UNIVERSITY OF GLASGOW

DEPARTMENT OF COMMUNITY MEDICINE

UTILIZATION OF AND SATISFACTION

WITH

ANTENATAL CARE IN JORDAN

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DECLARATION

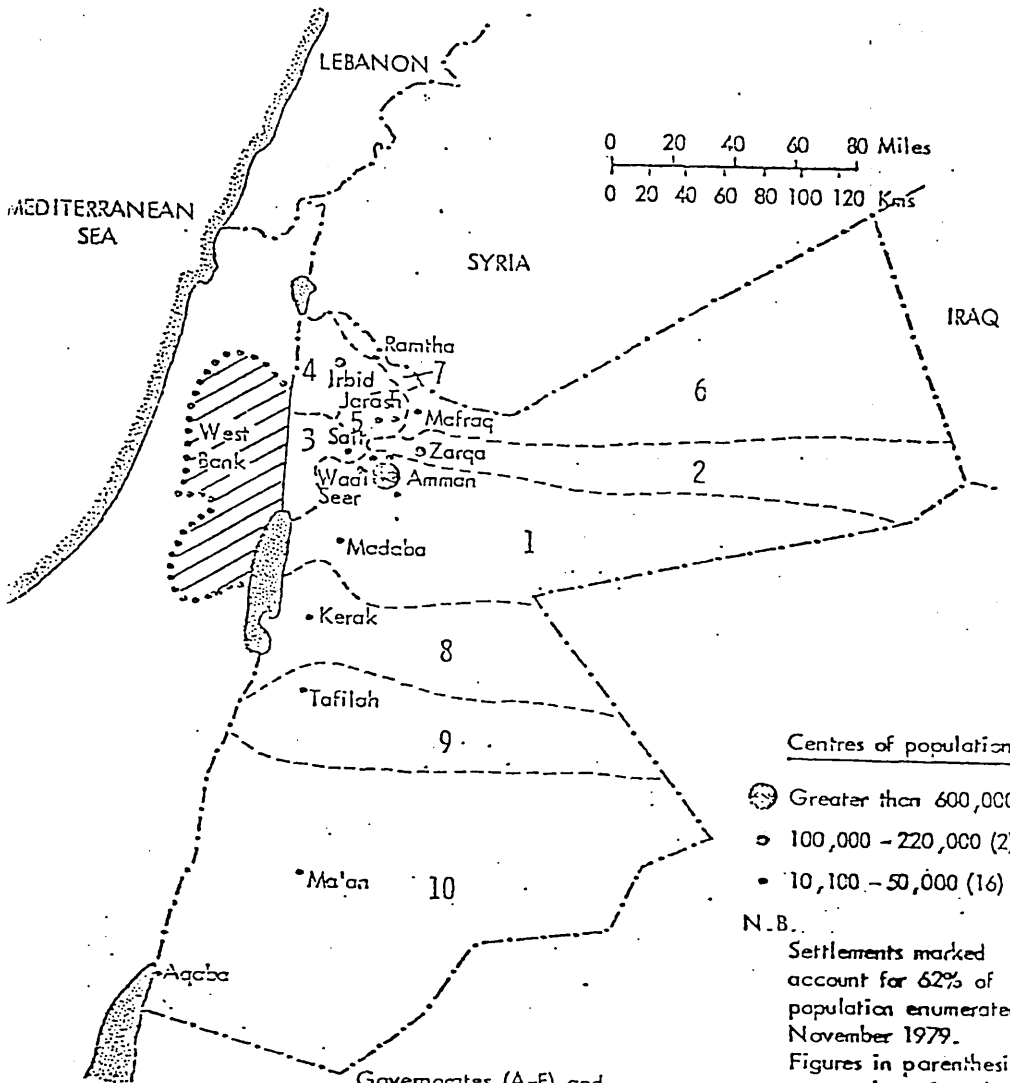
This thesis is the result of independent investigation. Where it is indebted to the work of others, acknowledgement has been made.

I declare that it has not already been accepted in substance for any other degree, nor is it concurrently being submitted in candidature for any other degree.

Candidate.

Royal Hashemite Kingdom of Jordan

Centres of population 1979, Governorates and Health Directorates



Centres of population[1]

- Greater than 600,000 (1)
- 100,000 – 220,000 (2)
- 10,100 – 50,000 (16)

N.B. Settlements marked account for 62% of population enumerated November 1979. Figures in parenthesis are number of settlements in each category.

1. Includes all settlements greater than 10,000 people East Bank.

Governorates (A–E) and Health Directorates (1–10)

A. Amman	1. Amman and Madaba
	2. Zarqa
B. Balqa	3. Balqa
C. Irbid	4. Irbid
	5. Jarash
	6. Mafraq
	7. Ramtha
D. Karak	8. Karak
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ABSTRACT

Aims and objectives: The aims of the study were a) to explore the determinants of both the utilization of antenatal care and the general satisfaction of women with the MCH care system in Jordan; b) to identify the weaknesses of the present MCH care system; and c) to formulate intervention strategies, to improve the utilization of antenatal care and the general health of the mothers and their children.

Methods and results: For achieving these objectives, a sample of women, who gave birth to full-term live babies, in Amman Governorate in 1986 was selected and interviewed in order to record a) their individual characteristics; b) characteristics of the health care system; and c) their utilization and satisfaction with the different aspects of the MCH care system. The study showed that the utilization of antenatal care was much lower than expected where only 59% of mothers interviewed were attending at the antenatal clinic. The husband's occupation followed by the perceived health status and the general concern about health were the most important in predicting utilization behaviour. The adjusted odds ratio (AOR) for these three variables were 10, 4.6 and 4.5 respectively, and the population attributable risk percent (PAR) was 78% for the husband's occupation and 62% for the general concern about health. Other characteristics were also important in predicting physician utilization such as area of residence (AOR = 2.6, PAR = 34%), level of education of the mother (AOR = 3.2, PAR = 39%), satisfaction with the MCH care system (AOR = 2.4, PAR = 40%), receiving health information designed to encourage women to attend at the antenatal clinic (AOR = 2.7, PAR = 44%) and the distance between the home of the mother and the antenatal clinic (AOR = 2.2, PAR = 26%). Maternal characteristics were of limited importance in predicting satisfaction with the MCH care system with the exception of the husband's occupation (AOR = 1.8, PAR = 24%) and area of residence (AOR = 1.6, PAR = 16%) as compared to the distance from the Ministry of Health MCH centre (AOR = 4.2, PAR = 49%) and waiting time to see the doctor (AOR = 2.1, PAR = 28%). In particular, the study showed that only 19% of the pregnant women were attending at the Ministry of Health MCH

centres (MOH.MCH centres), 13% of all pregnant women received antenatal home visits and 17% were provided with some kind of health information through these centres. Thirty percent of women who attended the MOH.MCH centres were dissatisfied with the communications with the medical staff and 40% were dissatisfied with the quality of care provided.

Implications and recommendations: The results of the study showed conclusively that the provision of comprehensive health programmes, removal of access and structural barriers, and proper health education for both the consumers and the providers of antenatal care are the steps needed to improve both the utilization behaviour and the general health of the mothers and their children. Other improvements depend on long-term social changes such as income redistribution, educational policies for the illiterate, comprehensive insurance and support for certain groups at high risk, and family planning.

The scarce resources available in the country pointed to the fact that steps must be taken towards the adoption of the risk approach and the outreach approach, to direct health care to those at high risk and in need for such care. To achieve this task, a simple arbitary scoring system was designed by including four factors (area of residence, level of education of the mother, husband's occupation and the distance between the home of the mother and the antenatal clinic) as risk indicators. These risk factors were selected according to their importance in terms of the adjusted odds ratio, the population attributable risk percent and the easiness of their identification in the community. Each woman in the study was given a list of the risk factors she possessed. Different cut-off points were applied to enable the identification of the maximum number of true positive cases (mothers at high risk who are more likely to be non users of antenatal care) by screening the smallest proportion of mothers at high risk and by taking into account the Ministry of Health goal of the required level of improvement in utilization rate and the resources available for achieving this goal. The scoring system showed that the identification of one fourth of pregnant women at high risk and providing them with the antenatal care they need, would achieve the Ministry of Health goal of

improving the antenatal care utilization to 80% by the year 1990. The cooperation of the traditional birth assistants and perhaps lay workers from the community is necessary for the identification of pregnant women and their levels of risk where further steps have to be taken to provide those at 'high risk' with the antenatal care they need at the right time and right place.

If the risk approach is to be adopted, the manpower policies have to be reviewed to include new task definitions and career structure, more orientation in preventive and primary health care, and new policies to reduce the high turnover of doctors in the Ministry of Health MCH centres in order to improve the doctor-client relationship and the involvement and interests of doctors in these communities and their health problems. A health information system is an essential part of this risk approach, in order to provide information which can be used to extend coverage, to modify the referral chain, to change practices and to design and implement training and retraining programmes for both the consumers and providers of antenatal care.

LIST OF ABBREVIATIONS

MOH	Ministry of Health/Jordan.
MCH	Maternity and Child Health.
UNRWA	United Nations Relief and Work Agency for Palestinian Refugees.
PHC	Primary Health Care.
RMS	Royal Military Medical Services.
TBA	Traditional Birth Assistant.
JD	Jordanian Dinar. JD 1 = £ 2 Sterling.
LBW	Low Birth Weight.
GP	General Practitioner.
N.S	Not significant at the 5 percent level.
PAR (%)	Population Attributable Risk Percent.
AOR	Adjusted Odds Ratio.

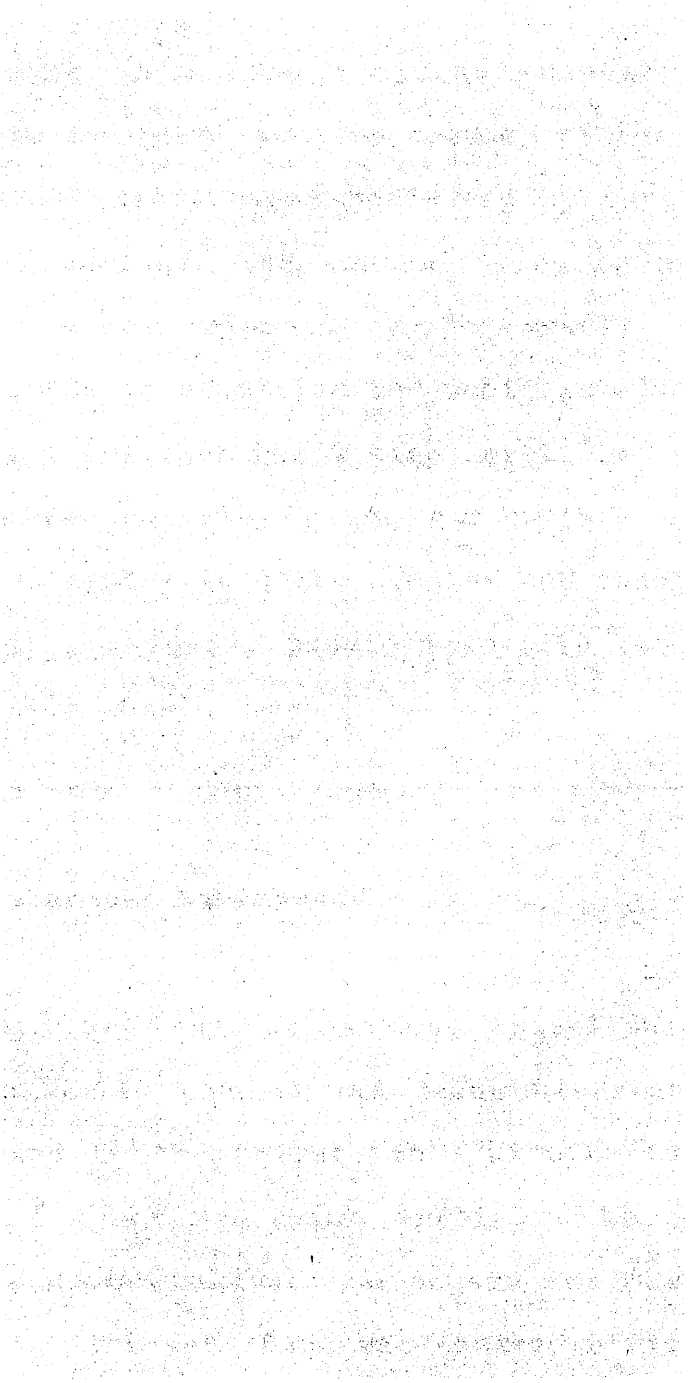
LAYOUT OF THE THESIS

This thesis is presented in one volume. It contains the text for six chapters. References, tables and the interview form are presented at the end of the volume. Each chapter in the text has its own summary and table of contents. References are numbered sequentially throughout the chapters. The chapter of the results presents data without comments as this has been dealt with in the chapter entitled "Discussion, Intervention Strategies, Conclusions and Recommendations".

CHAPTER 1. JORDAN AND MCH PROBLEMS

SUMMARY: This chapter reviews Jordan's background and MCH problems in the country. It is divided into two sections. The first section (1.1) reviews the general background of the country, providing the reader with some important aspects of the country. The second section (1.2) reviews some of the health and health related indicators regarding mothers and children who constitute more than half of the population. Emphasis has been paid on utilization, activities and some of the characteristics of the MCH care services in Jordan (1.2.3.). The necessity of the study (1.2.4), its aims (1.2.5.) and values are discussed.

Contents



1.1. Jordan's background

SUMMARY: The Emirate of Trans-Jordan was established as a British Mandate in 1921. It achieved its independence in 1946 and became the "Hashemite Kingdom of Jordan". As a result of the June war in 1967 and the occupation of the West Bank of Jordan, about 250,000 Palestinian refugees crossed over to Jordan creating economic and political problems in the country. The economy of the country depends upon external assistance; dominated by services and export of skilled manpower and concentrating on potash and phosphate as the main exports. The country has experienced rapid progress in education and achieved almost full employment. The population has a high fertility rate and has been characterized as very young and highly urbanized. The health care system is quite complex and consists of multiple independent providers; providing health care for less than three million people.

1.1.1. Historical background

The Emirate of Trans-Jordan was established as a British Mandate in 1921. Ma'an and Aqaba districts in the south were annexed to the Emirate in 1925 after an agreement between the Emirate and Saudi Arabia. The country achieved its independence in 1946 and became the "Hashemite Kingdom of Jordan". The West Bank was annexed officially to Jordan in 1950 [1].

As a result of the June war in 1967, the West Bank was occupied by the Israeli Armed Forces. The occupation of the West Bank led to a heavy blow to Jordan's economy and related matters. Agriculture revenues were reduced by half and tourism nearly disappeared after the loss of Jerusalem [2]. To make matters worse, about 250,000 Palestinian refugees crossed over from the West Bank and Gaza strip to Jordan, raising competition on the scarce resources available in the country and creating political problems. This ended in the 1970 civil war when the Jordanian Armed Forces were ordered to enter the cities and to return peace to the streets [2, 3]. All the following description relates to Jordan-East Bank only.

1.1.2. Geography

The country is located to the southeast of the Mediterranean Sea between longitudes 34^{o} and 39^{o} east and 29^{o} and 33^{o} north. It is bounded by Syria in the north, Iraq and Saudi Arabia in the east, Saudi Arabia in the south, and the occupied West Bank in the west [4].

The country covers 989,206 square kilometres, of which only 16% is cultivatable and the rest of the country is desert or semi-desert [5]. Jordan's only outlet to the sea is a forty kilometre stretch of coast on the Red Sea at Aqaba in the south. Jordan river, which rises in Syria and flows south to end in the Dead Sea, is the main source of irrigation in the country [5].

1.1.3. Geology, climate and vegetations

The country has three major topographical regions. The rift valley has an average depth of 300 metres below sea level; the mountainous part composed of two tableland areas with altitudes varying between 600 to 1,000 metres; and the desert or semi-desert covering more than 80% of the total land in the country [5].

The climate follows a mediterranean pattern being modified greatly by the continental air masses, with the exception of the rift valley where the climate is semi-tropical [5]. The prevailing wind is westerly to south westerly, with more humidity in the north than in the south. The occasional easterly winds are cold and dry in winter and hot and dry in summer. The maximum summer temperature in the highlands is 33^{o} C while in winter the temperature rarely falls below 7^{o} C. The rift valley temperature reaches 40^{o} C in summer and seldom falls below 14^{o} C in winter [1]. The highlands have an average rainfall of 400 to 600 mm; the rift valley has an average of 200 mm and the desert region has less 50 mm [1]. The annual rainfall ranges from 400-600 mm in the north to less than 100 mm in the south [5].

The distribution of vegetations in the country follows the pattern of rainfall; pine and oak forests where rainfall is heaviest; shrub covered steppe where it is less; and sparse shrub and thorn where it is least [2].

1.1.4. Jordan's economy

The structure of the economy has been affected by a variety of factors related to the scarce resources available, the nature of the capital projects and the political conflicts in the area with increasing the defence needs [6]. The particular feature of the economy is its dependence on external assistance which amounts to 64% of the total public revenues; 71% of the external assistance comes as a direct budgetary support [7]. The economy of the country is dominated by services, trade, export of skilled manpower to neighbouring countries and tourism [7]. The export pattern concentrates on specific commodities and destinations. Phosphate and potash are the major exports. They accounted for about 50% of all commodity exports. Exports of citrus and other fruits, and vegetables accounted for 12%. In 1985, 52% of commodity exports were to some Arab countries and one fourth was to India and some socialist states [6].

Expenditure on defence and security is one of the major components of the Government expenditures. It accounted for 34% of the total current expenditure in 1985. Expenditures on financial administration (subsidies and interests on public debt) accounted for 31%, and expenditure on social services (health and education) accounted for 17% of the total current expenditures [6].

1.1.5. Education and employment

The country has experienced rapid progress in education over

the last 25 years. Illiteracy rate has dropped sharply from 68% in 1961 to 33% in 1979 (from 52% to 19% for males, and from 85% to 48% for females). Seventy two percent of the population aged 6-24 years were in schools in 1985 compared to only 32% in 1961 [4]. Recent estimates show that the illiteracy rate is 30% [8]. The existing institutions do not have enough resources to meet the growing demands for higher education. An increasing number of students are seeking educational opportunities abroad. Expenditures on education abroad amounted to JD 77 million [6].

The country is one of the middle income countries. It has achieved almost full employment and a degree of participation of women in the labour force. Estimates from 1979 census show that the unemployment rate was 9% for males and 11% for females [9]. Women's participation in the labour force is still very low (4% in 1976 which increased to 12% in 1979) [10, 11].

1.1.6. Population: trends, structure and distribution

Population growth trends: The East Bank population increased from 680,000 in 1952 to 2.22 millions in 1980 and 2.67 millions in 1985. The average population growth rate during the period 1952-1960 was 3.1% annually, rising to 4.8% during 1961-1979, and then declining to 3.9% during 1980-1985. The ratio of population under 15 years increased from 45.4% in 1961 to 50.7% in 1979, and then declined slightly to 50% in 1985. Population ratio in the age group 15-59 dropped from 47.7% in 1961 to 45.2% in 1979 and then

rising slightly to 46% in 1985. The ratio of those over 59 years fell from 6.9% in 1961 to 4% in 1985. However, the sex ratio of males to females maintained its level of 105% since 1961 [6].

Population structure: The population of the country has a high fertility rate. Fertility extends over almost the entire reproduction life of women with a broad peak occurring at the age group 24-34 [11]. Recent estimates indicate a total fertility rate of 6.6 per 1,000 [12, 13].

As a result of the continuing high crude birth rate (44 per 1000) and the decline in the crude death rate (11 per 1000); the population of the country is very young with 48% under 15 years of age and children 0-5 years constituting 16.3% of the total population. Women in the child bearing age form 39% of the total population [8]. For further details, see table 1.

Population distribution: The population of Jordan is unevenly distributed. This geographic distribution reflects the pattern of rainfall and cultivation. However, military conflicts in the region have played a major role in this distribution; the influx of Palestinian refugees caused by the 1967 Arab-Israeli war contributed significantly to the growth of urban areas where most of the refugees settled in and around the cities. Furthermore, sizeable rural to urban migration has further accelerated urbanization in the country [9]. According to 1979 census, 60% of the population were classified as urban comparing to 44% in 1966 and

36% in 1952. About 41% of the population is concentrated in Amman, the capital [6]. Distribution of the population by each governorate is provided in table 2.

1.1.7. Health Care System

The Jordanian health care system is quite complex as it consists of multiple independent sectors providing health care for less than three million people [15]. The different sectors are: Ministry of Health, Royal Military Medical Services (RMS), Jordan University Hospital, United Nations Relief and Works Agency (UNRWA), in addition to the growing private sector. Traditional (local) medicine does play its role in the field of maternity care through traditional birth assistants (TBAs). The following section gives a brief outline of these sectors.

Ministry of Health Services: The MOH has been operated since 1951. According to Article 3 of the Administrative System for the Ministry Organization; it has these responsibilities: providing preventive, curative and pharmaceutical services; improving health education and training; setting health policies; developing health legislations and controlling medical and pharmaceutical services and professions [15].

According to its statistics the MOH provides 90% of all preventive health care and 45% of curative services in the country. All citizens are eligible for free preventive care and have to pay a nominal charge for curative services [8].

Royal Military Medical Services (RMS): The RMS provide free health services for all military personnel and their dependents. This sector provides tertiary care through its main medical centre in Amman, and has 4 small hospitals outside Amman [15].

University Hospital: The University Hospital provides health services for all university personnel (staff and students). This hospital serves as a teaching hospital for Jordan university medical and nursing graduates [15].

UNRWA: The UNRWA provides primary care to some of the Palestinian refugees in the country. Secondary and tertiary care are provided mostly by the MOH services [15]. The UNRWA runs 15 MCH centres. It has no hospitals in the country [16].

The private sector: Approximately 49% of all physicians and 73% of all dentists are employed in this sector which operates private clinics and 26 hospitals. Most physicians in this sector are concentrated in the cities [15]. Statistics concerning its activities do not exist except for some incomplete and scattered information related to hospital admissions.

Traditional (local) Medicine: This sector seems to be important in the field of maternity care. Traditional Birth Assistants (TBAs) are still conducting a considerable number of home deliveries and their role is significant in rural

areas [13]. The total number of TBAs in the country is unknown, but it has been documeted that 350 of them are registered with the Ministry of Health [17].

1.2. Maternal and child health problems

SUMMARY: The pattern of the health problems in the country is very similar to other developing countries. The infant mortality rate has declined dramatically from 151 in 1961 to 60 in 1984. Prematurity, respiratory problems and diarrhoeal diseases contributed to a great deal of children morbidity and mortality. There has been a dramatic improvement in health services and personnel with the highest quality and quantity in the capital and other main cities. However, the improvement in the utilization of MCH care was very little compared to what has been achieved in the health sector including MCH services. The activities of the MCH services are inefficient and the major concern of the MOH is to provide health services regardless the needs of the population and the distribution of these services. Little is known about the utilization of MCH care including antenatal care. Exploring the determinants of use of antenatal care and the general satisfaction of mothers with the MCH care system could be very important for future policies and planning of the MCH services and for the adoption of strategies within the context of PHC, to achieve " health for all by the year 2000".

1.2.1. Family morbidity and mortality: The pattern of the health problems in the country is very similar to those of neighbouring Arab states and other developing countries (table 4) with the heavy toll on mothers and children who constitute 54% of the total population in Jordan. Infant mortality had declined during the last two decades and this

decline has been attributed to the increase in the number of hospitals, improvement in the health services, better sanitation and better communication in the country [18]. It has been estimated that the infant mortality rate has declined dramatically from 151 in 1961, 86 in 1972, to 60 in 1984 [6]. For children, one fifth of all childhood deaths has been attributed to problems of prematurity and/or birth defects and about 30% to gastrointestinal and respiratory problems [13]. In 1979, respiratory and gastrointestinal problems were responsible for one third of all hospital admissions in the country, and problems related to pregnancy and its complications were responsible for one tenth of the total admissions [19]. It has been reported that 7.7% of children have had diarrhoea in two weeks time; this rate was 15% for those aged less than 1 year, 7% for 2 years old children and about 4% for 3 years old [13].

Child growth and nutrition has been studied in 1975 and 1980. The 1975 study shows that 50% of children were stunted, 1% wasted and stunted, and 0.8% were severely malnourished [2]. An UNRWA report shows that 7.4% of the infants who were registered at the UNRWA maternal and child health centres were underweight; of whom 5.4% having first degree malnutrition, 1.8% second degree, and 0.2% having third degree malnutrition [16].

1.2.2. Health sector: investments, achievements and distribution

Investments: Past investments in the health sector has

resulted in a multisector network of health facilities across the country, with rural areas still underserved since most facilities and personnel are concentrated in Amman - the capital of the country. Nevertheless, the 1981-1985 health plan was mainly curative in emphasis, although the first health goal in the plan was to adopt the principle of PHC and to support preventive services towrds "health for all by the year 2000". Seventy three percent of the MOH budget in the plan has been allocated for hospitals, and nearly all the private sector investment was for curative services [20].

Achievements: There has been a dramatic improvement in health care services and personnel in the country over the last decade. By the end of 1984, there was 24 public hospitals and 26 private hospitals. The total capacity of these hospitals was 5243 beds - a ratio of about one hospital bed per 500 persons. Nearly 58.5% of hospital beds were in Amman, which contains 40.8% of the population [8]. There were 188 health centres in 1985 comparing to 150 in 1984 and only 89 in 1981 [20]. Fully trained health professionals included 3219 physicians, 1416 nurses and 327 midwives; equivalent to one physician to every 837 persons, one nurse for every 1900 persons and one midwive for every 1500 mothers in the childbearing age [8].

Distribution of health services: The health care facilities and personnel are ineqitably distributed all over the country with the highest quantity and quality in urban areas and mainly in the capital. It is clear that Amman - the

capital contains 73% of the private hospital beds, 35% of the public hospital beds, 16 private hospitals out of 26, Al-Bashir hospital and University Hospital - the two main hospitals in the country, in addition to 39 health centres and MCH clinics [8].

1.2.3. MCH services: utilization, activities and characteristics

Introduction: MCH services is the most appropriate medium to provide health services for mothers and children. The main objectives of these services can be summarized as the reduction of maternal, perinatal, infant, and childhood mortality and morbidity and the promotion of the reproductive health, physical and psycho-social development of the child and adolescent within the community [21]. In Jordan, the activities of the MCH services should include a general physical examination of the pregnant mother at the first and subsequent visits, blood and urine tests, home visits antenatally and postnatally to provide health education and health care for both mothers and their children, weekly meetings with the pregnant mothers to provide them with the necessary information regarding self care and diet during pregnancy, providing mothers with vitamins and nutritional supplements such as milk, in addition to the provision of curative services to both mothers and children [19].

At present there are two formal providers of the organized MCH care in the country: the MOH through 101 MCH centres and the UNRWA through its 15 health centres which provide PHC to

some of the Palestinian refugees in the country [6]. MCH services are also provided by the Ministry of Health hospitals and by the private sector which concentrates in Amman where the market of medicine is highly profitable.

Health services and personnel in the country are quite reasonable when compared to other developing countries, but are very different from almost all the developed countries. See table 4 for further details.

Utilization of MCH services: In general, the use of PHC in Jordan is low. This could be due to the lack of understanding of people of the value and importance of PHC, the shortage of staff as many refuse to work in health services which provide primary health care as there is no enough incentives for them, and the failure of the public media such as TV and radio to inform people about the importance of PHC [6]. A high proportion of mothers do not attend at the antenatal clinic and do not take their children to well-baby clinics for general checkups. The 1975 study [2] shows that 15% of mothers were using the MCH centres as their source of care during pregnancy. Abbas [22] found that 49% of mothers in 1979 were not attending at the antenatal clinics and 57% of infants were not taken to the physician for general checkups compared to 42% and 57%, respectively, for 1983 [13]. There was a trend among users to go to the private sector [13].

Activities and characteristics: Some activities and characteristics of the MCH centres seems to be highly inefficient.

It has been found that the proportion of children who had the first dose of polio vaccine in the MCH centres has been decreased by 21.2% in 1985 compared to 1984 and those who had the first dose of DPT vaccine decreased by 29.8% for the same years [8]. Home visits during the antenatal period covered only 8.8% of all pregnant mothers in 1975 [2], compared to 10% in 1979 [22]. In 1979, only 53% of pregnant mothers received information regarding taking care of themselves and their children and more than one fourth of them received such information from elderly people in the family [22]. Other activities of the MCH centres were deteriorating dramatically [8]. These activities include: attracting new attenders at the MCH clinics, education classes, home visits to the newborns and nutritional supplements.

MCH centres are often not situated optimally with the distribution of the population, and mothers in rural areas have to travel long distances to reach these centres [22]. These centres are characterized by inefficient organization, poor health education activities, in addition to the lack of community participation which is needed to mobilize resources and to gain greater control over the socio-economic, political and environmental factors affecting their health [23].

1.2.4. The evidence

General conclusions: Mothers and children in Jordan constitute more than 50% of the total population. This sector of the population has been considered to be at high risk by their high vulnerability to health hazards and their special

needs for reproduction and growth. Mothers and children should have a priority in planning and initiating the health services.

Health services and personnel in the country have improved dramatically over the last decade. However, the improvement in the use of the MCH services was very little compared to what has been achieved in the health sector. The use of MCH services is still too low for both urban and rural areas, and the gradient between the two areas is very obvious [13].

The activities of MCH services are inefficient and beyond to what has been considered by the WHO as the minimum which should be provided in every rural community [24]. The major concern of the MOH is to provide health services regardless the distribution of these services, the quality of care provided, and needs and characteristics of the population who are using these services with its major emphasis on curative measures and highly sophisticated medicine.

Contradictions in opinions: Most of the health care planners and those interested in the field of MCH care services recognized the low attendance rate by mothers and their children. Many of them stressed that the provision of health services could be the best and probably the only way for increasing the attendance rate. "Remote areas have not yet been covered by medical services" [25: 326]; "Medical services are randomly distributed in favour of urban areas.... about 150 additional MCH centres are required to satisfy the minimal needs of mothers and children" [20:

277]; "The barriers against utilization of MCH services should be removed by the MOH by providing basic health services, free of charge to all population especially the poor" [26: 261]. The second project in the last five year plan for economic and social development, 1986 - 1990, to be implemented was "Ensuring better utilization of health services by providing primary and secondary health services to population clusters in urban and rural areas" [6: 18].

Others realized, probably from their experience, that we should look for determinants of utilization rather than stressing on the provision of health services which is beyond the scarce resources available and which could have little impact on enhancing the attendance rate. However, some of them were confused or even contradicted in their opinions.

Although the second project in the last five year plan, 1986 - 1990, was to provide health services to ensure better utilization, the plan stated that "The low level of utilization of primary health care in the country is attributed to the lack of confidence in the available services and the failure of the mass media such as TV and radio to educate people of the benefits of primary health care" [6: 16]. The 1983 Government study [13] stressed area of residence and education of mothers as the only determinants of MCH utilization behaviour. However, in the recommendations section of this study, the author forgot these determinants and was contradicted in his opinion "The long waiting hours, the attitude of the public medical staff and the dissatisfaction of

users are factors that drive women from using the public health services....Attention should be paid to quality and quantity of care....to become available, accessible and acceptable. This can be achieved by building more facilities" [13: 261].

The 1979 study concluded that "Difficult access to MCH centres judged by distance between the centre and the family residence constitutes a major obstacle to the use of MCH services in the country". However, the same study showed that "38% of mothers who were staying within half a kilometre from the MCH centre were non-attenders during pregnancy" [22: 95].

It is evident that there is a contradiction in opinions between and within the government agencies responsible for the provision and organization of health services. Most of these opinions were personal and not supported by objective evidence. The 1979 study [22] was the only study which tried to use the distance as a proxy to the availability of health services. This study shows clearly that many mothers do not use health services even if they are staying within a few metres from the service. There is an urgent need to identify the factors which could explain the attendance behaviour, in order to provide an objective base for future judgements, planning and intervention strategies to improve both the utilization of MCH services and the general health of the public.

1.2.5. Aims of the study

It is quite difficult to explore all determinants of utilization of health services in one study. Those who are interested in this field should look first to those characteristics which in their opinions and according to the experience of others could be the best predictors of utilization behaviour. According to the findings of such explorations, it becomes easier to identify other determinants of utilization in future studies.

In Jordan little is known about the use of antenatal care and nothing about: what mothers do think of the MCH services in general, the content of care provided and the confidence of mothers in the different aspects of the MCH care and the care provided. In this study an attempt is to be made a) to identify the points of weakness of the MCH care system, and to answer the question of who is using these services and who is not; b) to identify the reasons for not using the MCH services and to find out the gaps between the content of care provided for pregnant mothers and the content of care that should be provided; and c) to get evidence on the expressed levels of satisfaction of mothers with the different aspects of the MCH services and the care provided.

Such data can be used by the health care planners and managers, to identify the "at risk" mothers and to plan health related activities, and to decide how to: meet demands, improve services, organize promotive and preventive actions, introduce PHC, and assess the possibility of and eventually organize cooperation between the different health sectors and between the health sector and other related sec-

tors.

CHAPTER 2.REVIEW OF LITERATURE

SUMMARY: The aim of this review is to provide information on factors which could be applicable directly or indirectly to the use of and satisfaction with MCH care in Jordan. The first section of this chapter (2.1) reviews the objectives and activities of the MCH care within the context of PHC, and provides some approaches for quality assessment of health services. The second section (2.2) reviews family morbidity and mortality in general terms with special emphasis on the impact of antenatal care on children mortality, low birth weight and prematurity. The third section (2.3) is more comprehensive and reviews models and determinants of utilization of health services. The fourth section (2.4) reviews some aspects of satisfaction with health care. The third section has been emphasised, which is the main theme of our study of utilization and satisfaction with MCH care in Jordan.

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2.1.General introduction

SUMMARY: The main objective of antenatal care as found in the search of literature is a form of health education where the doctor and midwife have a duty to allay the pregnant woman's fears, to instruct her in the care of her body, to inform her about the process of birth, the care of the newborn and eventually about methods of health planning and child spacing and nutrition education for children. However, screening of expectant mothers for the indentification of risk conditions, and referring those at high risk to more qualified personnel is another important objective. Assurance of delivery of a good quality of maternity and general health services is required. These services must be evaluated to indicate areas of practice in need for improvements and changes. Studies of quality of health services range from those concerned with input, to those concerned with process, and finally those concerned with outcome. However, some were interested in encompassing more than one of these approaches in one approach to provide a comprehensive picture regarding the service to be assessed. Strengths and weaknesses of these approaches have been discussed throughout this section. Improving the documentation of health and health related indicators and record-keeping and the cooperation of the different health care sectors and other related sectors in many developing countries could be the first step towards quality assessment of health services.

2.1.1. MCH in the context of PHC: objectives and activities

Primary Health Care: Primary health care is the first level of contact of the individual, the family and the community with the national health system bringing health care as close as possible to where people live and work. Primary health care is the 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 the country can afford to maintain at every stage of their development in the spirit of self-reliance and self determination. It forms an integral part both of the country's health system and of the overall social and economic development of the community [27].

The essential elements of primary health care were defined as follows "...education concerning the prevailing health problems and methods of preventing and controlling these health problems; promotion food supply and proper nutrition; an adequate supply of safe water and basic sanitation; maternal and child health care; immunization against the major infectious diseases; prevention and control of locally endemic diseases; appropriate treatment of common diseases and injuries; and the provision of essential drugs" [27].

Objectives of MCH care: The objectives of maternal and child health (MCH) services begin with the immediate health problems of mothers and children and extend to health

throughout life and to community health. Through concern with child development and the health education of parents and children, the ultimate objectives of MCH services is lifelong health. The effect of both careful and informed mothering on the health of the entire family and the relation of the family health to community health are important factors in individual, community and national development [28].

The objectives of maternity care are to ensure that every expectant and nursing mother maintains good health, learns the art of child care, has a normal delivery and bears healthy children. Maternity care in the narrower sense consists of the care of the pregnant woman, her safe delivery, her postnatal care, the care of her newly born infant and the maintenance of lactation. In the wider sense it begins much earlier in measures aimed to promote the health and well-being of the young people who are potential parents and to help them to develop the right approach to family life. Maternity care should therefore also include guidance in parent-craft and in problems associated with infertility and family planning [28].

Willocks [29] has identified two main objectives for antenatal care: medical and educational. The first objective is a form of preventive medicine where regular attendance and treatment during pregnancy helps to maintain the woman's health, prevents anaemia, confirms normal progress including normal foetal growth, facilitates the diagnosis of complications of pregnancy and prevents some of the difficulties of

delivery, thus reducing maternal and foetal mortality and morbidity. The second objective is a form of health education where the doctor and midwife have a duty to allay the pregnant woman's fears, to instruct her in the care of her body, to inform her about the process of birth, the care of the newborn infant and eventually about methods of family planning.

Interventions and activities : Coping with the major health problems in mothers and children involves the following main health care interventions [21]: 1) prevention, identification and management of prevalent diseases in the area; 2) care during pregnancy, childhood, and postnatal period; 3) supervision of infants, particularly the promotion of nutrition, growth and development; and the prevention of infection; 4) advice on fertility regulation, which, through proper timing and appropriate spacing of pregnancies, will ensure better nutrition for mother and child, prevent interruption of breast feeding due to a new pregnancy and thus reduce the incidence of infections, particularly diarrhoeal diseases; 5) special care during weaning, in the form of nutrition education; promotion of suitable, particularly home-prepared, weaning foods; and in prevention and management of infant and child diarrhoea, including rehydration; 6) supervision of the physical and psychosocial development and maturation of the child and adolescent, giving particular attention to questions of nutrition, preparation for family life, and child-rearing; 7) upgrading of parental competence, with special reference to the prominent role of the mother in child-rearing and due consideration on local

sociocultural patterns; and 8) improving environmental sanitation at all stages.

The WHO Committee [21] suggests that the following activities could and should be provided in every rural community: 1) recognition and primary management of certain of the most common diseases and problems in the area; 2) elementary health education, with special emphasis on nutrition, hygiene, childbearing, child rearing, and fertility problems; 3) screening of expectant mothers and children, for the identification of high risk conditions and abnormalities, and referring those at high risk to more qualified personnel; 4) assistance during delivery and puerperium, ensuring maximum safety and cleanliness; 5) simple record-keeping; 6) the distribution of simple medicines, food supplements, and, whenever in accordance with policy, some types of contraceptives; and 7) the provision of information on community health problems. The peripheral unit of workers should serve as a point of contact and arrange attendance for itinerant services and mass campaigns [21].

The same committee [21] suggested a risk approach to direct intensive care to mothers and children who are considered to be at increased risk. The risk approach can be used to improve the health of mothers and children at several levels both within and outside the health care system [30]. According to this approach, the risk of a bad outcome has to be quantified. Methods for quantification have been suggested [30] and applied by some researchers [31].

2.1.2. Approaches to quality assessment in health care

General: Assurance of the delivery of high quality maternity and general health services, along with removal of barriers to access and availability, looms as a major goal of health care planners [32].

There are three purposes to the evaluation of health care: 1)to support good medical practice by identifying its efficacious and efficient elements; 2) to indicate areas of practice in need of improvement; and 3) to provide an ongoing education to physicians about their own practice [33]. These purposes are not served if the evaluation results are not fed back into the delivery system and acted upon.

Any discussion of the measurement of the quality of primary medical care should begin with a classification of its component parts and an outline of its objectives [34]. The objectives of primary medical care are defined by Watkins [34] as follows: 1) adequate access by providing a system of medical care which is accessible and acceptable to the entire population of the country; 2) adequacy of process by providing a medical care system which is capable of identifying medical need and responding appropriately; and 3) adequacy of outcome by providing a system which can use, to the full, the available skills, manpower, and financial resources to meet the medical needs of the population.

Studies of the quality of health services range from those concerned with "outcome" or "end results" based on what hap-

pens to the patient served as a result of the intervention; studies concerned with the assessment of the process of care or what is done to the patient; and finally, those examining the conformity with professional standards or "input" criteria [32].

Outcome approach to quality assessment: Examining the outcome of intervention such as infant mortality is appealing because of its manageability when the variables considered are measurable, and the data from which they are derived are readily available [32]. Many advantages are gained by using the outcome as the criterion of quality in medical care. The validity of outcome as a dimension of quality is seldom questioned. Nor does any doubt exist as to the stability and validity of the values of recovery, restoration and survival in most situations and most cultures [35]. The outcome tends to be fairly concrete and, as such, seemingly amenable to more precise measurement [35].

The prime deficiency of the outcome approach is that many factors other than medical care may influence the outcome, and precautions must be taken to hold all significant factors other than medical care constant if valid conclusions are to be drawn [32,35]. Some outcomes are not so clearly defined, and can be difficult to measure [35]. These include patient attitudes and patient satisfaction, and physical disability and rehabilitation.

General examples of the outcome approach are the assessment of: perinatal mortality and incidence of prematurity [39]; mortality after prostatectomy [40]; survival after treatment

of invasive cancer of the cervix [41]; Functional impairement and the degree to which this is recognized and resources mobilized to alleviate the situation [34]; compliance with treatment for hypertension [42]; satisfaction of the patient with the doctor, and compliance of the patient with the doctor's advice [43]; and patient satisfaction with his own health [44].

Process approach to quality assessment: The second approach to assessment is to examine the process of care itself rather than the outcome. This is justified by the assumption that one is interested not in the power of medical technology in achieving results, but in whether what is now known to be "good" medical care has been applied. Judgements are based on considerations such as the appropriateness, completeness and redundancy of information obtained through clinical history, physical examination and diagnostic tests; justification of diagnosis and therapy; technical competence in the performance of diagnostic and therapeutic procedures including surgery, evidence of preventive management in health and illness; coordination and continuity of care; and acceptability of care by the recipient [35]. This approach requires that a great deal of attention must be given to specifying the relevant dimensions, values and standards to be used in the assessment [35].

General examples of the process approach are the assessment of : recording of diagnosis and treatment [45]; clinical performance of the physician regarding a set of diagnostic and therapeutic actions [46]; completeness of the official

records [47]; appropriateness of surgery for adenoidectomy [48]; necessity of the operation [49]; doctor's competence and ability to communicate with the patient [50]; and preventability of stillbirths and neonatal deaths [51].

Input approach to quality assessment: A third approach to the assessment is not to study the process of care itself, but the setting (structure) or inputs into the health system. This approach is concerned with factors such as the adequacy of facilities and equipments, the qualifications of medical staff, the administrative structure and operations of programmes and institutions providing care [35]. This approach offers the advantage of dealing, at least in part, with fairly concrete and accessible information. It has the major limitation that the relationship between structure and process, or structure and outcome, is often not well established [35].

General examples of this approach are the assessment of: the competence and stability of medical staff, scheduling and duration of the clinic visit [52]; adequacy of equipment, speciality status, admission privileges of the physician, medical school affiliation, and accreditation status of the physician [53]; and duration of training and methods of practice of the physician (solo versus group practice) [54].

The "tracer" technique encompasses both process and outcome criteria for evaluating care for specific and selected health problems [33]. In an attempt to give a rational and uniform basis for selecting the tracers, Kessner and his

colleagues [33] established six criteria that would screen out health problems that are not appropriate tracers. In order of importance, the criteria were as follows: 1) tracer should have a definite functional impact; 2) tracer should be relatively well defined and easy to diagnose; 3) prevalence rates should be high enough to permit the collection of adequate data from a limited population sample; 4) the natural history of the condition should vary with utilization and effectiveness of medical care; 5) the techniques for medical management of the condition should be well defined for at least one of the following processes: prevention, diagnosis, treatment or rehabilitation; and 6) the effects of non-medical factors on the tracer should be understood. According to these criteria, six conditions were selected. These were: middle ear infection and hearing loss, visual disorders, iron-deficiency anaemia, hypertension, urinary tract infection and cervical cancer. Criteria for assessment in this approach were: methods of diagnosis, treatment, follow up, referral, functional impact and psychological adjustment and prevalence of tracers. The main problems with this technique are mainly inadequate medical documentation and the limited generalizability of the findings beyond the selected tracers [55].

Lane et al. [32] proposed a conceptual framework for evaluating maternal health care which endeavors to link structural, process and outcome variables in a comprehensive assessment approach by using "indicators" for each of the dimensions of maternal health care objectives and functional characteristics. In this model an attempt has been made to

categorize indicators by the time during the maternity cycle (prenatal, labour and delivery, postpartum) when such actions can be expected to be evident. In this framework, the dimensions of maternal health care objectives are viewed as: 1) the prevention of the occurance of disease in mothers and their infants; 2) the minimization of the consequence of conditions which cannot be prevented, or which pre-existed, or developed or identified during pregnancy; 3) the maintenance of the pregnant woman's health by counteracting the adverse effects of the maternity process (physiological or psychosocial), and by preventing iatrogenic diseases in the foetus; and 4) the rehabilitation of women whose pregnancies terminated in a poor outcome, and the upgrading of the conditions of pregnant women and newborns with serious general health or social problems, including those which pre-existed, are newly identified, or develop during the maternity cycle. Dimensions involved in the determination of the system's functional characteristics are proposed as: 1) accessibility - the extent to which the system was, or is open, to entry; 2) availability - the extent to which needed or indicated services are available; 3) adequacy - the extent to which needed or indicated services are sufficient, quantitatively or qualitatively; 4) responsiveness - the extent to which needed or indicated services are modified and adapted to the local needs; and 5) effectiveness - the impact of health care on the health and social function of mothers and children.

Hulka and Cassel [56] used an "indicator case" model to study the organization, utilization and assessment of

primary medical care. Four indicator conditions were selected for this task. These conditions were pregnancy, infancy, diabetes mellitus and congestive heart failure. Assessment of the effectiveness of the service provided for each indicator condition was made in terms of the following eight elements: 1) utilization - number of physician visits, number of different physicians visited, hospitalization, and referrals; 2) cost and convenience - cost of consultation and drugs, source of payment, time spent in getting to and from doctor's office, waiting time and kind of transportation and its availability; 3) physician performance in diagnosis and management of the condition; 4) medications and maintenance of contact and appointment setting; 5)compliance with appointments and medicines taken; 6) physician awareness of the patient concerns about the condition; 7)patient satisfaction with physician; 8) outcome - health status, functional capability, and level of symptoms.

Shortell and Richardson [57] devised a causal model of the relationship among dimensions of health services in two provider systems. This model comprises three sets of health system variables which may be called structural, process, and outcome. Structural variables (inputs into the system) in this model are the patient characteristics (age, family size, education, race and number of current health conditions); and provider characteristics (age, sex, years in practice, group versus solo practice, speciality, and qualifications). Process variables include access to care (number of reasons for not seeing the doctor when the respondent felt that he/she should see the doctor); utilization of services; continuity of care; physician performance

(based on the number of items of history, physical examination, and laboratory items performed by the physician, as a percentage of all items which should be performed as judged by a panel of physicians); and behaviour and attitudes of the provider. Outcome variables in this study include age-adjusted blood pressure and patient satisfaction.

2.2 Family morbidity and mortality: general determinants

SUMMARY: The health status of mothers and children is closely related to the general health of the community and is influenced by factors related to: health services and their utilization, characteristics of the infant and mother and socio-economic and environmental characteristics of the local population. Many of these determinants are amenable to changes through the adoption of certain intervention strategies which would improve the general health of the family and the community. Many of the strategies are beyond the scarce resources available in most developing countries. The adoption of health education programmes and campaigns within the context of PHC and through the available and appropriate media could be the cheapest and may have a major impact on the general health of the population. The available antenatal clinics may play a good role in transferring the health education message by cooperating with the local people, the traditional birth assistants and other related sectors (Ministry of Education and Ministry of Information).

2.2.1. General introduction

Promotion of the health status of mothers and children is one of the terms of the WHO constitution [24]. The specific objectives of maternal and child health can be summarized as the reduction of maternal, perinatal, infant, and childhood mortality and morbidity and the promotion of the reproductive health and the physical and psycho-social development of the child and adolescent within the family [28].

The health needs of a pregnant woman can be stated simply as her wish for a fulfilling experience for herself safely concluded by the delivery of a healthy infant. First, she should have a medical examination early in pregnancy to ensure that her general health is good. Second, at regular intervals during pregnancy, labour, and puerperium she requires the help and advice of a skilled attendant. Third, at any stage, she should have immediate access to specialist hospital services if the need arises [58].

It is well known that the highest rates of infant mortality occur in minorities and poor communities [59]. They also have the highest rates of illness and social problems, including high rates of teenage pregnancies and premature deliveries [60]. Many of the babies born are of low birthweight - the factor identified with high infant mortality rate where two-thirds who die are less than five pounds at birth [61]. The death rate is higher for hospitals delivering relatively more premature babies, for those infants born in hospitals located in a large community population, and for hospitals serving relatively more low income and non-white babies [62].

In Great Britain, the General Household Survey [63] showed that men and women from lower classes report high rates of chronic and acute illness and tend to consult their family doctor more often than do the higher classes. The risk of death before retirement is two and a half times as high in unskilled manual workers and their wives as it is in professional men and their wives [64]. A child born to parents in

class I and II can expect 5 or more years of life than a child of semi-skilled or unskilled parents and the risk of perinatal death in class V is double that in class I [64].

The poor sections of the population in Great Britain inhabit not only a more adverse physical environment, but also a social and psychological environment which increases their vulnerability to a variety of disorders [65]. Manual workers and their families are more susceptible to illness and less likely to recover from it because of a kind of psychic susceptibility which is a consequence of social circumstances [65]. The Court Committee [66] recognized the continued connection between mortality and morbidity in childhood and the economic and social factors. The Committee emphasized that social class V contains a higher proportion than other classes of those families where adverse circumstances - for instance, low income, bad housing, and poor education - combine to place children at high risk of ill health or accidents.

2.2.2. Infant mortality: general determinants

Family income, education of the parents, occupation, and some environmental conditions have been found to be related to infant mortality. A retrospective study of legitimate births in the USA, between 1964-1966, showed that family income and maternal and paternal levels of education were related to postneonatal mortality [67,68]. Bross and Shapiro [69] found that education has a consistent trend in relation to postneonatal mortality, with a 62% increase in postneona-

tal mortality for women with less than a high school diploma and a 34% decrease in women with some college experience. Crawford et al. [70], in England and Wales, found that population density, overcrowding in housing, social class, education, unemployment history, income, percentage of population under 15 years, migration, water hardness and latitude, altogether, explained 62% of the variance in postneonatal mortality in 1950-1953 and 53% in 1958-1964. Morris and Heady [71] found a notable difference in postneonatal mortality by occupation, even between occupations normally classified as within the same social class (for example, the postneonatal mortality rate for infants of miners in social class III was greater than that for infants of clerks in the same social class (III), and the rate for miners' infants was the same regardless of whether the fathers were skilled (class III) or partly skilled (class IV).

In Great Britain and other countries, it has been found that age of mother, parity, birth interval, age of gestation, and behaviour of parents are important determinants of infant mortality. A WHO Report [72] on social and biological effects on perinatal mortality in eight countries (Austria, Cuba, Japan, New Zealand, England and Wales, USA, Sweden and Hungary) showed that the number of previous births is associated with postneonatal mortality rate. This was elevated for first births, lowest for second births, then rises progressively with the number of previous births to become very high amongst mothers in the high parity groups (4 parities or more). The parity effect was evident at the

two levels of birthweight (less that and more than 2500 gm). Postneonatal mortality was highest when low birthweight was combined with high parity; and lowest for second and third births with mature birthweight. In seven countries (no data available for England and Wales) in the study, it has been found that duration of gestation has a determining effect upon perinatal mortality. For infants under 28 weeks of gestation, mortality was very high, approaching 1000 per thousand. Thereafter the rate declined progressively with lengthening gestational period to reach its minimum at 38-41 weeks.

Knowelden et al. [73] in Sheffield, found that avoidable risk factors attributed to inappropriate behaviour on the part of the parents occured in 24% of postneonatal deaths. Other risk factors in the study which contributed to postneonatal mortality were: mothers tended to be younger, and to have had more pregnancies with shorter birth intervals. The study recommends that health education should be enhanced, and declares that the benefits of such education programmes would extend considerably beyond reductions in postneonatal mortality.

McIlwaine et al. [74] found that the highest perinatal mortality rates in Scotland are found in women of all ages having a fourth or subsequent child and in women having their first baby before the age of 20 years. The perinatal mortality in women having a fourth or subsequent child was found to be twice that of women having a second or third child.

Pharoah et al. [75], in Great Britain, found that the mortality rate among infants of mothers under age 25, of parity 3 or more and of social class IV and V was 15.1 compared with a mortality rate of 2.0 among infants of mothers aged 25 to 29, with only one pregnancy, and within the highest two social classes (I and II).

Low birthweight in Great Britain and other countries is a major contributing factor to the pool of infant mortality [76], and perinatal mortality and short- and long-term morbidity in infants and families [77]. It also constitutes a growing element in the economic costs of the maternity services and in the costs of the personal social services providing long-term help for individuals with handicaps of perinatal origin [77].

Oakly [77] pointed that the chance of dying is some 23 times greater for a baby weighing 2500 gm at birth or less, as compared to one weighing over 2500 gm. Arneil [78] in a study of 327 postperinatal infants deaths in Glasgow (Scotland) found that 49.8% of these deaths were birth determined, half being very preterm infants. The WHO Report [72] showed that birthweight has a strong influence upon levels of postneonatal mortality. The postneonatal mortality was almost 1000 per 1000, for births under 999 gm. At the 1000 - 1499 gm weight group, the mortality rate was 656 (Austria) and 400 (USA); and declined to rates between 80 (Austria) and 41 (USA) for birthweights 2000 - 2499 gm. With higher birthweights the postneonatal mortality rate declined to very low levels, 3 per 1000 in several instances

for birthweights up to 4500 gm.

2.2.3. LBW and later functioning in children : determinants

LBW determinants: Inequalities in the socio-economic background and the use of health services among mothers and their families are associated with LBW and prematurity. "....mothers of the disadvantaged non-white children tend to be less well cared before they reach childbearing. When they reach it, they begin to bear children younger, more rapidly, and more often, and they continue to bear them to an old age. When such a mother is pregnant.....she will be far less likely to get prenatal care. Children of such mothers are smaller at birth, die more rapidly..... If they survive the first month of life, their mortality thereafter is excessively high and their illness is more frequent, more persistent, and more severe..." [79]. Low socio-economic status is associated with a multitude of variables potentially relevant to preterm deliveries. These variables include nutrition, stress, race, hygiene, maternal age, maternal weight and prenatal medical care [80]. LBW does not occur randomly within and across populations. Its epidemiology suggests a disproportionate incidence in less affluent regions, in lower socio-economic groups, in first and high order births, in very young and elderly women and in those of low educational achievement [81].

Hoff et al. [82], studied pregnancy outcome and sociomedical characteristics in a sample of 1844 black and white primiparous women who received prenatal care in South Alabama (USA) between 1974 and 1979. Stepwise multiple

logistic regression analysis was performed to control for a variety of variables in the study with size-for-gestational age (small, normal) as the dependent variable and sex of the neonate and maternal variables (marital status, contraceptive use, smoking during pregnancy, number of prenatal visits, irregular menstrual cycle, bleeding during pregnancy and diabetes) as independent variables. The results of this study indicated that the number of prenatal visits, maternal diabetes and smoking were significantly related to LBW. The greater the number of prenatal visits, the smaller the likelihood a woman would deliver a small-for-gestational age neonate. The presence of diabetes and increase in smoking during pregnancy enhanced the likelihood that a woman would deliver a small-for-gestational age neonate. In conclusion, these results underscore the importance of prenatal care in affecting the quality of pregnancy outcome (birth weight). This includes early prenatal diagnosis of maternal risk conditions such as diabetes and the provision of adequate medical care; and counselling the pregnant mothers concerning the bad effects of cigarette smoking on the development of the foetus.

Boldman and Reed [83], across 21 countries, produced sizeable correlations between LBW and urban residence, per capita income, per capita energy consumption, and population per physician. By using a stepwise regression analysis, per capita income was selected initially and contributed to 70% of the total observed variability in birth weight. By adding the population per physician into the equation in the stepwise regression, the explained variation in birth weight

increased to 74%, with no remaining variables could further increase the explained variation.

Later functioning in children: Reports from many countries over the last thirty years have confirmed beyond doubt the fact that LBW infants who survive into childhood are more likely than heavier infants to suffer from impaired functioning [81]. Relationships have been reliably established between LBW and congenital malformations, neurological abnormalities, mental retardation, low intellectual and educational achievements, childhood illness, and poor physical development [81].

Davie et al. [84] found that child's height was related to birth order, maternal height, birth weight, social class, number of younger siblings in the family, smoking during pregnancy and the age of the mother. Others [84, 85] found that reading attainment and reading scores were related significantly to social class (the strongest association), birth order, birth weight, number of younger children in the family, age of mother and length of gestation. McKeown [86] in Birmingham, found that verbal reasoning score was related to birth weight, social class based on father's occupation, and maternal age within each social class.

Illsley and Ross [81] have pointed out that socio-economic functions have a major and perhaps dominating influence on childhood functioning and that they may modify the effect of LBW and short gestation on later functioning in children (the effect will be weak in the upper social classes and

strong in the lower social classes). In studying the relationships between birth weight, its antecedents and external influences during childhood on physical, intellectual and emotional development in children in Aberdeen city and suburbs, Illsley and Ross [81] found that children who have birth weight of 2500 gm or less were, at age 10, lighter and shorter, had smaller heads and had more neurological disorders when compared to their controls. Regression analysis of the data on the LBW group shows that, for the young mother of an LBW infant, the child's later intelligence will be higher if the pregnancy is her first and there have been no previous abortions; if the nutritional status of the infant is good at the time of birth; if the mother is flexible in her attitude to behaviour training; and if the social environment at the time of birth is good. In the case of older mothers, the child will be more intelligent if he is the first child and a boy and if his mother has made considerable preparation for motherhood; the fewer the days spent in the intensive care and the older the mother, the higher the child's intelligence is likely to be. When LBW group was compared with control group, analysis of the data shows that the intelligence of the LBW child is less impaired relative to that of his/her control if there was little difference in the number of neonatal problems between LBW and controls; if the LBW child was socioculturally advantaged; and if the mother's attitude to behaviour training was less rigid.

2.2.4. The impact of antenatal care on infant's mortality and morbidity

General: Early and regular attendance at the antenatal clinic is important for mothers, especially those at high risk. This attendance could facilitate the identification of risk conditions where proper treatment and advice are to be provided for those mothers. For mothers not at above-average risk of an adverse outcome, Enkin and Chalmers [87] pointed out that routine antenatal care for those mothers is not so clear-cut and self-evident. Two major postulated benefits underlie the organization of their care: first, that large number of women in whom no risk is detected will benefit from the reassurance they obtain by regular consultations during pregnancy; second, that important asymptomatic conditions such as pre-eclampsia, failure of foetal growth and malpresentation will be detected and their harmful effects will be prevented by effective management [87].

Antenatal care and infant mortality: Access to and use of health care, particularly for mothers at increased social and biological risk, is associated with reductions in postneonatal mortality [88]. Data from different areas in the USA showed that the availability of health centres, higher expenditures for health services and the presence of more paediatricians per 1000 live births are all associated with a decline in postneonatal mortality and a reduction in the white-nonwhite disparities - which was even more striking among nonwhites than among whites [89 ,90]. Others [91, 92] attempted to isolate the effects of health care on in-

fant mortality. They concluded that infant mortality varied inversely with the amount of prenatal care received.

Quick et al. [93] studied the use of prenatal care and pregnancy outcome in 4148 deliveries among members of a well-established health maintenance organization (HMO) and 19116 births among the 1973-1974 white birth cohort in Portland area, USA. Each birth was classified as having no risk, or socio-demographic risk only, or medical-obstetric risk only, or both socio-demographic risk and medical-obstetric risk. A birth was considered to be at socio-demographic risk if it was illegitimate, the mother had eight years of education or less, maternal age was less than 15 or greater than 39, or maternal age-birth order combination was one of the following: 15 to 19 years and the second or higher birth, 20 to 24 years and fourth or higher birth, 25 to 29 years and fifth or higher birth, 30 to 34 and first birth or sixth or higher birth, or 35 to 39 years and first birth or fifth or higher. The birth was considered to be at medical-obstetric risk if there had been previous foetal or child deaths, there was a congenital abnormality, or there were complications during pregnancy or delivery. It has been found in this study that for the total population, neonatal and infant mortality rates were respectively, 2.4 and 5.4 for no risk births; 3.9 and 12.9 for socio-demographic risk only; 20.1 and 24.6 for medical-obstetric risk only; and 22.5 and 29.6 for births having both risks. The neonatal and infant mortality rates for all risk categories, were, respectively, 6.8 and 10 for mothers with adequate antenatal care; 18.3 and 19.4 with intermediate care; and 22.1 and 31.2 with in-

adequate care.

Antenatal care and infant morbidity: Gortmaker [94] found that LBW (less than 2500 gm) was associated with inadequate (as opposed to adequate) prenatal care and this association was attenuated when adjusted for differences between white and black people. Within the native white population, the relative risk changed from 1.72 (unadjusted) to 1.41 (adjusted) and within the native black population it changed from 1.89 (unadjusted) to 1.78 (adjusted).

Others [93, 95, 96, 97] found that the percent of mothers with LBW neonates increased as the level of prenatal care decreased. The percent of women with LBW infants was 4.36 when mothers received adequate antenatal care, 7.25 with intermediate care, and 11.27 with inadequate care [93]. Adequate prenatal care increased the predicted BW by 80 gm and inadequate care reduced the BW by 82 gm, implying a difference of 162 gm in birthweight of the neonate between mothers with adequate prenatal care and mothers with inadequate care [93].

Martin [98] compared 1097 primiparous mothers of premature infants in Greater London and Southeast Lancashire with an equal number of controls matched by age and social class. The distribution by trimester in which prenatal care began was almost identical in the two groups. The average week of initiation of prenatal care was 12.8 for mothers of premature infants and 12.3 weeks for the control mothers.

Drillien [99] in Edinburgh found that the proportion of

mothers attending prenatal clinic in the first 16 weeks of pregnancy was 83% for primiparae with premature births, 84% for primiparae with mature births, 86% for multiparae with premature births and 90% for multiparae with mature births.

Terris and Glasser [100] studied the relationship between prematurity and prenatal care for all black single live births in New York City in 1960. Each premature birth (2500 gm or less) has been paired with the next mature birth (by date of birth) that matched by place of delivery, sex of the neonate, maternal age, parity, and marital status of the mother. It has been found in this study that the proportion of mothers with onset of prenatal care in the first trimester was 7% for premature and 8% for mature births; in the second trimester, 35% for premature and 40% for mature births; and in the third trimester, 28% for premature and 37% for mature births. The difference in the proportion of mothers without prenatal care was large: 21% for the premature and only 9% for the mature births.

The impact of antenatal care on infant morbidity and mortality is inconsistent in direction and strength. This can be explained by the different methodologies applied on different populations with different health care systems and different care provided. The statistical techniques applied explain part of this inconsistency in the findings.

2.3. Utilization of health services: models and determinants

SUMMARY: Many models of utilization of health services have been developed since late 1950s by different researchers having different backgrounds and interests. The aim of these models is to identify and explore the determinants of use of health services. All models are cumulative in nature where each model adds certain variable clusters to increase our understanding of the utilization behaviour among the different sectors of the population using different services. The contents and the statistical techniques applied by these models are improving; however, the empirical findings are inconsistent or even contradicted.

2.3.1. Models and applications

Models which explain health services utilization patterns have been evolved by Rosenstock [101, 102], Suchman [103, 104, 105, 106], Andersen [107, 108], Gross [109], Aday and Andersen [110], and others. These models encompass a wide range of variables, including demographic, economic, organization, social and attitudinal and belief systems which are psychologically and culturally based.

2.3.1.1. Andersen's behavioural model

One of the most frequently used approaches for the use of health services is the behavioural model which was originally developed by Andersen [107] in his study of the differences in the families' use of health services, and

which was later revised to be more comprehensive [111]. This model suggests that the use of medical care is dependent upon predisposing, enabling, and need factors. Predisposing factors include the three general categories: 1) family composition (age, sex, marital status of the head of the family, family size, age of the youngest family member, and age of the eldest family member); 2) social structure (employment, social class, education of the head of the family and race); and 3) health beliefs (belief about medical care, physician and disease). The enabling component of the model includes family resources (family income, family savings, health insurance and regular source of care); and community resources (physician-population ratio, hospital bed-population ratio, and residence). The illness component of need includes the number of disability days resulting from injury or illness, the number of symptoms reported from a checklist including such symptoms, and self perceived general state of health; and the response component of need includes seeing the doctor for symptoms and regular physical examinations.

Wan and Soifer [112], employ a form of this model in an attempt to explain the determinants of physician utilization. They find that the need for care, as measured by the proportion of household members who have health disorders and who respond to their illness, is the strongest direct cuasal variable for predicting physician utilization. Other variables of importance are the average cost per visit, health insurance coverage, age and sex of the individual . Overall, the variables explain 18.2 percent of the variation in

physician utilization.

Shortell [113], also employs Andersen's general model by the addition of the type of the provider to the model in an attempt to examine the relative importance of a particular subset of enabling characteristics and provider variables among individuals experiencing a major illness during the survey year. He finds that the source of payment is the single most important determinant of ambulatory care visits, followed by the type of the provider, as a group practice.

Wolinsky [114], finds that predisposing and enabling variables are substantially unrelated to physician utilization. He finds that the model explains 9 to 13 percent of the variation in physician utilization. He attributes most of this variance to illness-morbidity characteristics, and he therefore questions the importance of most predisposing and enabling variables in explaining the variation in utilization.

Gross [109] designed a more comprehensive health service utilization model working within a behavioural framework. This model includes: predisposing factors (attitudes of the individual towards health care, health behaviour when symptoms of health disorder are recognized, use of a regular source of care, and knowledge of existence of various services); enabling factors (income, health insurance, family size, occupation of the head of the family and his/her education); accessibility factors (distance and/or travelling time of individual to the service, appointment

delay time, waiting time to see the doctor, availability of health services and personnel at varying distances from households, and availability of a regular source of care); and other factors (disability days, age, sex and race).

2.3.1.2. The health belief model

The health belief model developed in the late 1950s, stressing that the emotional rather than cognitive (belief) of a person are crucial to understanding utilization [101]. This model [101, 115, 116, 117] incorporates : (1) the individual's general motivation as the general concern about health and the possibility of getting sick, willingness to seek medical care, susceptibility to illness and severity of the condition; (2) demographic and sociopsychological characteristics of the patient (age, sex, race, personality, social class, peer and reference group pressure); (3) structure of the delivery mechanism as cost and accessibility; and (4) faith in doctors and medical care. The preferred path of action is determined by the individual's perception of potential barriers and benefits and the decision to act being based on some assessment of benefits minus barriers or costs. Combination of these variables (susceptibility, severity, benefits, and barriers) can exist in extreme intensity without resulting in observable action, "unless some instigating event occurs to set the process in motion" [118]. However, when deriving intervention strategies, Rosenstock [118] focuses on environmental and cognitive, rather than the psychological background of the patient. He

suggests some ways to modify the health behaviour, to minimize barriers to action, and to increase opportunities to act. These ways include: reducing costs of health care, reducing distances, setting convenience service hours, reminders from doctors and mass media announcements.

2.3.1.3. Suchman's socially oriented model

Suchman [105, 106, 119, 120] in the mid 1960s posited a sociologically oriented model for health care seeking behaviour, emphasizing the importance of social groupings and linkages on utilization. Suchman's model possesses the following hypotheses:

1. the more ethnocentric and socially cohesive the group on a community, friendship, or family level, the more likely are its members to display low knowledge about disease, fearful or skeptical attitudes towards professional medical care, and dependency upon lay support during illness.
2. a cosmopolitan social structure is related to scientific health orientation and a parochial, or local, structure is related to lay, or popular, health orientation.

In general, this model emphasizes that attitudes to illness and awareness of treatment vary considerably among cultural groups where low socioeconomic status and minority groups tend to be more isolated, having a lower level of knowledge about disease, and may be fearful of medical care and become dependent on lay advice.

Suchman [104, 105, 106, 119, 120] studied a sample of 5340

adults in an ethnically mixed area of Washington Heights in New York City. A dichotomy was devised (parochial/cosmopolitan) to describe the social structure. In comparing individuals according to the extent of their beliefs in and acceptance of modern scientific medicine, Suchman found the followings:

1. lower socioeconomic and minority groups are significantly more socially isolated or ethnocentric; ethnocentricism is, in turn, highly related to lower level of knowledge about disease, fearful or skeptical attitudes towards medical care, and dependence upon lay support during illness;
2. cosmopolitan groups are more likely to share a scientific health orientation, while members of parochial are groups are more likely to adhere to a popular or non-scientific health orientation.

2.3.1.4. Other models

Kronenfeld [121, 122], emphasizes both the number of different affiliations and the type of each affiliation. An affiliation is a person or a place where a consumer went for health care in the past or might go again in the future. The different variables in the study are the provider variables (number of affiliations, type of provider); predisposing and enabling factors (age, sex, education of the head of the family, family income, government insurance); and need variables (number of conditions, number of disability days). All these variables explain 40 percent of the total variation in the use of ambulatory care services. The most important explanatory variables are: the number of conditions

in the previous year to the survey; the number of different affiliations; and the number of disability days. Number of affiliations alone explains 27% of the variation in the use of ambulatory care. Number of conditions and number of disability days, jointly, explain 21% of the variation, and predisposing and enabling factors explain 11% of the variation. The findings of the study show that predisposing and enabling variables are of limited importance in explaining the variation in utilization of ambulatory care. These results are in agreement with other studies that demonstrate the importance of need variables in explaining the variation in utilization of health services [123, 124].

A useful model for examining health care systems and their utilization is provided by Aday and Andersen [110]. Although this model was proposed as a framework for the study of "access" to health care, it really involves a wide proposition: that national health policy should be taken into account when viewing the delivery of health care by a given system for a given population at risk. Two main categories of social indicators of the access concept may be specified on the basis of this framework: process and outcome indicators. The process indicators in this model [110], reflecting characteristics of the delivery system and of the population at risk that affect whether entry to the system is gained and how satisfied consumers are with it. Characteristics of the health care delivery system include: (1) volume and distribution of resources, for instance, number of physicians, of hospital beds, and of ambulances per unit of population and per unit of geographic area; and (2) organization variables which include travel time, appoint-

…ent waiting time, office waiting time to see the doctor, type of practice (solo, partnership or group), type of provider (general practitioner, specialist); type of provider seen first, and availability of night and weekend services. Characteristics of the population at risk in this model include: 1) predisposing factors: general health care beliefs and attitudes, stress and anxiety about health; 2) enabling factors (income, extent of health insurance, method of payment, regular source of care); 3) need variables as perceived health status, symptoms of illness, disability days; and 4) other variables (age, sex, marital status, previous health behaviour, education, race, family size and composition, religion, mobility and area of residence) [110]. The outcome indicators are the utilization and satisfaction with health services. Measures of utilization include type of service used; site at which care was rendered (home, office, hospital); purpose of care received (preventive, curative); percentage of population at risk who did not see a physician in a given time interval, mean number of visits to a physician in a given time interval, and continuity of care as measured by the number of different providers contacted for a given episode of illness. Satisfaction could be measured in terms of the percentage of a study population who are satisfied or dissatisfied with specific aspects of the service used such as quality, cost, co-ordination, courtesy shown by providers, medical information given to the patient about dealing with his or her illness, and the overall quality of care received [110].

2.3.2. Determinants of use of health services : further discussion

2.3.2.1. General introduction

Early and regular attendance at the antenatal clinic enables the determination of base line parameters of pregnancy before the extensive physiological adjustments of pregnancy have had time to become fully manifested. This enables the identification of maternal high risk conditions to provide the relevant treatment and care at the early stages of pregnancy [125]. It allows also the accurate assessment of gestational age which facilitates more aggressive management in late pregnancy, when decisions whether to expedite delivery may be influenced by an uncertainty of the foetus maturity [126]. Attendance at the antenatal clinic also helps in counselling the pregnant mothers concerning the effects of some bad habits such as smoking on the development of the foetus [82], and providing them with the necessary information regarding taking care of themselves during pregnancy and of their children.

2.3.2.2. Individual characteristics and utilization of health services

Kaliszer and Kidd [125], in Dublin, compared the antenatal attendance records of four groups of pregnant women, two attending "satellite" clinics located in the peripheral housing estates, and two attending the central hospital clinic. They indicate that the employment status of the woman's hus-

band, her age, parity and distance from the clinic are important in explaining her attendance pattern. Women with employed husbands attend over three weeks earlier than those of unemployed husbands. The number of weeks at first attendance increases with increasing parity ; the nulliparae attend early, then the mean stabilizes for parities one to three, and then increases, particularly for parities above 7. It is also clear from this study that the time of the first attendance decreases with increasing age (after adjusting for parity and other factors). This study concurs with other studies that showed the importance of these characteristics in predicting physician utilization [127, 128].

Some Scottish data shows that late antenatal booking is more common in poorer social groups [129] and some pregnant women in the lower working class group attend at the antenatal clinic in order to book a bed for confinement and to get the various maternity benefits [130].

It is well established that those in the manual workers make considerably less use of preventive services than do those in the non-manual workers [131]. Cartwright [132] found a clear class gradient in the population of mothers having an antenatal examination, attending a family planning clinic, and having discussions with their doctors about birth control. Lower class persons do not get as much out of their consultations, either in terms of the time spent with the doctor or the medical advice they receive [133, 134]. They also receive less health information and promotive care [129, 132, 135], less family planning advice [136], and less

health education [137]. Women in class four and five are much less likely to be screened for cervical cancer, although mortality from this condition is much higher in these classes than in the non-manual workers [138].

It is clear that differences are found between the health services available in poor and rich areas [131]. Hart [139] has concluded that in areas with most sickness and death, general practitioners have more work, larger lists, less hospital support and inherit more clinically ineffective traditions of consultations than in healthiest areas; and hospital doctors have heavier case-load with less staff and equipment, more obsolete buildings and suffer recurrent crisis in the availability of beds and replacement staff. These trends can be summed up as the inverse care law: that the availability of good medical care tends to vary inversely with the need of the population served.

Shrimshire [140] has identified that the provision and use of health services are all partly determined by the socioeconomic structure of the society on an area base, so that working class person is at greater disadvantage if he lives in a predominantly working class area than if he lives in a socially mixed area. The level and quality of available medical manpower, relative to need and demand is likely to be strongly affected by the environment and social class compositions of an area through the operation of the market for recruitment. This has been confirmed by Joseph and Phillips [141] who concluded that some lower income regions are poorly provided with medical services and this, in it-

self, may cause lower levels of utilization because of the inferior availability of health services.

Theodore [142] has provided a number of stages in the formulation of a demand for health services. He views the successive stages as: 1) the existence and the perception of the existence of physiological and psychological conditions; 2) willingness to manage or control such conditions through health care services; and 3) the ability to transform need into demand for health care. The author suggested that consumers in the last stage (the transformation of need into demand) are directed by "economic" factors such as income, health insurance coverage, cost of health services, and the availability of free medical care.

In the USA, it was suggested that lower class persons underutilize health services because of the financial costs of services and because of a subculture of poverty that has failed to emphasize the importance of good health [143]. A study in Oklahoma in the USA, showed that elderly people attend hospital emergency room and outpatient departments for primary care because of the high costs of health care in the private sector [144]. In rural Greece it has been found that poor mothers are more likely than the better-off mothers to deliver at home; and their children are less likely to see a doctor for routine developmental checkup, usually in the first year of their life. Mothers in a better-off situation are more likely to deliver at a private clinic, and their children are more likely to be younger than those of poor mothers when they see a doctor for such

routine checkups [145].

Insurance assumes a kind of financial security, and people with such a financial security are more likely than the uninsured to seek medical care and to spend money on drugs and medicines [146]. In Australia, between 10 to 15 percent of the population are neither insured nor eligible for free treatment, and most of that group is on low income who have been discouraged from taking up insurance because of frequent rises in insurance premium payments. The evidence in Australia pointed to an overuse of the health services by the insured and underuse by the uninsured [147].

Poor people and ethnic minorities are restricted to whatever health services available locally in their areas [148]. In some areas they must travel much further on the average than more affluent white patients [149]. Their opportunities of obtaining good quality, reasonably priced medical care can be very few in many national settings and this must inevitably reduce their utilization of health services [141]. Their underuse of health services may be due to: their residence in less desirable locations [150, 151]; poverty, lack of faith in the health services provided to them, and poor communication between doctors and patients [141].

2.3.2.3. Area of residence and utilization of health services

In the context of many developing countries and in some

developed countries it is clear that the further you stay from the capital and main cities, the more you have to suffer from getting access to health services and the less the alternatives (health care providers) you have to choose from, as most and probably the best doctors and facilities are concentrated in the main cities where the market of medicine is more profitable especially in countries with multiple sources of health care.

Williams [152] in comparing the utilization of primary health care in Urban Hackney (London) and remote Western Isles of Scotland showed marked differences probably caused by the availability of health services. Whilst 80% of urban residents were within one mile of their GP's surgery, only 14% of Island residents were, and, whilst 62% of urbanites could reach surgery in less than 10 minutes, 63% of Islanders took more than this time to do so. Distance and inaccessibility seemed to have deleterious effects on various types of consultations: only 66% of Islanders compared with 74% of Hackney respondents had seen a dentist in the previous two years; for residents over the age of 70 years, only 23% had received chiropody in the Islands compared to 39% in Hackney. The evidence gives a general appearance of deprivation to the Isles. Respondents from remoter Isles included many more remarks on the need for hospital facilities.

Distance from the health care provider is another obstacle to the decision of the consumer whether to use the service or not, and how often. In a study of general practice in

London, Morrell et al. [153] found that consultation rate was inversely related to distance from the surgery. Parkin [154], in analysis of the same data, found that consultation rate fell from 5 consultations per head of the population per year for patients living at less than 1 kilometre from surgery to 3.6 consultations for those living at greater distances. The author concluded that the distance from patients home did deter the population from both consulting at all with the doctor, and also from attending regularly. Phillips [155] shows that respondents living within two miles from surgery did attend more frequently than those living further away, and frequent attendance was apparently curtailed by greater distance. In Sweden, Magnusson [156] tested a hypothesis that visiting rates to an emergency hospital room would decrease with increasing distance from the hospital. The results of the study indicated a significant negative correlation between visiting rates and travelling distance, and this variable alone explained 68% of the variation in the use of emergency room services.

In hospitals known to serve patients of high socioeconomic standing, the effect of distance on utilization was notably less severe [157]. As the authors note, for higher status patients, travel distance did not seem to be a barrier. Such patients would apparently travel a longer distance rather than giving up their preferred hospital environment [157].

The distinction between the barrier effects of distance and of social factors has been examined by Bashshur et al. [158]

in a study in which specific hospitals and physicians were selected as the source of care by a sample of persons in Cleveland in the USA. The outcome measure was the percentage of people who did not seek care at the nearest provider but travelled to the second nearest health care provider or beyond. The propensity or necessity to bypass nearer hospitals was higher for black persons than whites. There were also clear gradients by education and income, with those in the higher groups showing least propensity or necessity to go beyond the second nearest hospital. These findings have been interpreted to indicate that blacks and persons with lesser income and education encounter barriers in access to some hospitals that may be nearest to them [158]. In some areas, patients are willing to travel long distances for medical care regardless the presence of physicians and hospitals in their communities, perhaps looking for larger hospitals with better-off physicians and to avoid smaller hospitals which are very busy with long waiting periods and very limited number of physicians [159] or to maintain their contact with their previous general practitioner if they have to move to new areas [160].

2.3.2.4. Clinic determinants and utilization

The prestige of the clinic has a potent influence on bypassing the nearest clinic, at least in urban areas where distance differentials are not so great and transportation facilities are reasonably good [161]. Brooks [162] found that there is a strong ordered relationship between type of the clinic and the utilization as measured by the frequency

of attendance. Patients in large clinics attend them more frequently than patients in small clinics. Perhaps the administration in large clinics are more effective in getting patients to make scheduled return visits than in smaller clinics. It may also be that large clinics are more fully equipped and more extensively staffed than small clinics so they attract patients to attend more frequently.

Cartwright [163] found that about 20% of the patients felt that they had delayed too long before consulting their doctor. Their reasons were often vague, but ignorance, embarrassment and unwillingness to bother the doctor were the ones more frequently given. For some patients, their own GP acted as a barrier between them and the hospital care they needed, as their GP had not sent them to the hospital soon enough. Once patients were referred to hospital, two thirds of them were seen at the outpatient department within a fortnight, and 70% were admitted to the hospital within two months of being seen there.

The use of hospitals varied according to a number of factors specific to institutions, such as volume of the service, location of the hospital, and service quality [164]. Dear [165] has identified some attributes of mental health services which appear to influence client demand for that service such as intake policy, quality of care, type of service, its capacity and price of consultations. Rosen et al. [166], have noted the negative impact of specific administrative procedures such as extensive form filling, upon utilization. Miller [167] found that lengthy intake proce-

dures appeared to discourage younger clients from utilizing health services. He found that the opening of a new clinic had a major impact upon existing consumption patterns and stimulated the flow of much new demand. One of the clinics in Miller's sample [167] was frequently congested because of its reputation as a source of good quality in-care, while another was underutilized, possibly as a consequence of its low profile in the community.

Other factors were found to be important in affecting the client utilization behaviour such as the activities of the "administrative personnel" before care is provided [168]; long travelling time to the hospital [169]; uncomforatable waiting conditions [155, 163]; and perhaps restrictions on visiting hours to the hospital.

2.3.2.5. Doctor and his patient: behaviour and communication

Poor communication between doctors and patients and differences in the social class levels of those who provide the services and those receiving the services may affect the utilization behaviour. Cartwright [163] found that nurses who are overworked, hurried and anxious inevitably tend to lack sympathy and understanding of their patients, and doctors often do not have enough time for discussions with patients, and large wards with little or no privacy do not encourage patients to ask for explanations. There is a tendency between hospital doctors to depersonalize and underinform their patients [170] and probably not to spend enough time with them.

The poor communication between doctors and their patients can be exacerbated by linguistic and cultural barriers, and differences in the social background of both providers and clients. Middle class dispensers of services have their own background (values, beliefs, life style) and they cannot understand the problems of lower working class people [171]. Lower class client does have its own thinking and perception towards middle class providers [172, 173]. Because of these differences between the two classes, lower working class client may receive different treatment [174, 175, 176, 177], and may behave negatively towards the use of health services.

2.3.3. Conclusions

Many models of utilization have been developed since late 1950s to identify the determinants of use of health services. These models were developed by researchers with different backgrounds and interests. Some of the researchers designed new models, while others were interested in the extension of the already designed models.

It is evident that these models are cumulative in nature, that is, each model adds certain variable clusters which could increase our understanding of utilization behaviour. All models employ similar terminology for variables; however, the concepts and definitions of some of these variables are different making replications and comparisons between the models and their applications problematic. These models are in greatest agreement regarding the importance of

the availablity of and acessibility to the health service, social group influences, combined with some demographic variables. The statistical techniques generated by these models are improving and becoming more sophisticated; growing from largely qualitative analysis in Rosenstock's and Suchman's models, to the use of multivariate and path analysis in the work of Andersen, Gross and Kronenfeld.

A number of disappointments were encountered in the search of literature regarding the models and determinants of utilization. These disappointments include:

1) there has been little theoritical work in this field in Great Britain and in most of the developing countries;
2) the empirical findings were not consistent either in direction or strength. This could be because of the varying methodologies applied on different health care systems with varying contents provided to different populations and analysed by different statistical techniques;
3) most of the models and their applications were in the field of curative medicine. This by itself could explain part of the contradiction in the findings, where need variables in terms of pain, severity of the condition and disability days could explain most of the variation in utilization in severe illnesses while their impact becomes weaker in minor illnesses and preventive care. In case of minor illnesses and preventive care, the characteristics of the individuals and of the health care system may have a greater impact on the use of health services;
4) most studies in this field were retrospective, focusing

on the behaviour of the people who have already initiated medical care and ignoring those who are not. Retrospective studies have their own problems as recall bias and the difficulty in the identification of cause-effect relationships. However, this kind of studies generates hypotheses which can be tested in future studies by applying the appropriate methodologies;

5) researchers tended to study a group or social category of the population using a specific service in a particular way, and assume that utilization behaviour is the same for the whole set of services provided and for the whole population; and finally

6) these models were static in nature. Little attention was paid to how specific individuals or groups made a particular decision, what factors or which individuals or groups were influential in making this decision, and why one form of behaviour was preferred to another.

However, any attempt to study the utilization of health services especially preventive services should include both users and non users of that service, and the selected determinants of utilization must be important at a community level and amenable to changes within the resources available in the country and within the context of primary health care.

2.4. Satisfaction with health care

SUMMARY: Satisfaction with the available health services may be one of the determinants of the use of health services in many countries especially the developing countries where a large sector of the population do not use health services for minor illnesses and preventive care. Improving satisfaction with health care could improve the use of these services with the result of improving the community health. Determinants of satisfaction in certain aspects of the health care provided have been reviewed in general terms. Methodological problems in measuring satisfaction with health care have been identified and discussed. It is worth noting that the empirical findings in this field are inconsistent or even contradicted. Possible reasons for this inconsistency are mentioned.

2.4.1. Problems and conceptualizations of satisfaction

There are several methodological problems inherent in measuring satisfaction with health care. First, patients are reluctant to criticize their health care providers. This problem is intensified with maternity care, during which the arrival of a healthy baby can overshadow the negative experiences and create a favourable environment of subsequent evaluations of care [178]. Second, a patient's satisfaction with care is based on his/her perception of several dimensions of the provider conduct, including technical competence, emotional support and communication [179], and this perception to these dimensions could be affected by

the characteristics of the individual and health service such as distance and waiting time. Third, in many developing countries a large percentage of mothers are non users of antenatal care, and in this case it is difficult to ask mothers about the different aspects of the care, and questions of satisfaction could only be related to some aspects of health services that these mothers might know (e.g. distance from the service, travelling cost, walking and waiting time).

Satisfaction with medical care received is of major concern to people working in the field of health services evaluation, although its measurement and relation to utilization of care have remained unclear or ambiguous [180].

There are two conceptualizations regarding satisfaction in health care. The first and predominant conceptualization, dating back to Koos [181] treats satisfaction as an outcome measure. Inherent in this view is an interest in the interaction of doctors and patients [182, 183], instrumental procedures used during the consultation [184], and satisfaction in the type of the provider [111, 185]. Other aspects of the service in this view were cost, convenience, competence of the provider, waiting time and assistance of the clinic's staff in the process of delivery of the service [186, 187, 188]. Starfield [189] mentioned satisfaction as one of the outcomes in her working model of health services research. The second conceptualization views satisfaction as an input variable to utilization. Suchman [104] and Andersen [108, 111] see satisfaction with care, or trust and confidence in doctors as a predisposing variable to the use of health

services. Similarly, the conceptualization of health educators uses satisfaction variables as inputs for the use of preventive care measures [190] and patients compliance [191].

Cafferta notes that the two conceptualizations are not necessarily incompatible with each other [192], and that feedback mechanisms and reciprocal relationships may be present [193]. Roghmann et al. [180] found some degree of reciprocity between satisfaction and utilization, but the findings of their stepwise regression analysis (that satisfaction increased the explained variance in utilization by an average 10 percent, while the increase in the explained variance in satisfaction did not derive from utilization) lead them to suggest that satisfaction should be seen as an input variable rather than an outcome variable.

2.4.2. Consumers' experiences and attitudes

In Great Britain, a survey was carried out to find out about the experiences and attitudes of users of the hospital services [194]. For inpatients, five aspects of the service were examined, of which, all, or at least all adult inpatients, would have had experience. These aspects were: waking time, privacy during examination and treatment, information about progress, understanding doctors and notice of discharge, waiting in the emergency room to see the doctor and waiting in the non-emergency room for admission. By looking at all combinations of satisfaction/dissatisfaction with these six aspects, it was found that: 36% of all in-

patients were satisfied with all six aspects, and 30% dissatisfied with only one aspect. For the inpatients with only one source of dissatisfaction, it has been found that 56% were dissatisfied because of being woken up too early, 21% said that they were not told enough about how they were progressing, 7% had difficulty in understanding what the doctors were saying, 7% were not given enough notice of discharge, 8% were either dissatisfied with how long they had to wait for attention, or for a hospital bed to become available, and only 1% because of the lack of privacy during examination. For outpatients, six aspects were examined: information about progress, length of time spent at the hospital, adequacy of space in waiting room, appearance of waiting room, length of wait before seeing the doctor and understanding doctor. It has been found for the outpatients that: 46% were satisfied with all aspects, and 24% were dissatisfied with one aspect only. Of the outpatients with one complaint only, it has been found that : 37% wanted more information about their progress, 17% complained that the waiting room was overcrowded, 15% found the waiting room drab and depressing, 14% had troubles in what the doctors were saying, 11% felt that they spent too long at the hospital and 6% thought that they had an unreasonable wait before seeing the doctor.

Hall et al. [195], in Aberdeen, found that: 49% of women said that they had not been given as much information as they would have liked on how the pregnancy was progressing and the results of any examinations or measurements comparing to 47% who said that they received such information; and

34% had not been given sufficient explanation of actions or decisions taken by the staff comparing to 56% who said that they received such an explanation. Women in this study rated their GP visits as more favourable than their hospital visits. They preferred the content of GP visits as well as the manner in which their GPs provided care. GPs were deemed both more sympathetic than, and as competent as, either obstetricians or midwives in the hospitals. GP consultation is usually quicker, easier, and the GP care is more convenient than hospital care because of the greater flexibility of appointment times, shorter waiting times at arrival and feeling it easier to take children with them. In order to improve the local antenatal care, women suggested that: doctors should spend more time with each woman; fathers should be more involved all the way through; relaxation classes should begin at earlier gestations and to be faster and to involve fathers more; and women should be encouraged to take care of themselves [195].

2.4.3. Some individual characteristics and satisfaction with health care

A trend towards greater satisfaction with health care was found by Gerst et al. [197], particularly among elderly males; while Hulka et al. [43] identified lower satisfaction among patients over the age of 60, particularly in blacks. Francis et al. [198] have reported no relationship between satisfaction with care and demographic variables including age.

Mechanic and Tessler [199] found that: married respondents expressed lower levels of satisfaction than respondents who were not currently married; housewives expressed greater satisfaction than respondents who were employed outside the house; and satisfaction was lower among those with greater skepticism towards medical care. Breslau and Mortimer [200] found that race, education and family income were not related to satisfaction of mothers of disabled children with the medical care their children received.

Severity of illness and disability have been found to accompany lower satisfaction with medical care [201, 202]. Linn and Linn [203] in studying 878 male patients attending ambulatory care clinics found that the best predictor for satisfaction in younger patients (less than 65 years of age) was the severity of the condition as rated by the physician. Those who were severely impaired were less satisfied with care. The next best predictor was distance from hospital, the longer the distance from hospital the more was the dissatisfaction with care provided. Number of clinic visits was correlated significantly with satisfaction, more visits associated with less satisfaction. These three variables in younger patients accounted for 70% of the predictable variance. For older persons (more than 65 years of age), Linn and Linn [203] found that the number of visits had the strongest correlation with satisfaction, followed by the expectation of the physician as to whether the patient would improve or not in the next two months and the severity of illness as judged by the physician. These three variables in older persons explained 77% of the predictable variance

in satisfaction.

2.4.4. Doctor and his patient: behaviour and continuity of care

Davis [205] and Parsons [205] emphasize that discussion of prognosis between doctor and patient reduces the patient's uncertainty and anxiety, while Balint [206] stresses that patients need a name for their illness and the points that a statement of diagnosis should precede therapy. Carter et al. [207] found that releases of tension on the part of the patients is positively related to subsequent compliance and satisfaction. They added that, if physician and patient can share a good joke, this may apparently promote satisfaction with the visit and supports subsequent behaviour of the patients towards the utilization of health care. Physician expression of tension shows strong negative relationship to satisfaction, and it is important for doctors to avoid such a behaviour as their patients may conclude that their doctors are not professional in their behaviour or having difficulties in coping with the patient's condition [207]. Releasing of tension on the behalf of the pregnant mother constitutes a good part of her reassurance about the progress of her pregnancy and may have an impact on her utilization behaviour.

Hulka et al. [43] in the USA studied the respondents attitudes towards three distinct components of medical care: the professional and technical competence of the physician; personal qualities of physician in his relationship with the

patient and accessibility to care including costs and convenience. It has been found in this study that respondents tend to be more satisfied than dissatisfied with physician and medical care, but the occurance of dissatisfaction was most frequent in areas of cost and convenience. The duration of attendance with a regular doctor was associated with satisfaction - when the time interval was less than one year, the percentage of highly satisfied respondents is low, whereas after 5 years, the percentage of highly satisfied respondents increases. Speciality of the regular source of care and the form of practice, solo versus group, were not associated with the level of satisfaction. It has been concluded that although medical services are being sought and obtained by a large segment of the society, problems of costs and acceptability for the elderly, low social class persons, members of large families and for blacks still remain [43].

Prior information of the client about the required treatment could have its effect on the consumer's satisfaction. Ben-Sira [184] pointed to the fact that there is a tendency among individuals for self diagnosis and attempts of self-treatment, and then to present to the GP. According to this concept, the GP is one among several advisory agencies utilized by a layman requiring health services. The layman may pass through several stages prior to turning to the GP: 1) self-diagnosis and self-treatment; 2) consultation with the family; and 3) some contact with the broader lay community. When the patient turns to the GP, the GP advice will be regarded as satisfactory to the extent that it fits the

patient's own experience or is approved by his lay reference group.

Ben-Sira [184] studied client satisfaction in the professional's affective behaviour in 1892 adult Israeli Jewish Population. Variables in this study were divided into 3 categories:

1) items of satisfaction (GP skills in coping with the patient's condition, the feeling of reassurance by the patient as a consequence of intervention and whether the GP gave the required treatment or not);

2) GP's affective behaviour: was defined as the type of behaviour directed by the physician towards the patient as a person rather than a "case". Such behaviour requires the GP to allocate sufficient time with the patient, to show interest in the patient personal problem and to demonstrate sufficient devotion to the management of the problem presented; and

3) administrative procedures such as waiting until seeing the doctor, procedures used and assistance of the clinic's staff in the process of delivery of the service.

The results of this study [184] showed a very strong correlation between the three items of satisfaction and the GP's affective behaviour, and these correlations were stronger than the correlations between satisfaction and administrative procedures. Devotion was most strongly correlated with the satisfaction items except for giving the required treatment, which had the strongest correlation with showing interest in the patient's personal problem.

in the USA, it has been found that a high proportion of mothers were satisfied or highly satisfied with their antenatal care [178]. The relationship between quality of communication and overall levels of satisfaction with prenatal care shows that the association is strongest for time spent with the doctor discussing problems and sympathy on the part of the examiner. The less time spent discussing problems and the sympathy shown by the provider, the lower is the level of satisfaction.

Preslau and Mortimer [200] pointed that continuity of care promotes a stable doctor-patient relationship. The doctor is said to develop an interest in the patient's overall health status and thus to draw on a thorough knowledge of the situation of the patient and his/her family. The patient develops confidence that the physician is thoroughly familiar with the relevant facts of his or her case and thus medical recommendations are based on valid grounds. This relationship is reciprocal; the physician's interest promotes disclosure on the part of the patient, which enhance the physician's efficacy, in turn increasing the patient's confidence in the physician's competence and concern.

In Glasgow, Reid and McIlwaine [196] found that only 8% of mothers preferred to see different doctors. The reason for preferring to see different doctors was revealed to be that one could receive a variety of opinions with different advice and information. The authors concluded that the organization of the local health services (busy clinics with

teams of doctors and midwives) seemed not to be conductive in forming a good obstetrician-patient relationship. It is very often only the obstetrician who can interpret the baby's progress and well-being. If at least more of this understanding could be shared by the mother (especially for mothers with previous complications who need more reassurance that their pregnancy is progressing well) progress would be made.

Persons with a usual source of care have better continuity of care [208] and are more apt to be satisfied with the care they received than others who do not visit a usual source of care [110]. Breslau and Mortimer [200] reported on satisfaction of mothers of disabled children with the medical care their children received in four speciality clinics. The general satisfaction of mothers was found to be influenced by specific structural aspects of the care, namely the extent to which the visits were to the same doctor (those who were visiting the same doctor were more satisfied) and waiting time upon arrival to the clinic.

Continuity of care may be one of the explanations of the success of the private sector in many countries and the preference of a large proportion of the population to attend at this sector. However, the content of care provided in this sector, its accessibility and availability and the behaviour of the staff towards their patients may have another impact on its success.

2.4.5 Conclusions

In this section an attempt has been made to identify the determinants of satisfaction with health care. The determinants are:

1) individual characteristics; and
2) health care system characteristics, continuity of care and the doctor-patient communication.

Two conceptualizations of satisfaction are discussed. The first treats satisfaction as an outcome measure, while the other treats it as an input variable to the use of health services. However, some researchers realized the feedback mechanisms and the reciprocal relationships between satisfaction and utilization of health care.

Almost all studies in this field are not comprehensive and try to concentrate on some aspects of the health care provided or certain determinants of satisfaction. The findings of these studies to some extent are inconsistent in direction and strength. The cause of this inconsistency may be because of the different methodologies applied, the different health care systems with different contents provided to populations with different needs and the varying statistical techniques used in the analysis.

Because of the importance of satisfaction on the utilization of health services in many developing countries especially in preventive measures, attempts should be made to identify the determinants of satisfaction in terms of the individual and health care system characteristics. According to the

findings of such studies, changes and improvements could be adopted in order to improve the health care system and to achieve "health for all by the year 2000".

CHAPTER 3. RESEARCH QUESTIONS, HYPOTHESES AND OBJECTIVES OF THE STUDY

SUMMARY: The utilization of MCH services in Jordan is quite low compared to other achievements in the health sector and other related sectors over the last few years. Very little is known about the utilization of MCH services and nothing about the content of health care provided. Similarly, there is a lack of information about the general satisfaction of mothers with certain aspects of the MOH. MCH centres and the health care provided through these centres. There is an urgent need to explore the determinants of both utilization and satisfaction with the MCH care system in order (a) to provide useful information for the planning and organization of the MCH care system in the future; (b) to establish cooperation between the different health care providers and between the health sector and other related sectors; and (c) to suggest intervention strategies in order to improve the utilization behaviour and the general health of mothers and their children.

Contents

3.1. Research questions

The utilization of MCH services in Jordan is low and has improved very little over the last few years compared to the achievements in the health sector and other related sectors. The activities provided by the MCH centres are inefficient and the policy of the Ministry of Health is still concerned with providing health services and highly sophisticated medicine regardless of the needs of the population. Very little is known about the utilization of antenatal care and nothing about the content of care provided and the satisfaction of women with the different aspects of the MCH centres and the health care provided. Many weaknesses of the MCH care system need clarification which could have a major impact on future planning and organization of these services. The research questions which need answering are:

1) What is the distribution of risk factors (maternal and health care system characteristics) amongst urban and rural mothers in Jordan and what are the determinants of both the use of antenatal care and the general satisfaction of women with the MCH care system?

2) Is there any difference between the content and quality of health care provided through the private sector and that of the government sector and to what extent? What are the gaps between what has been done for pregnant women (procedures and activities provided) and what should be done for them as recommended by the Ministry of Health?

3) Are pregnant women satisfied with the different aspects of the MCH centres and the health care provided? To what

extent are they satisfied and what is the impact of area of residence on their expressed level of satisfaction?

3.2 Hypotheses

The hypotheses of the study to be tested are:

1) There is no difference between urban and rural mothers regarding certain risk factors, and the associations between these risk factors and area of residence are not significant at the 5 percent level.

2) The likelihood of using antenatal care is similar for both women at high and at low risk, and the associations between risk factors and utilization of antenatal care are not significantly different from unity.

3) The likelihood of satisfaction with the MCH care system is similar for both women at high risk and at low risk, and the associations between risk factors and satisfaction are not significantly different from unity.

4) There is no difference between the private and the government health services regarding the content and quality of health care provided to pregnant mothers, and the associations between the source of health care and both the content and quality of care provided are not significant at the 5 percent level.

5) There is no difference between urban and rural mothers regarding their satisfaction with the different aspects of the MCH centres and the health care provided to them through these centres, and the associations between satisfaction and area of residence are not significant at the 5 percent level.

3.3. Specific objectives

The main objectives of the study are:

1) To provide a descriptive account of the regional distribution of the risk factors in the study.

2) To provide a descriptive account of the contents of the antenatal visits and to identify the distribution of these contents by the source of care (private sector, government and other sectors). The contents of the antenatal visits are : asking about the family history of the pregnant woman, past medical history, menstrual history, pregnancy history; general physical examination ; measuring weight and blood pressure; haemoglubin blood test; and providing the woman with information on the right diet during pregnancy and self-care.

3) To evaluate the MCH centres in terms of the major activities which should be provided to mothers during pregnancy. These activities include home visits, health education and antenatal classes. Mothers' opinions and satisfaction with the different aspects of the MCH centres and the health care provided are to be explored. These aspects include: travelling time to the centre, waiting time to see the doctor, time spent with doctor, the courtesy and consideration of the medical staff in the centre, the overall quality of health care provided and the general opinions whether these centres are working good or in need for changes. Women's opinions regarding the main reasons for not attending for antenatal care are to be investigated to

provide a better understanding of the utilization behaviour.

4) To measure the degree and significance of the relationships between each of the risk factors and antenatal care utilization. Risk factors are: area of residence (staying in rural areas), age of the mother (thirty years or more), parity (four or more pregnancies), level of education (illiterate), husband's occupation (unemployed or working in agriculture), family income (less than 100 JD), health education (not receiving information encouraging the woman to attend at the antenatal clinic if she becomes pregnant), general concern about health during pregnancy (not concerned about her health), perceived health status, number of disability days, satisfaction with the MCH care system (dissatisfied), and distance from the antenatal clinic (staying four kilometres or more from the clinic).

5) To measure the degree and significance of the relationships between each of the risk factors and the mother's general satisfaction with the MCH care system in the country. Risk factors are the same as in objective 4 in addition to : location of the nearest MCH centre (four kilometres or more from the mother's home); travelling cost (one JD or more), walking time to the centre (one hour or more) and waiting time in the centre to see the doctor (three hours or more).

6) To quantify risk at both the individual and community levels in order to identify groups at high risk. Population Attributable Risk (%) is to be used to quantify risk at the community level. A simple scoring

system is to be designed to identify mothers at high risk so that appropriate action can be taken at the right time and right place. An intervention strategy based on this scoring system is to be formulated.

3.4 Value of the study

The practical values of the study can be summarized as follows:

1. The data can be used by health care planners and managers for better planning of the MCH services in the future by taking into account the actual needs of the population, resources available, quantity and quality of health services and the background of the people who are eligible for these services.
2. To identify the points of weakness in the use of the MCH services and to specify the gaps between what has been done to pregnant mothers and what should be done. This could be of great value for health care planners to look for new strategies which could help to improve the use of these services and to consider special training programmes for the staff who are responsible for operating these services.
3. It would be the first study of its kind to put forward a comprehensive and a realistic picture of the patterns of use of MCH services in Jordan, by taking into account the different needs of urban and rural mothers and many risk factors which have been considered to be unimportant in planning the MCH services in the

country.

4. This study could be of some value in making the public, and especially the funding controlling administrators and politicians to realize the extent of the problem to ensure financial support for antenatal programmes as required. It could also encourage the health care administrators to provide local measures to promote health and good nutrition of the pregnant mothers, screening for high risk mothers at different stages of pregnancy, and to provide health education for the parents regarding pregnancy, delivery, postnatal care and care of children.

CHAPTER 4. MATERIAL AND METHODS

SUMMARY: This research is a cross-sectional study of a sample of mothers in the childbearing age, who gave birth to full-term live babies in Amman Governorate in 1986. The study has the main aim of exploring both the determinants of utilization of antenatal care and the general satisfaction of women with the MCH care system in the country. An interview form was designed and used by the investigator and four assistants as an instrument for the study. The study was in two stages and extended over a period of four months. It is worth noting that the response rate in the study was high. Possible reasons for this high response rate are discussed. Almost all the costs of collecting the data were paid for by the investigator and this was one of the main reasons for limiting the study to Amman Governorate.

Contents

4.1. Research strategy

A cross-sectional study of a sample of mothers in the childbearing age, who gave birth to full-term live babies in Amman Governorate, Jordan, from mid April to mid June, 1986, was interviewed, either in the hospital (for hospital deliveries) or at home (for home deliveries). The aims of the study were to explore the distribution of risk factors amongst urban and rural mothers, and to find out the relationships between these risk factors and both the utilization of antenatal care during the last pregnancy and the general satisfaction with the MCH care system in the country. An attempt was also made to identify the content of health care which was provided, to discover the main reasons for non-attendance and to assess the women's satisfaction concerning certain aspects of the MCH centres and the care provided for them.

4.2. Sample size and sampling procedure

Sample size [209]: The number of subjects to be selected should be sufficiently large to avoid two sources of error: 1) claiming that exposure is associated with the bad outcome, when in fact it is not; and 2) claiming that exposure is not associated with the bad outcome, when in fact it is. The probability of making the first error is called the level of significance and is commonly denoted by "alpha error". The probability of making the second error is represented by "B error"; the quantity (1 - B error) is called the power of the study. Assuming that the relative risk of the target popula-

tion differs from unity, the power is the probability of finding that the sample estimate of the relative risk differs significantly from unity.

Basically, an answer to the question of how many subjects should be selected for a case control study depends on the specification of four values: (1) the relative frequency of exposure among controls in the target population, Po; (2) a hypothized relative risk associated with exposure that would have sufficient biologic or public health importance to warrant its detection, R; (3) the desired level of significance; and (4) the desired study power. The sample size required for a case control study with an equal number of cases and controls is calculated as follows:

$$n = 2\,\bar{p}\,\bar{q}\,(Z_a + Z_B)^2 / (P_1 - P_0)^2 \quad \ldots\ldots 1$$

$$\text{where } P_1 = P_0 R / [1 + P_0 (R - 1)] \quad \ldots\ldots 2$$

$$\text{and } \bar{P} = (P_1 + P_0)/2 \quad \ldots\ldots 3$$

$$\bar{q} = 1 - \bar{P} \quad \ldots\ldots 4$$

In Jordan :

P_0 = 20% (the proportion of users at high risk)

R = 2 (the relative risk to be identified)

P_1 = 0.33 (from equation 2)

$\bar{P}$ = 0.27 (from equation 3)

$\bar{q}$ = 0.73 (from equation 4)

If alpha error = 5% and power of the study = 80%

then Z_a = 1.96, Z_B = 0.84 (from standard normal distribution tables)

from equation 1, n = 183 (number of women in each group).

Nevertheless, the sample size in this study was 700 women.

Sampling procedure : It is clear that the best way to achieve the research objectives would be by a household survey of the whole country which is beyond the resources available for this study. Therefore the study was limited to Amman Governorate (urban and rural), where more than 40% of the country's population live [8].

Deliveries take place either in hospitals or at home. In Jordan, 42% of all deliveries take place in public hospitals, 17% in private hospitals and 41% are home deliveries [13].

Ninety five percent of home deliveries were attended either by midwives or by traditional birth assistants (TBAs). The total number of registered midwives in the country is 291; 70% of them work in the public sector and 30% in the private sector. The total number of registered TBAs is about 350. Most of them work in villages [13].

Sixty seven percent of all deliveries take place in urban areas and 33% in rural areas. Forty two percent of all urban deliveries take place in public hospitals, 23% in private hospitals and 35% at home. For rural mothers, 40% of deliveries take place in public hospitals, 7% in private hospitals and 53% at home [13].

The sampling procedure was devised taking into account the above documented facts and after thorough discussions with the people concerned in the Department of MCH, the Department of Statistics, the Ministry of Planning, the Ministry of Health and the Department of Obstetrics and Gynaecology in Al-bashir

Hospital. It was decided to organize the sampling procedure of this study by establishing the place of delivery as the basis for its design. This decision was made because 1) it was easy to catch a large percentage of the sample (60%) after admission to the hospital for delivery where the response rate could be high as the medical staff in the hospital could be helpful; 2) it was easier to interview these mothers in hospital rather than to knock at their doors at home; 3) the recall bias regarding the facts of their last pregnancy could be lower than if one were to interview them months or years after their last delivery; and 4) finally and unfortunately, the resources available for this study were very little and almost all costs were paid by the investigator.

According to a sample size of 700 mothers, it was decided to divide the sample into urban and rural. Four hundred and seventy five women (67.9%) were urban and 225 (32.1%) were rural. For urban mothers, 100 (21%) delivered their children in private hospitals, 205 (43%) in public hospitals and 170 (36%) gave birth at home. For rural mothers, 15 (6.7%) delivered their children in private hospitals, 90 (40%) in public hospitals and 120 (53.3%) at home.

In Amman, there are two main public hospitals and 16 private hospitals. The public hospitals are Al-bashir and the University Hospital. Al-bashir Hospital is the main public hospital in the country and covers more than 70% of all Amman deliveries. The University Hospital is mainly confined for workers and students of the University of Jordan. Three out of the 16 private hospitals in Amman specialize in obstetrics

and gynaecology. These hospitals are Jabal Amman, Akla and Al-amal Hospital.

For hospital deliveries (in the two public and three private hospitals), it was decided to interview every fourth mother of a full-term delivery sometime between the delivery and before her discharge from the hospital. These interviews were done by the main investigator and four doctors from Al-bashir Hospital who volunteered to work in the study. This stage lasted for two months (from mid April to mid June, 1986) with an average of 8 to 10 interviews per day.

For home deliveries (41.4% of all deliveries), it was found that the only way to identify them was by means of the people who assist these deliveries. Ninety five percent of these deliveries were attended either by a midwife or a traditional birth assistant [13]. It was possible to identify this sector of delivery attendants by the help of the Ministry of Health in the country.

Midwives work in the health centres, and they inform these health centres about any home delivery they attend. TBAs in Amman were asked by the health centres to inform the nearest health centre about any delivery they attend over a period of two months (15 April to 15 June, 1986). By the end of these two months, 1099 home deliveries were identified which had been attended by midwives and TBAs. Of these deliveries 745 (67.8%) were urban and 354 (32.2%) were rural. According to the sampling design, a random sample from each group was selected in which 170 were urban and 120 were rural, making a

total of 290 mothers.

4.3 The study instrument

An interview form was used by the interviewers as an instrument for the study. The mothers were interviewed either in hospital or at home after their deliveries as it was not possible to depend on the hospital records and upon self-administered questionnaires in a community in which many mothers are illiterate, and where the hospital records are either incomplete or do not have the data needed.

The interview form included four categories of questions. These categories were :

1. Characteristics of the mother and of the health care system;
2. Utilization variables and the content of health care provided;
3. Reasons for not attending the antenatal clinic and the MCH centres; and
4. Satisfaction variables.

The interview form, originally in English, was translated to Arabic by the investigator and the staff of the Community Medicine Department in the University of Jordan. This translation was passed to the medical staff in Al-bashir Hospital in Amman. A few corrections and modifications were made to adapt it to the local culture of the pregnant women.

The wording of the form was simple and unambiguous, the ques-

tions were clear and specific, and most of these questions were closed ended. The majority of the questions related to some known characteristics, and respondents were expected to know the answers. In some occasions, as in case of the date of birth, mothers were asked about their birth certificates. This last task was easier for home interviews.

A few instructions were stated at the beginning of the form to serve as a guide, mainly for those in the team who had little experience in field studies. Boxes for coding the data were printed on the form to facilitate the direct transfer of the codes from the interview form to IBM punching instructions cards.

4.4. Other preparations for the study

The study team : The study team included the main investigator and four doctors from Al-bashir Hospital who volunteered to work with the investigator. The aims and objectives of the study were discussed with the team. Training was provided for them for one week covering areas such as how to introduce themselves to the selected mothers, followed by explanations of the interview form questions, definitions of the study variables and the different concepts of the study. The members of the study team were asked to apply the interview form questions on some of their relatives and friends, and they discussed together the difficulties they faced during the interviews. More training was provided for the team by enabling them to work together in one group during the pilot study and for one week at the beginning of the main study.

Preparatory visits to the field: Some visits were made in the early stages of the study (first two weeks of April, 1986) to some of the responsible people in the target hospitals and health centres. The main aims of these visits were to make the team and these people familiar with each other, and to explain the purpose and importance of the study. Some meetings were arranged with the headmen of the villages with the help of the staff working in the health centres. These headmen were of some value in facilitating the home interviews by finding some of the addresses of the respondents and by preparing the families in the villages for these interviews.

Pilot study: The form was pretested on 40 mothers who were not members of the study population. These mothers were: (10 deliveries from Al-Bashir Hospital, 10 from Jabal Amman Hospital, and 20 deliveries from two maternal and child health centres - one urban, the other rural. The interviewers recorded the comments of the mothers and the time needed to accomplish the interview, and made their own notes. On the basis of that pilot study, some defects were identified which pointed to the need for certain changes in the interview form. These defects included the wording and some of the categories of the closed ended questions. Some questions were modified or discarded. The questions which were discarded were those relating to the cost of bus transportation and to curative measures during pregnancy.

4.5. Conducting the study

Collection of the data from the field had started by the middle of April, 1986, after the sample size was estimated; the sampling procedure was designed; the team carefully trained; and the form translated, revised and printed.

The study was carried out in two stages :

(1) Hospital deliveries: the selected mothers were interviewed by the study team in the hospitals. The hospitals were Al-bashir Hospital, University Hospital, Jabal Amman Hospital, Akla Hospital, and Al-amal Hospital. Every fourth mother of a full-term live baby, was interviewed in the hospital sometime between delivery and before her discharge from the hospital. This stage continued for two months (mid April to mid June, 1986) with an average of 8 to 10 interviews per day. By the end of this stage, 390 mothers were interviewed out of 410. The response rate for this stage was 95%. The non-response was mainly due to the refusal of some of the mothers to be interviewed.

(2) Home deliveries: The selected home deliveries were interviewed by the study team at home. This stage continued from the middle of June to the end of the first week of August, 1986, with an average of 7 to 8 interviews per day. The response rate for this stage was 92%. This high response rate could be because every effort was made by the study team to interview all the mothers and in cases where the house of the respondent was locked at the time of the interview, another two visits were made before the mother was excluded from the study. The non-response was either due to the refusal of the respondent to be inter-

viewed or due to finding the house of the respondent locked on each visit.

Each interview form was checked at the end of each interview to be sure that it was completed and properly filled in. Each form was checked again at the end of each working day in order to detect any errors.

The total response rate in this study was 93.9%. This high response rate could be because about 60% of mothers in the study were interviewed in hospital, and because the members of the team did their utmost to interview each selected mother.

4.6. Methods adopted for minimizing bias

1. The study was cross-sectional retrospective in nature, and there was a possibility of recall bias because of the time elapsed between the event under study and the time of the interview. However, the bias in this study was minimized by interviewing mothers within four months of delivery. It is worth noting that many variables in the study were known facts to most mothers and the probability of recall bias in this case was minimal.
2. The sampling procedure was very simple where every fourth hospital delivery was selected and interviewed in hospital sometime after delivery and before discharge from the hospital. For home deliveries, mothers were selected randomly and interviewed by the study team in

their own homes.

3. The team was trained in all aspects of data collection for a period of one week before they began to collect the data. The team worked in one group at the beginning of the study. Continuous supervision and advice and repeated training were provided to the team throughout the period of study. The interview form was carefully prepared, tested and modified.

4. In order to minimize bias related to collection and coding of the data this flow chart was used:
field work, data collection → checking each form by the interviewer, at the end of the interview, for completeness and defects → office work → checks concerning the accuracy and completeness of the interview forms → accurate forms → coding of the data by one person, and checking of the coding by a second and third person → transferal of the coded answers onto an IBM punching instructions card by one person and inspection of the transferal by a second and third person → accurate IBM punching instructions cards.

5. Some of the variables in the study are confounding in nature where the association is a secondary one, resulting from the fact that both variables (dependent and independent) are related to a third, confounding variable. Multiple logistic regression analysis was used to neutralize the effect of confounding variables, and to measure the degree of the associations between the dependent and independent variables, while controlling other variables in the logistic model.

4.7. Storage and analysis of the data

Data analysis was carried out by using the University of Glasgow Computer System. Two computer packages were used - the SPSSx [210] and the BMDP statistical software [211]. The SPSSx was used for frequencies and crosstabulations, and the BMDP was used for calculating the adjusted odds ratios of the different relationships in the study.

The analysis of the data was carried out in many stages:

1. Absolute and relative frequencies of the study variables in order to provide a descriptive account of the study population and both utilization of antenatal care and the satisfaction with the MCH care system.
2. The distribution of the study variables by area of residence (urban, rural). Chi-square test [212] was used to identify the level of significance of the different relationships.
3. Crosstabulation of the two dependent variables (the use of antenatal care and satisfaction with the MCH care system) with certain risk factors - chi-square test was used.
4. Multiple logistic regression analysis was used to measure the degree of the associations between the risk factors in this study and both the utilization of antenatal care and satisfaction with the MCH care system. The likelihood ratio test was used to identify the level of significance of each association.

Multiple logistic regression analysis is a popular approach to mathematical modelling in epidemiology. Whenever y (the out-

come variable) is a binary variable, nothing in the method of multiple regression prevents an estimate of y from being less than zero or more than one. Since the estimated value of y is not defined as a probability, values outside zero to one are not satisfactory as an estimate of a variable that equals zero if the condition is absent and one if it is present [214]. However, the logistic regression analysis overcomes this problem by providing an estimated value of y between zero and one.

The general formula of the logistic model is

$P(x) = 1/\ 1 + EXP\ [-\ (a + \sum B_i X_j)]$

where P(x) is the estimated probability of the event, " a" is a constant term, the B_i are the regression coefficients and X_j are the independent variables. A natural measure for this model is the adjusted odds ratio - that each of the B_i can be interpreted as the logarithm of an odds ratio relating the outcome to the variable X_j while controlling for other X variables [214].

The logistic function can be demonstrated by:

P = estimated probability of an event

$= 1/\ 1 + EXP\ [-\ (a + B_1X_1 \ldots B_pX_p)]$

1 - p = estimated probability of no event

$= EXP[-\ (a + B_1X_1 \ldots\ldots B_pX_p)/\ 1 + EXP\ [-(a + B_1X_1 \ldots\ldots B_pX_p)]$

estimated odds of the event = (P)/(1-P)

$= EXP\ (a + B_1X_1 \ldots\ldots B_pX_p)$

The relative odds of an event (odds ratio), which compares those for whom X_1 is present ($X_1 = 1$) with those for whom X_1

is absent ($X_1 = -1$), is :

odds ratio = $EXP(a+B_1X_1.....B_pX_p)/EXP(a-B_1X_1.....B_pX_p)$

= $EXP\ (a + B_1X_1....+ B_pX_p) - EXP\ (a - B_1X_1.....+B_pX_p)$

= $EXP\ (2B_1)$

The likelihood ratio test can be used to test the hypothesis that a specified set of variables X_1, $X_2.....X_p$ have regression coefficients (B) equal to zero. If B differs significantly from zero, then the adjusted odds ratio differs significantly from unity. This test may be used as a one degree of freedom chi-square test [209].

5. Population Attributable Risk (%) was used to quantify risk at the community level. It is the maximum proportion of the bad outcome in the population which is attributable to the risk factor under study. It brings together the odds ratio and the proportion of the population with the risk factor. The Population Attributable Risk (%) formual is: $b(R-1)/1+b(R-1)$

where b is the proportion of the population with the risk factor and R is the relative risk, or odds ratio, associated with the risk factor [30]. Population Attributable Risk (%) is a measure that proves useful when considering intervention strategies. It indicates the proportion of the total problem which can be solved, if a causative risk factor can be eliminated ; or kept under observation, if the factor can be used only to indicate risk ; or compensated for, by providing specific measures and interventions.

6. Scoring: This technique helps to quantify the risk for individuals. It is possible, by using a computer and sophisticated programmes, to develop a

refined scoring system, based on one of the several types of multivariate analysis, such as the logistic regression and stepwise discriminant analysis. These techniques have the advantage of looking at all variables simultaneously, and thus can examine and compensate for interdependence between factors [215]. Their disadvantage (apart from the need for computers and statisticians) is the fact that, to be useful in practice, the resulting scoring system has to be simple.

In this study, mothers were classified according to four risk factors: area of residence; occupation of the husband; level of education of the woman and the distance between home of the woman and the antenatal clinic. These risk factors were selected according to their importance in terms of the adjusted odds ratio, the population attributable risk (%), prevalence in the community and the easiness of their identification especially in rural and urban socially deprived areas.

All women (urban and rural) were classified according to these risk factors and arranged into 16 groups at different levels of risk. Different cut-off points were applied to these groups in order to identify the proportion of mothers to be screened, sensitivity, specificity and the effectiveness of the screening test in terms of the predictive power of a positive and of a negative test. Separate classifications were designed for urban and rural women. The BMDP computer package system [211] was used to classify the women into dif-

ferent groups.

4.8. Definitions of the study variables

The study variables were the outcome variables and the independent variables. The outcome variables were the utilization of antenatal care and the satisfaction of women with the MCH care system in Jordan. The independent variables were the characteristics of the women and the health care system. The study variables were classified into four categories:

1) maternal characteristics;
2) health care system characteristics;
3) utilization variables; and
4) satisfaction variables.

1) Maternal characteristics

Respondent: The selected woman, who delivered a full-term, live baby, in Amman Governorate within a two month period (mid April to mid June, 1986).

Child: The full-term live baby of the respondent who was born in Amman Governorate (mid April to mid June, 1986).

Last pregnancy: The pregnancy of the respondent that resulted in the birth of this child.

Age of the respondent: Age of the mother in years and months at the date of commencing the collection of the data from the field.

Education of the respondent: The total number of schooling years the mother completed.

Occupation of the husband: The current occupation of the hus-

band of the respondent at the time of the interview. This has been classified into: working in the private sector, or in government, or in agriculture, or being unemployed.

Duration of marriage: Duration of the respondent's present marriage in years and months.

Information regarding the use of antenatal care: Whether the respondent ever received any health information encouraging her to go to the antenatal clinic in the event of pregnancy.

Sources of information regarding the use of antenatal care: The main source from which the mother obtained this information.

Family income: The average total monthly income, in Jordanian Dinar,for all members of the family.

Number of pregnancies: The total number of pregnancies, regardless of the outcome/outcomes.

General concern about health: Based on a 'yes' 'no'response to the question, "During your last pregnancy, would you say that you were generally concerned about your health?".

Disability days: The total number of occasions, during her last antenatal period, in which the respondent spent more than half a day in bed or in hospital.

Perceived health status: Based on the response to the question, "Would you say that your health in general during your last pregnancy was above average, average or below average?".

2) Health care system characteristics

Distance from the antenatal clinic: The average distance between the home of the respondent and the antenatal clinic that she used (for users), or that she might use in the future (for

non users). This was categorized as follows: less than 1 Km, one to two Kms, two to three Kms, three to four Kms, and four Kms or more.

Transportation to the MOH.MCH centre: The usual kind of transportation which the mother uses to reach the nearest MOH.MCH centre.

Location of the MOH.MCH centre: The distance between the home of the respondent and the nearest MOH.MCH centre. This was categorized as follows: within two Kms, from two to four Kms, and four Kms or more.

Travel cost: The average cost of travelling to the nearest MOH.MCH centre as estimated by the respondent in Jordanian pence (one way cost).

Walking time: The average time (in minutes) needed to get to the nearest MOH.MCH centre, as estimated by the respondent.

Waiting time: The average length of time (in minutes) the respondent has to spend in the MCH centre to see the doctor, once she gets to the centre.

3) Utilization variables

Antenatal care utilization: Whether the respondent attended at the antenatal clinic for a general checkup on her progress during the pregnancy being studied. The checkup could have been carried out by a doctor, a nurse, a midwife or any other health personnel on the doctor's staff. Respondents were classified either as 'users', who utilized the antenatal clinic or as 'non-users', who did not.

Source of antenatal care: The provider of health care to the woman during her last visit to the doctor for a general checkup on her pregnancy.

Contents of the antenatal visit: The women were asked about certain procedures and tests which they had undergone, and the information supplied to them during their last visit to the doctor for general checkups on their pregnancies. These procedures and tests included: being asked by the doctor about their family history, menstrual history, past medical history and pregnancy history; general physical examination; measuring of weight and blood pressure; haemoglubin blood test; and providing the respondent with information on the right diet during pregnancy and how to take care of herself during pregnancy.

Reasons for not attending the antenatal clinic: Based on the response to the question, "What was the main reason for not visiting the doctor for a general checkup during your last antenatal period?". A list of possible reasons is included at the end of the interview form.

Utilization of MOH.MCH centres in the two year period: Whether the respondent attended the MOH.MCH centre for a general checkup on her pregnancy during the two years which ended with the completion of her last pregnancy. This included visiting the doctor or any visit to a nurse, a midwife, or any other health personnel on the doctor's staff, who were working in the MCH centre.

Reasons for not attending the MOH.MCH centres: Based on the response to the question, "What was the main reason for not going to the MCH centres during the last two years?". A list of possible reasons is included at the end of the interview form.

Home visits: Visit/visits to the respondent's home made by a midwife or other health workers from the MOH.MCH centres

during her last antenatal period.

4) Satisfaction variables

General satisfaction with the MCH care system in Jordan: The mother's opinion regarding her satisfaction with the MCH care system in Jordan. This variable has been used as one of the determinants of antenatal care utilization. Women were classified as either satisfied or dissatisfied.

Satisfaction with certain aspects of the MOH.MCH centres and the health care provided: Mothers who attended the MCH centres in the two year period were asked about their satisfaction with the travelling time to the centre; the waiting time in the centre; the time spent with the doctor; the cost of consultation; the overall quality of care provided and the courtesy and consideration of the medical staff in the centre. Satisfaction was classified as follows: completely satisfied, somewhat satisfied and not satisfied at all. Women were asked about their overall view regarding certain statements for further evaluation of the MCH centres. They were asked to tick one statement only. The statements were:

1) The MCH centres work very well and there is no need for any changes.
2) There are some good things in the MCH centres, but minor changes are needed.
3) MCH centres have a great deal wrong with them, and basic changes are needed to make them work better.

SUMMARY: Utilization of antenatal care in Jordan was much lower than expected where only 59% of mothers interviewed were attending at the antenatal clinic. The husband's occupation followed by the perceived health status of the mother and the general concern about health were the most important in predicting utilization behaviour. The adjusted odds ratios (AOR) for these three variables were 10, 4.6 and 4.5 respectively, and the population attributable risk percent (PAR) was 78% for the husband's occupation and 62% for the general concern about health. Other characteristics were also important in predicting utilization behaviour such as the level of education of the woman (AOR = 3.2, PAR = 39%), area of residence (AOR = 2.6, PAR = 34%), satisfaction with the MCH Care System (AOR = 2.4, PAR = 40%), receiving health information (AOR = 2.7, PAR = 44%) and distance of the household's home from the antenatal clinic (AOR = 2.2, PAR = 26%). Maternal characteristics were of limited importance in predicting satisfaction with the MCH Care System with the exception of the husband's occupation (AOR = 1.8, PAR = 24%) and area of residence (AOR = 1.6, PAR = 16%) as compared to the distance from the MOH.MCH centre (AOR = 4.2, PAR = 49%) and waiting time in the centre (AOR = 2.1, PAR = 28%). In particular, the study showed that only 19% of women were attending at the MOH.MCH centres during their last pregnancy, 13% of all women received antenatal home visits and 17% were provided with some kind of health education through these centres. Thirty percent of

all women who attended at the MOH.MCH centres were dissatisfied with the communication with the medical staff and 40% were dissatisfied with the quality of care provided. A simple arbitary scoring system was designed by including four risk indicators. These indicators were selected according to their importance and the easiness of their identification. Different cut-off points were applied to identify the sensitivity, specificity and effectiveness of the screening test.

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for not attending at the antenatal clinic.

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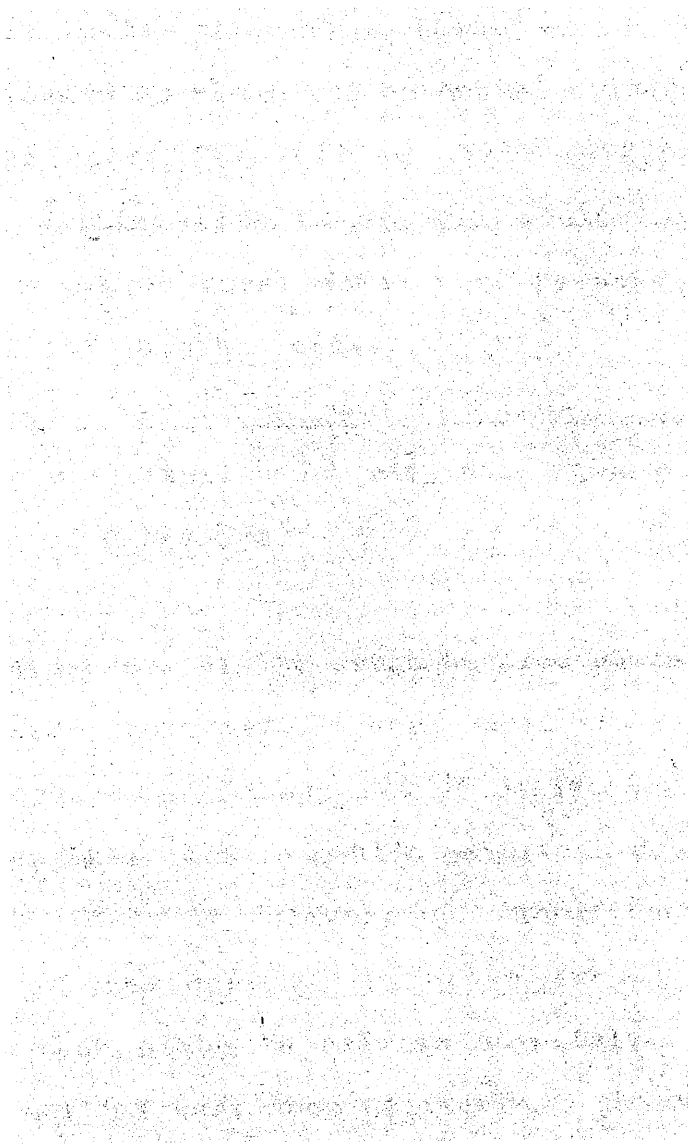


5.1. The distribution of maternal characteristics and health care system determinants by area of residence

SUMMARY: The relationships between area of residence of the family and risk factors were explored by applying chi-square statistical tests. The results indicated that rural areas were associated with higher levels of illiteracy, husbands were unemployed or working in agriculture and families were poorer than urban families. Rural mothers were less concerned about their health and less satisfied with the MCH care system in the country. These women have to travel longer distances to reach the antenatal clinic and they have to pay more costs (travelling cost, walking time to the centre and waiting time to see the doctor). It is worth noting that 56% of rural women have to walk to the centre compared to 14% in urban areas.

5.1.1. The distribution of maternal characteristics by area of residence.

Area of residence: Of the seven hundred women in the study, about 68% were urban and 32% were rural (Table 6).

Place of delivery: About 17% of deliveries took place in private hospitals, 42% in public hospitals and 41% were home deliveries. Place of delivery was significantly associated with area of residence. In urban areas, about 22% of deliveries took place in private hospitals, 44% in public hospitals and 34% were home deliveries. In rural areas, 7% of the deliveries were in private hospitals, 39% in public hospitals and 54% were at home (Table 7).

Age of the respondent: Twenty six percent of women were less than twenty years, 54% were in the age group twenty to thirty and about 20% aged thirty years or more (Table 8). Age of the mother was not significantly associated with area or residence (P> 0.10).

Duration of marriage: About two thirds of the women were married recently (less than five years), 28% have a duration of marriage of five to ten years and only 6% having a duration of marriage of ten years or more (Table 9).

Level of education: About 30% of women were illiterate, 25% completed 6 years of education and 45% completed more than 6 years (Table 10). It is worth noting that only 7% of all women completed more than 12 years of education. This variable was not significantly associated with area of residence (P> 0.10) (Table 11).

Total number of pregnancies: The mean number of pregnancies was 3.8 and the range was one to twelve pregnancies. Thirteen percent of women were primiparae, 40% having two or three pregnancies, about 37% having four to six pregnancies and 10% having seven or more (Table 12). The total number of pregnancies was not significantly associated with area of residence (P>0.10) (Table 13).

Occupation of husband: About 35% of husbands were employed in the government sector, 30% working in agriculture, 27% were employed in the private sector and about 8% were unemployed. The occupation of the husband showed regional variations. These regional differences were statistically significant (P<0.005) (Table 14).

Monthly income of the household: Thirty seven percent of the families had an income of less than 100 JD, 35% had an

income between 100 and 200 and 28% had 200 JD or more. This variable showed regional variations. In urban areas, 25% had less than 100 JD, 41% had between 100 and 200 JD and about 34% had an income of more than 200 JD. These percentages were 63%, 22% and 15% respectively in rural areas. These regional differences were statistically significant ($P<0.0001$) (Table 15).

Receiving information: Only fifty three percent of women received information encouraging them to attend at the antenatal clinic if they become pregnant. This variable was not significantly associated with area of residence ($P>0.10$) (Table 16).

The general concern of the woman about her health: More than one half of the mothers stated that they were concerned about their health during pregnancy. This variable showed some regional variations. Fifty six percent were concerned about their health in urban areas compared to 48% in rural areas. These regional variations were just significant at the 10 percent level (Table 17).

General health status: About 40% of the respondents stated that their perceived health status during pregnancy was above average, 26% having average health and 34% said that their health was below average. This variable showed regional variations. About 35% of urban mothers said that their health during pregnancy was above average, 28% said that their health was average and 37% claimed below average health. These percentages were 52%, 22% and 26% respectively for rural mothers. These regional differences were statistically significant ($P<0.0005$) (Table 18).

Disability days during pregnancy: About 24% of women said that they did not stay in bed because of illness or were hospitalized during their last pregnancy, 23% had one to ten days of disability, 18% had ten to twenty days and about 35% had twenty days or more (Table 19). This variable showed very little regional variation which was not statistically significant (P>0.10) (Table 20).

Satisfaction with the MCH care system: Only one half of women were satisfied with the MCH care system in the country. This variable showed regional variations which were statistically significant (P<0.0005). Fifty five percent of mothers in urban areas were satisfied with the system compared to 39% in rural areas (Table 21).

5.1.2. The distribution of the MCH care system characteristics by area of residence of the woman.

Distance between home of the respondent and the antenatal clinic: About 50% of mothers were staying within two kilometres from the clinic, 21% within two to four and 29% staying four kilometres or more from the clinic (Table 22). This variable showed regional variations. In urban areas, 52% of mothers were staying within two kilometres from the antenatal clinic, 22% within two to four kilometres and 26% were staying four kilometres or more from the clinic. These percentages were 46%, 18% and 36% respectively for rural mothers. These regional differences were statistically significant (P<0.05) (Table 23).

Location of the nearest MOH.MCH centre: About 45% of women were staying near to the MCH centre, 25% were staying within

an average distance and 30% were staying far from the centre. This variable did not show significant regional differences (P>0.10) (Table 24).

Travelling costs to the MOH.MCH centre: Fifty five percent of women had to pay less than half a JD to reach the centre, 22% had to pay up to 1 JD and about 23% had to pay 1 JD or more. This variable showed regional variations. In urban areas, 60% of women had to pay less than half JD, 23% had to pay up to 1 JD and 17% had to pay 1 JD or more. These percentages were 45%, 21% and 34% respectively for rural mothers. The regional differences were statistically significant (P<0.0001) (Table 25).

Walking time to the MCH centre: About 56% of women had to walk less than half an hour to reach the centre, 17% had to walk up to one hour, 22% had to walk between one and two hours and only 5% had to walk two hours or more to reach the centre (Table 26). This variable showed regional variations. In urban areas, about 59% had to walk less than half an hour, 17% had to walk up to one hour and 24% had to walk one hour or more to reach the centre. These percentages were 49%, 18% and about 33% respectively for rural mothers. The regional differences were statistically significant (P<0.05) (Table 27).

Waiting time in the MCH centre: About 26% of women had to wait up to one hour to see the doctor, 20% had to wait between one and two hours and 55% had to wait two hours or more. Waiting time in the centre showed regional variations. These regional variations were statistically significant (P<0.0001) (Table 28).

The usual transportation to the MCH centre: Twenty seven

percent of women usually go to the centre by a family car, 24% by a taxi, 22% by a bus and 27% had to walk to the centre. This variable showed regional variations. In urban areas, 14% of women had to walk to the centre and about 86% usually use some kind of transportation. In rural areas, 56% had to walk to the centre while 44% usually use some kind of transportation. These regional differences were statistically significant ($P<0.0001$) (Table 29).

5.2. Utilization of antenatal care during last pregnancy

SUMMARY: The relationships between antenatal care utilization and risk factors were explored by applying chi-square statistical tests. The results indicated that almost all risk factors in the study were significantly associated with the pattern of utilization. Area of residence, education of the woman, number of pregnancies, occupation of husband and family income were all significantly related to utilization. Need variables in terms of the perceived health of the woman and disability days during pregnancy were reflecting part of the behaviour of the mother towards attending at the clinic. Mothers who were dissatisfied in the MCH care system and those who have to travel longer distances to reach the clinic tended not to attend at the clinic. These relationships were further investigated by applying the logistic regression analysis to identify the adjusted odds ratios of the different relationships while controlling for other variables in the study. Mothers were scored at both the individual and community levels to identify those at 'high risk' of non using the antenatal care.

5.2.1. Frequency distribution of antenatal care utilization, sources of care and gestational month at the first visit to the doctor.

Antenatal care utilization: Of the six hundred and fifty seven mothers in the study, it was found that only 59% of them attended at the antenatal clinic for general checkups during their last pregnancy (Table 30).

Sources of antenatal care: For mothers who attended at the antenatal clinic, it was found that 42% of them were attending at the private clinics, 15% at the MOH hospitals, 19% at the MOH.MCH centres, 3% were attending at the village clinics, 10% at the UNRWA health centres, about 9% at the Military health services and only 2% were attending at the University hospital (Table 31). There was a trend among both urban and rural mothers to attend at the private sector (Table 32).

Gestational month at first visit to the doctor: Fifty nine percent of women attended at the antenatal clinic during their first trimester, 34% during the second trimester and about 7% during the third trimester (Table 33).

5.2.2. Procedures and activities provided during the antenatal visit and their distribution by source of care.

Family history: Only 54% of mothers were asked by the doctor about their family history. This variable showed variations by source of care. Seventy four percent of women who were using the private sector were asked by the doctor about their family history compared to 39% who were using other sectors. The differences by source of care were statistically significant ($P<0.0001$) (Table 34).

Past medical history: About 59% of mothers were asked by the doctor about their past medical history. This variable showed variations by source of care. Seventy percent of women who used the private sector were asked about their past medical history compared to about 51% who attended at

other sectors. These differences by source of care were statistically significant (P<0.0005) (Table 34).

Menstrual history: About 54% of women were asked by the doctor about their menstrual history. This variable showed variations by the source of antenatal care. About 71% of women who were using the private sector were asked about their menstrual history compared to 41% of mothers who used other sectors. These variations by source of care were statistically significant (P<0.0001) (Table 34).

History of previous pregnancies: Sixty seven percent of mothers were asked about any previous pregnancies. This variable showed variations by the source of antenatal care. Seventy five percent of women who attended at the private clinics were asked about their previous pregnancies compared to 61% who were attending at other sectors. These differences by source of antenatal care were statistically significant (P<0.01) (Table 34).

History of the present pregnancy: About 65% of women were asked about the history of the present pregnancy. This variable showed significant variations by source of antenatal care (P<0.01). Seventy three percent of women who attended at the private clinics were asked about the history of the present pregnancy compared to 59% who were using other sectors as their source of antenatal care (Table 34).

General physical examination: Only 64% of women were examined physically by the doctors. This variable showed some variations by source of antenatal care. About 70% of women who were using the private sector were examined physically by doctor compared to 60% who were attending other sectors. These differences were just significant at

the 10 percent level (Table 34).

Measuring the blood pressure: The blood pressure was measured only in 66% of mothers. This variable showed variations by source of care. Blood pressure was measured in 76% of women who attended at the private sector compared to 59% of mothers who were attending at other sectors. These differences by source of care were statistically significant ($P<0.005$) (Table 34).

Weighing the mother: About 58% of all mothers were weighed during their visit to the antenatal clinic. This variable showed statistically significant variations with the source of antenatal care ($P<0.0001$). About 71% of mothers who attended at the private clinic were weighed compared to only 48% for mothers who were using other sectors (Table 34).

Information about what to eat and what not to eat during pregnancy: About 42% of women were provided with information on what to eat and what not to eat during pregnancy. This variable did not show significant variations by the source of antenatal care ($P>0.10$) (Table 34).

Caring during pregnancy: Fifty eight percent of women were provided with information of how to take care of themselves during pregnancy. This variable showed variations by source of care. About 68% of mothers who attended at the private clinics were given such information compared to about 52% for those who attended at other sectors. These differences by source of antenatal care were statistically significant ($P<0.005$)

Blood tests: A haemoglubin blood test was taken for 64% of all mothers. This variable showed statistically significant differences by source of antenatal care ($P<0.0005$). A

blood test was done to 76% of women who were attending at the private sector compared to 56% for those who were using other sectors (Table 34).

5.2.3. Mothers' opinions regarding the main reason for not attending at the antenatal clinic

Mothers' opinions of the main reason for not attending at the clinic have been investigated. It was found that: about 6% said that they were not sick, 7% did not see any need for the visit, 14% said that they received advice from relatives and friends, 36% did not visit the clinic because it was far from their homes, about 3% said that the cost of transportation to the clinic was high, 26% claimed that they have to wait a long time to see the doctor and 8% did not attend because of non availability of a private clinic in their area. It is clear that the distance from the clinic and the long waiting time to see the doctor accounted for 62% of the non utilization of antenatal care (Table 35).

5.2.4. The significance of the relationships between antenatal care utilization and both maternal characteristics and distance between home of the woman and antenatal clinic.

Area of residence: Area of residence of the woman was significantly associated with her pattern of antenatal care utilization ($P<0.0001$). Sixty six percent of urban mothers were users of the antenatal clinic compared to only 44% in

rural areas (Table 36).

Age of the respondent: Age of mother was not significantly associated with her utilization behaviour ($P>0.10$) (Table 36).

Duration of marriage: Duration of marriage of the respondent was not significantly associated with the pattern of antenatal care utilization ($P>0.10$) (Table 36).

Level of education: Level of education of the mother was significantly associated with antenatal care utilization ($P<0.0001$). Sixty six percent of educated women were attending at the clinic compared to about 43% for illiterate women (Table 36).

Total number of pregnancies: This variable was significantly associated with antenatal care utilization ($P<0.05$). About 64% of women in the low parity group (less than 4) were using the antenatal clinic compared to 54% in the high parity group (4 Pregnancies or more) (Table 36).

Occupation of husband: Occupation of the husband was significantly associated with patterns of antenatal care utilization ($P<0.0001$). About 78% of women of husbands employed in the government or private sector were attending at the clinic compared to 29% for women with husbands working in agriculture or unemployed (Table 36).

Monthly income of the household: Monthly income was significantly associated with antenatal care utilization ($P<0.0001$). Sixty seven percent of women in the high income group (100 JD or more) were users of the clinic compared to 45% in the low income group (less than 100 JD) (Table 36).

Receiving information: About 72% of mothers who received

information encouraging them to attend at the clinic if they become pregnant were users compared to about 45% for those who did not receive such information. The association between the two variables was highly significant (P<0.0001) (Table 36).

General concern about health: The general concern of the mother about her health during pregnancy was significantly associated with antenatal care utilization (P<0.0001). Seventy four percent of women who were concerned about their health attended at the antenatal clinic compared to 42% for those who said that they were not concerned about their health (Table 36).

General health status: Forty eight percent of women with good health (average or above average) were attending at the clinic compared to 81% with below average health. The association between the two variables was significant (P<0.0001) (Table 36).

Disability days: The total number of disability days was significantly associated with antenatal care utilization (P<0.0001). Seventy three percent of women in the high group (twenty or more) were using the clinic compared to 52% in the low group (less than twenty days) (Table 36).

Satisfaction with the MCH care system: Satisfaction with the MCH care system was significantly associated with the utilization pattern of antenatal care (P<0.0001). Seventy two percent of women who were satisfied in the system were users of the antenatal clinic compared to about 46% for those who were not satisfied in the system (Table 36).

Distance between home of the woman and the antenatal clinic: Distance from the clinic was significantly associated with antenatal care utilization (P<0.0001). Sixty

eight percent of women who were staying within four kilometres from the clinic were using the clinic compared to 38% for those who were staying four kilometres or more from the clinic (Table 36).

5.2.5. Multiple logistic regression analysis of the associations between antenatal care utilization and both maternal characteristics and the distance between the home of the respondent and the antenatal clinic.

Multiple logistic regression analysis is a statistical technique which can be used to measure the degree and the level of significance of the associations between a dichotomous outcome and risk factors, adjusted for other variables in the logistic model. The unit of measurement is the adjusted odds ratio. The multiple logistic regression analysis has been carried out by including thirteen independent variables in the model. The dependent variable was the utilization of antenatal care (users and non users). All independent variables in the model were defined as dichotomies. Independent variables in the logistic model were:

- area of residence (urban, rural)
- age of mother (less than thirty years, thirty or more)
- duration of marriage (less than five years, five years or more)
- education of the mother (educated, illiterate)
- total number of pregnancies (less than four, four or more)

- husband's occupation (employed in the government or private sector, unemployed or working in agriculture)
- monthly income (less than 100 JD, 100 JD or more)
- receiving health information designed to encourage women to attend at the antenatal clinic (received, did not receive)
- general concern about health (concerned, not concerned)
- perceived health status (average or above, below average)
- disability days (less than twenty days, twenty days or more)
- distance from the antenatal clinic (less than four kilometres, four kilometres or more)
- satisfaction with the MCH care system (satisfied, not satisfied)

All thirteen variables were significantly associated with antenatal care utilization at the 5% level (chi-square technique was applied) with the exception of two (age of mother and duration of marriage). See table 36 for further details.

However, in carrying out the logistic regression analysis, two variables (duration of marriage and family income) were excluded from the model as they were not significant at the five percent level. Variables in the following section are arranged in a descending order according to their adjusted odds ratios.

Occupation of the husband: Occupation of the husband, adjusted for other variables in the model, was significantly

associated with antenatal care utilization (P<0.001). Mothers with husbands employed in the government or private sector were 10 times as likely to be users of antenatal care as mothers with husbands working in agriculture or unemployed (Table 37).

The perceived health status during pregnancy: The perceived health status of the woman, adjusted for other variables in the model, was significantly associated with her utilization behaviour (P<0.001). Women of below average health were about five times as likely to be users of antenatal care as those with good health (Table 37).

General concern about health status: The general concern about health during pregnancy, adjusted for other variables in the logistic model, was significantly associated with the attendance behaviour at the antenatal clinic (P<0.001). The relative odds of using the antenatal clinic for those who were concerned about their health as compared to those who were not concerned was 4.5 (Table 37).

Number of disability days during pregnancy: The number of disability days, adjusted for other variables in the logistic model, was significantly associated with the utilization of antenatal care (P<0.001). Mothers with twenty days of disability or more were about four times as likely to be users of antenatal clinic as mothers with less than twenty disability days (Table 37).

Level of education of the woman: Level of education, adjusted for other variables, was significantly associated with the pattern of antenatal care utilization (P<0.001). The relative odds of using the clinic in educated mothers as compared to illiterate was 3.2 (Table 37).

Receiving information encouraging women to attend at the antenatal clinic: This variable, adjusted for other variables in the logistic model, was significantly associated with antenatal care utilization ($P<0.001$). Mothers who received such information were about three times as likely to be users of antenatal care as those who did not receive such information (Table 37).

Area of residence: Area of residence of the respondent, adjusted for other variables, was significantly associated with her pattern of utilization ($P<0.001$). The relative odds of attending at the antenatal clinic in urban areas as compared to rural was 2.6 (Table 37).

Satisfaction with the MCH care system: Satisfaction with the MCH care system, adjusted for other variables in the logistic equation, was significantly associated with antenatal care utilization ($P<0.001$). Being satisfied in the MCH care system was estimated to increase the odds of using the antenatal clinic, relative to being dissatisfied, by 2.4 (Table 37).

Distance from the antenatal clinic: This variable, adjusted for other variables in the model, was significantly associated with antenatal care utilization ($P<0.005$). Mothers who were staying within four kilometres from the clinic were twice as likely to be users of antenatal care as those who were staying four kilometres or more from the clinic (Table 37).

Total number of pregnancies: This variable, adjusted for other variables in the logistic model, was significantly associated with the utilization of antenatal care ($P<0.05$).

Mothers with less than four pregnancies were twice as likely to be users of antenatal care as mothers with four pregnancies or more (Table 37).

Age of the woman: This variable, adjusted for other variables in the logistic equation, was significantly associated with antenatal care utilization ($P<0.05$). Younger mothers (less than thirty years) were twice as likely to be users of the antenatal clinic as those aged thirty years or more (Table 37).

The 95% confidence intervals of all the adjusted odds ratios are included in table 37.

5.2.6. The proportion of non users of antenatal care attributed to risk factors (Population Attributable Risk %)

The proportion of non users of antenatal clinic attributable to each risk factor in the study has been estimated (Attributable Risk %). The formula applied was

$$\frac{b\,(R-1)}{b\,(R-1)+1} \times 100\%$$

Where b is the proportion of mothers at high risk and R is the adjusted odds ratio resulting from the logistic regression analysis.

It was found that the highest attributable risk percentages were related to the occupation of the husband followed by the general concern about health (Table 38). Seventy eight percent of non users of antenatal care was attributed to the husband's occupation (working in agriculture or

unemployed) and 62% to being not concerned about health during pregnancy. Other risk factors were important in attributing the non utilization of antenatal care. These factors were : non receiving information designed to encourage the woman to attend at the antenatal clinic (44%); dissatisfaction with the MCH care system (41%); illiteracy (39%); staying far from the clinic (26%); living in rural areas (34%) and having four or more pregnancies (25%) (Table 38).

5.2.7. The identification of mothers at high risk.

Screening of all mothers (urban and rural): Women were classified by applying each of the four risk factors separately. Screening illiterate pregnant women (29.7%) would correctly identify 41.8% (sensitivity) of non users; specificity was 78.7% and the predictive power of a positive test was 57.4% (Table 39). However, screening the same proportion of mothers (staying four kilometres or more from the antenatal clinic) would correctly identify 44.8% of non users; specificity was 81% and the predictive power of a positive test was 62% (Table 39). A risk group of 38% (women married to unemployed husbands or husbands working in agriculture) would correctly identify 66.4% of non users; specificity was 81% and the predictive power of a positive test was 70.6% (Table 39).

Mothers were classified according to the different risk factors they possessed. Sixteen groups at different levels of risk were identified (Table 40). A risk group of 24%

(cut-off point 10+) would correctly identify 49% of non users; specificity was 93% and the predictive power of a positive test was 83.5% (Table 41). Increasing the proportion of the risk group to 30% (cut-off point 9+) would correctly identify 59% of non users; specificity was 90% and the predictive power of a positive test was 80.5% (Table 41). Screening a risk group of 50% (cut-off point 5+) would correctly identify 81.7% of non users; specificity was 71.6% and the predictive power of a positive test was 66.6% (Table 41).

Screening urban mothers: A separate classification was designed for urban mothers by applying single and combinations of three risk factors. These risk factors were: the level of education of the mother, husband's occupation and the distance between the home of household and the antenatal clinic.

A risk group of 29% (illiterate women) would correctly identify 42% of non users; specificity was 78% and the predictive power of a positive test was 49% (Table 42). Screening 35% of women (women married to unemployed husbands or husbands working in agriculture) would correctly identify 70% of non users; specificity was 82.6% and the predictive power of a positive test was 67% (Table 42). The application of the location of the antenatal clinic from the home of the mother as the risk factor would correctly identify 43% of non users by screening a risk group of 26.5%; specificity was 82% and the predictive power of a positive test was 54.6% (Table 42).

Urban mothers were classified according to the different risk factors they possessed. Eight groups at different levels of risk were identified (Table 43). A risk group of about 20% (cut-off point 6+) would correctly identify 47.7% of non users; specificity was 94% and the predictive power of a positive test was 81% (Table 44). At a cut-off point 5+, a risk group of 35% would correctly identify 70% of non users; specificity was 82.6% and the predictive power of a positive test was 67% (Table 44). Furthermore, a risk group of 51% (cut-off point 3+) would correctly identify 84.8% of non users; specificity was 66.4% and the predictive power of a positive test was 56% (Table 44).

Screening rural mothers: A separate classification was designed for rural mothers by applying single and combinations of three risk factors. These risk factors were: the level of education of the woman, husband's occupation and the distance between the home of the mother and the antenatal clinic.

A risk group of 45% (women married to unemployed husbands or husbands working in agriculture) would correctly identify 61.5% of non users; specificity was 76.4% and the predictive power of a positive test was 77.4% (Table 45). Screening a risk group of 31.6% (illiterate women) would correctly identify 42% of non users and screening a risk group of 36% (women who are staying four kilometres or more from the antenatal clinic) would correctly identify 47% of non users (Table 45).

Mothers were classified according to the different risk factors they possessed. Eight groups at different levels

of risk were identified (Table 46). A risk group of 33.5% (cut-off point 5+) would correctly identify 51.3% of non users; specificity was 90% and the predictive power of a positive test was 87% (Table 47). At cut-off point 4+, a risk group of 51% would correctly identify 72.6%; specificity was 76.4% and the predictive power of a positive test was 80% (Table 47).

5.3. Ministry of Health MCH centres

SUMMARY: The utilization of MCH centres is still low. The dissatisfaction of mothers with some of the aspects of these centres and the health care provided could explain part of this fact. About 44% of all women were dissatisfied with the length of waiting time in the centre, 30% were dissatisfied with the courtesy and considerations of the medical staff and 40% were dissatisfied with the quality of care provided. Activities of MCH centres are still deficient where only 13% of women received antenatal home visits and 17% received some health education from these centres. It is worth noting that 52% of mothers who did not attend at the MCH centres were attributing their behaviour to the long distance between their home and the centre and the long waiting time in the centre to see the doctor.

5.3.1. Frequency distribution of MCH centres utilization and the satisfaction in the different aspects of the centres and the health care provided.

MCH centres utilization: About 43% of women attended at the MCH centres in two years period which ended in the last delivery. This variable did not show significant regional variations (P>0.10) (Table 48).

Satisfaction with travelling time to the MCH centre: Sixty percent of women were completely satisfied in travelling time to the MCH centre, 21% were satisfied to some extent and about 19% were not satisfied at all. This variable

showed regional variations. In urban areas, 14% were dissatisfied with travelling time to the centre compared to about 28% in rural areas. These regional differences were statistically significant ($P<0.05$) (Table 49).

Satisfaction with waiting time in the MCH centre: About 38% were completely satisfied, 18% were satisfied to some extent and 44% were not satisfied. This variable showed statistically significant regional variations ($P<0.005$). In urban areas, about 46% were satisfied completely , 20% were satisfied to some extent and 34% were not satisfied. In rural areas, 24% were completely satisfied, 15% were satisfied to some extent and about 61% were not satisfied (Table 50).

Satisfaction with the time spent with the doctor: Thirty seven percent were completely satisfied with the time spent with the doctor, 30% were satisfied to some extent and 33% were not satisfied. This variable showed statistically significant regional variations ($P<0.0001$). In urban areas, about 48% were completely satisfied, 32% satisfied to some extent and 20% were not satisfied. In rural areas, 17% were completely satisfied, 26% were satisfied to some extent and 57% were not satisfied (Table 51).

Satisfaction with the doctor courtesy and considerations: Forty five percent were completely satisfied, 27% were satisfied to some extent and 28% were not satisfied. This variable showed statistically significant regional variations ($P<0.0001$). In urban areas, about 56% were completely satisfied, 25% were satisfied to some extent and 20% were dissatisfied. These percentages were 24%, 31% and

45% respectively for rural mothers (Table 52).

Satisfaction with the nurse courtesy and considerations: Thirty nine percent of women were completely satisfied with the nurse courtesy and considerations, about 31% were satisfied to some extent and 30% were dissatisfied. This variable showed regional variations. In urban areas, 48% were satisfied completely, 29% were satisfied to some extent and 22% were not satisfied. These percentages were 21%, 33%, and 46% respectively for rural women. These regional differences were statistically significant ($P<0.0001$) (Table 53).

Satisfaction with the quality of health care provided: About 36% were completely satisfied, 24% were satisfied to some extent and 40% were not satisfied. This variable showed regional variations. In urban areas, 41% were completely satisfied, 28% were satisfied to some extent and about 31% were not satisfied. In rural areas, 24% were completely satisfied, 17% were satisfied to some extent and 59% were not satisfied. These regional differences were statistically significant ($P<0.005$) (Table 54).

Satisfaction with the costs of medical care received: Almost all women (89%) were completely satisfied with the cost of medical care they received from the MCH centres. This variable did not show significant regional variations ($P<0.10$) (Table 55). It is worth noting that women pay very little charge for the MCH centres services as the health care provided through these centres is highly subsidized by the Ministry of Health.

Mothers' opinions in the MCH centres: Eighty three percent of women said that the MCH centres were working very well or in need of some changes and about 17% said that these centres were in need of basic changes. This variable showed statistically significant regional variations ($P<0.0001$). About 9% of urban women said that these centres were in need of basic changes compared to 32% for rural mothers (Table 56).

5.3.2. Frequency distribution of some activities of the MCH centres.

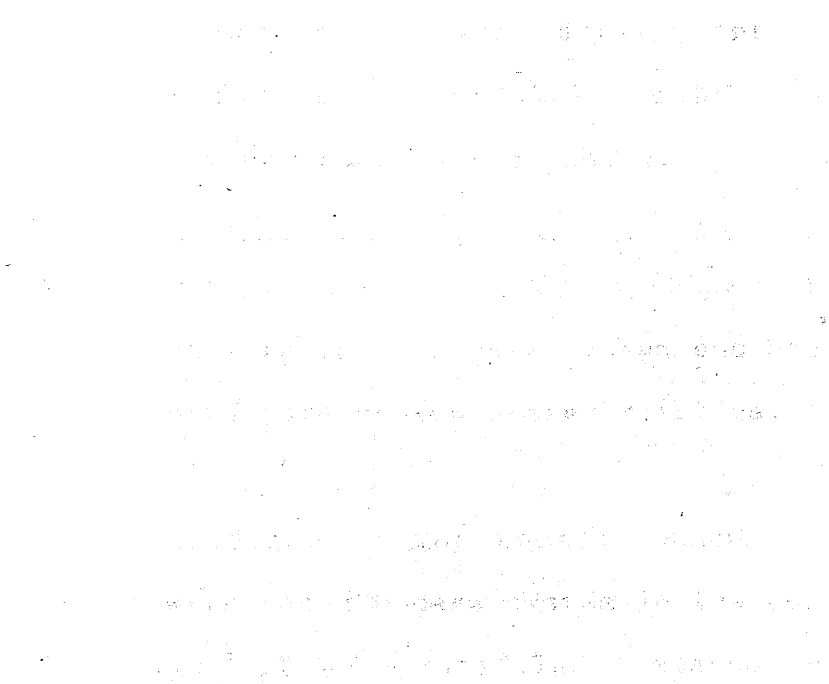
Home visits: Only 13% of women received antenatal home visit/visits from midwives and health workers in the MOH.MCH centres (Table 57).

Receiving information designed to encourage women to attend at the antenatal clinic: Fifty three percent of women received such information. About 17% of them received the message from the MOH.MCH centres, 47% from other medical sources, 6% from radio and TV, 4% in the schools, 4% from TBAs and 19% received the information from their relatives and friends (Table 58).

Antenatal classes: Thirty eight percent of mothers who attended at the MCH centres said that the health workers in the centres arranged antenatal classes for them to discuss problems related to maternity and child health care (Table 59).

2.3.3. Mother's opinions regarding the main reasons for not attending at the MCH centres.

Mothers' opinions regarding the main reasons for not attending at the MCH centres were investigated. It was found that: 7% did not attend because they were not sick; about 11% did not see any need for attending; 13% received advice about antenatal care from relatives and friends; 28% did not attend because the centre was far from their homes; 24% attributed their behaviour to the long waiting time in the centre; 11% preferred to see other health care providers; and about 6% said that the courtesy and consideration of the staff in the centres were not good enough. It is clear that the distance from the centre and waiting time in the centre were the two main reasons for not attending (Table 60).



5.4. Satisfaction with the MCH care system in Jordan.

SUMMARY: The relationships between satisfaction and characteristics of the mother and the health care system were explored by applying both chi-square tests and the logistic regression analysis. The results indicated that area of residence, occupation of the husband, family income and perceived health status were all significantly associated with satisfaction (chi-square test used). Characteristics of the health care system were all highly significantly associated with satisfaction. Because of the interdependence between the different variables especially the health care system characteristics; the logistic regression excluded most of the variables as they were not significant at the 5 percent level except the location of the MCH centre from the home of the woman, waiting time in the centre, occupation of the husband and area of residence. It is worth noting that mothers who were staying not far from the MCH centre were four times as likely to be satisfied as those who were staying far from the centre.

5.4.1. Significance of the relationships between satisfaction with the MCH care system and both maternal and health care system characteristics.

Area of residence of the woman: About 50% of women were satisfied with the MCH care system in the country. In urban areas, about 55% were satisfied compared to 39% for rural mothers. The association between area of residence and satisfaction was statistically significant ($P<0.0005$) (Table

61).

Occupation of the husband: Occupation of the husband was significantly associated with satisfaction in the MCH care system ($P<0.001$). Fifty five percent of women with husbands employed in the government or private sector were satisfied compared to 41% for mothers with husbands working in agriculture or unemployed (Table 61).

Family income: Family income was significantly associated with satisfaction ($P<0.005$). Fifty four percent of women in the high income group (100 JD or more) were satisfied in the system compared to 42% in the low income group (less than 100 JD) (Table 61).

Receiving information encouraging the woman to attend at the antenatal clinic: This variable was significantly associated with satisfaction in the MCH care system ($P<0.05$). Fifty five percent of women who received such information were satisfied compared to 44% who did not receive the information (Table 61).

General concern about health: This variable was significantly associated with satisfaction ($P<0.05$). Fifty four percent of women who were concerned about their health during pregnancy were satisfied compared to about 45% for those who were not concerned about their health (Table 61).

Perceived health status: This variable was significantly associated with satisfaction ($P<0.01$). About 46% of women with good health (average or above average) were satisfied compared to 58% for those with below average health (Table 61).

Distance from the antenatal clinic: Distance between home of the respondent and the antenatal clinic was significantly

associated with satisfaction (P<0.0001). Fifty nine percent of women who were staying within four kilometres from the clinic were satisfied with the MCH care system in the country compared to 27% for those who were staying four kilometres or more from the clinic (Table 61).

Location of the MCH centre: This variable was significantly associated with satisfaction (P<0.0001). Fifty nine percent of women who were staying average or near to the MCH centre were satisfied compared to about 29% for those who were staying far from the centre (Table 61).

Travelling cost to the MCH centre: This variable was significantly associated with satisfaction (P<0.0001). About 56% of women who have to pay less than 1 JD were satisfied compared to about 31% for those who have to pay 1 JD or more (Table 61).

Walking time to the centre: This variable was significantly associated with satisfaction (P<0.0001). Fifty six percent of women who have to walk less than one hour to reach the MCH centre were satisfied compared to 33% for those who have to walk one hour or more to reach the centre (Table 61).

Waiting time in the centre: This variable was significantly associated with satisfaction (P<0.001). Fifty five percent of women who have to wait in the MCH centre for less than three hours were satisfied compared to 40% for those who have to wait three hours or more (Table 61).

Other variables: The following variables were not significantly associated with satisfaction at the 5% level: age of the woman; duration of marriage; level of education; total number of pregnancies and the total number of disability days during pregnancy.

5.4.2. Multiple logistic regression analysis of the associations between satisfaction and both maternal and health care system characteristics.

The multiple logistic regression analysis has been carried out by including eleven independent variables. All these variables were defined as dichotomies. The outcome variable was the satisfaction with the MCH care system (satisfied, not satisfied). The independent variables in the model were:

- area or residence (urban, rural)
- occupation of the husband (employed with government or private sector, working in agriculture or unemployed)
- monthly income of the family (less than 100 JD, 100 JD or more)
- receiving information designed to encourage women to attend at the antenatal clinic (received, did not receive)
- general concern about health (concerned, not concerned)
- perceived health status (average or above, below average)
- distance from the antenatal clinic (less than four kilometres, four kilometres or more)
- location of the MOH.MCH centre (less than four kilometres, four kilometres or more)
- travelling cost to the MOH.MCH centre (less than 1 JD, 1 JD or more)
- walking time to the centre (less than 1 hour, one hour or more)
- waiting time in the centre (less than three hours, three or more)

All independent variables included in the logistic model

were significantly associated with the outcome variable at the 5% level by applying the chi-square technique (Table 61). In running the the multiple logistic regression, seven variables were excluded from the model because they were not significant (P>0.05).

The remaining variables in the model were:

Location of the MCH centre: Location of the MCH centre from the home of the woman, adjusted for other variables in the model, was significantly associated with satisfaction (P<0.001). Mothers who were staying not far from the centre were four times more likely to be satisfied as mothers who were staying far from the centre (Table 62).

Waiting time in the MCH centre: This variable, adjusted for other variables in the model, was significantly associated with satisfaction (P<0.001). Mothers who have to wait less than three hours were twice as likely to be satisfied with the MCH care system as those who have to wait three hours or more (Table 62).

Occupation of the husband: This variable, adjusted for other variables in the model, was significantly associated with satisfaction (P<0.01). Mothers with husbands employed in the government or private sector were twice as likely to be satisfied as those with husbands working in agriculture or unemployed (Table 62).

Area of residence of the mother: Area of residence, adjusted for other variables in the model, was significantly associated with satisfaction (P<0.05). The relative odds of

being satisfied for urban mothers as compared to rural mothers was 1.6 (Table 62).

5.4.3. The proportion of dissatisfaction with the MCH care system attributed to each risk factor (Population Attributable Risk %)

It was found that 49% of dissatisfaction with the MCH care system was attributable to the location of the MCH centre (far from the home of the woman) and 28% of all dissatisfaction was attributed to the waiting time in the MCH centre (waiting three hours or more). Occupation of the husband (working in agriculture or unemployed) and area of residence (staying in rural areas) attributed to dissatisfaction by 24% and 16% respectively (Table 63).

CHAPTER 6. DISCUSSION, INTERVENTION STRATEGIES, CONCLUSIONS AND RECOMMENDATIONS.

SUMMARY: This study in Jordan has the aim of exploring the determinants of both the utilization of antenatal care and the general satisfaction of women with the MCH care system, and to formulate intervention strategies to improve the utilization behaviour. Utilization of antenatal care was much lower than expected where only 59% of women interviewed were attending the antenatal clinic. The husband's occupation followed by the general concern about health were the most important in predicting utilization behaviour. The adjusted odds ratios (AOR) for these two variables were 10 and 4.5, respectively, and the Population Attributable Risk Percent (PAR) was 78% for the husband's occupation and 62% for the general concern about health. Other characteristics were also important in predicting the utilization behaviour such as the level of education of the woman (AOR = 3.2, PAR = 39%), area of residence (AOR = 2.6, PAR = 34%), satisfaction with the MCH care system (AOR = 2.4, PAR = 41%), receiving health information (AOR = 2.7, PAR = 44%) and distance of the household's home from the antenatal clinic (AOR = 2.2, PAR = 26%). Maternal characteristics were of limited importance in predicting satisfaction with the MCH care system with the exception of the husband's occupation (AOR = 1.8, PAR = 24%) and area of residence (AOR = 1.6, PAR = 16%) as compared to the distance from the clinic (AOR = 4.2, PAR = 49%) and waiting time in the MCH centre (AOR = 2.1, PAR = 28%). Only 19% of women were attending the MOH.MCH centres during their last pregnancy, 13% of all women received antenatal home visits and 17% were provided with some kind of

health education through these centres. One fifth of all women who attended the MOH.MCH centres were dissatisfied with the travelling time to the centre, 44% with the waiting time to see the doctor, 33% with the time spent with the doctor, 30% with the communication with the medical staff and 40% of all attenders at the MOH.MCH centres were dissatisfied with the overall quality of health care provided. The results of this study showed conclusively that the removal of access and structural barriers, and proper health education are the steps needed to improve the utilization behaviour. The scarce resources available in the country pointed to the fact that steps must be taken towards the adoption of the risk approach, to direct health care for those at high risk and in need for that care. To achieve this last task, a simple arbitary scoring system was designed by including four risk indicators. These indicators were selected according to their importance and the easiness of their identification in the community. This scoring system showed that screening one fifth of urban pregnant mothers and one half of rural pregnant mothers, and providing them with antenatal care, would achieve the Ministry of Health goal of improving the utilization rate to 80% by the year 1990. The Cooperation of TBAs and perhaps volunteers from the community is necessary for the identification of pregnant women and their levels of risk where proper action has to be taken at the right time and right place.

Contents

6.1. Discussion

Utilization of antenatal care in Jordan was much lower than expected and at a level which gives rise to concern. Less than two thirds (59%) of women interviewed were attending the antenatal clinic and about 42% of those who were using the clinic tended to use the private sector even in rural areas where the private sector is not available in most of the villages (Tables 30 - 32). The picture of utilization has been changed very little since 1979 when the utilization rate of antenatal care was estimated to be 51% [22] compared to 58% in 1983 [13]. This minor improvement in utilization does not match the other achievements and improvements in the health care system and other related sectors as education, increasing income and better communication throughout the country. In particular, the MOH.MCH centres which all pregnant women are eligible to use and which provide free-of-charge health care for all pregnant women, seem not to be improving in terms of their utilization. The rate of utilization of the MOH.MCH centres ranged between 15% and 21% during the period 1975 to 1983 [2, 13] compared to 19% in this study (Table 31).

6.1.1. Maternal characteristics and utilization

Most of the maternal characteristics in the study were found to be related to utilization behaviour, even after adjustment for other maternal and health care system characteristics. The husband's occupation (employed in the private or government sector) followed by the perceived health status

(having below average health) and the general concern about health (being concerned about her health during pregnancy) were the most important in predicting utilization behaviour. The adjusted odds ratios for these three variables were 10, 4.6 and 4.5 respectively (Table 37). Other characteristics were also important in predicting the utilization behaviour such as the level of education of the woman (AOR = 3.2), area of residence (AOR = 2.6), satisfaction with the MCH care system (AOR = 2.4), receiving health information designed to encourage the mother to attend at the antenatal clinic (AOR = 2.7) and the distance between the home of the woman and the antenatal clinic (AOR = 2.2) (Table 37).

The employment status of the husband showed a strong association with the woman's utilization behaviour. Unemployed husbands and husbands working in agriculture are mainly villagers and concentrating in socially deprived areas, having low level of education, low income and not covered by insurance schemes as those who are working with the government and private sector. The risk factors they possess seem to have an impact on their behaviour and attitudes towards medical care with its consequent effect on their wives' behaviour and attitudes. Furthermore, the women in this sector are of low educational level and may not have the faith in the health care and do depend on lay advice from their relatives and friends and perhaps from untrained traditional birth assistants. These poor families do not believe in family planning to the same extent as those who are educated and better-off, and they prefer to have more children for religious and other reasons - the

factor which found in this study and other studies to be related to the pool of non users of the health services.

When women were asked about the main reasons for not attending the clinic; 21% were not aware of the importance of antenatal care and they did not see any need for attending and some of them were getting lay advice from relatives and friends; and 6% said that they were healthy and there was no need for attending (Table 35). It is possible that this last sector of non attenders took the view that health services are only for sick people and perhaps they were not aware that these services do provide preventive health care for healthy pregnant women.

Almost all these findings are in agreement with other studies that demonstrate the key role of area of residence [141, 152], level of education of the mother [26], parity and husband's occupation [125] and number of disability days [121, 122] in predicting physician utilization.

Several studies have been reported to test Andersen's conceptual model of utilization [107], to show the impact of the individual characteristics in predicting physician utilization. Most of these studies were in the field of curative medicine and showed that the individual need variables such as the perceived health status, number of disability days and severity of illness were the most important in predicting physician utilization [111, 114, 121, 122]. However, this study of utilization of antenatal care in Jordan, to some extent, contradicted these other studies, espe-

cially for maternal characteristics (other than need variables) which have been found in this study to be highly related to utilization behaviour. Nevertheless, the findings of this study regarding the impact of need variables (perceived health status and number of disability days) on physician utilization have supported the traditional findings of others who emphasized the importance of need variables in explaining the variation in physician utilization.

The different studies, including our study, are inconsistent in strength or even contradicted regarding the impact of individual characteristics on physician utilization. It is note worthy that our study was concerned with preventive health issues compared to other studies which examined the use of curative medical services. The low prediction of the individual characteristics other than need variables could be because the decision in case of using curative services is more urgently determined by the severity of the condition and limitations in the normal range of activities, compared to the use of preventive service where the individual has to exercise his own discretion and initiatives in obtaining the service. In the last case, the individual and the health care system characteristics may compound differences in the personal choices or decisions made, whether to use the service or not and to what extent. Furthermore, many of these discrepancies could be accounted for by the types of population studied; the range of variables included, their definitions and cut-off points applied; the analytical strategies used; sample size and sampling procedures; the manner of data aggregation and the type of care provided (preventive,

curative....).

6.1.2. Health care system characteristics and antenatal care utilization

This study highlighted the maldistribution of health services and the impact of maldistribution on utilization behaviour - mothers who were staying within four kilometres from the antenatal clinic, adjusted for area of residence and maternal characteristics, were twice as likely to use the clinic as those who were staying four kilometres or more from the clinic (Table 37). When mothers (non-attenders) were asked about the main reasons for not attending the clinic; more than one third of them (36%) attributed their behaviour to the far location of the clinic, 27% were non users as they have to wait a long time in the clinic to see the doctor and 9% of women said that the non-availability of the private sector in their area was the main reason for their non-attendance (Table 35). It is note worthy that 28% of women claimed that the far location of the MOH.MCH centre was the main reason for not attending at the centre and 6% attributed their behaviour to the bad communication with the medical staff in the centre (Table 60). These findings are in agreement with other studies that highlight the importance of distance from the clinic [156] and the waiting time to see the doctor [153] in explaining the variation in physician utilization.

The content of the antenatal visits and some of the activities of the MOH.MCH centres were still very deficient

compared to what should be provided to every pregnant woman as recommended by the Ministry of Health in Jordan [19]. Less than two thirds of the women interviewed were asked about their family history, past medical history and pregnancy history (Table 34). Information about self-care and the right diet during pregnancy was provided to less than 60% of all women (Table 34). The content of the antenatal visits provided by the private sector was better than that of other sectors including the Ministry of Health services (Table 34). This, to some extent, can explain the behaviour of a large sector of women of bypassing the government health services to use the private sector (Tables 31, 32) and it might have a worse impact on rural mothers where the private sector is not available in most of the villages.

6.1.3. Satisfaction with the health care system and the care provided

Maternal characteristics were of limited importance in predicting the general satisfaction of the women with the MCH care system with the exception of area of residence (AOR = 1.6) and the occupation of the husband (AOR = 1.8) (Table 62). However, women who were staying far from the MOH.MCH centre and those who have to wait a long time to see the doctor were four and two times, respectively, as likely to be dissatisfied as those who were staying not far from the centre and who have to wait a shorter time (Table 62).

The satisfaction of women (users of MOH.MCH centres in two years period) with the different aspects of these centres

and the health care provided for them was investigated. The findings reflected a general picture of why women bypass the MOH.MCH services to use the private sector and perhaps, in the case of non-availability of the private clinic, these women may turn to be non users of antenatal care. One fifth of all women who attended the MOH.MCH centre were dissatisfied with the length of travelling time to the centre (Table 49), 44% dissatisfied with waiting time (Table 50), 33% dissatisfied with time spent with the doctor (Table 51), about 30% dissatisfied with the courtesy and consideration of the medical staff (Tables 52, 53) and 40% of all women were dissatisfied with the overall quality of care provided (Table 54). It is of some interest that rural areas had a higher proportion of women who were dissatisfied in the preceding items of satisfaction; all these regional differences were significant at the five percent level (Tables 49-54). To clarify this last fact, the study indicated that 32% of rural women said that the MOH.MCH centres are in need of basic changes compared to about 9% for urban mothers (Table 56).

The findings presented did show beyond doubt that the government health services provided to rural areas are worse than services provided to urban areas. This adds another cumulative fact to the already mentioned facts such as the non-availability of the private sector in rural areas, and the bad content and quality of care provided through the government health sector which is the only sector available for rural women, and the fact that rural women are at higher risk than urban women (Tables 14, 17, 18, 21, 23, 25, 27,

28, 29). The impact of these facts on urban mothers' utilization behaviour is far less than the impact on rural mothers as urban mothers have more alternatives to select from compared to rural women who have only the government health services.

The findings of this study regarding satisfaction are in agreement with other studies that showed the importance of area of residence [152], distance from the clinic [203], waiting time in the clinic [200], time spent with the doctor [178] and doctor-patient communication [184] in predicting satisfaction with health care.

It is clear that factors affecting satisfaction with health care were also predicting utilization behaviour. Any intervention strategy/strategies to modify or compensate these risk factors would have an impact on enhancing utilization behaviour and improving satisfaction with the health care system - the factor that has been found to be related to utilization behaviour (adjusted odds ratio was 2.4).

6.1.4. The size of the problem and the identification of women at high risk

The importance of many of the characteristics of the woman and health care system in explaining the variation in utilization and satisfaction was further investigated at the community level by estimating the population attributable risk percent. The occupation of the husband was associated with the highest population attributable risk (%) followed

by the general concern about health; 78% and 62% respectively (Table 38). Other risk factors were also important in predicting utilization at the community level such as receiving information encouraging the woman to attend at the antenatal clinic (PAR = 44%), satisfaction with the MCH care system (PAR = 41%), level of education (PAR = 39%), area of residence (PAR = 34%) and distance from the clinic (PAR = 26%) (Table 38). About 50% of dissatisfaction was attributed to the far location of the MOH.MCH centre and 24% to the occupation of the husband (Table 63).

Many of these risk factors are difficult to eliminate in the short-run policies because of the scarce resources available. However, these risk factors can be used as valid indicators for the planning of the MCH services and for priority setting in the future.

According to the findings of this study, we were able to design a scoring system in order to predict mothers who are more likely to be non users of antenatal care, so that appropriate action can be taken at the right time and right place. A simple and clear classification of mothers was designed to identify the maximum number of mothers who are more likely to be non users of antenatal care, by screening the smallest proportion of pregnant women at high risk. Mothers were classified according to four risk factors. Each mother in the study was given a list of the risk factors she possessed. These risk factors were: area of residence (urban, rural); level of education (educated, illiterate); husband's occupation (working with the government or private

sector, unemployed or working in agriculture) and the distance of the home of the mother from the antenatal clinic (within four kilometres, four kilometres or more). The selection of these four factors as risk indicators was according to their importance in terms of their adjusted odds ratio, population attributable risk percent and their high prevalence in the community (Tables 37, 38). However, the final decision for the selection was the easiness of their identification in the population with little efforts. The cooperation of the Department of Statistics is required, to provide the health centres with special maps in order to facilitate the identification of the location of the household from the health centre.

Screening all mothers (urban and rural): Women were classified by applying each of the four risk factors separately. Screening illiterate pregnant women (30%) would correctly identify 42% (sensitivity) of non users; specificity was 79% and the predictive power of a positive test was 57% (Table 39). However, screening the same proportion of mothers (staying four kilometres of more from the antenatal clinic) would correctly identify 45% of non users; specificity was 81% and the predictive power of a positive test was 62% (Table 39). A risk group of 38% (women married to unemployed husbands or husbands working in agriculture) would correctly identify 66% of non users; specificity was 81% and the predictive power of a positive test was 71% (Table 39).

Mothers were classified according to the different risk fac-

tors they possessed. Sixteen groups at different levels of risk were identified (Table 40). A risk group of 24% (cut-off point 10+) would correctly identify 49% of non users; specificity was 93% and the predictive power of a positive test was 84% (Table 41). Increasing the proportion of the risk group to 30% (cut-off point 9+) would correctly identify 59% of non users; specificity was 90% and the predictive power of a positive test was 81% (Table 41). Screening a risk group of 50% (cut-off point 5+) would correctly identify 82% of non users; specificity was 72% and the predictive power of a positive test was 67% (Table 41).

Screening urban mothers: A separate classification was designed for urban mothers by applying single and combinations of three risk factors. These risk factors were: the level of education of the mother, husband's occupation and the distance between the home of the household and the antenatal clinic.

A risk group of 29% (illiterate women) would correctly identify 42% of non users; specificity was 78% and the predictive power of a positive test was 49% (Table 42). Screening 35% of women (women married to unemployed husbands or husbands working in agriculture) would correctly identify 70% of non users; specificity was 83% and the predictive power of a positive test was 67% (Table 42). The use of the location of the antenatal clinic, in relation to the home of the mother as the risk factor, would correctly identify 43% of non users by screening a risk group of 27%; specificity was 82% and the predictive power of a positive test was 55%

(Table 42).

Urban mothers were classified according to the different risk factors they possessed. Eight groups of women at different levels of risk were identified (Table 43). A risk group of about 20% (cut-off point 6+) would correctly identify 48% of non users; specificity was 94% and the predictive power of a positive test was 81% (Table 44). At cut-off point 5+, a risk group of 35% would correctly identify 70% of non users; specificity was 83% and the predictive power of a positive test was 67% (Table 44). Furthermore, a risk group of 51% (cut-off point 3+) would correctly identify 85% of non users; specificity was 66% and the predictive power of a positive test was 56% (Table 44).

Screening rural mothers: A separate classification was designed for rural mothers by applying single and combinations of three risk factors. These risk factors were: the level of education of the woman, husband's occupation and the distance between the home of the mother and the antenatal clinic.

A risk group of 45% (women married to unemployed husbands or husbands working in agriculture) would correctly identify 62% of non users; specificity was 76% and the predictive power of a positive test was 77% (Table 45). Screening a risk group of 32% (illiterate women) would correctly identify 42% of non users and screening a risk group of 36% (women who are staying four kilometres or more from the antenatal clinic) would correctly identify 47% of non users

(Table 45).

Mothers were classified according to the different risk factors they possessed. Eight groups at different levels of risk were identified (Table 46). A risk group of 34% (cut-off point 5+) would correctly identify 51% of non users; specificity was 90% and the predictive power of a positive test was 87% (Table 47). At cut-off point 4+, a risk group of 51% would correctly identify 73%; specificity was 76% and the predictive power of a positive test was 80% (Table 47).

It is clear that this scoring system, which is designed for the identification of mothers who are more likely to be non users of antenatal care, has many features worth mentioning. These features include:

1. Few risk factors were applied in this scoring system. All these factors could be identified easily in the ommunity especially in rural and urban socially deprived localities. This can be achieved by the TBAs, midwives or assistant midwives and perhaps by the cooperation of some volunteers from local communities. The cooperation of the Department of Statistics in Jordan is necessary to provide the health centres with specific maps of their catchment areas, to facilitate the identification of the distance between the home of the mother and the antenatal clinic.

2. This scoring system was designed to be applied on ur-

ban and rural mothers either as one group or two separate groups. Different cut-off points were applied to enable to identify the maximum number of true positive cases (mothers at risk who are more likely to be non users of antenatal care) by screening the minimal proportion of mothers at high risk, taking into account the required level of improvement in the utilization of antenatal care and the resources available for achieving this improvement over a specific period.

3. It was clear from this scoring system that the application of single risk factors (Tables 39, 42, 45) was less effective than the application of combinations of these risk factors (Tables 41, 44, 47). Combinations of risk factors would correctly identify true positive cases by screening a smaller proportion of mothers at high risk. This predictive power of a positive test was higher in almost all cases by applying combinations of risk factors than applying single risk factors. This suggests that a reasonably high proportion of the costs and efforts of the screening programme are in fact to be expended for the detection of true positive cases if we apply combinations of risk factors to identify these cases.

4. The risk factor/factors selected were most effective in predicting utilization behaviour in rural areas than in urban areas. For example, when group 8 in urban areas compared with the same group (the same

level of risk) in rural areas, it was found that the risk factors were able to identify 89% of non users in urban areas compared to 93% in rural areas (Tables 43, 46). The occupation of the husband as a risk factor had a predictive power of a positive test of 67% in urban areas compared to 77% in rural areas and the level of education of the mother had a predictive power of a positive test of 49% in urban areas compared to 75% in rural areas (Tables 42, 45).

5. The application of this scoring system as a strategy based on the risk approach will be of great value in the identification of a group of women at high risk who are more likely to be non users of antenatal care. Any intervention strategy to improve the utilization behaviour of those women with the selected risk factors will beyond doubt improve the survival and health of their children as it is found in the search of literature that those women are more likely to have a higher infant morbidity and mortality rates.

6.2. Intervention strategies

6.2.1. Health education

There are at least three sets of reasons for health education: to produce changes in health beliefs and behaviour in order to reduce morbidity and mortality; to influence norms and values governing the use of health services; and to produce a general understanding of certain health issues in order to obtain a population who have a general understanding of health issues and to avoid certain forms of unhealthy behaviour.

The recognized failure of a large sector of women to attend the antenatal clinic even when these services are provided free and within a short distance from their homes demonstrates that the appropriate use of health services cannot be guaranteed simply through the removal of financial and geographical barriers. Developing community health education programmes and the implementation of formal training programmes in self and family care seem to be necessary steps towards improving the utilization behaviour and the nation's health.

A health education message is needed to inform women about the different aspects of MCH care and to encourage them to attend at the antenatal clinic. Mothers should be aware of the risk factors during pregnancy that could be serious and should be encouraged for self care and self referring if risk recognized. The content of the health education mes-

sage should emphasize: changing behaviour and attitudes and making women aware of the importance of preventive care during pregnancy, nutritional needs for pregnant women and children, hygiene, proper breast-feeding, coping with some illnesses as diarrhoea in children, the necessity of immunization in children, and family planning. The impact of this message could have a major influence on the health behaviour and attitudes of the whole family, and on the utilization behaviour and children morbidity and mortality. Husbands must be involved in this message as their impact on the behaviour of their wives' is evident in most countries.

Combinations of mass communication approaches and personal influence techniques, might pay far greater dividends in modifying health beliefs and behaviour than to what can be obtained with the sole use of any one approach. In this case, research is needed to evaluate the effectiveness of mass communication and personal influence, and this research has to be extended to find out (a) the most appropriate and acceptable individuals and groups in transferring the health education message; and (b) clusters of women in need of face-to-face health education so the education message can be transferred to them through the medical staff, TBAs and perhaps by some volunteers.

Relatively younger and educated women were more often exhibiting preventive health behaviour than did older and illiterate women. Unusual opportunities apparently exist in primary and secondary education to influence children both to develop desirable health habits and to acquire desired

health beliefs. To some extent, school systems have to approach some of these goals through their emphasis on health and health education. Such efforts should be planned on an experimental basis to determine the extent to which school health education programmes can exert a significant and lasting effect on the acquisition of health beliefs and behaviour. It is note worthy that some of the illiterate women in Jordan could have this chance of health education through schools which specialize in educating illiterate women.

6.2.2. Health care system changes

The availability of and accessibility to health services, content and quality of care provided and the communication of women with the medical staff were all found to be important in predicting the utilization behaviour.

Actions are needed to increase accessibility to the medical professions and health care facilities, shortening waiting time, and promoting women's communication with the medical staff. The content and quality of health care, especially in rural areas, have to be improved to attract women to attend at the MOH.MCH centres rather than not attending or bypassing the centres to use the private clinics or even resort to lay advice. It is important to recall that the perceived access to health care services was positively associated with both utilization and satisfaction. This suggests that improving access to health care, beyond removal of financial barriers, is likely to lead to increase the

patient satisfaction, with its results on improving the utilization behaviour.

Much of the doctors time is taken up with curative medicine and they failed to stress preventive care among people. Training of doctors in primary health care is needed and a career structure needs to be developed to ensure that the skills acquired by professionals are appropriately deployed. The policy of the Ministry of Health and the emphasis that paid to curative and highly sophisticated medical techniques, created a lack of interest among doctors regarding preventive and primary health care; and possibly it created a wrong feeling among women that health services are only for sick people. More than 70% of the Ministry of Health budget was allocated to hospitals and sophisticated medical techniques and almost all the private sector investment was for curative services [20].

Services provided on an "outreach" basis can serve to reduce at least some of the costs of attendance, especially for socio-economic deprived regions and areas with inferior availability of health services, with the results of transferring antenatal care to those in need for care. The success of the EPI (Extended Programme of Immunization) [23] in achieving high levels of children immunization in Jordan was an example of what a dynamic approach to the delivery of health care can achieve. Moving from the static approach being adopted at the present by the MOH.MCH services to a more dynamic one in which the outreach of these services is extended might be one of the answers to the present weakness

of the system. If such an approach is to be adopted, the manpower policies would have to be reviewed to include new task definitions and career structure, more orientation in preventive medicine and primary health care, and policies for reducing the high turnover of doctors in the MOH.MCH centres.

Action is needed to build on the resources of the rural community traditional birth assistants (TBAs), who provide most of the maternity care in villages and socially deprived areas. TBAs should be respected, incorporated to the Ministry of Health and given the incentives and tools to work properly. They must be provided with the right knowledge about maternity and child health care and must have the ability to identify women and children at high risk, to provide them with the appropriate care they need, or to refer them to the right health service at the right time. The decision of the TBA regarding when to refer the woman or child has to be supported by providing them with simple scoring systems based on the risk approach. The last task could be difficult as many of them are illiterate; however, continuous training and re-training through the simple and appropriate techniques could mask these difficulties in the long-run.

It is beyond doubt that the cessation of some of the maternity benefits as the distribution of milk and some nutritional supplements [213] through the MOH.MCH centres for those who were attending for antenatal care had a bad impact on the attendance rate. The Ministry of Health should look

again to that decision, as many women, especially the poor, were attending to obtain such benefits.

6.2.3. Intervention strategy based on the scoring system

General: A more successful strategy may be to increase the efforts to public health education in conjunction with major changes in the health care system to ensure that each individual can call upon a usual source of care that provides comprehensive care while respecting the dignity of the individual. However, the limited resources available in the country pointed to the fact that steps must be taken to identify those at high risk in order to provide them with the health care they need, with special emphasis on preventive measures.

An attempt was made to design a simple and clear scoring system to identify mothers at high risk who are more likely to be non users of antenatal care. The aim of this strategy is to achieve the Ministry of Health goal of improving the utilization of antenatal care to 80% by the year 1990 [4]. More specifically, this means that we have to improve the utilization rate from 66% to 80% in urban areas and to improve this rate from 44% to 80% in rural areas (Table 36). This indicates that a large sector of rural pregnant women should be screened and provided with antenatal care to achieve this goal. Screening one fifth of urban mothers and screening one half of rural mothers at high risk and providing them with the antenatal care they need will improve the utilization rate to more than 80% in both urban and rural

areas (Tables 44, 47). For example, screening 51% of rural pregnant mothers at high risk (cut-off point 4+) would correctly identify 85 true positive cases; sensitivity was 73%, specificity was 76% and predictive power of a positive test was 80% (Table 47). In this study, it means that the identification of the 85 cases and providing them with the antenatal care they need will improve the utilization rate to 85%; 5% more than the Ministry of Health goal.

In Practice: In practice, and according to the available statistics in Jordan [8, 14], screening 51% of rural pregnant women at high risk (7,000 pregnancy each year) means that the twenty health centres in rural Amman will be overloaded, because an average of 350 extra pregnancies each year, at each health centre, would result, assuming that all the 51% would be provided with antenatal care through these centres. By the assumption that each pregnancy would have an average of five antenatal visits, and by dividing the total number of the expected visits of the 350 pregnancies by the average number of working days per year (310 days); an average of six antenatal visits are expected to be managed every working day (350 x 5/310) by each rural health centre, in order to achieve the Ministry of Health goal of improving the utilization rate in rural Amman to 80% by the year 1990. However, if the number of antenatal visits is 7; an average of eight antenatal visits are expected to be managed every day by each rural health centre.

The question which should be answered is: "Can the rural health centre manage these extra six antenatal visits each

working day?". Several points have to be considered in this particular situation:

1. About one fifth of the 51% rural pregnant women at high risk would be misclassifed (false positive cases), mothers at high risk who are more likely to be users of antenatal care (Table 47). By excluding these false positive cases from further assessment and investigation, the average number of extra antenatal visits to be managed by each health centre would decrease to about five visits per each working day. However, the exclusion of these cases from further evaluation may be an over-optimistic step, as many of them may not have been initiated the antenatal visits at the time of screening and would appear at that stage as true positives. Details of the proportion of true positive cases as a fraction of the total number of mothers are included (Tables 39-47).

2. Almost all of the villages have a village clinic (one doctor and one nurse), and the cooperation of the village clinic with the health centre in this matter could be worth initiating.

3. The role of the TBAs is very evident in almost all villages. The cooperation and integration of the TBAs and perhaps other lay workers into the health care system is worth considering.

4. Mobilization of resources in terms of midwives or assistant midwives from urban to rural areas is justifiable. For example, screening 20% of urban pregnant women and providing them with antenatal care, would achieve the Ministry of Health goal of improving antenatal care utilization to 80% in urban areas (Table 44). By applying the same calculations* as those presented for rural mothers, an average of four extra antenatal visits are expected to be managed by each urban health centre every working day. The availability of all other health sectors (hospitals, Military health services, UNRWA health centres) in urban areas could decrease the extra load of antenatal visits on these health centres.

5. Improving the efficiency of the medical staff in the health centres is worth considering.

Steps: The following section describes briefly the consequence of steps necessary for achieving this risk approach strategy.

1. The identification of all pregnant women at one point of time, then further search for any new pregnancies in the future. This can be achieved locally by the

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* Number of pregnancies in urban Amman = 27,000 each year.
Number of health centres in urban Amman =20.
Average number of working days per year =310.

cooperation of the midwives, the TBAs and perhaps volunteers from the community.

2. The identification of the level of risk of each identified pregnancy on the basis of two risk factors (the level of education of the mother and her husband's occupation). Further information is required, such as the full name and address of the mother, average month of gestation as estimated by the woman and probably with the help of the screening team, and whether she is attending at the antenatal clinic at the screening time.

3. The health centre should be informed about these pregnancies and their levels of risk. Further assessment of the level of risk of the pregnant mother should be made in the health centre taking into account the distance between the home of the household and the antenatal clinic. The cooperation of the Department of Statistics is required to provide the health centres with special maps for the identification of the location of the households from the clinic.

4. Records should be kept in the health centre on all identified pregnancies and the records of women at high risk to be further assessed and investigated should be kept separate. Duplications of records for the same pregnancy could be one of the problems. Proper organization, management and continuous check-ups are required to mask part of this problem. The

allocation of each of the screening team to specific households or areas may be useful. Caution and steps must be taken to overcome this problem.

5. Personal invitations and reminders if necessary for women at high risk to attend at the antenatal clinic at a specific time. If the pregnant mother comes to the clinic, her health and pregnancy should be assessed as included in Appendix A. Further arrangements for follow up have to be decided. The woman who does not attend after the first or even the second reminder should be visited at home by the midwife or the TBA for preliminary assessment. This woman has to attend the clinic at least once for the investigations to be carried out. Arrangements for follow up have to be decided.

6. In all cases, records should be completed and ready for further follow up of these pregnancies and for evaluations at any time.

It is an important step that women and their families should be informed and prepared through the most appropriate media, of the screening and its general aims.

Health information: At this stage, antenatal care is to be provided to mothers who are identified for further assessment and investigations. This care is contained in three parts:

1) the woman's health history

2) clinical examination

3) investigative procedures

Details of these three parts are included in appendix A.

All information in appendix A should be secured, as far as practicable, at the first antenatal attendance. At each contact with the pregnant woman after the first attendance, the following information should be obtained for all of them and the results recorded:

1) the general well being of the mother

2) vaginal bleeding or discharge

3) emotional and social difficulties

4) weight and blood pressure

5) urine sugar and protein

6) ankles for oedema

7) varicose veins

8) height of the fundus of the uterus.

An important objective of screening during the antenatal period is the determination of the most suitable place for confinement. A choice of two possible places of confinement exists in Jordan, the home of the mother and the hospital. The decision regarding the place of confinement needs some assessment and evaluation, to provide some valid criteria for taking the decision. It is worth noting that the facilities available in the health centre and home of the mother, the availability of trained attendant to help in the labour process, and the availability of an ambulance to transfer the woman to the right place if complications arise during delivery, are all crucial in this decision. Or-

ganization of the place of confinement is important to collect further information on the place of delivery, procedures taken, length and complications of each of the three stages of labour and criteria of the newborn at birth. This information with other information collected during the antenatal period and further data on the newborn and the infant could be the basis and perhaps the most solid and valid basis in the future, for predicting mothers and children at high risk, in order to provide them with the extra care they need at the right time and right place.

At this stage after delivery; the baby should be examined briefly at birth to exclude major abnormalities such as imperforate anus and other gross congenital abnormalities. However, it is better to delay the complete newborn physical examination for a few days to allow extra-uterine life to be established. The list of factors which can influence the future morbidity and mortality of the infant is almost endless. Some of the common factors are: complications of pregnancy (e.g. toxaemia, antepartum haemorrhage, hydramnios and urinary tract infection), short gestation, low birth weight, early convulsions and cyanotic spells. Other information is useful such as twin pregnancy, feeding difficulties and the intention of the mother for breast feeding. This and other information can be used to design a comprehensive scoring system to identify infants at high risk, so that extra care and follow up can be provided to them, to improve their health and survival.

6.3. Conclusions

General conclusions: The results of the present study indicated that rural women, the illiterate, those married to unemployed husbands or husbands working in agriculture, those not concerned about their health and who were not informed about the importance of antenatal care, were all more likely to be non users of health services during pregnancy. Differences in the availability and, to some extent, in the quality of health care available in different localities, provided one channel to the under-use. Inferior availability of health services in rural areas and other socially deprived regions implied greater journeys, high travelling costs, long walking time, long waiting time and probably shortage of space, and so on. A second channel is provided by the structuring of the health care institutions in terms of the communication between the doctor and his patient and the emphasis which has been paid by the Ministry of Health to curative medicine which probably created (a) a wrong feeling among pregnant women that "health services are only for sick people"; and (b) lack of interest among doctors in preventive medicine and primary health care.

Rural mothers were at high risk in terms of the individual characteristics they possessed, the low availability and accessibility to health services and the inferior content and quality of health care available to them. More than half of them have to walk to the MOH.MCH centre in order to get antenatal care (Table 29), and this adds a new burden to the already mentioned facts. The alternatives available to them

are very limited; either attending at the MOH.MCH centre, or bypassing the centre to use the nearest private clinic or turning to be non users. However, their adherance to their local community, their perception and beliefs in medical care and their life style could have another impact on their utilization behaviour.

The local doctors in the villages are young, and women may not have confidence in them as they do not fulfil the 'market competition' requirements of experience and reputation. These young doctors do not involve themselves in these small communities, as they stay in the MOH.MCH centre for only a year or so before specialization. They have no job description, no career structure and their interests are often far from the concerns of primary health care and community medicine, as they have been mostly trained for hospital work and in different cultures. Such rapid turnover of doctors has the result of lack of interest among them, weak doctor-patient relationship and weak community involvement.

The MOH.MCH centres were inadequate in coverage of the target population and in relation to the quality of care provided and other activities which should be provided to every pregnant woman as recommended by the Ministry of Health in Jordan [19]. Only 19% of women were attending the MOH.MCH centres during their last pregnancy (Table 31), 13% of all pregnant mothers received antenatal home visits and 17% have been provided with some kind of information designed to encourage them to attend at the antenatal clinic (Tables 57, 58). These findings are in agreement with other

national studies that showed the inadequacy in coverage and activities of the MOH.MCH centres, lack of community participation and health education [2, 22, 23).

Utilization behaviour results from a subtle interactional process through which the women become aware of a need, appraise the nature of that need in relation to competing needs and definitions, examine the alternative solutions, and weighing costs and benefits of such solutions. In all cases, for a pregnant woman to seek antenatal care, her perception of the need for care will have to overweigh the perceived costs (financial and other). The costs and benefits are regional related on account of the differences in the individual characteristics, ways of life, constraints, resources available and of the fact that costs to rural mothers actually increased by the inferior quality of care available to them and by perceiving their health to be better than those in urban areas in terms of having above average health (Table 18) and by claiming lower number of disability days during pregnancy (Table 20) - factors that have been found to be highly associated with utilization behaviour.

Interventions: The results of this study showed conclusively that the provision of primary health care and comprehensive health programmes, removal of access and structural barriers, proper health education for both the mothers and health care providers, and improving the socio-economic status of the families, especially in rural areas, are the steps needed to improve both the utilization of antenatal

care and the general health of the mothers and their children. Other improvements depend on long-term social changes such as income redistribution, educational policies for the illiterate, and comprehensive insurance and support for certain groups at high risk as the unemployed or those who are working in agriculture. However, the scarce resources in the country and the fact that many women in this community are not aware of the importance of antenatal care and are non users of these services even if they are staying within a few metres from the clinic, pointed to the fact that steps must be taken at the individual level, to identify groups of pregnant women at high risk, in order to provide them with the health care they need.

A simple and clear arbitary scoring system was designed by including four factors (area of residence, husband's occupation, level of education of the mother, and distance of the home of the household from the antenatal clinic) as risk indicators. Each mother in the study was given the list of the risk factors she possessed. Different cut-off points were applied to enable the identification of the maximum number of true positive cases (mothers at high risk who are more likely to be non users of antenatal care) by screening the smallest proportion of women at high risk , taking into account the level of improvement in utilizatin which is required by the Ministry of Health and the resources available for achieving this task. It is note worthy that screening of one fifth of urban pregnant mothers and screening one half of rural pregnant mothers, and providing them with the antenatal care they need would achieve the Ministry

of Health goal of improving the utilization rate to 80% by the year 1990. The midwives, TBAs and volunteers from the local communities are suggested to be the basis for the identification of pregnant women and their levels of risk. The health centres should be informed about all these pregnancies for further assessment and investigations.

Health information system: The development of a health information system of complete, comprehensive, reliable and valid data; the application of simple and low cost technology for collecting and storing the data; and the use of special skills and techniques for data validation are all necessary and considered as an essential part of any risk strategy for (a) the evaluation of the health care system and the identification of groups at high risk; (b) designing and evaluation intervention strategies based on the risk approach; and (c) constructing and implementing training and retraining programmes for both the consumers and providers of health care.

The health information system should provide data on the health problems of mothers and their children; risk factors affecting their health; growth and development in children; services provided, their content, quality of care provided, and utilization; and the outcome/outcomes of any intervention. Continuous monitoring and evaluation of the documented information is a necessary step, to ensure the completeness, accuracy and repeatability of the data collected. Interviews with the persons responsible for collecting and completing the forms, and interviews with other persons su-

pervising this task; in addition to evaluative studies on representative samples of these forms, could be the basis for the identification of any defects and problems, where proper action can be taken to improve the data collection and validation.

Points to consider: Few points have to be taken into account regarding this study and the intervention strategies suggested:

1. This kind of intervention (health education and discrimination in favour of preventive care and groups at high risk) may be considered by the Ministry of Health and other health sectors as an unfair concept, since the health care providers are concerned with providing curative high technology hospital care to the detriment of promotive and preventive care which is more likely to have greater impact on improving the overall health status of the population;

2. The Ministry of Health started taking some steps towards the incorporation of the TBAs into the health care system in the country; however, this step has its own oppositions (personal communications);

3. The inferences and implications which can be drawn from the present findings are limited by two factors (a) the study was limited to Amman Governorate and the results cannot be precisely generalized to the

whole country; and (b) the present findings were based on a relatively small number of women and only for one aspect of the maternity cycle (antenatal period);

4. The scoring system suggested in this study is simple, clear, practicable and could achieve the Ministry of Health's goal of improving antenatal care utilization to 80%, by screening about one fourth of pregnant women at high risk. In practice, it is reviewed that "the application of a scoring system to the cases and controls from which it is obtained can be an over-optimistic, and the reduction in performance that occurs is usually of the order of 5%, caused primarily by misclassification errors" [31:229], but it may also be due to any efforts being made to improve the utilization of antenatal care. However, data on further mothers regarding their use of antenatal care and the risk factors applied in this scoring system (area of residence, husband's occupation, level of education of the woman and the distance of her home from the antenatal clinic) can be used to validate the present scoring system; and

5. It is recognized that one study is not a sufficient test for any conceptual framework, and that further studies are needed to determine the generality of the results reported in this study and to address questions that remained unanswered.

Final decision: Finally, primary health care is the basis of any successful health care system, and maternal and child health is one of its major components. Hence the innovations recommended here should be seen as important and consistent with the aim of achieving "health for all by the year 2000". The final decision regarding the implementation of any of the suggested intervention strategies is within the Ministry of Health. Decision-makers in the Ministry of Health with the cooperation with other ministries such as the Ministry of Education and Ministry of Information have to weigh the different strategies suggested; through their knowledge, the resources available and in a cost effectiveness context; if any strategy implemented, evaluated.

I hope that this study will provide some practical values, to ensure financial support for antenatal programmes as required, and to encourage the health care administrators to provide local measures to promote health and good nutrition of pregnant women, screening for high risk mothers at different stages of pregnancy, and to provide health education for the parents regarding pregnancy, delivery, postnatal care, and the care of their children.

6.4. Recommendations

An approach is needed, to improve the utilization behaviour of pregnant women and the nation's health, within the broad social context of the community. Socio-economic, environmental, as well as health services and other related sectors have to be planned in an organized and integrated fashion with its aim of achieving "health for all by the year 2000". To achieve this:

1. Efforts are needed to remove barriers to the uptake take of antenatal care, by developing community health education programmes and the implementation of formal training programmes in self care and self referring and by promoting the public awareness of preventive health habits.

2. Resources within the Ministry of Health should be shifted sharply towards community care and preventive health, particularly towards mothers and children at high risk, with more inputs into health education programmes.

3. The adoption of the risk approach and the outreach approach, to direct health care to those at high risk and in need for care. If such approaches are to be adopted, the manpower policies would have to be reviewed to include new task definitions and career structure, more orientation in preventive and primary health care and new policies to reduce the high turn-

over of doctors in the MOH.MCH centres.

4. Appropriate actions are needed to redistribute health resources and services to overcome urban/rural inequalities, to promote doctor - patient relationship, and to improve the content and quality of care provided through the MOH.MCH centres, especially to rural and socially deprived areas.

5. Coordination among the various health care providers and between the health care system and other related sectors is required, to overcome the duplication of health care and to encourage the health related sectors to be more involved in the health planning process and the implementation of health programmes.

6. Action is needed to improve the role of the TBAs in providing the right and appropriate care, by incorporating them into the health care system. Training and providing them with incentives and tools to work properly hand in hand with other health care providers are required.

7. Steps are needed to improve the referral chain and the health information system at all levels of health care.

8. Research:

A:

This study must be tested in other settings in the

country. Such cumulative and integrated work is necessary, to arrive at a more systematic understanding of the health services delivery and to develop some theories of the system, from which public policy options may be derived and, if implemented, evaluated.

B:

Researchers should give more attention to the question of how people move in the health care system from one source to another, and the role of the physician, the mother, and the society to which the mother adheres in taking this decision.

C:

Comparative evaluation studies on the provider of health care would assist in clarifying how much difference it makes; for example, to have TBAs, midwives, health services providing curative care as the present system or to have health facilities that provide special health education programmes.

D:

Research is needed to identify the extent of the turnover of doctors in the MOH.MCH centres, and to explore the possibility of creating an in-service training programmes for the purpose of more orientation in community medicine and primary health care.

E:

Research is needed to evaluate the effectiveness of mass communication and personal influence in health education. This research needs to be extended to determine the principles by which individuals and groups can be persuaded to alter their health beliefs, attitudes and behaviour.

F:

Efforts for school health education should be planned on an experimental basis, to determine the extent to which such health education programmes can exert a significant and lasting effect on the acquisition of health beliefs and behaviour.

Appendix A. Information to be sought at first antenatal attendance. This list can be modified according to the needs and the resources available.

1. HISTORY.

a) Personal history:

Rheumatic fever

Fits

Mental illness

Urinary tract infection

Thyrotoxicosis

Asthma

Chronic chest disease, pulmonary surgery

Tuberculosis

Heart disease

Diabetes

Neurological conditions

b) Family history:

Diabetes

Hypertension

Pulmonary Tuberculosis

c) Gynaecological history:

Irregular menstrual rhythm

Infertility

Cervical operations

Pelvic floor repair

Myomectomy, hysterotomy

Curettage of the uterus

d) Previous obstetric history:

Habitual abortion

Toxaemia

Hydramnios

Ante-partum haemorrhage

Premature labour

Breech delivery

Twins

Caeserian section

Post-partum haemorrhage

Stillbirth

Neonatal death

Congenital abnormality

e) Present history:

Age

Education

Occupation

Occupation of the husband

Number of pregnancies

Smoking habits

Diet

2. CLINICAL EXAMINATION

Height

Weight

Blood pressure

Teeth and gums

Thyroid gland

Other glands of the neck

Vertebral Column

Breasts

Chest

Heart

Abdomen for the size of uterus

Legs

3. INVESTIGATIONS

Haemoglubin or full blood count

Blood group

Rh factor

Specific tests for syphilis

Urine sugar

Urine protein

Urine/organisms

Vaginal swab and/or cervical smear

Source: Lloyd G (1975)
The antenatal clinic
In: Hart CR (ed).
Screening in general practice.
Churchill Livingstone : 118-120

TABLES

TABLE 1

Population of Jordan according to age and sex (1986)

Age group (years)	Male (%)	Female (%)	Total (%)
0-1	3.0	3.2	3.1
1-4	13.0	13.5	13.2
5-9	15.4	16.2	15.8
10-14	16.0	15.8	15.9
15-19	13.3	13.0	13.1
20-24	9.7	8.2	9.0
25-29	5.3	5.4	5.3
30-34	3.7	4.0	3.9
35-39	3.9	4.8	4.3
40-44	4.0	3.8	3.9
45-49	3.6	3.2	3.4
50-54	2.9	3.6	3.2
55-59	2.0	1.8	2.0
60+	4.2	3.5	3.9
Total	100%	100%	100%

Source : Jordan Fertility and Family Health Survey. Amman, Jordan, 1983

TABLE 2

Distribution of the population in Jordan by Governorates, 1986

Governorate	Population			Percentage of the total population
	No. of Males	No. of Females	Total	
Amman	575,802	523,345	1,099,147	40.8
Zarka	203,267	184,820	388,087	14.4
Balga	99,037	91,045	190,082	7.0
Irbid	346,687	326,015	672,702	25.0
Mafrak	47,273	44,208	91,418	3.4
Karak	61,990	56,156	118,146	4.4
Tafileh	20,918	19,120	40,038	1.5
Ma'an	53,191	40,852	94,043	3.5
Total	1,408,165	1,285,561	2,693,726	100%

Source : Ministry of Health Statistical Year Book, Amman, Jordan, 1986

TABLE 3

Distribution of health and health related indicators in Jordan for the years 1961-1984

Indicator	Year 1961	1972	1981	1984
Infant mortality rate/1000	151	86	64	60
Life expectancy (years)				
Males	45.8	57.4	64.9	67
Females	46.5	59.8	69.7	71
Doctors/10,000	1.8	4.3	10.4	11.4
Hospital beds/10,000	19	11.7	17	18.8
Health centres	-	-	89	150
GNP (JD)	72	163	139	686

Source : Jordan Five Year Plan for Economic and Social Development, 1986-1990, Amman, Jordan

TABLE 4

Distribution of some of the health and health related indicators in different countries

Country	IMR (/1000)	Life expectancy (years)	Doctors/ 10,000	Hospital beds /10,000
Jordan	60	69	11.4	18.8
Egypt	104	58	10	21
North Yemen	163	44	-	-
Ethiopia	122	47	1	3.5
Turkey	83	62.5	6	20
India	-	-	4	8
Sweden	7	77.5	18	50
USA	11	74.5	17	64
UK	11	74	-	-
France	10	75	20	-
Canada	-	-	18	87

Source : Adapted from Jordan Five Year Plan for Economic and Social Development, Amman, Jordan, 1986-1990

TABLE 5

Distribution of the Ministry of Health's health care and village clinics (1985)

Governorate	No. of Health centres	No. of Village clinics	No. of MCH centres
Amman	22	41	17
Zarka	15	14	14
Balga	26	17	11
Irbid	72	41	33
Mafrak	16	30	4
Karak	18	38	15
Tafileh	7	9	4
Ma'an	12	37	3
Total	188	227	101

Source : Ministry of Health Statistical Year Book, Amman, Jordan, 1986

TABLE 6

Area of residence of the mothers

Area of residence	Number of mothers	percentage
Urban	475	67.9
Rural	225	32.1
Total	700	100%

TABLE 7

Distribution of mothers according to their place of delivery by area of residence

Place of delivery	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Private hospital	97 (21.6)	14 (6.8)	111 (16.9)
Public hospital	197 (43.8)	82 (39.6)	279 (42.5)
Home	156 (34.7)	111 (53.6)	267 (40.6)
Total	450 (100%)	207 (100%)	657 (100%)

$x^2 = 31.48$, 2 df, $p < 0.0001$

TABLE 8

Distribution of mothers according to their age by area of residence

Age of mother	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Less than 20 years	116 (25.8)	56 (27.1)	172 (26.2)
20-30 years	247 (54.9)	110 (53.1)	357 (54.3)
30 years or more	87 (19.3)	41 (19.8)	128 (19.5)
Total	450 (100%)	207 (100%)	657 (100%)

$x^2 = 0.18$, 2 df, $p > 0.10$

TABLE 9

Distribution of mothers according to their duration of marriage by area of residence

Duration of marriage	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Less than 5 years	290 (64.4)	140 (67.6)	430 (65.4)
5-10 years	124 (27.6)	62 (30.0)	186 (28.3)
10 years or more	36 (8.0)	5 (2.4)	41 (6.2)
Total	450 (100%)	207 (100%)	657 (100%)

$x^2 = 7.59$, 2 df, $p < 0.05$

TABLE 10

Distribution of mothers by level of education

Level of education	Number of mothers	Percentage
Illiterate	195	29.7
1-6 years	164	25.0
6-9 years	164	25.0
9-12 years	89	13.5
More than 12 years	45	6.9
Total	657	100%

TABLE 11

Distribution of mothers according to their level of education by area of residence

Level of education	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Illiterate	129 (28.7)	66 (31.9)	195 (29.7)
1-6 years	109 (24.2)	55 (26.6)	164 (25.0)
More than 6 years	212 (47.1)	86 (41.5)	298 (45.4)
Total	450 (100%)	207 (100%)	657 (100%)

$x^2 = 1.78$, 2 df, $p > 0.10$

TABLE 12

Distribution of mothers by the total number of pregnancies

Number of pregnancies	Number of mothers	Percentage
1	87	13.2
2	149	22.7
3	113	17.2
4	89	13.5
5	60	9.1
6	91	13.9
7	34	5.2
8	17	2.6
9	8	1.2
10	4	0.6
11	4	0.6
12	1	0.2
Total	657	100%

Mean = 3.8 Minimum = 1 Maximum = 12

TABLE 13

Distribution of mothers according to the total number of pregnancies by area of residence

No. of pregnancies	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
1 or 2	160 (35.6)	76 (36.7)	236 (35.9)
3 or 4	140 (31.1)	62 (30.0)	202 (30.7)
More than 4	150 (33.3)	69 (33.3)	219 (33.3)
Total	450 (100%)	207 (100%)	657 (100%)

$x^2 = 0.12$, 2 df, $p > 0.10$

TABLE 14

Distribution of mothers according to the occupation of their husbands by area of residence

Occupation of husband	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
With government	153 (34.0)	76 (36.7)	229 (34.9)
In agriculture	126 (28.0)	74 (35.7)	200 (30.4)
In private sector	139 (30.9)	37 (17.9)	176 (26.8)
Unemployed	32 (7.1)	20 (9.7)	52 (7.9)
Total	450 (100%)	207 (100%)	657 (100%)

$x^2 = 13.23$, 3 df, $p < 0.005$

TABLE 15

Distribution of mothers according to their family income by area of residence

Family income	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Less than 100 JD	113 (25.1)	130 (62.8)	243 (37.0)
100-200 JD	186 (41.3)	46 (22.2)	232 (35.3)
More than 200 JD	151 (33.6)	31 (15.0)	182 (27.7)
Total	450 (100%)	207 (100%)	657 (100%)

$x^2 = 86.79$, 2 df, $p < 0.0001$

TABLE 16

Distribution of mothers according to their state whether they received information designed to encourage them to attend the clinic by area of residence

Receiving information	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Received	249 (55.3)	100 (48.3)	349 (53.1)
Did not receive	201 (44.7)	107 (51.7)	308 (46.9)
Total	450 (100%)	207 (100%)	657 (100%)

$X^2 = 2.53$, 1 df, $p > 0.10$

TABLE 17

Distribution of mothers according to their general concern about health by area of residence

General concern	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Concerned	250 (55.7)	99 (47.8)	349 (53.2)
Not concerned	199 (44.3)	108 (52.2)	307 (46.8)
Total	449 (100%)	207 (100%)	656 (100%)

$X^2 = 3.2$, 1 df, $p < 0.10$

TABLE 18

Distribution of mothers according to their perceived health status by area of residence

Perceived health	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Above average	156 (34.7)	106 (52.0)	262 (40.1)
Average	127 (28.2)	44 (21.6)	171 (26.1)
Below average	167 (37.1)	54 (26.5)	221 (33.8)
Total	450 (100%)	204 (100%)	654 (100%)

$x^2 = 17.56$, 2 df, $p < 0.0005$

TABLE 19

Distribution of mothers by the total number of disability days during pregnancy

Number of disability days	Number of mothers	Percentage
Nothing	156	23.7
1-10 days	152	23.1
10-20 days	120	18.3
20 or more	229	34.9
Total	657	100%

Mean = 14.8 Median = 13

TABLE 20

Distribution of mothers according to the total number of disability days during pregnancy by area of residence

No. of disability days	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Up to 10 days	206 (45.8)	102 (49.3)	308 (46.9)
10-20 days	83 (18.4)	37 (17.9)	120 (18.3)
20 days or more	161 (35.8)	68 (32.9)	229 (34.9)
Total	450 (100%)	207 (100%)	657 (100%)

$x^2 = 0.74$, 2 df, $p > 0.10$

TABLE 21

Distribution of mothers according to their satisfaction with the MCH care system by area of residence

Satisfaction	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Satisfied	239 (54.7)	77 (38.9)	316 (49.8)
Dissatisfied	198 (45.3)	121 (61.1)	319 (50.2)
Total	437 (100%)	198 (100%)	635 (100%)

$x^2 = 12.99$, 1 df, $p < 0.0005$

TABLE 22

Distribution of mothers according to their distance from the antenatal clinic

Distance	Number of mothers	Percentage
Less than 1 km	289	44.0
1-2 kms	37	5.6
2-3 kms	73	11.1
3-4 kms	63	9.6
4 kms or more	193	29.4
Do not know	2	0.3
Total	657	100%

TABLE 23

Distribution of mothers according to the distance from the antenatal clinic by area of residence

Distance	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Less than 2 km	232 (51.7)	94 (45.6)	326 (49.8)
2-4 kms	98 (21.8)	38 (18.4)	136 (20.8)
4 or more	119 (26.5)	74 (35.9)	193 (29.5)
Total	449 (100%)	206 (100%)	655 (100%)

$x^2 = 6.06$, 2 df, $p < 0.05$

TABLE 24

Distribution of mothers according to the location of their homes from the MOH MCH centre by area of residence

Location of centre	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Within 2 kms	206 (45.9)	86 (41.7)	292 (44.6)
2-4 kms	118 (26.3)	47 (22.8)	165 (25.2)
4 kms or more	125 (27.8)	73 (35.4)	198 (30.2)
Total	449 (100%)	206 (100%)	655 (100%)

$x^2 = 3.91$, 2 df, $p > 0.10$

TABLE 25

Distribution of mothers according to the travelling cost they have to pay to reach the MOH MCH centre by area of residence

Travelling cost	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Less than half JD	271 (60.2)	92 (44.4)	363 (55.3)
Half to one JD	102 (22.7)	44 (21.3)	146 (22.2)
One JD or more	77 (17.1)	71 (34.3)	148 (22.5)
Total	450 (100%)	207 (100%)	657 (100%)

$x^2 = 25.11$, 2 df, $p < 0.0001$

TABLE 26

Distribution of mothers by walking time they need to reach the MOH MCH centre

Walking time	Number of mothers	Percentage
Less than 30 minutes	366	55.7
30-60 minutes	113	17.2
60-90 minutes	110	16.7
90-120 minutes	36	5.5
2 hours or more	32	4.9
Total	657	100%

TABLE 27

Distribution of mothers according to the time they have to walk to reach the MOH MCH centre by area of residence

Walking time	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Less than 30 minutes	265 (58.9)	101 (48.8)	366 (55.7)
30-60 minutes	75 (16.7)	38 (18.4)	113 (17.2)
One hour or more	110 (24.4)	68 (32.9)	178 (27.1)
Total	450 (100%)	207 (100%)	657 (100%)

$x^2 = 6.53, 2$ df, $p < 0.05$

TABLE 28

Distribution of mothers according to the time they have to wait in the MOH MCH centre by area of residence

Waiting time	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Less than 1 hour	128 (28.4)	40 (19.3)	168 (25.6)
1-2 hours	105 (23.3)	24 (11.6)	129 (19.6)
2 hours or more	217 (48.2)	143 (69.1)	360 (54.8)
Total	450 (100%)	207 (100%)	657 (100%)

$x^2 = 25.82$, 2 df, $p < 0.0001$

TABLE 29

Distribution of mothers according the type of transportation they usually use to reach the MOH MCH centre by area of residence

Type of transportation	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Family car	116 (25.8)	60 (29.0)	176 (26.8)
Taxi	137 (30.5)	21 (10.1)	158 (24.1)
Bus	132 (29.4)	10 (4.8)	142 (21.6)
Walking	64 (14.3)	116 (56.0)	180 (27.4)
Total	449 (100%)	207 (100%)	656 (100%)

$x^2 = 154.4$, 3 df, $p < 0.0001$

TABLE 30

Distribution of mothers by their utilization of antenatal care

Utilization of antenatal care	Number of mothers	Percentage
Users	389	59.2
Non-users	268	40.8
Total	657	100%

TABLE 31

Distribution of mothers by source of antenatal care

Source of care	Number of mothers	Percentage
Private doctor	163	41.9
Public hospital	60	15.4
MOH MCH centre	75	19.3
Village clinic	11	2.8
UNRWA health centre	37	9.5
Military health services	34	8.7
University hospital	8	2.1
Do not know	1	0.3
Total	389	100%

TABLE 32

Distribution of users of antenatal care according to their source of care by area of residence

Area of Residence	Using private No. of mothers (%)	Using others No. of mothers (%)	Total
Urban	131 (44.0)	167 (56.0)	298 (100%)
Rural	32 (35.6)	58 (64.4)	90 (100%)
Total	163 (42.0)	225 (58.0)	388 (100%)

$x^2 = 1.67$, 1 df, $p > 0.10$

TABLE 33

Distribution of mothers according to the trimester of initiation of the first antenatal visit

Trimester	No. of mothers	Percentage
First trimester	231	59.4
Second trimester	133	34.2
Third trimester	25	6.4
Total	389	100%

TABLE 34

Procedures and activities provided to the mothers during the antenatal visits and their distribution by source of care (only for mothers who attended the antenatal clinic)

Procedure or activity	No. of mothers (%)			x^2 1 df	Level of significance
	Private sector	Other sectors	Total No. of mothers (%)		
Taking family history	121 (74.2)	88 (39.1)	209 (53.9)	45.52	$p < 0.0001$
Taking past medical history	114 (69.9)	114 (50.7)	228 (58.8)	13.70	$p < 0.0005$
Taking menstrual history	115 (70.6)	93 (41.3)	208 (53.6)	31.28	$p < 0.0001$
Taking past pregnancy history	122 (74.8)	138 (61.3)	260 (67.0)	7.21	$p < 0.01$
Taking present pregnancy history	119 (73.0)	132 (58.7)	251 (64.7)	7.89	$p < 0.01$
Physical examination	114 (69.9)	135 (60.0)	249 (64.2)	3.64	N.S
Measuring blood pressure	123 (75.5)	133 (59.1)	256 (66.0)	10.54	$p < 0.005$
Weighing the mother	115 (70.6)	108 (48.0)	223 (57.5)	18.76	$p < 0.0001$
Information about diet	76 (46.6)	86 (38.2)	162 (41.8)	2.41	N.S
Information about self-care	110 (67.5)	116 (51.6)	226 (58.2)	9.22	$p < 0.005$
Haemoglubin blood test	124 (76.1)	125 (55.6)	249 (64.2)	16.43	$p < 0.0005$

TABLE 35

Mothers* opinions regarding the main reasons for not attending at the antenatal clinic

Reasons for not attending	No. of mothers	Percentage
Mother was not sick	15	5.6
No need for attending	19	7.1
Received advice from others	37	13.8
Long distance from clinic	96	35.8
High travel costs	7	2.6
Long waiting time	71	26.5
No private clinic in the area	23	8.6
Total	268	100%

* Only non-users of antenatal care during last pregnancy

TABLE 36

Distribution of users of antenatal clinic by the maternal characteristics and the location of the home of the mother from the antenatal clinic

Variable	No. of mothers (%)	x^2 1 df	Level of significance
Urban residence	299 (66.4)	30.02	$p < 0.0001$
Rural residence	90 (43.5)		
Age less than 30 years	311 (58.8)	0.12	N.S
Age 30 years or more	78 (60.9)		
Married for less than 5 years	255 (59.3)	0.00	N.S
Married for 5 years or more	134 (59.0)		
Educated mothers	306 (66.2)	30.84	$p < 0.0001$
Illiterate mothers	83 (42.6)		
Having less than 4 pregnancies	222 (63.6)	5.59	$p < 0.05$
Having 4 pregnancies or more	167 (54.2)		
Husband employed with government or private	315 (77.8)	148.75	$p < 0.0001$
Husband unemployed or working in agriculture	74 (29.4)		
Income less than 100 JD	110 (45.3)	30.13	$p < 0.0001$
Income 100 JD or more	279 (67.4)		
Received health information	251 (71.9)	48.69	$p < 0.0001$
Did not receive health information	138 (44.8)		
Concerned about health	259 (74.2)	68.72	$p < 0.0001$
Not concerned about health	129 (42.0)		
Average or above average health	208 (48.0)	64.43	$p < 0.0001$
Below average health	179 (81.0)		
Less than 20 days of disability	222 (51.9)	26.52	$p < 0.0001$
20 days of disability or more	167 (72.9)		
Satisfied with the MCH care system	228 (72.2)	44.52	$p < 0.0001$
Dissatisfied with the MCH care system	145 (45.7)		
Staying within 4 kms from clinic	314 (68.0)	49.92	$p < 0.0001$
Staying 4 kms or more from clinic	73 (37.8)		

TABLE 37

The adjusted odds ratio, the level of significance and the 95% confidence limit for the relationships between risk factors and utilization of antenatal care (multiple logistic regression analysis)

Risk factor *	Adjusted odds ratio	Level of significance	95% CL **
Husband's occupation (government/private, unemp/agriculture)	10.2	< 0.001	6.1 to 17.0
Perceived health status (below average, average or above)	4.61	< 0.001	2.8 to 7.7
Concern about health (concerned, not concerned)	4.47	< 0.001	2.7 to 7.4
Disability days (20 days or more, less than 20)	3.67	< 0.001	2.2 to 6.1
Level of education (educated, illiterate)	3.16	< 0.001	1.9 to 5.3
Health information (received, did not receive)	2.7	< 0.001	1.6 to 4.5
Area of residence (urban, rural)	2.63	< 0.001	1.6 to 4.4
Satisfaction (satisfied, dissatisfied)	2.36	< 0.001	1.4 to 3.9
Distance from clinic (less than 4 kms, 4 kms or more)	2.19	< 0.005	1.3 to 3.6
Parity (less than 4, 4 or more)	1.7	< 0.05	1.02 to 2.8
Age of mother (less than 30, 30 or more)	1.8	< 0.05	1.08 to 3.0

* Risk factors significant at the 5 percent level in the logistic regression model

** 95% confidence limit has been calculated (209,216) as:

95% CL = exp [log odds ratio $\pm$ 1.96 (2SE)] where SE is the standard error

TABLE 38

The proportion of non-users of antenatal care attributed to each risk factor (Population Attributable Risk %)

Risk factor *	b ** value	Adj. odds ratio	Population Attributable Risk (%)
Working in agriculture or unemployed	38.4	10.22	78.0
Not concerned about health	46.8	4.47	62.0
Did not receive health information	46.9	2.7	44.4
Dissatisfied with MCH care system	50.0	2.36	40.5
Illiterate	29.7	3.16	39.1
Rural residence	31.5	2.63	33.9
4 pregnancies or more	46.9	1.7	24.7
4 kms or more from clinic	29.5	2.2	26.1

* Risk factors which were significant at the 5 percent level in the logistic regression model

** b value : Proportion of mothers at high risk (see table 36 for details)

TABLE 39

Grouping of mothers (urban and rural) according to their area of residence, level of education, husband's occupation and distance from the antenatal clinic. Single risk factors were applied.

	Risk Factors			
	Residence	Education	Husband's occupation	Location from clinic
True positive (a)	117	112	178	120
False positive (b)	90	83	74	73
False negative (c)	151	156	90	148
True negative (d)	299	306	315	314
Proportion of true positive $\left(\frac{a}{a+b+c+d}\right)$ *	17.8	17.1	27.1	18.3
Proportion of mothers at high risk $\left(\frac{a+b}{a+b+c+d}\right)$	31.5	29.7	38.4	29.5
Sensitivity $\left(\frac{a}{a+c}\right)$ **	43.7	41.8	66.4	44.8
Specificity $\left(\frac{d}{b+d}\right)$	76.9	78.7	81.0	81.1
Predictive power of pos. test $\left(\frac{a}{a+b}\right)$	56.5	57.4	70.6	62.2
Predictive power of neg. test $\left(\frac{d}{c+d}\right)$	66.4	66.2	77.8	68.0

* a, b, c and d are defined in table 38

** Sensitivity, specificity and predictive power are defined in table 41

TABLE 40

Grouping of mothers (Urban and Rural) according to their residence, education, husband's occupatic and location from the antenatal clinic. Combinations of risk factors were applied.

Group number	Risk* factors	Non-Users No.	Non-Users Cum.** %	Users No.	Users Cum. %	Total No.	Total Cum. %	Observed proportion of non-users	Predicted proportion of non-users	SE of predicted proportic
16	RIFU	14	5.2	1	-	15	2.3	0.93	0.96	0.01
15	RIF	13	10.1	0	-	13	4.3	1.00	0.72	0.05
14	IUF	16	16	2	-	18	7	0.89	0.90	0.03
13	-UF	27	26.1	4	1.8	31	11.8	0.87	0.77	0.04
12	RUF	21	34	4	2.8	25	15.6	0.84	0.90	0.03
11	RIU	12	38.4	4	3.9	16	18	0.75	0.86	0.03
10	IU	29	49.3	11	6.7	40	24.1	0.73	0.71	0.05
9	RU	25	58.6	12	9.8	37	29.8	0.68	0.71	0.05
8	U	34	71.3	35	18.9	69	40.3	0.49	0.48	0.04
7	IF	11	75.4	12	22	23	43.8	0.48	0.49	0.06
6	RI	10	79.1	11	24.8	21	47	0.48	0.41	0.06
5	RF	7	81.7	14	28.4	21	50.2	0.33	0.49	0.06
4	R	15	87.3	43	39.5	58	59.1	0.26	0.21	0.03
3	F	11	91.4	36	48.8	47	66.3	0.23	0.27	0.04
2	I	7	94	41	59.4	48	73.6	0.15	0.21	0.04
1	-	16	100	157	100	173	100	0.09	0.09	0.02
Total		268		387		655				

* I = illiterate; F = staying four kilometres or more from clinic; R = rural; U = unemployed husband or husband working in agriculture

** Cumulative percentage

TABLE 41

Distribution of mothers (Urban and Rural) at different cut-off points of the risk factors th possessed

	Group Cut-Off Points					
	Group 13+	Group 12+	Group 11+	Group 10+	Group 9+	Group
True positive (a)	70	91	103	132	157	219
False positive (b)	7	11	15	26	38	110
False negative (c)	198	177	165	136	111	49
True negative (d)	380	376	372	361	349	277
Proportion of true positive $\left(\frac{a}{a+b+c+d}\right)$	10.7	13.9	15.7	20.2	24.0	33.4
Proportion of mothers at high risk $\left(\frac{a+b}{a+b+c+d}\right)$	11.8	15.6	18.0	24.1	29.8	50.2
* Sensitivity $\left(\frac{a}{a+c}\right)$	26.1	34.0	38.4	49.3	58.6	81.7
** Specificity $\left(\frac{d}{b+d}\right)$	98.2	97.2	96.1	93.3	90.2	71.6
*** Predictive power of pos. test $\left(\frac{a}{a+b}\right)$	91.0	89.2	87.3	83.5	80.5	66.6
**** Predictive power of neg. test $\left(\frac{d}{c+d}\right)$	65.7	68.0	69.3	72.6	75.9	85.0

* Sensitivity : The ability to identify correctly those who have the unwanted outcome

** Specificity : The ability to identify correctly those who do not have the unwanted outcome

*** Predictive power of a positive test : The probability that a person with the risk factor late turns out to experience the unwanted outcome

**** Predictive power of a negative test : The probability that a person without the risk facto turns out not to experience the unwanted outcome

TABLE 42

Grouping of urban mothers according to their level of education, husband's occupation and distance from the antenatal clinic. Single risk factors were applied.

	Risk Factors		
	Education	Husband's occupation	Location from clinic
True positive * (a)	63	106	65
False positive * (b)	66	52	54
False negative * (c)	88	45	86
True negative * (d)	232	246	244
Proportion of true positive $\left(\frac{a}{a+b+c+d}\right)$	14.0	23.6	14.5
Proportion of mothers at high risk $\left(\frac{a+b}{a+b+c+d}\right)$	28.7	35.2	26.5
Sensitivity **	41.7	70.2	43.0
Specificity **	77.9	82.6	81.9
Predictive power of positive test **	48.8	67.1	54.6
Predictive power of negative test **	72.5	84.5	73.9

* Defined in Table 38

** Defined in Table 41

TABLE 43

Grouping of urban mothers according to their level of education, husband's occupation and distance from the antenatal clinic. Combinations of these risk factors were applied.

Group number	Risk* factors	Non-users No.	Non-users Cum.** %	Users No.	Users Cum. %	Total No.	Total Cum. %	Observed proportion of non-users
8	IUF	16	10.6	2	-	18	4.0	0.89
7	UF	27	28.5	4	2	31	10.9	0.87
6	IU	29	47.7	11	5.7	40	19.8	0.73
5	U	34	70.2	35	17.4	69	35.2	0.49
4	IF	11	77.5	12	21.5	23	40.3	0.48
3	F	11	84.8	36	33.6	47	50.8	0.23
2	I	7	89.4	41	47.3	48	61.5	0.15
1	-	16	100	157	100	173	100	0.09
Total		151		298		449		

* I = Illiterate
U = Husband is unemployed or working in agriculture
F = Staying four kilometres or more from the antenatal clinic

** Cumulative percentage

TABLE 44

Distribution of urban mothers at different cut-off points of the risk factors they possessed

	Group Cut-Off Points				
	Group 7+	Group 6+	Group 5+	Group 4+	Group 3+
True positive	43	72	106	117	128
False positive	6	17	52	64	100
False negative	108	79	45	34	23
True negative	292	281	246	234	198
Proportion of true positive $\left(\frac{a}{a+b+c+d}\right)$	9.6	16.0	23.6	26.1	28.5
Proportion of mothers at high risk	10.9	19.8	35.2	40.3	50.8
Sensitivity	28.5	47.7	70.2	77.5	84.8
Specificity	98.0	94.3	82.6	78.5	66.4
Predictive power of positive test	87.8	80.9	67.1	64.6	56.1
Predictive power of negative test	73.0	78.1	84.5	87.3	89.6

TABLE 45

Grouping of rural mothers according to their level of education, husband's occupation and distance from the antenatal clinic. Single risk factors were applied.

	Risk Factors		
	Education	Husband's occupation	Location from clinic
True positive	49	72	55
False positive	16	21	19
False negative	68	45	62
True negative	73	68	70
Proportion of true positive cases	23.8	35.0	26.7
Proportion of mothers at high risk	31.6	45.1	35.9
Sensitivity	41.9	61.5	47.0
Specificity	82.0	76.4	78.7
Predictive power of positive test	75.4	77.4	74.3
Predictive power of negative test	51.8	60.2	53.0

TABLE 46

Grouping of rural mothers according to their level of education, husband's occupation and distance from the antenatal clinic. Combinations of these risk factors were applied.

Group number	Risk* factors	Non-users No.	Non-users Cum.** %	Users No.	Users Cum. %	Total No.	Total Cum. %	Observed proportion of non-users
8	IUF	14	12.0	1	-	15	7.3	0.93
7	IF	13	23.1	0	-	13	13.9	1.00
6	UF	21	41.0	4	5.6	25	25.7	0.84
5	IU	12	51.3	4	10.1	16	33.5	0.75
4	U	25	72.6	12	23.6	37	51.5	0.68
3	I	10	81.2	11	36.0	21	61.7	0.48
2	F	7	87.2	14	51.7	21	71.8	0.33
1	-	15	100	43	100	58	100	0.26
Total		117		89		206		

* I = Illiterate
U = Husband is unemployed or working in agriculture
F = Staying four kilometres or more from the antenatal clinic

** Cumulative percentage

TABLE 47

Distribution of rural mothers at different cut-off points of the risk factors they possessed

	Group Cut-Off Point				
	Group 7+	Group 6+	Group 5+	Group 4+	Group 3+
True positive	27	48	60	85	95
False positive	1	5	9	21	32
False negative	90	69	57	32	22
True negative	88	84	80	68	57
Proportion of true positive cases	13.1	23.3	29.1	41.3	46.1
Proportion of mothers at high risk	13.6	25.7	33.5	51.5	61.7
Sensitivity	23.1	41.0	51.3	72.6	81.2
Specificity	98.9	94.4	89.9	76.4	64.0
Predictive power of positive test	96.4	90.6	87.0	80.2	74.8
Predictive power of negative test	49.4	54.9	58.4	68.0	72.2

TABLE 48

Distribution of mothers according to their utilization of the MOH MCH centres during the last two years by area of residence

MCH use	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Users	182 (41.0)	94 (45.6)	276 (42.5)
Non-users	262 (59.0)	112 (54.4)	374 (57.5)
Total	444 (100%)	206 (100%)	650 (100%)

$x^2 = 1.06$, 1 df, $p > 0.10$

TABLE 49

Distribution of users of MOH MCH centres according to their satisfaction with travelling time to the centre by area of residence

Satisfaction with travelling time	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Completely satisfied	116 (63.7)	50 (53.2)	166 (60.1)
Somewhat satisfied	40 (22.0)	18 (19.1)	58 (21.0)
Not satisfied	26 (14.3)	26 (27.7)	52 (18.8)
Total	182 (100%)	94 (100%)	276 (100%)

$x^2 = 7.27$, 2 df, $p < 0.05$

TABLE 50

Distribution of users of MOH MCH centres according to their satisfaction with the waiting time in the centre by area of residence

Satisfaction with waiting time	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Completely satisfied	57 (45.6)	16 (23.9)	73 (38.0)
Somewhat satisfied	25 (20.0)	10 (14.9)	35 (18.2)
Not satisfied	43 (34.4)	41 (61.2)	84 (43.8)
Total	125 (100%)	67 (100%)	192 (100%)

$x^2 = 13.19$, 2 df, $p < 0.005$

TABLE 51

Distribution of users of MOH MCH centres according to their satisfaction with the time spent with the doctor by area of residence

Satisfaction with time spent with doctor	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Completely satisfied	75 (47.5)	14 (17.1)	89 (37.1)
Somewhat satisfied	51 (32.3)	21 (25.6)	72 (30.0)
Not satisfied	32 (20.3)	47 (57.3)	79 (32.9)
Total	158 (100%)	82 (100%)	240 (100%)

$x^2 = 36.78$, 2 df, $p < 0.0001$

TABLE 52

Distribution of users of MOH MCH centres according to their satisfaction with the doctors' courtesy by area of residence

Satisfaction with doctors' courtesy	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Completely satisfied	93 (55.7)	20 (23.8)	113 (45.0)
Somewhat satisfied	41 (24.6)	26 (31.0)	67 (26.7)
Not satisfied	33 (19.8)	38 (45.2)	71 (28.3)
Total	167 (100%)	84 (100%)	251 (100%)

$x^2 = 26.30$, 2 df, $p < 0.0001$

TABLE 53

Distribution of users of MOH MCH centres according to their satisfaction with the nurses'courtesy by area of residence

Satisfaction with nurses' courtesy	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Completely satisfied	82 (48.2)	18 (21.2)	100 (39.2)
Somewhat satisfied	50 (29.4)	28 (32.9)	78 (30.6)
Not satisfied	38 (22.4)	39 (45.9)	77 (30.2)
Total	170 (100%)	85 (100%)	255 (100%)

$x^2 = 21.20$, 2 df, $p < 0.0001$

TABLE 54

Distribution of users of MOH MCH centres according to their satisfaction with the quality of care provided by area of residence

Satisfaction with quality of care	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Completely satisfied	67 (41.1)	20 (24.1)	87 (35.4)
Somewhat satisfied	46 (28.2)	14 (16.9)	60 (24.4)
Not satisfied	50 (30.7)	49 (59.0)	99 (40.2)
Total	163 (100%)	83 (100%)	246 (100%)

$x^2 = 18.40$, 2 df, $p < 0.0005$

TABLE 55

Distribution of users of MOH MCH centres according to their satisfaction with the cost of consultation by area of residence

Satisfaction with cost of consultation	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Completely satisfied	149 (88.7)	70 (89.7)	219 (89.0)
Somewhat satisfied	17 (10.1)	8 (10.3)	25 (10.2)
Not satisfied	2 (1.2)	- -	2 (0.8)
Total	168 (100%)	78 (100%)	246 (100%)

TABLE 56

Distribution of users of MOH MCH centres according to their general opinions in the MOH MCH centres by area of residence

Mothers' opinions	Urban No. of mothers (%)	Rural No. of mothers (%)	Total
Good or minor changes were needed	150 (91.5)	58 (68.2)	208 (83.5)
Basic changes were needed	14 (8.5)	27 (31.8)	41 (16.5)
Total	164 (100%)	85 (100%)	249 (100%)

$x^2 = 20.30$, 1 df, $p < 0.0001$

TABLE 57

Distribution of mothers according to whether they received antenatal home visits from the health workers in the MOH MCH centres

Home visits	No. of mothers	Percentage
Received	85	12.9
Did not receive	572	87.1
Total	657	100%

TABLE 58

Distribution of mothers who received health information designed to encourage them to attend at the antenatal clinic by the source of such information

Source of information	No. of mothers	Percentage
MOH MCH centres	59	16.9
Other medical sources	163	46.7
Radio and TV	21	6.0
TBAs	13	3.7
School	15	4.3
Relatives and friends	68	19.5
Do not know	10	2.9
Total	349	100%

TABLE 59

Distribution of users of MOH MCH centres according to whether the health workers in the centres arranged antenatal classes for them

Antenatal classes	No. of mothers	Percentage
Yes	105	38.3
No	169	61.7
Total	274	100%

TABLE 60

Mothers' opinions regarding the main reasons for not attending at the MOH MCH centres (non-users only)

Reasons for not attending	No. of mothers	Percentage
Was not sick	26	7.0
No need to attend	40	10.7
Got advice from relatives	49	13.1
Long distance from centre	104	27.9
Long waiting time	90	24.1
Prefer other sectors	42	11.3
Courtesy of medical staff was not good	21	5.6
Do not know	1	0.3
Total	373	100%

TABLE 61

The distribution of mothers who were satisfied with the MCH care system by their characteristics and the characteristics of the health care system. All variables were dichotomies.

Variable *	No. of mothers (%)	x^2 1 df	Level of significance
Urban residence	238 (54.8)	12.74	$p < 0.0005$
Rural residence	78 (39.2)		
Husband working with government or private	216 (55.4)	11.57	$p < 0.001$
Husband working in agriculture or unemployed	100 (41.2)		
Income less than 100 JD	100 (42.4)	8.10	$p < 0.005$
Income 100 JD or more	216 (54.4)		
Received health information	184 (54.8)	6.31	$p < 0.05$
Did not receive health information	132 (44.4)		
Concerned about health	186 (54.4)	5.77	$p < 0.05$
Not concerned about health	129 (44.5)		
Average or above average health	194 (46.2)	6.86	$p < 0.01$
Below average health	121 (57.6)		
Staying within 4 kms from clinic	264 (59.3)	52.84	$p < 0.0001$
Staying 4 kms or more from clinic	51 (27.3)		
Staying within 4 kms from MOH MCH centre	259 (59.0)	48.60	$p < 0.0001$
Staying 4 kms or more from MOH MCH centre	55 (28.5)		
Travel cost less than 1 JD	273 (55.5)	26.39	$p < 0.0001$
Travel cost 1 JD or more	43 (30.5)		
Less than 1 hour walking time to MCH centre	260 (56.3)	26.70	$p < 0.0001$
1 hour or more walking time to MCH centre	56 (32.7)		
Waiting time of less than 3 hours	227 (55.1)	12.06	$p < 0.001$
Waiting time of 3 hours or more	89 (40.3)		

* Variables significant at the 5 percent level

TABLE 62

The adjusted odds ratio, level of significance and the 95% confidence limit for the relationships between risk factors and satisfaction with the MCH care system (logistic regression analysis)

Risk factor *	Adj. odds ratio	Level of significance	95% CL **
Location of MCH centre (within 4 kms, 4 kms or more)	4.2	<0.001	2.6 to 6.7
Waiting time (less than 3 hrs, 3 hrs or more)	2.1	<0.001	1.3 to 3.5
Husband's occupation (government/private, unemp/agriculture)	1.83	<0.01	1.1 to 2.9
Area of residence (urban, rural)	1.6	<0.05	1.04 to 2.5

* Risk factors which were significant at the 5 percent level in the logistic regression model

** 95% confidence limit has been calculated (209,216) as:
exp [log odds ratio $\pm$ 1.96 (2 SE)], where SE is the standard error

TABLE 63

The proportion of dissatisfaction attributed to each risk factor (Population Attributable Risk %)

Risk factor *	b ** value	Adj. odds ratio	Population Attributable Risk (%)
Far location of MCH centre	30.5	4.2	49.4
Long waiting time	34.9	2.1	27.8
Working in agriculture or unemployed	38.4	1.83	24.0
Rural residence	31.4	1.6	15.9

* Risk factors which were significant at the 5 percent level in the logistic regression model

** b value : Proportion of mothers at high risk

INTERVIEW FORM

A STUDY OF THE USE OF ANTENATAL CARE SERVICES AND THE SATISFACTION WITH THE MCH CARE SYSTEM IN JORDAN

GENERAL INSTRUCTIONS

1. These questions are to be asked to the mother/wife under the study in the hospitals (for hospital deliveries) and at homes (for home deliveries).

2. It is better to interview the mother without an audience (family, friends, others).

3. Ask the question exactly as in this interview form and record the respondent's answer exactly.

4. Do not give the respondent any of your opinion regarding the answer of the question except if mentioned in the question.

5. If the respondent's answer is not clear or incomplete, try to get some clarification from her.

6. If the respondent refuses to answer a particular question, try to get the answer but not so hard.

7. Coding the answers would be at the end of each working day.

SURNAME _____

FIRST NAME _____

ADDRESS _____

_____

[ ] 1. Urban

[ ] 2. Rural

PLACE OF DELIVERY _____

[ ] 1. Private hospital

[ ] 2. Public hospital

[ ] 3. Home

---

1. How old are you?

   Months _____ Years _____

2. What is your current marital status?

   [ ] 1. Married

   [ ] 2. Divorced

   [ ] 3. Widowed

   [ ] 4. Separated

3. How long have you been married:

   Months _____ Years _____

4. How many years of schooling did you complete? (Record the number of years, if none write 0).

   _____

5. How many times have you been pregnant in your life? Include the last pregnancy.

   _____

6. How many years of schooling did your husband complete? (Record the number, if none write 0).

_____

7. What is your husband's occupation? (Please describe as fully as possible).

_____

[ ] 1. With the government sector

[ ] 2. In agriculture

[ ] 3. In the private sector

[ ] 4. Unemployed

[ ] 8. Do not know

8. What is the total combined monthly income of all members of your family from the different sources (in Jordanian dinars)?

_____

9. a) Did you ever receive any kind of information encouraging you to go to the antenatal clinics if you become pregnant?

[ ] 1. Yes (ask question b)

[ ] 2. No (skip to question 10)

[ ] 8. Do not know

b) If yes, what was the main source of this information (tick one source)?

[ ] 1. MCH centres

[ ] 2. UNRWA centres

[ ] 3. Private doctor

[ ] 4. Medical sources not including 1, 2 and 3

[ ] 5. Public media (radio, television)

[ ] 6. Midwife , traditional birth assistant

[ ] 7. School

[ ] 8. Do not know

[ ] 9. The elderly in the family (mother, sisters, relatives, friends)

[ ] 10. Others (please specify)

_____

10. During your last pregnancy, would you say that you were generally concerned about your health?

[ ] 1. Yes

[ ] 2. No

[ ] 8. Do not know

11. During your last pregnancy, would you say that your health in general was above average, average, below average?

[ ] 1. Above average

[ ] 2. Average

[ ] 3. Below average

[ ] 8. Do not know

12. How many days altogether during your last antenatal period, did you stay in bed more than half of the day because of illness? Include any days you stayed in the hospital. (Record the number, if none write 0).

_____

13. a) During your last pregnancy, did you visit a doctor for a general checkup of your pregnancy? This includes any visit to a nurse, a midwife or any other health personnel on the doctor's staff instead of the doctor.

[ ] 1. Yes

[ ] 2. No

[ ] 8. Do not know

b) IF SHE VISITED A DOCTOR
What was the source of care in the last visit?

[ ] 1. Private doctor

[ ] 2. Public hospital

[ ] 3. MCH centre

[ ] 4. Village health clinic

[ ] 5. UNRWA health centre

[ ] 6. Military hospital

[ ] 7. University hospital

[ ] 8. Do not know

[ ] 9. Did not visit any source

c) IF SHE VISITED A DOCTOR
How many months were you pregnant, when you first visited the doctor for a general checkup?

[ ] 1. 1-3 months

[ ] 2. 4-6 months

[ ] 3. More than 6 months

[ ] 8. Do not know

d) IF SHE VISITED A DOCTOR
Here are some activities usually taken when the pregnant mother goes to the health care provider for a checkup. Please put down the appropriate answer. The possible answers are "Yes, No and Do not know".

The doctor asked about my family history.

_____

The doctor asked about my menstrual history.

_____

The doctor asked about my past medical (including surgical) history.

_____

The doctor asked about my past pregnancy history.

_____

The doctor asked about my present pregnancy history.

_____

The doctor made a general physical examination.

_____

The doctor ordered a haemoglubin blood test.

_____

The medical staff in the clinic explained to me how to take care of myself during pregnancy.

_____

The medical staff in the clinic measured my weight.

_____

The medical staff in the clinic measured my blood pressure.

_____

The medical staff in the clinic provided me with useful information about what to eat and what not to eat during pregnancy.

_____

e) IF SHE DID NOT VISIT THE DOCTOR

What was the main reason for not visiting the doctor for a general checkup during your pregnancy? (A list of possible reasons is included at the end of this form, do not read the list to the mother, write the mother's own words in answering this question. This answer is later to be matched with the corresponding reason in the list).

_____

_____

14. a) Did you visit the MCH centres during the last two years? This includes any visit to a nurse, a midwife, or other health personnel on the doctor's staff, instead of the doctor.

[ ] 1. Yes (ask question b)

[ ] 2. No (ask question c)

[ ] 8. Do not know

b) During your last visit to the MCH centre, were you (1) completely satisfied, (2) somewhat satisfied, or (3) not at all satisfied. Please give only one of the above three answers for the following items.

The amount of time it took you to get there _____

The amount of time you had to wait to see the doctor, once there _____

The amount of time the doctor spent with you _____

The out-of-pocket cost for the medical care received _____

The quality of care you felt was provided at the visit _____

The courtesy and consideration of the doctor in the centre _____

The courtesy and consideration of the nurse in the centre _____

c) What was the main reason for not going to the MCH centre during the last two years? (A list of possible reasons is included at the end of this form, do not read the list to the mother, please write the mother's own words in answering this question. This answer is to be matched later with the corresponding reason in the list).

_____

_____

15. What kind of transportation do you usually use to get to the nearest MCH centre?

[ ] 1. Family car

[ ] 2. A taxi

[ ] 3. A bus or other public transport

[ ] 4. Walk

[ ] 5. Others (please specify) _____

[ ] 8. Do not know

16. How far is the nearest MCH centre to your home?

[ ] 1. Less than 2 kms

[ ] 2. 2-4 kms

[ ] 3. Four kms or more

[ ] 8. Do not know

17. What is the average distance between your home and the antenatal clinic?

[ ] 1. Less than 1 km

[ ] 2. 1-2 kms

[ ] 3. 2-3 kms

[ ] 4. 3-4 kms

[ ] 5. Four kms or more

[ ] 8. Do not know

18. If you go to the nearest MCH centre by a taxi, how much does it cost you to get there (one way)?

(In pence) _____

19. If you walk to the nearest MCH centre, how long does it take you to get there (one way in minutes)?

_____

20. How long do you have to wait to see the doctor in the centre, once you get there (in minutes)?

_____

21. Which of the following statements expresses your overall view of the MCH centres? (READ ALL THREE STATEMENTS BEFORE GIVING AN ANSWER).

[ ] 1. The MCH centres work very well and there is no need for any change

[ ] 2. There are some good things in the MCH centres, but minor change is needed to make them work better

[ ] 3. The MCH centres have so much wrong with them that they need basic change

[ ] 8. Do not know

22. Did you receive any home visits from the health workers in the MOH MCH services during your last antenatal period?

[ ] 1. Yes

[ ] 2. No

[ ] 8. Do not know

23. Did the medical staff at the centre arrange regular meetings with pregnant mothers to explain to them the process of pregnancy and how to take care of themselves during pregnancy?

[ ] 1. Yes

[ ] 2. No

[ ] 8. No opinion

24. In general, are you satisfied with the MCH care system in Jordan?

[ ] 1. Yes

[ ] 2. No

[ ] 8. Do not know

A LIST OF POSSIBLE REASONS FOR NOT GOING FOR A GENERAL CHECKUP DURING LAST PEGNANCY (QUESTION 13e). THE SAME LIST TO BE APPLIED TO QUESTION 14c (REASONS FOR NOT GOING TO MCH CENTRES DURING LAST TWO YEARS)

1. Was not sick.
2. Do not see the need to go.
3. I received health care from the elderly in the family (mother, sisters, relatives and friends).
4. Did not know of a nearby centre.
5. Could not get an appointment.
6. There was no easy way to get to the centre.
7. Could not afford the costs of transportation.
8. Do not know.
9. It costs too much for consultation and treatment.
10. Would have had to wait too long in the centre before seeing the doctor.
11. Do not trust the doctors.
12. The care which the doctor provides is not good enough.
13. Prefer to go to other health care providers.
14. The absence of doctors when they are needed.
15. The absence of nurses and midwives when they are needed.
16. The courtesy and consideration of the staff is not good enough.
17. Doctors cannot do anything to cure illness.
18. No private doctor in the area.
19. Others (please specify).

_____

_____

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