,* 1989).

5.4 Statistical Indicators and their Implications for Health Care Sector (1969–1988)

5.4.1 Development of health care expenditure per capita (1969–1988)

Table 5.3 demonstrates the consistent trend of increasing health expenditure over two decades. This table reveals that from an outlay of 8.3 Libyan dinars per head in 1969, the amount had jumped considerably to 52.2 L.D per head in 1984, a six fold increase. Growth of expenditure was slower in the first and second plan periods, but during the course of the third and fourth development plans much money was assigned to improve and promote health care services and the level of health in general. Due to high economic growth, social spending during the early 1980s was greater than that of the 1970s. Libya moved from a situation of a low gross domestic product and low health expenditure per head of the population to a high level for both variables. As a consequence, the country had attained a remarkable position among the Arabic countries in 1986, in terms of public health expenditure as percentage of GNP. It was second only to Saudi Arabia, (Figure 5.1) though its GNP per capita was much less than Kuwait and United Arab Emirates. A high social expenditure ratio does not necessarily guarantee a good human development performance, but it does make an important contribution (UNHDR, 1991).

Figure 5.1: Expenditure on public health as a percentage of GNP in Libya and other Arab countries.



Source: Human development report,(UNDP), 1991, Oxford university press, 152-153

This implies that firm policy action is needed in order to formulate a closer link between economic growth and human development.

Table 5.3: Health expenditure per capita (1969–1988)

Year	Average expen. per capita L.D.	% of growth
1969	8.3	–
1972	12.5	50.6
1976	24	92
1980	39.4	64.2
1984	52.2	32.5
1988	50.9	– 2.5

Source: Extracted from Ghanous *et al.,* (1989) Libya, The revolution: The Social, Political and Economic Changes in Twenty Years (1969–1988). University of Garyounis, Benghazi, Libya (in Arabic, P.462)

The recent trend in social spending in Libya and in most developing countries is not promising. In many countries, the real expenditure per head has been declining dramatically. In the light of this, Libya has sought ways to reduce the size of the public sector and to some extent has maintained its commitment to the principal aim of the fourth development plan, expanding and evolving the social sector of the economy.

5.4.2 Development of health manpower and population ratios

As emphasized elsewhere, the State has made enormous efforts to augment the numbers as well as the standards of medical staff during the first three development plans so as to match the mounting demand on such essential professions. Table 5.4 demonstrates the development of population per physician as well as other medical staff.

Table 5.4: Population per physician, nurse and auxiliaries, technicians and assistant technicians in Libya, 1969–1988

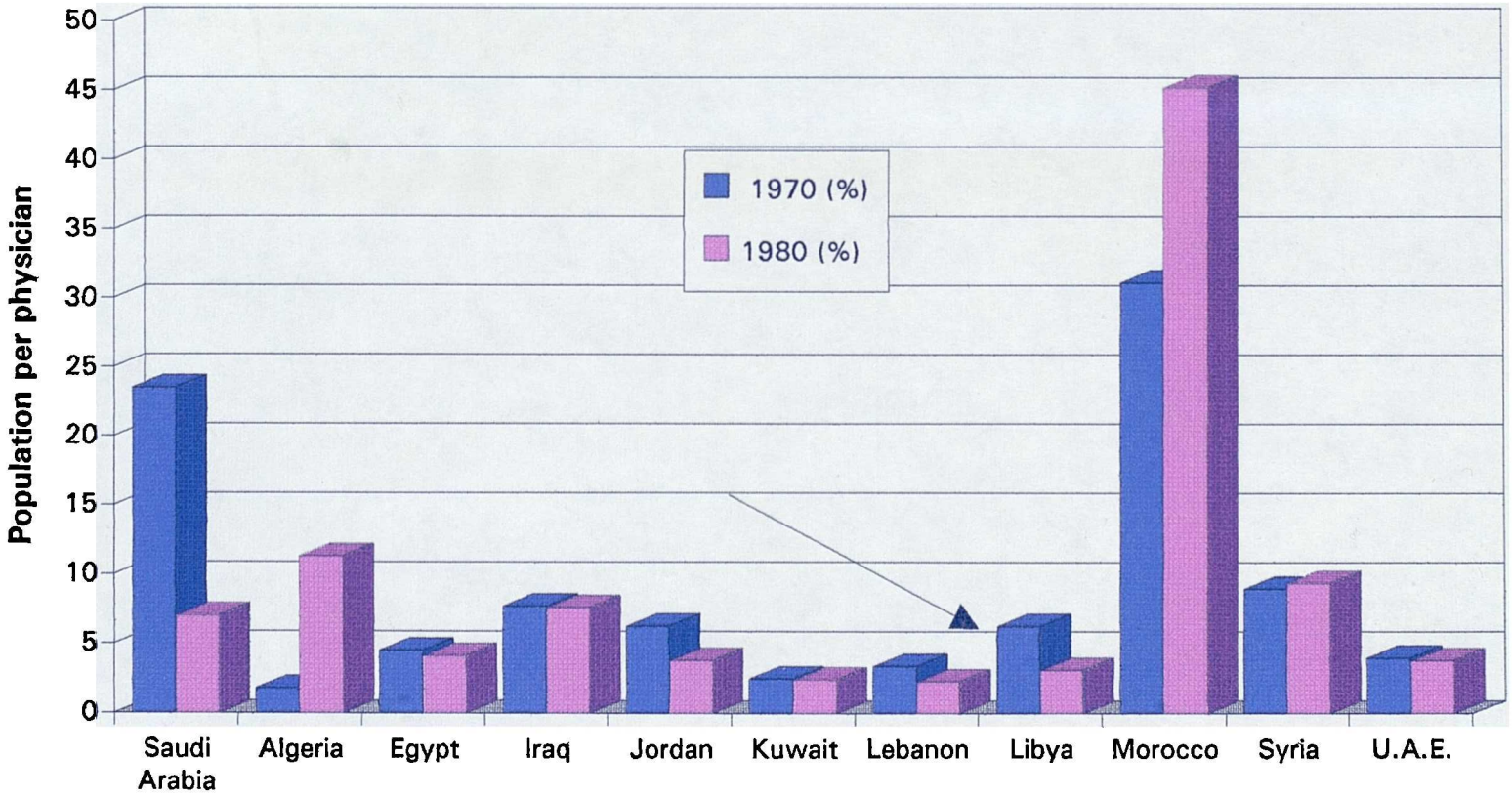
Type of staff	1969	1972	1976	1980	1984	1988
Physician	2588	1416	911	730	686	706
Nurses & auxiliaries	726	406	260	240	220	226
Technicians & assistants	5000	2645	1712	1460	1102	994

Source: Secretary of general popular committee of health and general administration for health planning and manpower development. Derived from several reports until 1988.

In 1969 the total number of professionals working in the health sector in Libya was put at 3825, of which 795 were physicians and dentists, 2612 were nurses and auxiliaries and 418 were technicians and assistants of technicians (Ghanous *et al., 1989*). By 1988 the total number in these categories had grown to more than seven times that of 1969, or by 654%. In these 20 years, the number of physicians had grown by 626%, the number of nurses and auxiliaries by 596% and the number of technicians and assistants by 1066%. The fast rate of increase in health personnel as a human development endeavour has allowed the country to compete with, or at times to exceed, other wealthy Arab countries in Africa and Asia (Figure 5.2). Examining this Figure one may notice that during the early 1970s, Libya ranked seventh when compared to most Arab countries in terms of population per physician, but during the 1980s the situation improved dramatically as the ratio of physicians to population decreased from 1: 2,650 in 1970 to 1: 730 in 1980 occupying the third rank only after Kuwait and Lebanon.

According to more recent data, the ratio has continued to drop, to one doctor per 500 people in 1990 (EIU 1994). Even though the Libyan physician population ratio is still far below of that of the developed world. According to statistical year book of the United Nations (1990), Norway had 1:450 (1984), Belgium 1:331 (1985), Sweden 1:321 (1985) and Italy just 1:236 (1986).

Figure 5.2: Number of population per physician in Libya, 1970 and 1980, compared to selected Arab countries



Source: (1) Al-ribdi (1990, P. 82) (2) Number of population to doctors in Libya was extracted from Ghanous et al., (1989, P. 473)

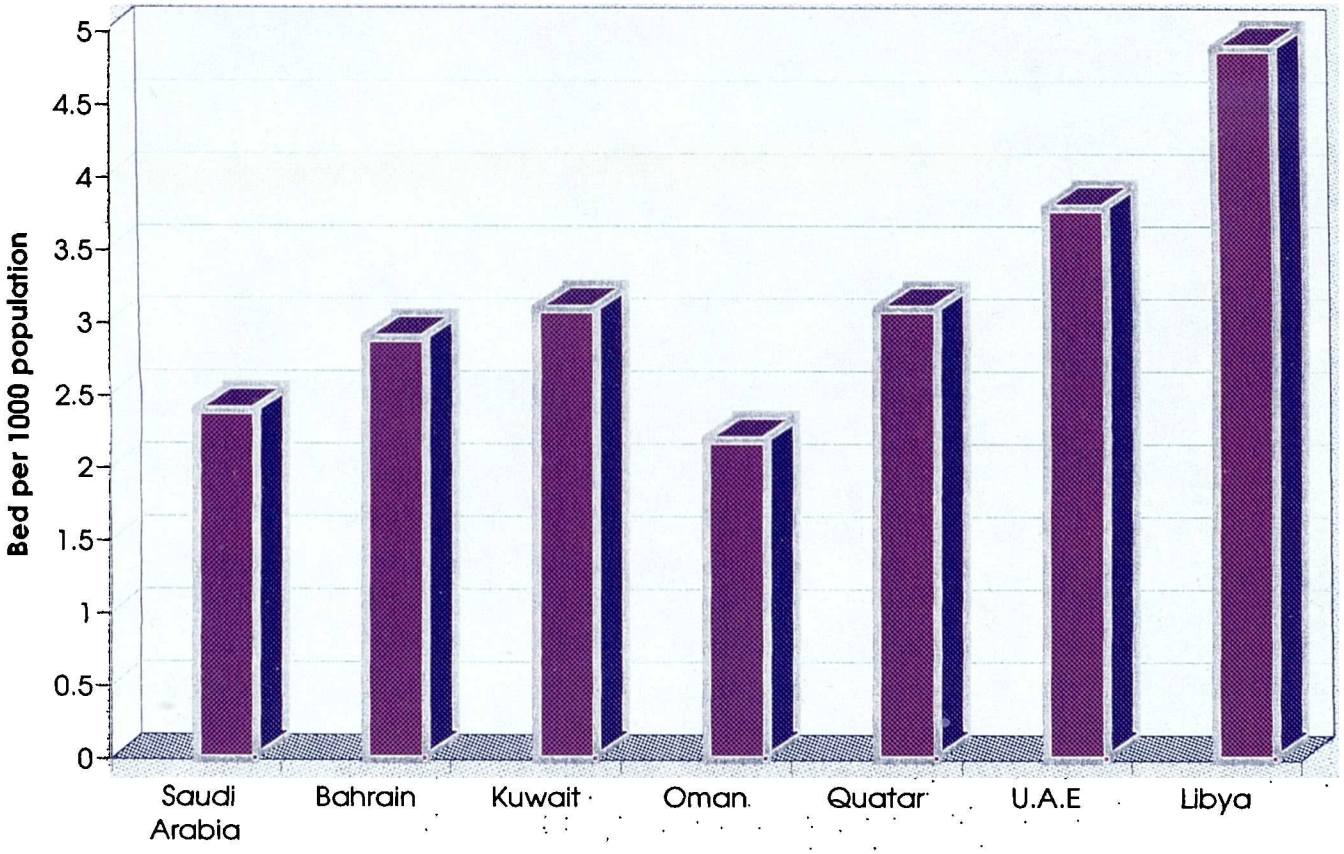
5.4.3 Development of bed/population ratio, 1969-1988

The improvement in bed/population ratio has been a natural extension to the fast expansion in the number and size of hospitals in Libya, where, in 1988 the total number of hospitals (specialised, rural and public) was put at 103, in addition to others which were under construction. However, the national target was to have reached 6 beds/1000 population by the end of the five year plan, which was due to run from 1986. This was never reached due to rapid population growth and progressive oil prices recession. Increases in beds to match the persistent predicted population growth of 3.6% until the year 2000, would require building more new hospitals as well as training more medical staff. Given the present aggravated situation of the economy, the target of 6 beds/1000 population by the year 2000 seems too ambitious. It may be difficult to reach even 4 beds per 1000 by the year 2000. However, as far as data can be relied on, when one compares Libya with the affluent Gulf Cooperation Council (GCC) countries, it is still one of the best in terms of bed/population ratio (Figure 5.3). The Gulf Cooperation Council States had an average of 2.9 beds/1000 population in 1984, which placed them some way behind Libya. Even with this impressive rate of growth in bed provision in Libya, it is still far behind what has been achieved in the advanced countries. According to Al–Ribdi (1990) the ratio was 7 hospital beds per 1000 in the U.S.A, 9 beds/1000 in England and Wales and 15 beds/1000 in Sweden.

5.4.4 Development of health care facilities (1969–1988)

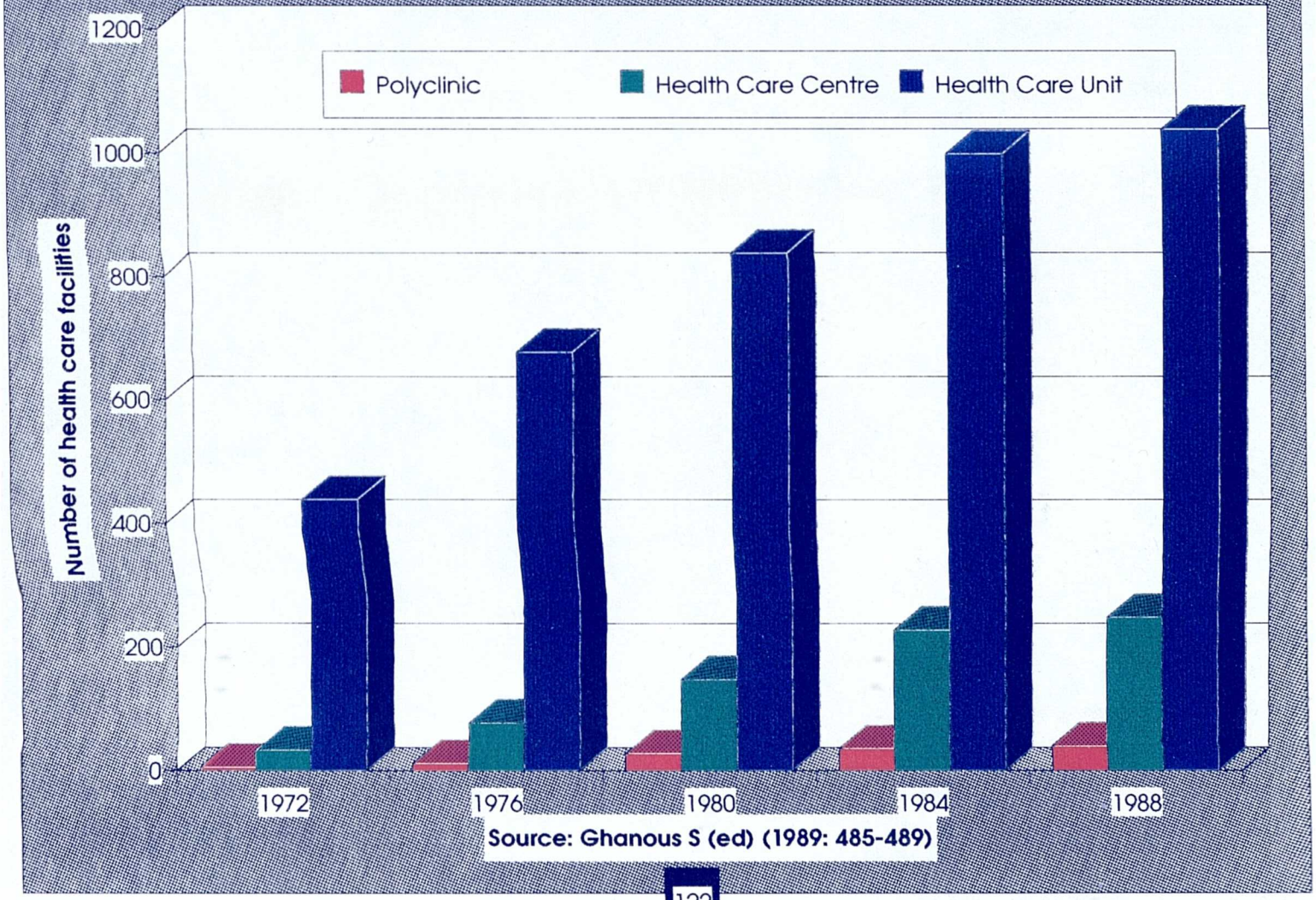
Figure 5.4 and Table 5.5 show the rapid development of the basic health care units, which were rare in the recent past. They were non–existent especially in the remote areas before the early 1970s. The number of these health care units increased from 414 in 1969 to 1038 exemplary units, equipped with up to date technological equipment in 1988. The increase was 624 units, an increase of 150% since 1969 until 1988. It is worth mentioning that the distribution of these health care units was fairly equal throughout the country, to the extent that they were commonplace even in the very remote villages and their presence was considered as being basic amongst the other public utilities. The aim was to provide citizens

Figure 5.3: Ratio of beds per 1000 population in Libya as compared to Gulf Cooperation Council States, 1984.



Source: 1. Al-Ribdi (1990: P.82) 2. Libyan data derived from secretary of health and planning report, 1988.

Fig. 5.4: Development of health care facilities between 1969-1988 in Libya



Source: Ghanous S (ed) (1989: 485-489)

of remote areas with the necessary health and medical services, which they had previously lacked.

A comparison of the number of health care centres in 1969 and 1988 reveals a large difference in their number before and after the discovery of oil; before the discovery of oil, basic health care centres were lacking even the simplest technology. Moreover, the small number of health care centres, which existed before the discovery of oil reflects the miserable sufferings of the public and the negative effects on the citizens' health. People were lacking even minimal medical services that could protect them from diseases that were widely spread. After investment of the reserves of petroleum products, one can notice the rapid increase in the number of these health care centres. Of course, this is attributed to the efforts and interest of the authorities; one can not deny their positive attitude towards raising the standard and level of public health. As a result, the number of health care centres increased from just 3 in 1969 to 248 in 1988; this was considered a big achievement. Since 1969 emphasis was focused on the establishment of health and medical services such as polyclinics, which were equipped with the most up to date scientific and practical aids. They were capable of providing the public with the best and most efficient medical services in almost all required specialisations. Generally, these polyclinics were established in different parts of the country, but special consideration was given to areas of high population density. In 1969 there was only one polyclinic, while in 1988 there were 40 polyclinics. This increase is very high if measured in financial terms, especially if it is acknowledged that the establishment and furnishing of each polyclinic cost millions of Libyan dinars.

Table 5.5: Development of health care facilities, 1969–1988

Year	Health unit		Health centre		Polyclinic	
	No.	Increase	No.	Increase	No.	Increase
1969	414	0	3	0	1	0
1972	439	+25	34	+31	6	+5
1976	678	+264	78	+75	12	+11
1980	838	+424	148	+145	28	+27
1984	998	+584	228	+225	36	+35
1988	1038	+624	248	+245	40	+39

Source: Ghanous *et al.*, (1989, PP. 484–495)

The medical and health care services' sector has thus witnessed rapid development in both its dimensions–curative and preventive–in the period of 20 years between 1969 and 1988. The progress was clear and tangible. The objective was to create a healthy capable citizen, who can push the wheels of change positively and effect change and reform in the different aspects of life economically and socially. Success of this sector's strategy was mainly attributed to the availability of allotted funds and moral drives, which were facilitated by the government after 1969. These statistics also show an increase in other supporting elements, such as the number of technicians, institutes, equipment and the resources necessary for successful operation and maintenance of this vital sector. Likewise, the health centres, which were assigned to fight local epidemic diseases such as tuberculosis, malaria and trachoma gained support. They succeeded in attracting the attention and support of the revolution and the government as a whole. The aim was to create healthy and effective human beings (citizens), free from any illness or disease. As a result, society was cleared from the endemic diseases, to the extent that they became mere history. The anticipated result was a remarkable improvement in the health conditions of the citizens, a decrease in the mortality rate among both adults and children and an improvement in living standards.

The rapid growth of the network of both curative and preventive health care services has been strongly supported by the State since the early 1970s. But it should be realized that the main emphasis had remained until recently on curative services in most health care facilities. The preventive services though have been in service for quite a long time, their major role being to control parasitic and infectious diseases, and to spread health education, quarantine, and community as well as social health. Briefly speaking, the dominant pattern of administrative structure is primarily curative, while the preventive element functions as a secondary activity. Health care delivery in Libya is generally provided at two main levels: hospitals (general, rural and specialised) and primary health care of basic services. Since the major focus of this thesis is on PHC, it is useful to shed some light on the importance of such services and their role of serving a great majority of the Libyan population. Other services will be referred to only briefly since they were not dealt with in the author's field survey to any extent.

5.5 Dependence on Foreign manpower

Historically, health care development in Libya has been strongly tied up with expatriate manpower, particularly in rural areas. Therefore, it is important to consider their role in forming the great majority of the health care work–force during the early stages of establishing health care facilities in Libya. This heavy dependence on foreign manpower and severe shortage of Libyan trained personnel led to the establishment of two big universities of medicine after 1970 and numerous schools and institutes of paramedics and technicians. The proportional share of Libyan medical and assistant staff in 1975 was just 5.8% for doctors, 60.4% for nurses and 42.4% for technicians and assistants of technicians (Table 5.6). Although during recent years, their number has improved considerably, the dependence on expatriates is still marked, particularly for rural health care facilities. Thus, to provide integrated and comprehensive health care delivery systems as rapidly as possible, in order to meet the continuing demand on trained health manpower, there was no alternative but to recruit staff from abroad.

Table 5.6: Medical and assistant medical staff (1975–1985)

Years	Number of doctors				Number of Nurses				No. of Tech. & assis.			
	A	B	C	D	A	B	C	D	A	B	C	D
1975	162	2117	2779	5.8	5669	3719	9388	60.4	566	769	1335	42.4
1980	450	3850	4300	10.5	7800	5700	13500	57.8	950	1350	2300	41.3
1985	2110	3170	5280	40	14850	1650	16500	90	4347	483	4830	90

A. Libyans B. Non–Libyans C. Total D. % of Libyans

Source: Social, development and economic change plan 1981–1985. The general popular committee of planning, Tripoli, 1986, P.220

In 1985 the percentage of Libyan doctors was 40% and this reached 60% in 1988 and probably 70% or more at the present time. However, Libyans made up a much larger proportion of the nurses and technicians in 1985 as can be seen from Table 5.6. This table shows clearly that the proportion of increase for physicians was not similar to that of other medical staff, where it tends to be much lower. It is expected that numbers of Libyan health personnel will increase rather faster at the lower skill levels. Although the policy of the Secretariat of Health has always been in favour of encouraging local manpower to take up positions left by foreigners, to minimise the heavy dependence on expatriate skills, there is still a great number of non–Libyans working in rural health care facilities. The lack of a strong presence of Libyan medical staff (doctors) in rural health care services and a high concentration in large urban areas may be expected to continue for the foreseeable future. This is in total agreement with the typical distribution of doctors in developing countries. Thus, dependence on the expatriate has resulted in numerous setbacks, particularly at the lower levels in the health care delivery system in rural areas. Although it is justified to have foreign physicians in highly specialised operations such as heart surgery or brain surgery, it is no longer accepted for general practice in which the physician usually deals with different segments of the population and therefore needs a full understanding of their culture and language. The major problems surrounding the use of expatriates in rural areas are as follows:

1. Lack of sufficient knowledge of the habits, customs, diseases and socio-economic background of the indigenous population. Though such a knowledge can be gained by experience, most expatriates do not stay sufficiently long to develop such experience. Unlike the western experience of maintaining a long term relationship between a patient and his or her local GP, this can not be easily built, simply because of the short sojourn of most expatriate doctors. Most foreign physicians are brought into the country on a short basis contract and good salaries, which tend to attract only newly graduated and unmarried staff.

2. Due to short contracts and less experienced doctors working in rural areas, medical research which was designed to promote and solve urgent matters of health care has never succeeded in its endeavour. This problem is echoed in Saudi Arabia as highlighted by Nasser (1985:94)

> The benefit of medical research can not be achieved unless physicians stay long enough and have time to complete the research work they started. With an average one year of stay in Saudi hospitals, it will be impossible to get any results that could be relevant to the promotion of health in Saudi society.

He adds that in the light of such a situation of staff turnover, some treatments such as prosthetics, which require a persistent monitoring of the patient, become extremely difficult.

3. The lack of local experience in expatriate doctors is compounded by their ignorance of local language. The writer's experience in this survey, which was carried out in Benghazi in 1992, has revealed that most ordinary people wished to be seen by an Arabic speaking doctor rather than by foreigners. Thus, the diversity of nationalities of medical staff has somehow created an atmosphere of general loss of confidence in the overall abilities of medical staff.

Certainly these expatriate manpower-related problems tend to reduce the level of efficiency of the health care delivery system and tremendously minimise the benefits of the high doctor/population ratio that has been achieved over the last twenty years.

5.6 Primary Health Care in Libya

People everywhere use curative and preventive medicine within the context of

their cultures and social organisations. Thus, cures may depend on certain local herbs and prevention may rely on refraining from taking certain food during sickness episodes or pregnancy. These sorts of both curative and preventive medicines are usually prescribed by healers, spiritual leaders, neighbours etc. Such practices used to, and probably still do form an integral part of the life of numerous societies around the world. Modern medicine was not known to non–Europeans until recently, mainly with the advent of the colonial era, in the form of campaigns to root out infectious diseases and to control epidemics (Iyun 1994). Such intensive campaigns were, of course, directed towards protecting the colonial rulers rather than the indigenous people. Only missionary missions (religious missions) were somehow better in caring more for the local population, particularly the rural dwellers (Kalapula 1991). Therefore, in most colonised countries, some sort of rural mission hospitals and dispensaries were the first foundation of what later become known as basic health care services. Libya is no exception, and, following the evacuation of the Italian colonial forces after their defeat in the Second World War, there has been strengthening of an existing network of basic health care centres and dispensaries supported by a few district hospitals especially in Tripoli and Benghazi. This was eventually the first real start of modern health care in Libya. Libya has suffered so long from both the Italian colonisation on the one hand and the backwardness and its consequences represented by the infliction of curable diseases on the other. This situation started to change gradually after independence in 1951 and the discovery of oil in the early 1960s. Consistent with this, awareness of the international community grew rapidly during the 1970s, noting that even basic health care services were not accessible for a great majority of the people in most parts of the world. Health care services do not always reach those who need them most. This aggravated situation particularly in the developing world has catalysed the attention of the World Health Organisation (WHO) to adopt the "Primary Health Care Strategy". The objective of primary health care (PHC) is to make a number of simple but effective health measures available to the majority by encouraging their active involvement and ameliorating economic, cultural and geographical accessibility (WHO, 1978). Libya, like many other developing countries, has continued to stress its priority for PHC. Thus, it has already adopted a strategy to launch and sustain PHC as an essential part of a comprehensive health care system. PHC is looked at as the point of entry of individuals into the total

health care system, no matter how modest the service may be. This emphasis has arisen as a reaction to large expenses spent on building and maintaining hospitals and complicated technology in major cities of the country. PHC was put at the top of a list of priorities when it was defined by the WHO at Alma Ata (in the former Soviet Union) (1978:1) as:

> Essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self reliance and self-determination.

This was not the origin of the PHC concept, but rather a major turning point for pushing forward a movement that had been in progress for many years. In theory then PHC facilities provide basic health care, and function as the first level of a patient's entry to the health care delivery system. In other words omnipresent available primary and family care services form the base, while the more specialised services form the upper tiers of the health care hierarchy. However, in Libya it was realised that higher–level training as applied in developed countries is inappropriate for community needs, where incremental increase in specialisation is inherent in the type of hierarchy. Hence training was desired to be undertaken at "*grass–roots*" level. This may formulate the essence of sound grass–roots systems and community participation. These basic health care facilities represent the first points by which the patients contact the system; patients may then be referred to the upper tiers (hospitals) for further treatment if necessary. As a greater level of specialisation above the first and basic primary services is needed, the hierarchy qualifies patients to be referred upwards to higher levels especially in large urban areas. Though in theoretical terms the system of hierarchy exists in Libya, unfortunately, it has never been strictly implemented. There is no straightforward, uniform hierarchical system with a clear distribution of functions and referral paths between health care facilities as conceptualised in parts of the developed world.

As more primary health care services were planned to reach the most remote areas, the target during the first five year plan (1981–1985) was to deliver basic health services to all communities with populations of over 10,000. In the second stage of the same plan the target was to reach communities of over 5,000 population. PHC services were categorised after 1981 into four levels depending on

the size and quality of the needed services and according to the size of population they serve. The characteristics and functions of each is shown in Table 5.7, which can be considered as a model for PHC services all over the country. The table demonstrates the approximate population size to be served in Benghazi by each facility and the medical staff needed, working hours, major functions and other essential functions such as laboratory and X- ray facilities.

5.7 The current distribution of health care services in Benghazi

Benghazi has a network of numerous health care services ranging from health care units, health care centres, and polyclinics, to general as well as specialist hospitals. The function of each is shown in Table 5.7. PHC forms the main core of Benghazi's health care delivery system and is vital to the overall social and economic development of the community. Conventionally health care planners conceptualize the provision of services in a hierarchical form. A number of simple but effective health care services formulates the base, and the more specialised services form the upper tiers until reaching the sought objective of uniquely specialised institutions. This conception tends to be derived from the central place theory as suggested by Phillips (1990:106) in the following words:

> The concept of a health care hierarchy is basically founded on central place system notions, in which certain threshold populations within a given travel distance are provided with a specified level of care.

The hierarchy of health care centres reflects their importance, the services and the demand placed on them. Examining this conceptualisation in Benghazi, it is possible to confirm the existence of such a hierarchy (Figure 5.5) but it is not uniform with a fixed division of functions and referral routes between health care facilities. A planning system that aims to provide and maintain a formal hierarchy and fixed referral system ends up, for the most part, with doctors and nurses wasting most of their time on trivial administrative matters due to a rigid and bureaucratic machinery.

However, more growth in quality and quantity of basic health care facilities took place following the famous Declaration of the Alma Ata conference in 1978, which was agreed upon by most developing and industrialised countries. Therefore,

Table 5.7: Functions of Existing Health Care Services in Benghazi, Excluding Hospitals

clinic	Pop. size	No. of phys.	No. of Nurses	Working hours	Major functions	Lab. and X – ray facilities
Polyclinic	40,000 – 60,000	15 – 20 GPs and consultants*	70 – 100	24 hours	PHC in all major fields	Both
Health care centre	15,000 – 30,000	5 – 10 GPs	20 – 30	Morn. /Afternoon	General medical, dental, maternal and child care	Both
Health care units	5,000 – 7,000	3 – 5 GPs	5 – 10	Morn. /Afternoon	Genral medical and minor surgery	Lab. only
Maternal & child care units	5,000	2 – 3 GPs	5	Morn. /Afternoon	Antenatal, postnatal care	Nil

* Consultants in medicine, surgery, eye, ear, nose and throat, dermatology, gynaecology, maternal and child health as well as radiodiagnostics.

Source: The Secretariat of Health in Benghazi, 1992

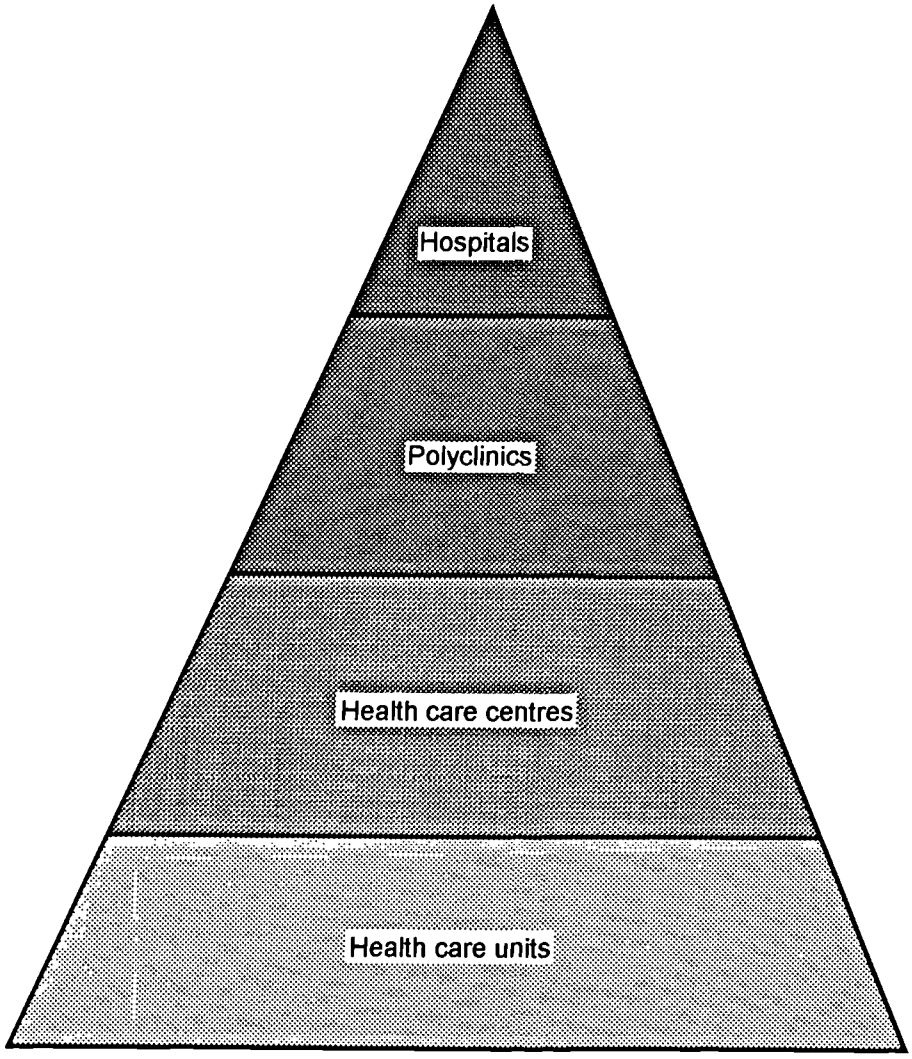


Fig. 5.5: The theoretical framework of hierarchy of health care delivery system in Benghazi.

a concentration more on preventive medicine was well established through adopting the new concept of PHC. Health care facilities in Benghazi are stationed in various parts of the city districts, but most are scattered across the city within a distance of 5 km from the central business district (Figure 5.6). To begin with, it is reasonable to consider the pattern of primary health care centres, which makes the base of the health care delivery system as follows:

5.7.1 Health care units

Health care units represent the lowest order in the hierarchy of the health care delivery system. They provide regular GP services, and maternity and child care. Each health care unit serves a population of approximately 5000 persons through two sessions, morning and afternoon. As can be seen from Figure 5.6 the city embraces three health care units in addition to a separate maternity and child care centre, all of which are located within a distance of 4 km. from the city centre. Unfortunately, these services are provided in low quality buildings which were not designed to serve health care purposes at all. Neglect of these buildings is probably attributed to the distribution of better public health care facilities, such as health care centres and polyclinics elsewhere in the city. The services provided in each health care unit can be identified as:

(a) Care for mothers and pregnant women.
(b) Ante–natal and post–natal care in addition to providing required vaccinations.
(c) Early detection of modern disease cases and taking necessary measures to control them.
(d) Health education.
(e) Following up chronic disease cases and recording them.
(f) Nutritional awareness.
(g) Monitoring water supply and analysing samples of water regularly to test its potability.
(h) Monitoring street cleaning and disposal of excreta and garbage.

5.7.2 Health care centres

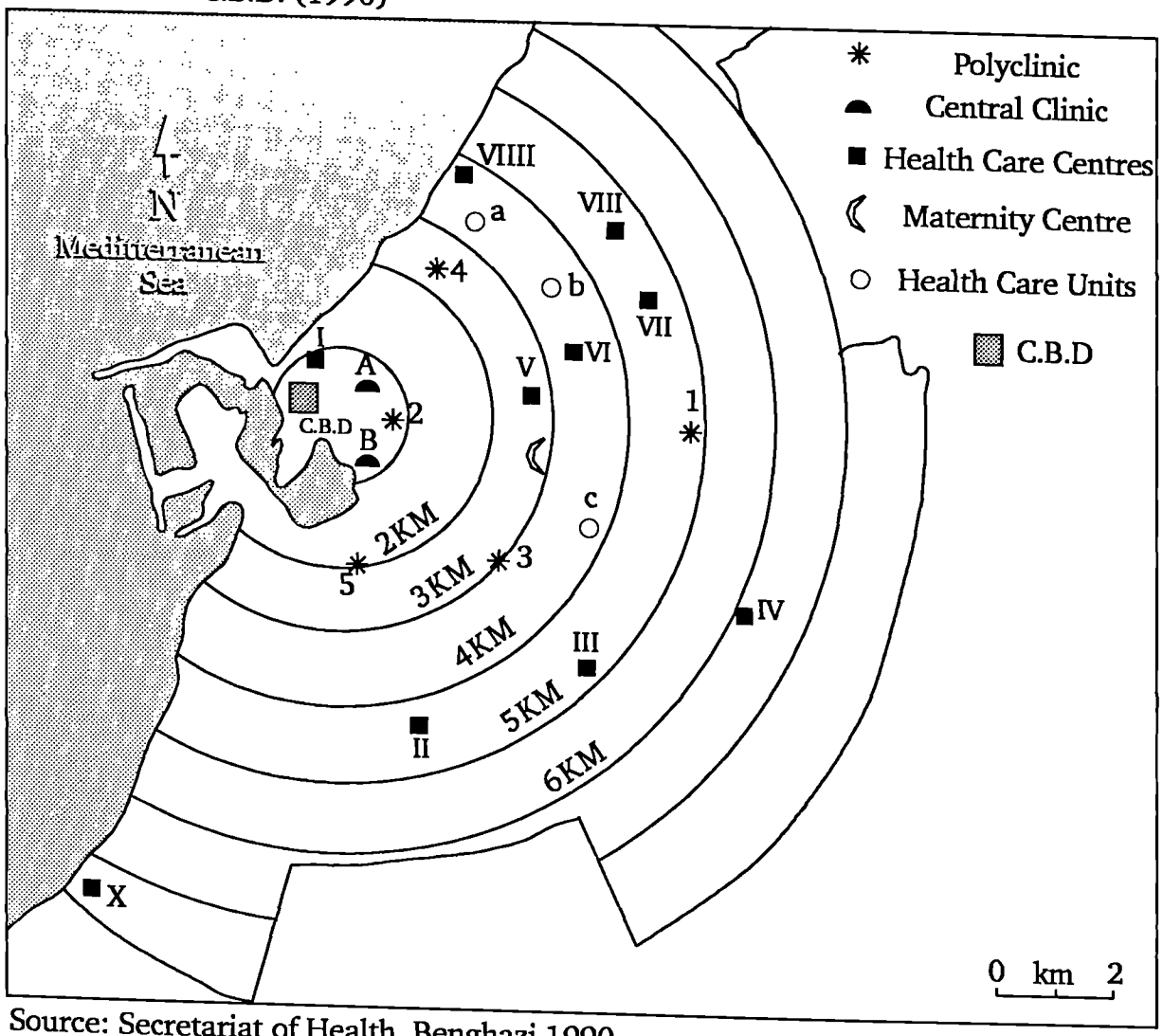
Health care centres form the third level in Benghazi's health care services. Each health care centre is thought to serve at least 5000 people through two periods, morning and afternoon sessions. Benghazi contains 10 health care centres almost equally distributed over the city, as can be seen from Figure 5.6. Each health care centre is required to cover the following services:

(a) Provision of curative services for patients referred from lower health care units.
(b) Taking appropriate measures against cases of endemic and communicable diseases.
(c) Supervision of school health missions in the surrounding schools of each centre.
(d) Organisation of vaccination for both children and adults if required.
(e) Health education.
(f) Surveillance of environmental sanitation.
(g) Supervision of maternity and child care.
(h) Nutritional awareness.
(i) Health supervision of factories and shops located within the sphere of influence of each health care centre.

5.7.3 Polyclinics

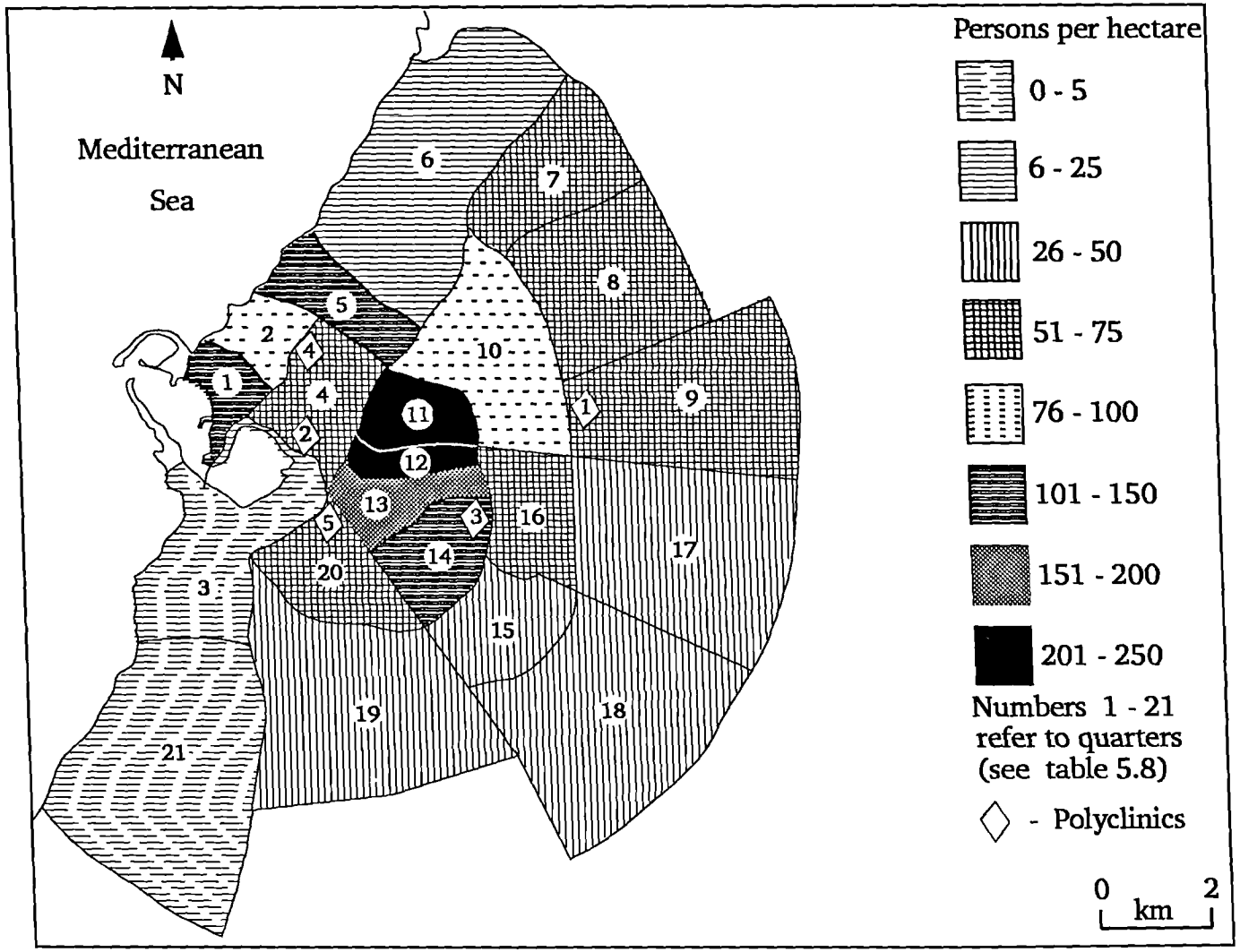
Polyclinics have been recently established in Benghazi in order to provide general medical care, and specialist and 24 hour emergency services on an out–patient basis for a population of approximately 60,000 each. Their essential role is manifested in providing preventive medicine in the form of immunisation against infectious diseases, appropriate treatment of common diseases, prevention and control of locally spread diseases and above all providing continuous curative services for a variety of illnesses. Polyclinics are to be found within a distance of 3 km from the city centre except for Al-Uroba polyclinic, the services of which are similar to a health care centre and are lower than the services offered by other polyclinics. Polyclinics tend to be concentrated close to the city centre, serving at least 40% of the population of the city being also concentrated within the first ring road (Figure 5.6 and Figure 5.7 with Table 5.8).

Fig. 5.6. Isoline Map of Distribution of Benghazi's Major Primary Health Care from the C.B.D. (1990)



Source: Secretariat of Health, Benghazi 1990.

Fig. 5.7 The Distribution of Benghazi's Population According to Quarters , Areas and Densities 1991. Including the Distribution of Polyclinics.



Source: Mansour Al - Kekyah (1991) A project for mapping Benghazi in collaboration with the Secretariat of Justice.

Table 5.8: Distribution of Benghazi's population according to quarters' areas and densities, 1991

Quar. no.	Name of Quar.	Population	Area (hectare)	Person/hectare
1	Al-Bayan 1st	14224	95	150
2	Bernik	6596	78	85
3	Al-Jazeerah	2316	449	5
4	Sidi Hussien	15621	281	56
5	Al-Sabri (West)	18249	165	111
6	Al-Sabri (East)	20322	807	25
7	Al-Salmani	23871	326	73
8	Al-Muhatar	36596	520	70
9	Ali Ben taleb	39646	661	60
10	Al-Salmani (East)	39732	437	91
11	shouhada Al-Salmani	31685	136	233
12	Dawood (North)	19714	90	219
13	Dawood (South)	28566	154	185
14	Khaled Ben Weed	32900	244	135
15	Al-Hadaek	8467	276	31
16	2nd March	19103	266	72
17	Al-Ansar	31536	808	39
18	New Benghazi	23460	900	26
19	Al-Zaytoon	25807	825	31
20	Al-Andalous	17902	242	74
21	Garyounis	4701	882	5
Total	All quarters	461314	8642	53

Source: M Al-Kekyah (1991), A project for mapping Benghazi's population density. Municipality of Benghazi in collaboration with the Secretariat of Justice.

The concentration of such vital health services in a small area close to the city centre has certainly deprived the eastern and southern areas of these services. As a result, the population of the peripheries tend to frequent these polyclinics for obtaining specialised health services which are definitely lacking in the suburbs. Polyclinics embody the second level of the health care hierarchy after hospitals and are the most essential providers of all health care requirements except bed services. The required qualifications and specifications of medical staff who work in a polyclinic, as identified by the Secretariat of Health, are shown in Table 5.9. Many factors have to be considered in proposing plans for polyclinics, including such

aspects as their accessibility, centrality and optimisation to meet the mounting demand for health care services. During the process of rapid urban development in Benghazi, associated with population growth and changes in population structure and characteristics, there has been increasing pressure on existing polyclinics. Regrettably, the previous factors related to urban growth and others were not given special attention in planning policies. For example, the 3–5 km radius suggested for catchment areas by the Secretariat of Health about 20 years ago needs to be re–evaluated as this radius is no longer appropriate for serving the population of the city. In Benghazi four polyclinics are almost equally distributed within 3–5 km of the city centre which leaves a great number of newly built areas in the suburbs without coverage (Figure 5.6).

Table 5.9: The required number of medical staff in each polyclinic

Position	Number of staff
Manager (Specialist in general health	1
Internal disease specialists	2
Pediatricians	5–10
Surgical specialist, general surgery and urologist	3
Gynaecologists and obstetricians	4–6
Specialists in nose,eye and ear	2
X–ray specialist	1
General practitioners	14
Dentists	4
Assistant of pharmacist	7
Medical translator	3
X–ray technicians	5
X–ray developer of films	2
Nurses	38
Midwives	4
Eye–specialists	3
Dermatologists	2
Psychiatric	1
Pharmacists	7
Nursing supervisor	1
Lab. technicians	6
Dental technicians	2
Sterilisation technician	1
Technicians of medical equipments	2
Certified nurses	2

Source: Secretariat of Health, Benghazi, 1992

In theory, each of the five major polyclinics provides services for about 60,000 inhabitants in the city as indicated earlier. This means that they serve only 300,000 inhabitants. The city's population according to the latest census (1988) was estimated at 457,322 persons; in addition, there are people living outside the city limits and illegal immigrants from neighbouring countries. It is obvious then that health care services at polyclinics in Benghazi are not sufficient and need to be studied carefully. In reality about 34% of the population are in urgent need of better access to polyclinics, creating great demand on the existing health care services. Table 5.10 demonstrates the high demand of out–patients of polyclinics in

Benghazi, which varies from month to month and from year to year depending on the circumstances of the health care delivery system as a whole.

Table 5.10: Annual numbers of patients visiting polyclinics in Benghazi (1989–1991)

Name of Polyclinic	1989	1990	1991
1. Al-Uroba	77,311	165,881	258,351
2. Sidi Husien	635,994	660,685	621,641
3. Khaled Ben Al-Waleed	631,630	854,173	333,673
4. Al-Sabri	586,127	471,966	372,450
5. Al-Keesh	373,125	349,138	352,653

Source: The Secretariat of Health in Benghazi, 1992

The fluctuation in numbers of people visiting these polyclinics may be attributed either to the aggravated conditions of these facilities as a result of shortages in medicine and specialists during recent years, or to the new policy adopted by the government after 1989 of permitting private clinics to work side by side with the public health sector.

Although the development of polyclinics as centres for providing health care services in Libya can be traced back to the early 1970s, annual reports by the then Department of Health show that there were very few in operation and that those in existence were unable to offer preventive care. After two and a half decades of neglect of these vital health services, officials at the Secretariat of Health realised their importance and built about 40 polyclinics distributed all over the country, specifically to serve people in the main cities.

5.7.4 Hospitals

Hospitals were known to the Libyan society as early as the Ottoman era though the Italians were the first pioneers in setting up modern hospitals particularly in Tripoli and Benghazi. The first hospital to be built in Benghazi during the

Italian period was the General Hospital, the only public hospital known in the city, which had accommodation for 453 patients. Extension and modernisation of the hospital during the early 1960s was insufficient to cope with growing demand and was restricted just to rehabilitating a few departments such as a surgical section, X–ray unit and the kitchen. Reflecting the miserable conditions of the hospital, Bulugma (1964) indicated that "*the whole hospital is in urgent need of repairs, improvements and some special equipments and hospital furniture.*"

The second but private hospital was the Adventist Hospital, which was primarily built to serve most if not all the foreign community and wealthy Libyans. It was well equipped and run by 2 doctors, 6 female nurses and 2 technicians. Despite its limited capacity of just 50 beds and high costs, it provided free medical treatment once a week for poor people. The other important source of private health care then was the Municipality Hospital which was originally set up as a private clinic by an Italian doctor. The total capacity of hospital beds was about 150, operated by a dentist, an eye doctor, a female doctor and five nuns carrying out the nursing missions as local female nursing staff were very limited. Bulugma in (1964) described it as "*overworked, which makes it more like a public dispensary on a market day in a small market town*". The treatment was mainly restricted to general medicine due to lack of doctors and equipment. However, privately run clinics in Benghazi were very few, not exceeding ten surgeries, were run by government physicians in the evening sessions and were mostly lacking good quality service of specialists. Progress in health provision in the city as well as in the country at large during this period was slow. Primary health care and hospitals began to develop faster in the late 1960s, reaching a peak during the mid 1970s and onwards. During this period, reliable data on the distribution and number of staff employed were readily available.

Hospitals embody the highest level of Benghazi's health care delivery system. All eight hospitals in the city are run and funded by the Secretariat of Health and the system is still expanding. These hospitals are divided into two groups: four general hospitals with a total capacity of 1136 beds, and an additional 1200 hospital beds (central hospital) that should have been opened in 1993 to bring the total number to 2336, and four special hospitals dealing only with particular health problems, catering for a total capacity of 1075 patients. However, due to

the large capacity of the central hospital, the need for expensive equipment and manpower, the opening of the central hospital was delayed indefinitely.

Table 5.11 details the main activities of the hospitals, while Figure 5.8 shows the geographical distribution of these hospitals, which appears to be appropriate for the city's population distribution. The psychiatric and chest hospitals are not displayed in Figure 5.8 because both of them are located outside the city borders. As stressed elsewhere, hospitals are not bound to any restrictive catchment areas, hence patients frequenting health care centres are free to attend any hospital of their own choice if further treatment is required. Nevertheless, the four specialist hospitals do have some kind of restriction on patients seeking general health care.

It should be realised, however, that all eight hospitals in Benghazi provide services not only to the population of the city, but also to the whole eastern region of the country. The popularity of Benghazi's hospitals probably reflects a local belief that they have both better services and more highly qualified physicians than do the local hospitals.

Figure 5.8 shows the predicted locations of two new hospitals; one for eye–surgery and the second for bone surgery and accidents. It is hoped, however, that when the proposed hospitals are completed, the ratio of population to beds, and to staff will improve to match, at least in quantitative terms, the advanced countries. Yet, it is recognised that some problems such as shortages of specialist staff and a lack of highly sophisticated, expensive technological equipment will remain unsolved.

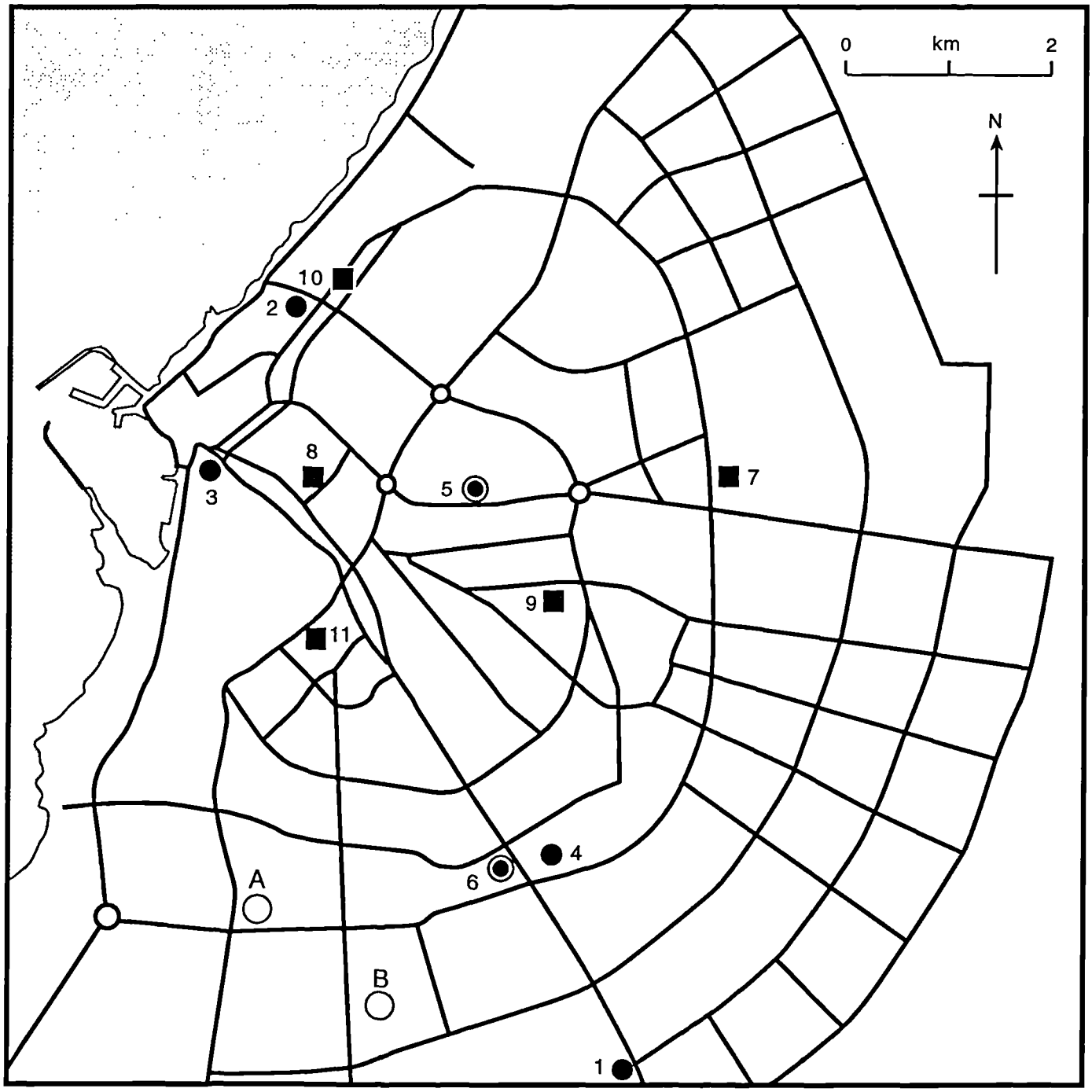
Table 5.11: Hospital activities in Benghazi in 1991

Name of hospital	No. of beds	No. of outpatients	Entry cases	Discharge cases		Death rate%	Bed occup.%	Bed circulation*
				Deaths	total			
Al–Jamahyria	433	22670	27022	15	27007	0.06	47	57
Al–Jalaa	400	429720	13697	339	13358	2.5	70	34
Al–Fateh	200	10994	5432	319	5113	1.6	85	29
7th April	488	18185	10432	529	10003	5.06	86	21
7th October	132	3204	3862	85	3777	2.4	79	26

* Bed circulation means: the average time in days spent in bed between the date of patient's entry into hospital and final discharge through one year.

Source: The Secretariat of Health in Benghazi, 1992.

Fig. 5.8 The distribution of Government Hospitals and Polyclinics in Benghazi



Source : The Secretariat of Health, Benghazi and based on field study in 1992

● General Hospitals
1 7th April
2 Al-Jamahyria
3 7th October
4 New Hospital

◉ Specialist Hospitals
5 Al-Jalaa
6 Al-Fateh

○ Proposed Hospitals
A Eye - surgery
B Bone - surgery and accidents

■ Polyclinics
7 Al-Uroba
8 Sidi Husien
9 Khaled Ben Al-Waleed
10 Al-Sabri
11 Al-Keesh

5.8 Summary and Conclusion

In this chapter an attempt has been made to outline the main features of the Libyan health care delivery system in general and the growth of the primary health care system in particular. It was realised from the beginning that in order to gain better uptake of health care services and use in any specific geographic area (here, Benghazi city), the context of the overall national health care delivery system should be examined. Health care delivery in Libya is mainly provided by the government and is still undergoing continuous expansion, improvement and adjustment. The government recognised that in order to ensure equal opportunities and access, and free–of–charge care to every citizen in the country, direct control in terms of planning, organisation and distribution has to be the responsibility of the Secretariat of Health. Therefore, throughout the last four decades or since independence in 1951, the public sector in Libya has furnished the greatest momentum in funding and delivery of health care. However, in spite of achieving tremendous success over this period, health status levels in the country as a whole have not yet reached the required target that should make them comparable with the developed world. Consequently, pockets of deprivation are still to be found among certain groups of the population. It is true then that equality in health care delivery is a difficult concept, being easier to legislate than to achieve. In the field of health care, it is suggested that changes should be introduced whenever necessary in order to improve service distribution, quality and effective utilisation. This can be attributed to the fact that no health care system is ever accepted completely as an ideal identity. It is unlikely that there is a unique way of organising health care services to be consistent with the changing pattern at the community level: both in terms of health infirmity and health needs that people can afford within the available resources (White 1977). Indeed health status levels are not only a function of the integrated structure of health services but also of education, occupation, income, formal and informal support systems and culturally determined values, all of which are visible in Benghazi's health care delivery system. Health care authorities should not confine themselves to focussing on health care *per se* at the risk of ignoring other important and relevant factors that affect health. Since diseases and sicknesses are a result of behavioural and/or biological responses to genetic and/or environmental factors (Phillips and Verhasselt 1994, and Bentham 1994), the health authorities' main concern should be disease prevention rather than the

quality of health services solely to cure their consequences. These aims can be met, at least in part, by adopting effective measures for modifying environmental factors and/or changing human behaviour in order to be able to minimise their harmful effects on health. Relatively little thought has been given to such crucial matters and how health policy might be adapted to respond to them effectively. The lack of a reliable health information system both locally and nationally has acted as a barrier towards effective health planning and achieving appropriate health care delivery systems all over the country. The absence of such an important system has made it extremely difficult to achieve the objectives of the health planning approach, which revolve around improving accessibility, quality, availability and proper locations of health care facilities and manpower (Gish 1977).

The new philosophy of PHC suggested by the advocate of health planning at the grass–roots level (communities) appears to be promising in solving the preceding problems (Rifkin 1985). Medical breakthroughs should be articulated into a health care delivery system that assigns resources according to community and individual needs. Although the new approach of using simplified techniques and making health care more accessible to the masses has been widely spread all over the country, it has not been as diffused as might have been hoped. Simply spending enormous amounts of money on a health care delivery system without resorting to genuine efforts to improve other crucial and relevant factors as mentioned above may end in failure. It would be foolhardly indeed to expand or even to continue to present patterns of health care without considering a broad range of variables that interact collectively or individually to affect the health status of a great number of the Libyan population. Health services should be developed in accordance with the health problems of each community and the possibility of an effective intervention to serve those who are in desperate need. The author's experience of Benghazi's health care delivery system (living in the city since the early 1960s) draws attention to the accumulating body of evidence that much of the resources spent on health care in the city did more harm than good. The flourishing economic situation during the early 1980s, by the virtue of high oil prices, has certainly allowed for a massive expansion and improvement of spending on health care and other social welfare services. But unfortunately the economic conditions have dramatically worsened in recent years. In Libya's present economic constraints and with competition from other political priorities, there is a very poor chance in the near

future of the government satisfying public aspirations. Thus the State has already introduced austerity measures as part of a programme designed to limit full dependence on State support. The State undertook considerable efforts to balance its interests in fostering fiscal austerity and its commitment to finance basic social programmes. In the light of sluggish oil revenues, the adverse economic climate throughout the late 1980s has until now acted as a marked barrier to social development, particularly in terms of the health sector, slowing down the progress that has been made in earlier decades. Thus it seems that health care development is the most important factor influencing social development, as expressed by Ramalingswami (1993:103) in the following words:

> Good health, since it enables people to lead socially and economically productive lives, is both a major end product of development as well as a positive force driving development. Investments in health yield high social returns, which unlike investments in capital structures are long lasting and may even have an inter-generational effect.

But high spending on health care provision and services within a tight public sector budget appears to be no longer feasible, which certainly will lead to lowering social security benefits and minimising the role of the State in financing medical care. This implicitly entails a collective responsibility on the part of each citizen in society at large to take proper care of his or her own health so that others can effectively help in turn to keep him or her healthy.

What has been observed in this chapter is a tendency for high utilisation rates of outpatient services provided at governmental institutions. Focusing on Benghazi's public health care facilities, it has been shown to be a well-favoured area for health care facilities, where rates of use have proven to be well above the national level. The high utilisation rates demonstrate that urban patients no longer rely on the hospital outpatient clinics for all their primary care as was the case in the past. Health care services during the 1980s became more available (facilities and manpower) and more accessible in terms of proximity and free-of-charge care for most of the population. However, when the number of visits to different health care facilities was examined, it was clear that the most frequented services were generally the polyclinics, with an average of at least 387,754 visits in 1991. The increase in the awareness of, and desire to use, modern medical care led to outpatient departments of the governmental health hospitals coming

under high pressure during the 1970s and early 1980s. Meanwhile, the existence of hospital outpatient clinics to which people can mostly go without a referral, have substantially minimised the excessive use of the city's PHC services. Thus the city embraces a dual system of PHC, both sections of which appear to be exposed to an enormous pressure.

Chapter VI

Help–seeking behaviour and satisfaction with services among users of five public polyclinics in Benghazi's urban area: An Institutionally–based Study

6.1 Methodology

Introduction

An understanding of the local health care delivery system of polyclinics in Benghazi has become increasingly necessary because of its importance as the point of entry into the public medical care system in the city. Since most of the population of Benghazi receive the services of polyclinics not far from the quarters where they live, we would assume firstly, that the majority of people are served by services of adjacent polyclinics and would want this situation to be maintained, and secondly, that the potential development of new polyclinics should follow the same pattern, especially in the deprived areas of the outskirts of the city. Therefore, this chapter is devoted to examining the current conditions and help–seeking behaviour of frequent users of five polyclinics located in different areas of the city. The major objective is to give a clear and comprehensive picture of the quantity and quality of services available at these clinics, derived principally from the opinions and viewpoints of their use by various groups of the population. A full detailed study of the demographic and socio–economic background of 250 users of these polyclinics is analysed in an attempt to assess their experiences and attitudes as eligible patients. Although each polyclinic has an officially designated catchment area, users are allowed to attend any facility in the city, regardless of distance from the place of residence, for a nominal fee for medicine. The present study will test the logical assumption that is usually posed by health care planners and geographers, that is, the potential users will manifest a reasonable spatial behaviour and use the nearest polyclinic which provides a service (Bailey and Phillips, 1990). The following defined aims and objectives are designed to act as a basis for further planning schemes, management and promising developments in the health care

sector, consistent with the pursuit of the concepts of "Health For All by 2000". These goals as ideally perceived by Husein *et al.* (1993) dictate that the health care delivery system must be "*(1) universal and provide care according to need; (2) effective and affordable; (3) community oriented; (4) promotive, preventive, curative and rehabilitative.*" In view of the above, the first section of this chapter focuses on the aims and objectives, data collection, selection of samples and the questionnaire design. The second part concentrates on the socio–economic background of the users of five polyclinics in Benghazi. Socio–economic data related to occupation, household size, marital status, housing, education and income are examined. The third section deals with matters such as age and sex distribution of patients, their geographic distribution, nature and types of current sickness reported and the average duration of sickness. The influence of distance, transport and accessibility on the use of polyclinics' services in Benghazi are also investigated. The last part of this chapter is orchestrated to examine patients' attitudes and satisfaction with the services provided by the polyclinics along with patients' attitudes towards self–medication and folk medicine.

6.1.1 Aims and objectives

The central aim of carrying out a facility–based survey was mainly to examine factors related to accessibility, characteristics of patients' help–seeking behaviour, and the frequency of polyclinics' use as well as satisfaction with care. It was realised from the outset that in order to offset the lack of research into these crucial matters, the author would have to administer an outpatient polyclinic survey to a selected sample of users in the city of Benghazi to obtain the following information:

(a) a clear picture of service provision from the viewpoint of access, use and satisfaction with services;
(b) individual and household profiles (demographic, socioeconomic and morbidity factors);
(c) the outcome of treatment in terms of the frequency of utilisation and the perception of care;
(d) the extent to which these services are used by the neighbouring residents (catchment areas).

Therefore, evaluation of medical care and consumer use at this level (polyclinic) is an important element of PHC analysis and the continuity of care at higher levels of specialisation.

6.1.2 Data collection

In order to fulfill the objectives of this research two different surveys needed to be undertaken; an institutionally–based survey and a household interview survey. As the target samples of both surveys were large and scattered all over the city and required to be surveyed within a limited period of time, not exceeding three months (due to difficulties with British visas), there was no alternative but to seek assistance in collecting the questionnaires, particularly when it is appreciated that no funds were provided to hire interviewers. The author obtained various offers from numerous volunteer students from the Geography Department and Sociology Department, at the Faculty of Arts and Education, University of Garyounis. Thus, out of 30 students at different levels, 12 students (six males and six females) were selected to conduct the polyclinics' survey. All of these students were in their final year or were post–graduates registered in one of the departments mentioned above. Selection of interviewers was based mainly on two criteria: firstly, they must have, at least once, conducted an interview survey so that they could be easily trained to carry out this mission accurately and successfully. Secondly, they should be natives of Benghazi and preferably be from the same communities in which the survey was to be carried out, so that respondents would trust them and hence cooperate with them effectively. It was also realised that local people would be better able to explain the nature and aims of the study, its requirements, benefits and the way it had to be conducted. Prior to this, the author had paved the way by visiting the selected health care facilities and handing over an official letter from the Secretariat of Health about the agreement for conducting the study. This letter, besides giving an official status to the survey, demonstrated the researcher's name, the objectives of the study and most importantly urged those who were relevant to cooperate.

The researcher made great efforts to ensure that as little inconvenience as possible was caused by the study's activities to the daily routine work of institutions. Such efforts were made not only to avoid causing disturbance to the staff

and patients but also to allow the routine work of these institutions to go on.

At the end of every working day and during break time hours, completed questionnaire forms were checked for any apparent mistakes or missing information. Inconsistent and unreliable forms were disregarded without replacement. After the survey was finished, 250 completed questionnaire forms were collected and were found valid and reliable for the purpose of this study.

6.1.3 Selection of Samples

A representative sample of 250 users from five polyclinics in Benghazi was selected to be interviewed. The aim was to investigate whether the patterns of attendance were influenced by variables like proximity, income, age and personal mobility. These variables and others documented in the literature were found to have great influence on service attendance patterns. On the basis of routine statistics and records obtained from the polyclinics' administrators, an estimate of the daily attendance was made using figures for 1991. It was decided that a randomly chosen sample of 4% of the daily attendance of five selected polyclinics, giving approximately 250 people, would be sufficient to fulfill the objectives of this study. From the pretest investigation visit mentioned earlier, the author noticed little variation from one week to another or from one month to another concerning the frequency of patients to outpatient polyclinics. However, slight differences were noticed from day to day along with fluctuations in the number of users coming from different distances within any working day.

The survey was carried out over a continuous six day period in each polyclinic, on a 12–hour rota basis, 8 am to 8 pm (excluding Friday, the official holiday for the country). The spread of interviews over most days of the week was deliberately made to reflect the different patterns of behaviour in a weekly cycle. The author originally intended to use a systematic sampling technique for selecting the sample including every fifth or sixth patient with a random starting point at each polyclinic. This option was ruled out because it could have been difficult in such large health institutions frequented by quite a sizeable population. In these institutions sudden spates of users may have built up to such an extent that the administrative personnel could not maintain control and thus conducting a systematic sample would have become impossible. A proper systematic sample would

require pre–made lists of patients from which one can select the needed sample. These lists are not readily available. Accordingly, it was sensible and wise to adopt a selected quota as implemented in a similar area, Saudi Arabia (Al-Ribdi 1990) rather than a systematic sample of patients.

A structured questionnaire was administered to each selected patient for twenty minutes. In order to gain their confidence, patients were informed that the interviewer was an independent researcher who had nothing to do with the government. Oral answers to the questionnaire were taken to enable most of the people (illiterate or otherwise) to cooperate in answering. The importance of oral interview not only lay in providing accurate data and a higher response rate, but also in helping to explain any misunderstanding of the questions posed, for those who were unfamiliar with the material or spoke in a different accent. Since this part of the study is mainly concerned with the users themselves it was thought reasonable to contact them at polyclinics rather than at their homes. In so doing, the patients were immediately interviewed after being seen by doctors so that they could better express their opinion on the service received.

The interview team met on July 30, 1992 at the University of Garyounis and went to the first health polyclinics to be surveyed, Al–keesh and Khaled ben Al–waleed. The first group of interviewers, which consisted of three females and three males, was supervised by the author, while the second similar group was escorted by Mr Mohamed Mersal (Lecturer in the Department of Geography). Thus, the first interviews took place simultaneously in the two institutions at 9 am promptly on that day. The starting place was the point of patients' entry to the institution. When patients arrive at a polyclinic, they usually report to a counter, where they obtain an entry ticket from a clerk to enable them to see a doctor. This site was thought to be the best for controlling the patient flow and for obtaining a proper sampling coverage. For those who were willing to be interviewed, each interview took between twenty and forty minutes, depending on the education and understanding of the person questioned.

The spread of the sample over 12 hours a day meant that the investigator and his assistants had to stay in the health polyclinic from 8 am to 8 pm every day until a sample of 50 patients had been interviewed.

6.1.4 The Questionnaire

The questionnaire was designed to be short and simple so that a sizeable number of different segments of the population could answer it easily. It was realised that simple oral answers to a written questionnaire would certainly fulfill the stated objectives of providing valuable information in an area (Libya) which has only recently experienced social and spatial analysis research. As information on individuals or groups of people is seldom available in official documents in the developing countries, surveys are considered by many as the best way to obtain such data. The significance of surveys in developing countries was clearly demonstrated by Timaeus *et al.*, (1988:359) as follows:

> Surveys can contribute to the improvement of national health information systems by providing person–based, rather than episode–based, measures related to health that apply to the entire population. A programme of health interview surveys would be used to ascertain patterns of morbidity and mortality, to measure access to and use of health services and to develop and disseminate methodologies for collecting and analysing health related data.

As an exploratory study, the questionnaire interview was divided into two main parts. The first part was meant for the collection of data on accessibility, morbidity and satisfaction factors. The second was designed for the collection of general administrative information, socio–demographic, and socio–economic status, and family as well as housing environment. The second part was deliberately postponed to the final part of the questionnaire lest the respondents did not wish to respond at the early stages of the interviews to critical questions seeking very detailed information on their personal and socio–economic life. Part two of the questionnaire contained an important question regarding the address of each attendant. In case the patient was a traveller or otherwise, the place from where he or she came was recorded. Addresses were essential elements in this study for determining the distance travelled by users. The questionnaire was designed and written in English as shown in Appendix A, but it was carefully translated into Arabic without losing the meaning of its English version.

6.2 The Socio–economic background of the polyclinic users

6.2.1 Occupation

The occupations of 250 patients who utilise polyclinics' services in Benghazi are displayed in Table 6.1. Differences in employment are remarkably clear between the sexes: government work schemes were the greatest source of employment for men (20.8%) but less for women (6.4%). Approximately 52.4% of the sample were students or housewives, who are very high utilisers of health care services in comparison with other categories of occupation. Indeed, these two dependent categories utilise health care facilities of polyclinics more than twice as frequently as government employees; 2.6 times all other occupational categories apart from government staff.

Table 6.1: The distribution of patients frequenting Benghazi's polyclinics according to occupation and sex

Occupation	Sex		
	Male	Female	Total
Government officials	52 (45.2)	16 (11.9)	68 (27.2)
Businessman	5 (4.4)	0 (0.00)	5 (2.0)
Worker	14 (12.2)	3 (2.2)	17 (6.8)
Student	20 (17.4)	22 (16.3)	42 (16.8)
Unemployed	1 (0.9)	2 (1.5)	3 (1.2)
Retired	8 (7.0)	1 (0.7)	9 (3.6)
Housewife	0 (0.00)	89 (65.9)	89 (35.6)
Merchant	6 (5.2)	0 (0.00)	6 (2.4)
Others	9 (7.8)	2 (1.5)	11 (4.4)
Total	115 (100)	135 (100)	250 (100)
DF=(8)	$\chi^2 = 135.7730$		$p > 0.001$

Source: Field study conducted by author, 1992

6.2.2 Household size

The average household size of the users of polyclinics was put at 8 persons with 74.4% of households having between four and nine people. The distribution of users' households according to the number of people per household is presented in Table 6.2.

Table 6.2: The distribution of patients visiting Benghazi's polyclinics according to household size

Household size	No. of households	Percent
< 4	36	14.40
4–6	66	26.40
7–9	84	33.60
10–13	54	21.60
14–26	10	4.00
Total	250	100.00

Source: Field study coducted by author in 1992

Patients from large households, on average 7 persons and more, amounted to 59.2% and the remaining 40.8% were from small or medium size households. This indicates that users' households were larger and relatively older than comparable households reported in the city in the 1984 census, suggesting the existence of large extended families requiring more health care facilities.

6.2.3 Marital Status

Approximately 56% of the patients interviewed were married. Of the total sample almost one–third (31.2%) were married females and more than a quarter (25.2%) were married males. Of the total sample 38.4% were single; 20.4% were single males and 18% were single females. The few remaining (5.2%) were divided between divorced and widowed. The population of frequent users was mainly

females, young and aged less than 36 years (67%). As can be seen from Table 6.3, the total female users are greater than male users as expected, (135) 54% and (115) 46% respectively. The overall difference between the two sexes is statistically significant (P=0.021, Table 6.3). It is also worth stressing that most users of polyclinics are Libyans (91.6%) and the remainder are from other nationalities, mainly Arab countries.

Table 6.3: The distribution of users of polyclinics in Benghazi according to marital status and sex

Marital status	Sex		
	Male	Female	Total
Married	63 (54.8)	78 (57.8)	141 (56.4)
Single	51 (44.4)	45 (33.3)	96 (38.4)
Divorced	0 (0.00)	1 (0.7)	1 (0.4)
Widow/er	1 (0.9)	11 (8.2)	12 (4.8)
Total	115 (100)	135 (100)	250 (100)
DF=(3)	$\chi^2 = 9.7666$		P = 0.021

Source: Field study carried out by author, 1992

6.2.4 Housing

As regards types of housing, survey findings revealed that about 76.4% of the interviewed patients were living in owner occupied houses, while the rest were residing in rented houses or houses given by the government. The majority of users were found to live in modern Arab houses (45.4), which are less expensive than villas. The second most frequent category of dwelling was flats (34%); followed by villas (12%) and traditional houses (8%) (Table 6.4). Most of the homes were found to be built from modern materials and 92% contain at least three rooms. Most importantly, more than two thirds (68.4%) of the users' houses were built recently, after 1960, confirming the oil impact of attracting immigrants from rural

areas and other neighbouring countries in search of employment and better life in urban areas.

Table 6.4: The distribution of users of polyclinics in Benghazi according to type of dwelling

Type of housing	Frequency	Percent	Cum. frequency
Flat	85	34.00	34.00
Villa	31	12.40	46.00
Traditional Arab house	20	8.20	54.40
Modern Arab house	113	45.20	99.60
Others	1	0.40	100.00
Total	250	100.00	100.00

Source: Field study carried out by author, 1992

6.2.5 Education

A spate of world wide data have shown some tendency toward higher use of health care facilities by better educated groups in society (Benyousef and Wessen 1974, Caldwell 1993). The educated, who are supposedly the high wage earners, tend to gain more economic benefits from good and better health care systems than the less educated. As experience has shown (Caldwell 1993), better educated people are more likely to use private health care services. Examination of the patterns of polyclinics' use (Table 6.5) reveals that the highest groups were those who had received secondary education (22%); followed by preparatory education (21.2%); illiterate groups (20.8%) and university educated (10%). The high ratio of illiteracy contrasts with the household survey results of 9.2% (Chapter 7). This difference can probably be explained by the fact that most of the users were either mothers or adults over 35 years of age. This group has suffered from a lack of or limited facilities for formal education in the past. Therefore, the low level of literacy of old and middle age groups was an extension of the policy adopted during the Italian occupation, when the Italians ignored educating the Libyan nationals

in toto. Yet, the illiteracy rate was higher among females than among males. As in most other countries, women show higher rates of polyclinics' use than do men particularly in the middle and upper age groups. This study has revealed that women, especially mothers, utilise health care services of polyclinics more frequently than do men. Where public health care facilities are available, people usually prefer them to indigenous medicine and private care.

Table 6.5: The distribution of patients using polyclinics' services in Benghazi according to their level of education and sex

Education	Sex		
	Male	Female	Total
Illiterate	17 (14.8)	35 (25.9)	52 (20.8)
Primary	17 (14.8)	26 (19.3)	43 (17.2)
Preparatory	25 (21.7)	28 (20.7)	53 (21.2)
Secondary	30 (26.1)	27 (20.0)	57 (22.8)
University	16 (13.9)	9 (6.7)	25 (10.0)
Others	8 (7.0)	8 (6.0)	16 (6.4)
Not applicable	2 (1.7)	2 (1.5)	4 (1.6)
Total	115 (100)	135 (100)	250 (100)
DF=(6)	$\chi^2 = 8.8589$		P = 0.182

Source: Field study carried out by author, 1992

6.2.6 Income

While theoretically a positive impact of income on the demand for private health and medical services might be expected, the results shown in Table 6.6 did not prove to be statistically significant (P=0.360); probably because the number of rich patients was not well-represented in this sample, or they may have selected other more expensive and different health care facilities. However, out of 129 patients, approximately three quarters (74.4%) indicated that the most common

reason for not using private care was the high costs. The magnitude of the high costs of private clinics is varied; for those on low incomes, high charges act as a great barrier for the initial visit, while the greatest effect for those earning middle incomes, was on follow–up visits and medication.

The average monthly income of the users of polyclinics is shown in Table 6.6. About 44.8% receive less than 200 Libyan dinars, while 42.4% obtain a monthly income ranging between 200 and less than 400 Libyan dinars. Only 6% receive an income equal to or higher than 400 Libyan dinars. Most of the figures mentioned above by respondents do not cover the high costs required for private hospitalization. For instance, the cost of three days in a private clinic in Benghazi may exceed 250 Libyan dinars or about £500. This is consistent with the idea that income has a positive effect on the demand for good health and thus good medical care. Conversely, low income may act as a barrier to obtaining private medical care in the study environment.

Table 6.6: The relationship between patients' monthly income and preference of private care

Income	Preference of Private clinics		
	Yes	No	Total
< 200 Libyan dinar	53 (44.2)	59 (45.4)	112 (44.8)
200–399 Libyan dinar	51 (42.5)	55 (42.2)	106 (42.4)
≥ 400 Libyan dinar	10 (8.3)	5 (3.9)	15 (6.0)
Not applicable	6 (5.0)	11 (8.5)	17 (6.8)
Total	120 (100.0)	130 (100.0)	250 (100.0)
DF=(3)	$\chi^2 = 3.2148$		P = 0.360

Source: Field study carried out by author, 1992

The gradient of polyclinics' use in this study is shown to be associated with income, in the sense that as income increased, the use will decrease and vice versa (Table 6.6). Those with high income prefer private clinics to the services of

the polyclinics. This study has revealed that the few rich people in the sample population are relatively more selective of the services they seek and use quicker modes of transport than do the low and middle income groups.

6.3 Use of folk medicine and self–medication

When patients were questioned about their belief in folk medicine almost three quarters (72%) mentioned that they did not make use of such services, while the remainder (28%) answered positively, indicating that they had frequented herb specialists for seeking prescriptions or advice for self–medication. Self health care, which includes self–medication, has grown greatly in the developing countries over the last two decades. Studies in some developing nations have reported high rates of self–medication among adults, ranging between 50% and 80% for sickness episodes (Collins and Klein 1980). An objective of the present study was to collect basic information about the prevalence of self–medication among the polyclinics' users and their level of education, and was found that self–medication is still practised, even where health care facilities are adequately available and accessible. Self–medication among patients of polyclinics in Benghazi was relatively common with a rate of 30.4%; 81.6% of those practicing self–medication were literate and 18.4% were illiterate (Table 6.7).

Table 6.7: Level of literacy and the practice of self–medication

Education	Self–medication before seeking help		
	Yes	No	Total
Illiterate	14 (18.4)	38 (21.8)	52 (20.8)
Literate	62 (81.6)	136 (78.2)	198 (79.2)
Total	76 (100)	174 (100)	250 (100)
D.F(6)	$\chi^2 = 9.2264$		P = 0.161

Source: Field study conducted by author, 1992

6.4 Age and sex distribution of patients

The age and sex structure of the sample has proved to be similar to that of the country as a whole and to the results of other studies like Abudejaja *et al.,* (1987) except that the proportion of children under 16 years of age was much smaller (Table 6.8). The proportion of adults 16–25 years of age is the highest, forming about 38% of the sample. Of this 43.2% were males and 56.8% were females. As regards the middle–aged group of 36–45 years, it was found that the proportion of both sexes was 14%, with more females (10%) than males (4%). The high proportion of adults 16–45 is mainly made up of mothers frequenting health care services for ante–natal and post–natal care. Contrary to the previous pattern of female domination, the proportion of patients in the group of 46–65 years of age was 17.6%, of which 12% were males. The overall difference between age and sex was statistically significant (P=0.020, Table 6.8). The low ratio of elderly people (>65) in the sample population–just 1.2%–is in line with Caldwell's (1986) analysis of life expectancy for Libyans of 64 years. In a more recent study, Caldwell (1993) emphasised that life expectancy is not necessarily associated positively with per capita income. For instance, Sri Lanka and China with per capita incomes in the U.S $330–420 range, have life expectancies of between 70 and 71 years, where Libya and Saudi Arabia have life expectancies of 61–64 years although their per capita income is as much as ten times those of the former countries (Figure 6.1). The World Development Report of 1988 indicated that Sri Lanka in Particular spent 1.7% of its GNP or $7 per head on health and provided one doctor per 5520 persons to achieve a life expectancy of 71 years, while Libya spent about $150 per head and achieved one doctor per 706 inhabitants, reaching a life expectancy level ten years lower than Sri Lanka. The impressive high level of life expectancy of Sri Lanka and China, despite their low per capita incomes is by no means attributed to several factors, probably the most voiced one is the commitment of their countries towards improving social welfare services.

Accordingly Caldwell (1993) indicated that achieving high standards of life expectancy not only ascribed to technologically most advanced health care systems, but also to the democratic systems that provide free or cheap health services close to where people live. Above all, special emphasis should be placed on comprehensive health care programmes with citizen participation and promotion of education,

particularly female teaching (during the maternal age) and family planning. Other factors such as improved density of doctors, nutritional levels and high per capita incomes, though important, were not as essential for extending high levels of life expectancy as development of health, education and family planning. This may lead us to accept Phillips and Verhasselt's interpretation that the relative success of China, Sri Lanka and other low income countries, is not necessarily associated with high improvement of health sector *per se*, but attributed to other factors such as high standard of education, particularly among mothers, family planning and

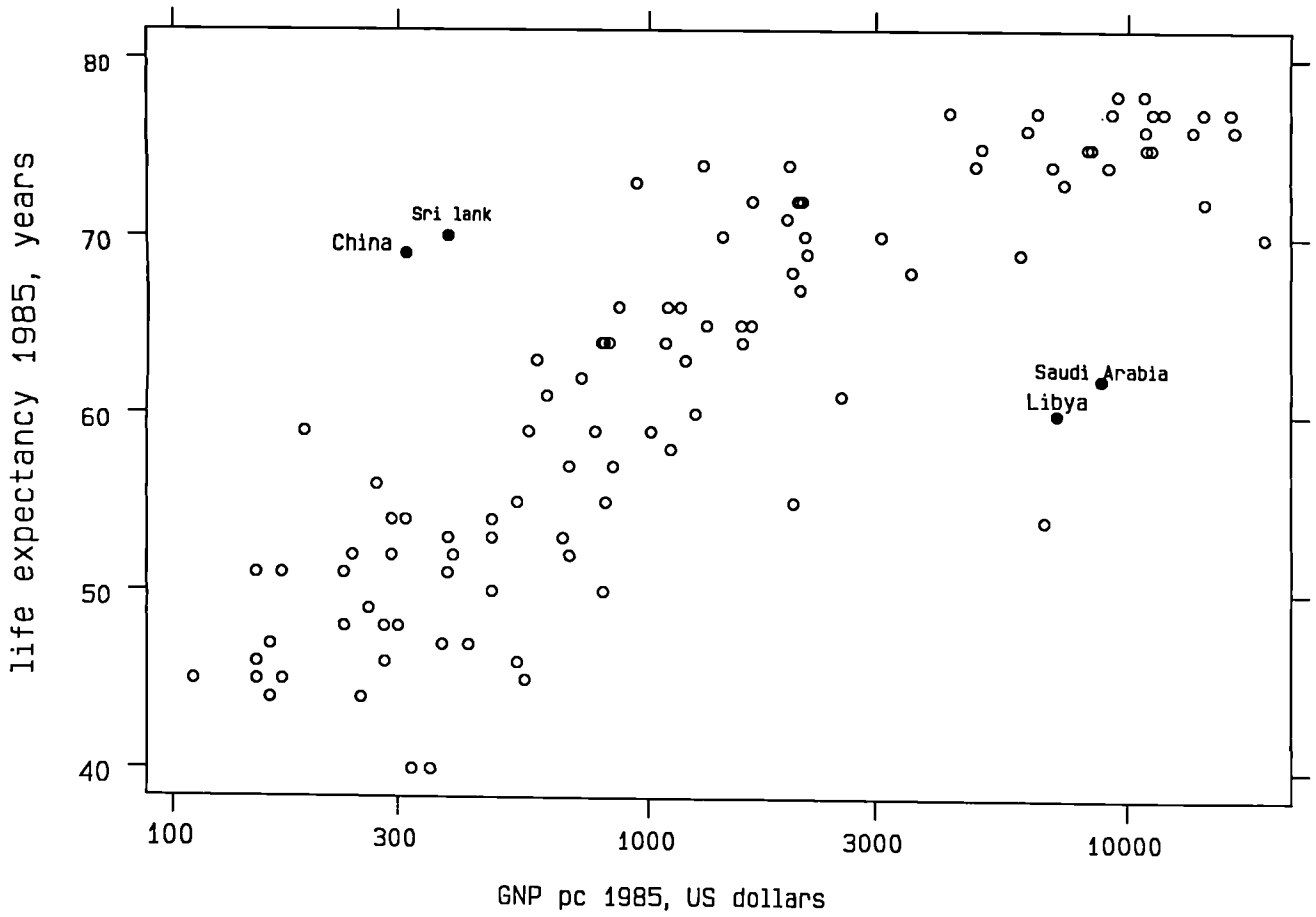
Table 6.8: The distribution of patients according to their age and sex

Age in years	Sex		
	Male	Female	Total
< 16	8 (7)	7 (6.2)	15 (6)
16–25	41 (35.7)	54 (40)	95 (38)
26–35	24 (20.9)	34 (25.2)	58 (23.2)
36–45	10 (8.7)	25 (18.5)	35 (14)
46–55	18 (15.7)	7 (5.2)	25 (10)
56–65	12 (10.4)	7 (5.2)	19 (7.6)
> 65	2 (1.7)	1 (0.7)	3 (1.2)
Total	115 (100)	135 (100)	250 (100)
Df=(6)	$\chi^2 = 14.9833$		P < 0.020

Source: Field study carried out by author, 1992

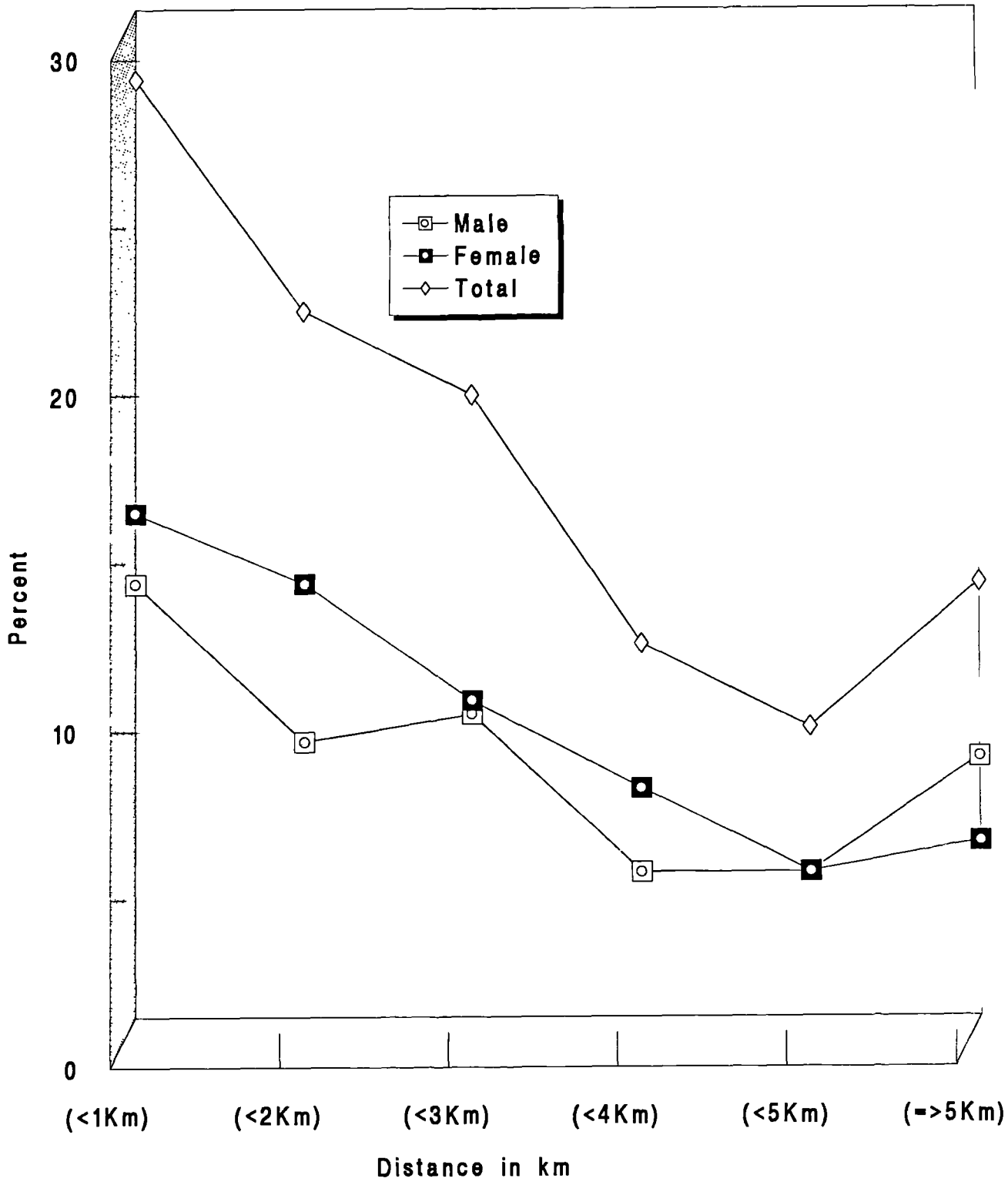
improvement of nutrition levels. Thus, the epidemiological standard of China and Sri Lanka has remained outstandingly exceptional, largely due to rational policies of their States embodied in high standard of social welfare.

Fig. 6.1 Life expectancy and GNP per capita



Source: World Development Report 1987

Fig. 6.2 Distribution of polyclinics' patients according to their sex and vector distance from their residence



6.5 Geographic distribution of patients

Figure 6.2 shows the percentage of polyclinics' users by sex and vector distance from their residence. For patients living within 5 km of the polyclinics there was a marked preponderance of females over males, while after that distance the males are more dominant. In this chapter, it is concluded that female patients had a tendency to choose a doctor of their own sex. Since there are not always women doctors available, it would therefore seem likely that a high ratio of female patients would seek other health care providers not necessarily close to their homes. This would result in an increase in the workload of the female doctor and in the movement of women seeking this facility. Generally speaking, however, no significant differences were found in distances to polyclinics by users of different sexes and in different age groups (P=0.505; P=0.515 respectively).

Table 6.9: Summary of vector distance in metres between Patients' places of residence and polyclinics attended

Polyclinic	Summary of distance		
	Mean	Std. Dev.	Frequency
Al-uroba	1884	793	43
Sidi hussein	3422	1828	45
Khaled ben waleed	2479	1611	48
Al-sabri	3438	1486	48
Al-keesh	3204	2041	49
Total	2901	1715	233*

*17 values were missing

Source : Field study carried out by author, 1992

Table 6.9 displays the mean and standard deviation of the vector distance measured in metres between the user's place of residence and the five polyclinics in Benghazi. As estimation of distance between place of residence and the closest polyclinic used was questionable due to poor perception of the extent of distance

by respondents, the author has used another way of recording street addresses; thereby measurement of distance to the nearest polyclinic can be easily performed. Therefore, distance in metres from place of residence to the frequented polyclinic was determined by measuring the approximate vector distance between place of habitation and that health care facility. Distance was computed by converting centimetres or fractions thereof derived from a large scale map. This method approximates only the actual metres involved and more importantly assumes that all people would follow the same expected route. This process, of course, has its limitation as it does not take into consideration the various roads that may be used out of preference or habit, or the fact that some people may not be interested in the visited polyclinic but prefer other and more distant clinics. The outcome of this process has revealed that about half (48.9%) of the patients were coming from areas within a distance of 2 km; 18.5% between 2 and less than 3 km; and 19.7% between 3 and less than 5 km. Patients who travelled 5 km or more comprised 12.9% of polyclinics' attendants. Figure 6.3 demonstrates the steady decline in the number of respondents as distance travelled increases. The data were further examined by boxplot techniques to investigate the travel behaviour patterns of users in each of the five polyclinics (Figure 6.4). The boxplot method is a simple visual display of a batch of data, which shows the location, spread, skewness, tail lengths and outliers. In doing so, we are able to summarise the whole data set without being influenced by outliers and we will be able to classify the outliers as points needing special attention. The vertical line in the boxplot represents the median, while dispersion is indicated by the length of the box, using the fourth quartile. Thus, the position of the median line in the box conveys something of the skewness or straggle of the distribution (Emerson and Strenio 1983). Therefore, the greatest benefit of the boxplot seems to be embodied in its ability to convey visually important facts about the distribution and shape of the phenomenon under consideration. Users frequenting Sidi hussein, Al–sabri and Al–keesh tend to have come from more distant areas and thus shared more or less similar travel patterns, while Al–uroba and Khaled ben waleed users representing 39% of the whole sample, travelled less than 5 km. The overall mean distance travelled was 2.9 km and standard deviation of 1.7 km; the maximum distance travelled by all users appeared not to have exceeded 8 km (Table 6.9). The plots of distance from five polyclinics in Figure 6.4 showing spatial variation suggest that Al–keesh is the most popular

polyclinic and has the most dispersed population; followed by Sidi hussein, Khaled ben waleed, Al–sabri and finally Al–uroba. A striking feature of Figure 6.4 is the wide dispersion of patients frequenting Al–keesh and Sidi hussein polyclinics as compared to others; this is probably due to their being well–managed and having better qualified staff. Furthermore, the most extreme value in the tails of the boxplots appeared to be in Sidi hussein polyclinic, indicating that the farthest point was 8 km. The closeness of the median line to the left side of the box indicates upward spread, implying that the batch is positively skewed as can be seen clearly in Al–uroba and Khaled ben waleed and less so in Sidi hussein and Al–keesh. Contrary to the other four polyclinics, the distribution of Al–sabri users tends to be normal or close to a normal as the median intermediates the boxplot. In general terms, the total distance travelled as displayed in the bottom of Figure 6.4, appears to be positively skewed, as the median is located closer to the lower fourth quartile than to the upper one. This means that distance does not act as a great barrier for frequent patients of the services of the polyclinics in Benghazi as also concluded by the household survey in Chapter eight.

6.6 Nature of current sickness reported by users

Table 6.10 demonstrates the distribution of users according to their age, sex and types of sickness, classified broadly as acute, chronic, accidents and vaccination. There was a remarkable difference between males and females in the nature of sickness conditions reported. Acute–care patients were about five out of six (82.4%) of the whole sample (females 45.6%, males 36.8%). In the under 16 age group and in the age group of 46–65 years, there was a relative preponderance of males over females. In adults aged 16–45, women uniformly reported more illness than men. Women aged 16–45 for instance, made up nearly 75.6% of all female patients and about three fifths (60.4%) of all users in the category aged 16–45 years.

Of the whole sample population, two out of fifteen (12.8%) were chronic–care patients complaining principally from diabetes and hypertension (high blood pressure). The proportion of chronic conditions was slightly higher among females (6.8%) than it was among males (6%). Patients with chronic disease, however, appeared to be middle aged and older people (46 years or more).

Fig: 6.3: Vector distance between users' place of residence and polyclinics in Benghazi (Field study, 1992)

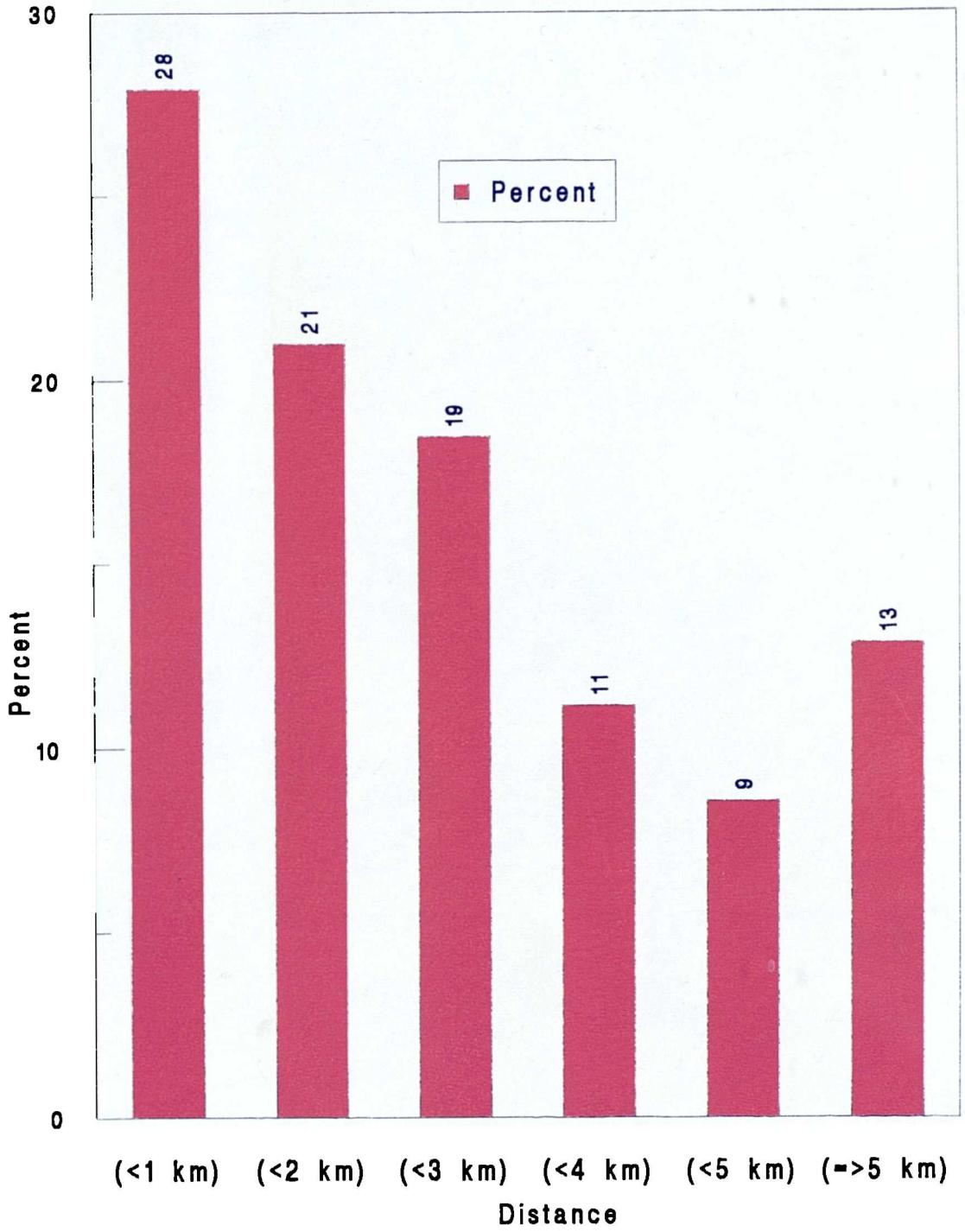


Fig. 6.4 Boxplot of distance from home to polyclinics

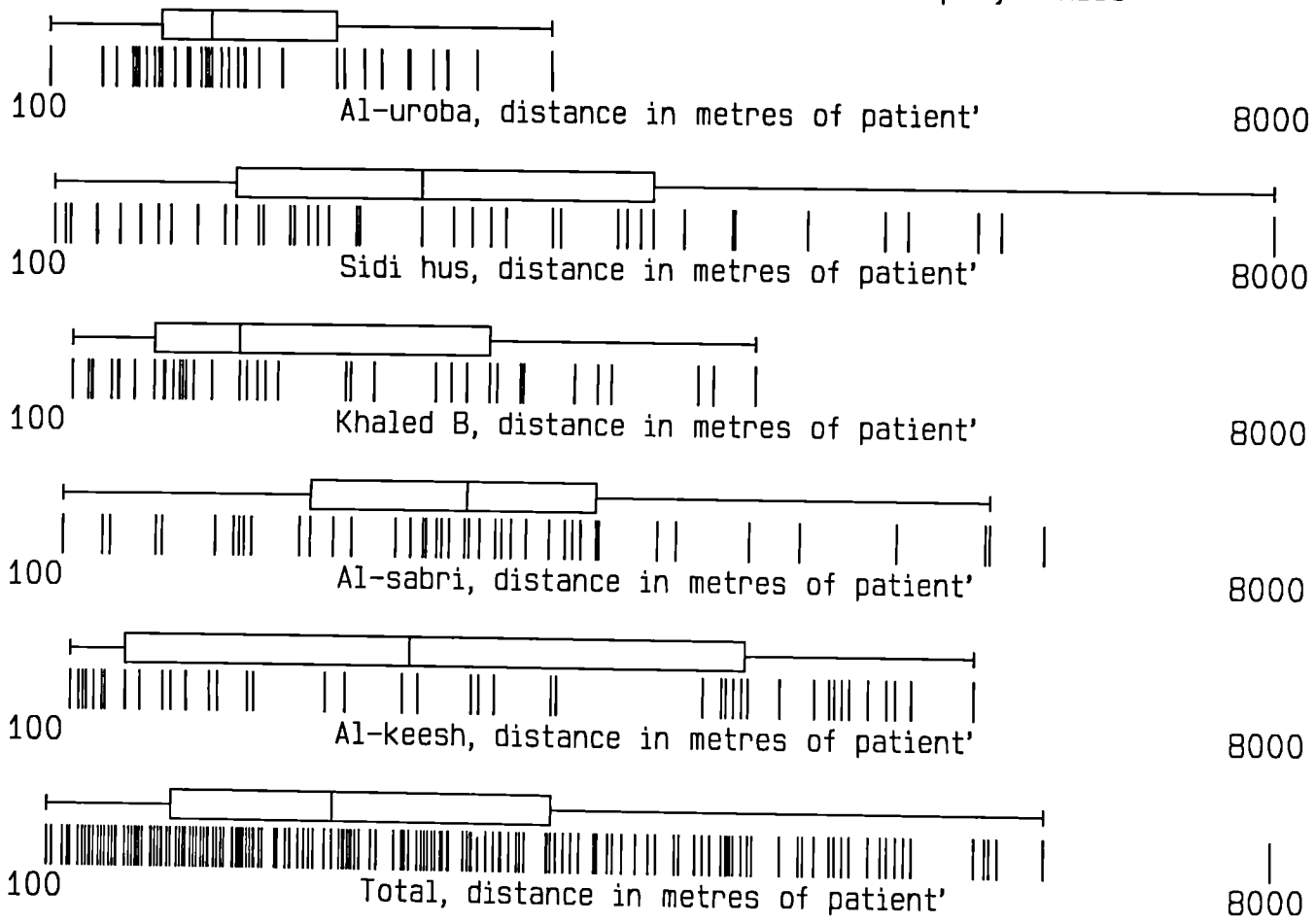


Table 6.10: Patients attending the five polyclinics of Benghazi classified by age , sex and nature of sickness

Age in years	Reason for treatment											
	Acute			Chronic			Accidents			Vaccination		
	M	F	T	M	F	T	M	F	T	M	F	T
< 16	6	5	11	-	-	-	-	-	-	3	2	5
16–25	38	51	89	1	2	3	2	-	2	-	-	-
26–35	21	33	54	1	1	2	2	-	2	-	-	-
36–45	8	18	26	2	6	8	-	1	1	-	-	-
46–55	12	3	15	4	4	8	2	-	2	-	-	-
56–65	6	3	9	6	4	10	-	-	-	-	-	-
≥ 65	1	1	2	1	-	1	-	-	-	-	-	-
Total	92	114	206	15	17	32	6	1	7	3	2	5

M= male F= female T= total.

Source: field survey, 1992

Accidents were more common among males (2.4%) than females (0.4%). This reflects the cultural trend of a predominance of male over female drivers– a pattern that is remarkably different in number and size from that seen in acute and chronic sickness. Here, the total number of users is very low due to the fact that it is more likely that most serious conditions have been treated in accident and emergency hospitals or elsewhere.

The small size of the last category (vaccination) in the sample is probably due to the widespread distribution of maternity and child care centres all over the city, which may have minimised the number of frequent users to polyclinics. It may, however, have been due to the hot weather and high humidity during the days of carrying out the study, which also may have acted as a barrier for parents to cooperate in the study. As soon as parents finish consultations with doctors, they take their children and rush home. However, the distribution of age and sex

pattern of this group was proportionally identical to each other and consistent between both sexes.

6.7 Types of current sickness conditions

An analysis of the diagnosis of users made during this research has revealed that the five polyclinics treat a wide range of medical conditions. Reasons for attending the polyclinics are summarised in Table 6.11. This broad classification has been made mainly to facilitate analysis of the data. Excluding dental complaints, approximately 58% of all ailments diagnosed in the five polyclinics were for five major disease groups– respiratory diseases (14.8%), internal (12.8%), skin diseases (12%), musculoskeletal (9.2%) and diabetes (9.2%). If sickness conditions are compared between males and females, the five leading conditions remain the same except that skin diseases were replaced by gynaecology for females. Therefore, the previous five sicknesses accounted for 66.2% of all male sickness conditions reported to the services of the polyclinics. For females, the five outstanding conditions were the same as for all patients constituting, with gynaecological conditions, about 65.3% of all female sickness conditions treated at the polyclinics.

Table 6.11 demonstrates two patterns of note: one concerning the high proportion of dental problems among females compared to males, and the second concerning the high proportion of other diseases or "All others" among males compared to that among females. The next important group was accidents among males (5.2%) and diseases of hypertension among females (4.4%). In general, diseases of the respiratory system, internal, musculoskeletal, accidents, chest and "All others" are relatively more common among male users of the polyclinics than among females. Commonly, skin diseases, gynaecological, hypertension, cold and dental ailments are often more frequent among female than among male users.

Table 6.11: Reasons for attending the polyclinics by sex

Main reasons	Sex of users		
	Male	Female	Total
Respiratory	20 (17.4)	17 (12.6)	37 (14.8)
Internal	17 (14.8)	15 (11.1)	32 (12.8)
Dental problem	6 (5.2)	26 (19.3)	32 (12.8)
Skin disease	13 (11.3)	17 (12.6)	30 (12.0)
Musculoskeletal	14 (12.2)	11 (8.2)	25 (10.0)
Diabetes	12 (10.4)	11 (8.2)	23 (9.2)
All others	14 (12.2)	5 (3.7)	19 (7.6)
Gynaecology	- (0.0)	17 (12.6)	17 (6.8)
Hypertension	3 (2.6)	6 (4.4)	9 (3.6)
Accidents	6 (5.2)	1 (0.7)	7 (2.8)
Cold	2 (1.7)	4 (3.0)	6 (2.6)
Vaccination	2 (1.7)	3 (2.2)	5 (2.0)
Chest	4 (3.5)	1 (0.7)	5 (2.0)
Urogenital	2 (1.7)	1 (0.7)	3 (1.2)
Total	115 (100.0)	135 (100.0)	250 (100.0)
Df=(13)	$\chi^2 = 35.7843$		P0.001

Source: Field study conducted by author in summer 1992.

Most of the medical conditions treated were acute in nature as clearly demonstrated earlier in this chapter, while chronic conditions were fewer. Among the chronic cases, however, the only two diagnoses which together account for more than 12.8% of all of the interviewed users are diabetes (9.2%) and hypertension (3.6%). The overall impression seems to be that respondents make use of the services of polyclinics more than once during the recall period (one year), and

that usage tends to be for all sorts of sickness. Furthermore, this study has concluded that the overall distribution of sickness conditions between the sexes was statistically highly significant ($P<0.001$, Table 6.11).

6.8 Nature of current visit to the polyclinics

To estimate the degree of diversity of service utilisation and to examine the extent to which these services are frequently used by the population, the users were questioned about the nature of their visit to the polyclinics during the days of the interview. The aim of this was to discover whether the visit was the first response to the present sickness condition or was consequential on other visits made elsewhere to tackle the same sickness condition. Patients were classified into two main groups: those attending the services of the polyclinics for the first time (initial visits) and those attending these services more than once (subsequent visits).

Table 6.12 demonstrates the distribution of users according to their sex, sickness group and initial and subsequent visits. In this table, the data are organised in such a way as to enable comparisons to be made between males and females and the two major groups of sickness: acute and chronic. The table demonstrates considerable differences in the distribution of initial and subsequent visits not only in terms of sex but also in terms of nature of sickness. For acute sickness, the percentage of female attendance was higher than that of males for both initial and subsequent visits. Total percentage of subsequent visits for both sexes was far higher than that of the initial visits.

Similarly, a comparison of the nature of visits by chronic sickness reveals the dominance of subsequent visits of patients over initial ones, making up 90.6% and 9.4% respectively. As females usually make more routine use of health care services and follow–ups than males, their subsequent visits for chronic disease in this study did not prove to be so, though they received more "total care" than men 53.1% to 46.9% consecutively. Generally speaking, the overall differences between nature of current visit, sex and nature of sickness (acute or chronic) did not prove to be statistically significant (Table 6.12).

Concerning the distribution of initial and subsequent visits by distance and

nature of sickness, the number of subsequent visits decreases with distance for acute conditions and there is some evidence to suggest that the contrary is applicable for initial visits within the range of 5 km (Table 6.13).

For chronic disease, the number of subsequent visits by distance travelled reveals some indication of a tendency to increase gradually as distance increases. The relationship between distance travelled in kilometres and the nature of current visit for acute–care patients is statistically highly significant (P=0.010, Table 6.13), while for chronic sickness low frequencies prevented calculation of a Chi–square statistic.

In summary, most users of the polyclinics were attending for subsequent care (84.4%); of which nearly 60% were acute–care patients living within 3 km from polyclinics' services. This means that most of the subsequent users were living within close vicinity of the services provided at polyclinics.

Table 6.12: Polyclinics' users classified by nature of sickness, sex and nature of current visit

Nature of disease	Nature of current visit	Sex		
		Male	Female	Total
Acute	Initial	15 (7%)	20 (9%)	35 (16%)
	Subsequent	83 (39%)	95 (45%)	178 (84%)
	Total	98 (46%)	115 (54%)	213 (100%)
DF=(1)	$\chi^2 = 0.1675$	P = 0.682		
Nature of disease	**Nature of current visit**	**Sex**		
		Male	Female	Total
Chronic	Initial	(0.0%)	3 (9%)	3 (9%)
	Subsequent	15 (47%)	14 (44%)	29 (91%)
	Total	15 (47%)	17 (53%)	32 (100%)
DF=(1)	$\chi^2 = 2.9209$	P = 0.087		

Source: Field survey by author, 1992

Table 6.13: Distribution of polyclinics' users by distance, nature of sickness and nature of current visit

Acute			
Distance	Initial	Subsequent	Total
< 1 km	4	57	61
1–< 2 km	5	36	41
2–< 3 km	6	33	39
3–< 4 km	6	15	21
4–< 5 km	6	8	14
≥ 5 km	5	17	22
DF=(5)	$\chi^2 = 15.0963$	P = 0.010	
Chronic*			
Distance	Initial	Subsequent	Total
< 1 km	-	1	1
1–< 2 km	-	7	7
2–< 3 km	1	2	3
3–< 4 km	-	5	5
4–< 5 km	-	6	6
≥ 5 km	1	7	8
Total	2	28	30

* For chronic sickness computing a X^2 statistic was not possible due to low frequencies.

Source: Field survey by author, 1992

6.9 Average duration of sickness

It is important to note that people in their endeavour to respond to a sickness

episode usually react differently in seeking public health care, though they have equal rights to use whatever health care facility is available in the city. Distance (among other factors) between place of residence and the services of the polyclinics was postulated to have a negative impact on the process of seeking health care. To test this assumption, initial users were examined based on the duration of their sickness prior to the first contact and on their sex, age and distance from where they came (Table 6.14). As can be elicited from table 6.14, duration of illness is strongly associated with distance travelled as 41% of 39 polyclinic (initial visits) patients who had been ill for two weeks had come from less than 5 km. Twenty three per cent of all users were accounted for by patients reporting illness of more than one month and who lived within 5 km. Thus, patients with more severe conditions are likely to travel greater distances for health care. However, the differences in illness–specific travel patterns are a result of a combination of people's perception of the causation and severity of sickness and the relative success of modern health care services to cure them, (Kloos *et al.*, 1990).

As for sex, it seems clear from Table 6.14, that women formulate a high percentage of all respondents, but tend to put off their responses to sickness episode more than men. Children under 16 years had on average a shorter duration of sickness than adults. In general terms, the results of this study have concluded that people living in the close vicinity of polyclinic services tended to frequent these services in response to sickness earlier than those needing to travel longer distances.

Table 6.14: Average duration of illness episode from outset of illness to the first connection with polyclinics' services by sex, age and distance travelled

Distance	Duration of sickness for initial visitors					
	Today	Last week	Last fortnight	Last month	> one month	Total
< 1 km	1	1	-	-	2	4
1–1.99 km	1	2	2	1	-	6
2–2.99 km	-	1	1	1	4	7
3–3.99 km	-	3	1	1	1	6
4–4.99 km	1	1	1	1	2	6
≥ 5	3	1	1	1	4	10
Total	6	9	6	5	13	39
Sex	**Duration of sickness for initial visitors**					
	Today	Last week	Last fortnight	Last month	> a month	Total
Male	1	6	2	-	6	15
Female	2	5	4	5	8	24
Total	3	11	6	5	14	39
Age	**Duration of sickness for first visitors**					
	Today	Last week	Last fortnight	Last month	> a month	Total
< 16 years	2	2	2	-	-	6
≥ 16 years	1	9	4	5	14	33
Total	3	11	6	5	14	39

Source: Field survey, 1992

6.10 Types of transportation used and travel time

The majority of users used their own cars for reaching the closest polyclinic. Thus, in a wealthy city like Benghazi it was no surprise to find that the most popular mode of transport was a private automobile (owned by the user or a friend), accounting for 49.2% of all means of transport. As can be seen from Table 6.15, the percentage using private cars nowhere dropped below 38%. Another 24% of respondents walk to the polyclinics. Other types of transport such as taxi, buses, etc. conveyed the remaining 26.8%. Variations in types of transportation used by respondents from one polyclinic to another did not seem to be great. The overall difference between mode of transport utilised was not statistically significant (P= 0.259, Table 6.15). On the whole, it seems clear that access to automobiles for transport is very easy, particularly in cases of illness. As far as analysis can be made, the highest proportion of walkers to the five polyclinics tend to frequent Al–uroba, Khaled ben waleed and Al–keesh, where it seems more likely that they have come from a short distance. Furthermore, the findings have confirmed that more than two thirds (67.4%) of all respondents using different modes of transport were living within a distance of 3 km from home. Of 57 foot users about 89.5% were living within 3 km from polyclinics; this is equal to 21.9% of all patients residing within a 3 km threshold (Figure 6.5). Thus, most of the users of the five polyclinics live in close proximity and can reach them in a short period of time. The existing health care delivery system needs to be well organised in order to cover health care needs. It is very difficult from the available data to confirm whether the more distant patients make less use of these services, because they consider the trip not advantageous or worthwhile. There is also some evidence to suggest that users who had travelled a short distance (less than 1 km) utilise the services of polyclinics more than those coming from more distant areas.

Table 6.15: Modes of transport used by patients to reach health care services of the polyclinics in Benghazi

Mode of transport	Name of polyclinic					
	A	B	C	D	E	Total
Walking	14 (28)	9 (18)	14 (28)	10 (20)	13 (26)	60 (24)
Private car	26 (52)	26 (52)	26 (52)	19 (38)	26 (52)	123 (49.2)
Others	10 (20)	15 (30)	10 (20)	21 (42)	11 (22)	67 (26.8)
Total	50 (100)	50 (100)	50 (100)	50 (100)	50 (100)	250 (100)
DF=(8)		$\chi^2 = 10.0835$		P = 0.259		

A. Al-uroba B. Sidi hussein C. Khaled ben waleed
D. Al-sabri E. Al-keesh

Source: Field survey by author, 1992

Respondents were also questioned about how long it would take them to reach the closest polyclinic. Approximately 37.2% reported that it would take them less than 5 minutes, while about 38.8% responded between 5 and 9 minutes, nearly 13.2% between 10 and 14 minutes and only 10.8% would take 15 minutes or more to reach the closest polyclinic (Table 6.16). The great majority of polyclinics users (76%) can reach these services in less than ten minutes (Table 6.16). Statistically, the total difference between car distance measured in minutes and the use of preferred polyclinic did not prove to be significant (P=0.158).

The respondents were asked about their opinion of the optimal distance from home to a nearby polyclinic. About 85% wished to have the polyclinic sited within 1 km from their homes. Another 12.8% wished it to be located between 1 km and 2 km. Only very few (2.2%) indicated that they would not mind having health care facilities located more than 2 km from their home address. This is an important point to be considered for the future planning of polyclinics in Benghazi, subject to financial and other factors.

Figure 6.5: Type of transport used to seek a polyclinic service and distance travelled (Field study, 1992)

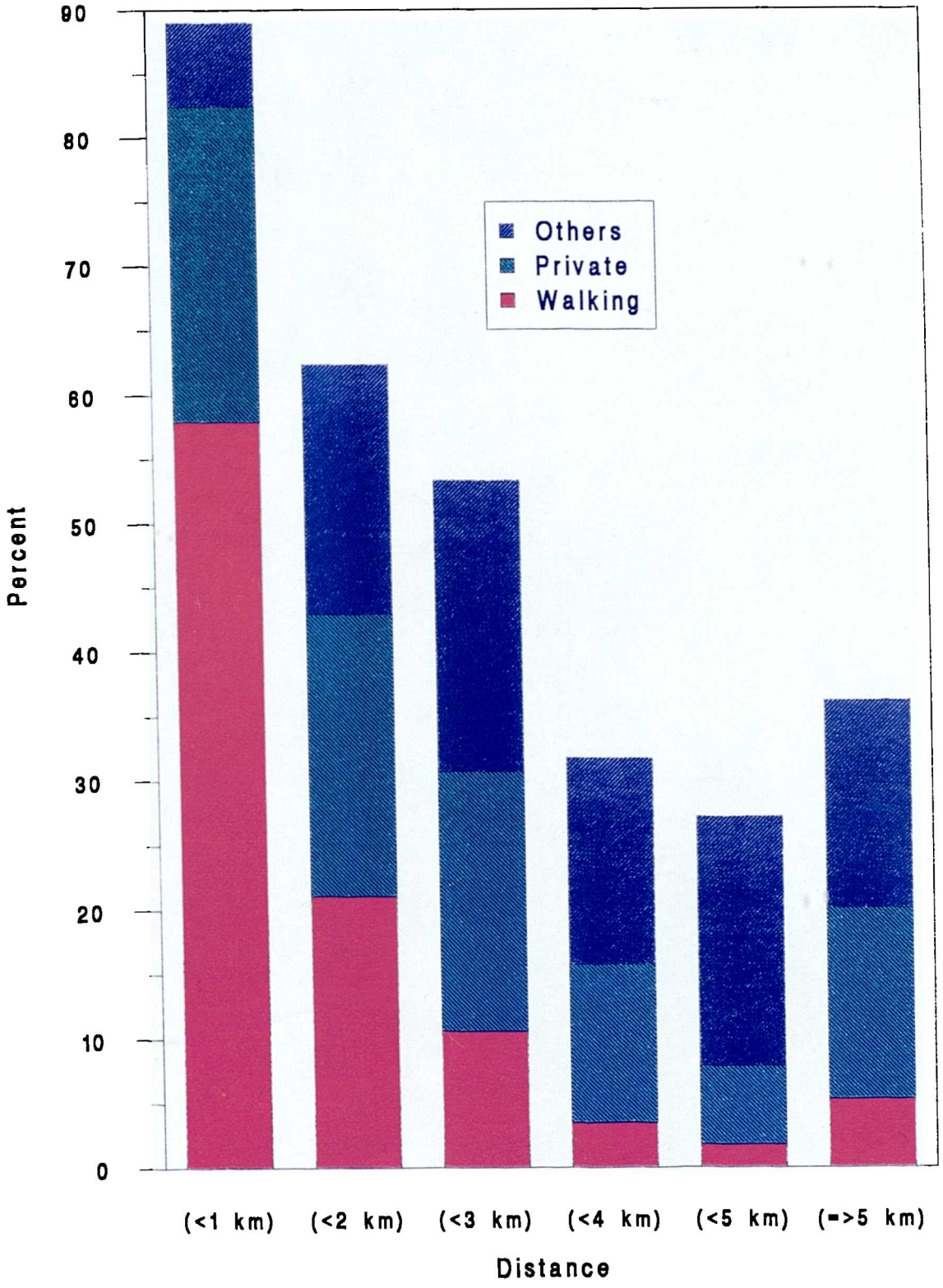


Table 6.16: Relationship between car distance measured in minutes and the use of polyclinics' services

Car distance	Name of polyclinic					
	A	B	C	D	E	Total
< 5 minutes	20 (35.7)	17 (29.8)	19 (50)	16 (29.6)	21(46.7)	93 (37.2)
5 to < 10 minutes	25 (44.6)	24 (42.1)	15 (39.5)	17 (31.8)	16 (35.6)	97 (38.8)
10 to < 15 minutes	7 (12.5)	9 (15.8)	3 (7.9)	10 (18.5)	4 (8.9)	33 (13.2)
≥ 15 minutes	4 (7.1)	7 (12.3)	1 (2.6)	11 (20.4)	4 (8.9)	27 (10.8)
Total	56 (100)	57 (100)	38 (100)	54 (100)	45 (100)	250 (100)
DF=(12)	$\chi^2 = 16.7816$			P = 0.158		

A. Al-uroba B. Sidi hussein C. Khaled ben waleed
D. Al-sabri E. Al-keesh

Source: Field survey by author, 1992

6.11 Patients' attitudes towards the services and accessibility of polyclinics

In this chapter and the following chapters certain aspects influencing the use of health care services by respondents are examined, in particular, access to adjacent polyclinics. The results confirmed that the vast majority of respondents have hardly travelled outside their neighbouring areas (especially for basic medical care) except when they believed that appropriate treatment was not available there.

In a country like Libya, where the organisation of medical practice is almost entirely provided by the State as a form of welfare and as a public utility, measuring perception of patient satisfaction and dissatisfaction is extremely important, particularly when it comes to formulating health care policy and future planning of health care services. In supporting this claim Marquis *et al.* (1983:821) argue that

> Patient satisfaction ratings contain useful information about the structure, process, and outcomes of care, as well as a unique evaluative component. Satisfaction is predictive of how patients will behave in the future.

Studying patients' attitudes is not only important in examining the country's avowed objectives of having equity in the availability and distribution of health care services but also in providing services and resources according to clinical need. Corresponding with the fundamental principle of professional ethics of medicine, which revolves around serving the needs and wishes of the patient and working towards improving health, an understanding of the patient's concerns and interests is extremely significant particularly in laying down firm grounds for future planning of required services to the population of Benghazi. Almost two decades ago, Shortell *et al.,* (1977) contended that satisfaction should also be used as an intervening variable in explaining quality, perceived access and use of care or aspects of care in which patient behaviour is important. Thus, levels of patient satisfaction have been shown to be significant for predicting the use of and satisfaction with existing health care services (Scarpaci 1988). Satisfaction is looked at as a predictor of subsequent patient behaviour in maintaining or changing contact with the usual provider of care. Several questions in the present questionnaire survey were, therefore, designed to examine issues of satisfaction. The responses of the users tend to reflect the following views as raised by Calnan (1988:927), which run along the following lines:

"*1. The goals of those seeking health care in specific instance.*
2. The level of experience of use of health care.
3. The socio-political values upon which the particular health care system is based.
4. The images of health held by the lay population."

Discussion of the results of the questions referred to above focuses on some selected variables shown in Table 6.17. This set of organisational variables attempts to select the best predictors of the use of and satisfaction with primary medical care (services of polyclinics). Such variables were selected to measure procedures performed on patients and factors that influence their consultation, accessibility, convenience, waiting time and other aspects of the quality of care provided.

Table 6.17: Variables used to predict patients' use of and satisfaction with the services of polyclinics

Variable	Definition
MAINDIFF	main difficulty experienced to reach polyclinic
PARKING	evaluation of parking facilities around polyclinic
LOC	locational convenience of visited polyclinic
GENEVAL	general evaluation of the services of the polyclinics
EVALTRIP	evaluation of trip to visited polyclinic
MREAS	major reason for preferring the visited polyclinic
TREAT	length of treatment at the frequented polyclinic
CONSULT	length of checking–up periods with doctors
SERPROB	most serious problem encountered in the frequented polyclinic
PREF	most positive aspect of treatment in the visited polyclinic
PRESENT	availability of doctors at their offices
ENOUGH	whether doctors enough in the visited polyclinic
QUALIF	whether doctors qualified in the frequented polyclinic
ROTATE	whether doctors rotate too often
CHOICE	whether able to see a preferred doctor
PRESMED	availability of prescribed drug in the visited polyclinic
CARDIST	estimated time to reach wanted polyclinic
OPDIST	optimal distance perceived to reach the wanted polyclinic
DIST2	vector distance in metres of patient's home to a polyclinic

Source: Field survey by author, 1992

6.11.1 General profile of patients' satisfaction with services

In order to determine patients' perception regarding use of polyclinics, several

variables measuring their satisfaction were selected and tested by a Chi–square test as can be seen later. The findings of this study have revealed that the patients in general had strong views on the continuity of care and the qualifications of the doctors contacted. Nearly 71% of the users asserted that physicians were available at their offices on the day of interview; 43% complained that physicians were rotated too often. Despite the occasional turnover of doctors, more than half (51%) were given the opportunity to select their doctors and about 57% indicated that their physicians were qualified and friendly. More than three quarters (77.6%) of the patients did not cite any difficulty with doctors as a result of a language problem. However, most patients passing through the polyclinics indicated a shortage of physicians. Thus, when patients were interrogated about the number of doctors in the visited polyclinics, excluding 13% who were undecided, 45% noted that there were insufficient numbers of physicians. Fifty one per cent of the patients interviewed argued that they had been well treated by doctors, but did not receive free prescribed drugs, bringing to mind the recent trend of minimising funds assigned to the health care sector in Libya.

The questionnaire survey also contained a question regarding the amount of time the physician spent with the patient. Although there were some variations depending on the cases of the patients, the author's main intention was to see whether patients were obliged to speed up their consultations with the doctor as a result of pressure from the health care facility visited, as a result of their own wishes or a combination of both. Table 6.18 reveals that approximately 56% of patients had been treated in less than five minutes and more than 90% in less than ten minutes.

Table 6.18: Distribution of sample population according to length of consultation with doctors in each polyclinic

Consultation	Name of the frequented polyclinic					
	Al–uroba	Sidi hussein	Khaled B.W.	Al–sabri	Al–keesh	Total
< 5 minutes	33 (66)	32 (64)	34 (68)	17 (34)	23 (46)	139 (55.6)
5–10 minutes	14 (28)	15 (30)	14 (28)	25 (50)	19 (38)	87 (34.8)
11–15 minutes	3 (6)	1 (2)	1 (2)	3 (6)	4 (8)	12 (4.8)
≥ 15 minutes	– (0)	2 (4)	1 (2)	5 (10)	4 (8)	12 (4.8)
Total	50 (100)	50 (100)	50 (100)	50 (100)	50 (100)	250 (100)
D.F=(12)		$\chi^2 = 23.3075$		P = 0.025		

Source: Field survey by author,1992

These results tend to suggest that physicians in all five polyclinics spend very little time with each patient. The shortness of consultations may reflect the attitudes of the patients themselves, who do not want lengthy consultations and who for the most part judge doctors' performance on how quickly they can diagnose rather than on how competent they are or how accurate the diagnosis is. This may conform with the idea raised by Ben–Sira (1976) that "*affective behaviour*" of the physicians is highly associated with the layman's satisfaction rather than administrative factors, concession to specific demands and the evaluation of technical competence. Figure 6.6 suggests that the largest proportion of patients who rated their physicians as qualified was found in polyclinics in which the largest percentage of users indicated that they were examined in less than five minutes.

Figure 6.6: Patients' evaluation of their physicians' competence according to length of time spent on consultation (Field study, 1992)

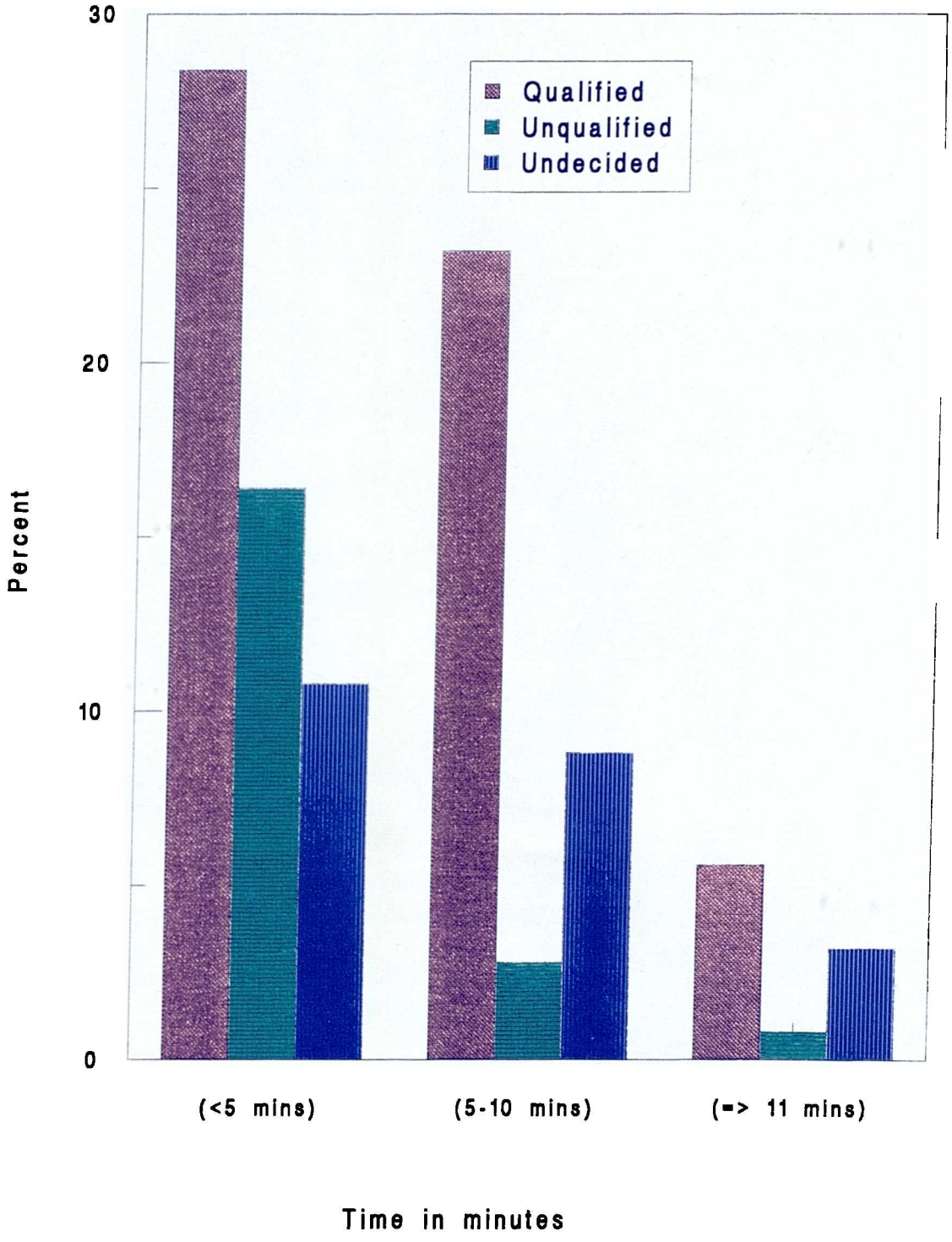


Table 6.19: Chi–square test results for patients' responses to selected variables related to use of and satisfaction with polyclinics

Variables	D.F	X^2 Statistics	P–values
QUALIF	(6)	19.5169	0.013
PRESENT	(4)	37.0714	<0.001
ENOUGH	(8)	21.3482	0.006
ROTATE	(8)	19.9299	0.011
CHOICE	(4)	9.6985	0.046
LANG	(4)	2.1631	0.706
CONSULT	(12)	23.3075	0.025
SERPROB	(24)	67.9644	<0.001
DIST2	(20)	61.3026	<0.001

Source: Field survey,1992

It should be pointed out that slightly less than three–quarters of the patients (74.4%) sought a polyclinic as soon as they became ill or noted symptoms, while about 30.4% of all patients claimed practising self–medication at home before resorting to a polyclinic. Yet, in response to a question addressed to patients concerning their having had a general check–up in life to examine their general awareness of health, it was found that only one–third (34%) answered positively, while the remaining majority (66%) did not show any interest in this regard. However, Table 6.19 reveals that almost all variables, except (LANG) or language problem, suggest that there is a large amount of difference between the observed and the expected values. With almost every selected variable except (LANG), the difference between patients' responses embodied in eight variables and the use of and satisfaction with the services of the five polyclinics was statistically highly significant (P values varied between 0.046 and 0.001). The eight variables show values of Chi–square which reveal the strength of the association between these variables and the use of and satisfaction with services. Contrary to this, the language problem (LANG) did not

prove to be significant. This may suggest that this variable has little effect on the use of and satisfaction with the services of the polyclinics.

6.11.2 Accessibility of polyclinics and their demand

Accessibility of health care facilities can best be summarised by the following quotation as derived from Whitelegg in his book *Inequalities In Health Care: Problems of Access and Provision*, (1982:145)

> The problem of tackling inequalities in health care will, for some time to come, be an uneasy balance between marginal improvements within specific health care systems and the more deeply rooted critical analyses of modern western medicine based on links between society and its illness–generating mode of production. ... A demand for great accessibility, in raising consciousness and challenging professional orthodoxes, represents an attainable objective of improved health care for the population, by the population.

This statement seems to confirm that inequalities in geographical access to health care facilities are inevitable, particularly if the focus is primarily on discrete location of polyclinics and population growth. The analysis of polyclinics' locations discussed in Chapter eight, however, will reveal disparities among these facilities, which are not only due to the failures of a supposedly egalitarian health service, but also to differences in the existing geographical patterns of socioeconomic disadvantage in the city. Thus, there is no reason to believe that Benghazi is different in this respect from other cities in developing countries. Indeed, it follows the same pattern and results of similar analysis of two cities, Jeddah, Saudi Arabia and Santiago, the Chilean capital, which suggests a comparable situation exists in many large cities (Al–Ghamdi 1981; Scarpaci 1988). It is clear then, that accessibility to services of polyclinics all over the city is remarkably variable because of the tendency for these services to be centrally located, thus depriving the outlying areas of the city of such vital services. This can often leave large numbers of people with long and time–consuming journeys. In this regard, the most affected groups in the society are the aged and mothers with pre–school children, for whom the maximum bearable walking distance is only half a mile according to Hillman *et al.*, (1973). It should be worth emphasising then, that local accessibility of health care facilities has become increasingly important to most groups of people, particularly those lacking the service of home–visiting or even a health visitor (as in the present area of research). Consequently, physical proximity tends to be an essential factor

in accessibility and utilisation of health care services. Having shed some light on the major factors influencing accessibility such as vector distance, travel time, and method of transport used to reach polyclinics in the previous section, it is important here to evaluate and understand the perceptions of users by answering the following questions: How did they find the journey to the polyclinic? What was the major difficulty they encountered? How did they evaluate parking facilities and the location of the frequented polyclinics? What was the most common reason for frequenting a polyclinic rather than others?. These five queries will now be examined in relation to utilisation rates.

Patients were asked whether the polyclinics were accessible to their residencies. Nearly four out of five (79%) users indicated that the journey was either "very easy" or "easy"; 15.5% "difficult" and only 5.5% "very difficult". Fewer patients noticed things that they disliked than things that they favoured. Almost 48% of the respondents did not encounter any difficulty in reaching the frequented polyclinic. Those who faced some difficulties cited long distance (19.6%); heavy traffic (18.4%); "others" e.g. traffic lights, interruption by pedestrians etc. (7.2%) and only 6.8% were delayed because of road works. A statistically significant difference exists between the main difficulty experienced in reaching a polyclinic and the evaluation of the journey by patients ($P<0.001$, Table 6.20).

Table 6.20: Relationship between journey evaluation and major difficulties experienced

Main difficulty	Evaluation of trip to polyclinics				
	Very easy	Easy	Difficult	V. difficult	Total
Road work	3	13	1	0	17
	5.3%	9.3%	2.6%	0.0%	6.8%
Heavy traffic	6	25	11	4	46
	10.5%	17.9%	28.2%	28.6%	18.4%
Long distance	6	16	20	7	49
	10.5%	11.4%	51.3%	50%	19.6%
No difficulty	39	76	4	1	120
	68.4%	54.3%	10.3%	7.1%	48%
Others	3	10	3	2	18
	5.3%	7.1%	7.7%	14.3%	7.2%
Total	57	140	39	14	250
	100%	100%	100%	100%	100%
D.F=(12)		$\chi^2 = 65.7916$		P < 0.001	

Source: Field survey by author, 1992

As regards existing parking facilities around each polyclinic, the half (50%) of the sample population rated the parking facilities as "average"; 24.4% as "below average" and 25.6% as "excellent or above average". As expected, a Chi–square test revealed significant statistical differences between the evaluation of trip to polyclinics and the ratings of parking facilities, (P<0.001, Table 6.21).

Table 6.21: The relationship between journey to polyclinics and rating of parking facilities

Rating of Parking	Evaluation of trip to polyclinics				
	V. easy	Easy	Difficult	V. difficult	Total
Excellent	17 (29.8)	11 (7.9)	- (0.00)	2 (14.3)	30 (12.00)
Above average	5 (8.8)	26 (18.6)	3 (7.7)	- (0.00)	34 (13.60)
Average	29 (50.9)	76 (54.3)	14 (35.9)	6 (42.9)	125 (50.00)
Below average	6 (10.5)	27 (19.3)	22 (56.4)	6 (42.9)	61 (24.4)
Total	57 (100)	140 (100)	39 (100)	14 (100)	250 (100)
D.F=(9)	$\chi^2 = 54.8075$			P < 0.001	

Source: Field survey made by author, 1992

When interrogated about the locational convenience of the closest polyclinic in a three stage response pattern, more than half (53.6%) of the respondents indicated that the existing location of the nearest polyclinic was "convenient" and easily accessible, while about one–third (31.2%) valued the location as "very convenient". "Inconvenient" location was proposed by just 15.2% of all responses. Thus, the overall difference between general evaluation of polyclinic services and locational convenience was highly significant, (P<0.001, Table 6.22).

Table 6.22: The relationship between locational convenience of the visited polyclinic and the general evaluation of services

Rating of location	General evaluation of services					
	A	B	C	D	E	Total
Very convenient	37 (50)	9 (29)	21 (19.6)	10 (33.3)	1 (12.5)	78 (31.2)
Convenient	32 (43.2)	21 (67.7)	61 (57)	15 (50)	5 (62.5)	134 (53.6)
Inconvenient	5 (6.8)	1 (3.2)	25 (23.4)	5 (16.7)	2 (25)	38 (15.2)
Total	74 (100)	31 (100)	107 (100)	30 (100)	8 (100)	250 (100)
D.F=(8)	$\chi^2 = 28.6594$			P < 0.001		

A. Excellent B. Above average C. Average

D. Below average E. Do not know

Source: Field survey by author, 1992

As regards reasons for selecting a polyclinic, it was shown that choice was based on both medical and non–medical justifications. For non–medical reasons, it seems more likely to be strongly associated with accessibility and closeness rather than other causes. Patients' responses were grouped into four major classifications and a miscellaneous one in order to generate a clear picture of the perceptions of the patients towards their health care delivery system. As can be seen from Table 6.23, closeness or easy access was the most outstanding reason, given by 45.5% of the whole sample population, followed by 34.7% who cited a polyclinic–related factor (availability of specialist doctors). A particular physician who treats his patients well and listens to them attentively was cited by 11.6%, while only 3.7% of respondents believed that the frequented polyclinics were crowded. "Miscellaneous" was the next most common reason given by respondents who selected a local polyclinic (4.4%). The survey results have shown that there was marked variation in the patterns of responses in the five polyclinics, particularly when they are compared in terms of easy access. Therefore, the overall difference between the selected polyclinics and the main reason for that choice was statistically highly significant (P<0.001, Table 6.23)

Table 6.23: Patients' main reasons for selecting a polyclinic

Reasons' category	Name of polyclinic selected					
	A	B	C	D	E	Total
Close to home	30 (970)	16 (32)	23 (46)	19 (38)	20 (40)	113 (45.2)
Good physician	1 (2)	5 (10)	4 (8)	8 (16)	10 (20)	28 (11.2)
Not crowded	5 (10)	- (0.0)	- (0.0)	2 (4)	3 (6)	10 (4)
Looking for a specialist	7 (4)	28 (56)	21 (42)	16 (32)	16 (32)	88 (35.2)
Miscellaneous	2 (4)	1 (2)	2 (4)	5 (10)	1 (2)	11 (4.4)
Total	50 (100)	50 (100)	50 (100)	50 (100)	50 (100)	250 (100)
D.F=(16)	$\chi^2 = 45.7827$			P < 0.001		

A. Al–uroba B. Sidi hussein C. Khaled ben waleed
D. Al–sabri E. Al–keesh

Source: field survey, 1992

6.11.3 The positive and negative attitudes of patients towards services

In order to examine the underlying motivations in utilisation other than type of illness, patients were asked about the leading positive aspect of treatment in the polyclinic where they were interviewed. Responses obtained were summarised in seven categories starting with long consultation periods and ending with "others" as demonstrated in Table 6.24. Good treatment was considered the most significant positive aspect of all responses, accounting for 27.2%. The second most important factor, and the central feature in the help–seeking behaviour of polyclinics' services, was obtaining free prescribed medicine. This was mentioned by 25.2% of all respondents. The friendly nature and affective behaviour of physicians proved to be attractive and thus represented the third reason, accounting for 17.6% of all responses. "Others" were noted by 12.8%; followed rather distantly by medication by touch (8.4%); accurate appointments (5.2%); and long periods of consultation (3.6%). The overall differences between the instrumental aspects of treatment and the use of polyclinics' services are statistically highly significant (P<0.001, Table

6.24).

Table 6.24: The negative and positive attitudes of patients towards frequented polyclinics in Benghazi

Positive aspects	Name of frequented polyclinic					
	A	B	C	d	E	Total (%)
Long consultation	1	1	2	2	3	9 (3.6)
Medication by touch	9	6	1	1	4	21 (8.4)
Friendly doctors	10	10	5	11	8	44 (17.6)
Accurate appointments	3	4	–	2	4	13 (5.2)
Good treatment	16	12	7	18	15	68 (27.2)
Free medicine	8	10	20	14	11	63 (25.2)
Others	3	7	15	2	5	32 (12.8)
Total	50	50	50	50	50	250 (100)
D.F=(24)	$\chi^2 = 48.6500$			P = 0.002		
Major difficulty	Name of frequented polyclinic					
	A	B	C	D	E	Total (%)
Waiting	18	22	17	30	19	106 (24.4)
Bad treatment	1	6	1	2	–	10 (4)
Absence of doctors	6	–	10	2	3	21 (8.4)
Crowdedness	11	11	6	8	13	49 (19.6)
Few Specialists	4	2	4	1	7	18 (7.2)
Inadequate Cleaning	3	–	10	6	8	27 (10.8)
Not applicable	7	9	2	1	–	19 (7.2)
Total	50	50	50	50	50	250 (100)
D.F=(24)	$\chi^2 = 67.9644$			P < 0.001		

A. Al-uroba B. Sidi hussein C. Khaled ben waleed

D. Al-sabri E. Al-keesh

Source: Field survey by author, 1992

In terms of undesirable aspects observed, office waiting time was the leading negative response among patients. The time spent waiting to see a doctor is likely to be a reflection of the level of the doctor's workload or the quality of administration of the health services. Another problem linked to this is the absence of an appointments system. In polyclinics in which patients are accustomed to arriving at any time, queues build up until they become very crowded. According to the findings of this study, however, inherent problems of long waits (from 3.5

hours to half a day) experienced elsewhere (Hunt *et al.,* 1986; Kind and Carr–Hill, 1987), were not apparent. When respondents were asked to express their view about the length of time they had to wait to see a doctor, slightly more than one–fifth (22.8%) indicated that they were kept waiting less than ten minutes. Another 14% had to wait between 11 and 20 minutes. Nearly 10% waited between 20 minutes and one hour. Those who indicated waiting–time periods longer than one hour were accounted for by 41.2% of all responses. This tends to be acceptable in a public health care delivery system, where prior appointments are not the rule. In general, these waiting times do not prove to be excessive as far as can be revealed elsewhere (Scarpaci 1988). Haristany and El–Torky (1985) as cited by Al–Ribdi (1990) noted that new British NHS standards imply that 75% of outpatients should not wait longer than 30 minutes to see a doctor. The variation between polyclinics concerning waiting times is probably attributed to the greater number of patients to be seen in some polyclinics than others, or as a result of maldistribution of medical specialities, which supposedly to be equally provided in each polyclinic. Thus, some polyclinics have been shown to be more crowded than others.

Excluding 7.2% of the users, who appeared to have been fully satisfied with the services, waiting time, as can be seen from Table 6.24, was the major criticism and thus put at the top of the list (42.2%) of major difficulties perceived by patients frequenting polyclinics in Benghazi. Crowdedness, a concomitant factor to waiting–time was the second, making up 19.6% of all responses. Other complaints cited by users were: lack of cleanliness (10.8%); absence of doctors during official hours of work (4.8%); and discourteous treatment generated by impolite behaviour of auxiliary personnel (4%). A Chi–square test revealed high significant statistical differences between the use of these facilities and the most difficult problem encountered ($P<0.001$),Table 6.24).

6.11.4 Attitudes of patients towards folk medicine

As can be seen in Chapter seven, the dualistic use of healing systems (traditional and modern) is practised side by side, though the second is the most widespread. Unlike most developing countries, where the use of traditional healing systems is common, in Libya people tend to follow a rather similar pattern to western countries of quasi–dependence on modern medicine. Therefore, to a

certain degree, health–seeking behaviour in the study area has been shown to be different from– though in some instances similar to– health–seeking behaviour in the developed world. Most authors interested in the Third World have recognised the essential role of traditional medicine, which at times can be considered as part of the health care delivery system. Not only that but some countries like Sri-Lanka have exceeded this limit by creating a Ministry of Indigenous Medicine (Wolffers 1988). It was therefore decided to elucidate the role of traditional healing in this study by interviewing and questioning a sample of patients frequenting the modern health care services of polyclinics. In recent years, folk medicine has witnessed a drastic reduction in use, attributable for the most part to better education levels and accessible modern health care services. However, the use of traditional methods depends on the nature of the disease or illness, people's perception of the disease or illness and the sort of health care services available. Empirical results obtained by the author have lent support to this generalisation as can be seen in this section. When sample patients were asked about their belief in folk medicine, only 28% mentioned using some sort of traditional medicine, while the remaining majority (72%) did not show interest in this kind of medicine. Of the 70 patients who believed in traditional medicine 54.3% utilised herbal remedies that they usually buy from shopkeepers and that they make up at home, while 18.6% consulted herb specialists. The rest, those who frequented supernaturalists, clergymen, bone setters etc. were accounted for by 27.1%.

Formal education has turned many villagers away from traditional medicine in both Tunisia and Iran (Benyoussef and Wessen, 1974; Mohseni, 1979) and many more in other developing countries. In this part of the study, no evidence was found to suggest that educational status influenced the pattern of use of health care services. As can be seen from Table 6.25B, no relationship could be found between using folk medicine and four selected variables related to education, age, sex and occupation of patients. This may lead to the suggestion that any variation in age–sex structure, educational levels or occupational standards do not necessarily imply a change in traditional medicine use.

Having fully explained the justification of using the Kruskal–Wallis H test in Chapter one, it is used here to decide whether there is a significance difference between the samples (with assumed identical distribution) that have been drawn

randomly from the five polyclinics. In applying the Kruskal–Wallis H test for selected variables related to patients' attitudes and perceptions of the five polyclinics in Benghazi, results at the 0.05 significance level have shown that the differences between the samples concerning six variables defined in Table 6.17, (GENEVAL, CONSULT, PREF, PARKING, DIST2, MREAS) and the use and satisfaction with these services were statistically highly significant as displayed in Table 6.26. (P values varied from 0.0071 to 0.0001). Thus, the differences between the samples mirror real differences between the population of users of the five polyclinics. Three variables (SERPROB, MAINDIFF, and LOC) did not prove to be statistically significant (P values ranged from 0.1852 and 0.1307) and thus their influence on use of and satisfaction with these services appears to be very weak.

Table 6.25A Variables' Definition

Variable	Definition
EDUC	education of patient
AGE	age of patient
SEX	sex of patient
OCCUP	occupation of patient

Table 6.25B X^2 test results for patients' response to four selected variables related to use of folk medicine

Variable	D.F.	X^2 Statistics	P–values
EDUC	(6)	6.8740	0.333
AGE	(1)	0.0141	0.906
SEX	(1)	0.1150	0.734
OCCUP	(8)	9.8271	0.277

Source: Field survey by author, 1992

Table 6.26: Kruskal–Wallis results for selected variables related to patients' attitudes of five frequented polyclinics in Benghazi

Visited polyclinic	Observations	Rank sum
1. By General Evaluation		
Al–uroba	50	4516.50
Sidi hussein	50	6125.50
Khaled Ben waleed	50	8579.00
Al-sabri	50	5453.00
Al-keesh	50	6701.00
D.F=(4)	$\chi^2 = 35.494$	P = 0.0001
2. By Length of Consultation		
Al-uroba	50	5569.50
Sidi hussein	50	5706.50
Khaled Ben waleed	50	5419.00
Al-sabri	50	7685.00
Al-keesh	50	6995.00
D.F=(4)	$\chi^2 = 15.529$	P = 0.0037
3. By Most Serious Problem		
Al-uroba	50	6741.50
Sidi hus	50	6188.00
Khaled Bbe waleed	50	6707.00
Al-sabri	50	5122.50
Al-keesh	50	6616.00
D.F=(4)	$\chi^2 = 7.100$	P = 0.1307
4. Most Positive Aspect of Treatment		
Al-uroba	50	5096.50
Sidi hus	50	5943.50
Khaled B	50	8400.50
Al-sabri	50	6043.50
Al-keesh	50	5891.00
D.F=(4)	$\chi^2 = 23.780$	P = 0.0001

Table 6.26: continued

5. By Parking facilities		
Visited polyclinic	**Observations**	**Rank sum**
Al-uroba	50	4743.00
Sidi hus	50	7982.00
Khaled B	50	7158.50
Al-sabri	50	5466.00
Al-keesh	50	6025.50
D.F=(4) $\chi^2 = 25.848$ P = 0.0001		
6. By Main Difficulty Experienced		
Al-uroba	50	7116.50
Sidi hus	50	5281.00
Khaled B	50	6525.50
Al-sabri	50	5929.50
Al-keesh	50	6522.50
D.F=(4) $\chi^2 = 7.418$ P = 0.1154		
7. By Vector Distance		
Al-uroba	43	3463.50
Sidi hus	45	6132.50
Khaled B	48	4796.00
Al-sabri	48	6807.00
Al-keesh	49	6062.00
D.F=(4) $\chi^2 = 26.331$ P = 0.0001		
8. By Locational Convenience of Polyclinic		
Al-uroba	50	5221.00
Sidi hus	50	6949.00
Khaled B	50	6393.00
Al-sabri	50	6459.00
Al-keesh	50	6353.00
D.F=(4) $\chi^2 = 6.192$ P = 0.1852		
9. By Main Reason		
Al-uroba	50	4713.50
Sidi hus	50	7268.50
Khaled B	50	6416.50
Al-sabri	50	6749.00
Al-keesh	50	6227.50
D.F=(4) $\chi^2 = 14.045$ P = 0.0071		

Source: Calculated by author from survey data in 1992

6.12 Discussion and conclusion

In this chapter, some aspects of the use of and satisfaction with the services of five polyclinics by their patients have been examined. The focus was mainly to provide comparative and aggregate information about the use of the five polyclinics rather than other health care facilities in the city.

Before starting this discussion in some detail, it is worth noting two important points; that the pattern of service utilisation of polyclinics reflects not only the present interplay between people and the services but also enormous economic and social investments that have been made by the State to improve health care facilities over the last two decades. What we now observe is that the country has a level of health provision almost equal in quantitative terms, to that in some advanced countries (World Development Report 1993). This is true in a country where health care services are rapidly becoming accessible to a great number of people. The second point is related to the complexity of the utilisation process, where there is no set or sets of variables that have ever been found to explain it in detail. It appears that there is no universal answer which can be generalised to the whole country (Libya) or at least some parts of it. Thus, each observed pattern should be explained within its own boundaries. This does not denote that generalisations can not be drawn, but that they should be made with caution.

In this chapter several variables related to socio–demographic, and socio–economic data, satisfaction with existing services of polyclinics and health characteristics of a sample of 250 patients were examined. Beginning with occupation, the sample population was characterised by a preponderance of government employees, students and housewives, who together formed about four–fifths of the interviewed sample. These results have proven to be consistent with other outcomes obtained in similar Arab oil–producing countries like Saudi Arabia and Iraq (Al–Ghmdi 1981; Al–Ribdi 1990; Habib and Vaughan 1986). The findings of this study have also revealed low proportions of polyclinics' use on the part of better–off and more sophisticated merchants, businessmen and high ranks of government officials which imply that they may have preferred to use private clinics or other health care services. Generally speaking, the labour force in the sample population is markedly overrepresented by government staff as opposed to other occupations.

The overall difference of patients' occupations and their sex was statistically highly significant ($P<0.001$, Table 6.1).

The average household size of the patients was about 8 persons, slightly higher than the average household size of respondents reported in Chapter seven. It appears clear then, that the sample population has come from large households. It is also comparable to that of Arab and some developing countries but is much more than that reported in the developed world. For example, Al–Ribdi's study in 1990 of Al–qassim region of Saudi Arabia has showed that the average number of persons per household was 8.6. As the average size of household has risen from 6.2 as reported in the 1973 Libyan census to 6.9 in the 1984 census, this may indicate that household size has been getting larger over the last ten years until reaching 8 persons per household in this study. Part of the reason for large families seems more likely to be accredited to cultural attributes preventing use of contraceptive devices and encouraging all members of a family to live together; it is thus common to find parents, their children and grandchildren living together in one household. It can be inferred from this that the potential use of health care services may increase, requiring more facilities to be established.

As for marital status of the patients, 56% were classified as married. The high proportion of married users is matched in other Arab countries. Thus, a survey of out–patients at the central hospital in Riyadh, Saudi Arabia revealed that over 60% of the users were married (Haristany and El–Torky 1985). The frequency of married patients not only reflects their greater number in the population, but also their higher responsibility for taking care of each member in the household. Yet the 1984 census demonstrated that 17% of females over 15 years old were divorced or widowed as compared to only 8.9% in this study. The proportion of males in this respect was 1.8% in the 1984 census and 1.3% in the current study. The higher ratio of divorcees and widows among females than among males may be explained in terms of the limited chance of women re–marrying after being divorced or widowed. Thus, a statistically significant difference between marital status and sex of the patients frequenting the polyclinics was ($P=0.021$).

Another indicator of socioeconomic status of the patients was housing conditions. Conforming with results of the household survey explained in the next

chapter, this sample will show that more than three–quarters (76.4%) of the patients own their housing and the remaining houses were either rented or provided by the State. The majority of patients were lived in modern Arab houses, generally concrete built; many of which were built to traditional design but with modern taste and conveniences. Generally speaking, housing seems to be of high quality, well provided with sanitary facilities and public electricity supply. Thus, the vast majority of the population appear to enjoy good conditions of housing with sufficient living space and modern conveniences. Given improvement in health care services, the advantageous impact of good quality housing would be healthier people, lower infant mortality rates and above all a higher life expectancy.

Enormous efforts have been made by the State to establish as many educational facilities as possible in all levels of schooling to serve communities all over the city. The general trend is that more people now have access to basic education than ever before, while many can even achieve secondary education within their community. Thus, illiteracy among the younger generation has been reduced to a minimum, and the disparity in literacy between males and females has also become very narrow. The eradication of illiteracy among a wide segment of the population is expected to improve the general awareness of the public and increase their understanding of better use of health care services as well as to help to free individuals from relying on traditional medicine. The findings of the 1984 census have shown that the illiteracy rate in the Municipality of Benghazi was about 25.1% of which the proportion of females was twice that of males, 36.3% and 14.6% respectively. The author's findings have revealed that the total illiteracy of both sexes was put at 20.8%, but tends to be higher among females (25.9%) than males (14.8%). Although the elderly constituted a very small group of the sample population, it seems that they and the middle–aged group have suffered a lot from a lack of or limited facilities for formal education particularly, during the Italian occupation, when a policy of depriving Libyan nationals even from basic education was adopted. However, in recent years, adults have had access to intensive programmes by adult education, which is functional in all primary schools to minimise the level of illiteracy. The impact of this policy is still minimal, however, as most of the old adults are unwilling to frequent these facilities. The impact of better education on using folk medicine may be inferred from the findings of Caldwell (1993) that as literacy rate mounted to about 80% of any population, the use of traditional

medicine will be reduced to less than a third. As for self–medication, although other studies conducted elsewhere have found a positive association between literacy and self–medication before seeking help (Greenk 1985 and Saeed 1988), this study did not, as just 30.4% reported having experienced self–medication. The relationship between education (literate and illiterate) and self–medication did not prove to be significant (P=0.161). It seems obvious, however, that education has less effect on use of the services of the polyclinics by the sample population as the relationship between both did not prove to be statistically significant (P=0.178). A recent and similar outcome of no relationship between education and the use of public health facilities was also noticed in Saudi Arabia (Al–Ribdi 1990).

In terms of the economic status of the sample, the majority had lucrative incomes comparable with the results of Abudejaja *et al.,* (1987), but not substantial enough to cover the high costs of private health care. However, shortage of comparable data make it quite difficult to compare the sample with the total reference population or even with their situation in the past. Given the critical nature of the question of income, it must be realized that some answers may not be accurate, even though the responses were classified into four broad income categories (Table 6.7). More than four–fifths (87%) of the sample population did not have sufficient income to frequent private clinics. An example from another, similarly wealthy country, shows that the cost of three days of in–patient medical care at a private hospital in Jeddah may exceed £600 (Al–Ghamdi 1981) as compared to £500 in a private clinic in Benghazi. Therefore, in line with the household survey findings and other studies carried out elsewhere (Al–Ribdi 1990 and Habib and Vaughan 1986), with the vast majority of respondents lying in the middle or lower income groups, it may be inferred that most of the population would not be able regularly to afford the high costs of private care. As long as one visit to a private clinic may cost between £10 to £15 and a similar amount for drugs from a private pharmacy, therefore most people would turn to the governmental polyclinics, particularly for routine and ordinary consultations. Although the present data did not reveal a clear relationship between income and the use of the services of polyclinics (P=0.108), there was a tendency for the use of polyclinics to decrease with increasing income.

The findings have revealed that the health care services of the polyclinics were utilised by almost all age–sex groups though the proportions were not the same. In general, the age–sex structure of the sample population of patients has proven to be more or less similar to that of the national figures and to that of the household survey discussed in Chapter seven, except that the sample tends to be much less in the age group below 16 years. The small proportion of the young population in this sample may be attributed to one or more of the following reasons:

1. The widespread distribution of child and maternity units all over the city may have attracted a great number of these young people to abandon the services of the polyclinics.

2. The absence of a strict referral system made it easy for many of the population of Benghazi to frequent the advanced services of the out–patients' clinic of the infant hospital rather than polyclinics.

3. Probably one of the major reasons for parents' refusal to cooperate with the team was the inordinately hot weather during which the study was carried out.

However, the dominance of women in the reproductive age group (16–45 years) may draw our attention to the need to strengthen and extend gynaecological services in the health care delivery system in the city. Similarly, the low presence of elderly people in this sample raises the possibility that this group of people were either under–utilising the services of the polyclinics or using other sources of care.

The study has revealed that the patterns of ailments which have led to the use of the polyclinics were mainly acute in nature and apparently not serious. The great bulk of sickness seemed to be of the kind that can be dealt with by the services of the polyclinics and with their present state of competence. Apart from dental complaints, approximately 80% of all ailments diagnosed in the five polyclinics were for five major disease groups: respiratory diseases, internal, skin diseases, musculoskeletal and diabetes.

Polyclinic services coverage is a concept expressing the extent of interaction between the service and the people for whom it is intended. Such being the case, it is important to examine intervening factors relevant to spatial equality in polyclinics' service provision and whether their services are adequately distributed to serve

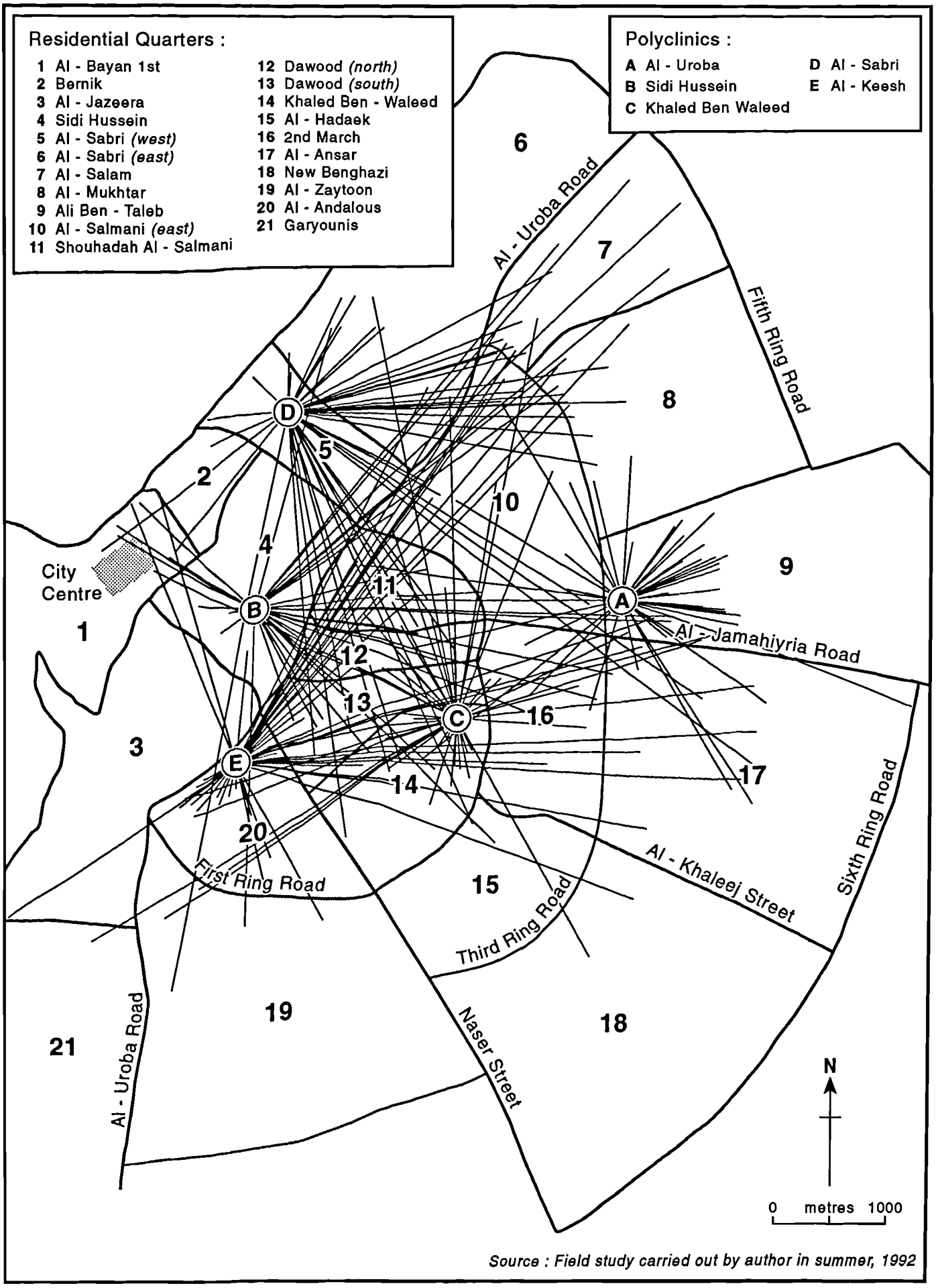
most of the city dwellers. Spatial imbalances in the location of specialised services still exist, particularly in the newly built–up areas. Some specific neighbourhoods situated in the periphery of the city are, in general, lacking even the most basic medical services. The present analysis examines the health service coverage of the polyclinics and their sphere of influence as well as identifying their shortcomings in terms of certain types of service. Figure 6.7 shows a flow line diagram representing proportions of patients attending the five public polyclinics in Benghazi. The nearest polyclinic hypothesis tends to be manifestly applicable as, in most polyclinics, more than 67% of patients attended their closest surgery.

However, in some instances, large numbers of patients in some quarters were bypassing their nearest or second nearest polyclinic to travel long distances in search of better or specialised medical services. Al–uroba polyclinic appears to offer services for more than 70% of the population of its neighbouring quarters of Ali ben taleb and Al–salmani (east). Both quarters are located within an average distance of 2 km. from the referred polyclinic. The remaining 30% were coming from rather distant areas such as shouhada Al–salmani, 2nd March and Al–ansar. Here, the major ailments that have been dealt with were skin diseases, eye, nose, throat, and child care, in which this polyclinic is specialised.

In addition, most patients who use the services of Sidi hussein polyclinic come from a wide area, of average distance of 3.4 km., and mainly living in three quarters: Sidi hussein, Shouhada Al–salmani and Al–salmani (east). Surprisingly large proportions of patients (46%) from almost all quarters were bypassing their nearest or second nearest polyclinic to attend this polyclinic. The most plausible interpretation of this phenomenon is the availability of diabetic treatment there, it being the only polyclinic provided with specialists and suitable drugs for this field of medicine in the whole city. Accordingly, it seems obvious that the absence of certain specialties in some polyclinics has led to people not attending the nearest polyclinic.

As for Khaled ben waleed polyclinic, it was realised from the sample taken from patients that the great majority were living within an average distance of 2.5 km. Yet, this polyclinic caters for a proportion of the inhabitants of Shouhada Al–salmani, 2nd March and Khaled ben waleed quarters, which altogether comprise

Fig. 6.7 Home - to - polyclinic vector distances in metres for patients surveyed in Benghazi, 1992



Source : Field study carried out by author in summer, 1992

up to 58% of all frequent patients to this clinic. However, besides being located in one of the most populated area of the city, it is also known to be the main provider of specialised bone and urology services for the city. A large number of patients (46%) frequent it for these two specialties. The high daily frequency of patients seeking treatment for bone and musculoskeletal specialties in particular indicates that there is a great need for such specialties. Therefore, it is recommended to expand this field in other health care facilities in order to mitigate the severity of overcrowding at this clinic.

Since the polyclinic of Al–sabri is close to the main bus station, the inhabitants of the eastern quarters of the city are inclined to attend it more frequently as public transportation is readily available. Therefore, this polyclinic serves 56% of frequent patients coming from Al–sabri (west), Al–sabri (east) and Al–salmani (east) quarters. This clinic caters for more patients residing within an average distance of 3.4 km (Table 6.9), a matter which explains the large number of patients using it daily for the specialties of skin diseases, respiratory problems and heart surgery. In addition, cases of cardiac and glandular diseases are dealt with only at this clinic. This implies that these fields of medicine are only available in the north and north–east of the city in this clinic. This may lead us to anticipate that it provides such services not only to the area of Benghazi but also to the neighbouring villages and towns.

A sample of the last polyclinic, Al–keesh shows that this surgery looks after a sizeable portion of inhabitants of almost all northern and eastern quarters, though the vast majority were coming from Al–salmani (east), Al–andalous, 2nd March and Al–ansar quarters. This clinic provides a wide range of health care services to the population of the south and south–west quarters, though it probably serves the whole area in the fields of respiratory diseases, internal medicine and family planning. This also indicates that a great number of those who attend this polyclinic travel a mean distance of 3.2 km. to attain the specialised medical services on offer here, and which are lacking in the neighbouring health care facilities of their own quarters.

The samples of patients taken from the five public polyclinics have shown some behavioural variations in terms of attendance. Certain differences in atten-

dance patterns were quite clear, as some have manifested a twofold adherence to nearby and remote polyclinics, while others have revealed an attachment to local polyclinics, but not necessarily the closest (Figure 6.7). More specifically, approximately 33% of respondents were attending polyclinics outside the neighbouring quarters. The most plausible explanation is that once a specialty of medicine is not available locally, some patients will look for it elsewhere, not least because most Benghazi dwellers enjoy a great personal mobility because of high rates of car ownership. Thus, it seems clear that those who attend more distant polyclinics rather than the local ones were not able to satisfy their need for medical specialties, or they were more mobile, or both.

Moreover, the results presented here suggest that, while distance from the heath care provider is an important determinant of patients' responses, its importance may sometimes be modified by other factors. The outcomes of this research show that patterns of demand differ for the different distance zones (Figure 6.5). This indicates that the distances from patients' homes to the polyclinics relatively impeded some segments of the population from consulting and from frequently attending these services. The distance impact appears to be most notable in those groups who consult most. The consultation rate is nearly twice as high for females (36–64 years) as compared with males in the nearest distance areas but in the furthest zones is actually lower. It should be realised, however, that regardless of distance to the facility, patients in the city of Benghazi had a high rate of utilisation of modern health facilities due to their high expectation of cure from such services. Expectations about the quality of care of a given healer or facility also offset the effect of distance. On the whole, no significant difference was found in distances travelled to polyclinics by users in different age and sex groups, though differences were great for patients attending with acute sickness, chronic sickness and accidents. For the latter diagnosis, it may be that the effect does not exist for women, as the majority of accidents may occur at roads, workplaces and not at homes. The importance of proximity on a patient's decision to select a health care facility was confirmed by the findings of this study in terms of travel distance and travel time. About half of the users of polyclinics came from less than 2 km and consider themselves to live close to their polyclinics. It seems evident that distance does not act as a barrier for patients using the services of polyclinics in Benghazi.

Chapter VII

Characteristics of Sample Households: Their Morbidity and Physical Environment: A Single–Round Retrospective Interview Survey

7.1 Methods and Questionnaire

7.1.1 Introduction

The ultimate objective of this research is to assess the health status, accessibility and service use of a sample of households in Benghazi city. The previous chapter gave a reasonably comprehensive picture of the utilisation of outpatient polyclinics' services based mainly on attendance at these institutions. This, however provides information only on the part of the population that are covered by and use these institutions. The non–users of such health care services are excluded, though these people might need greater attention by health care planners. Service–based studies provide information on case episodes rather than on the individual, which is considered a serious shortcoming. However, given the diversity of health care provision in the city, selecting a limited number of polyclinics' attendance also appears not to be sufficient for eliciting information on the total experience of the community in terms of accessibility, sickness patterns, and use of and satisfaction with services.

Moreover, using routine data obtained from outpatient records has proven inappropriate for planning purposes for the following reasons:

1. the data may be out of date;
2. the data may be inaccurate; and
3. most importantly, the data may not be specifically designed to meet the requirements of the intended research or the evaluative purposes.

Since neither the existing outpatient recording systems (routine data) nor the service–based surveys are sufficient sources for providing representative informa-

tion on the health status, and service use of the whole population, a household survey was carried out because of its great value in this respect. Therefore, the overall purpose of this survey was to meet some or all of the following objectives as summarised by Timaeus *et al.*, (1988:359):

"1. promote the development and improvement of national health information systems;
2. measure patterns of disease and mortality;
3. measure the access of individuals and communities to services and resources that influence health and identify factors that restrict such access;
4. elucidate the processes leading to disease and mortality and quantify their effects;
5. evaluate the effectiveness of health interventions in improving health and reducing mortality;
6. develop specific methodologies for collecting and analysing health related data."

7.1.2 The Sampling Design

Beginning with sampling, it was hoped that beyond the basic structural requirements of a representative sample, the magnitude of sampling errors should be reduced to the absolute minimum. Moreover, due to the need for conducting an interview survey in a limited period of time, limited financial resources and other social and political factors, a systematic sample with a random starting point was thought to be the best choice. Three major reasons lay behind this decision:

1. low efforts of the method;
2. simplicity of execution;
3. more even distribution of the sample over the studied population.

The systematic random sample method adopted here is much better than the randomly sample method used in the previous chapter and other methods, particularly in terms of producing a more scattered sample. The sample, which needed to be representative of Benghazi's population of over 500,000 inhabitants, was 400 households. For determining the required sample size, the author has resorted to Krejcie and Morgan's simple graph (1970), which was developed according to the following formula:

$$s = \frac{X^2 NP(1-P)}{d^2(N-1) + X^2 P(1-P)}$$

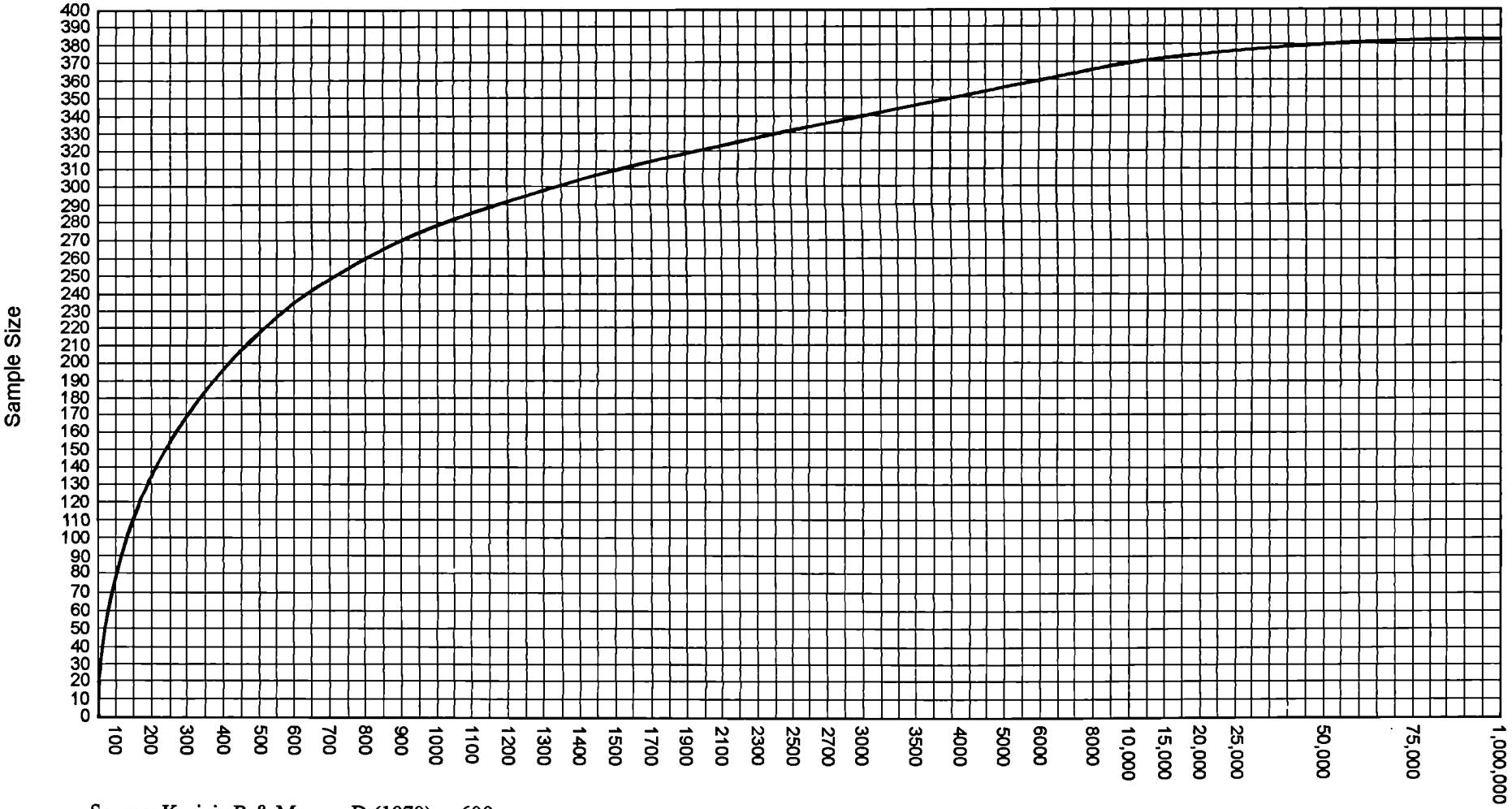
s = required sample size.
X^2 = the Table value of chi–square for 1 degree of freedom at the desired 95% confidence level (3.841).
N = the population size.
P = the population proportion (assumed to be 0.5 since this would provide the maximum sample size).
d = the degree of accuracy expressed as a proportion (.05).

Figure 7.1 shows that the relationship between population and sample size is proportional with a diminishing rate, implying that the sample size increases with an increase in population until it becomes almost fixed at slightly more than 380 cases (Krejcie and Morgan 1970). Based upon the above mentioned Figure, 400 households were interviewed from five selected areas (each area with 80 households), each served by a polyclinic.

In order to have detailed information on demographic and socio–economic factors to guide area selection, the 1988 census data and Benghazi residential quarters' map (Figure 5.7 with an explanatory Table 5.8) were used to define sampling units. Some prior knowledge of the social structure (age composition, social characteristics etc.), transportation network, housing patterns and the household types dominating in each selected area was provided by the census data. Thus, interviewing 400 eligible respondents in five carefully selected enumeration areas was undertaken. Enormous efforts were made in the selection of these neighbourhoods to include a wide range of different variables related to access, socio–economic status, physical environment, use and satisfaction with services.

The first step which was performed at each area after its selection and discussion with communities, was to create a map of all occupied houses in the area. An identification number was given to each household included in a designed framework. The basic sample unit in the interview survey was a household. This was used in accordance with the standard social survey definition developed by Atkinson (1971) as a group of people who all live regularly at one house and who share

Figure 7.1 Relationship between sample size and total population



Source: Krejcie R & Morgan D (1970), p.609

at least one meal per day and have collective financial responsibilities for providing basic living essentials.

7.1.3 Structure of the questionnaire

The household interview survey questionnaire fell broadly into five parts; each part was designed to cover a different set of variables (Appendix B). The data were collected through interviewing a responsible adult in the household, usually the head of the household, his wife or the eldest son or daughter.

Part one (Questions 1 to 4). This part was concerned with social and demographic information on each member of the household, and included questions on sex, age, relationship to respondent, marital status, occupation and education. Information for selected members of a household (i.e. child < 5 yrs, child > 5 yrs, husband, wife, grandmother, grandfather) concerning health status, type of service used, duration of sickness, and mode of transport used for seeking care was also gathered.

Part two (Questions 5 to 22). Questions in this section were designed to obtain information about the last health care facility used by respondents in terms of the following items:

1. whether physicians were available;
2. whether physicians at the visited health care facility rotate too often;
3. whether respondents were given the opportunity to choose the preferred doctor;
4. whether respondents faced any language problem with doctors;
5. whether prescribed free medicine was easily obtained;
6. the overall time that respondents had to wait to be treated and spent with doctors;
7. whether respondents had home treatment before seeking a health care facility;
8. the positive and negative aspects of the last health care facility visited including trips to facilities and parking lots.

Part three (Questions 23 to 29). This section was designed for the collection of data to help measure accessibility factors (time and distance from the nearest polyclinic). Using Benghazi's subdivision map and the response to question 1 in

part one, the author was able to estimate the actual distance between place of residency of each respondent and the nearest polyclinic he or she uses.

Part four: this part is divided into five main sub–sections, each section dealing with a group of variables.

(A) Questions 30 to 36 were addressed to elicit information on the opinions and viewpoints of the informants about health care services used and other relevant aspects of their behaviour.

(B) Questions 37 to 41 examined attitudes of respondents towards the transportation system, driving ability, and public transportation.

(C) The household physical environment was visually observed by interviewers along with Questions 42 to 47, which were devised to obtain information on condition of dwelling, number of rooms, quality of drinking water, source of light and number of latrines. It was expected that these measures may be associated with illness and thus service use.

(D) Questions 48 to 50 were designed to collect data on ownership of certain assets that were thought relevant to economic status. Car ownership and assets of the house i.e. telephone, television, freezer, video etc., were considered as good indicators of economic status for each household.

(E) Questions 51 to 53 were concerned with household income and structure. Though obtaining true answers to these questions was somehow difficult because of the sensitivity of the questions as they deal with the number of working people in each household and their incomes, it was anticipated that they would provide basic economic information on each household.

Part five (Questions 54 to 65). This set of questions was devised to obtain information on cultural attributes concerning consulting habits with doctors between males and females as well as the social network of help and mutual cooperation among households, particularly in terms of the working woman and children.

7.1.4 The interviewing procedure

After the questionnaire form was pilot tested in the field on 25 households,

certain changes were made. Some unclear questions were cancelled and others were amended. The interviewing process was carried out by 12 trained research assistants all of whom were familiar with social survey questionnaire research and most of whom took part in the first institutionally–based study conducted into polyclinics' premises. Acquaintance of the team with the study population and the fact that they had grown up in the city, made it extremely easy to come into close quarters with interviewees and to win their confidence and trust. Because of the need to interview an eligible person, many interviews had to be done in the afternoon or evening (2.30 pm to 6.30 pm) as this is very often the only time when a working head of household can be found. Every attempt was made to interview a knowledgeable adult member of a household about the rest of the members. However, as a last resort, when it had proven impracticable to contact the head of household or when he or she was ill and was not able to provide reliable information needed, interviewers were instructed to conduct a proxy interview with a near relative. For the most part, the sample interviewed were beyond the official school leaving age of 16 years.

In publicizing the study among local communities two weeks before interviewing, clergymen and city council leaders (secretaries of popular congresses) at each area had briefed the people with the objectives of the study and thus called for their cooperation with the interviewers. In addition to this, some young local volunteers (males and females) were very helpful in escorting the research team to respondents in each area.

Prior to the day fixed for interview, a household list was created for houses currently occupied and for the purpose of the study. The sample was a systematic one including every fifteenth house with a random start. As people were previously informed of what the study was about, interviewers did not encounter any problem and were cordially welcomed on the day of conducting the interview. Interviews were held in the reception room (if any) and questionnaires were filled out section by section in a friendly environment between interviewers and informants. When informants did not understand the meaning of a particular question, interviewers were ready to explain it without hinting at potential answers. It is worth mentioning that the courtesy, generosity, and the friendly nature of the Libyans, who always welcome their guests, were positive aspects in obtaining the required data

without losing the structure of the interview process. In this very amicable environment, the interviews were carried out smoothly and successfully without any interruption over a period of three weeks. The questionnaire was designed and written in English at the Department of Geography, University of Durham, but was translated into Arabic. Therefore, all interviews were conducted and questionnaires filled out in Arabic.

At the end of each working day, routine checks on the completed forms were made by the author for completeness, accuracy and consistencies of collected information. In cases where there was a mistake or interviewers failed to interview a household listed in the sample, another attempt was made. If this failed too, the next household was selected and interviewed. The overall number of households successfully contacted as planned was 400. It took at least 30 minutes per household for all the questions included in the questionnaire to be answered.

7.2 Results and Response Rate

Out of 400 households in numbered houses planned to be visited and interviewed, 392 households were positively interviewed while the remaining 8 households were substituted to achieve the target population (400 households). Thus, the response rate without replacement was 98% which is considered very high in terms of household surveys. For example, it is much higher than the response rate of a survey carried out in Washington D.C by the Institute of Medicine, where the completion rate was 86% (Dutton 1986) and higher than another study conducted in a similar Arab country, southern Iraq where the response rate was 96.1% (Habib and Vaughan 1986). It is also higher than the response percentage of 94% from a household survey made recently in Sweden (Lynöne *et al.*, 1993).

The high response rate was principally due to the following:

1. Involvement of assistant researchers from the same communities in which the survey was carried out in order to create an environment of confidence and cooperation of those people.

2. Encouragement by religious preachers during Friday prayers and local councils during the two week period before the study began.

3. Use of a detailed map demonstrating the city subdivisions, street names and house numbers.

4. Finally, the large size of most of the households mean that an eligible adult was usually available to answer the questions.

The positive response from the communities visited obviously reflects the strength of the approach, the commitment of the study team and above all the growing health consciousness of the people. In the remaining eight households, which were not interviewed and thus replaced by others, the reasons given for not cooperating included the recent death of a household member in one case and the presence of a wedding party in the other. Three households refused to be interviewed. The remainder were visited at an inconvenient time, so they were unable to cooperate. As the objective of this research was to select randomly eighty respondents from five known areas around the polyclinics in the city of Benghazi (presumably the head of each household or the second in charge, as it was thought that they are able to provide the necessary information on each member of the household) the replacement of eight missing households was an essential matter. Table 7.1 shows the details of the response rate of Benghazi's selected households.

Table 7.1: Total population, total households, sample households and response rate of Benghazi's population

Total population in the city of Benghazi	460,000	
Total households in Benghazi's quarters	80,000	
Number of households enlisted in the sample	400	100%
Number of households interviewed without replacement	392	98%
Number of replaced households	8	2%
Reasons for the eight non–responses:		
Default of appropriate contact	3	
Rejection of households	3	
Social reasons	2	

Source: Field study carried out by author in summer 1992.

7.3 Socio–demographic profile

Out of 80,000 households residing in Benghazi in 1992, a total of 400 households were contacted providing information on 2983 individuals. The findings on age and sex structure of the sample population have reflected the typical pattern of a rapidly growing country consistent with the national figures mentioned earlier (Chapters 4 and 6). Children aged 0–14 constituted 36% as compared with 51.4% for the entire country (Census 1984). Adults aged 15–45 years were 53.4% and those between 46–64 were 8.2%. Elderly people 65 years and above were just 2.4%. Among children 0–14 years of age, infants below 5 comprised 9.9% of the total sample while pre–school children (age 5 years) were 2.3% and school age children (6 years of age) were 3%. Children constitute an important group in the population as they need special attention in terms of health care supply and because of their nature as an active group experiencing rapid physical and mental growth and development.

7.3.1 Age–Sex structure

The sex ratio of the sample population was 993 females to 1000 males as compared with that of 1171:1000 for Benghazi, (Abudejaja *et al.*, 1987). The sex and age structure of the sample was more or less similar to that of the national

figures except that the sample (Table 7.2) tends to have less in the age group 0–14 ages. This can be attributed to the promotion of education among married women and the progress of the country as a whole scientifically and intellectually, which have led to the adoption of child spacing and family planning. Moreover, the comparative reference population was dependent on the 1984 census because it was the only authentic census available then. The wide gap between 1984 and 1992, the date of conducting this study, makes some comparative figures unreliable. This, of course has created difficulties in carrying out any reasonable and accurate comparative analysis in this regard.

Table 7.2: Age and sex structure of members of the sample households in 1992

Age in years	Males	Females	Total	Column %
0–1	48	35	83	2.8
2–5	154	125	277	9.3
6–14	353	363	716	24
15–45	763	830	1593	53.4
46–64	143	98	241	8.1
≥ 65	36	35	71	2.4
Total	1497	1486	2983	100

source: Field survey carried out by author in summer 1992.

7.3.2 Household size

The average household size of the sample population was 7.5 compared with the 1984 national average of 5.8. The distribution of households according to the number of people per household is shown in Table 7.3.

Table 7.3: Household size of the sample population of Benghazi

Household size	frequency	percent	cumulative %
up to 4	129	32.25	32.25
5–6	92	23.00	55.25
7–9	103	25.75	81.00
10–12	56	14.00	95.00
13–17	20	5.00	100.00
Total	400	100.00	100.00

Source: Field study by author in summer 1992.

More than half (55.3%) of the sample households contain an average of six persons or less, while 32.3% of households were of an average size of 4 persons or less. Those with between 7 and 9 were 25.8%, with 14% having between 10 and 12 members, leaving the last category of 13 people and more, as 5%. The overall average household size of 7.5 may appear high but is not exceptional when compared to that of Arab countries (Abudejaja *et al.,* 1987) and other developing nations. It is remarkably high in comparison to the average household size of the developed world, however, which rarely exceeds 3.5 (UN, 1992).

7.3.3 Educational status

Excluding young children below school level (12.5%) and about 9.2% of the sample who were designated illiterate, more than three quarters (78.3%) of the remainder were literate, confirming that a significant proportion had received formal education. More specifically, more than a quarter of the sample (25.9%) had primary education, another quarter (25.9%) had preparatory education, 12% had secondary education, 8.1% received university education and the rest (7.2%) had received technical and other education. The high illiteracy percentage among adults (especially females) above 40 years of age could reflect the very limited facilities available for formal education immediately after independence in 1951. Further, during the Italian era, education in the Italian language was compulsory, completely ignoring the national language. As can be seen from Table 7.4, the illiteracy rate is higher among old people, particularly women (72.9%) as compared with men (27.1%). The rate of illiteracy was remarkably high during the early 1960's, particularly among women, but after establishing adult education centres

and free night schools, many adults gained access to education and consequently the number of educationally deprived people has considerably decreased. From 1960 onwards, Libya made considerable efforts towards narrowing the gap between educating the two sexes; a legacy of the dark past of colonialism. Consistent with this view Caldwell (1986:209) made it clear that

> Libya and Iraq achieved the world's greatest increases in ranking between 1960–1981, raising the proportions in primary school from one–quarter and one–third respectively to universal enrolment, and reaching secondary school proportions for both sexes (with females making up a substantial fraction) of 67 and 59 per cent respectively.

Where traditional health attitudes are thought to be strong in a developing country like Libya and yet conceived by health authorities to impede development processes, educational institutions certainly have made great strides towards overcoming such backward attitudes of dependence on folk medicine for treatment, especially those views that were dominating during the early 1960s. Moreover, education may have also acted as a proxy for a variety of cultural influences, all of which were dispatching modernizing ideas (Benyoussef and Wessen 1974). Education, however, not only provides increasing concern with respect to health requirements and to the methods of modern medicine, but in general also permits a person to develop a more comprehensive view about health care systems which otherwise may not have been acquired.

Table 7.4: Distribution of sample according to education and sex

Education	Sex			Total %
	Male	Female	Total	
Illiterate	74	199	273	9.2
%	27.1	72.9	100	
Primary	369	404	773	25.9
	47.7	52.3	100	
Preparatory	422	326	748	25.1
%	56.4	43.6	100	
Secondary	169	187	356	12
%	47.5	52.5	100	
University	148	97	245	8.1
%	60.4	39.6	100	
Technical institute	97	104	201	6.7
%	48.3	51.7	100	
child < school age	207	166	373	12.5
%	55.5	44.5	100	
Others	10	4	14	0.5
%	71.4	28.6	100	
Total	1496	1487	2983	100
%	50.2	49.8	100	

Source: Field study conducted by author in Benghazi in summer 1992

7.3.4 Occupational status

A high percentage of the total sample was students at all stages of education (43.2%) as shown in Table 7.5. Another 26.1% was composed of housewives and children below school age. The rest (30.7%) were people involved in different professions: 18.4% were government officials; 3.4% businessmen and merchants; retired and unemployed were about 5.5%; and labourers and others e.g farmers etc. amounted to 3.4%.

Table 7.5: Distribution of sample according to occupation and age

Occupation	Age						Total
	< 1	1–5	6–14	15–45	46–64	≥ 65	
Government officials	-	-	-	474	72	2	548
%	00	00	00	86.5	13.1	0.4	100
Businessmen	-	-	-	33	18	2	53
%	00	00	00	62.3	33.9	3.8	100
Labourers	-	-	-	36	13	2	51
%	00	00	00	70.6	25.5	3.9	100
Students	-	-	699	599	-	-	1289
%	00	00	54.2	45.8	00	00	100
Unemployed	-	-	-	104	3	2	109
%	00	00	00	95.4	2.8	1.8	100
Retired	-	-	-	-	31	25	56
%	00	00	00	00	55.4	44.6	100
Housewives	-	-	-	296	89	32	417
%	00	00	00	70.9	21.3	7.8	100
Merchants	-	-	-	38	7	4	49
%	00	00	00	77.6	14.3	8.2	100
Children < school	83	278	-	-	-	-	361
%	23.00	77.0	00	00	00	00	100
Others	-	-	16	24	8	2	50
%	00	00	32.00	48.00	16.00	4.00	100
Total	83	278	716	1595	240	71	2983
%	2.8	9.3	24.00	53.5	8.1	2.4	100

Source: Field study conducted by author in summer 1992.

7.3.5 Marital status

As the sample is mainly young, it is not surprising to find that 70.7% were single and about a quarter (25.7%) were married (Table 7.6). The remaining 3.6% were either divorced or widowed. Women in the reproductive age group (15–45 years) formed 27.9% of the total sample population and 56% of all females, as compared with 40.5% of females for the entire country. Out of this group 46.3% of women (385) were currently married, compared with 59.4% for Libya as a whole.

Table 7.6: Distribution of sample households classified according to marital status and sex

Marital status	Sex			Total %
	Male	Female	Total	
married	383	385	768	25.7
%	49.9	50.1	100	
single	1105	1003	2108	70.7
%	52.4	47.6	100	
divorced	1	24	25	0.8
%	4	96	100	
widowed	7	75	82	2.8
%	8.5	91.5	100	
total	1496	1487	2983	100
%	50.2%	49.9%	100%	

Source: Field study carried out by author in summer 1992.

7.4 Socio–economic Status

Socio–economic factors have consistently been identified as variables which affect the demand for and levels of health care services. Almost everywhere, researchers have revealed that lower socio–economic groups have greater potential for use of health care services than the higher socio–economic groups (Phillips 1986). Probably the key single variable of most influence in differential use of health care services is not need but income, although it is not so easy to distinguish its effect from other variables such as education, social status etc. In general, it has been stated that low income groups are the most susceptible to under–utilisation, especially in a fee for service system (Phillips 1986) . Further, as the matter of health care utilisation is fraught with many visible and invisible factors, it seems more appropriate to focus here on some variables related directly to the socio–economic status of the sample households as shown in Table 7.7.

Table 7.7: Distribution of households according to socio–economic factors

Factor	No. of households	%
1. Monthly income per Libyan dinars*		
Up to 199	138	34.3
200–399	174	43.5
$\geq$ 400	88	22.2
Total	400	100
2. Kind of dwelling		
Flat	196	49
Villa	46	11.5
Traditional Arabic house	38	9.5
Modern Arabic house	115	28.8
Others	5	1.2
Total	400	100
3. Status of home		
Owned	260	65
Rented	110	27.5
Given by government	28	7
Others	2	0.5
Total	400	100

* A Libyan dinar approximately equals £2

Source: Field survey conducted by author, 1992

As can be seen from Table 7.7 about 34.3% of the sample households indicated that their monthly income lies below 200 L.D., or less than £400 pounds, while nearly 43.5% of the sample households had an income in the range of less than 400 L.D. Only 22.2% of households questioned revealed that their monthly income was equal to or exceeded 400 L.D. Consequently, income level was classified into three categories: lower–those receiving up to 199 L.D.; middle–200 to 399 L.D.; higher–400 L.D. or more. This Table has further demonstrated the dominance of middle income and lower income groups, while the higher income category represents only one fifth.

Referring to the dwelling conditions, the great majority of Benghazi's population have decent dwelling conditions represented either by flats, villas, traditional or modern Arabic houses. Most of the sample households were living in flats (49%) either built by the people themselves or provided by the government, and about

29% were occupying modern Arab houses, as they are preferred by the indigenous population; the State supports local civilians by giving long term mortgages without interest for building such housing. Just 12% were found to enjoy living in spacious villas; supposedly wealthy businessmen or the high ranks of government officials. The rest, about 11%, were found to be living mainly in traditional Arab houses and these are mostly from the middle income class group.

Table 7.8 : Distribution of households according to ownership of certain assets

Ownership of certain assets	Number of Households	% from the sample
Freezer	140	60
Fridge	392	98
Air–conditioning	102	25.5
Video	213	53.4
Tape recorder	346	86.5
Radio	378	94.5
Possession of a telephone	145	36.3
Possession of a car	313	78.3
Availability of electricity	400*	100

* Total sample of households was 400

Source: Field survey conducted by author in summer 1992

Generally, about two thirds (65%) of the sample households were identified as having their own homes and 7% were given flats by the State. Twenty eight per cent rent their houses and most of those houses were owned by the State as well.

As expected at the quarter level, there is a significant positive association between wealth status as measured by the kind of housing and its ownership, and the ownership of the following assets: freezer, fridge, air–conditioning, video, tape recorder and radio. Probably the most important indicators of high social status as reported by other studies are: the possession of a telephone or the ownership of a car or both (Weiss *et al.*, 1970 and Bailey and Phillips 1990). Table 7.8 demonstrates the differences between household ownership of all assets, and thus, one can make an inference of the classification of those households accordingly. Car and telephone ownership in households are different: while 78.3% of households

keep a vehicle, just 36.3% of households showed that acquiring a telephone was not as important as ownership of a car. Over 50% of the entire sample households were found to have owned the all assets shown in Table 7.8, which implies that the social status in the five selected areas of the city of Benghazi is more or less high.

7.5 Cultural Factors

In very broad terms, health planners and geographers have identified two groups of influences on health care utilisation behaviour, those dealing immediately with distance and accessibility and those concerned with features of the individuals and their cultural attributes (Habib and Vaughan 1986, Al–Ribdi 1990). There is a considerable difference in use of medical services between people of different age and sex. For instance, older people tend generally to use services more than younger groups, and females, especially accompanied with infants, attend more than males. It is further known that females make more routine use of preventive medicine and follow ups. Females also tend to be more vulnerable to depressive illnesses than men (Phillips 1986). In cultural terms, apart from sex discrepancies there are some notable dissimilarities among various countries. For instance, in Libya and probably in most Islamic countries there are some cultural differences concerning consulting doctors between the two sexes. About 90% of women interviewed in the household survey preferred to be checked by a female doctor rather than a male one and only 10% did not pay any attention to this matter. The main reason given for selecting female doctors was the fact that women can not be frank with male doctors (58%) and the second reason was that they feel shy with male doctors (26%). The rest (16%) sought female doctors either because of the refusal of their husbands or because their families did not like it. Moreover, when women were asked if they looked for another health care facility if a female physician was not available, 62% responded negatively, while 38% positively emphasized that they would search for another place to consult a female doctor. This suggests that the potential movement of sick women among polyclinics would be great as the number of female physicians is not sufficient and widely spread all over the city. More than three quarters (78%) of the women surveyed asserted that they had had children and only around a fifth (22%) claimed no children. Also, women were asked whether they take their children when they attend health care facilities; four out of five (80%) answered "no", indicating that they relied significantly on others

for child care when they visit a polyclinic. Only one–fifth (20%) confirmed that they had had no alternative but to have taken their children with them. However, many married women depended substantially on a strong local network of social relations similar to that experienced in Chile, South America, (Scarpaci 1988) and in other developing countries. More than one–third (35%) of the interviewed women left their children alone, 21% with their grandmothers, 10% with their fathers, 9% with other relatives, the rest (25%) either did not have children or left their children with a neighbour or a friend. This strong social network of help and mutual cooperation among the population of Benghazi is an important characteristic of Islamic and developing countries.

Out of four hundred households surveyed, only 16% of spouses were engaged in paid work, the rest (84%) were housewives. Forty four of those working were dependent on their mothers for taking care of their children while absent at work, 27% on their relatives and about a quarter left their children alone at home, as it is not strictly forbidden to leave them alone in Libya. Only 4% left children with their fathers. Seventy seven per cent of children were taken to a health care facility either by a father or a mother, 15% by others and 8% by relatives. About 76% were taken to be treated in one of the five major polyclinics in the city which indicates the significant importance of these health care facilities. Only 24% were treated in other health care facilities (HCF) e.g. health care centres, public hospitals, private clinics etc. However, when women were asked whether they take the rest of their children with the sick one to HCF, only 11% responded "yes", while the remaining majority (89%) did not allow their children to accompany them as they could manage to leave them with one of the relatives mentioned above. For those who escorted all of their children as well as the sick one, 38% indicated that they had taken them into the consulting room, 30% were left in other places such as in the car, 23% were left in corridors of the HCF and only 9% were put in assigned places in the HCF visited. In conclusion, 78% of the households interviewed had at least one married woman who had children–which is consistent with the results of all censuses that have been carried out in Libya since independence in 1951. This confirms the fact that the population of Benghazi is mainly young and needs extra attention and health care services .

This study has also revealed an important outcome relevant to self–medication. Nearly 42% of household respondents expressed their willingness to use self–medication before consulting professional doctors, being least costly in terms of time, money and energy. Treatments are by home remedies, either modern or traditional with a strong preference for modern medicine. This suggests that self–treatment at home has become an integral part of the habits of the population of Benghazi city. However, when respondents were questioned about their belief in folk medicine, nearly 30% claimed to use some kind of traditional medicine. If people can no longer manage the complaint themselves or by traditional medicine, they will seek help from a professional practitioner.

Table 7.9: The choice of traditional medicine

Sort of Medication	No. of Respondents	Percent
Self–medication by herbs	53	40.2
Herb specialist	46	34.8
Bone setter	3	2.3
Others	30	22.7
Total	132	100

Source: Field study carried out by author in summer 1992

Table 7.9 demonstrates the pattern of folk medicine that the population of Benghazi usually use. More than 40% of the respondents admitted utilizing self–treatment by herbs at home, while 34.8% maintained regular contacts with herb specialists for consultation and advice concerning the use of prescribed medicine and 22.7% use different types of folk medicine, including diagnosis of supernatural elements, stress and mental diseases. For instance, when suffering from a condition such as worry and sleeplessness, people will turn to the traditional healers like clergymen for treatment. Finally, the role of bone setters in the urban area of Benghazi tends to be small (2.3%) due to the high dependency on modern medicine. Therefore, different complaints create various health care demands and expectations. It is apparent that all this can not be supplied by one single health care facility.

7.6 Physical environment and sanitation

To assess the physical environment and sanitation, it was necessary to collect information about factors such as the existence of potable water supply, household construction materials, conditions of dwelling units, number of rooms, latrines and cleanliness of house and yard. It was expected that these criteria would act as indicators of illness and service use, some (water supply) being related to morbidity and others acting as measures for health behaviour (cleanliness) and socio–economic status (building materials). Therefore, the survey contained both verbal questionnaire and visual observation components. Information was obtained on self–reported sickness and on self–reported use among different age groups of the population (Table 7.10). In examining this table, one tends to say that nearly three quarters (72.5%) of the sample households judged the quality of drinking water as average, below average or very poor, with more than a third (34.5%) in the last category. Only 16% estimated the quality of drinking water as excellent and 11.5% as above average. The quality of drinking water in Benghazi is clearly not good at all as perceived by the interviewees and needs further analysis into the understanding of the involved factors. Despite the poor quality of Benghazi's drinking water, almost all the sample households enjoy piped water within the house, drawn from natural springs with some kind of chemical treatment as the water contains high saline components and other impotable materials. All households had at least one latrine, while about half (48.7%) had two latrines. The remaining (14%) had three or more. Thus, all sampled households had in one way or another an organised human waste disposal system. Moreover, 63.3% of households claimed that they own dwellings composed of three or four rooms, while more than a quarter indicated that their housings contain five or more rooms. Only 11% of the sampled households indicated that they had just two rooms in their homes. Although it is difficult to pinpoint exactly the density of population per living room in this study, some other relevant studies in Benghazi (e.g. Abudejaja *et al,* 1987) have indicated that living rooms in housing accommodation were not adequate for the generally large families.

Table 7.10: Distribution of sample households owing to selected environmental indicators

Indicators	Number of Households	Percent
1. Quality of drinking water		
Excellent	63	15.8
Above average	46	11.5
Average	120	30
Below average	33	8.2
Very poor	138	34.5
Total	400	100
2. Number of rooms		
Two or less	44	11
Three–four	253	63.3
Five and more	103	25.7
Total	400	100
3. Number of latrines		
One	149	37.3
Two	195	48.7
Three and more	56	14
Total	400	100

Source: Field study carried out by author in summer 1992.

As the focus here is on the nature of the home environment and its impact on the health care service utilization of its members, the author has depended heavily on his long living experience in the city of Benghazi for direct observation and on grading the houses on entering them according to presence or absence of surface sewage, rubbish and unpleasant odor outside and inside the house.* Accordingly, the author further classified the general conditions of dwellings as being generally good or generally fair. Table 7.11 highlights the observed sanitary conditions of houses according to the judgement of the study team and based on the author's long standing experience of the city. Thus, out of 400 households surveyed and carefully monitored, about four fifths (79.8%) were categorised as having an appropriate sanitary environment and only one fifth (20.2%) were estimated as having a relatively poor environment. None of the households was found to have totally poor condition housing due to the policy adopted by the State of giving

* These observations were made by the author and the study team during the household interview survey

lands at low prices and lending mortgages to be repaid after long time periods without interest. Besides, in 1989 about 7,000 housing units (flats) were distributed among the homeless in an attempt to solve the ongoing problem of housing scarcity in the city.

Table 7.11: Observed sanitary conditions of houses in the study area

Observed sanitary conditions of houses by author	No. of households	%
Generally good	319	79.8
Generally fair	81	20.2
Total	400	100

Source: Field study made by author in summer 1992

7.7 Health and sickness

The following statement by Knight (1971:25) can best describe the lesson of the ecological approach to disease:

> The complex, intricate, and frequently misunderstood relationships between man, environment, and the etiological agents of disease remind us that we are thoroughly ensconced in the larger web of earthly life.

It is undoubtedly true that there is a strong relationship between ecology and the human component in producing different sorts of diseases in any selected environment. Health status was principally identified in the context of this study as the state of health for those chosen six categories as perceived by themselves or by their proxy who spoke on their behalf. Consequently, the sampled population was divided into those who were healthy and those who reported being sick at any time during the recall period. The outcome of this study has revealed that out of the 2983 individuals included in the survey, 1021 (34%) reported some kind of illness in the course of the recall period and the remaining 1962 (66%) confirmed no sign of infirmity during the same period. Furthermore, out of the 400 interviewed households, 132 (33.3%) reported that there was one of their family members sick on the day of the survey and the rest were healthy. In comparing the outcomes of the individuals above and the households outcomes, one can easily notice the consistency between them in terms of health status.

As disease is usually a result of a complex process of interaction between a number of factors acting individually or collectively over time, relevant for the most part to social, economic, environmental or political factors, multiple intervention measures are thought necessary by planners and health care authorities to enhance health status among the public. Therefore, by identifying the specific risk areas entailing intervention and their impact on causing disease, it would be possible to formulate an appropriate health policy to reduce disease occurrence. Each of the above mentioned factors has its concomitant health problems. Specific information for each variable is essential for further analysis and successful future planning policies. In this part of this chapter the aim is to examine the impact of these factors in some detail as follows:

7.7.1 Sex and age

It is well known from the literature that sex and age are the most important variables associated with differential usage of health care services. In very simple terms, older people usually tend to frequent services more than younger ones and females use health care services more than males. Disease rates vary with age and sex. The percentage of people reported as sick during the defined recall period was divided into six categories as shown in (Table 7.12).

Table 7.12: Classified distribution of people reported sick during the recall period

Category	Frequency	percent	cumulative percent
respondent	317	31.05	31.05
spouse	295	28.89	59.94
child<5 yrs	173	16.94	76.89
child>5 yrs	215	21.06	97.94
grandfather	5	0.49	98.43
grandmother	16	1.57	100.00
Total	1021	100.00	100.00

Source: Field study carried out by author in summer 1992

As it was difficult sometimes to locate the head of household to be interviewed, it was decided to substitute him or her by a respondent, either male or female, who

was able to give the required information on each member of the household. The first category of respondent was the highest at about 31.1% and the female adults (spouses) were 28.9%. Children under 5 years old formed 16.9% of people reporting sick, while children above 5 years of age made up 21.1%. Thus, children formed 38% of the total sample, which implies that this group is the more vulnerable to disease than other groups. For elderly people, both females and males, the percentage was too small as their number in this survey was not great. In this study, female adults (elderly) tended to have reported relatively more sickness than their male counterparts. Also the difference between children under 15 years and adults in the age group 15–44 years was obvious.

7.7.2 Environmental Factors

As the focus here is on the nature of the home environment and its association with health service use of its members, an analysis of reported sickness against the background of some eclectic environmental indicators is essential. These indicators are: the quality of drinking water, the presence or absence of latrines, the degree of crowding of housing and the general conditions of houses based on the observed judgement by the author. Since ecological studies are a useful starting point for determining the relationship between a number of factors and disease and as these ecological studies are important for identifying differences in a particular outcome, more detailed analytic studies will follow to determine the reasons for the variations. Thus, based on the hypothesis that improved physical conditions in urban areas remarkably reduce the potential for infectious diseases, irrespective of social and economic changes, the major objective will be to focus on the above mentioned factors against health status. Table 7.13 demonstrates clearly the relationship between sickness reporting and some selected environmental and sanitary factors. To determine the impact of drinking water quality on health status, a Chi–square test was applied, revealing no significant relationship between this factor as perceived by the respondents and reported sickness (P=0.604). Likewise, number of rooms at home– an indicator of overcrowding revealed no significant relationship with reported sickness (P=0.779). Moreover, number of latrines also did not demonstrate any significant relationship with reported illnesses (P=0.638). As regards the relationship between sickness reporting and housing conditions, there was no

significant relationship at all between the two factors, (P=0.986). Therefore, important aspects of physical environment, including the availability and quality of drinking water and a number of factors relevant to housing including the extent of overcrowding and the quality as well as type of houses, did not prove to be statistically significant. This may lead us to postulate that most of the reported sicknesses were not poverty–related diseases resulting from lower social class or poor physical environment but were mainly attributable to psychological problems and social instability or other factors. It seems likely that the rapidly growing nature of Benghazi city and the fragmentation and disruption of social organisation, may have led to the various pathologies reported in this study. Further, some of the reported illnesses, particularly chronic, were of a psychological or stress related nature, like blood pressure, diabetes etc., related to social instability.

Table 7.13: Persons reporting sickness during the days of survey by selected environmental indicators, Benghazi 1992

Indicators	Persons reporting sickness		
1. No. of rooms in house	Yes	No	Total
One	0	2	2
Two	16	26	42
Three	49	95	144
Four	38	71	109
Five	13	34	47
Six and more	17	39	56
Total	133	267	400
D.F=(4) $\chi^2 = 2.4804$		P = 0.779	
2. No. of latrines at home	Yes	No	Total
One	46	103	149
Two	68	127	195
Three	12	18	30
Four and more	7	19	26
Total	133	267	400
D.F=(3) $\chi^2 = 1.6954$		P = 0.638	
3.Type of housing condition	Yes	No	Total
Good	106	213	319
Fair	27	54	81
Total	133	267	400
D.F=(1) $\chi^2 = 0.0003$		P = 0.986	
4. Quality of drinking water	Yes	No	Total
Excellent	19	44	63
Above average	11	35	46
Average	43	77	120
Below average	12	21	33
Very poor	48	90	138
Total	133	267	400
D.F=(4) $\chi^2 = 2.7291$		P = 0.604	

Source : Field study carried out by author in summer 1992

7.7.3 Household attributes

As can be seen from Table 7.14, the type and size of household did not suggest a strongly significant relationship between health status and type or size of household (P=0.586) and (P=0.059) respectively, though the percentage of people reporting sickness differed significantly with household size. Likewise, the rela-

tionship between reported sickness and monthly income of households was not statistically significant (P=0.450) although a very minor tendency towards decreasing sickness rates with increasing rates of monthly income of a household was apparent.

Table 7.14: Contingency table for rated sickness by some socio–economic indicators

indicators	persons reporting sickness		
1. Type of household	Yes	No	Total
extended	8	20	28
nuclear	125	247	372
Total	133	267	400
D.F=(1) $\chi^2 = 0.2969$		P = 0.586	
2. Size of household	Yes	No	Total
up to 4	35	94	129
5–6	31	61	92
7–9	34	69	103
10–12	21	35	56
13–17	12	8	20
Total	133	267	400
D.F=(4) $\chi^2 = 9.0905$		P = 0.059	
3. Monthly income of household	Yes	No	Total
0 to < 200	50	88	138
200 to <400	52	122	174
$\geq$ 400	31	57	88
Total	133	267	400
D.F=(2) $\chi^2 = 1.5956$		P = 0.450	

Source: Field study carried out by author in summer 1992

7.8 Nature of diseases: broad disease groupings

Table 7.15 demonstrates clearly the reported sicknesses by four types of people selected from each household to represent different ages and sexes. However, the five leading groups of disease which have major impacts on health status were: diseases of the internal and digestive system, diseases of sense organs, skin diseases, respiratory diseases and diabetic disease. These five diseases make up about 57% of all reported diseases. To start the analysis with children below 5 years of age, the five leading causes of indisposition to this sensitive group (17%) excluding vaccination and dental problems were attributed to internal diseases and disease of the digestive system, cold, respiratory problems, skin disease, and disease of the sense organs. Among children more than 5 years of age (21%), the five most frequent reasons for ill–health were internal diseases and disease of the digestive system, cold, skin, respiratory problems, and sense organs. Comparing children below and above 5 years of age, they both share high rates of internal diseases and disease of the digestive system and almost similar symptoms of skin and respiratory problems. As expected, they differ remarkably concerning preventive measures like vaccination where children below 5 years of age constitute the overwhelming majority. For spouses (29%), the five most rampant diseases were gynaecological, internal, sense organs, diabetic and heart diseases. Respondents, representing both males and females, form about 32% of the whole reported diseases and thus share the diseases of both sexes. Therefore, the major five leading diseases reported by this group were internal and digestive system, sense organs, gynaecological, others, and musculoskeletal system. Elderly people, of whom there were very few in the sample, did not show any significant disease pattern. Therefore, they were omitted from the X^2 test (Table 7.15). The table demonstrates the remarkable difference between the four categories and reported sickness. Using a X^2 test, one is struck by the results which were highly significant ($P<0.001$), confirming the different pattern of disease infliction among dissimilar groups of sex and age. However, in order to find out where and how this difference took place, reference is to be made to the contingency table below. Thus, broadly speaking the differences discerned among these four categories of people are as expected.

Table 7.15 : Total sickness and other reasons reported by four categories during the recall period classified into main diagnostic groups

Disease & other reasons	category*				Total
	1	2	3	4	
Internal & digestive	67	37	46	53	208
Respiratory	12	13	23	21	70
Sense organs	35	35	9	18	101
Musculoskeletal	23	15	2	5	47
Skin diseases	21	10	23	29	83
Urogenital	4	1	0	1	6
Gynaecological	27	65	0	0	92
Heart diseases	12	20	2	0	36
Accidents	13	4	2	4	24
Infection	5	4	2	4	15
Dental problems	25	22	2	29	79
Diabetics	17	26	1	3	50
Others	24	16	6	10	56
Vaccination	2	1	23	4	30
Cold	30	27	31	34	122
Total	317	295	173	215	1000
DF=(70)	$\chi^2 = 319.8849$		P < 0.001		

* (1) Respondent (2) Spouse (3) Child<5 yrs (4) Child>5 yrs

Source: Field survey conducted by author in summer 1992

7.9 Discussion and Conclusions

Members of four hundred households from different socio–demographic, socio–economic, educational and occupational groups residing at different distances from the five polyclinics in the city of Benghazi were interviewed to give a complete picture of the use of these health care services. Obviously, the use of health care services can be influenced by various factors including socio–demographic, socio–economic and cultural factors but generally can not be divorced from each other (Wolffers, 1988). According to Wolffers (1988) "*culture is simply a result of the way by which people live under the given socio–economic conditions.*" Reviewing the previous tables in depth, demonstrates a complex set of interrelationships between the demographic, socio–economic and ecological variables. To start analysing the data, we begin with the average household size of 7.5, which is higher than that reported for the entire country, 5.8 (Secretariat of Health 1984) and is comparable with the only other study of Benghazi city, 7.1 (Abudejaja *et al.*, 1987). It is also comparable to some Arab countries like Saudi Arabia and other developing nations, but is much more than the household size of the developed world, like north America and Europe, which never exceeded 3.5 (UN, 1992). Probably part of the differences mentioned in several studies concerning variations of the average household size may be attributed to differences in the definitions of a household.

The sample households, particularly in terms of age structure, reflect the typical stereotype pattern of a rapidly developing country. Thus, a high proportion of economically dependent people is the dominant feature; that is children less than 15 years of age, housewives and students at all stages of education constitute about three quarters of the sample. Only one quarter of the sample was primarily occupied in economic activities other than the normal domestic activities. But being a student or a housewife does not mean that a person does not participate in one way or another in the economic activities of the household. Dividing the population into three major stages of the life cycle showed that about 61.6% of the population were adults (15–64) years. The youth element or population under 15 years of age comprised 36% and the aged are a mere 2.4%. In general terms, the age–sex profile of the Benghazi sample revealed a broad–based pyramid suggestive of a young expanding population as indicated earlier (Chapter 4). The decline in the dependency ratio of children below 15 years of age recently reflects the

increased number of educated married women, who usually use modern methods of contraception as well as the adoption of child spacing and family planning. The dependency ratio has declined in recent years and probably for the years to come.

On the whole, although the proportion of children under 15 years of age has declined since the mid 1980s the population is still young with high fertility rates, requiring more health care services for women and children. Thus, maternity and infant health and school health services must have the first priority in health planning as they make up about 49% of the total sample; a proportion that is high when compared with the developed and some of the developing countries.

As regards education, the low illiteracy rate was the result of a rational and steady educational policy adopted in the country after independence in 1951; obligatory education for every child reaching school age (6 years) and the national campaigns for eradication of illiteracy among adults. Establishment of free evening adult schools in particular and free education for all people in general was hoped to have an effect on the level of health of the people. It is also thought that the healthy behaviour which has been noted in this study may have been associated with education or was a result of it. Accordingly, the improved educational level among women in particular may stimulate and increase their awareness of the need to care more about their children, for their well–being and might increase their demand for modern health care services. Education, even of a primary level, is a major driving force towards breaking down short–sighted views and reliance upon traditional medicine among women in the developing world. A United Nations' study of 15 developing countries carried out by Mensch *et al.,* (1985:21) has commented on the significant role of education as follows:

> An additional year of mother's schooling reduces child mortality by 6.8% ... After all other variables are entered into the estimation equation, the effect is still a reduction of 3.4% in mortality per year of schooling. This latter is the direct effect of schooling and is biased downward as an estimate of the total effect by the inclusion of variables whose value is partly determined by mother's schooling itself.

An important function of education is to help people deal with their health needs by making appropriate use of available social and health care services. Further, as modernizing views are an integral part of the development process, and as these are stimulated and enhanced by education (Benyoussef and Wessen 1974; Habib and Vaughan 1986), we would postulate them to be major predictors of

modern behaviour enabling educated people to make best use of modern health care facilities in our area of study.

The economic status of the vast majority of the heads of the households was gainful employment with reasonable incomes. This outcome is strongly consistent with a study carried out in Benghazi city, in which it was demonstrated that the great majority (98.1%) of the heads of the families were lucratively engaged in work, (Abudejaja *et al.,* 1987). More than a quarter (26.7%) of the households' sample were involved in different professions e.g. government officials, businessmen and merchants, while the rest were either students at various stages of education, housewives, infants or self–employed professionals. About a third (34.5%) could be classified as lower income receiving less than 200 Libyan Dinars per month, while 43.5% were considered as middle income earning between 200 and less than 400 L.D. The remainder, more than one fifth (22%) of the sample population were classified as a higher income group, with income of 400 L.D. or more. However, as the subject of income is a sensitive one, some people may not have revealed their real income from other miscellaneous sources which could not be easily verified. Therefore, information was also collected on a surrogate variable–possession of certain assets in each household. Many households possess fridges (98%), radios (94.5%), tape recorders (86.5%), a car (73.3%), a freezer (60%) or a video (53.4%). Rather fewer own a telephone (36.3%) or have air–conditioning (25.5%). Eighty nine per cent of the households lived in modern housing types (villas, flats or modern Arab houses) and almost two thirds (65%) owned their housing. All households surveyed confirmed provision of electricity supply (100%). These findings suggest that the purchasing power is relatively high, which implies that the population of Benghazi city enjoy a high standard of living similar to that of Jeddah and Al–qassim region, Saudi Arabia, (Al–Ghamdi 1981; Al–Ribdi 1990) and other oil producing countries like Iraq before the Gulf War (Habib and Vaughan 1986).

Probably one of the major issues concerning environmental effects on health in Benghazi is that of water quality. Approximately forty three per cent of respondents were not satisfied as they judged water quality of below average or very poor. Since the seasonal rainfall is usually unproductive, periodic shortages of potable water not only formed a threat to health and hygiene, but were also a constant source of anxiety to the public at large. Another relevant problem that needs to be

referred to, though it is out of the domain of this study , is water contamination. Due to shortages and poor quality of water supply, some people have built expensive water holding tanks or sink wells to collect rainfall water during the winter season, which have provided another opportunity for diseases to occur in Benghazi residential quarters. For sink wells in particular, as the main sewage system network has not yet been completed in many parts of the city, there is potential for water mixing with human wastes below the earth's surface, which implies that many people will be threatened by serious health hazards. Moreover, where milk supply is more or less devoid of any strict sanitary control by local authorities, some milk–sellers used to add up to 40% water in sold milk which usually comes from dubious water quality sources, posing yet another serious health risk for the public in general and young children in particular. Accordingly, in the absence of any effective sanitary control over the water supply, health officials can only warn the public to ward off serious health consequences by boiling water before drinking. In conclusion, while the paucity and poor quality of water threaten the health of the entire population, it is the children of the poor and working classes who will be put at the most immediate and highest risk, not the wealthy who would retain a firm hold on this first necessity of life. Water quality is perhaps the most important factor and requires further analysis of its effect on health in Benghazi. The presence of carcinogenic substances in public drinking water systems has recently led to concern about possible relationships between water quality and high cancer rates. An example for this relationship between surface water use and overall cancer mortality has been reported in Ohio, Missouri, and Louisiana (Gottlieb *et al.,* 1981). Although the present study does not show a causal link between water quality and reported sickness, it may further strengthen concerns of a drinking water risk. Indeed, the search for meaningful associations, between water quality and disease infliction in Benghazi is an essential part of any potential morbidity investigation, particularly when it is based on an intimate acquaintance with the environment that predisposes populations to such diseases as cancer.

The main outcomes of this study appear to be consistent with the comments made by Cassel (1973:539) two decades ago:

> The question of concern then is what are the important environmental factors associated with our modern plagues (cardiovascular disease, neoplasms, arthritis, diabetes, behavioural disorders, mental disorders) ... the categories of environmental

> factors currently suspected as being determinants of these diseases are inadequate to explain their occurrence ... We need to focus research on other categories. This is especially true when we focus almost exclusively on such physical and physiochemical environmental factors as quality of housing, air pollution, and physical density.

The findings of this study concerning the level of reported sickness (broad disease groupings) and four categories of people have substantially confirmed the hypotheses of different disease patterns for each age and sex group. The overall difference between these four categories and the distribution of all disease groupings was statistically highly significant, ($P<0.001$). Furthermore, the level of reported sickness was more or less similar to that reported for Iraq (Habib and Vaughan 1986), and Australia (Bridges–Webb 1974; Al–Ribdi 1990) but much less than that reported in Ethiopia (Kloos 1990). This means that the level of health care utilisation reported in this study is high by international standards.

Cultural differences between peoples of various nations have implications for health and health care use. For instance, there are examples, which explain the cross national pattern of medical care use mainly in terms of different perceptions from one country to another. Scarpaci (1988) made an essential comparison between a British study of general practitioners carried out by Cartwright (1967) and his own study on Chile (1988). Scarpaci indicated that, in using open–ended responses, Cartwright interrogated a sample of British patients about the attributes of general practitioners that they appreciate. Not a single British respondent ever claimed that being touched by a doctor was an important attribute, while in his study on Villa O'Higgins of Santiago, Chile, Scarpaci found that touching was frequently considered by respondents as one of the most significant reasons for believing that the care they had received was good. In the present study, the perception of users neither follows the British pattern nor the Chilean example but tends to be closer to the latter as about 5% of the interviewees demonstrated that touching was a positive aspect of their treatment at the polyclinics in Benghazi.

The demand for medical care in relation to need among Libyan women tends to be higher than that of many women in developing countries. In such countries, differences in health care access have become increasingly pronounced over the last half century. In most developing nations they are still clear and the differences apply both to the differential availability of services and to the attributes of

population (Kroeger 1983). Indeed, an important finding of this study is the salient difference in utilisation rates between Libyan women and their counterparts of the developing countries. This has been particularly true with reference to the use of public health care services as can be illustrated via the following examples. In Colombia, South America, for example (Tellez 1977) as cited in Scarpaci claimed that women had more limited access than did men to health care as opposed to the Libyan women who had equal rights with men in terms of treatment in any public polyclinic they desire. The only exception, however, that may hinder making use of free public health care services was the absence of female doctor. Moreover, the variation is attributed principally to dissimilarities of national health care coverages, where help seeking behaviour in most Latin American and probably in most developing countries (for women working in informal sectors) is heavily dependent on charitable or church–sponsored medical services (Schmink 1982).

In general terms, it should be emphasised that in the absence of a tight policy limiting the potential risks of the complex web of housing overcrowding, poor control of general sanitation and low levels of a suitable water supply system, these factors will act either individually or collectively further to increase the magnitude and scope of disease environments in the city of Benghazi . Although the city's sample findings suggest that the population were mainly literate and tended to be less likely to admit to being influenced by traditional medical practices and believed in the strength of modern medicine for prevention and treatment of illnesses, much work remains to be performed in the study of health care systems and their accessibility as well as in utilisation by the people of Benghazi. Thus, specific policy initiatives ensuing from this work must primarily concentrate on improving the provision of preventive and curative services, reducing the adverse consequences of socio–cultural change, ameliorating physical environmental factors, enhancing economic and social conditions and above all diplomatically handling the problems of political and economic inequalities. Undoubtedly, there is a great need for research to identify where the problems and successes of urban health interventions lie. The use of health care policies that have been developed and tested in completely different settings of the developed world needs to be radically reviewed in terms of their applicability to the rapidly changing environment of a developing city like Benghazi.

Chapter VIII

Accessibility, utilisation and spatial patterns of polyclinic use: A Household interview survey

Introduction

The central focus for many geographers and health care planners has long been on patterns of accessibility to various social and public service facilities within urban areas (Phillips 1980; Khan and Bhardwaj 1994). The issue of social equity as well as equality in service provision has been a major concern of many academics and administrators alike during the last half of this century. Harvey (1973:69) summarised this view succinctly in the following perspective:

> Natural and man-made resources are usually localised in their distribution. Location decisions, in turn, lead to the further evolution of the spatial availability of man-made resources. A general tenet of location theory and spatial interaction theory is that the local price of a resource or proximity is a function of its accessibility and proximity to the user. If accessibility or proximity changes (as it must do every time there is a locational shift) then the local price changes and, by extension, there is an implied change in the real income of the individual. Command over resources, which is our general definition of real income, is thus a function of locational accessibility and proximity.

The provision of health care facilities is an essential manifestation of Harvey's general theme. They are locationally fixed and thus impose differential burdens of transport costs and other expenses associated with time expenditure and physical accessibility (Whitelegg 1982). There are social and cultural factors that transcend the physical basis of accessibility, and which call for careful planning and positive use of space in a usable manner rather than acting as a source of barriers, difficulties or lack of understanding (Whitelegg 1982). Two decades ago, Knox (1972) addressed this case more specifically, in examining the relationship between particular areas of the city (greater or lesser accessibility) and the characteristics of the residents of those areas. Such research often seeks to highlight the unfair distribution of public health care facilities and hence can help to determine specific deprived communities that are lacking in service provision. Failure in health care provision and lack of conformity between needs and their gratification may lead to

serious consequences of reported ill–health which, for the most part, are inversely associated with social class (Phillips 1980; Weis and Greenlick 1970). In addition, the perceptions and attitudes that people have about the existing health care facilities and their qualities may have an important impact on both the initial contact with these services and the compliance with any given medicine (Marquis *et al.*, 1983; Scarpaci 1988). It is generally known, however, that the initiation of a health care seeking process is a result of recognising some kind of health disposition. But the factors that determine patient contact with the health care service are numerous and sophisticated as well as changeable over time, space and from person to person (Hussein *et al.*, 1993). Studies of accessibility and utilisation largely focus on the proportion of people using health care services and their frequency of use, in an attempt to determine the possible mechanisms that may influence this use (Dutton 1986).

The geographical juxtaposition of health care services to people's residence is another crucial area of concern influencing utilisation of health care services (Whitelegg 1982). The concept of centrism adopted by Low (1975) for the planning of primary health care, in which it is assumed that the nearest modern health care facility offering a given service will be attended, appears to have been widely applied in health care planning in developed and developing countries alike. But do these facilities provide equal health care services to all people irrespective of whether they reside within the immediate catchment areas? To investigate this question in Benghazi, an empirical geographical study of consumer behaviour has been developed using more or less tried and previously tested behavioural methodologies, in similar environments, to investigate health care accessibility and utilisation in Benghazi. As very little or nothing is known about the way in which patients choose and keep contact with a health care facility, household interview surveys in specific areas, at homes, have become increasingly significant. Systematic study of the pattern of health care activities in a community provides an essential background for understanding the health status, pattern of disease distribution, needs for health services and any necessary information concerning establishing new health care facilities (Habib and Vaughan 1986). Furthermore, household interview surveys are one potential source of such information and provide population–based data that are rarely available from any other source.

The primary objective of this chapter is to examine the type of health care facility used by respondents, particularly polyclinics, people's perception of the quantity and quality of the care provided in those facilities and their modes of travel and travel times. Preferences for the polyclinic for emergency use are also examined. Above all, another attempt is made to measure the extent to which the nearest modern health care facility is used. Generally speaking, other things being equal, we assume that the greater the distance of a service from a household, the less likely it will be that those householders frequent it.

8.1 Access to Health Care Facilities

Donabedian (1972:111) summarises many of the above considerations concerning the conceptualisation and measurement of access:

> The proof of access is use of service, not simply the presence of a facility. Access can, accordingly, be measured by the level of use in relation to need. One should recognize, however, that clients and professionals evaluate need differently. Further, one must distinguish two components in use of service: initiation and continuation. This is because different factors influence each, though any one factor may influence both. It is hardly necessary to emphasize that barriers to access are not only financial but also psychological, informational, social, organisational, spatial, temporal, and so on.

Implied in the characterisations of access as attributes of the person or the system, then, is the hypothesis that the quantity and quality of an individual's entry to the medical health care system are affected by the above factors. Many health care policy makers, administrators and planners have raised concerns about access, and probably all of their programmes were made to attempt to equalise access to health care facilities for various groups in the population (Khan and Bhardwaj, 1994). Accordingly, the stated aim here is simply to evaluate which sectors of the population access the health care system and which sectors do not. More specifically, the objective reflects the view expressed by Freeborn and Greenlick (1973) that "*access means that services are available whenever and wherever the patient needs them and that the point of entry to the system is well-defined*". For most people, health care is sought when they or any member of their family recognise that they are ill and action needs to be taken. The factors that lead a patient to initiate a contact with health care facilities are numerous and sophisticated, ranging from factors related to income, health insurance, family size, occupation, sex

and education, passing through predisposing factors like attitudes of the individual towards health care services, health values, knowledge of existence of various services, and ending with accessibility factors such as distance and/or time of individual from facility, appointment time, travel time, waiting room time, actual processing time, and above all, availability of clinics, physicians and other services. (Aday and Anderson 1974; Phillips 1990) Thus, variations among patients frequenting health care facilities in response to sickness usually exist and differ from person to person and for any person from time to time. To explore the form of these variations, this chapter will examine the pattern of health care services utilisation and accessibility in response to sickness reported by respondents during the recall period (one year), in addition to eliciting an association (if any) between service utilisation and selected variables.

The study has pointed out that the selected sample households had, in general, good access to public health care services, particularly polyclinics. As can be seen from Table 8.1, more than 86% of the sample population were living within a distance of less than 1 km from their closest health care facility. A further 12.25% were living in the range of 1 and 3 km and the remaining (1.5%) were residing beyond 3 km from their nearest health care facility. The vector distance between a patient's home and polyclinic was measured in centimetres or fractions thereof from a large scale map as explained in Chapter 6. Despite the limitations of this method, it is more appropriate than use of a respondent's perception of distance. Having applied this method on the five selected locations circumscribing five polyclinics in the city of Benghazi, the spatial distribution of respondents from each polyclinic is shown in Figure 8.1. Not surprisingly, large proportions of respondents in all areas were living within a distance of 1 km from the adjacent polyclinic–a matter that is highly consistent with respondents' conceptualisation of distance previously mentioned and can be seen from Figure 8.2. Yet, as Benghazi throughout its long history has always been troubled by physical constraints represented by surrounding salt marshes, the city's development had to be concentric in nature, particularly since the reclamation of those marsh lands in 1976. Moreover, being located on the seashore, it could only expand inland. These physical restraints have undoubtedly been imprinted on the whole landscape of the city, thereby the differences of respondents' distribution around each polyclinic has become inevitable. However,

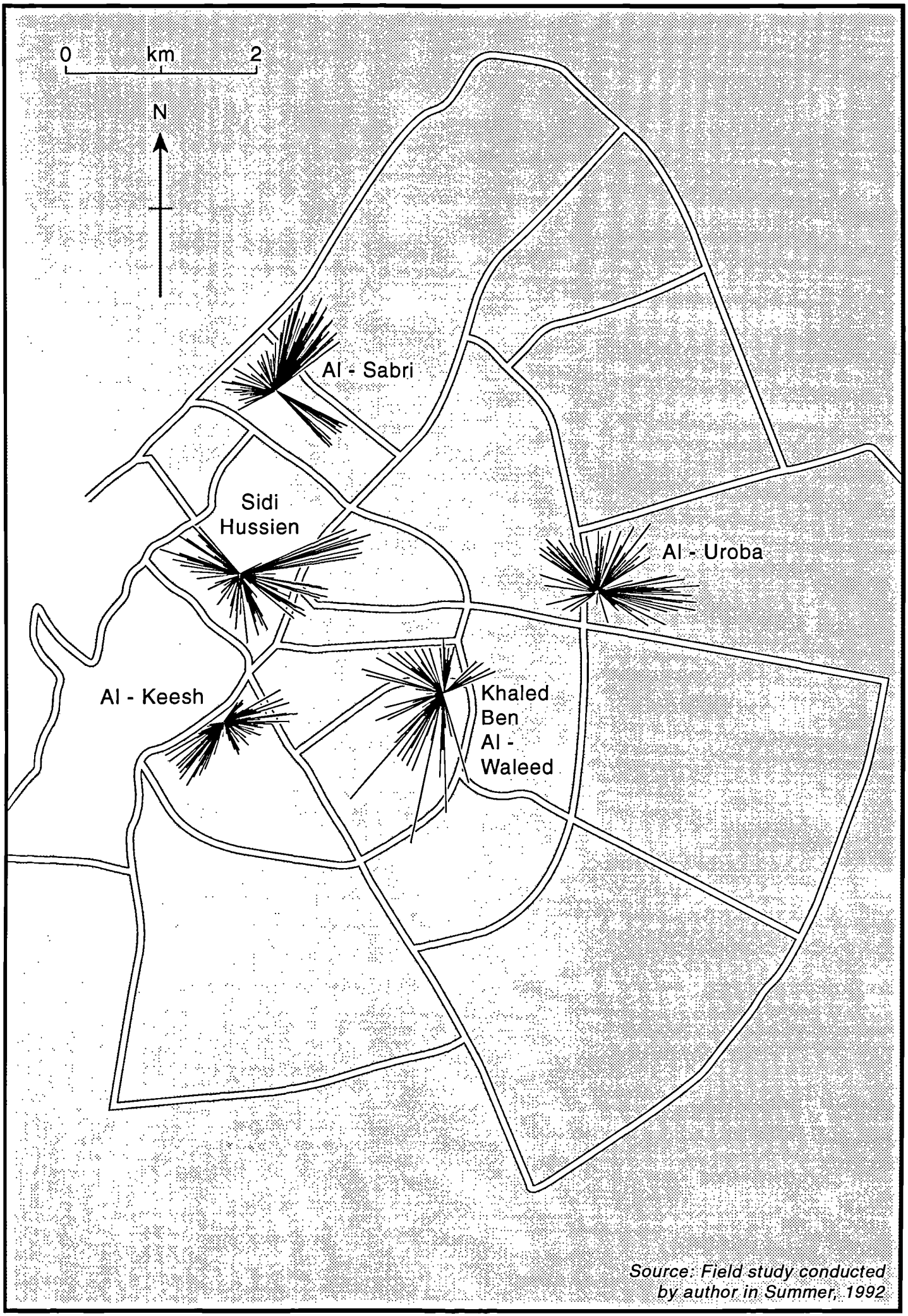


Fig. 8.1 Home - to - polyclinic vector distances in metres for respondents surveyed in Benghazi, 1992

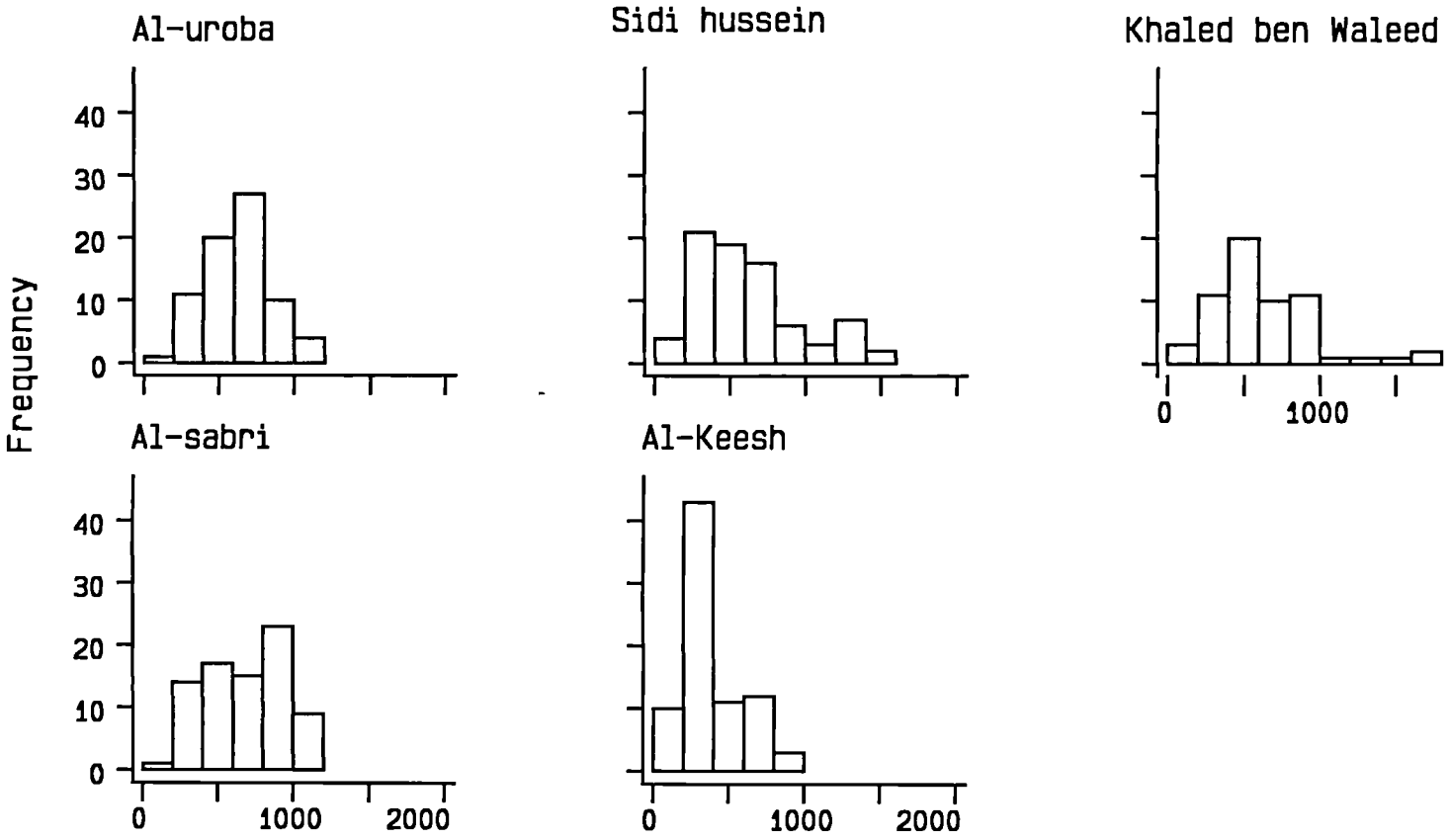


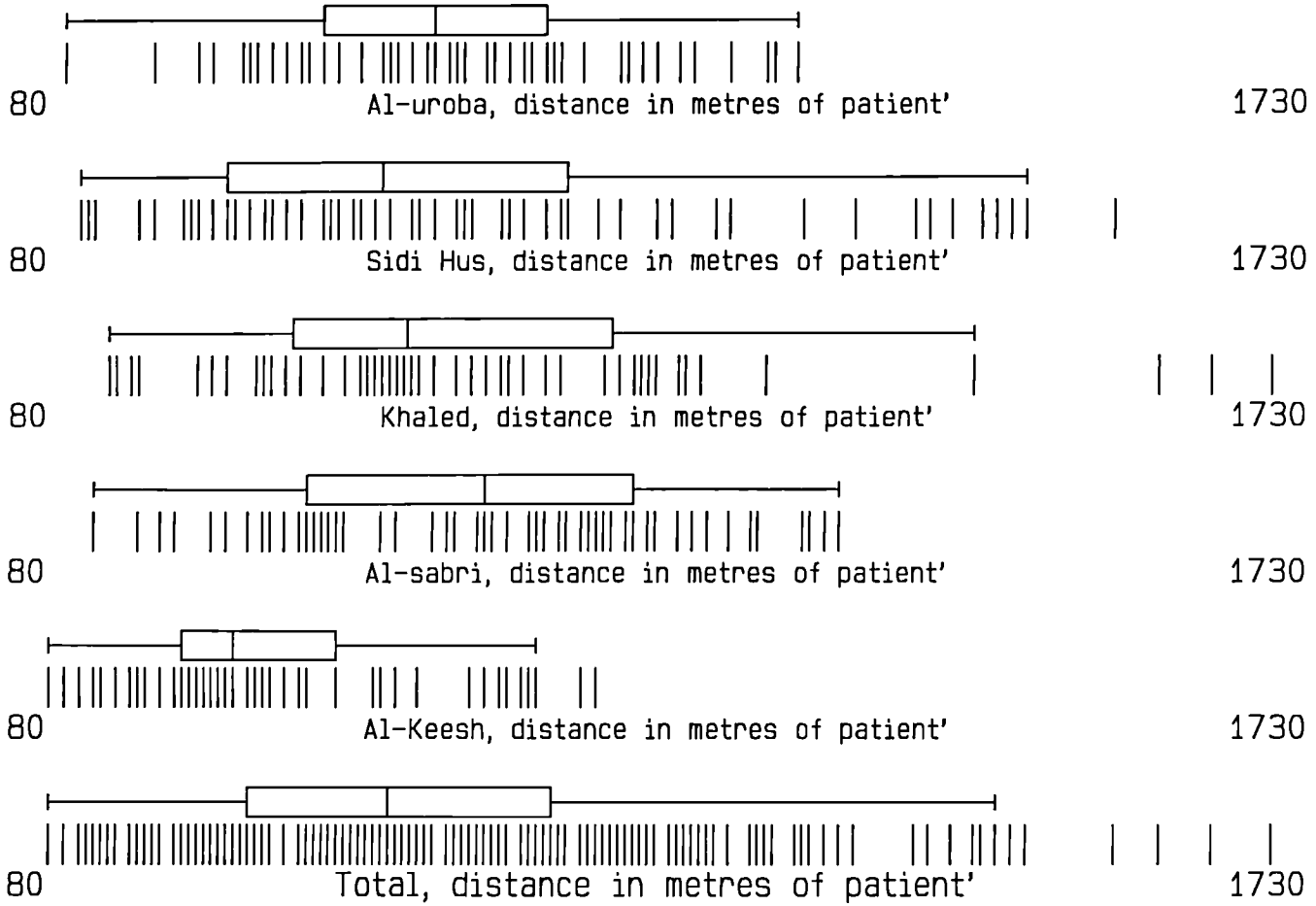
Fig. 8.2 Distance from home in metres
Histograms by polyclinics in Benghazi

to examine the spatial distribution of respondents around each polyclinic from another angle, the author has resorted to a boxplot technique as explained elsewhere (Chapter 6). Applying this technique in our area of study, tends to confirm the five features previously indicated with both similarities and differences among the spatial distribution of respondents around the five polyclinics concerned. Thus, a display of parallel boxplots as shown in Figure 8.3 can facilitate the comparison of several batches of data.

It shows clearly that the distribution of respondents from polyclinics is not identical, though not widely spread. Respondents around Sidi hussien, Khaled ben waleed and Al–sabri need to travel more distance than those around Al–uroba and Al-keesh. Yet, the distribution of respondents around Al–uroba, Sidi hussien and Al–sabri tend to be central as the median (the crossbar) in the interior of the box is in the middle. The population of Khaled ben waleed and Al–keesh, though they are different in their dispersion, are both positively skewed as their medians are closer to the lower quartiles than to the upper ones. As for dispersion, it is clear, that Sidi hussien is the most widely diffused population polyclinic, followed by Khaled ben waleed, Al–sabri, Al–uroba and Al–keesh. The reason for this spread is principally accredited to the nature of land use and the type of buildings. The accumulation of multi–storey buildings in the vicinity of Al–keesh and Al–uroba polyclinics has served to keep distances considerably shorter between residents and these two health care facilities. Data values that are far enough beyond the quartiles are considered as potential outliers. Therefore, it is apparent from Figure 8.3 that Khaled ben waleed and Sidi hussien are the only polyclinics that register high values (outliers). A more detailed examination of the total boxplot reveals a strong tendency of dispersion towards centre, a similar result to the institutionally–based study (Chapter 6), implying an accessible location of all adjacent polyclinics in the city of Benghazi. However, the dominance of nearest polyclinics among other health care facilities can be substantiated by another finding in this research, where out of 132 households who reported having someone being sick during the time of conducting the survey, about 89.4% asserted that they were treated in a nearby polyclinic.

Likewise, if one is to take time needed to reach local health care facility as an indicator of accessibility, 71% of the sample households can reach the local health

Fig. 8.3 Boxplot of distance from home to polyclinics



care services by car in less than 6 minutes; another 27.5% can make it in less than 11 minutes and only 1.25% of that sample needed 11 minutes or more to reach the closest health care facility. On the whole, the services of polyclinics tend to be used more often than other health facilities and are available at shorter distances for most of the households in Benghazi as can be confirmed by data shown in Table 8.4.

Table 8.1: Distribution of the sample population according to location of nearest health care facility (HCF) by distance and travel time

Distance to nearest HCF (km)	Frequency	Percent	Cum. percent
0 up to 499 m	178	44.50	44.50
500 m to 999 m	167	41.75	86.25
1000 m to 1499 m	23	5.75	92.00
1500 m to 1999 m	16	4.00	96.00
2000 m to 2499 m	2	0.50	96.50
2500 m to 2999 m	8	2.00	98.50
3000 m to 3499 m	3	0.75	99.25
3500 to 3999 m	2	0.50	99.75
$\geq$ 4000 m	1	0.25	100
Total	400	100	100
Time to nearest HCF by car	Frequency	Percent	Cum. percent
0– 5 minutes	284	71	71.00
6– 10 minutes	111	27.75	98.75
11– 15 minutes	5	1.25	100
Total	400	100	100

Source: Field study carried out by author in summer 1992 in Benghazi

In addition to health care services provided by the government, the sample can use private clinics and hospitals. The latter services are available at various distances from places of residence but people need to spend more money and time to reach them. Likewise, besides the availability of modern health care services at local care providers, traditional care is also practised, though to a very limited extent. When interviewed, respondents were asked to judge the location of the nearest health care facilities to their homes. As portrayed in Table 8.2, more than half (57.3%) praised their closest health care facility and considered it as very convenient; 35.7% as convenient; 6.7% as inconvenient or very inconvenient

and only 0.25% did not know any thing about the locational convenience of their nearest HCF.

Table 8.2: Evaluation of sample population of Benghazi to the geographic location of the nearby HCFs

Locational evaluation	Frequency	Percent	cumulative
Very convenient	229	57.25	57.25
Convenient	143	35.75	93.00
Inconvenient	23	5.75	98.75
Very inconvenient	4	1.00	99.75
Do not know	1	0.25	100
Total	400	100	100

Source: Field study conducted by author in summer 1992

In general terms, it seems obvious from Table 8.2 that about 93% of the sample population were satisfied with the available services of the closest HCF. In addition, when the respondents were asked about liking the nearest HCF, four-fifths answered "yes", while one-fifth replied "no", expressing no sign of admiration. However, apart from 17.5% not applicable (being using other HFCs other than their nearest), the most positive aspect for using the nearest health care facility was the contiguity to the place of residence (72.8%). Other reasons reported for attending the nearest HCF (Table 8.3) included the presence of a well-known physician (7.2%) or lack of crowds (1.3%).

Table 8.3: Respondents main reasons for liking HCF nearest to the place of residence

Reasons for liking	Frequency	Percent	Cumulative
1. Close to home	291	72.8	72.8
2. Has a good doctor	29	7.2	80.0
3. Not crowded	5	1.3	81.3
4. Others	5	1.3	82.5
5. Not applicable	70	17.5	100
Total	400	100	100

Source: Field study made by author in summer 1992

The optimal distance perceived from home to a nearest health care facility by respondents was classified into three categories: those who prefer to live within 500 metres, accounting for 48.3%; those who would like to live within 1 km limits 45.7% and the rest (6%) who do not mind living more than 1 km away. Generally speaking, respondents interviewed at households had received health care from different sources, though those in the public sector are predominant (Table 8.4). Nearly 13 out of 14 of all respondents (92%) had been treated in the nearest polyclinic; 7.5% in a health care centre; 2% in a public hospital; and only 1.5% of the respondents had been treated in a private clinic. This would indicate the absolute importance of polyclinics as major sources of health care to the great

Table 8.4: The nearest health care facility to home

Name of HCF	Freq. of respondents	Percent	Cum. percent
Al-uroba polyclinic	78	19.50	19.50
Sidi hussien poly.	79	19.75	39.25
Khaled polyclinic	44	11.00	50.25
Al-sabri polyclinic	78	19.50	69.75
Al-keesh polyclinic	89	22.25	92.00
Al-fwehat centre	1	0.25	92.25
Ibn zohr centre	8	2.00	94.25
23 July centre	2	0.50	94.75
Sidi younis centre	1	0.25	95.00
11 June centre	3	0.75	95.75
Al-uroba centre	2	0.50	96.25
Al-khaleej clinic	4	1.00	97.25
Al-fateh hospital	1	0.25	97.50
Al-jalaa hospital	2	0.50	98.00
Al-jamahyria hosp.	2	0.50	98.50
Private clinic	6	1.50	100
Total	400	100	100

Source: Field study carried out by author in summer 1992

majority of the population of Benghazi.

To test the degree of association between the variables, a Chi-square test was applied at a level of 0.05 suitable for accepting or rejecting the null hypothesis of no association. Table 8.5, reveals that favouring the closest HCF is statistically highly significant particularly with main reasons of appreciation (MREASON) e.g.

proximity to home and availability of qualified doctors (P= 0.003). Contrary to this, LIKING the closest health care facility did not prove to be statistically significant (P= 0.070), but when nearest health care facilities were compared in terms of their physical location (LOCATION), the overall difference was significant (P= 0.011). However, a Chi–square test further suggests that the difference between household income (HOUSEINC) and using the closest HCF is statistically highly significant (P< 0.001).

Table 8.5 : Chi–square results for selected variables related to nearest HCF

Variables	DF	χ^2 statistic	Probability
MREASON	15	34.687	0.003
LIKING	5	10.183	0.070
LOCATION	10	22.848	0.011
HOUSEINC	15	40.138	< 0.001

Note: Low frequencies were eliminated to avoid unreliable results.
Source : Calculated by author from household survey data collected in Benghazi in summer 1992

As for income, respondents were classified into four income groups according to their household income per month in Libyan dinars. The results indicate that use of the nearest public health care facility decreases substantially as household income increases (Table 8.6). For households with an income of less than 300 Libyan dinars per month, the total percentage of respondents preferring to frequent the nearest HCF was 64%; followed by 25.5% for those in the income group 300 to 499 dinars; 7% for those between 500 and 699 dinars and just 3.5% for the last category of 700 or more dinars per month. The overall difference between the use of nearest HCF and household income per month, measured by a χ^2 test was also statistically highly significant (P< 0.001). Thus, as most respondents fall in the lowest income category, it seems clear that most respondents do use the nearest HCF.

Table 8.6: The relationship between household income and the use of nearest HCF by respondents

Nearest HCF	Household income (Libyan dinars)				
to home	0 up to 299	300 to 499	500 to 699	$\geq$ 700	Total
Al-uroba	50 19.53	20 19.61	4 14.29	4 28.57	78 19.50
Sidi hussien	59 23.05	9 8.82	4 14.29	7 50.00	79 19.75
Khaled B. W.	29 11.33	14 13.73	1 3.75	0 0.00	44 11.00
Al-sabri	51 19.92	25 24.51	1 3.57	1 7.14	78 19.50
Al-keesh	50 19.53	25 24.51	12 42.86	2 14.29	22.25 89
Others	17 6.64	9 8.82	6 21.43	0 0.00	32 8.00
Total % of row	256 64%	102 25.5%	28 7%	14 3.5%	400 100
DF=(15)		$\chi^2 = 40.1376$		P < 0.001	

Source: Field study made by author in Benghazi in summer 1992

Table 8.7 shows the results of a Kruskal–Wallis H test which was selected to examine whether there is a significant difference between the samples of health care facilities in relation to selected variables related to general evaluation of the closest HCF in Benghazi. More specifically the stated hypothesis is that there is no difference between the services provided in the five selected samples of polyclinics. In applying the Kruskal–Wallis H test to variables related to general evaluation of the closest HCF in Benghazi (Table 8.7), the results reveal that the difference between the six health care facilities is highly statistically significant by location (P=0.0098), but did not prove to be so in terms of time of travel, vector distance and average household income with probabilities of P=0.0564, P=0.3767 and P=0.2038, respectively. At the 0.05 significance level, it is inferred from the test that the difference between the samples reflects a real difference between the populations of respondents of the six health care facilities and location, but there were no differences between the populations of respondents with time of travel, vector distance and household income.

Table 8.7: Kruskal–Wallis results for selected variables related to general evaluation of closest HCF in Benghazi

Nearest HCF	1. By Time in minutes			Probability
	Observations	Rank sum	rank order	
Al-uroba	78	15320.50	3	
Sidi hussien	79	15602.50	2	
Khaled B. W.	44	10475.50	5	
Al-sabri	78	14728.00	4	0.0564
Al-keesh	89	16435.00	1	
Others	32	7638.50	6	
	2. By location			
Al-uroba	78	18472.50	1	
Sidi hussien	79	15282.00	4	
Khaled B. W.	44	8498.00	5	
Al-sabri	78	15337.00	3	0.0098
Al-keesh	89	15353.50	2	
Others	32	7257.00	6	
	3. By vector distance			
Al-uroba	78	17100.00	1	
Sidi hussien	79	16292.50	2	
Khaled B. W.	44	8679.50	5	0.3767
Al-sabri	78	15765.00	4	
Al-keesh	89	15942.50	3	
Others	32	6420.50	6	
	4. By Household income			
Al-uroba	78	14792.00	4	
Sidi hussien	79	15066.00	2	
Khaled B. W.	44	8258.00	5	0.2038
Al-sabri	78	14975.00	3	
Al-keesh	89	19920.00	1	
Others	32	7188.00	6	

Source: Calculated by author from household survey data collected in Benghazi in summer 1992

8.2 Utilisation of Health Services

During the recall period, 1021 consultations were made to various sources of modern health care facilities by patients who reported being sick. Consultations during recall periods of greater than one year were excluded due to possibilities of lapse of patient memory, leaving the total consultations made in less than a year as 955. This gives an average consultation rate of 32% and annual consultation rate of 4.2 per person per year * assuming that seasonal differences would be small and could substitute each other throughout the recall period. Focusing on health care facilities utilisation, again the polyclinics seems to have scored the highest rate (60.2% of all visits made to HCFs during the recall period); followed by public hospitals forming 15.5%; private clinics 13.6%; health care centres 6.2%; and private hospitals 3.8% (Table 8.8).

Table 8.8: Health care facilities used by respondents of the sample population in Benghazi

Health care facility	Frequency	Percent	Cumulative percent
Polyclinic	615	60.24	60.24
Public hospital	158	15.48	75.72
Private clinic	139	13.61	89.33
Health care centre	63	6.17	95.50
Private hospital	39	3.82	99.32
Others	7	0.69	100
Total	1021	100	100

Source: Field study carried out by author in summer 1992

8.2.1 Utilisation and type of health care facility

Table 8.9 shows the relationship between reported sickness and those facilities used by respondents. As indicated in chapter 7, the five leading reported conditions were internal diseases and disease of the digestive system (20.4%); cold (12.1%); sense organs (9.9%); gynaecological diseases (9%) and skin diseases (8.1%). The major reported complaints to polyclinics are: internal diseases and disease of the digestive system (22.6%); cold (15.9%); sense organs (8.5%); skin diseases (8.1%);

* Annual consultation rate = $\frac{(No.\ of\ consultation\ made\ in\ one\ year)\ (52)}{(No.\ of\ people\ in\ the\ sample)\ (4)}$

and respiratory (7.3%). As for health care centres, the treatment provided in response to health infirmity was different from the rest of HCFs and can be categorised as follows: cold is the most complaint to be reported by respondents frequenting HCCs, accounting for 17.5%; followed by internal diseases and disease of the digestive system 15.9%; sense organs 14.3%; skin diseases 9.5% and dental problems 7.9%. Private clinic use is also different from the rest of the HCFs; gynaecological is the highest 15.1%; internal diseases and disease of the digestive system 14.4%; sense organs 13.7%; skin diseases 10.8% and dental 14.4%. The pattern of out–patient clinic use in public hospitals is more or less consistent with the pattern of use described above. For example, internal diseases and disease of the digestive system have scored the highest proportion, accounting for 20.9%; followed by gynaecological diseases 13.3%; dental 10.8%; others 10.8% and skin diseases 7.6%. The proportion of respondents to have reported use of private hospitals was generally small, with gynaecological diseases the most frequent reason (due for the most part to cultural differences explained in chapter 7); followed by the same proportion (18%) for sense organs; 5.4% dental problems; 12.8% internal diseases and disease of the digestive system and "others" accounting for 10.3%. On the whole, it seems that there is a great variation among health care facilities use, which is connected largely with the intensity and sort of disease. Also, it can be attributed to other factors such as the availability of some specialities in one location and not in others and the population density of each catchment area though everybody has the right to use whatever HCF he or she desires. But, generally speaking, the services of polyclinics are much better than health care centres and health units and hence are ranked second only to hospitals.

Table 8.9: Total sickness reported and other reasons according to HCF used during the recall period

Disease	HCF used by respondents						Total
	A	B	C	D	E	F	
Internal & digestive	139	10	20	33	5	1	208
Per cent	22.6	15.9	14.4	20.9	12.8	14.3	20.4
Respiratory	45	5	4	12	3	1	70
Per cent	7.3	8.0	2.9	7.6	7.7	14.3	6.9
Sense organs	52	9	19	12	7	2	101
Per cent	8.5	14.3	13.7	7.6	17.6	28.6	9.9
Musculoskeletal	27	2	11	7	-	-	47
Per cent	4.4	3.2	7.9	4.4	00	00	4.6
Skin diseases	50	6	15	12	-	-	83
Per cent	8.1	9.5	10.8	7.6	00	00	8.1
Urogenital	3	0	2	-	-	1	6
Per cent	0.5	00	1.4	00	00	14.3	0.6
Gynaecological	41	2	21	21	7	-	92
Per cent	6.7	3.2	15.1	13.3	18.0	00	9.0
Heart	25	2	4	4	1	-	36
Per cent	4.1	3.2	2.9	2.5	2.6	00	3.5
Accident	7	2	2	11	2	-	24
Per cent	1.1	3.2	1.4	7.0	5.1	00	2.4
Infection	5	4	1	5	-	-	15
Per cent	0.8	6.4	2.7	3.2	00	0.00	1.5
Dental	38	5	13	7	6	-	79
Per cent	6.2	7.9	9.4	10.8	15.4	00	7.7
Diabetes	37	2	6	2	3	-	50
Per cent	6.0	3.2	4.3	1.3	7.7	00	4.9
Vaccination	26	3	-	-	1	-	30
Per cent	4.2	4.8	00	00	2.6	00	2.9
Cold	98	11	9	5	-	-	123
Per cent	15.9	17.5	6.5	3.2	00	00	12.1
Others	22	0	12	17	4	2	57
Per cent	3.6	00	8.6	10.8	10.3	28.6	5.6
Total	615	63	139	158	39	7	1021
% of row	60.2	6.2	13.6	15.5	3.8	0.7	100.00

A. Polyclinic B. Health care centre C. Private clinic
D. Public hospital E. Private hospital F. Others

Source: Field study carried out by author in summer 1992

8.2.2 Utilisation and time of visiting health care facilities

The relationship between HCF attended and the timing of visits by respondents is shown in Table 8.10 below:

Table 8.10: Time of visiting health care facilities by respondents in Benghazi

HCF	Time of visiting HCFs by respondents								Total
	A	B	C	D	E	F	G	H	
Polyclinic	39	153	76	153	84	38	36	36	615
Per cent	73.6	68.6	63.3	60.7	54.6	51.4	45.6	54.6	60.2
Health C.C.	2	13	7	20	9	7	2	3	63
Per cent	3.8	5.8	5.8	7.9	5.8	9.5	2.5	4.6	6.2
Priv. cl.	3	26	14	32	27	13	12	12	139
Per cent	5.7	11.7	117	12.7	17.5	17.6	15.2	18.2	13.6
Public hos.	7	27	17	36	28	11	20	12	158
Per cent	13.2	12.1	14.2	14.3	18.2	14.9	25.3	18.2	15.5
Priv. hos.	1	4	5	11	3	4	8	3	39
Per cent	1.9	1.8	4.2	4.4	2.0	5.4	10.1	4.6	3.8
Others	1	-	1	-	3	1	1	-	7
Per cent	1.9	00	0.8	00	1.9	1.4	1.3	00	0.7
Total	53	223	120	252	154	74	79	66	1021
Per cent	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)

A. Today B. Last week C. Last fortnight D. Last month
E. < three months F. < six months G. < a year H. $\geq$ 1 year

Source: Field study carried out by author in summer 1992

For all categories of utilisation times, the preferred facility was the polyclinic and the greatest probability of patients attending polyclinics was in the range of

a month or so. Indeed, the number of people using all health care facilities within the period of a month is the highest of all, accounting for 24.7%; followed by last week 21.8%; less than three months 15.1%; last fortnight 11.8% and the remaining categories of less than six months and less than a year accounting together for 14.9% leaving the period of a year and more of just 6.5%.

8.2.3 Principal type of transport used by respondents to HCFs

Personal mobility is one of the most outstanding factors associated with health care service utilisation. Personal mobility as (Hillman *et al.,* 1973) pointed out is *"the capacity that a person possesses for getting around"*. Personal mobility, particularly when supported by the ownership of a car is more likely to be influenced by social class (Weiss and Greenlick 1970). Moreover, it is thought that possession of a private vehicle by a household may give equal mobility to all members of that household. This assumption may have been valid in the past but not today as the pattern of life has drastically changed. Further, the inability of some members of the household to drive and the unavailability of a private car for daytime use may also hinder HCF attendance (Phillips 1980).

Car ownership is examined here in the light of the mode of transport respondents use to attend HCFs in Benghazi city. It was assumed at the outset of this study that ease of attendance at different health care facilities may be an outcome of access to a dependable mode of transport, private or otherwise. Table 8.11 demonstrates, however, that walking to public surgeries remains an important way of reaching local health care services among respondents of all sorts of social classes. 30.8% of respondents indicated that they would walk to surgeries when using the nearest ones. This suggests that for the relatively large minority of Benghazi's population without access to a car, lack of such transport does not act as a great deterrent to attending their nearest health care services. Conversely, the poor public transport network may be considered as a great barrier in not allowing such respondents to seek more distant facilities–only 6.1% used such modes of transport (buses 0.3%, taxis 5.3%, and ambulances and others 0.5%).

The dominant mode of private transport whether used by the respondent or a friend, accounts for 63.2% of all means of transport. This proportion is very high and significantly magnifies the traffic volume on the city streets on routes

to health care services, creating congestion, which may impede the trips to these health care facilities (Salem 1989). In comparing all health care facilities and type of transport used to reach them, polyclinics are the most frequently visited by walking respondents . Out of 314 walking respondents, nearly 86.9% had frequented polyclinics; 2.6% HCC; 4.1% private clinics; 5.1% public hospitals and only 1.3% used private hospitals. Roughly half (49.3%) of the respondents who used private transport indicated that they had frequented polyclinics; 8.8% HCC; 18.7% private clinic; 18.3% public hospitals; 4% private hospital and 8% others. From Table 8.11 , it appears that the main methods of transport used to reach different HCFs were either walking or private transport, which all together form up to 89.5% of all modes of transport utilised by respondents. The findings of this study have revealed that about 78.3% of interviewed households were car–owning, while the rest were with no car. More specifically, out of 78.3% having automobiles, 55% indicated owning one car; 17.3% two cars; 4% three cars and the remaining (11.6%) having four cars or more. Approximately 66% of respondents over the age of 18 did not have a driving licence, although 42.5% of respondents were able to drive but did not own a driving licence. Of all respondents, nearly 57.5%, mainly the middle aged and older women group, were unable to drive a car. Table 8.12(a) shows the dominance of private automobiles and the neglect of public transportation. The following factors, had a great impact on infrequent use of the bus, owning a private car, waiting too long at bus stops, socially unacceptable, overcrowded vehicles, and the great distances between places of residence and bus stations. Overcrowded vehicles, a consequence of long waiting time, are attributed to the need for drivers, maintenance, and shortage of vehicles. The great majority of Benghazi dwellers are using their own cars and thus have made the buses and other public transportation relatively outmoded for many years (Table 8.12(b)).

Table 8.11: Principal type of transport used by respondents to reach health care facilities in Benghazi

HCF	Mode of transport used by respondents							Total
	walking	private car	relative's car	taxi	bus	ambulance	others	
Polyclinic	273	296	22	23	-	-	1	615
Per cent	86.9	49.3	48.89	42.6	00	00	33.3	60.2
Health c.c.	8	53	1	1	-	-	-	63
Per cent	2.6	8.8	2.2	1.9	00	00	00	6.2
Private cl.	13	112	6	6	1	-	1	139
Per cent	4.1	18.7	13.3	11.1	33.3	00	33.3	13.6
Public hos.	16	110	14	16	1	1	-	158
Per cent	5.1	18.3	31.1	29.6	33.3	50.0	00	15.5
Priv. hos.	4	24	1	8	1	1	-	39
Per cent	1.3	4.0	2.2	14.8	33.3	50.0	00	3.8
Others	-	5	1	-	-	-	1	7
Per cent	00	0.8	2.2	00	00	00	33.3	0.7
Total	314	600	45	54	3	2	3	1021
% of row	30.8	58.8	4.4	5.3	0.3	0.1	0.3	100

Source: Field study carried out by author in summer 1992

Ideally, bus operations should be competitive with the private car, which requires that buses be (1) frequent (2) on schedule (3) comfortable (4) cheap and (5) convenient. Unfortunately, in Benghazi, these specifications for a transit system competitive with the private car have not yet been reached, indirectly motivating the increased usage of private cars instead of public buses.

Table 8.12: Respondents' main reason for not using bus services and last use of them

A. Main reason	Frequency	Percent	Cum. percentage
Overcrowded	34	8.50	8.50
Waiting long	69	17.25	25.75
Too expensive	1	0.25	26.00
Destination not served	16	4.00	30.00
Route far away	21	5.25	35.25
Socially unacceptable	41	10.25	45.50
Stations not close	4	1.00	46.50
Owns private car	210	52.50	99
Others	4	1.00	100
Total	400	100	100
B. Last use	Frequency	Percent	Cum. percentage
Today	19	4.75	4.75
Last week	32	8.00	12.75
Last month	39	9.75	22.50
Last year	24	6.00	28.50
$\geq$ 1 year ago	39	9.75	38.25
Never used it	247	61.75	100
Total	400	100	100

Source: Field study conducted by author in Benghazi in summer 1992

The distribution of household automobiles according to individual or household income is indicative of the great discrepancies which exist in the distribution of mobility. This conclusion supports that of similar studies carried out in Jeddah and Makkah, Saudi Arabia (Al–Ghamdi 1981: Makki 1988) but is hardly sup-

porting though, surely different from a study conducted on Kingston, Jamaica, where public transport was found to be the best mode of transport for all low income groups (Bailey and Phillips 1990). Further, Whitelegg (1982) in his study on health care facilities and re–organised provision in Blackburn, UK, found that bus passengers (users of these services) were higher than car drivers, though the formers' fare sometimes act as a deterrent to the users.

8.3 The role of the last HCF used by respondents

It is intended in this part of the chapter to focus principally on the importance of the last health care facility visited and to examine the structural barriers that may disencourage people from using it. It is useful, however, to examine the separate effects of different barriers, one at a time, but in reality, of course, these barriers may not function independently of one another, but for the most part have a collective impact. Consequently, to begin with, the respondents were asked about the availability of doctors at their offices in these facilities; four out of five responded positively, confirming the loyalty of most physicians to their profession and patients. They, did, however, emphasise the fact that there was a marked shortage of indigenous doctors, with about 55% asserting that the number of physicians in the last health care facility visited was insufficient. It seems that more foreign doctors need to be brought into the country to help alleviate this shortage; the patients frequenting those facilities may then face difficulties of language with non–Libyan doctors. However, the effect of language represented only one fifth of all complaints of respondents, while four fifths had no complaints at all on this matter. Generally, respondents of the households interviewed had strong views on the continuity of care , while more than two thirds (68.5%) indicated that physicians were rotating too often. Also, about the same proportion (66.8%) of the respondents mentioned that they were able to select their favourite doctor at the last health care facility utilised.

A common phenomenon in State run primary health care services all over the world is the excessive waiting time between arrival and receiving treatment. Accordingly, it was not a surprise to find that roughly half (49%) of respondents indicated that they were not allowed to stay more than five minutes with the doctors to whom they were assigned, in order to reduce waiting times. This suggests

that the public health care facilities are seen as desirable and acceptable by a great number of people in Benghazi. As regards time used before consultation, respondents were interrogated about their use of other facilities than the sought doctor such as X-ray or laboratory tests, to estimate the time consumed by respondents from their entry until they finished their tests at the clinic. About a third (34.2%) had to see others, while two–thirds (65.8%) did not mention consulting any one except the chosen doctor. Out of 148 interviewees reported as being seen by others, about 53% revealed that their total time for all tests taken together was less than 30 minutes; 16.9% between 30–60 minutes; 9.5% between 60–90 minutes; 8.9% between 90–120 minutes and only 11.5% were equal to or more than two hours. Approximately, four–fifths of the respondents confirmed having had treatment in less than an hour on the last occasion on which they had visited a health care facility and only one–fifth waited more than that.

Some respondents commented that old patients need not necessarily suffer the long waiting times (which sometimes take place from early dawn) necessary to obtain a number in the queue for the limited tickets issued daily for specialised consultations, as their younger relatives usually wait in line on their behalf. The main complaints, however, were those against the specialised physicians, who usually take a small proportion of patients daily and leave others to be scheduled for another chance in the tedious daily queue system applied in most public health care facilities in Benghazi. Further, probably the two major difficulties that respondents identified were the absence of specialised doctors and the difficulty of obtaining a ticket for consultation from the queues held every day in all public primary health care facilities. However, the new trend of health care privatisation adopted by the State after 1988 is more likely to face strong opposition from users, especially as doctors have deviated from their real humanitarian message concerning the health of their fellow people. Moreover, as professional physicians have become more materialistic (according to observations of respondents) and concerned only with making more money, and since the government itself has participated in this direction by gradually reducing public funds for supporting medical systems and deviating from the commitment of State support, the poor and middle income classes will certainly suffer the most. Hence, most respondents (54%) sharply criticised the shortages of most freely prescribed medicine in the last HCF frequented. Prescribed drugs are a central aspect in the help–seeking

process for a great number of patients visiting health care facilities in Benghazi. Unfortunately, in recent years only 46% of the respondents who frequently make use of the resources of HCFs have received the medicine prescribed by doctors. Health care must, therefore, continue to be free of charge, particularly for the low income groups and to be within access for every citizen in Benghazi. Health care is not a staple that can be left to market forces or to an individual's purchasing power. It is really a social obligation on the part of the State towards its people, where those least able to pay should get the greatest benefit. Hence, provision of an accessible and universal health care delivery system has become an essential matter affecting every one in the city of Benghazi.

8.4 Evaluation of users' opinions towards last HCF

Survey research into lay evaluation of care has been considered as the major tool for developing ways by which patients evaluate the providers and the health care they receive (Calnan 1988). However, as perception is the reality of the perceiver, then differences in satisfaction reflect the realities of care to a substantial extent and personal preferences as well as expectations (Ware *et al.*, 1983). Satisfaction ratings are also used to substantiate the personal evaluation of care that can not be discovered by merely observing care directly. Yet, Ware *et al.* (1983) suggested eight essential points to be considered as the main taxonomy of the characteristics that would provide a framework for classifying the content of satisfaction measures and evaluating various attributes of the providers and medical care services. These points are:

1. **Interpersonal manner**
2. **Technical quality**
3. **Accessibility/convenience**
4. **Finance**
5. **Efficacy/outcomes**
6. **Continuity**
7. **Physical environment**
8. **Availability**

The first four, according to these authors, formulate the key factors of care measurement in patient satisfaction studies. Furthermore, Calnan (1988) conceptualised evaluation of health care by concentrating not only on measures of clinical effectiveness and economic efficiency but also on measures of social acceptability, political beliefs and professional ethics or humanitarian concerns. Although much

empirical work needs to be done to formulate a complete model of patient satisfaction, devoid of shortcomings, the author is fully satisfied as to the viability of several features of such a model. Accordingly, this section of this chapter is designed to measure respondents' satisfaction in general as well as satisfaction with specific features of health care facilities in Benghazi.

8.4.1 Evaluation of mode of transport used to last HCF

The aspect of dominant automobile use at the expense of other public carriers was clearly raised by Reichman about twenty years ago (1973:200), while examining the transportation and urban development of West Africa. He argues that:

> Perhaps more than any other single factor, the private car has been a means of superimposing a modern and often deceptive veneer on the African urban scene. Last, but not least, the large traffic flows generated by private cars have had a dominant influence on the accessibility pattern of the cities, since they have dictated to a large extent, which links in the existing road network need improvement.

Preference for the use of private automobiles for various purposes in Benghazi tends to be more likely, to be explained by the following reasons:

1. Some people need their vehicles to be as close as possible to their destination, especially when their places of residence are not fully served with public transit.

2. Others can not easily be enticed to use buses for a variety of social and personal reasons.

3. Finally, some others will use one means of transportation or another depending on considerations of economy, standards of bus services, traffic and parking conditions, etc.

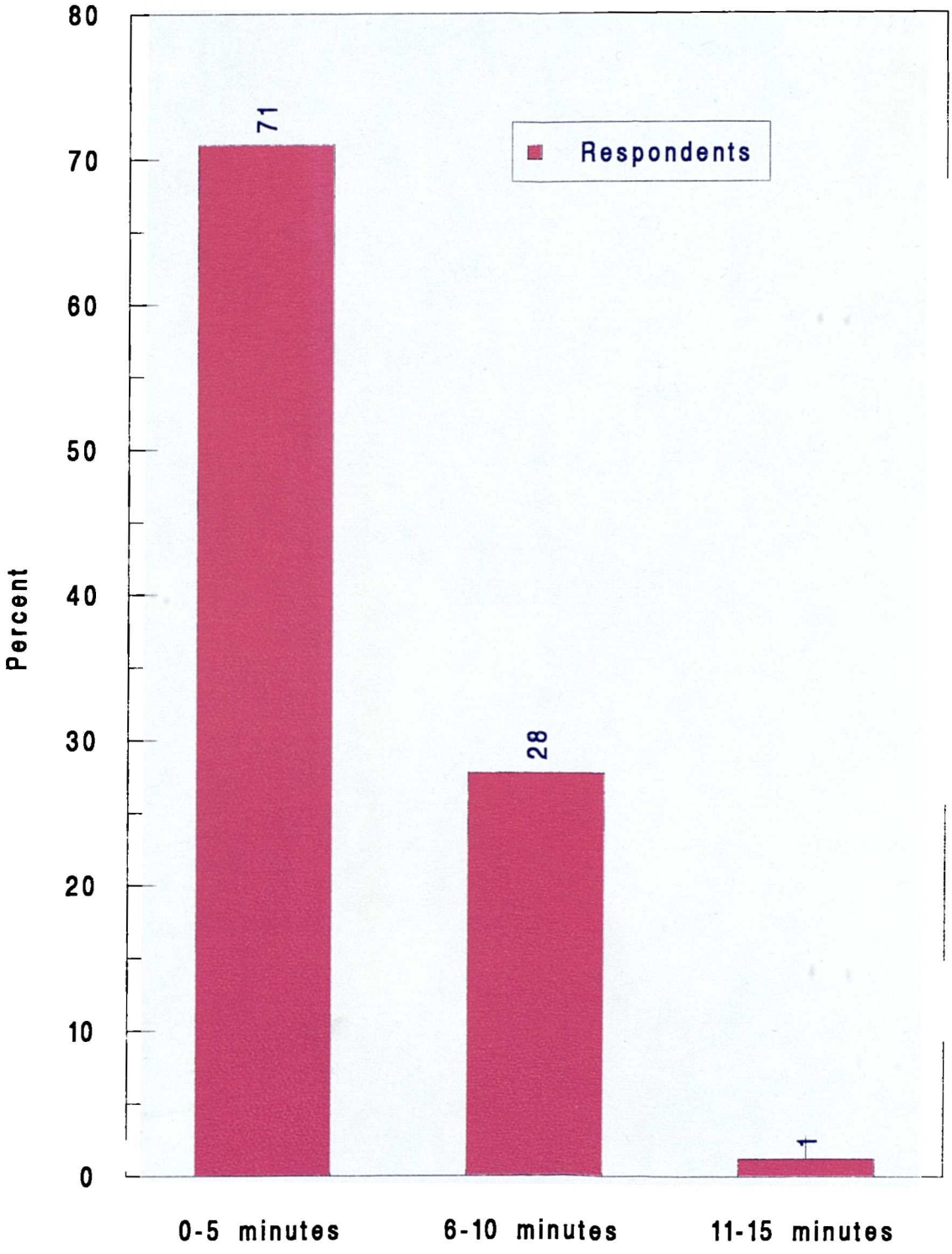
The purpose of this section is to evaluate how easy or difficult it is to get from various locations of the city to health care facilities. If the traffic system control and management is effective, motorists have the opportunity to reach their destination in reasonable time. Likewise, the form of the transportation network and the low proportions of urban area used for roads , the mix of slow and fast vehicles in the same lanes and the pattern of the built–up area can also effectively influence ease of access to a health care centre in the city. In Benghazi the role

of public transport is still far below that of private transportation. This was well substantiated by two consecutive studies; one carried out by the international consultant Doxiadis (1979) and the second by the author in summer 1992. The findings of the first study have demonstrated that out of all trips generated by vehicles, 49.9% were made by private automobiles; 17% by buses and taxis; 30.7% by foot, and other methods of transport were just 2.4%. In the second study, though it was conducted twelve years after the first one, the pattern of dominant private transport at the expense of public transit was still the prevalent stereotype of the whole fabric of the morphological aspects of the city. The later study has strongly reinforced the results of the previous one in that, out of all trips made by vehicles to different health care facilities 63.2% were generated by private automobiles, while the share of taxis and buses in particular is much less significant at 5.3% and 0.3%, respectively and "Others" were just 0.4%. Surprisingly, the 30.8% of visits made on foot matched that recorded by Doxiadis in 1979. Thus, the continuing preponderance of the private automobile among the motorised trips can be attributed either to the poor service offered by the Benghazi bus network or preference of private car usage. Yet, it is more interesting to observe that the city and suburban dwellers of Benghazi, irrespective of their places of work, or places of social services which they usually frequent, use public transit on a very limited scale and only when there is no other alternative for private transportation. Thus, the overwhelming majority of people using public transport, particularly buses, are non–Libyans temporarily working in the city (Salem 1989). However, as regards the time taken by car to finish the trip to the last health care facility utilised, it appears obvious from Figure 8.4, that about 98.8% of the journeys would be made within 6–10 minutes and the remaining 1.2% would be made in more than 10 minutes. This, of course, suggests that the last health care facility used is reasonably accessible by car to most respondents.

8.4.2 Evaluation of the trip to and parking facilities of last HCF

Data about major difficulties experienced by respondents during the process of seeking the last health care facility show that more than half (50.7%) of the sample population travelling to those health care facilities did not face any problem. This may be attributed to short distances or lack of traffic volume. The other half (49.3%) experienced some sort of difficulties ranging from heavy traffic (22.3%),

Fig. 8.4: Distribution of the sample population according to location of HCF by travel time (Field study, 1992)



long distance (9.5%) to road works (8.3%). These factors necessitate reduction in speed, traffic delays, car accidents, retarding of public transit and above all personal annoyance. Numerous traffic lights may further act as a deterrent and cause delays. For example, if there are five sets of traffic lights and the adjusted stopping time at each is one minute, a driver can add 5 minutes' delay to his trip. As can be seen from Table 8.13, difficulties arising from heavy traffic were the most significant, particularly for those frequenting polyclinics. Part of this setback is connected with the location of health care facilities, which, for the most part, were selected to be on main streets that cater for a large volume of traffic. This phenomenon was also a crucial problem for patients using buses, who had to cross those busy streets to reach the health care facility intended. Interruption made by pedestrians and other reasons did not show any clear evidence of causing

Table 8.13: Respondents' perception concerning travelling to last HCF and parking facilities

1. Difficulties obtained from survey	Frequency	Percent	Cum. percent
Road works	33	8.25	8.25
Traffic lights	23	5.75	14.00
Heavy traffic	89	22.25	36.25
Long distance	38	9.50	45.75
Interruption by pedestrians	6	1.50	47.25
Those who experienced no problem	203	50.75	100
Others	8	2.00	49.25
Total	400	100	100
2. Judging car parking facility	Frequency	Percent	Cum. percent
Excellent	60	15.00	15.00
Above average	39	9.75	24.75
Average	168	42.00	66.75
Below average	37	9.25	76.00
Very poor	71	17.75	93.75
Not existent	16	4.00	97.75
Do not know	9	2.25	100
Total	400	100	100

Source: Field study carried out by author in summer 1992

inconvenience for motorists or walkers; thus their proportions were just 1.5% and 2% respectively. Indeed, the dramatic increase of motorcars in Benghazi has far exceeded the capacity (in either physical or economic terms) of the urban street system and consequently has led to severe congestion during rush hour periods and shortage of parking lots among HCFs. This is not only a recent problem as

highlighted by Burrace and Morgen (1957:1) in the following perspective:

> Increasingly congested traffic and inadequate parking seriously threaten the economic health of fine communities, halting their further progress. Yet,our unavoidably growing use of motor vehicles, essential in our daily life, arises from inevitable changes in our past.

When relating this statement to the research area in Benghazi, it seems to describe the situation in both its timing and pattern of change. As health care sites in Benghazi are one of the most important foci of traffic interaction, we expect that plenty of journeys will be generated by them. Indeed, it is the combination of affluence and car ownership that have dramatically increased the mobility and the volume of traffic, bringing about serious problems which the city was unable to anticipate by planning alternatives. The most serious of these problems was on–street parking within and outside the premises of the health care facilities, that has resulted in a perplexing obstacle to traffic flow and a definite hazard. When interviewed, people were asked to judge parking places and whether they pose a problem at the last health care facility frequented; the majority (42%) believed that they were "average"; followed by those who were highly satisfied, "excellent" (15%) and "above average" (9.7%). Thus, roughly two–thirds (66.7%) perceived parking facilities to be "average" or better at the last health care post visited, while 17.5% of all respondents considered parking facilities as "poor"; 9.3% "below average" and only 4% claimed car parking places to be "non–existent" (Table 8.13). These results suggest that some health care facilities like newly built polyclinics have sufficient car parking places, whereas the rest either have few spaces or more likely none at all. Due to marked shortages in car parking places within some health care facilities, nearby street parking and curbside parking have become necessary. Curbside parking provides an additional problem, as it has a great impact on traffic flow in general, and on health care facilities, public transit, and emergency vehicles in particular. Studies of these setbacks in Benghazi have shown that double and triple parking are widespread as parkers try to avoid walking for short distances. Long term parkers, especially around health care facilities in the city centre and main streets, are most often perpetrators of such parking abuses, which exacerbates the problem for short term parkers (Salem 1989). Thus, curb parking, both angle and parallel, has greatly reduced the streets' capacity for traffic, while restricting visibility for both motorists and pedestrians alike, hence increasing the

risk of intersection accidents. Not enough attention has been given to this crucial problem at the outset of building some of the health care facilities; thus the growing demand for car parking has long posed a problem.

8.4.3 Negative and positive attitudes towards last HCF

It is worth noting that the main reservations about not liking the last health care facility used were travel and office waiting times. The tedious waiting time in particular between arrival and examination is deemed by far the major factor for complaint, mentioned by 30.9% of respondents. However, excluding 8.7% who did not express any dislike, overcrowding was put as the second category (26.8%) as it was quite relevant to the waiting time factor, which certainly generated some discontent towards the facility visited. This is added to the travel time that must be taken to reach the facility, which, undoubtedly, increases the burden of time spent on what might also sometimes end up to be an unsatisfactory visit. Among other reasons for dissatisfaction, as can be seen from Table 8.14, lack of specialists was commented on by 11.5%; followed by discourteous treatment by staff (7%); absence of doctors during official hour times (5.7%) and lack of cleanliness in the waiting area and rest rooms (5.5%). The remaining complaints of too much paper work (2.5%) and others (5.2%) were not recorded as major factors of dissatisfaction in the last HCF used. Positive responses given for attending the last health care facility appear in Table 8.14. Though a mixture of reasons may apply in most cases, there did arise a general pattern of response. The leading positive reason for frequenting the last health care facility was the anticipated good treatment of the staff (25%) at all health care providers. The courtesy of physicians in particular was highly appreciated by 22% of respondents. Other reasons cited for using the last health care facility were that it provided free medicine (20.7%) and that the period of consultation with doctors was long (13.7%). The category of "others" was mentioned by another 6.7%, of whom about 95% cited it was the closest clinic. Medication by touch was considered a positive reason for good care for about 4.5% of the respondents, though this attribute has occasionally been considered as highly positive elsewhere, except in the case of Villa O'higgins of Santiago, Chile, (Scarpaci 1988). Accurate appointments were the least important positive response, accounting for just 4.3% and reflecting the shortage of medical personnel, physicians and highly crowded health care facilities.

Table 8.14: Main negative and positive characteristics of last health care facility

1. Major complaints	Frequency	Percent	Cum. percent
Waiting	113	28.25	28.25
Bad treatment	28	7.00	35.25
Absence of physicians	23	5.75	41.00
Crowdedness	98	24.50	65.50
Lack of specialists	46	11.50	77.00
Lack of cleanilness	26	5.50	83.00
Too much paper work	10	2.50	86.00
Others	21	5.25	91.25
No problem	35	8.75	100
Total	400	100	100
2. Positive perceived responses	Frequency	Percent	Cum. percent
Long period of consultation	55	13.75	13.75
Medication by touch	18	4.50	18.25
Friendly physicians	88	22.00	40.25
Accurate appointments	17	4.25	44.50
Availability of free medicine	83	20.75	65.25
Good treatment	100	25.00	90.25
Others	27	6.75	97.00
Not applicable	12	3.00	100
Total	400	100	100

Source: Field survey carried out by author in Benghazi in summer 1992

8.4.4 Staff behaviour in the last health care facility visited

In general terms, a sizable number of respondents looked favourably on staff behaviour in the facility they have frequented lately (Figure 8.5) as more than a fifth (21.5%) described it as "excellent"; another 11.3% as "above average" and 45.3% as "average". Fewer respondents, however, cited things that they disliked about the behaviour and treatment of those staff in the last clinic utilised and thus they had negative views. These respondents can be divided into three categories: the first group judged negatively the behaviour of auxiliaries in particular as "below average", giving a percentage of 5.7%; followed by "very poor" treatment as 12%. Those who neither exalt nor criticise were put at 4.3%. It is apparent from the previous discussion that almost four out of five of those interviewed did not cite any complaint against the behaviour of personnel in the last health care facility visited. Also, variation of respondents' perception is quite obvious (Figure 8.5).

However, a Chi–square test was used to determine the relative overall importance of the variables relating to variations in utilisation of the last health care facility used. Table 8.15 shows the significant association between general evaluation based on the perception of the respondents to the last HCF used and some selected variables like staff behaviour (STAFFBEH), parking facilities (PARKING), positive aspects of treatment (POS), serious problem encountered (SERPROB) and choice of the preferred physician (CHOICE). With almost every variable in the Table, the difference between general evaluation (based on previous utilisation) and these variables was statistically highly significant (P value varied between <0.029 and <0.001). Table 8.15 presents also non–significant results for some variables like length of treatment (TREAT), availability of physicians at their offices (PRESENT), obtaining free prescribed medicine easily (PRESMED), main difficulties experienced in reaching the last HCF used (MAINDIFF) and finally, the total time for all tests taken together (DURATION). The results in this table reveal that for each of these variables, the general evaluation was not statistically significant ranging between >0.669 and >0.161.

Fig. 8.5: Staff behaviour as perceived by respondents in the last HCF visited (Field survey, 1992)

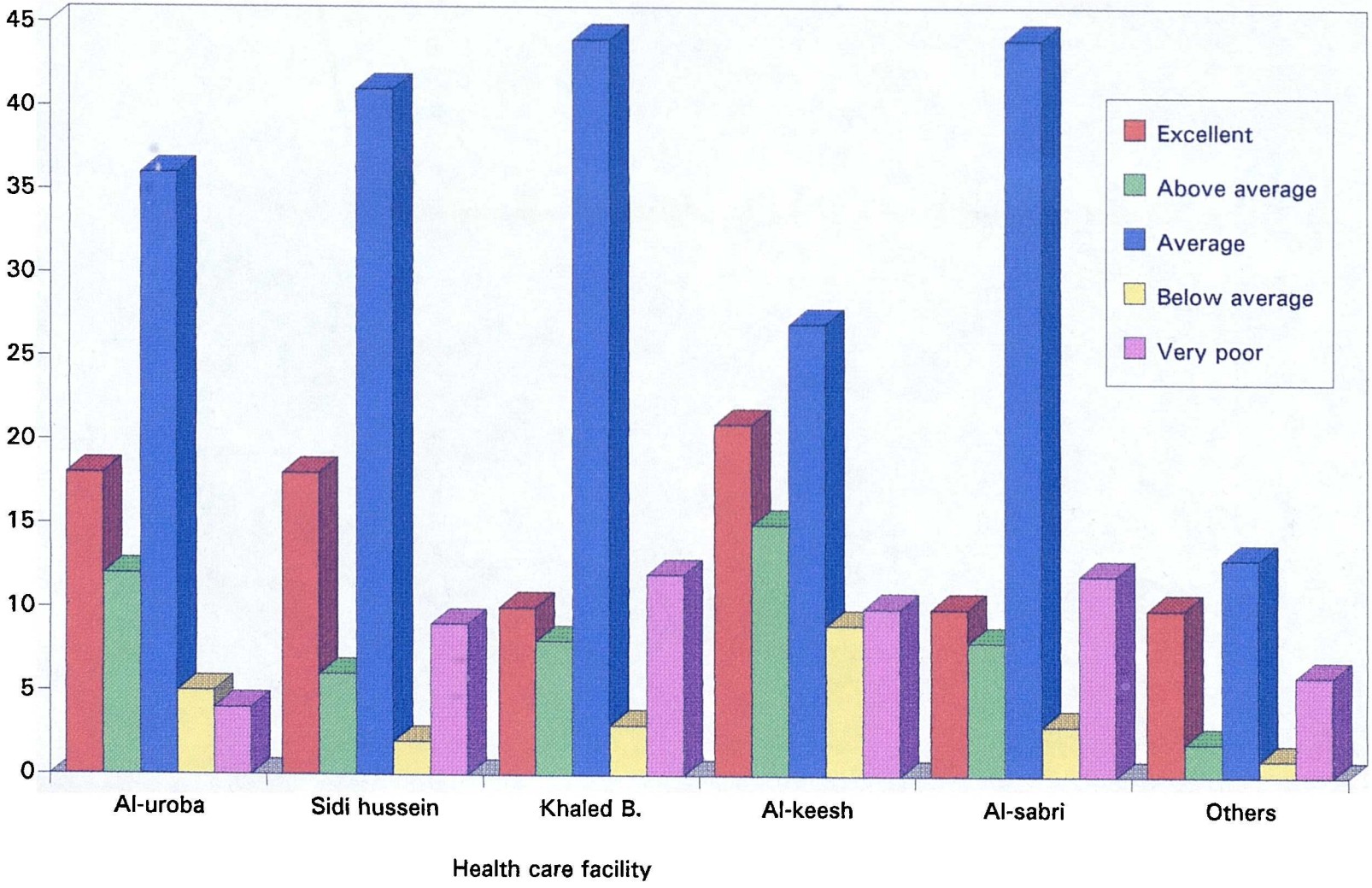


Table 8.15 : Chi–square significant and non–significant results for selected variables related to general evaluation of last HCF used by respondents in Benghazi

Variables	DF	χ^2 statistic	Probability
STAFFBEH	20	92.5473	<0.001
PARKING	25	47.7466	0.004
POS	28	47.1198	0.013
SERPROB	28	44.3500	0.026
CHOICE	5	12.4175	0.029
TREAT	24	30.7577	0.161
PRESENT	5	7.2265	0.204
PRESMED	5	6.0132	0.305
MAINDIFF	20	18.9711	0.524
DURATION	20	16.7448	0.669

Note: low frequencies were either recoded or eliminated to avoid violating the assumptions of the Chi–square test.

Source: Calculated by author from household survey data collected in Benghazi in 1992

The selected variables in the upper part of Table 8.15 were mainly organisational in nature. The results further demonstrate that physical accessibility as perceived by respondents is reasonable, while organisational factors like length of treatment, availability of doctors at their offices, availability of prescribed medicine, the duration of treatment and other difficulties are not sufficient and thus did not prove to be statistically significant. As the aspect of concern here is the difference between polyclinics, and since in this respect the Kruskal–Wallis H test is more powerful than other methods such as cross–tabulations, the variables mentioned in Table 8.15 were further tested by a Kruskal–Wallis H test in the context of their neighbourhood perspective. The results are shown to be not statistically significant except TREAT, indicating that there are few differences among the samples of the five polyclinics (Table 8.16).

Table 8.16: Kruskal–Wallis H test results for selected variables related to general evaluation of last HCF frequented in Benghazi

Variables	DF	χ^2 statistic	P values
PRESENT	5	2.987	0.7020
CHOICE	5	2.008	0.8480
PRESMED	5	7.771	0.1693
TREAT	5	14.069	0.0152
MAINDIFF	5	9.592	0.0876
PARKING	5	5.545	0.3531
SERPROB	5	8.782	0.1181
STAFFBEH	5	4.643	0.4610
POS	5	6.946	0.2247
DURATION	5	5.207	0.3912

Source: Calculated by author from household survey data collected in Benghazi in summer 1992

8.5 Preference of health care facilities for emergency use

Emergency treatment is considered by far one of the most essential aspects of health care delivery. It has long been recognised as an important source of care, especially for poorer or non–insured people in various health care delivery systems all over the world. The interviewed sample of population in Benghazi were questioned about the facilities they had used when they, or any member of their household, had an emergency case. Nearly half (49%) of the respondents had preferred to use the closest polyclinic, because they felt that an emergency case must reach the adjacent health care facility promptly as it would take too long to get to the emergency room of a public hospital like Al–jalaa. Those who preferred to travel to a casualty hospital (emergency room) represented about a third of the sample (32.8%), suggesting that casualty hospitals are seen as better equipped than other HCFs; while 6.3% think that general hospitals provide good services for emergency cases; and 5.3% would prefer private hospitals because they believe that they are well–equipped and provide better and faster services than all other health care providers. The few remaining 6.5% can be divided among three health care facilities: health care centres 1.5%; private clinics 1.5% and others 3.3% (Table 8.17). The great significance of the emergency system lies mainly

in the response time for certain serious sicknesses and accidents. It is important, however, to emphasise that response time *per se* has nothing to do with the quality and quantity of services provided but only with vehicle speed and the geographical constraints of service area.

Table 8.17: Types of medical facilities preferred for emergency cases

Type of facility	Frequency	Percent	Cum. percent
Casualty hospital	131	32.83	32.83
Polyclinic	196	49.12	81.95
Private clinic	21	5.26	87.22
Health care centre	6	1.50	88.72
Private hospital	7	1.75	90.48
General hospital	25	6.27	96.74
Others	14	3.26	100
Total	400	100	100

Source : Field study carried out by author in Benghazi in summer 1992

For instance, in cases of cardiac arrest, when the heart stops beating, cardiopulmonary resuscitation needs to be set up in four to six minutes, or irrevocable brain damage comes about abruptly (Mayer 1980). However, Mayer (1980:79) further adds that:

> Response time is defined as the interval between the time at which an emergency vehicle is dispatched and its arrival time at the location of the emergency.

Accordingly, it seems more likely that the effect of response time on fatality is anticipated to be greatest for cardiac arrest cases and the like. In the light of this, it seems essential to evaluate respondents' maximum perceived time to reach casualty hospitals. Table 8.18 shows almost similar views of respondents concerning their perception of maximum time to reach a casualty provider, particularly polyclinics. However, if we assume that the distribution of cases in this table is normal or close to that–though the term normal distribution is, at times misleading because aggregate normal distribution is rarely found in reality–then, the total mean of maximum perceived time to reach a casualty HCF was 2.76 minutes and the standard deviation was approximately 1.0, resulting in 83.8% of respondents falling between 1.76 and 3.76 (i.e. $2.76 \pm 1 \times 1.0$). This means that there is a 83.75

probability that a case will lie between 1.76 and 3.76. Similarly, 94.75% of respondents will lie between 0.76 and 4.76 (i.e. 2.76±2 ×1.0). Comparing this variable of perceived maximum time in its association with the nearest health care facility emphasises the fact that the nearest health care facilities are highly accessible in the event of an emergency as almost all respondents live within a maximum distance of 5.8 minutes (i.e. 2.76±3 ×1.0) by car from place of residence. This distribution is positively skewed, implying that more facilities are close to the sample population.

Table 8.18 : Summary of maximum perceived time by respondents to reach a casualty facility by car

Nearest HCF to home	Maximum perceived time to reach casualty		
	Mean (time in minutes)	Std. Dev.	Frequency
Al-uroba	2.7	1.0	78
Sidi hussien	2.5	0.8	79
Khaled ben waleed	2.7	0.9	44
Al-sabri	2.9	1.1	78
Al-keesh	2.9	1.0	89
Others	3.0	1.1	32
Total	2.8	1.0	400

Source: Calculated by author from household survey data collected in Benghazi in summer 1992

8.6 Discussion and Conclusion

A major aim of this chapter has been to examine the spatial patterns of the use of publicly run health care facilities, particularly the services of the five polyclinics in Benghazi, and to investigate the effects of distance, travel time, accessibility and mobility of respondents on the use of services, especially on choices as well as satisfaction with facility contacted. It is quite clear from the previous discussion, that the distribution of polyclinics and the growth of the city have both played a decisive role in influencing the distance between residential quarters and the location of these health care facilities. The study has shown that the selected respondents of the households had in general good physical access to public health care services especially the nearest polyclinic. Thus, proximity to home and availability of a good doctor was statistically highly significant (P=0.003).

The existing polyclinics tend generally to be reasonably well located, although congested traffic flow on some narrow routes, along which some of the polyclinics are situated, often obstructs emergency vehicles from reaching those needing health care facilities in the shortest possible time. Yet, in measuring distance by time, it was found that about 98.7% of the respondents can reach the local health care facility by car within a time span of ten minutes. The respondents appear to prefer polyclinics services as such to be located within less than six minutes travel time as implied by the maximum perceived time by respondents in the event of an emergency (Table 8.18). Moreover, about 64% of the low income respondents of the households (receiving less than 300 Libyan dinars per month) reported preference for use of the nearest health care facility; of which 60% prefer polyclinics. It was clear that the higher income group utilises the services of the nearest polyclinic least, as compared to lower income groups. This was anticipated, as a visit to a private clinic would cost much more than a visit to a local public health care facility. In comparing the average household income shown in Table 8.6 with the high costs of private clinics, one would suggest that few people can make use of the highly qualified and expensive private systems. For example, the cost of staying one week in a private clinic in Benghazi may exceed £1500, which most residents can not afford. Thus, the difference in use of nearest HCF with household income was statistically highly significant ($P<0.001$). As regards potential time of visiting health care facilities by respondents in Benghazi, in all utilisation times the most preferable facility was the polyclinic and the period within which one can best predict that patients will attend health care facilities was four weeks.

The wide range of sources of care used by patients in this study has given the opportunity for most people to choose the most appropriate health care facility for each disease or illness. The choice of any facility then depends (other things being equal) on previous experience with different sources of health care and how each source is rated to be suitable for each particular case. Thus, Table 8.9 may enlighten us about which source of care patients were using for each disease or illness. We can identify five groupings for which polyclinics were clearly preferred: internal diseases and disease of the digestive system, cold, sense organs, skin diseases and respiratory conditions. The significant variation in the choice of source of care is clear from Table 8.9, which reflects the differences in people's judgement on where each disease should best be treated. Hence, the use in terms of source of

care and intensity can be categorised as: polyclinics 60.2%, public hospitals 15.5%, private clinics 13.6%, health care centres 6.2%, private hospitals 3.8% and others just 0.7%. However, approximately half of the respondents (49.1%) preferred to use the public polyclinics for emergency cases and most of the reported cases to polyclinics were colds and influenza as well as minor cuts and wounds.

Attitudinal studies, such as this one, usually provide an essential source of data on the relative importance of transport characteristics as perceived by the traveller and on residents' preferences for alternative transport policies. In spite of scepticism about the accuracy and reliability of attitudinal criteria, such studies can help public transport agencies to identify deficiencies in their services; they can also involve the public in the transport planning process by defining their attitudes toward land use and transport policies (Black 1981). Benghazi's bus network provides a very inadequate and poorly operated service to the public. As a result, public usage is far below what could be expected (Table 8.12). Moreover, the Benghazi experience has shown that certain classes of people (doctors, engineers, and those of higher social rank) have always been unwilling to ride buses. This conclusion can be attributed either to the poor quality and infrequency of bus transport or to viewing bus ridership as second class, though the survey made by the author was not so comprehensive in this respect to show the reality of this situation. Major reasons for this inefficiency are low frequencies of operations resulting in long waiting periods and restriction of bus routes to a few specific corridors incapable, by their very location, of serving many neighbourhoods. The longer the waiting time, the greater the inconvenience and the lower the ridership. In a sense, this works in a vicious circle. The extremes of waiting time were found to vary from 10.4 minutes to 63.7 minutes (Salem 1989). Yet, more and more of the problem revolves around the automobile as the most favoured mode of motor transport, a mode readily accepted over public transit wherever it is affordable. Unlike bus services, which function only on certain lines and concentrate people at a few known stations, private transport provides much more uniform services all over the city. In the sense that a car can use any street or road, it can reach almost everywhere; all parts of the city are accessible to it. Above all, private automobiles together with newly built modern roads have considerably extended Libyans' horizons and opportunities not only in the performance of their jobs, daily business and health, as well as social trips but also in the enjoyment of their leisure

and recreation. This study has strongly confirmed the dominance of the private car as a preferable mode of transport used to frequent HCFs in Benghazi.

The last health care facility visited by respondents tended to be desirable and acceptable to a great number of people. More than half (50.7%) of the sample travelling to these facilities did not face any notable difficulty. The rest complained of heavy traffic (22.3%), long distance (9.5%), and road works (8.3%), which have a definite impact on retarding public transit and cause general personal annoyance. The findings also have shown that about 98.8% of the journeys to the last health care facility would be made within 6-10 minutes and the balance 1.2% would be made in more than 10 minutes. Unlike the extreme waiting time of four hours and more experienced in Villa O'higgins of Chile (Scarpaci 1988) and elsewhere in the developing world (Fadayomi and Oyeneye 1984), the situation experienced in health care facilities of Benghazi was very different, because more money and resources per head have been spent in Libya. Therefore, approximately four–fifths of the respondents reported having had treatment within less than an hour on the last occasion they had visited a health care facility, while only one–fifth waited more than that. Again, in contrast with Villa O'higgins of Santiago, where users lack experience in medical programmes with shorter waiting times, the respondents in Benghazi consider the above mentioned waiting time as one of the main unsatisfactory factors, along with overcrowding. Some patients have to wait from 3.5 hours to half a day to receive primary treatment in hospital out–patient departments in some developing countries (Schulpen and Swinkels 1980; Saeed 1984).

Staff behaviour was generally highly regarded, as four out of five appraised positively the behaviour of the personnel in the last health care facility visited. Therefore, when respondents were asked about the positive characteristics of the last facility frequented, they stressed the potentially good treatment (25%) and the courtesy of physicians (22%). Hence, the inherent problems of long waiting times, overcrowding and an overall lack of clinic amenities are offset by frequent respondents' perceptions of good treatment and courtesy of the auxiliaries and physicians.

Due to shortages in space for car parking within some health care facilities, nearby street parking and curbside parking have become a *sine qua non* around

these health care facilities. Although the impact of this problem was not felt very much by respondents, it is likely that it will become worse in the future as the city population grows and car ownership rises. However, the results of χ^2 analyses shown in Table 8.15 reveal that satisfaction with the last health care facility utilised was reasonably good, as measured in terms of satisfaction with staff behaviour, parking facilities, general positive attitudes and the choice of preferred doctor, while other factors like length of treatment, availability of prescribed medicine, the duration of treatment and other difficulties are not appreciated by respondents and thus did not prove to be statistically significant. Perhaps the main reason for the down grading of these facilities recently was the retrenchment of resources allocated to publicly–sponsored polyclinics, as a result of world oil prices declining –the driving force for every economic aspect of the country at large. Discussion with administrative heads of polyclinics in Benghazi as well as personal observations by the author reveal that the shortages of financial support have led to underutilisation. These problems of underuse are largely due to a lack of adequate drugs and supplies, supervision of regional health authorities and community participation, and considerable deficiencies in staff training. In brief, apart from being highly overcrowded, particularly for specialised consultations, the last health care facilities used have in general a common problem of inadequate physicians, unqualified auxiliaries, nurses and a shortage of up-to-date technical expertise. In addition, some of them lack X–ray facilities or equipment for blood tests and the most needed drugs are often out of stock. This issue in particular was felt by 46% of the respondents who were not able to obtain the free prescribed medicine on the last occasion they frequented a polyclinic.

To summarise the results of this chapter, it seems more likely that most of the users are constrained to use the public polyclinics rather than other services. The nearest health care facility assumption is manifestly acceptable as in almost all selected areas more than 78% were close to a polyclinic except (Khaled ben waleed). As explained earlier in Table 8.4, over four–fifths of the respondents expressed their strong willingness to use the nearest public polyclinic, except Khaled ben waleed which tends to lack some positive requirements. The resistance to this clinic is probably attributed to its location in a very highly populated area and the propinquity to other private and public health centres.

As far as conclusions can be drawn from the foregoing discussion, one is inclined to assert that although the Libyan government has recently gradually reduced public funds assigned to public health care delivery, it still continues to be positively viewed by its clients. A utilisation rate of 4.2 per person per year is remarkably high by international standards, indicative of the appropriateness of the response to sickness and the quality of care received. It embodies, at least in part, recognition of the availability and easy access of health care services to a great number of respondents. Hence, not surprisingly, one finds a consistency between the results and the high utilisation rate mentioned above, where low and middle income respondents have expressed strong opinions towards the services of the public polyclinics. Even if they had sufficient income to frequent a private medical care system, they would still prefer to be treated in the nearest HCF of their neighbourhoods. Thus, the present newly adopted policy (by the State) of privatising health care services is more likely to be met with strong objection from the continuous users of these services, particularly if the Secretariat of Health is to divert considerably from the historical and traditional commitment of free–of–charge treatment and medicine. Income seems to have significantly influenced the utilisation of the nearest health care facility. Although the nature of the data collected and the method of assessment did not allow a rigorous quantitative analysis of the effects of household income on utilisation, the findings have shown that the frequency of use of nearest health care facilities is reduced by high household income and increased by low and middle income households. This might be due to the fact that higher income groups can seek health care from elsewhere, as they are apparently less satisfied with the quality of existing public services. In general terms, income was not regarded as a great obstacle to the use of local HCFs because most of the governmental–sponsored health care services are either entirely free or patients pay only a nominal value for medicine. Thus, the effect of income was not felt except for the expensive private clinics. The type of health care facility was shown to have a significant impact on variation of utilisation. Health care services at their current level in the study area are still not equally accessible and acceptable to different groups of people in the city. Consequently, as neither distance nor income is an important barrier, services are used frequently and regularly located close to respondents.

More importantly, the findings call attention to the significant role of respondents' attitude towards confidence in health care services provided by polyclinics, as some of the users have recently raised some doubts about the reliability of care (shortages of specialised doctors, technical equipment or of medicine) at certain facilities. Also, the fact that most of the respondents would like to be able to reach a polyclinic in less than ten minutes is an important outcome of this research to be considered in future planning of polyclinics in the city of Benghazi.

Thus, the potential implications of the findings of this study (other things being equal) have been in line with the planning notion of providing central primary care services into community or neighbourhood health centres. In emphasising the idea that only those living close to a health care facility can make full benefits from its services, Al–Ghamdi (1981) confirmed that 81 per cent of patients frequenting seven dispensaries (adjacent to their places of residence) in Jeddah, Saudi Arabia, travelled no more than 5 km to reach them. Likewise, a similar and more recent study in Saudi Arabia carried out by Al–Ribdi (1990) in Al–qassim region showed that 68 per cent of the total users of five primary care services, travelled less than 5 km and can be deemed to live close to their clinics. In Ghana, Fosu (1986) referred to some surveys of health centre utilisation in which 70 per cent of their attenders came from a distance of 3.5 miles. These examples may substantiate the idea of locally providing services of polyclinics at the community or neighbourhood level as most users in the author's samples also travel short distances for the nearest polyclinic services. Conversely, these outcomes were at variance with findings elsewhere (Morrill *et al,.* 1970, Phillips 1984, Phillips 1980, Bailey and Phillips, 1990 and Groeger, 1983). Patient variation by race, religion and income acts to deter the actual choice to nearby health care services open to patients (Morrill *et al.* 1970). Patients not only perceive the distance of health care services in terms of so many miles or minutes, but also in terms of complex combinations of other reasons– social, cultural, psychological and severity of sickness. These features of spatial accessibility to health care have been investigated by numerous scholars in different disciplines and different regions. For instance Morrill *et al.* (1970) demonstrated that many long distance trips to physicians in Chicago continue even after the family has moved to another place because of loyalty or inertia or the number of nearby physicians may not be able to meet the local demand. This pattern of spatial utilisation behaviour is also to be seen in Hong Kong, in which

some residents of the new towns return to former facilities in their old areas of residence (Phillips 1984).

In West Glamorgan, Swansea (Britain) Phillips (1980:695) also confirmed that

> The desire to maintain a link with a doctor known to the family or respondent for a long time appears to be stronger than any wish to minimise the distance travelled to the practice premises.

More importantly in the latter study was the reliable public transportation system, which played an essential role in allowing the low economic status group from attending far distant surgeries that usually exist in former residential areas in the city centre. Elsewhere, Bailey and Phillips (1990) noticed some salient differences in Kingston, Jamaica, between the help seeking behaviour of residents in adjacent pairs of survey sites, one of each pair being richer and the other poor. The difference in terms of use was clear; the better–off tended to travel considerable distances to reach high quality private clinics, while the poor tended to use either locally available public health care centres or two public emergency rooms at the university hospital or Kingston public hospital. Groeger (1983) noted that the strength of use of health care facilities in rural India (regardless of distance decay) varied from one type of facility to another: a health centre was frequented by 75 per cent of its patients from 2.9 miles, while traditional practitioners drew on patients from 2.5 miles and qualified allopatic practitioners were visited from 7.5 miles. In clarifying the importance of perceived sickness and distance on the usage of the nearest health care facility rather than other variables in Iraq, Habib and Vaughan (1986) confirmed that the most significant explanatory variables for use were perceived need and distance. The severity of illness (in some studies) has also proved to be the first determinant of health care behaviour in terms of both the decision to seek treatment and the therapeutic option selected (Stock 1987). These examples show that utilisation of health care services should not only be examined in terms of the effects of distance *per se* but also in light of care beliefs and expectations, and with regard to the propinquity of other sources of care.

Chapter IX

Summary, conclusions and recommendations

The main objective of this study was to investigate in depth the accessibility and utilisation of governmental public polyclinics in Benghazi, Libya. In order to gain proper understanding of the patterns of use and ease of access to such health care facilities, these were examined within the context of the overall national health care delivery system. Thus, an attempt has been made to outline the predominant features of the Libyan health care delivery system and the rapid growth of health care provision in the country at large. These general conclusions are mainly summarised in accordance with the factual results of the present study and based on evaluations derived from these results as well as from informal observations made by the author prior to, and during, the field study.

The analysis has shown that the rapid increase of the country's wealth from oil production, the backbone of the economy, particularly between 1970 and 1980, has profoundly pushed forward the wheels of change and has permitted massive spending on social welfare, including health. Much progress has been made within a short period of time leading to a level of health care provision almost similar in quantitative terms, to that found in some developed countries. This progress was made manifest in the increase of the number of health care facilities and other supplies as well as ameliorating the levels of health manpower, particularly in urban areas such as Benghazi. During the 1980s primary health care facilities in particular were provided to all segments of the population in an attempt to extend the network of such facilities to reach almost all communities and to reduce inequalities among the country's health regions. Nonetheless despite the tremendous success that has been achieved over the last two decades, pockets of deprivation still exist among certain groups of the population within the national health regions. Accordingly, it was felt necessary (at least on the micro level, the city of Benghazi) to carry out a field work investigation in five locations and within five polyclinics to detect the potentially unserved population within the limits of the city. A field study was thought important also in terms of filling the gaps in unreliable

data obtained from the planning office of the Secretariat of Health in Benghazi. Although the study of accessibility and utilisation of outpatient polyclinics' services, presented in chapter 6, provided a reasonably comprehensive picture based on the attendance at these institutions, it demonstrates little or nothing about the non–users of health care services. Thus, a large segment of the population may be overlooked, and which significantly needs greater attention by health care planners and decision makers. As people usually frequent more than one source of health care, a household survey is the best choice to acquire proper information about the total experience of people in their communities in terms of access and use of services provided by different sources of health care. The methodology employed and the results of both questionnaire surveys were presented in chapters six and eight.

In sum, the following conclusions could be made about the accessibility and use of services of polyclinics in Benghazi.

1. The largest categories of polyclinics' users were generally young children, students, housewives and government employees. While this is not surprising as this reflects the typical pattern of a rapidly developing country, the survey also showed that the proportion of elderly people was small when compared with the city's total population given in the 1984 census. Thus, a high proportion of economically dependent people is the dominant feature, e.g. children less than 15 years of age, housewives and students at all stages of education constitute about three quarters of the entire sample population. The sample of Benghazi's population revealed a broad–based pyramid suggestive of a young expanding population with high fertility rates, suggesting a need for more health care services for women and children.

2. The average household size of the sample population was approximately 7.5. The average size of a household has risen from 6.2 in the 1973 census to 6.9 in the 1984 census indicating that household size has been increasing over the years until reaching 7.5 in this study. Probably part of the reason for large families is attributed to the cultural characteristics of the Islamic Libyan society preventing use of contraceptive devices and encouraging all members of a family

to live together. It is widely common then to find parents, their children and grandchildren living together in one household.

3. Although the nature of the data collected and the method of evaluation did not allow a rigorous quantitative analysis of the effects of household income on utilisation, the findings have demonstrated that the frequency of use of polyclinics is reduced by high household income and increased by low and middle income households. Generally speaking, income was not regarded as a great influence on the use of local health care facilities because most of the governmental–sponsored health care services are either entirely free or patients pay only a nominal fee for medicine. The impact of income, however, was felt in the case of expensive private clinics.

4. The findings have revealed that the most preferable facility was the polyclinic, in comparison with hospitals and private clinics and the period within which one can best anticipate, patients will attend health care facilities was four weeks. The frequency of use of health care was classified as: polyclinics 60.2%, public hospitals 15.5%, private clinics 13.6%, health care centres 6.2%, private hospitals 3.8% and others just 0.7%.

5. The significance of the proximity factor on patients' decision to select a health care facility was confirmed by the results of this study of travel distance and travel time. Nearly half of the users of polyclinics came from less than 2 kilometres and consider themselves to live close to their polyclinics. These outcomes indicate that respondents travel quite short distances to services of polyclinics with journeys not exceeding ten minutes, for the most part. Thus, people who lived nearer to health care institutions and the city centre use the services more frequently than those living in areas far from health care facilities.

6. The great majority of the sample (78.3%) indicated that they use their own cars for seeking health care. Of all respondents, however, approximately 57.5%, mainly the middle aged and older women group, were unable to drive a car. Variations in types of transportation used by respondents from one polyclinic to another did not prove to be great. No significant differences were found in the mode of transport used by respondents in the study area.

7. Benghazi's bus network provides a highly inadequate and poorly operated service to the public. As a result, the public usage is far below what could be expected. The major reasons for this inefficiency are low frequencies of operations resulting in long waiting periods and restrictions of bus routes to a few specific corridors incapable by their very location of serving many neighbourhoods.

8. Attitudes towards use of self–medication and traditional medicine were found to be influenced by the nature of the disease or illness, people's perception of the disease or illness and the sort of health care services available. Thus, approximately 42% of the respondents mentioned that they had used self–medication before consulting professional doctors, this being least costly in terms of time, money and energy. Yet, the findings revealed that about one out of every three respondents had visited, at least once, some kind of traditional healer. However, though age, sex, education and occupation have shown profound influences on using folk medicine elsewhere (Al–ribdi 1990 ; Bennyousef and Wessen 1974), no such evidence or relationship was found in this study.

9. Due to recent retrenchment of resources allocated to publicly–sponsored polyclinics most of these vital facilities have in general a common problem of not enough physicians, particularly for specialised consultations; unqualified auxiliaries and nurses; a shortage of up–to–date technical expertise and, above all, a lack of adequate drugs and supplies. Despite these deficiencies and the low quality of care received, polyclinics are still positively viewed by the majority of their clients.

10. For emergency cases, nearly half (49%) of the respondents preferred using the closest polyclinic to a casualty hospital, because they feel that an emergency case must reach the adjacent health care facility promptly, otherwise fatal consequences may occur.

11. A more detailed examination of the spatial distribution of polyclinics by using a boxplot technique has revealed a strong tendency of dispersion towards the centre, implying a reasonably accessible location for all polyclinics in the city of Benghazi.

12. The recent strategy of encouraging health care privatisation taken up by the government, which requires gradual reduction of public funds from the

medical care system, is most likely to be met with strong opposition, particularly if the national health organisation is to be substantially changed from the historical pattern of free care.

13. This research has revealed that accessibility and utilisation studies, whether institutionally based or community oriented (i.e., household survey), are possible with limited resources in Libya.

14. Given the boundaries of this study being restricted to determined quarters and populations at a given time, the author believes that the findings can be used as an important guide to encourage Libyan researchers to undertake wider studies of accessibility and utilisation of health care facilities. The research may be used as a starting point and important tool for measuring future trends in health care accessibility and utilisation in other areas of the country, which are similar in the nature of their health care settings. This is true as the author is fully aware that no other similar studies have ever been carried out in the country.

15. Although a one–year recall period seems to be fraught with shortcomings of under–reporting and recall lapse in the current study, the author realised that a shorter recall period may obtain better and accurate information and thus suggests a four–week recall period for similar future studies.

16. The absence of clear regulatory measures to control patients' unnecessary use of health care services "*shopping around* " calls for immediate and rigorous actions. A well–managed network of health care delivery systems based on appropriate appointment and referral systems could provide fairly quicker and successful services to the public.

17. Evaluation of consultation rates of both study samples tend to be more or less consistent, whether institutionally oriented or community based. However, properly carried out studies at local health care institutions may provide sufficient and useful data on accessibility and use of the total health care system over a short period of time, but may not give a clear picture of the non–use of services and the unmet needs of the community, for which a community based study was conducted.

18. The distribution of polyclinics and growth of the city have both played a crucial role in influencing the distance between residential quarters and the location of these health care facilities. The study has shown that the selected respondents from both institutions and household surveys had in general good physical access to public care services especially the nearest polyclinic.

19. It has been noticed that there was some variation in use of health care facilities, which is largely associated with the population densities of each catchment area, the intensity and sort of disease and the availability of some specialties in one facility and not in another. Generally speaking, however, the services of polyclinics have shown to be the best due to their significance in the hierarchical matrix of the health care delivery system in the city.

20. Most of the medical conditions reported in the household survey or in the outpatient clinics were acute in nature, while chronic conditions were fewer. Among the chronic conditions, however, the two diagnoses that were widely reported, were diabetes and hypertension.

21. The outcome of this study has further revealed that out of 2983 persons approximately one third (34%) has reported some kind of illness in the course of the defined recall period, while the remainder (66%) did not express any sign of health debility during the same period.

22. The five leading groups of diseases or illnesses reported by six people selected from each household to represent age and sex in the sample population were: the internal diseases and disease of the digestive system, diseases of sense organs, skin diseases, diseases of the respiratory system and diabetic disease. These groups of diseases and illnesses made up about 57% of all reported conditions. Sickness reporting was significantly different among different age–sex groups but not so among populations with different levels of environmental sanitation. The study has concluded that most of the reported sicknesses were not poverty–related diseases resulting from lower social class or poor physical environment but mainly attributable to psychological problems, social instability or other factors.

23. The utilisation of health care services in Benghazi is high as measured by an annual consultation rate of 4.2 per person per year or an average consultation

rate of 32%. Such a high utilisation rate, comparable with international standards, could have been attributable to one of the following interpretations:

a. The growing concern of people regarding their health.
b. A high level of health service availability and easy access to such services by the majority of the people.
c. Widespread health debility (illness).
d. A lack of proper referral system and effective regulatory measures to organise the entry of patients to health care services according to need.

24. The routinely collected data from outpatient polyclinics' records have proved inappropriate for future planning, evaluation or even making effective follow–up of cases, as they do not allow a temporal assessment to be made on an individual basis. Towards this end and in order to avoid such deficiencies, two surveys were conducted: an institutionally based study and a household interview survey.

9.1 Implications

In the light of the foregoing summary, two major aspects deserve to be further analysed:

1. The problems resulting from accessibility and abuse of existing polyclinics services and;
2. Potential solutions for correcting such deficiencies.

Despite the enormous developments to serve these objectives by the State, particularly over the last three decades, there are still areas of shortcomings associated with the provision and use of health care services. Indeed, there is still an apparent deficiency of services' coverage and remarkable variations between those who live close to health care services (particularly within the first ring road) and others who live on the outskirts of the city. The single most important factor which influences accessibility and use of health care services after severity of sickness was distance. Although it could be unwise to overemphasise the effects of distance alone, it is beneficial to look at it in the wider context of accessibility or broadly speaking within the context of physical, social and economic availability of services (Phillips 1986). Simple provision of physically accessible health care services alone

does not necessarily solve health problems nor does it satisfy the health care needs of the population. The implication remains, therefore, that a mere multiplication of supply facilities and other inputs, in addition to providing free services, will not necessarily result in solving the basic problems of health and disease. Though in many instances it was difficult to predict accurately the rates of use, the findings have shown an inadequate service provision. Some people were found to make excessive use of the neighbouring services, though not necessarily needing them (overuse) at the expense of others, who are coming from more distant areas and who desperately need these services but can not reach them (underuse). This suggests that those who live very close to health services tend to enjoy very high levels of utilisation rates and faster response to sickness, with a high probability of the misuse of curative services. This shows an appropriate example of where utilisation studies have a considerable role to play in this regard. Considering the above, one implication should be drawn that there is a pressing need for improving accessibility for those who are deprived (underutilisers) by imposing strict measures to control the irrational use made by the neighbours of the services. This will lead us also to another implication that a high utilisation rate may reflect a positive connotation of the success of the health care delivery system in the country. In general terms, it seems reasonable to suggest that the high utilisation rate discovered in this study is more likely ascribed to sufficient quantity of health services but not necessarily high quality services.

The present study has shown some weaknesses of the current **recording system** of the health care institutions, particularly from the point of view of accuracy as well as comprehensiveness, though there are some exceptions. The available data suggest a lack of essential information on the characteristics of the population in each community served by these individual health facilities. Additionally, the available data are seldom used for planning purposes or monitoring developments or progress. To correct these shortcomings, a combination of improved routine statistics and management information systems must be introduced to guide health authorities, policy makers and professional planners to assign health services according to need. Taken seriously, response to these challenging points calls for designing and managing health systems that can achieve some kind of universal coverage of a population, giving special priorities to those most in need. Lack of sufficient data may lead to frustration in action and in inaccurate reporting

on the part of the planners, researchers and decision makers. It appears obvious then that in order to facilitate planning, managing, developing and evaluating the PHC system in Benghazi or in the country as a whole, the introduction of a decentralised management information system is an urgent priority. An effective and promotive management information system plays an important role in achieving equal access, effectiveness and efficiency to primary health care.

Another weakness of health care provision in Libya is **the lack of national health research (NHR).** To prevent diseases and promote health and development on the basis of equity and social justice, an integrated strategy of adopting a wide range of national health research is important. Ramalingaswami (1993) emphasized that national health research improves health policy and management, enhances the impact of scarce resources, fosters innovation and experimentation, secures international cooperation in mutually beneficially ways and above all provides the foundation for a stronger and suitable health research base. Applying an essential NHR in Libya needs the collaboration of all concerned parties and agencies, not only medical scientists but also social scientists, behavioural scientists, policy makers, planners and service providers. This significant and ideal concept of NHR should be generalised and widespread throughout the country.

A further weakness of health care provision is **the lack of appointment systems.** Appointment systems are lacking in almost all public health care facilities causing enormous inconvenience for patients frequenting those facilities. Without proper appointment systems, waiting times build up until reaching, at times, intolerable degrees. Although the findings of this study did not show any inordinate waiting times by patients, future expectations of more use of public health care services, call for immediate implementation of appointment systems in all public health care facilities. Applying appointment systems could lead to spacing out consultations and organisation of patients' arrival to their required surgeries and thus warding off overcrowding and tedious waiting times.

Lack of a health booklet represents a fourth weakness. The new idea of a health booklet that was circulated recently over most of the country appears promising since it functions as a health recording folder for every individual in the country. The notion was addressed by the Secretariat of Health in 1990 in

an attempt to improve knowledge about each visitor to the health care facilities. Each person in a family has to be provided with a small booklet containing his or her medical records to facilitate identification and record linkages on subsequent visits. Failure to bring this document to any visited health institution may result in being deprived of treatment. Strict imposition of the use of the health booklet system as a source of primary information on individual cases will be valuable for medical reasons as well as reducing many unnecessary visits made by some people. If successful, such a personal health recording system may encourage the health authorities to introduce a proper **referral system** that allows better coordination between different levels of care in the health care hierarchy system, both locally and nationally.

A final weakness revealed by the study was **the lack of emphasis on aspects relevant to healthy people.** The study has shown that some people underutilise the services of polyclinics, either because they live far from the services or because of the low quality of care provided. This implicitly means that once improvements in accessibility and quality of care are introduced, further increase in demand and thus use of services will occur. While such improvements in accessibility and quality of curative care are essential and desirable in enhancing more equitable use to different subgroups in the population, there is a risk that they will lead to a lack of concern with effective preventive services, unless similar corrective measures are to be taken to improve the coverage of the latter. This situation of unbalanced provision of services calls for further studies to improve preventive care, service supply and use, particularly in rural areas, and to reduce differences between what is desirable and what is available.

Based on the author's observations and the research findings, the following recommendations are suggested to facilitate appropriate and acceptable health care services:

1. Each polyclinic should be well prepared to cover a wide variety of patient needs and to reduce the heavy pressure on outpatient clinics of main hospitals. A provision of locally needed services of polyclinics at quarter level will certainly minimise mobility to hospital outpatient clinics and other remote health care facilities in the city.

2. A well established programme advertised through daily newspapers and other sources of media will educate the people on how to use the health care facilities properly and raise the awareness of health issues affecting them in the city.

3. If people are to be the centrepiece of planning and development, the caring and health service structures should be managed within the context of comprehensive and integrated programmes of social and economic development policies. This task should be pursued under the auspices of the Department of Planning and by follow–up in the Secretariat of Health.

4. Undertake to work with people and organisations to help them take proper actions to benefit their own and others' health.

5. Since the city's polyclinics lack a dependable emergency system to serve seriously ill cases and to mollify the heavy pressure on the only emergency hospital in the whole city, Al–Jalaa, a system of 24–hour–service ambulance stations, with well equipped ambulances and fully trained staff, needs to be continuously maintained so as to serve the emergency needs of all the city's population.

6. The services of existing polyclinics should be developed, because as time goes on it will be increasingly difficult to provide the quality of care that people need without enormous and costly renovation. These efforts should be made to ensure improvement in a range of services that cover the unique needs of the population, especially where deficiencies are apparent.

7. Each polyclinic should be provided with a sufficient parking area for staff and users.

8. As Benghazi's current bus network provides an inadequate and poorly operated service to the public, the city's first public transportation priority should preferably be made through reorganising and developing the existing bus network. A primary emphasis must be devoted to maintaining present levels of bus service, accompanied by extensions into currently unserved or inadequately served sectors of the city. This positive step towards adopting a long range strategy for the city bus network is necessary to bring about a system and consecutive processes of

extension and expansion to offer easy access for those without cars to reach their desired health care facility.

9. Patients should be charged a nominal fee for consultations so as to limit the abuse of public health services.

10. An ongoing health booklet system should be strictly maintained for every individual frequenting any health care facility in the city. This step should be followed by assigning people to a specific health care facility according to defined catchment areas. It is further recommended that rigorous regulations be imposed on free self–referral unless it is an emergency case.

11. Primary health educational programmes for all people should be made obligatory and must start immediately on a wide basis to include schools, places of business, on the streets and in other appropriate places, through whatever methods that prove most effective. Though, at best, the result is a "shotgun" programme, its success in some parts of the world justifies its implementation in Benghazi.

In the light of the preceding broad recommendations, the following additional suggestions are offered as a framework for approaching the problems of Benghazi's primary health care system. Beginning with the perspective that a system should have its own consistent language, coherent to both old and new users of its facilities, the health care delivery system needs an identity. This identity is not only part of the development plan but should be recognised in fact by its users. Accordingly, a key set of objectives of the PHC system in Benghazi should be designed to achieve equity, effectiveness and affordability. These objectives require that the primary health care delivery system be:

1. accessible and achieve universal coverage according to need;
2. effective, with a favourable impact on mortality and serious sickness conditions.
3. affordable or within the monetary reach of both the State and the people.
4. community oriented in a sense that a community is an active participant in the development and application of the system.
5. consistent with larger systems of the country to serve as a prototype for development of larger health care systems.

These recommendations, which are suggested for improving the accessibility and utilisation of Benghazi's polyclinics, may become solutions to underlying problems of the health care delivery system of the city. It should be stressed however, that these are recommendations, not final solutions to the observed health care problems. Also, mentioning these recommendations and their application does not necessarily mean that they would lead to an ideal or optimal solution. Rather, they should provide a framework for further research and study. In the long run, these vexing problems will either increase with urban development, or the citizens of Benghazi will pressure the authorities into some action to alleviate the worst of the obstacles. What is stressed here is comprehensive planning for an integrated user–oriented PHC system that contributes to the improvement and development of health care, increasing the efficiency of the system and contributing to a higher quality of life for the people of Benghazi. The author is ready to participate in any fruitful study in the future, designed to consider the implementation of these recommendations.

9.2 Strategy for implementation

The main focus of this strategy is to present a plan for newly proposed polyclinics in accessible and socially acceptable positions for the entire population of Benghazi within a short travel time. The establishment of new polyclinics will provide a wide range of primary services for people living in the northeast, eastern and southern parts of the city. Potential locations for such important services must be selected in ideal locations so as to be accessible for the largest number of previously deprived inhabitants. The major criteria that have been used to select the anticipated locations in addition to personal experience were as follows:

1. Patients' access derived from revealed accessibility (attendance at the five selected polyclinics)
2. Shape and size of the site.
3. Availability of land.
4. Traffic network.
5. Peak points of population concentration.

Three major factors that have deterred the use of linear programming or

geographic information systems (GIS) techniques for specifically locating the anticipated sites of future polyclinics:

(a) the non–availability of specific population data for smaller units;
(b) meagre details on public transportation routes and frequencies;
(c) the lack of basic road maps containing details in respect of traffic lights and road way systems such as pertaining to one–way routes, stop stations etc.

Linear programming techniques can be used for allocating limited resources to meet economic objectives such as maximising the profit or minimising the transportation cost and total distance travelled (Cox 1965). These techniques are more appropriate to places of supply and demand which can more legitimately be treated as points. The basic conditions of the present research are problematic in that there are several locationally different sources of supply and several sources of demand, similarly different in their locations. Therefore, in order for the newly proposed polyclinics to be ideally located to serve their populations within a minimum time at a minimum overall cost, supplies and demands at different places need to be quite clear. Geographic Information Systems (GIS) is a powerful tool for allowing the dynamic modelling of geographic reality (Martin 1991). In brief a GIS is a computer–based information system for the integrated handling and analysis of spatial data. GIS is a recent field which derives its identity from a number of technologies and application fields concerned with the geographic location of their objects of study e.g. computer–assisted–cartography and remote sensing. Linear programming and GIS techniques place great demands on data accuracy and availability which are lacking in this study.

Based upon the findings of the present study, the spatial imbalances of health care provision have been recognised. The aim was to schedule development priorities and design a procedure for selecting sites of new polyclinics. The criteria for sufficient accessibility to each polyclinic as can be drawn from Table 6.9 (summary of vector distance in metres between patients' place of residency and polyclinics attended) must not exceed 3 km. Depending on mapping samples of attenders in both household and facility–based surveys (Figures 6.7, 8.1) and Figures 5.6, and 5.7 including explanatory Table 5.8, the author was able to identify four potential areas of Benghazi city that are desperately short of polyclinics' facilities.

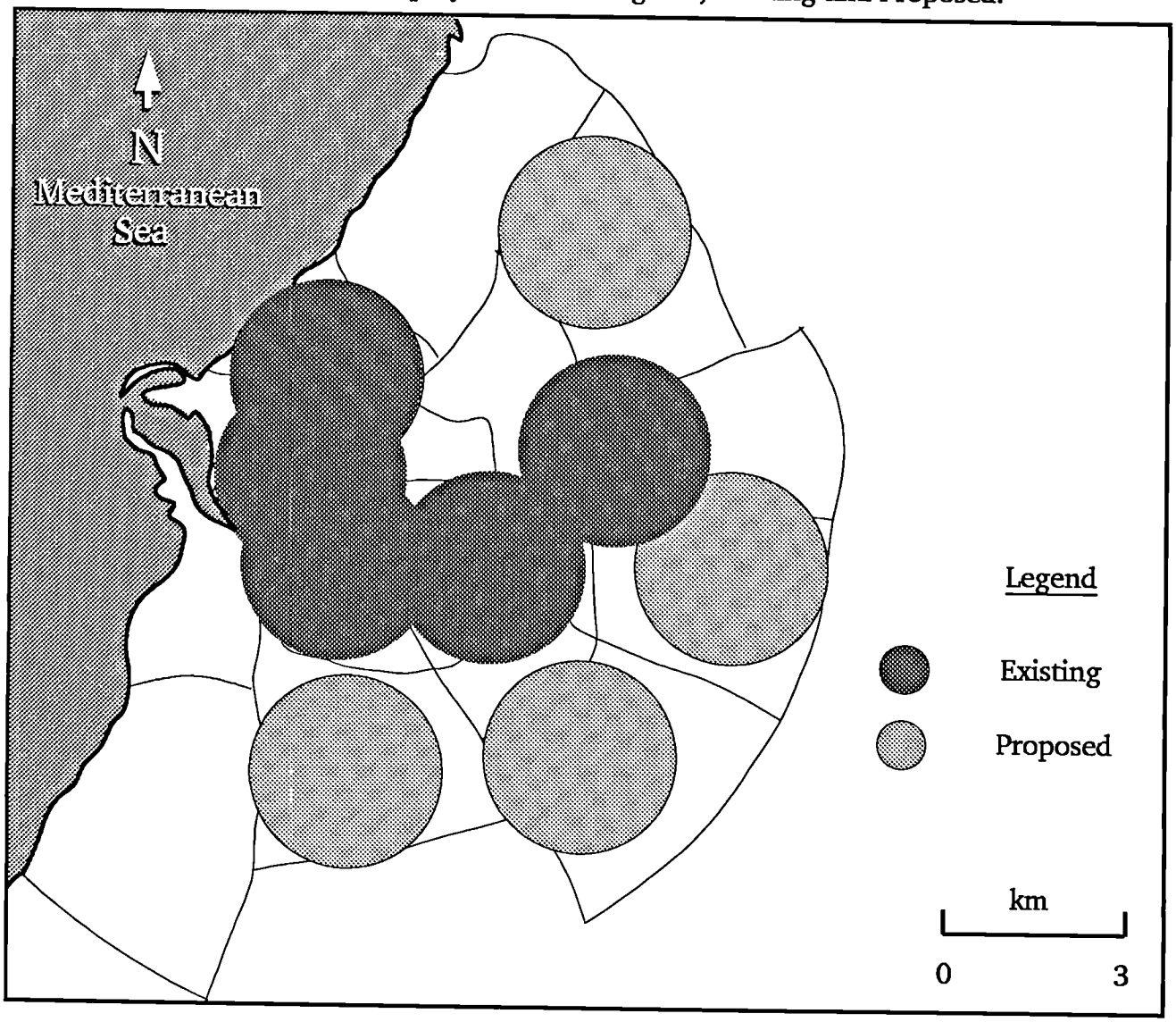
This approach of mapping attendance at clinics highlighted by many in developing countries (Iyun 1983, Joseph and Phillips 1984, and Laloe *et al.,* 1986), though not totally reliable and does not consider variations in population density, age structure, mobility or the like, is a less sophisticated mode of analysis than spatial modelling (Phillips 1990). The demarcation of the catchment areas in models, for example, depends heavily upon the accuracy and continuity of attendance records in the polyclinic registers. The precision of a quarter level census as shown in this study and the method of delineating catchments and computing their populations from density maps have also proved to be subjective and questionable. These problems substantially undermine the pragmatic value of the model of catchment area and it seems that even with a modification of such a model, while possible, can not result in satisfactory outcomes for accommodating the difficulties encountered in its application to Benghazi data. It is, therefore, pertinent to quote Phillips's (1990:145) comment that

> A practical weakness of many models for optimising accessibility, from the point of view of the Third World in particular, is that reliable data are frequently unavailable and the models can rarely take account of all the variables that seem to influence resource allocation and health services utilisation.

As the two surveys have been successful in identifying populations whose access to existing polyclinics was not satisfactory, the author was able, at least theoretically, to locate new sites to be in previously underserved or unserved areas. Thus, the proposed future locations of such facilities are displayed in Figure 9.1. Potential locations for proposed polyclinics were selected where they could be most profitably located; that was in response to delineating the catchment area of each existing polyclinic, identifying populations living outside the 3 km catchments and examining imbalances of accessibility to polyclinics, and between and within the quarters of the city. The implementation of this plan will ultimately depend on the agreement of the authorities, on the one hand and the final cost and availability of land, on the other.

As the future economic growth of Benghazi is likely to continue to be rapid, planning becomes more essential as the costs of reorganising the spatial infrastrucure of health facilities become increasingly high. On the whole, this study has aimed to provide some ideas about acceptable alternatives to Benghazi's current problems of public polyclinics. Indeed, it is the author's stated intention to find an

Fig. 9.1 Distribution of polyclinics in Benghazi, Existing and Proposed.



effective solution to alleviate at least the suffering of the people who are not served by health care facilities in his native city–Benghazi. Therefore, in response to the growing need for more health services, which represents a great capital investment, it would seem reasonable to invest in building a more extensive PHC network of polyclinics, in order to serve the suburban areas, and therefore to provide much improved and reliable services on an integrated city–wide basis rather than for specific areas only. More importantly, the findings of the field study support and call attention to the significant role of respondents' attitudes towards confidence in health care services provided by polyclinics. A utilisation rate of 4.2 per person per year is remarkably high by international criteria, suggestive of the suitability of the response to sickness and the quality of care received. It embodies, at least in part, recognition of the availability and ease of access of health care polyclinics to a reasonable number of respondents. Another supporting factor and most positive aspect to the frequency of use of polyclinics was the proximity to the place of residence. Moreover, the fact that most of the respondents would like to be able to reach a polyclinic service in less than ten minutes, and be provided with a female doctor, is another important finding to be considered in the future planning of polyclinics in Benghazi. The results have also shown strong emphasis on the use of the closest polyclinic by the respondents, which implicitly means that spatial proximity does equate with social and economic access. The overall implications of these findings lead us to accept the rational planning notion of centrally provided PHC services into community or neighbourhood health centres.

By establishing the newly proposed polyclinics, a great number of deprived people could reach a new polyclinic service within a reasonable time, probably ten minutes by car, with the great majority of people being able to complete the journey much more quickly. By completing these services, access from all directions will be within standards which are considered acceptable. Currently as many as 56% of the people in the area receive their polyclinic services within their communities' boundaries. Thus, the author is making an assumption that the people of Benghazi would want this situation to be continued or improved and that the development of new polyclinics services should reflect this goal. The writer is optimistic that this strategy of building more polyclinics to support the existing ones will provide the best possible primary care for the people of Benghazi, provided that the State continues its role in supporting the improvement of quality of these

services. This aim could be achieved through providing well trained personnel, qualified medical staff, advanced equipment and importing high quality brands of medicine. Therefore, in combination with community hospitals and other health care services, these proposed facilities will ensure that the residents will be able to receive within their localities (other things being equal), the best and probably most comprehensive health care services available. Certainly the better standards of new buildings and equipment for both patients and staff will help to attract high quality staff and thereby secure high levels of care for the citizens of Benghazi. But generally speaking, the author agrees with Whitelegg's notion that absolute accessibility to health care services for each individual in any society is truly unattainable. Whitelegg (1982:143) argues that

> ... improvement in accessibility of the kind possible within existing health care systems will not be capable of eliminating the inbuilt inequalities which arise from the design and structure of the system itself as part of a wider societal framework of inequalities.

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9.4 Appendices

Appendix A

University of Garyounis
Faculty of Arts and Education
Department Of Geography

QUESTIONNAIRE DESIGN
AN INSTITUTIONALLY- ORIENTED QUESTIONNAIRE

PART ONE : ACCESSIBILITY AND SATISFACTION FACTORS

Please circle or write the appropriate answer for each question:

1) Which polyclinic do you usually visit ?

please mention the name .....

2) Do you or any of your family have a car ?

a. Yes b. No

3) What mode of transport do you usually use to get to a polyclinic ?

a. Walking b. Private car c. Relative's car

d. Taxi e. Bus f. Ambulance

g) Other, please specify .....

4) How do you evaluate the car parking facilities around this polyclinic ?

a. Very adequate b. Adequate

c. Inadequate d. Not-existent

5) How did you find the journey to the polyclinic ?

a. Very easy b. Easy

c. Very difficult d. difficult

e. Do not know

6) What was the main difficulty you experienced in reaching to this polyclinic?

a. Road work
b. Traffic lights
c. Heavy traffic
d. Long distance
e. Interruption by pedestrians
f. No difficulty
g. Other, please specify .....

7) What do you think of public transportation in Benghazi ?

a. Excellent
b. Above average
c. Average
d. Below average
e. Do not know

8) When did you last use the public transportation ?

a. To day
b. Within the last week
c. Within the last month
d. Within the last year
e. More than a year ago
f. Never used them

9) Can you drive ?

a. Yes
b. No

10) Do you have a driving licence ?

a. Yes
b. No

11) What type of medical care do you usually seek ?

a. A polyclinic
b. A dispensary
c. A public hospital
d. A private clinic
f. Other, please specify .....

12) How far is the closest polyclinic to your home ?

a. Less than 1 km
b. Less than 2 km
c. Less than 3 km
d. Less than 4 km
e. Less than 5 km
f. 5 km and more

13) Can you estimate how long does it take by car to get to closest polyclinic ?

a. 0-5 minutes
b. 6-10 minutes
c. 11-15 minutes
d. 16-20 minutes
e. 21-25 minutes
f. 26-30 minutes
g. More than 30 minutes

14) How would you evaluate the location of this polyclinic ?

a. Very accessible
b. Accessible
c. Inaccessible
d. Very inaccessible

e. Do not know

15) Why do you prefer this polyclinic rather than others ?

a. Because it is so close to my home b. Because it has a good physician

c. Because it is not crowded e. Other reason, please specify .....

16) What is the optimal distance from your home to a polyclinic ? .....

17) In your opinion what should be the maximum time it takes to reach the polyclinic in an emergency case ? .....

18) If you or someone in your household has an emergency case, where do you prefer to go ?

a. A casualty hospital b. A polyclinic c. A private clinic

d. A dispensary e. A private hospital f. A public hospital

g. Other, please specify .....

19) Is this the first time that you have used this polyclinic ?

a. Yes b. No

20) If no, how many times have you come to this polyclinic ?

a. Once b. Twice c. Three times

d. Four times e. Five times f. More than five times

21) What is the illness that has led to your visit to the polyclinic today ? .....

22) For how long do you have this illness ? .....

23) Do you usually find physicians at their offices in the polyclinic ?

a. Yes b. No

24) Do you think that the number of physicians in this polyclinic is enough ?

a. Yes b. No c. Do not know

25) Do you think that the physicians in this polyclinic are qualified ?

a. Yes b. No c. Do not know

26) Do the physicians at this polyclinic rotate too often ?

a. Yes b. No c. Do not know

27) Are you given the opportunity to choose the doctor you need in this polyclinic ?

a. Yes b. No

28) Have you ever faced any language problem ?

a. Yes b. No

29) If yes, why ? .....

30) Do you find the free prescribed medicine easily at the polyclinic ?

a. Yes b. No

31) Have you ever had any general medical check up in your life ?

a. Yes b. No

32) How long does it usually take to be treated in this polyclinic ?

a. Less than 10 minutes b. Less than 20 minutes c. Less than 30 minutes

d. Less than 40 minutes e. Less than 50 minutes f. Less than 60 minutes

g. One hour and more

33) Did you come to this polyclinic as soon as you became ill ?

a. Yes b. No

34) Before coming here, did you try to treat your self at home ?

a. Yes b. No

35) Do you believe in folk medicine ?

a. Yes b. No

36) If yes, please mention to whom you usually go ? .....

37) Do you prefer to go to private clinic ?

a. Yes b. No

38) If no, would you please mention why ? .....

39) Approximately, how much time does the physician spend with you during the process of checking up?

a. Less than 5 minutes b. Less than 10 minutes

c. Less than 15 minutes d. 15 minutes and more

40) Which of the following, you do not like the least in this polyclinic ?

a. Waiting b. Bad treatment c. Absence of doctors
d. Crowdedness e. Lack of specialists f. Lack of cleanliness
g. Too much paper work h. Other, please specify .....

41) What is the thing about your treatment that you liked most in this clinic ?

a. The period of checking up is long b. The physician touches you
c. The physicians are friendly d. Accurate appointments
e. Availability of free medicine f. Good treatment
g. Other, please specify .....

42) How would you judge the quality of service in this polyclinic ?

a. Excellent b. Above average
c. Average d. Below average
e. Do not know

SECOND PART : SOCIO-ECONOMIC FACTORS

1) Name of (quarter) ..... Street .....

2) Name of polyclinic .....

3) Nationality .....

4) Sex:

a. Male b. Female

5) Age:

a. 0-17 years b. 18-25 years
c. 26-35 years d. 36-45 years
e. 46-55 years f. 56-65 years
g. 65 years and more

6) Marital status:

a. Married b. Single
c. Divorced e. Widow
f. Widower

7) Occupation .....

8) Highest educational grade level completed:

a. Illiterate b. Primary c. Preparatory

d. Secondary e. University f. Others, please specify .....

9) Place of origin .....

10) Number of people living with you .....

11) Since when have you been living in Benghazi ? Since 19..

12) Is the home in which you live

a. Owned b. Rented

c. Given by the government d. Other, please specify .....

13) If it is rented, how much money do you pay for rent ? .....

14) What kind of housing do you live in ?

a. Flat b. Villa

c. Traditional old house d. Modern Arabic house

e. Other, please specify .....

15) How many rooms are there in your home ? .....

a. One room b. Two rooms c. Three rooms

d. Four rooms e. Five rooms f. Six rooms and more

16) Would you mind telling me your approximate monthly income ? .....

17) Are you originally from Benghazi ?

a. Yes b. No

18) If no, where did you come from ? Please mention the name of the city or the village .....

APPENDIX B

A HOUSEHOLD INTERVIEW SURVEY QUESTIONNAIRE

Part one: Questions about each member of the household:

Please circle or write the appropriate answer for each question:

1) Name of district (quarter) ..... Street..... Since 19..

2) How many people live in this household ? .....

3) Please supply the following information :

Table 1: Social and demographic information on each member of the household

	Res.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Sex																	
Age																	
Rel. to respondent																	
M. status																	
Occupation																	
Education																	

4) When you or someone of your family was last sick, which health care facility did you, he or she visit ?

Table 2: Information on selected members of household

	Respondent	Spouse	Child < 5 yrs	Child < 5 yrs	Grandfather	Grandmother
A						
B						
C						
D						

(A)

a. A polyclinic
b. A health care centre
c. A private clinic
d. A public hospital
e. A private hospital
f. Other, please specify

(B) When was that ? .....

(C) Why was that ? .....

(D) What mode of transport did you use to get there ?

a. Walking
b. Private car
c. Relative's car
d. Taxi
e. Bus
f. Ambulance
g. Other, please specify

Part Two: A) Questions about the last health care facility used by the respondent:

5) Did you find physicians at their offices in the health facility you last visited ?

a. Yes
b. No

6) Did you find the number of physicians in that health care facility was enough ?

a. Yes
b. No
c. Do not know

7) Do the physicians at the health care facility rotate too often ?

a. Yes
b. No
c. Do not know

8) Were you given the opportunity to choose the doctor you wanted at the health care facility you last used ?

a. Yes b. No

9) Did you face any language problem with the doctors in that health facility ?
a. Yes b. No

10) If yes, why ? .....

11) Did you find the free prescribed medicine easily at the health care facility ?
a. Yes b. No

12) How long did it take to be treated in the last occasion that you visited a health care facility ?
a. Less than 10 mins b. Less than 20 mins c. Less than 30 mins
d. Less than 40 mins e. Less than 50 mins f. Less than 60 mins
g. If one hour and more please specify the time .....

13) Approximately, how much time did the physician spend with you during the process of checking up ?
a. Less than five minutes b. Less than ten minutes
c. Less than fifteen minutes d. Fifteen minutes and more

14) Did you have to see other people apart from the doctor ?
a. Yes b. No

15) If yes, how long did it take in total, that is, all tests taken together ?
a. Less than 30 minutes b. Less than 60 minutes
c. Less than 90 minutes d. Less than 120 minutes
e. 120 minutes and more

16) Before you went to the health care facility, did you treat your self at home ?
a. Yes b. No

17) How did you find the journey to the health care facility you last visited ?
a. Very easy b. Easy
c. Difficult e. Very difficult
f. Do not know

18) What was the main difficulty you experienced in travelling to the health care facility you last used ?

a. Road work
b. Traffic lights
c. Heavy traffic
d. Long distance
e. Interruption by pedestrians
f. Other, Please specify .....

19) How do you evaluate the car parking places around the health care facility you last visited ?

a. Excellent
b. Above average
c. Average
d. Below average
e. Very poor
f. Not-existent

20) Which of the following, you think it is the most serious problem in the health care facility you last visited ?

a. Waiting
b. Bad treatment
c. Absence of doctors
d. Crowdedness
e. Lack of specialists
f. Lack of cleanliness
g. Too much paper work
h. Other, please specify .....

21) What is your opinion of the staff behaviour in that health care facility ?

a. Excellent
b. Above average
c. Average
d. Below average
e. Very poor
f. Do not know

22) What is the thing about your treatment that you liked most in the health care facility which you last used ?

a. The period of checking up is long
b. The physician touches me
c. The physicians are friendly
d. Accurate appointments
e. Availability of free medicine
f. Good treatment
g. Other, please specify .....

B) Questions about the closest health care facility to the respondent:

23) What is the nearest health care facility to your home ?

please mention the name .....

24) How far is the closest health care facility to your home ?

a. Less than 500 metres
b. Less than 1 km
c. Less than 1.5 km
d. Less than 2 km
e. Less than 2.5 km
f. Less than 3 km
g. Less than 3.5 km
h. Less than 4 km
I. Less than 4.5 km
J. 5 km and more

25) Can you estimate how long does it take by car to get to the nearest health care facility ?

a. 0-5 minutes b. 6-10 minutes c. 11-15 minutes
d. 16-20 minutes e. 21-25 minutes f. 26-30 minutes
g. More than 30 minutes

26) Would you describe the location of the closest health care facility to your home as:

a. Very convenient b. Convenient
c. Inconvenient d. Very inconvenient
e. Do not know

27) Do you like the closest health care facility to your home ?

a. Yes b. No

28) If yes, what is the main reason you like it ?

a. Because it is close to my house b. Because it has a good physician
c. Because it is not crowded d. Other reason, please specify .....

29) What do you think the optimal distance from your home to a health care facility ?

a. Less than 500 metres b. Less than 1 km c. Less than 1.5 km
d. Less than 2 km e. Less than 2.5 km f. Less than 3 km
g. Other, please specify .....

C) Questions for obtaining information related to opinions and viewpoints of the respondents on selected parts of the health care services they were frequenting and on behavioural aspects of people:

30) If you or someone in your household has an emergency case, where do you prefer to go or actually went ?

a. Casualty hospital b. Polyclinic
c. Private clinic d. Health care centre
e. Private hospital f. General hospital
g. Other, please specify .....

31) In your opinion what should be the maximum time it takes to reach the casualty hospital in an emergency case ? .....

32) Do you believe in folk medicine ?

a. Yes b. No

33) If yes, please mention to whom you usually go ? .....

34) What do you think of the services of ambulance in Benghazi ?

a. Excellent b. Above average

c. Average d. Below average

e. Very poor f. Do not know

35) In your own opinion, what is the major reason for seeking more than one source of care for the same episode of illness ? .....

36) In general how would you judge the quality of services in the health care facilities of Benghazi ?

a. Excellent b. Above average

c. Average d. Below average

e. Very poor f. Do not know

D) Attitudes of respondents towards the transportation system in Benghazi:

37) Can you drive ?

a. Yes b. No

38) Do you have a driving licence ?

a. Yes b. No

39) What do you think of the public transportation in Benghazi ?

a. Excellent b. Above average

c. Average d. Below average

e. Very poor f. Do not know

40) When did you last use the bus services in Benghazi ?

a. To day b. Within the last week c. Within the last month

d. Within the last year e. More than a year ago f. Never used them

41) If you never or occasionally use the bus services, can you mention the major reason for that ?

a. Overcrowded vehicle
b. Waiting too long
c. Too expensive
d. Destination not served
e. Route far from home
f. Socially unacceptable
g. Stations are not sheltered
h. Ownership of private car
I. Other, please specify .....

E) Questions for obtaining information on physical environment:

42) What kind of housing do you live in ?

a. Flat
b. Villa
c. Traditional old house
d. Modern Arabic house
e. Other, please specify .....

43) How many rooms are there in your home excluding kitchen and a bathroom ?

a. One room
b. Two rooms
c. Three rooms
d. Four rooms
e. Five rooms
f. Six rooms and more

44) Is the home in which you live :

a. Owned
b. Rented
c. Given by the government
d. Other, please specify .....

45) What is the quality of drinking water in your home ?

a. Excellent
b. Above average
c. Average
d. Below average
e. Very poor
f. Do not know

46) What is the source of light in your home ? .....

47) How many latrines do you have in your home ?

a. one
b. two
c. three
d. More than three

F) Ownership of certain assets:

48) Please tick the items that you own in your home ?

a. Television
b. Freezer
c. Fridge
d. Video
e. Recorder
f. Radio
g. None

49) How many cars does the household have ?

a. One b. Two c. Three

d. Four e. Five and more

50) Do you have a telephone in your home ?

a. Yes b. No

G) Questions concerning the household income and structure:

51) Would you mind telling me where does your approximate monthly income lie in the following categories :

a. Less than 100 L.D. b. Less than 150 L.D. c. Less than 200 L.D.

d. Less than 250 L.D. e. Less than 300 L.D. f. Less than 350 L.D.

g. Less than 400 L.D. h. Less than 450 L.D. I. Less than 500 L.D.

J. 500 L.D. and more

52) Would you mind telling me where does the approximate monthly income of your household lie in the following classifications ?

a. Less than 200 L.D. b. Less than 300 L.D. c. Less than 400 L.D.

d. Less than 500 L.D. e. Less than 600 L.D. f. Less than 700 L.D.

g. Less than 800 L.D. h. 800 L.D. and more

53) If your home is rented, how much money do you pay for rent ? .....

Part Four : For Women Only

54) If you are sick or pregnant, would you like to be checked by a female doctor ?

a. Yes b. No

55) If yes, why ? .....

a. Because I feel shy with a male doctor

b. Because my husband does not like that

c. Because my family does not like that

d. Because I can not be frank with a male doctor

e. Other, please specify .....

56) If you do not find a female doctor, do you go to another health care facility ?

a. Yes b. No

57) Do you have children ?

a. Yes b. No

58) When you go to any health care facility, do you take your children with you?

a. Yes b. No

59) If no, with whom do you leave your children ?

a. Their father b. Their grandmother c. Your neighbour

d. With a friend e. Leave them alone f. Other, please specify .....

60) Are you working ?

a. Yes b. No

61) If yes, Where do you leave your children ?

a. With your mother b. With their father c. With a friend

d. With a neighbour e. Leave them alone f. Other, please specify .....

62) The last time a child was sick, who took him or her to the polyclinic ?

a. A father b. A mother

c. A relative d. Other, please specify .....

63) To what health care facility did you take the child ?

Please mention the name .....

64) Did you take the rest of children with you to the health care facility ?

a. Yes b. No

65) If yes, where did you leave them during the process of checking up ?

a. In an assigned place for children b. In the corridors

c. Inter with you in the checking room d. other, please specify .....