Maternal utilisation of health care services and its effect on the health status of delivery outcomes in Riyadh area: A study based on the attendence of pregnant women at ANC clinics in the Primary Health Care centres.

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Maternal Utilisation of Health Care Services and its Effect on the Health Status of Delivery Outcomes in Riyadh Area:

A study based on the Attendance of Pregnant Women at ANC Clinics in the Primary Health Care Centres

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DEDICATION

This study is dedicated with love and admiration to my mother whose love, encouragement and prayer were my real light to finish my thesis.

It is also dedicated with honor and special thanks to my wife who supported, co-operated and encouraged me throughout this study.

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SUMMARY

International Conference on Population and Development (ICPD), Cairo, 1994 focussed the importance of reproductive health issues and since then a wide attention has been given in this area of research. Prior to that, the second half of the last century has shown a dramatic change in the technological advancement and thus improved the health situation of the population. Moreover, many of the underdeveloped and developing countries could reduce its infant and child mortality and such health hazards with the use of proper health measures. Thus many of the researches were given due priority to cop with such problems, particularly in the developing nations. Also attention has been given in particular areas of health care delivery system and many of the governments directed their large part of economy towards this direction. Health care services particularly prenatal, antenatal and post-natal care services draw attention widely, which in turn not only determine the families' health status, but also improves the expectancy of life at birth.

The health care services began to development nation-wide in early 1980s (1400H) aiming to provide comprehensive health care for all people in the Kingdom. As part of the Primary Health Care (PHC) program, maternal and childcare aims at promoting and protecting the health of women at the child bearing age. Each primary health care center incorporates an antenatal care clinic (ANC) to provide comprehensive health care to women from the beginning of their pregnancy until delivery. The Ministry of Health (MOH) has emphasises the importance of adequate antenatal health care for pregnant women by recommending a specific pattern of visits throughout the pregnancy period and by establishing procedures for promoting attendance. The recommended number of antenatal care visits had been decided to be 10 to 13 during a normal pregnancy period. Although the

numbers of studies are few, the available documents indicate that the attendance at the ANC clinic is poor.

Thus, the present research is an attempt to study the antenatal care services in Saudi Arabia, as not many studies have been undertaken to explore the importance of a better care service been used. Illustrating into six chapters, the first chapter elaborates a brief introduction in addition to the detailed pattern of antenatal care service pattern in the Kingdom and other countries. Second chapter gives the literatures reviewed for this study, while the third chapter is the methodology adopted for selecting the desired sample and also the problem associated with the study. Analysis is being done in two chapters, where fourth chapter explains the distribution of study sample, while fifth is bivariate and multivariate approach used to explain the acceptance of antenatal care services. Finally, the sixth chapter is the discussion of the finding and conclusion, in addition to the recommendations.

Identifying the major socio-economic and health indicators in explaining the attendance of pregnant women in the antenatal care clinics for their delivery care services, education of the women and the families economic status as the two major constraints to go for higher number of antenatal visits at the clinics. Education not only improves the women's knowledge towards the requirement of better care in the early pregnancy and the follow-up during the subsequent months of her pregnancy, but she accepts in a more systematic or organised manner as well. Family's economic level not only allows the women to have an easy access to the services, but their other social indicators also might be linked with this indicator and would be better than those of poor women.

In addition, a variety of factors shown to have explaining the patterns of antenatal

care services. Particularly, the presence of a baby-sitter, physician's sex and her nationality are significantly related to the acceptance pattern. In the end, the research focussed on a standard woman who has the best antenatal visits at the clinics. It has seen that those woman who are educated and having a better economic condition at the household may be termed as the standard woman. These are the indicators often determines the other factors (socio-economic) which in turn influence the woman to have a regular, ideal or irregular visits at the clinics. Also, it has seen that presence of other young child at home and physician sex etc. determines the frequency of the woman's ANC visits. However, an improvement in socioeconomic condition at the household is directly related to these factors and hence education of the women and economic condition at the household are the major contributing factors.

The research also formulates certain recommendations for policy implications. It recommends that the health teams in PHC centers through the mass media, especially television and radio, should carry out health education for the pregnant women. It is also recommends for an increased number of qualifies Arabic medical staff (Physicians and midwives) to reduce the waiting time of the women for receiving care and to increase the frequency of visits at the centers. If the PHCC managers make ensure that the women visits the same physician in their each visit, which would probably increase the number of ANC visits. Provision of recreational facilities for the young children at the centers would motivate the women to visit the clinics more often. Periodic meetings should be organised between the ANC doctor and midwives, and a representative women group from the catchment areas to discuss PHC development and especially maternal and child health (MCH).

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER ONE

INTRODUCTION

1.1 GENERAL SAUDI ARABIAN BACKGROUND

1.1.1 HISTORICAL DEVELOPMENT
1.1.2 LOCATION OF SAUDI ARABIA
1.1.3 THE GEOGRAPHY AND CLIMATE OF SAUDI ARABIA
1.1.4 LANGUAGE AND RELIGION OF SAUDI ARABIA
1.1.5 POPULATION OF SAUDI ARABIA
1.1.6 ECONOMY OF SAUDI ARABIA
1.1.7 REGION ADMINISTRATION IN THE KINGDOM

1.2 HISTORY OF ISLAM

1.3 HISTORICAL DEVELOPMENT OF ISLAMIC MEDICINE

1.3.1 HEALTH IN PRE-ISLAMIC ARABIA
1.3.2 HEALTH IN THE EARLY PERIOD OF ISLAM
1.3.3 HEALTH IN THE UMAYYAD AND ABBASIDE PERIOD
1.3.4 HEALTH AFTER ABBASIDE PERIOD

1.4 HEALTH CARE SERVICES IN SAUDI ARABIA

1.5 DEVELOPMENT PLANS

1.5.1 FIRST DEVELOPMENT PLAN (1970-1975)
1.5.2 SECOND DEVELOPMENT PLAN (1975-1980)
1.5.3 THIRD DEVELOPMENT PLAN (1980-1985)
1.5.4 FORTH DEVELOPMENT PLAN (1985-1990)
1.5.5 FIFTH DEVELOPMENT PLAN (1990-1995)
1.5.6 SIXTH DEVELOPMENT PLAN (1995-2000)

CHAPTER ONE

INTRODUCTION

1.1 GENERAL SAUDI ARABIAN BACKGROUND:

1.1.1 HISTORICAL DEVELOPMENT:

The name of "Saudi Arabia" derives from the historic role of the Saudi dynasty in the life of the nation. When Shaikh Muhammad bin Abdul-Wahhab launched his appeal to all Muslims to end their factionalism and return to the original purity of Islam, it was Amir (Prince) Muhammed bin Saud who become the driving force behind his movement. The first Saudi state was founded in 1158 H. (corresponding to 1745 AD.) and was restricted to the few Najed towns and villages held together by Muhammed bin Saud. The following century and a half twice witnessed a great expansion of the Saudi state even beyond the limits of the Arabian peninsula (MOI,1985).

The third, and significant, stage of the Saudi rule started when King Abdulaziz bin Abdulrahman Al-Saud (Ibn Saud) recovered the city of Riyadh from its usurpers on 15 January 1902 in an intrepid action which became the starting point of the renaissance of the country (MOI,1985). In 1925 Ibn Saud occupied the west coast of Arabia and was proclaimed King of the Hijaz in addition to his title as Sultan of Najd. In 1927 Najd and eastern part of Arabia were unified with the Hijaz, and the official name of Ibn Saud's domains was changed to the Kingdom of Najd and the Hijaz and their Dependencies (Saudia,1978). On Thursday, 23 September 1932 the country came to be known as "The Kingdom of Saudi Arabia' instead of the

various names it had carried before. The new name was proclaimed by Royal Decree No. 2716, dated 18 September 1932, issued by King Abdul-Aziz. That day has become a landmark in the history of the country, and is considered a national day which is celebrated by the people every year, for it is regarded as a turning point, for the better, in the course of their lives (MOI,1990). Before that year the component bodies of the Council of Ministers has begun to evolve. In 1931 the Ministry of Foreign Affairs was established and the Viceroy of the Hijaz become its head. Others followed: the Ministry of Finance in 1932; Defence in 1944; Interior in 1951; Communication, Education, and Health in 1951; Commerce in 1954 and Information and Petroleum in 1961 (Saudia, 1978).

1.1.2 LOCATION OF SAUDI ARABIA:

The Kingdom of Saudi Arabia (KSA) occupies about 87 percent of the Arabian peninsula (870.000 sq.miles), which is located in the south west part of Asia between latitude 20-30 degrees and longitude 50-52 degrees (Schofield, 1986). The Kingdom shares extensive boundaries with many countries. In the north, it borders Jordan for 740 km, Iraq for 900 km, and Kuwait for 220 km. The eastern boundaries are 1,950 km in length, of which 610 are seacoast and the remainder are borders with Qatar 80 km, United Arab Emirates 480 km and Oman 780 km. The southern boundary totals 1,240 km that is shared with the Yemen Arab Republic. The western coast on the Red Sea, which starts from Jordan in the north to Yemen in the south, is 1,800 km long (SA,1978).

1.1.3 THE GEOGRAPHY AND CLIMATE OF SAUDI ARABIA:

The geographical particularities of Saudi Arabia can be classified into six major categories (SA,1978):

1. *Tihama Plain*: A low coastal sandy plain with sedimentary rocks on the Red Sea of variable width: as narrow as 25 km in the north and center and as wide as 45 km in the south

2. *Sarawat Mountains*: The main feature of the peninsula, apart from the deserts, consists of a series of mountains parallel to the Red Sea. They are of igneous and metamorphic rock of variable width ranging from 120 km to 200 km and reaching a maximum width between Al-Wajh and Yanbu. Their elevation gradually rises from the north to the south with average height of 1,200 meters above sea level between Aqaba and Makkah and 1,800 meters between Makkah and Najran with a maximum height of 3,000 meters above sea level.

3. *The Central Plateau* (Najd) extends between the lava flows in the west and the Dahna desert in the east, covering 640 km. It also extends from the Nafud (desert) in the north and the Ruba Al-Khali (desert) in the south for a distance of 800 km. The Najd plateau declines from west to east with a slight rise in the middle at approximately 24 degrees north.

4. *The Northern Plateaux* extends from the Sarhan valley in the north west to the Kuwait frontier in the east. A number of plateaux such as Al-Hammad, Al-Hijrah and Al-Dibdibah are a feature of this area.

5. *The Great Nafud* is an extensive area of sand (56,320 square kilometers), forming a triangle with its base, 300 km long in the north, south of the plateaux Al-Dibdibah and Al-Hammad. Its two sides, of approximately 250 km, are bordered in the west by the Hijaz plateau and in the south by the Najd plateau.

6. *The Ruba Al-khali* (literally, the Empty Quarter) is a major feature of Saudi Arabia. It is a sand ocean extending between 16 degree and 22 degree north, and 45 degree and 56 degree east. The area comprises 640,000 square kilometers of elevated sand.

The climate of the Kingdom is generally hot, with a mean summer temperature, in the central regions, of 40 c. During the cool season, the temperature drops but rarely reaches freezing point. In the coastal areas, the climate is more humid and moderate. Rainfall throughout the peninsula is low and averages only 10 cm a year except in the southwest (Assir region) where precipitation is greater. The most important crops of the Kingdom are dates, wheat, fruit and vegetables.

1.1.4 LANGUAGE AND RELIGION OF SAUDI ARABIA:

The official language of the Kingdom is Arabic. Arabic is the sacred language of Islam, one of the most widely spoken international languages in use today and one of the greatest

literary languages in history, with its immense range, power and beauty. The second language that been understood in the country is English. It is spoken by many health administrators and professionals, particularly physicians.

The religion of Kingdom is Islam, which means "submission to the will of God". Islam has been proclaimed to the world through the Prophet Muhammad, who is the last in a succession of inspired prophets. With more than one billion adherents throughout the world, Islam is one of the great monotheistic religions revealed to mankind. Islam is not only a religion preaching equality, tolerance of other faiths, and submission to the will of God, but also a practical legal system and a way of life, laying down rules for behavior in private, social and business activities. The Muslim basic duties are represented by the profession of faith, prayer five times a day, almsgiving, fasting in the holy month (Ramadan) and performing the pilgrimage to Makkah.

Saudi Arabia follows Shariah (Law of Islam) in its system of Government. Shariah is revealed in the Koran (Holy book) and expounded in Sunah (the Prophet's teachings). All legal transactions in the country, even administrative codes and decisions, are enacted within the framework of the Shariah.

1.1.5 POPULATION OF SAUDI ARABIA:

Little is known about the history of population changes in the Arabian Peninsula except that gains through invasions have been exceeded by losses through emigration. The Arabian Peninsula had been invaded by the Amoreans, Canaanites, Phoenicians and others. The Red Sea

and the Arabian Gulf has never been an obstacle to human movement. Persian and Indian influence can be discovered in the Eastern province. Due to the collapse of the Ma'rib Dam, emigrants from the Arabian Peninsula made their way to Iraq and Palestine (Jerusalem) among whom were the Ghasasinah and Manathirah. From the time of the Prophet Muhammad (peace be upon him) Muslims spread the message of Islam to Asia, Africa and part of Europe. Three hundred years before the discovery of petroleum most of the Arabs in the peninsula emigrated to Iraq, Egypt, Iran, Palestine and Libya in order to look for a better life. With the discovery of black gold, every Arab has become inclined to go back to the Arabian peninsula, because of the economic growth and cultural development in the Arabian peninsula in general and the Kingdom of Saudi Arabia in particular.

The first reported census, held in 1974 (1394 H) recorded the population as 7,012,642 (SA,1979). The present population of the Kingdom of Saudi Arabia, as estimated, in the last census (1992), is 16,930,625 out of which 4,624,734 (27.3%) are expatriates. Thus the native population of the Kingdom is 12,305,891, distributed in thirteen administrative districts (Table 1.1) (MOF,1993). The 76% increase between 1974 and 1992 is attributed to the relatively high growth rate, estimated to be 4.6 in 1980 and 4.2 in 1987 (UNICEF, 1990). The population of Saudi Arabia (SA) can be classified into two major groups, 69% urban dwellers and 31% rural, including Bedouin.

TABLE 1.1

The Distribution of Saudi Population in the Thirteen Administrative districts (1974 & 1992)

ADMINISTRATIVE DISTRICT	POPULATION (1974)	POPULATION (1992)
Riyadh	1,287,388	2,613,228
Makkah	1,754,108	2,780,458
Eastern Province	769,648	1,898,462
Asir	681,261	1,149,618
Medinah	519,295	836,764
Jaizan	403,106	734,078
Qasim	319,496	611,462
Hail	259,979	346,180
Tabuk	193,763	401,256
Baha	158,905	289,890
Najran	147,980	242,066
Northern Frontier	127,745	178,389
Jauf	96,968	224,040
Border Bedouins	293,000	Nil
TOTAL	**7,012,642**	**12,305,891**

Source: SA.1978 and MOF.1993.

The majority of fixed Saudi inhabitants live in the main cities of the Kingdom, as shown in Table 1.2, distributed in five main regions. These cities are Riyadh (the Capital) and Buraydah in the central region; Dammam (Main port) and Hufuf in the eastern region; Jeddah (Main port), the two Holy Cities (Makkah and Madinah) and Taif in the Makkah region; and Tabuk in the Northern region (Table 1.2).

TABLE 1.2
The Distribution of Saudi Population
in the Main Cities (1974 & 1992)

CITY	NUMBER OF CITIZENS	
	1974	1992
Riyadh	666,840	1,800,032
Jeddah	561,104	999,124
Makkah	366,801	550,196
Taif	204,857	320,464
Medinah	198,186	432,681
Dammam	127,855	303,535
Hufuf	101,381	185,597
Tabuk	74,825	241.111
Buraydh	69,940	198,631

Source: SA.1978 and MOF.1993.

1.1.6 ECONOMY OF SAUDI ARABIA:

Oil and agriculture are the two main natural resources in Saudi Arabia. Before oil was discovered in the eastern region of the country during 1938, the Saudi economy was simple and generally remained so until oil export began in 1946. In 1970 SA become one of the world's major oil producers, but the country's wealth was not enhanced by it because of the price policy. After the rise in oil prices, following OPEC's oil embargo to the west in 1973, the Saudi economy and society become exposed to a major challenge and unusual pressures. The isolated desert (SA) was transformed into a financial, economical and politically influential giant. The Saudi budget increased from SR 6.4 billion in 1970/71 to SR 110 billion in 1975/76 to SR 260 billion in 1982. This sudden wealth encouraged the government to plan for national development and then it initiated the first five-year development plan in 1970.

1.1.7 REGIONAL ADMINISTRATION IN THE KINGDOM:

The Kingdom is divided into 13 regions called governorates, each headed by a Governor (Emir). The Emir of a region is its chief administrator, who oversees all its affairs. All governmental departments and public organisations are under his control and he is responsible for overall development of the region. He is also responsible for its employees. He has wide powers vested in him to deal with these. The King, the Crown Prince, the Second Deputy Premier and governors always set aside a few hours to listen to the requests, suggestions or complaints of the citizens. Each governorate has a capital, where the Emir resides. A large number of towns and villages are linked to each capital. These governorates are: Riyadh Area, Makkah Al-Mukaramah Area, Al-Madinah Al Monawarah Area, Al-Qassim Area, Eastern Province, Northern Border Province, Al-Jouf Area, Tabook Area, Hail Area, Al-Baha Area, Asser area, Jazzan Area, and Najran Area (Map 3.1, p 95).

Saudi Arabia uses the Islamic lunar year, which is 10-11 days shorter than the solar year, on which the Gregorian calendar is based, hence the seasons gradually shift through the lunar year, recurring about every 17 years. Dates are reckoned from the year of the Prophet's migration (Hejra) from Makkah to Madinah in 622 AD.

Official local time is GMT + 3 hours. Friday is the weekly day of rest and worship, but Government offices are also closed on Thursday. Apart from weekends, there are in the Hijri calendar two Islamic holidays (Celebrations). The first (Eid Al-Fitr) extends for ten days from the end of the ninth month (Ramadan) through the beginning of the following month (Showal) and represents the celebration of the end of the month of Muslim fasting; the second (Eid Al-

Adha) extend for ten days, from the fifth to the fifteenth of the twelfth month, (Dhul-Hijjah), the period of the Pilgrimage to Makkah.

The Saudi Arabian flag is green with a sword centred horizontally at the base. Over the sword there is the inscription in Arabic "THERE IS NO GOD BUT ALLAH, AND MUHAMMAD IS ALLAH'S MESSENGER.

1.2 HISTORY OF ISLAM:

Before the rise of Islam in 610 AD, Arabs were almost totally illiterate. The new movement began about 610 A.M. when Muhammad (Peace be upon him) had a vision in a cave near Makkah. An angel seemed to appear, telling him to go out and found a new religion that would unite all of the people in the world under one God, with Muhammad as His major prophet. Science and learning were to be an important part of this new way of life (Beshore, 1988). Teaching a stern form of Islamic religion, at a time when the Arab tribes worshipped many nature gods, Muhammad (Peace be upon him) and his small band of followers were ridiculed and persecuted for more than a decade. In 622 they fled to Madinah to which they had been invited. The community of Muslims in Madinah continued to grow. At that time, Muhammad (Peace be upon him) began to preach in the markets of Arabia, and the people rallied around him. In 631, the University of Islam joined the isolated tribes of the Peninsula through a spiritual bond and a common interest.

When most of Arabs in the Arabian Peninsula converted to Islam, they formed armies that swept north and captured Al-Quads (Jerusalem) in the year 637. Then they turned east to

conquer areas that were ruled by the Babylonians and Persians. Continuing east, they overran central Asia, and in 712 they captured the ancient city of Samarkand on the main route to China. At the same time, Muslim armies in the west conquered Egypt and the rest of North Africa. In 711 they crossed the Straits of Gibraltar into Spain and they moved rapidly to the north until they crossed the Pyrenees Mountains into France (Beshore,1988).

Wherever they went, Muhammad's followers would collect and preserve the science of ancient civilisations. They would also build new centres of learning and add many ideas of their own about mathematics, medicine, astronomy, and physics. Equally important would be their new approach to science. It used experimentation, observation and careful measurement of natural phenomena. This approach replaced older methods of speculating about the nature of things, and it gave future generations the great legacy that is the scientific heritage of Islam.

1.3 HISTORICAL DEVELOPMENT OF ISLAMIC MEDICINE:

1.3.1 HEALTH IN PRE-ISLAMIC ARABIA:

The Arabian Peninsula has been inhabited by mankind since early time. The Arabs consider themselves to be descendants of Kahtan and Adnan. From these two ancestors arose numerous tribal units, forever splitting or confederating. Ancient Arabs lived as nomadic and semi-nomadic camel- and sheep-owning pastoralists in villages with some horticulture. The cities had merchant and religious classes. The Quraish of Makkah were an important group of tribes who controlled commerce and were in charge of the religious shrine of Kabbah.

The general level of health was poor, and harsh climatic conditions were exacerbated by social injustice, poverty and ignorance. Thus it was fertile soil for the growth and proliferation of numerous diseases. The nutritional situation was poor, with a shortage of food and a monotonous diet. There were a number of endemic diseases such as leprosy, malaria, tuberculosis, rickets, scurvy, numerous eye diseases and gastro-intestinal diseases. There was use of folk medicine, which has an interesting connection with magic. The pre-Islamic Arabians had contacts with ancient Egypt, Greece, Persia and India through their commerce with these countries, where medicine was highly developed, but there is no evidence to suggest that it was adopted or utilized by the ancient Arabs (Khan,1986).

1.3.2 HEALTH IN THE EARLY PERIOD OF ISLAM:

At the founding of the Islamic country in Madinah, there was no real medicine, except words that derived from Qur'an and Hadith (Prophet's teachings). These words gave the Muslems the belief that God has made available a treatment for every illness, He has created (El-Khadi, 1981). So this belief gives all Muslims power to be healthy as promised by God. The Qur'an states:

"And when I am ill, It is He (God) who cures me"(26:80). Also the prophet (PBUH) laid great stress on the importance of sound health amongst his followers. He said that "There are two gifts of which many men are cheated, health and leisure". He gave specific instructions on various aspects of health care and treated people. He prohibited certain types of treatments such as cauterisation and magic. It was Muhammad (PBUH) who told his companions not to embark upon treatment without adequate training. He provided the foundation for a medical tradition that considered a human being in its totality; the spiritual, the psychological and the physical

within the context of a social milieu. At that time, the level of health care and well being of the people of the Medina was such that it appears miraculous. There was an enormous difference in the level of health between the pre-Islamic era and that of the new community of Muslims (Khan, 1986).

1.3.3 HEALTH IN THE UMAYYAD AND ABBASIDE PERIOD:

The Umayyad rule stated from 41 H. (661 AD) to 132 H. (750 AD). It was during the Umayyad period that translations of ancient medical works were begun. The Umayyad prince, Khalid Bin Yazid instructed a group of Greek scholars in Egypt to translate Greek-Egyptian medical literature into Arabic (Khan, 1986). At the end of the 8th century the Abbasides Caliphs (750 AD - 1240 AD) supported and encouraged the scientists in order to contact and translate the scientific and philosophic heritage of Ancient Greece as well as the vestiges of Indian and Persian cultures. At the end of the ninth century there did not remain a single important scientific work, which had not been translated into Arabic. For the first time, such knowledge was available in a single language. Two of the oldest translators who wrote about medicine were Ibn Jibril, who died in 828 AD and Ali Al-Tabari who died in 850 AD. These translators did not follow blindly in the footsteps of the Greek predecessors, but they thoroughly checked sifted then sorted out what was useful to them, according to the Shariah (rule of Islam). For example, Islamic physicians such as Al-Razi and Ibn Sina worked with the translated information and ideas scientifically. They observed people's illness and experimented with new medicines in order to cure them. They kept records of the quantities they used and their effects. Then they wrote down all the successful methods that must be used in order to improve health. Their methods are still used today. Islamic medical achievements passed to Europe around the

17th century. They were developed further in the West. In the twentieth century, the latest developments have been imported into the Arab World. Once again, Arab medicine and health care are among the best.

From the very beginning, Islam encouraged the pursuit of science and favoured progress. The precepts of the Qur'an and the injunctions of the Prophet (PBUH) bear testimony to the favourable attitude of the Islamic religion (Ali,1986). The first five verses, direct Revelations to the Prophet, start with the word 'Iqra' which mean "Read" or "Proclaim". Verses 1-5 of SURAH 96-AL'ALAQ talk about education:

> In the name of Allah, Most Gracious, Most Merciful "Proclaim! (or Read) in the name of the Lord and Cherisher, who created. Created man, out of a (mere) clot of congealed blood. Proclaim! And the Lord is most Bountiful. He who taught (The use of) the Pen. Taught man that which he knew not".

Also the Prophet (PBUH) persuaded Muslims to acquire knowledge. He commented on this pursuit of science term "To seek knowledge is a duty for every Muslim man and woman". The aspects of the Divine Law (Shariah) concerning personal hygiene, dietary habits, ablutions, and many other elements affecting the body, are related to the medicine (Nasr, 1976).

A hospital was founded in the first century of Islam by the Muslim rulers, where inpatients were kept and treated under the system of Islamic Medical Science. This hospital was built by Al-Walid Bin Abdulmalik in 707 AD at Demacicus (Nasr, 1976 and Khan, 1986). The Abbasides era was a famous time for the establishment of numerous hospitals run by State functionaries. During the days of Abbasides, the first real Central Hospital (Bimaristan) with all

the required facilities of that day, was established by Harun Al-Rashid in Baghdad, and during the 8th century, the physician Jibrail Bin Bukhtishu was the head of this hospital. It was this hospital which became the pivot of medical activity and the center for the rise of Islamic Medicine. Besides this Central Hospital, various branch hospitals in different provincial centers were also established. In addition to the Central Hospital, Muqtadir (Abbasides Caliph) built another hospital (called Bimaristan) in another part of Baghdad. Its monthly expenditure stood at two hundred dinars. Ibn Jubyr, the Muslim traveller, visited Baghdad and described this hospital as (Wasti, 1986):

> "In between the main street and the vicinity of Basra Gate, is the Hospital Road leading up to this great establishment. It is a beautiful and magnificent structure on the right bank of the river. This hospital is split up into various wards, and each ward has a number of rooms, giving one the impression that the ward is a royal palace in which every convenience is provided. In this hospital best arrangements exist for providing medical aid. The patients are dealt with very courteously and sympathetically. All patients are given free medicine and food. For meeting the sanitary requirements, the water is supplied through pipes. Every Monday and Thursday eminent Medical consultants visit this hospital and assist the regular staff in diagnosing complicated and chronic diseases, and suggesting their treatment. In addition, medical attendants prepare food and medicine for every patient under the guidance of the physicians".

In 911, Asid Al-Daulah bin Buwayhid established a hospital near the western bridge of Baghdad that called Bimaristan-i-Asadi where twenty four resident physicians worked in addition to many skilled surgeons, eye specialists and a host of dressers, dispensers and medical attendants. At the end of that century, many hospitals were established after the benevolent pattern of Bimaristan-i-Asadi, the most prominent being the great central hospital of Damascus, built by Nur Al-Din Zangani. In this grand hospital every convenience that government could possibly procure was placed at the disposal of the patients.

1.3.4 HEALTH AFTER ABBASIDE PERIOD:

After the devastation of Baghdad the history of Islamic medicine becomes much more diverse. Fortunately, before the invasion of Baghdad there had already been founded centres of medical learning in other parts of the Muslim word. The core concepts and practices of Islamic medicine continued to be common to various areas, although there were unique characteristics to each locality (Khan, 1986).

Many hospitals were established in other Muslim cities such as the one in Rayy which was headed by the most famous medical scientist of that day, Muhammad Bin Zakariyya Al-Razi in 1258 AD (Nasr, 1976). Another hospital was constructed by Salah Al-Din Al-Ayyubi in Cairo at the mid of the 13th century, called Al-Nasiri hospital or Bait-Al-Shifa. Ibn Jubayr rendered a fine account of Bait-Al-Shifa as (Wasti,1986):

> "This hospital surely brings befitting pride to Salah Al-Din. It was housed in a beautiful and magnificent palace. The rooms were decorated and contained fine

beds properly laid out. There were separate rooms for medicines where compounders and scribes were posted. There were separate quarters for mental patients where extensive courtyards had been laid out and the openings of their rooms were secured with iron networks. An eminent physician was always in attendance assisted by numerous junior consultants. They visited the patients in the morning and in the after-noon and effected necessary changes in the prescribed medicines and diet. The Sultan regularly visited the hospital and took interest in the treatment and care of patients. No slackness was permitted in this respect.

In addition to this Central Hospital at Cairo, Sultan Salah Al-Din also established a similar institution, at Alexandria. It had a unique arrangement in as much as medical aid, including surgery, was administered at the residence of such patients who would be obliged to stay away from the hospital and get medical treatment at home (Wasti, 1986).

In the end of the 13th century Al-Mansur Qalaoon built the most notable hospital in Egypt which was called Mansuri Hospital. The hospital had beds for several thousand patients with different wards specified for various illnesses and separate sections devoted to each of the sexes. It also possessed lecture halls, a library, a mosque and separate administrative quarters. A century earlier, the Al-Moahad King, Yaqub Al-Mansur, built the first large hospital of the Maghrib (Morocco) in Marrakesh and attracted notable physicians such as Ibn Tufayl and Ibn Rushid to his court. From then, hospitals continued to be built in the Maghrib, some, like the 13th century one in Salee, built by Mawlay Abdul-Rahman, still being in use. Also, in Tunis,

Algeria and Andalusia itself (Spain), many hospitals were built whose descriptions survive in various literary sources (Nasr, 1976).

Ottoman Turkey was also an important centre of Islamic medical knowledge. Similarly to other parts of the Muslim word, the Turks built numerous hospitals that were open to all people. The hospitals were generally regulated by trust deeds as welfare institutions. There were hospitals and medical schools built by the sultans which were both civil and military. Most of these hospitals are still in active use in Turkey today (Khan, 1986).

1.4 HEALTH CARE SERVICES IN SAUDI ARABIA:

Many years ago, the Saudi government decided that all Saudi citizens, as well as pilgrims to the holy places of Islam, should have free health care. In 1927, His Majesty King Abdulaziz Bin Saud issued a decree establishing a health department. The King approved its budget and charged it with the setting up of hospitals and clinics at Makkah, Madinah, Jeddah and Taif. The next year the department was renamed the "General Directorate for Health and Aid" and was appended to the Bureau of the Attorney General. But with the limited number of employees at that time, the potential of the General Directorate of Health was greatly restricted. In 1930 the employment of health officials was regulated to standardise the technical assistants' sector. The next year, the General Directorate of Health and Aid was taken under the wing of the Ministry of Interior and was later annexed, in 1934, to the Council of Deputies' Bureau. The rapid improvement of heath care started late in 1946 following the economic progress the country had made (MOI, 1990). In 1949 there were 111 physicians and about 1,000 hospital beds (Sebai, 1987) established in Makkah, Madinah, Jeddah, Taif, Riyadh and Al-Hassa. This

expansion and delineation of district led to the conversion of the Directorate of Health and Aid into a Ministry. This was established by Royal Decree number 5/11/8697, dated 26/8/1370 H, corresponding to 1951 (MOI, 1990). Up to the late 1950s, the greater part of the population received only traditional forms of public welfare, through religious and private charities (Al-Mazrou, 1991). The objectives of the Ministry of Health (MOH) when it was started were outlined as follows (MOH, 1987):

1. "Prevention is better than cure".... This adage has been implemented in the great number of Primary Health Care Clinics in the Kingdom as a basic means of maintaining the health of the community and the prevention of disease and epidemics.

2. Providing free and equal medical attention to Saudi nationals as well as foreign residents.

3. Eradicating diseases and preventing the spread of contagion and epidemics either by continuous hygiene control or by preventive measures and the co-ordination of relevant programs.

4. Educating citizens and residents in hygiene and fostering this culture, especially in the field of motherhood and childcare, thereby raising the standard of health in the country.

5. Co-ordinating between preventive heath care and remedial services in order to provide all people with the best health care.

6. Developing and continually upgrading health institutions and providing them with the very best in human and technical resources.

7. Expanding the network of health. care services to cover all corners of the Kingdom.

8. Upgrading the scientific and technical standards of all employees of the various health institutions and the recruitment of highly proficient staff to man them.

9. Providing all health institutions with highly qualified Saudi staff of doctors, technicians and administrators in order to achieve self-sufficiency.

10. Co-ordinating the efforts of the Ministry of Health and health sectors of other ministries and governmental bodies in order to achieve development in a unified framework.

11. Encouraging the private sector to participate in the health services, supporting and providing the participants with loans and technical and financial subsidies under the supervision of the Ministry of Health.

12. Supervising pharmacies and overseeing the classification and approval of proper medication and pricing.

In 1946, Saudi Arabia started to export oil to other countries. Suddenly, Saudi Arabia was catapulted into the 20th century. The traditional, isolated, poor and mostly Bedouin country began to modernise. Saudi Arabia is now economically stable and enjoys a strong foreign exchange position with a surplus balance of international payments. The government revenue increased from SR 57,000 million (MOH SR177 million) in 1970 to SR 166,000 million in 1993, and MOH represented 5.1% of the total government budget for the same year as shown in table 1.3 (Sebai, 1985 and MOH, 1994).

TABLE 1.3
Budget Appropriations for the MOH in relation to
Government Budget (by SR 1,000) 1972 – 1993

YEAR	GOVERNMENT BUDGET	MOH BUDGET	PERCENTAGE
1972	13,200,000	420,852	3.2
1975	110,935,000	3,197,331	2.9
1978	134,253,500	3,384,750	2.5
1981	245,000,000	5,656,400	2.3
1984	260,000,000	10,742,900	4.1
1987	170,000,000	8,333,431	4.9
1990	143,000,000	8,597,000	6.0
1993	160,000,000	8,110,680	5.1

Source: MOH "Annual Health Report"; 1976,1982,1989,1991 & 1994.

In 1993, health services become available almost everywhere in the country and within the reach of almost every individual. The MOH is not the only the provider of health services in

the Kingdom of Saudi Arabia, providing almost 65% of the health services in 1993. About 18% of the services are provided by more than ten different governmental agencies including: Ministry of Education, Ministry of Higher Education, Ministry of Defence and Aviation, Ministry of Interior, the National Guard, Girls Education, King Faisal Specialist Hospital, Royal Commission for Jubail and Yanbu and ARAMCO (Arabian-American Oil Company), and 17% of the services are provided by the private sector, as shown in table 1.4 (Sebai,1987 and MOH,1994).

TABLE 1.4
Comparison between Health Services Providers
In Kingdom of Saudi Arabia (1993)

NUMBER OF:	MOH	OTHER GOVT. AGENCIES	PRIVATE SECTOR	TOTAL
HOSPITALS	174	32	75	281
HOSPITAL BEDS	26974	7338	7477	41789
PHYSICIANS	14554	5076	8135	27765
NURSES	33373	12485	11232	57090
ASSISTANTS	18528	7659	4653	30840

Source: MOH (1994) "Annual Health Report".

During the last 22 years (1972 - 1993) the number of hospitals has increased 2.2 times, hospital beds 2.7 times and health centres 2.8 times (Table,1.5). During that time, the number of physicians increased from 1,704 in 1972 to 27,765 in 1993 and the number of nurses from 4,370 (1972) to 57,090 (1993) as shown in Table 1.6.

TABLE 1.5

Development of hospitals, hospital beds
and health centres in MOH over 22 years (1972-1993)

YEARS	HOSPITALS	HOSPITAL BEDS	HEALTH CENTERS
1972	80	10,101	621
1975	98	12,111	792
1978	105	13,745	1,042
1981	116	18,849	1,263
1984	138	23,393	1,633
1987	157	25,902	1,438
1990	163	25,835	1,668
1993	174	26,974	1,707

Sebai,Zohair"Health in SA",MOH Yearly Report on 1988, 91 & 94.

TABLE 1.6

Number of Physicians, Nurses and Health Assistants Working
in the Health Sector (Governmental and Private)
in Kingdom of Saudi Arabia (1972-1993)

YEARS	PHYSICIANS	NURSES	HEALTH ASSISTANTS
1972	1,704	4,370	2,230
1975	3,107	6,573	3,552
1978	4,612	8,728	4,823
1981	7,680	15,244	7,071
1984	12,971	22,781	11,058
1987	21,780	42,876	20,468
1990	24,622	48,054	24,526
1993	27,765	57,090	30,840

Source: Sebai (1987) "Health in SA" and MOH, 1991 and 1994.

The establishment of the MOH signalled the beginning of a new phase of health care in the KSA, with several Directorates of Health Affairs being set up in different parts of the

kingdom. Each Directorate was responsible for the hospitals, clinics, equipment, and medical, technical and administrative staff under its jurisdiction (MOI,1990). Such Directorates increased with the progress of the MOH and are located in Riyadh, Makkah, Madinah, Jeddah, Dammam, Jizan, Asir, Najran, Baha, Qassim, Hail, the Northern Borders, Tabuk, Qurayat, Al-Jouf, Taif, Al-Hassa and Hafar Al-Baten.

As a result of the rapid and extensive socio-economic development that has occurred in this country during the last two decades, the health status of the population has significantly improved (Table, 1.7).

TABLE 1.7
Health and Related Socio-economic Indicators

INDICATOR	1960	1988
CRUDE BIRTH RATE (Per 100)	49	43.3
CRUDE DEATH RATE (Per 100)	23	8.0
INFANT MORTALITY RATE (Per 1000 live births)	292	98.0
UNDER 5 MORTALITY RATE	170	70.0
POPULATION WITH ACCESS TO SAFE WATER SUPPLY (%)	NA	97.0
POPULATION WITH ACCESS TO HEALTH SERVICES (%)	44	97.0
MATERNAL MORTALITY RATE (Per 100,000 live births)	NA	53.0
PERCENT OF POPULATION INCREASE/YEAR	4.6	4.2.0
LITERACY RATE (%)		
MALE	15	61.0
FEMALE	2	31.0

Source: UNICEF, 1990.

1.5 DEVELOPMENT PLANS:

The five development plans, executed during the last 25 years, paid much attention to the health sector and were an important guide to the development of the MOH in Saudi Arabia.

Up to the beginning of the first five-year plan in 1970, the MOH had achieved the following (MOI,1990):

* Fifty hospitals.
* 7265 beds available for patients.
* 334 health care centres.
* A budget of SR 1.7 billion (US$ 453 million) for the fiscal year 1970.
* The private sector had 18 hospitals with a 946-bed capacity.

1.5.1 FIRST DEVELOPMENT PLAN:

In 1970, the First Five-Year Development Plan for the Kingdom of Saudi Arabia had been submitted to the President of the Council of Ministers accordance with the Council of Ministers Resolution number 693.

Objective of the Plan:

This plan consists of two phases: One of them covers the first two years of the plan, and the second covers the remaining years of the plan. Emphasis during the first phase was placed on achieving the following objectives:

1. Making more effective use of the technical manpower employed in providing health services.

2. Improving standards of sanitation, diet, services, maintenance and supplies of existing facilities.
3. Undertaking studies of policies relating to the following:
   i. Full or part-time employment of doctors;
   ii. Registration of patients or collection of nominal fees for medical services; and, encouraging the development and improvement of health services provided by the private sector.
4. Preparing and implementing a preventive health services program.
5. Studies required for the implementation of the second phase of the plan.

The second phase of the plan consists the following objectives:

1. Increasing the number of doctors and technicians and expand training programs.
2. Expand preventive health services.
3. Commence the construction of new facilities and the reconstruction of old ones in accordance with the requirements of a general health network for the country that will provide health care through the Kingdom.
4. Complete the studies required for the preparation of a scientifically based plan for the future development of health services that, within a decade will:
   i. Lead to improved standards of health care throughout the Kingdom,
   ii. Reduce mobility and mortality caused by infectious diseases and nutritional deficiencies through concentration on preventive health services; and,
   iii. Increase the proportion of Saudi doctors and technicians.

The outstanding features of the health care services by the end of First Plan Period are shown in table 1.8.

Table 1.8
The health facilities & personnel in 1974

DESCRIPTION	EXISTING NUMBERS
HOSPITALS	62
HOSPITAL BEDS	7,734
DISPENSARIES	215
HEALTH CENTER	372
PHYSICIANS	1900
NURSING STAFF	4234
MEDICAL TECHNICIANS	3526

1.5.2 SECOND DEVELOPMENT PLAN (1975-1980)

Through this plan the MOH has made considerable progress in a number of fields, but had far to go to raise the level of basic health facilities. The objectives and policies for the health services during the Second Plan can be summarised as:

I. To provide the Kingdom's population in all regions with a comprehensive range of preventive and curative health services so that the people may, through higher levels of health, both contribute to and benefit from the socio-economic progress of the Kingdom, and will include the following:

1. Provide horizontal and vertical expansion of preventive and curative health services.

2. High priority will be given to the integration of preventive and curative services at both the delivery and administration levels.
3. Encourage and regulate the development of private sector health services.
4. *Improve the health education programs in order to increase public awareness of health problems, their causes, and the means of resolving them.*

II. Significant improvement of the efficiency of health service operations at all levels. The guiding policies associated with this objective are as follows:

1. Improve the range and performance of the support services necessary for the operation of a modern and efficient health system.
2. Develop a better understanding of the Kingdom's particular health situation by means of research and improved statistics.
3. Undertake significant management and administrative improvement to provide for efficient operation of the expanded health system.
4. Delegate increased responsibility for operation and control to the local level.
5. Expand the number and improve the quality of skilled manpower at all levels of the Ministry's operation.
6. Increase coordination with other government ministries and agencies in order to derive the maximum benefit from scarce skilled health personnel and to develop common supportive health services.

Table 1.9
The Health Facilities & Personnel in 1980

DESCRIPTION	EXISTING NUMBERS
HOSPITALS	70
HOSPITAL BEDS	12,525
DISPENSARIES	205
HEALTH CENTER	299
PHYSICIANS	3,212
NURSING STAFF	6,081
MEDICAL TECHNICIANS	4,740

1.5.3 THIRD DEVELOPMENT PLAN (1980-1985)

The Third Development Plan emphasised Primary Health Care Centres as the basis of integrated health services, a development that has required the establishment of a curative, preventive, and a comprehensive health-education network.

The objectives for health services, during the Third Development plan, can be summarised as follows:

1. To improve the health condition of the population, in particular by ridding the country of endemic disease.
2. To provide the population in every region with a fully integrated and comprehensive system of medical care services, which shall be provided free of charge by the MOH.

3. To improve the quality of medical care and the efficiency of the administration of health services.
4. *To increase the number and improve the quality of medical manpower and, in particular, to encourage more Saudis to take up medical careers.*
5. To establish a National Health Council, with the functions of determining the Kingdom's health policies , guiding the development and improvement of all health services in the Kingdom, delineating the responsibilities of individual government health care agencies and the private sector, and co-ordinating their activities.
6. To introduce a change of emphasis towards greater concentration on environmental health, preventive medicine and primary care, in keeping with the changing needs and priorities for medical services.
7. To complete, initiate, and operate those projects, which were commenced, but not completed, during the Second Plan period, and to improve the utilisation and maintenance of all available facilities and equipment.
8. To encourage the private sector to expand medical services for citizens and foreign residents in the Kingdom.

At the end of the Third Plan, the number of hospitals, dispensaries, health centres, and manpower were increased, and it became possible to achieve the integration of the preventive and curative components of the health services offered in hospitals and dispensaries as shown in the table1.10.

Table 1.10

The Health Facilities & Personnel in 1985

DESCRIPTION	EXISTING NUMBERS
HOSPITALS	
Ministry of Health	86
Other Agencies	28
Private Sector	31
Total No:	145
HOSPITAL BEDS	
Ministry of Health	17,961
Other Agencies	5,432
Private Sector	3,412
Total No:	26,805
PRIMARY HEALTH CENTER	
Ministry of Health	1,119
Other Agencies	287
Private Sector	* 224
Total No:	1,630
Physician	7,529
Nursing Staff	14,984
Medical Technicians	7,876

* *Include Dispensaries and Clinics*

1.5.4 FOURTH DEVELOPMENT PLAN (1985-1990)

The Fourth Development Plan (1985-1990) stressed the need to improve the quality of medical services in all hospitals to the best international standards and also applauds the establishment of integrated medical centres, such as the King Fahd Medical City which comprises hospitals and support facilities for all medical specialisation.

The government's objectives for the health services are:

- *To strengthen primary health care as the basis of a comprehensive health services network providing integrated health services of high quality for the people of the Kingdom.*
- To increase the co-ordination between the MOH and other agencies that provide health services, and expand exchanges for expertise between the Kingdom and international health organisations.
- To further develop the health services manpower of the Kingdom at all levels.
- *To continue the development of preventive, public health, and environmental health programs, including health education, maternal and child health care, improved public immunisation, and occupational health programs.*
- To further develop emergency medical services with special attention to the requirements of the Hajj season.
- To continue encouraging the expansion of private health care programs and promote private sector participation in all health sector services and the operation of all health sector facilities.

Health policies adopted by the MOH aim at the following objectives (MOI, 1993):

* Free provision of PHC services;

- Completion of the infrastructure for health services

- Promotion of service levels.

- Operation of more health facilities.

- Increased co-ordination between the MOH and other government departments, which provide health services.
- Increase in and development of health manpower
- Continuation of the development of health services
- Encouragement and expansion of the private health sector.

The MOH had to set its regulations and level of services in keeping with the government's policy of implementing projects in all parts of the Kingdom and providing them, without exception, with the same standards of services. Directorates of Health were therefore founded with this in mind.. Such directorates increased with the progress the MOH made and now number 18, located in Riyadh, Makkah, Madina, Jeddah, Dammam, Jizan, Asir, Najran, Baha, Qassim, Hail, The Northern Borders, Tabuk, Qurayat, Al-Jouf, Taif, Al-Hassa, and Hafr Al-Baten. Each directorate is responsible for hospitals, clinics, equipment, and medical, technical, and administrative staff under its jurisdiction (MOI, 1990).

The outstanding features of the health care services by the end of the fourth development plan period are shown in table 1.11.

Table 1.11
The Health Facilities & Personnel in 1985

DESCRIPTION	1985 NUMBERS	1990 NUMBERS	% INCREASE
HOSPITALS			
Ministry of Health	86	162	88.4
Other Agencies	28	30	7.1
Private Sector	31	55	77.4
Total No:	**145**	**247**	**70.3**
HOSPITAL BEDS			
Ministry of Health	17,961	26,315	46.5
Other Agencies	5,432	6,577	21.1
Private Sector	3,412	5,956	74.6
Total No:	**26,805**	**38,848**	**44.9**
PRIMARY HEALTH CENTER			
Ministry of Health	1,119	1,477	32.0
Other Agencies	287	298	3.8
Private Sector	* 224	* 313	* 39.7
Total No:	**1,630**	**2,088**	**28.1**

* *Include Dispensaries and Clinics*

1.5.5 FIFTH DEVELOPMENT PLAN (1990-1995)

The Fifth Development Plan represents an important phase in the continuing economic and social development of Saudi Arabia. As the achievements of the first four plans amply testify, the physical and institutional foundations of a modern economy have been established, a wide range of social services has been provided throughout the Kingdom, and the basis for a diversified, productive economy has been established in industry, agriculture, mining and financial services.

The challenge now is to further broaden the development of the economy and society as a whole, and in particular to sustain and accelerate the recovery, which began in the last years of the Fourth Plan. To provide its people with meaningful and productive employment and to use

its resources effectively, the Kingdom will continue to make progress towards establishing a diversified competitive economy in which the private sector, by investing its intensive financial resources, pursues an ever widening range of opportunities, and in which the government asserts its role in guiding the national economy.

OBJECTIVES OF THE FIFTH DEVELOPMENT PLAN:

Although the Fifth Plan reaffirms the broad objectives established in the Fourth Plan, they are to be achieved with a substantially different set of development policy initiatives, in response to the special conditions that have evolved in recent years and the constraints that prevail upon the national economy.

The objectives of the Fifth Development Plan (1410-1415 A.H.), as established by the Council of Ministers, are:

1. To safeguard Islamic values by duly observing, disseminating, and confirming Allah's Sharia (God's Divine Law).
2. To defend the Faith and the Nation, and to uphold the security and social stability of the Kingdom.
3. To form a productive national work force by encouraging citizens to avail themselves of the benefits from the infrastructure and institutions provided for them by the State - ensuring their livelihood and rewarding them on the basis of their work.
4. To develop human resources, thus ensuring a constant supply of manpower, upgrading its quality and efficiency to meet the requirements of the national economy.

5. To raise cultural and information standards to keep pace with the Kingdom's development.

6. To reduce dependence on the production and export of crude oil as the main source of national income.

7. To continue with real structural changes in the Kingdom's economy so as to establish a diversified economic base – with due emphasis on industry and agriculture.

8. To develop mineral resources and to encourage discovery and utilisation thereof.

9. To concentrate on the qualitative development of already-established utilities and facilities by improving their level of performance.

10. To complete the infrastructure projects necessary to achieve overall development.

11. To further encourage private sector participation in socio-economic development.

12. To achieve balanced growth throughout all regions of the Kingdom.

13. To achieve social integration among the Gulf Co-operation Council (GCC) countries.

The fundamental development objective of the health sector is to improve the health condition of all citizens through the provision of comprehensive preventive and curative health services throughout the Kingdom, with particular emphasis on equitable and efficient primary care. Specific long-term objectives for the health sector include:

- *The completion of all preventive and primary health care facilities, and the full implementation of the referral system for the optimal provision of preventive and curative health services;*

- Development of the health information system necessary for efficient and effective health care delivery;
- Further development of national health manpower, through programs that raise productivity and improve performance and to provide the specialisation needed to maintain a high level of health services.

The outstanding features of the health care services by the end of this plan period are shown in Table 1.12.

Table 1.12

Number of Hospitals, Beds, PHC Centres, Manpower in Health Services in 1989/1990 and 1993/1994

Health Service	*1989/1990*	*1993/1994*	*Increase*	
	Number	*Number*	*Number*	*Percentage*
Hospitals				
Ministry of Health (MOH)	162	174	12	7.4
Other Govt. Agencies (OGA)	30	32	2	6.7
Private Sector (PS)	61	75	14	22.9
Total	253	281	28	11.1
Hospital Beds				
MOH	25,918	26,974	1,056	4.1
OGA	6,592	7,338	746	11.3
PS	6,445	7,477	1,032	16.0
Total	38,955	41,789	2,834	7.3
PHC Centres				
MOH and other agencies	1,640	1,707	67	4.1
Physicians				
MOH	12,617	14,563	1,946	15.4
OGA	4,298	5,076	778	18.1
PS	5,718	8,135	2,417	42.3
Total	22,633	27,774	5,141	22.7
Nurses				
MOH	28,266	33,373	5,107	18.1
OGA	9,255	12,485	3,230	34.4
PS	8,319	11,232	2,913	35.0
Total	45,840	57,090	11,250	24.5
Health Technicians				
MOH	15,125	17,868	2,743	18.1
OGA	6,518	6,899	381	5.8
PS	3,549	3,895	346	9.7
Total	25,192	28,662	3,470	13.8

1.5.6 SIXTH DEVELOPMENT PLAN (1995-2000)

The Kingdom's health services are provided through a wide range of institutions covering many different functions. In broad terms, the provision of health care is officially

organised through a referral system into a Kingdom-wide network of PHCC, general and specialist hospitals, although a number of government agencies provide health care services directly to their employees. The total MOH manpower reached 89,817 employees by the end of 1993/94, of whom 44,600 (49.7%) were Saudis. The Sixth Development Plan aims to increase the total manpower of the MOH to 103,720 by the year 1999-2000, along with the steady replacement of non-Saudis by Saudis, so that the Saudi work force will reach 57,403, 55% of the Ministry's total manpower, by the end of the plan period.

Resources in the Kingdom's health services have expanded rapidly between 1989/90 and 1993/94 as shown in tables (1.12). Thus the number of hospitals rose by 11.1%, the number of hospital beds by 7.3%, PHC centres by 4.1%, doctors by 22.7%, nurses by 24.5% and assistant technicians by 13.8%.

Sixth Development Plan Targets:

The government is committed to raising the health levels of the population by improving the existing health services network in the Kingdom. The most important targets of this plan include the following:

- Maintaining the current rate of hospital beds at 2-4 per 1,000 population.
- Reducing the morbidity rate of infectious diseases per 100,000 population (through immunisation) to 0.01 per 100,000 population for diphtheria, 0.4 whooping cough, 40 for measles and 8 for TB, and eliminating tetanus and poliomyelitis altogether.
- Reducing the frequency of diarrhoea to 2 per children.

Reducing the morbidity rate of endemic diseases per 100,000 population to 200 cases of malaria in high rate areas, below 100 cases in medium rate areas, maintaining the status quo in other areas free of malaria, and to 500 cases of bilherzia;

Increasing the immunisation coverage to 97% for each of diphtheria, whooping cough, tetanus, and poliomyelitis, 95% for hepatitis and maintaining the 99% rate for immunisation against TB.

Decreasing the incidence of new born children whose weight is less than 2.500 grams to 2%. and increasing the percentage of children of less than five years of age. whose weight is less than commensurate with their ages. to 98%.

Raising the percentage of pregnant mothers who are provided with health care by health professionals to 97% and increasing the delivery rate by health professionals to 95%.

Increasing the immunisation coverage of pregnant mothers against tetanus to 85%.

NB: All of those and aims that have been presented in italic script are of particular relevance to this thesis.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

2.2 THE HISTORY OF PRIMARY HEALTH CARE

2.3 ORGANIZATION OF PHC IN DIFFERENT COUNTRIES

2.3.1. ORGANIZATION OF PHC IN BAHRAIN
2.3.2. ORGANISATION OF PHC IN PEOPLE'S DEMOCRATIC OF YEMEN
2.3.3. ORGANISATION OF PHC IN LIBYAN ARAB JAMAHIRIYA
2.3.4 ORGANISATION OF PHC IN ZIMBABWE

2.4 DEVELOPMENT OF ANC CARE

2.5 ANTENATAL CARE ATTENDANCE

2.6 HIGH RISK PREGNANCY

2.7 SPECIFIC HEALTH PROTECTION

2.7.1 INFECTIONS
2.7.2 ANAEMIA
2.7.3 TOXAEMIA
2.7.4 RHESUS STATUS

2.8 FACTORS INFLUENCING ATTENDANCE AT ANCC

2.9 FACTORS INFLUENCING ATTENDANCE AT ANCCS IN SA

CHAPTER TWO

LITERATURE REVIEW:

2.1 INTRODUCTION:

The health of the population and individuals is inextricably bound up with development. Development, in the most general meaning of the word, entails change and usually important alterations to people's living environments (Phillips and Verhasselt, 1994). A technocratic view of health is 'the absence of disease' (generally organic but possibly also mental). This definition implies that medical intervention can often restore health and places emphasis on medical diagnosis, treatment and cure, along standardized lines. However, illness and disease are, to some extent, relative matters and, to sociologists, they are social constructs in which different societies view symptoms and appropriate treatments differently. Health therefore becomes a complex notion to define (Phillips, 1990). Health has been defined by the WHO as "the state of complete physical, mental and social being and not merely the absence of disease or infirmity" (Phillips, 1990 and Sebai, 1985). Clearly, much more than the absence of diagnosed disease is involved; 'basic human needs' will, by implication, be satisfied in a healthy individual. Thus, today it is widely agreed that the concept of health as a technical measure, the absence of diagnosed illness, is insufficient for most purposes. Rather more useful, perhaps, is the objective of basic needs approaches to provide for a 'full life' in which healthy individuals live in caring, well-provided and intellectually stimulating communities. This is a more comprehensive perspective but its achievement will obviously require involvement of far more

than the medical sector alone (Phillips, 1990). Halon (1984) has considered the multifaceted relationships of health and public health in the following terms:

> "Heath is a state of total effective physiological and psychological functioning; it has both a relative and absolute meaning, varying through time and space, both in the individual and in the group; it is a result of the compilation of many factors, intrinsic and extrinsic, inherited and contrived, individual and collective, private and pubic, medical, environmental and social; and it is conditioned by culture, economy, law and government" (Sebai, 1985).

It was only in the 1970s that an increased awareness of the importance of health and development marked the beginning of a new era in health of mothers and children become a focus of attention (Price, 1994). Maternal and child health (MCH) programmes were often initially perceived in terms of directing services towards this group to deal with medical and domestic problems, rather than towards individuals. Today, the value of involving the mother in an educated, participative way, in the control of her own fertility, home circumstances and her children's health, has become increasingly recognized (Phillips, 1990).

Health care services can be classified into three categories as follows (Abel-Smith, 1994):

- A Primary Health Care Centre: It is the one that staffed by general doctors without specialist qualifications and has defined areas.
- A Secondary Hospital: It usually has only the four most common specialities (general medicine, general surgery, paediatrics and obstetrics).
- A Tertiary Hospital: It has a greater degree of specialisation, a greater need for particular equipment, the greater the delegation of tasks, and a greater catchment area.

2.2 THE HISTORY OF PRIMARY HEALTH CARE:

Primary Health Care (PHC) is an approach to the planning of health services (Macdonald, 1992). A health system that is based on PHC, should be particularly concerned with ensuring that care is readily available to all, with appropriate support at the intermediate and national levels, as well as more specialised referral services when needed. A well-balanced health system based on PHC should, according to Keteczkowski et al., (1984):

- Encompass the entire population on a basis of equity and responsible participation;
- Include components from the health sector and from other sectors where interrelated actions contribute to health;
- Provide the essential elements of PHC at the first point of contact between individuals and the health system;
- Support the provision of PHC at the local level as an important priority;
- Provide, at intermediate levels, the skilled and specialised care needed to deal with the more technical health problems requiring referral from the local level, as well as continued training and guidance for communities and community health workers;
- Provide at the central level, planning and managerial skills, highly specialised care, teaching for specialised staff, and the services for such institutions as central laboratories; and
- Provide co-ordination throughout the system, with referral of problems between levels and among components whenever appropriate.

The term "Primary Care", in English usage, goes back to 1920 when the report of Lord Dawson advocated the provision of a "Primary Health Centre" which was to be mainly concerned with the first contact medical care (Hetzel, 1978). With the support of the Rockefeller Foundation, the first real Primary Health Centre was established at Kalutura, Ceylon, in 1926. The services offered by this centre were almost exclusively preventive: health examination of mothers and babies; immunisation; environmental sanitation; health education; and midwifery services. In 1931, the League of Nations Health Organisation promoted a European Conference on Rural Hygiene. This conference called for the establishment of "Rural Health Care Centres" which it defined as:

"an institution for the promotion of the health and welfare of the people in a given (rural) area, which seeks to achieve its purpose by grouping under one roof co-ordinating in some other manner, under the direction of a health officer, all the health work of that area, together with such welfare and relief organisations as may be related to the general public health work."

The heavy stress laid on preventive services in those early days is seen in the recommended functions for Rural Health Care Centres, which include: maternal welfare; infant and child welfare; heath education; environmental sanitation; and first aid in urgent cases (Roemmer, 1972).

In the last twenty years there has been a lively debate in Third World countries about the need for new approach to health care. The PHC approach arose out of the perceived inadequacies of conventional health care to meet the needs of people in such countries. It is an

attempt to chart the way towards a more appropriate health care system. In country after country in Africa, Asia and Latin America, the evidence points to the spending of considerable amounts of money on the health care system which do not meet the country's health needs, because the focus is on treatment and cure within institutions, rather than on prevention (Macdonald, 1992).

In 1973, the Executive Board of the World Health Organization (WHO) considered that there were no grounds for confidence that there existed the delivery of health services to the majority of people. It therefore commissioned a joint WHO/UNICEF study to provide a reappraisal of the situation. The report on the recommendations of this joint study was approved by the WHO/UNICEF committee on Health Policy in Feb.1975. The recommendations were as follows (Hetzel, 1978):

- Primary health services should be recognised as forming part of an overall development (of urban, rural and other under-privileged groups), taking into account the interaction between development and health programs;
- firm policies, priorities, and plans should be established for the proposed primary health services;
- all other levels of the health system should be reoriented to provide support (referral, training, advisory, supervisory, and logistic) to the primary health care level;
- the community should be involved in the designing, staffing, and functioning of their local primary health care centres, and in other forms of support;
- primary health care workers who have undergone simple training should be utilised;

- the primary health care workers should be selected, where possible, by the community itself, or at least in consultation with the community. The acceptability of such workers is a crucial factor of success; and
- there should be special emphasis on preventive measures; health and nutrition; health care needs of mothers and children, utilisation of simplified forms of medical and health technology; association with some traditional forms of health care and use of traditional practitioners; and respect for the cultural patterns and felt needs in health and community development of the consumers.

From a recognition of these health difficulties and a range of incompetent plans for health services that appeared, particularly in Third World Countries, the World Health Organisation (WHO) was influenced to make a reasonable target by preparing an international conference on PHC that took place in Alma-Ata (USSR) in Sept. 1978. This conference was attended by delegations from 134 Member states and by representatives of 67 United Nation organisations, specialised agencies and nongovernmental organisations. The main documentation for the conference was the joint report by the Director of UNICEF, entitled "Primary Health Care". The goal of WHO was "Health for all by the year 2000". From this Declaration, Alma-Ata has became synonymous with one of the great public health movements in history (WHO, 1988).

But "health for all by the year 2000" does not mean that everyone on earth will be healthy by the end of the century. Halfdan Mahler, Director General of the WHO defined "Health for all" as:

> ... that people will use a much better approach than they do now for preventing disease and alleviating unavoidable illness and disability, and that there will be better ways of growing up, growing old, and dying gracefully. And it means that health begins at home and at the work place, because it is there, where people live and work that health is made or broken. And it means that essential health care will be delivered in an acceptable and affordable way, and with their full participation (Morley, 1986).

Primary Health Care (PHC) has been defined by WHO as essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford in the spirit of self-reliance and determination (Macdonald, 1992).

The World Health Organisation (WHO) listed five concepts that should be included in the PHC programme (WHO, 1988):

1. Universal coverage of the population, with care provided according to need.
2. Services should be promotive, curative and rehabilitative.
3. Services should be effective, culturally acceptable, affordable and manageable.
4. Communities should be involved in the development of services so as to promote self-reliance and reduce dependence.
5. Approaches to health should relate to other sectors of development.

Also, in 1978 the World Health Organisation (WHO) specified eight components of PHC (WHO, 1988):

1. Health education;

2. Maternal and child health including family planning;

3. Immunisation against the major infectious diseases;

4. Prevention and control of locally endemic diseases;

5. Appropriate treatment of common diseases and injuries;

6. Provision of essential drugs;

7. Promotion of food supply and proper nutrition;

8. and adequate supply of safe water and basic sanitation.

After that the delegation became convinced of the need to restructure PHC, as then understood, and in particular to integrate at least most of the vertical programs, to create a Comprehensive PHC package (Morley, 1986).

But successful PHC programs need to be supported by the general health care system. Kleczkowsli et. al. (1984) classified the necessary support as:

1. the promotion and development of PHC: This must include the formulation of policy and priorities; mobilisation of both community and intersectional support, establishment of the necessary laws, planning and programming; organisation, financing, manpower issues, and the provision of the necessary tools.
2. the functioning of PHC: This form of support lies in the management of resources, the provision and co-ordination of the available administrative and medical tools.

2.3 ORGANIZATION OF PHC IN DIFFERENT COUNTRIES:

The concept of Primary Health Care (PHC) differs from one country another according to the ways in which planners and policy makers see it corresponding to the Alma-Ata definition of 1978. From these differences in the concept of PHC, the researcher has tried to cast some light on different interpretations in countries that have initiated PHC programmes. In this section, a description is given about the organization of PHCs in Bahrain, Yemen, Libya and Zimbabwe. However, it must be stated that the selection of these countries was made because they are developing nations in addition to which Bahrain and Yemen are neighbouring states to Saudi Arabia. On the other hand, Libya and Zimbabwe by and large have a similar set of goals to Saudi Arabia, and the major health problems in Zimbabwe are related to nutritional deficiencies, communicable diseases, pregnancy and child birth.

2.3.1. ORGANIZATION OF PHC IN BAHRAIN:

Bahrain's total land area is 666 sq km with a population of about 435,065 in 1986. In that country, the government uses its oil resources to create welfare facilities. The foundation of Bahrain's health service dates back as far as 1900 when the first foreign hospitals opened in Manama. The government took its first step towards a comprehensive health system for its population in 1925 with the appointment of a physician to a pearl diver' clinic and a dispensary on Muharraq. In 1968 the government drew up a comprehensive development plan for a health care, in co-operation with the WHO. This included strengthening the hospital service, training all categories of health personnel, introducing a system of medical records, increasing the

number of health centres to provide a basis for PHC and building up preventive care within the MOH. After the Alma-Ata Declaration in 1978, PHC become fully accepted with the formation of the division of PHC within the MOH (Stephen, 1992).

The figures for IMR (15/1000 live births) and MMR (8/100,000 births) in 1989 were very low, which compares well with a number of countries in the industrialised world (UNICEF, 1991). Bahrain is divided into four regions: Muharrag, Manama, North Central and South Central regions. PHC is not divided into urban or rural services but facilities vary according to the population of each catchment area (10 - 30,000 people). A network of 19 Health Centres, serving about 98% of the population, is organised to provide PHC services, and by 1993 it was planned to have built a further six health centres. Basically there are three categories of Health Centre as shown in table 2.1:

TABLE: 2.1
Category of Health Centres in Bahrain

Regions	A+	A	B	C
Muharraq		2		2
Manama	1	3	1	
North Central		2	2	1
South Central		2	1	2
Total	1	9	4	5

Type A Health Centre:

Covers a population of 20,000 - 30,000 and provides maternal health care (MHC), curative and dental services, with a pharmacy and radiological and laboratory facilities. In the Type A+ Health Centre a physiotherapy department is provided.

Type B Health Centre:

Covers a population of 10,000 - 20,000 and provides the same services as Type A except there is no radiological department.

Type C Health Centre

Covers a population of 5,000 - 10,000 and only provides a basic curative consultation service. MCH services are provided by a visiting midwife and doctor.

Maternal and child health (MCH) services are provided by a doctor (Wherever possible female), community health nurse, nurse midwife or MCH/practical nurse, and concentrate on antenatal and postnatal care, health education and women's' immunisation. Ninety nine percent of deliveries take place in hospitals.

2.3.2. ORGANISATION OF PHC IN PEOPLE'S DEMOCRATIC OF YEMEN:

The PDR Yemen covers an area of 388,100 sq km with the estimated population of about 2,328,000 in 1987.

PHC in the Democratic Yemen is no longer confined to medical actions but has been broadened to encompass many health-related activities like the provision of safe water and the production and consumption of nutritious food (Morely, 1986).

Since Independence in 1967, government policies have been established in order to expand health facilities, to train health personnel at local level and to concentrate on MCH care. By the end of 1978 sixteen percent of the rural population had access to some health care. Through 1980-1988, the Maternal Mortality Rate was 100 per 100,000 births (Latif, 1989). In 1982, a comprehensive survey was undertaken over one year by the MOH in collaboration with the World Bank, Ruddo Barner and the WHO, which gave an excellent insight into the background and problems of malnutrition in PDR Yemen. The main findings were (Stephen, 1992):

1. No less than 40 per cent of pre-school children were affected by some form of malnutrition.
2. Malnutrition increased to its maximum between the ages of nine months and two years.
3. Anaemia was common amongst women and children.
4. The cost of imported food is high and poorer families tended to buy cheaper foods, which were nutritionally inadequate.
5. The highest percentage of malnutrition occurred in the slums rather than rural areas.

Primary health care (PHC) in this country is no longer confined to medical actions but has been broadened to encompass many health-related activities like the provision of safe water and the production and consumption of nutritious food (Morley, 1986).

The integrated PHC package in the PDR of Yemen includes the following elements (Morley, 1986):

1. MCH care, including antenatal, delivery, and postnatal care; a family planing service implementations; nutritional surveillance; health and nutritional education; oral dehydration for diarrhoea, and in-service training.
2. Environmental hygiene and provision of safe water.
3. Control of major specific communicable diseases.
4. Health education (including information on personal hygiene).
5. Management of common diseases and injuries, and referral of more complex problems.
6. Reporting on vital statistics and epidemics, and other basic items of health information.

In the Third Five Year Plan (1986-1990) priority continued to be given to PHC with the aim of providing accessible facilities to 90% of the population by the end of 1990 (Latif, 1989). The other predisposing factors leading to the poor standard of health have been identified and labelled as major policy issues:

1. Improving quality care.
2. Improving intersectional co-operation.
3. Community involvement through grass-root organisations.
4. Strengthening of management and organisational skills at every level from MOH to the PHC Units.
5. Improving the information system.

6. Expanding the training and education of new health workers and re-orientation of old health workers.

7. Environmental health.

PHC in this country is provided by the following facilities (Shown in Table 2.2) (Stephen, 1992):

1. Maternal Child Health (MCH) Centres, which were originally built as a separate facility. They may serve population of up to 70,000 and are staffed, in theory, by one nurse midwife, one trained nurse, three community nurses, one practical nurse and a variable number of national service personnel.

2. People's Clinics provide only curative care for an adult population of 50,000 - 70,000 and are staffed by a varying number of physicians, up to six, one or two medical assistants, one dental assistant, one trained nurse, eight practical nurses, one laboratory technician, one pharmacist, two assistant pharmacists and a variable number of national service personnel. No radiological department is provided.

3. Workers' Clinics are organised for industrial workers. Their facilities and pattern of staffing are similar to the People's Clinics.

4. Polyclinics are multi-purpose facilities which provide comprehensive primary care (Curative, preventive and the follow-up of certain diseases) and in addition, a variety of

specialist outpatient clinics. They were conceived following the advice of Cuban and Soviet experts and are similar to polyclinics found in these two countries.

5. Health Centres are placed in the largest villages with the intention of serving a surrounding population of up to 25,000 and are staffed by one or two medical assistants, one or two community nurse midwives, one practical nurse and a varying number of health guides. As well as a small pharmacy and laboratory, five beds are provided-mainly for obstetrics; which serve a population from 6,000 to 10,000.

6. Rural Health Units are provided to serve 3,000 to 8,000 people. Each unit varies in size and staffing according to the population served: one medical assistant acting as a substitute for a physician, one practical nurse or community nurse midwife, and a varying number of health guides according to catchment area. The function of upgraded health units is to provide not only simple curative care but also all aspects of MCH care and the diagnosis/initial treatment of endemic diseases (Malaria, bilharzia, tuberculosis and trachoma).

TABLE: 2.2
Categories of PHC providers in People's Democratic of Yemen

CATEGORY	1974	1979	1982	1985	1987	1990
MCH Centre	3	25	38	59	N.A.	N.A.
People's Clinic	0	22	N.A.	N.A.	N.A.	N.A.
Workers' Clinic	0	6	N.A.	N.A.	N.A.	N.A.
Polyclinic	0	0	0	3	3	N.A.
Health Centre	5	15	18	19	N.A.	68
Rural Health Unit	99	257	300	357	N.A.	379

2.3.3. ORGANISATION OF PHC IN LIBYAN ARAB JAMAHIRIYA:

The Libyan Arab Jamahiriya is a large country of 1,759,540 sq km with a population of about 3,637,000 of which in 1984, 11 per cent were foreigners.

Since the revolution in 1969 the government has seized the initiative and priority has been given to the provision of clean water and sewage disposal, the elimination of malnutrition and improvement of health services. The changing health situation of the country since 1969 can be highlighted by the control of infectious disease through improving socio-economic conditions and immunisation (Table 2.3).

TABLE: 2.3
Incidence of Communicable Disease per 1,000 Population

CATEGORY	1969	1978	1983
Tuberculosis	180.0	27.00	16.60
Diphtheria	319.0	0.36	0.05
Tetanus	N.A.	1.8 (1973)	0.60
Poliomyelitis	16.5	3.60	0.80
Measles	384.7	88.30	27.00
Meningococcal meningitis	5.9	0.50	0.20
Schistosomiasis	N.A.	130.00	0.60

The five-year Development Plan (1981-1985) had the following aims:

1. Extending PHC facilities.
2. Improving/upgrading health services and in particular quality control in PC.
3. Expanding health education - concentrating mainly on women and children at school.

The following Five Year Development Plan (1986-1990) continued with the same policies, in particular to integrate curative and preventive services and increase health manpower, using Libyan personnel whenever possible. The national health policy for the future is geared towards providing "health for all and by all" and providing 100 per cent coverage - both urban and rural - by the year 2000.

PHC in Libya is provided by MOH through four different units (Shown in Table 2.4):

1. Basic Health Centres (Previously known as dispensaries) are the basic units providing mainly curative care to small populations, of about 2,500. One doctor, sometimes a dentist and three or four nurses staff them. Each centre has a small pharmacy and laboratory. Basic Health Sub-Centres that serve nomadic and seminomadic communities in the populated desert regions are staffed by one or two nurses and are visited each week by a doctor from the nearest Basic Health Centre.

2. Basic Health Care Centres (Previously known as Health Centre) are being established in towns and villages with population of 8-10,000 and provide curative, MCH and dental services as well as a pharmacy and laboratory. Two doctors are usually appointed, one of whom is female, for MCH care.

3. MCH Centres are still found as separate units, depending on the requirements of each locality. Whenever possible they are staffed by a female doctor, health visitors and assistant nurses or midwife. Antenatal care, health education for mothers, with particular emphasis on breast feeding and the preparation of food, with occasional advice on family planning, general curative care of children up to 6 years, and immunization are provided. Complications found at antenatal clinics are referred to the obstetric department of the nearest Combined Unit. It was estimated in the early 1980s that nearly 85% of the births took place in hospitals.

4. Combined Units (Polyclinics) cover populations of up to 50,000. They provide a comprehensive service with both primary and specialist facilities. The ground floor is occupied by primary care physicians (General practitioners), the MCH section and emergency department, is open 24 hours per day. The specialist consultation clinics are found on the first floor with a considerable variation in the number and type of specialists appointed. In addition, there is a radiological department, laboratory and pharmacy.

TABLE: 2.4
Categories of PHC providers in Libya

UNITS	1969	1977	1983
Basic Health Centre	414	678	682
Basic Health Care Centre	5	78	82
MCH Centre	31	108	172 (1980)
Combined Unit	1	12	28

2.3.4 ORGANISATION OF PHC IN ZIMBABWE:

The population of Zimbabwe in 1988 was about 9.1 million. The major health problems in the country are related to nutritional deficiencies, communicable diseases, pregnancy and childbirth. The IMR in this country was 71/1000 live births in 1988 and for those under 5 years' of age, the mortality rate was 113/1000 live births. The MMR in 1987 was 9/100,000 births (Grant, 1990).

The MOH co-ordinates provision of health services in the country. The main goal of the country is to improve the health services in rural areas as defined by MOH in 1986:

"The main objective of the Health for all Action Plan is to ensure that all the people of Zimbabwe have access to comprehensive and effective health care which will ensure their highest level of health and which will allow them to participate fully in the socio-economic development of their country".

Since independence in 1965, over 7000 Village Health Workers have been trained and 230 new Rural Health Centres built. Fifty five per cent of the population are served by fixed health units which provide outreach services to an additional 25% of the rural population. The remaining 20% of the population are reached by mobile units (Bryar, 1990).

The Primary Health Care (PHC) approach indicates three basic ideas (Bryar, 1990):

1. that the promotion of health depends fundamentally on improving socio-economic conditions, and on the elimination of poverty and under-development;

2. that in this process the mass of the people should be both major activists and the main beneficiaries;
3. that the entire health care system should be structured to support health activities, at the primary level, which respond to the mass health needs of the people.

The Zimbabwe "Health for All Action Plan" indicates that priority funds will be given to PHC activities.

PHC in this country is provided by the outpatient department of hospitals, health centres and outreach clinics at health posts which, every day, provide antenatal examinations, postnatal examination, weighing and growth monitoring of children up to 5 years of age, immunisation, provision of vitamin A, diagnosis and treatment of illness, advice and education about the prevention and treatment of diarrhoea and dehydration, health education, and nutrition advice (Bryar, 1990).

What this brief review shows is that PHC and more particularly MCH are similarly treated in all these countries but the emphasise may be different, especially when nutritional problems intervene. All of these systems have followed the precepts of Alma Ata but they places emphasis on different issues. However, they all recognise the importance of MCH. It is also probably true to claim that some have been more successful than others in striking a balance between PHC and secondary and tertiary care. At present, it has to be admitted, in Saudi Arabia the focus of health care remains concentrated in the hospital system and despite the best efforts of the government serious problems remain in the field of PHC. In a parallel study conducted by Al Darrak (University of Wales, 1999) severe deficiencies were found in the relationships between PHC provides and the hospital system.

2.4 DEVELOPMENT OF ANC CARE:

Ballantyne (1902) wrote that preventive care, in order to be truly preventive, must be antenatal. Antenatal care is a comparatively new approach to childbirth and has only developed since the beginning of the 20th century. In 1872 the London Obstetrical Society granted the first proficiency certificates to midwives. Before 1900 women had no supervision during pregnancy and were seen for the first time by a doctor or midwife when labour had become established, so that complicating factors were never discovered until late in labour. The results were disastrous. Women died in childbirth and their babies were often fortunate to survive (Bourne, 1984). In order to decrease the rate of maternal mortality, the first clinics in London were founded in 1915 under the Local Government Boards, while maternity inpatient care was provided by voluntary hospitals and some beds in the Poor Law institutions (Chamberlain, 1984).

The growth of the idea of antenatal care (ANC) has been a most pervasive influence. During the late nineteenth century various medical officers of health had begun to record numbers of infant deaths and to explore their causes. In 1904, S G Moore, Medical Officer of Health for Huddersfield, suggested dividing the causes of infant deaths into three categories - preventable, unpreventable and doubtfully preventable (Hall et al., 1985). At the beginning of this century any special care deliberately devoted to the aspect of protecting the health of the expectant mother, of treating any unhealthy conditions during pregnancy, of foreseeing and, if possible, forestalling dangers likely to arise in her labour, was virtually unknown (Johanstone, 1950). After the First World War there was a shift from an emphasis on educating mothers to

take care of themselves and their babies, to an emphasis on the professional supervision of expectant mothers. Attention also shifted from infant mortality to maternal mortality, the rates of which were extremely resistant to attempts at improvement (Hall et al.1985)

Antenatal care is a relatively recent phenomenon (Enkin et al.1982). It did not begin to develop until the early 20th century as medicine had very little to offer women before this time (Jo Alexander, 1990). The UK's development is divided into five time periods. Before 1915 there was very little ANC in the modern sense, but the period 1915 to 1932 saw it firmly established as an integral part of medical maternity care, primarily in the form of clinics organised by local government (Enkin et al, 1982). In two reports (Great Britain: MOH 1930, 1932) 5805 maternal deaths were analysed and it was concluded that 4655 of these were due directly to pregnancy and childbearing. Among the 34% in which an avoidable factor was identified, inadequate antenatal care was held responsible for one in five deaths (Enkin et al.1982). At that time ANC began to be introduced in Britain (and elsewhere in the industrialised world) (Hall et al., 1985) and the first British hospital antenatal clinic was opened in Edinburgh in 1915 (Jo Alexander, 1990). In 1918 the Maternal and Child Welfare Act empowered local authorities to make arrangements for the care of expectant mothers and children under five (Hall et al.1985). During 1932 - 37, questions about the usefulness of ANC came to the fore (Enkin et al.1982). The proportion of women receiving antenatal care rose from 40% in 1932 to 54% in 1937 (Hall et al., 1985), and it covered an estimated 80 per cent of pregnant women as early as 1935. This pattern of care is that which is still generally accepted and practised (Jo Alexander, 1990). In 1936, local authorities were granted powers to provide a comprehensive antenatal and delivery service (Chamberlain, 1984).

In the years during and after the Second World War a comprehensive maternity service developed within the context of the National Health Service (NHS) and the local government component declined in importance (Enkin et al 1982). A departmental committee on Maternal Mortality and Morbidity advocated an extension of medical care that included more treatment, more doctors, increased hospitalisation and more facilities, and suggested that the best remedy for Britain's poor record of maternal deaths was in the expansion of ANC (Hall et al.,1985). During the last 20 years ANC has become centralised in hospitals, its clinical content has been transformed by a series of technological innovations, and consumer consciousness of its effects on the experience of childbearing has grown (Enkin et al.1982). During these years the maternal and prenatal mortality rates have been falling steadily (Chamberlain,1984).

These British developments were part of an international movement. In Australia, Dr. T.G. Wilson opened an antenatal clinic in the Royal Adelaide Hospital in June 1910, closely followed by Dr. J.C. Windeyer's clinic in the Royal Hospital for women in Sydney. The first such clinic in the United States was established in the Boston Lying-in Hospital in 1911. This had been preceded by an extensive system of home visiting during pregnancy, which was initiated by the Instructive Nursing Association in 1901. By 1909 every women booked for delivery by the staff of the Boston Lying-in Hospital was being visited at home every ten days during pregnancy (Enkin et al.1982).

The concept of antenatal care has evolved from preventive medicine, at its start over a century ago, into a comprehensive system of maternity and neonatal services now referred to as perinatology (Di Renzo, 1992).

Young (1994) indicated that there are several targets that have to be achieved in the UK by the year 2000 or earlier. These targets are:

1. To increase, to at least 90 percent, the proportion of women making their first antenatal booking by the twelfth week of pregnancy and to decrease the social and ethnic disparity in early antenatal attendance.
2. To offer all women with low risk pregnancies the possibility of antenatal care that is shared between midwives, GPs, and hospital consultants.
3. To increase to at least 90 percent the proportion of pregnant women who are offered antenatal classes.
4. To offer all pregnant women support and advice in their efforts to stop smoking.

The Safe Motherhood Conference held in Nairobi in February 1987, served as a watershed for the recognition that (Kwast, 1993):

- every minute a woman dies because of complications of pregnancy and childbirth;
- that each year there are half a million maternal deaths. Ninety nine percent of these occur in the developing world;
- that the difference between the highest and lowest maternal mortality ratio in the world is 200-fold or more; and

- it is the greatest discrepancy in public health indicators and the second largest in all development indicators, after gross national product.

The major recommendations from all 23 Safe Motherhood Conferences across the continents show many similarities. These recommendations include (Kwast, 1993):

- The establishment of national and regional safe Motherhood Committees.
- Policy reforms to improve the status of women and girls.
- Increased access to family planning services.
- Expanding family life education programs.
- Involving communities and non-Governmental Organizations.
- Training and deploying appropriate skilled health personnel.
- Improving data collection and research.
- Strengthening referral systems and maximising resources.

2.5 ANTENATAL CARE ATTENDANCE:

For more than 50 years obstetricians have given a lead in demonstrating their concern for the prevention of abnormal pregnancy outcomes by stressing the importance of good antenatal care. A primary objective of these antenatal programs has been to achieve an optimal level of maternal and infant health, by early identification of any complications such as toxaemia or foetal growth retardation, and to anticipate potential problems associated with the delivery itself (Hey, 1984). Antenatal care is that care necessary to meet the health needs of pregnant women. Antenatal services are the services which cover this care and may be provided

by health centres, voluntary organisations or private hospitals (Dowling, 1984). Smolensky (1982) has defined prenatal care as "the complete and adequate health supervision of the pregnant women designed to maintain, protect, and promote the physical and emotional health and well-being of the woman, the new-born infant, and the family. It is the epitome of preventive medical services and is designed for prevention of complications as well as for their treatment. The ultimate objective is to assure an optimum state of health following pregnancy for the woman and to safeguard her future good health".

In the UK, in the 1920s a uniform pattern of care was proposed whereby women were seen monthly until 32 weeks, fortnightly until 36 weeks and weekly thereafter. At each visit the maternal blood pressure was recorded, urine-analysis performed, uterine size determined and the foetal heart osculated.

The recommended intervals for antenatal examinations in 1935 at Edinburgh Hospital Antenatal Clinic was at 16, 24, 28, 30, 32, 34, and 36 weeks of pregnancy, and then at weekly intervals to delivery (Jo Alexander, 1990). The association between lack of antenatal care and increased maternal and foetal morbidity had been recognised for almost half a century. Eastman observed, in 1947, that the prematurity rate was 24 percent among patients at The Johns Hopkins Hospital who had received no prenatal care, but only 8 percent among women with three or more antenatal visits. Tokuhata et al. studied birth certificate data of 185,000 deliveries and found a 23.6 percent prematurity rate among women without prenatal care compared with 6.9 percent among those with care. Similar results were obtained by Bruce et al. (22.9 percent versus 9.5 percent prematurity), as well as Klein (33.1 percent versus 9.1 percent), Ryan et al.

(15.8 versus 9.9 percent), and Greenberg found that women without prenatal care have 2.5 times increased risk of prematurity (Moore, 1986).

As a result antenatal care is now largely concerned with the detection and treatment of foetal problems. These would be dramatically reduced if congenital abnormalities could be avoided, and both premature labour and intrauterine growth retardation prevented or effectively treated. The challenge of modern antenatal care in Europe is to ensure that all women receive care without unnecessary intervention or inconvenience whilst at the same time ensuring that those few women, with either maternal or foetal problems, are detected and treated appropriately (Gillian, 1993).

Ideally the mothers should attend the antenatal clinic once a month during the first six months, twice a month during the next two months and thereafter once a week - if every thing is normal. According to Al-Mazrou (1990), the mothers should make at least five visits to ANC Clinics during her pregnancy period.

The World Health Organisation recommended that after the initial antenatal visit, women have to be seen by a physician or a midwife (nurse) ten to thirteen times during pregnancy. More frequent visits would be necessary if symptoms of danger arise during the term.

Hall (1984) suggested that four or five visits are adequate for the normal multipara compared with the present mean of 11 or 12 visits.

1. An early visit to clarify the length of gestation and to allow for antenatal screening, if this is available and is desired by the women.
2. At 22 weeks' gestation, to diagnose multiple pregnancy and establish a baseline weight for later analysis of weight gain patterns.
3. At 30 weeks' gestation, to diagnose intrauterine growth retardation so that there is time to arrange serial ultrasound scan.
4. At 36 weeks' gestation diagnosis of malpresentation may be attempted in time to arrange change of booking.
5. At 40 weeks' gestation, to assess the optimum time for delivery for women not already delivered spontaneously.

Dr. Hall explained that antenatal visits were reduced to only five or six occasions for healthy women as "The reduced number of visits did not jeopardise anyone's care and allowed those who did have problems to receive more attention" (Laurent, 1992).

Recommended ANC visits, like these advocated by Hall, can only be applied in the developed countries because there is a high level of heath education knowledge especially related to pregnancy.

2.6 HIGH RISK PREGNANCY:

Pregnancy is a time for physical, psychosocial care and preparation for the most important relationship between a mother and her expected child. Such care is essential to

maintain the physical and mental health of the mother; to anticipate and respond favourably to difficulties and complications of labour, if any; to bear a healthy child, and to help the mother learn the art of child care (Inch, 1988).

The central purpose of antenatal care is the early detection of high risk pregnancies, from a large group of expectant mothers and arrange for their skilled care; simultaneously continuing to provide appropriate care to all expectant mothers (Al-Mazrou et al., 1990).

The following are the conditions that mark the pregnancy as a-high-risk pregnancy (Saudi MOH, 1986):

1. Elderly primigravida (over 30 years old).
2. Short statured primigravida (below 140 cm).
3. Malpresentation (eg. breach, transverse lie, etc.)
4. Cases that present in early pregnancy with threatened abortion or in late pregnancy with antepartum haemorrhage.
5. Pre-Eclampsia and eclampsia.
6. Elderly grand multipara.
7. Twin or multiple pregnancy, Hydramnios.
8. Previous still birth, intra uterine death or manual removal of placenta.
9. Anaemia (Hb%, 50% or below).
10. Post maturity (Prolonged pregnancy two weeks or more of EDD).
11. History of previous Caesarian section or instrumental interference.
12. Pregnancy associated with general diseases (Kidney including persistent UTI, diabetes, cardiovascular diseases, TB, liver disease, etc).

McClure and Dixon (1970) have defined the typical woman who does not have high risk pregnancy as: "A healthy woman under the age of 30 years, with a normal obstetric history, for her second, third and fourth pregnancy only, and having no history of medical disorder or abnormality arising in the current pregnancy".

2.7 SPECIFIC HEALTH PROTECTION :

The antenatal care physicians should not only be health educators but also counsellors providing concrete information regarding the pregnancy and also helping the women through emotional and physical problems when they occur (Smith, 1981). Conditions, which have a direct impact on pregnancy, may be familial or they may be related to lifestyle and personal exposure. The identification of them is essential because of potential hazardous effects on the mother, the baby, or both, and because many of the potentially hazardous effects can be alleviated with proper medical care. Physical examination and laboratory testing will be useful adjuncts for substantiating and monitoring some of these conditions throughout pregnancy (Adams, 1983). The mother should have some information about:

2.7.1 Infections:

Many infectious diseases, if they are contracted during pregnancy, may be dangerous for the foetus. These include rubella (german measles) and toxoplasmosis. Rubella, a virus, usually results in no major side effects when contracted during childhood (Smith, 1981). There

is a 60 percent chance of the baby developing serious eye, brain, heart, and hearing defects if the mother contracts rubella in the first six to eight weeks of pregnancy. When rubella infects the mother between the eighth and twelfth week, the risk to the baby decreases to 40 percent. And if infection occurs between the twelfth and sixteenth week of pregnancy, the incidence to develop abnormalities drops to between 5 percent and 20 percent of such pregnancies (Sher & Knutzen, 1983), then rising further towards the last month of pregnancy (Hall, 1990).

As the rubella virus crosses the placental barrier and has a teratogenic effect on the foetus, it is important that women who are found to be rubella susceptible are offered vaccination (Alexander et al, 1992).

Toxoplasmosis is another virus, which is dangerous to the unborn child. This virus is commonly spread via two main routes: consumption of rare or raw meat and contact with the faeces of cats (Smith, 1981). The study that was undertaken by the Public Health Laboratory shows that over half of British antenatal clinics give advice and information on toxoplasmosis because it is a foetal infection which occurs in the first and second trimester (Hall,1994). This disease may cause 11 - 13 percent of children of an affected pregnancy to develop the features of choroidoretinitis, cerebral calcification, hydrocephalus and mental subnormality (Hall,1990).

2.7.2 Anaemia:

The pregnant woman needs to be fit and healthy and have a competent oxygen-carrying capacity in order for her body to supply the foetus with its oxygen needs (Farrer, 1994).

According to Lloyd and Lewis (1993), the reduction of the oxygen-carrying capacity in the blood is due to:

- a reduced number of red blood cells;
- a low concentration of haemoglobin; or
- a combination of both.

Anaemia is, however, a problem that needs active attention. There are two main causes (Farrer, 1994):

- Iron deficiency.
- Folic acid deficiency.

Iron deficiency anaemia presents at the start of pregnancy when the haemoglobin concentration is less than 10.4g/di. Large amounts of supplemental iron (such as ferrous sulphate tablets) will be needed. Folic acid deficiency may occur in the second half of pregnancy (Rakel, 1984). This happens because the pregnant woman's requirements of folic acid are increased five times above the requirements of the non-pregnant women (Farrer, 1994). A daily amount of 500 mg. of folic acid is sufficient to meet this need (Rakel, 1984 and Wintrobe, 1981).

Anaemia occurs in about one out of every 500 births (Smolensky, 1982). Also it occurs in approximately 8 out of 10 pregnant women in the USA. Iron deficiency anaemia accounts for about 95 percent of all diagnosed pregnancy anaemia. Increased risks of abortion, premature labour, infection, toxaemia of pregnancy, intrauterine growth retardation, perinatal mortality,

and perinatal morbidity have been associated with anaemia during pregnancy (Adams, 1983). Women in the childbearing years frequently have a low iron component in their blood because of the monthly period. So in order to prevent anaemia, it is important to eat food that provides iron and vitamin C (Smith, 1981).

2.7.3 Toxaemia:

The presence of albumin in urine and an increase in blood pressure, especially on serial observations over a period of time, indicates Toxaemia of pregnancy (Al-Mazrou et al.1990). This condition complicates approximately 8 percent of all pregnancies. It most commonly occurs in first pregnancies, in women with multiple pregnancies and in women whose pregnancies are complicated by maternal diabetes mellitus. It also occurs more frequently in teenage pregnancies and in pregnant women over 35 years of age. Early signs of toxaemia should be managed by simple procedures like salt restriction, bed rest and diuretics (Sher & Knutzen, 1983).

2.7.4 Rhesus status:

A once common medical problem caused by the immune system is haemolytic anaemia of the new-born, which is due to a blood factor; Rh factor (Curtis, 1983). Rh factor is an antigenic factor found in the blood of 85 percent of people who are termed Rh positive (Farrer, 1994). Rh incompatibility (Rh-negative mother, Rh-positive foetus) can lead to destruction of red blood cells. The foetus produces Rh-positive antigens that can pass through the placenta;

maternal antibodies are then produced in response to the antigens. These antibodies pass back into the foetal blood system destroying the foetal red blood cells (erythroblastosis fetalis) (Nelms, 1982 and Farrer, 1994). When Rh-positive cells encounter these antibodies, the antibodies will react with and destroy the red blood cells. This process will lead to anaemia (Farrer, 1994). Rh positive and "O" group women, as well as women with rare blood groups, should again be tested at 28 weeks of gestation to detect antibodies. In order to prevent Rh sensitisation in women at risk, intramuscular administration of Rh-immunoglobulin at 28 and 34 weeks of pregnancy, with a further dose after delivery, is generally recommended (Al-Mazrou et al, 1990).

2.8 FACTORS INFLUENCING ATTENDANCE AT ANCC:

It is surprising to note that a pregnant woman in a developing country has up to 200 times greater risk of dying than does a pregnant woman in an affluent society. As many as 1400 women die daily in the process of carrying or delivering children (Philips, 1990). There are almost half a million maternal deaths a year in the developing world and millions of women are seriously ill after giving birth (Koblinsky, 1993; Philips, 1990; Royston and Armstong, 1989; and WHO, 1985). It seems that most maternal deaths are theoretically avoidable, but major improvements in health care, public health and nutrition are required to be able to effect safe pre-natal care (Koblinsky, 1993 and Philips, 1990). These improvements in health care and nutrition will help in detecting most of the factors that are known to influence the early and regular attendance for antenatal care, which will influence the outcome of the pregnancy.

Examining the prenatal care-seeking behaviour among rural women in Bangladesh, Rahman et al. (1997) have shown the importance of demographic, socioeconomic, cultural, and programmatic factors in explaining health seeking behaviour. They indicated from the study that 41 percent did not receive prenatal care prior to their most recent delivery and most of the women, among those who received prenatal advice, went to an unqualified person. According to the study, only 5 percent received prenatal care 6 or more times, even though the recommended number of visits is 10. It further explored the economic status of the household as a factor for seeking prenatal care or to consult qualified persons. Younger and more educated women were more likely to seek prenatal care. Younger low-parity women were more likely to use a qualified person for delivery.

A women's health, her total well-being, is not determined solely by biological factors and reproduction, but also by the effects of work load, nutrition, stress, war, and migration, among others (Kwaak, 1991).

The age at marriage and age at first pregnancy is rising in many developing countries, but 50 percent of first births occur to women aged less than 19 years. Women who are not fully matured enough to deliver children can permanently cause injury to their health by giving birth at this age, and the maternal mortality rate in this age-group is often three times that of the age group 20 - 24 years (WHO, 1985). Herdson (1989) shows that a poor outcome of pregnancy was associated with a maternal age of 35 years or more, multiparity and multiple pregnancy. The number of children a women has delivered, also contributes to pregnancy outcome and

often compounds the age influence. Very young teenagers are at a higher risk of having low birth weight babies but this may be attributable to late booking, unwanted pregnancy, poor uptake of the compliance with care, and lack of social support. Perhaps the best arguments for specialist unit confinement are that skeletal growth may not be complete (Hall, 1990). Young women (under 20) or older women (over 30) with high parity have infants with higher mortality rates in the first month of life than do mothers in their twenties (Nelms, 1982). Kwast (1993) indicated that both age and parity affect a woman's chance of dying. Statistics shows that younger and older women, particularly those under 15 and over 40 years of age, face a risk of dying 10 or 15 times greater than the already formidable risk faced by women age 20 - 29 years. Most of the maternal deaths (75 percent) are due to direct obstetric causes and are basically preventable through antenatal care. However primigravidae now constitute almost half of the pregnant population in the UK and most have no serious complications. Women who are pregnant for the first time should, however, have more antenatal checks than the multigravida woman, in order to detect pregnancy-induced hypertension. The likelihood of the conditions occurring, and hence the productivity of visits intended to detect it, is greater after 33 weeks' gestation, but it has been argued that extra visits should be made in the second trimester, on the grounds that the condition is more morbid for mother and baby if it does develop at that time (Hall, 1990). It seems the association between birth spacing and mortality is generally strongest in the Middle East and North Africa (Philips,1990).

The height of the pregnant woman may be used as a risk factor, especially in primigravidae, mainly on the basis that those women, who are short because they have not reached their genetic potential, perhaps because of nutritional problems in childhood, are more

likely to have a higher perinatal mortality. A height of 152 cm is often used, but Bull's data (1983) suggests that 160 cm may be more reasonable (Hall, 1990). Nelms (1982) wrote in his study that short women have a greater incidence of difficult labours, smaller babies, and a higher infant mortality rate than other women. These findings are seen in women who are short because of genetic as well as nutritional causes. Obesity also leads to pregnancy complications, particularly toxaemia and delivery problems. Infant mortality is also higher in cases of maternal obesity.

Wilcox et al. (1993) found in their study of 31,561 women delivering in the University and City Hospitals (Nottingham) that the maternal height and maternal weight have a direct relationship with birthweight. In addition, they found that age and parity have a significant association with birthweight (Table 2.5)

TABLE: 2.5

Relationship between maternal characteristics and birth weight

FACTOR	No. In Group	Birth weight Ratio	Birthweight adjusted to 40 wks (g)
AGE (Years)			
Less than 19	2892	0.977	3441
20 – 24	8931	0.990	3487
25 – 29	11232	1.005	3540
30 – 34	6161	1.010	3557
35 – 39	1854	1.018	3585
More than 40	310	1.005	3540
PARITY			
0	13235	0.980	3452
1	10476	1.015	3575
2	4153	1.023	3603
3	1428	1.019	3589
More than 4	774	1.012	3564
MATERNAL HEIGHT (cm)			
Less than 150	516	0.932	3283
150 – 154	2300	0.959	3378
155 – 159	6531	0.979	3448
160 – 164	8936	1.000	3522
165 – 169	6722	1.019	3589
170 – 174	3035	1.038	3656
175 – 179	745	1.053	3709
More than 180	774	1.064	3747
MATERNAL WEIGHT (kg)			
Less than 50	1842	0.924	3254
50 – 59	9843	0.972	3423
60 – 69	10610	1.009	3554
70 – 79	4814	1.034	3642
80 – 89	1775	1.048	3691
90 – 99	719	1.062	3740
More than 100	440	1.090	3839

Women who are underweight for height are at risk of having a growth retarded baby and fundal height checking with serial ultrasound is indicated, together with monitoring of maternal

weight again. Obesity (overweight for height) is a risk factor for foetal macrosomy and pre-eclampsia. Extra visits for blood pressure checks, using an obese cuff are indicated. Obese women should be seen by a specialist with a scan available in late pregnancy and booked for confinement under specialist care (Hall, 1990).

There is also a relationship between occupation and the health of the pregnant woman in which two-thirds of low-birthweight babies are born to working-class women (Chadwic, 1994). WHO (1985) indicated, many studies clearly show that women engaged in heavy labour during pregnancy have a mean pregnancy weight gain several kilograms less than other women who have a similar food intake. The birth weights of their babies are similarly lower, thus diminishing the babies' chances of survival and healthy growth, and development.

Studying a Jamaican population, McCaw-Binns et al. (1995) showed an independent association between each set of variables (demographic, behavioral, environmental, economic, obstetric history) and nonattendance and time of first visit. According to the study, 4 percent of the women had not attended for antenatal care. Moreover, among those who attended for antenatal care, 10 percent delayed the first visit until the last trimester, while 29 percent presented for care in the first trimester. The majority, 61 percent, made their first visit in the second trimester. Further, teenage women were the least likely to attend or they attend late. Compared with primigravidae, women who were gravida 1-2 (OR = 1.4) and gravida 3-4 (OR = 1.6) were more likely to attend early. In addition, women who smoke were at high risk of nonattendance. Variables describing the quality of the home environment were particularly predictive of nonattendance. The risk of nonattendance increased from 2.2 to 3.1 for the shorter

birth interval. Women who have some unspecified pregnancy complications were highly motivated to attend early.

Draper et al. (1987) observed 269 women who attended antenatal care clinics irregularly. They learned that many women found the care in the clinic impersonal and unfriendly. Also they were less able to relax and discuss their concerns, worries with staff regarding long waiting times and difficult journeys in getting to the clinics. Long waiting times may also affect women's perception of the care they receive and are found to be a major source of frustration among mothers (Buckley, 1991). Mason's (1989) findings are probably typical of many antenatal clinics. Seventy five percent of women felt that they spent too much time waiting and 96 percent felt that it was important that they had only a short time to wait. Flynn (1985) found that perceived waiting times had the greatest effect on patient satisfaction with care in pregnancy, irrespective of whether continuity of care was given. The early contact of pregnant women with antenatal services is advocated in an attempt to identify those at particular risk of developing complications, so that these might be prevented. Chisholm (1989) carried out a cohort study of 960 women in Central Manchester in order to examine the factors associated with late booking. She found that the factors of importance include teenage pregnancy, unemployment in the household, ethnic origin, moving during pregnancy, geographical area of residence and opinions about the value of antenatal care.

In an Egyptian study, El-Sherbini et al. (1993) has examined the characteristics of pregnant women attending prenatal clinics at the maternal and child health (MCH) centers. Twanty-one percent of the pregnant women visits was in the 1st trimester, 35 percent was in the

2nd trimester, and 33.5 percent was in the 3rd trimester. From these women, 34.5 percent attended one prenatal visit each month. 52 percent had less than 8 visits during their pregnancy, and 13.5 percent had more than 8 visits. Also, this study shows that 25.5 percent of the pregnant women knew little about the significance of prenatal care. In the findings, it was found that several factors associated with seeking prenatal care such as: younger than 30, higher education, gravidity less than 5 and greater than 0, and working outside the home. Their recommendations to improve antenatal services are; nurses can encourage pregnant women to seek prenatal care include education via mass media, home visits, improved quality of prenatal care, screening for high-risk women, an increased number of MCH centers and prenatal clinics in rural areas, and adequate supply of medication, supplies, and equipment in these facilities.

Kaiser and Kiddy (1981) compared attendance records of low socio-economic status women attending antenatal care clinics in Dublin and found that high parity, age and employment status are considered as barriers to either receiving early antenatal care or regular visits.

Enkin et al (1989) wrote that women from lower social classes tend to be less well informed about the progress of pregnancy and birth, about problems, and about preventive and curative care. In giving greater priority to the preventive aspects of care, rather than to the alleviation of symptoms, the current system of ANC is more adapted to the normal behaviour of middle- and upper class women. Greenberg (1983) recognised that prenatal care is associated with a favourable pregnancy outcome. He noticed that antenatal care is associated with a

favourable pregnancy outcome, which is influenced by some social factors such as maternal age, parity and cigarette smoking.

Bourne (1984) found that there are several factors, which affect the weight of the baby. These factors, are age of the mother, number of children, mother's race, maternal diseases, maternal height, maternal weight, diet, smoking habits and other economic factors. Chadwick (1994) wrote that one of the most significant factors is poverty, which not only leads to poor diet, housing and basic facilities, but also lower self-esteem and increases social isolation. This in turn is linked with habits such as smoking and drinking. Smoking and drinking in pregnancy are known to be detrimental not only to the health of the mother, but also to that of the developing foetus.

Educating mothers is important in reducing infant mortality. Also the mortality rates of children of women with seven or more years of schooling in the developing countries, are half as high as those of women with no formal education. Educated women are more likely to have enough status and power in their families to get prenatal care, delivery care, childhood immunisation, better diets for their children, and better housing (Brown et al, 1993). Education of girls is positively associated with many factors important for their good health status. Women, who are educated, marry later, have their first child later, make greater use of health services, and are involved in work that generates more income. In most developing countries, governments should give high priority to overcoming all the forces that currently prevent girls from obtaining education which improves their health status and increases the number of their visits to ANC clinics (Koblinsky, 1993).

In latter years, it has become 'improper' in the modern world to have a baby without consulting medical 'experts'. Everybody knows that the health of the mother and her baby are a medical matter, but not everybody feels the same way about it. The satisfactions and dissatisfactions mothers exhibit towards hospital doctors, GPs, midwives and health visitors, depend on the attitudes they have towards them. While some are happy to place themselves and their babies in medical hands, others suspect that useful advice can be given without medical training and some may argue that experts are only experts by virtue of their own beliefs in a false image (Oakley, 1981). Marsh (1985) suggested that the pregnant woman should have a longer consultation time, which might take more than 30 minutes and more opportunity to talk during antenatal care (Thorley and Rouse, 1993).

Nasah et al. (1991) found that one of the main factors that affected the attendance of pregnant mothers at the Maternal and Child Health Centre in Yaounde, Nigeria was waiting for hours to be seen by a doctor or midwife. Distance, transport difficulties and poor-quality services - suffering from shortages of suitable staff and inadequate supplies and equipment, involving excessive waiting times - deterred women from seeking MCH care (Price, 1994). Koblinsky et al. (1993) indicated that long distances to health facilities are obstacles to prenatal care. Ninety six percent of mothers in two Nigerian villages, who had not used a health facility to give birth, cited distance as the reason. Lack of access to timely and effective basic maternal health care is a critical problem for Third World women and contributes mightily to maternal health problems and infant mortality rate. The health care systems of most developing countries might be characterised by a different set of "four toos" - too far from home, too few trained

birth-attendants, too poorly equipped to identify or handle complications, and too deficient in quality of care (Koblinsky et al, 1993).

Young et al (1990) wrote that pregnant women who do not seek antenatal care until the third trimester exhibit certain high-risk behaviour symptoms. These include smoking, closely spaced pregnancies and self-reported low weight gain, as well as well-documented financial and educational disadvantages. In addition to exhibiting high-risk behaviours, there are some factors which may be related to the pattern of very delayed care such as: low self-esteem, poor communication patterns with parents and partners, depression and the inability to plan for childbearing. They also noticed that adolescents, who had not given birth to a child, were most likely to be late care seekers due to attempts to conceal the pregnancy from their parents.

There are additional maternal factors that influence foetal development. Diabetes, anaemia, hypertension and heart disease are example of chronic maternal conditions that can affect the heart of the foetus. Diabetic mothers have a higher incidence of toxaemia, stillborn, spontaneous abortions, and infants born with defects, than do other mothers. The infants are often large in size, which leads to problems with labour and delivery. Anaemia in the mother can cause maternal and foetal complications. Foetal iron reserves are not built up if anaemia is present in the mother. Hypertension can result in foetal distress due to inadequate placenta perfusion of oxygen and nutrients (Nelms, 1982). Wright (1992) indicated in his study of about 15,000 women, that repeated pregnancies at short intervals, anaemia and poor nutritional status are major contributing factors to the high risk of death for Afghan women during their reproductive years. Other contributing factors included poor hygiene practices, early age of first

pregnancy, reluctance to seek medical care during their antenatal period, unsupervised delivery and a general lack of education.

Analyses of data from the British Prenatal Mortality Survey showed that smoking more than ten cigarettes daily during pregnancy was associated with a mean reduction in birthweight of 170g and a 28 percent increase in late foetal and neonatal mortality (Hall, 1990). MacArthur and Knox (1988) studied 1235 women smokers at the outset of their pregnancy: 85 stopped in the first six weeks of the pregnancy, 119 between 6 and 16 weeks, 56 after 16 weeks, 51 stopped and restarted before delivery, and 924 carried on smoking throughout. This study also showed the benefits of stopping smoking: those who stopped smoking before the end of 16 weeks' gestation had heavier babies than those smoking throughout pregnancy. Those who stopped after 16 weeks' gestation were intermediate.

2.9 FACTORS INFLUENCING ATTENDANCE AT ANCCs IN SAUDI ARABIA:

There are some important factors that are known to influence the early and regular attendance at antenatal care centres in Saudi Arabia. These factors must be studied then must be controlled in order to have a healthy mother and baby. From the previous studies, the researcher found that possibly most of the factors that inhibit the attendance of pregnant women in Saudi Arabia are similar to those in other countries. One of these studies undertaken in Saudi Arabia is Al-Nasser's. Al-Nasser (1991) reviewed the records of 1946 women receiving antenatal care

in the primary health care centres in Al-Baha region. He found that the majority of the women (58.5 percent) visited the clinic five times or less, while only 15.2 percent visited more than eight times. There was no significant association between maternal age and the frequency of visits. There was a statistically significant association between parity, gestational age at first visit, place of delivery, and outcome of the pregnancy on one hand and the number of antenatal visits on the other. The majority of pregnant women (60.8 percent) were first seen before the 20th week of gestation.

Herdson (1989) shows that poor outcome of pregnancy in Saudi Arabia was associated with a maternal age of 35 years or more, multiparty and multiple pregnancy. He also found that the different social and behavioural conditions in Saudi society, where marriage and pregnancy are common among teenage girls, affect the prenatal outcome of adolescent pregnancies more than the young age of the mother.

Al-Meshari et al. (1992) studied maternal mortality in Saudi Arabia. This was a prospective study, which followed over 850,000 pregnancies Kingdomwide from August 1989 to June 1992. During this time, there were 880,248 deliveries and 155 maternal deaths, which give a maternal mortality ratio (MMR), of 17.6 per 100.000 births. The regional distribution of maternal death shows that the rate was lowest in the Central province (12 per100.000) and highest in the Eastern province (21 per 100.000). They found that two important factors (age and parity) were closely associated with maternal deaths which were highest among women aged over 35 years and those with a parity of one and over seven deliveries. A majority of the maternal deaths occurred among unbooked women (61 percent) and the most important factors in this

percentage of deaths, was women's failure to use available prenatal care facilities. The epidemiological features of the maternal deaths show the highest rates among illiterate women (75.5 percent), women with an income of less than 2,000 SR (38 percent) and those belonging to the lowest social class (64.5 percent).

Al-Mazrou and Farid (1991) collected information about 1,346 pregnant women in Saudi Arabia. They found that women under 25 years of age reported a larger number of antenatal visits than women 25-34 years. Women whose husbands were illiterate had the smallest number of ANC visits (50 percent reporting once or twice and 20 percent five or more checks). The times taken by the women to reach the health centres did not appear to affect the likelihood of a pregnancy visit. They also found that the more common reasons for not having pregnancy visits were that they had not felt the need for any medication (had no complaints), they were too busy, their husband were busy, there was no facility or they lived too far from antenatal care clinics.

The study by Al-Shammari et al (1994) of 1344 expectant mothers, which selected randomly from 15 health centres in Riyadh city, indicates that the average gestational age at booking was 13 weeks and the number of ANC visits achieved during the current pregnancy was 6. They also found that the level of education of both husband and wife, poor obstetric history, the family income and gestational age at booking, affect the number of antenatal visits.

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

3.2 STATEMENT OF THE PROBLEM

3.3 GOAL AND PURPOSE OF THE STUDY

3.4 SIGNIFICANCE OF THE STUDY

3.5 STUDY POPULATION

3.6 THE RESEARCH DESIGN

3.7 VALIDITY AND RELIABILITY OF INSTRUMENTS

3.8 TRAINING OF INVESTIGATORS

3.9 THE PILOT STUDY

3.10 METHOD OF DATA COLLECTION

3.11 DESCRIPTION OF STUDY VARIABLES

3.11.1 DEPENDENT VARIABLE
3.11.2 INDEPENDENT VARIABLES

3.12 METHOD OF DATA ANALYSIS

3.12.1 DESCRIPTIVE PART
3.12.2 ANALYTICAL PART

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION:

Research in its broadest sense is an attempt to gain solution to problems. More precisely, it is the collection of data in a rigorously controlled situation for the purpose of prediction or explanation (Treece and Treece, 1982). Social research is the systematic observation of social life for the purpose of finding and understanding patterns among what is observed (Babbie, 1992). It is the application of scientific research procedures to solve problems of a social nature. It is a social inquiry directed toward the domains of behavior, often within the scope of organisational problems or questions (Al-Assaf and Schmele, 1993).

Many methods are used to conduct social research and these fall under the general classification of research methodology. Within this classification the research methodology can be divided into research design and statistical methods (Krueger et al., 1978). Research design addresses the planning of scientific inquiry - designing a strategy for finding out something (Babbie, 1992). Statistical methods provide the tools to implement the design methods (Krueger et al., 1978).

Leady (1993) identified the structure of the social research as a common to all research studies as follows:

1. It begins with a problem;

2. It ends with a conclusion.

3. The entire process is based upon observable facts called data;

4. It is logical;

5. It is orderly;

6. It is guided by a reasonable guess (hypothesis);

7. It confirms or rejects the reasonable guess on the basis of fact only;

8. It arrives at a conclusion on the basis of what the data and only the data, dictate;

9. The conclusion resolves the problem.

Jacob's Ladder represents a patterned set of assumptions and the ways for knowing something (methodology). Jacob's Ladder is divided into nine steps, which are (Crabtree and Miller, 1992):

Step 1: Define Research Problem;

Step 2: Literature Review;

Step 3: Hypothesis Formulation;

Step 4: Research Design;

Step 5: Instrumentation and Sampling;

Step 6: Data Collection;

Step 7: Data Analysis;

Step 8: Conclusion;

Step 9: Revise Hypotheses.

Survey research is probably the best method available to the social scientist interested in collecting original data for describing a population too large to observe directly. It is also an excellent vehicle for measuring attitudes and orientations in a large population (Babbie, 1992).

3.2 STATEMENT OF THE PROBLEM:

The problem statement presents the overall intent of the study and indicates how open or closed the study will be. In general, quantitative studies identify sets of variables and seek to determine their relationship. The researcher should write and rewrite his problem statement, seeing it, at best, as tentative: expecting it to change (Glesne and Peshkin, 1992).

In most of the developing countries, maternal mortality accounts for the largest proportion of deaths among women of reproductive age. Every year, an estimated half a million women die of causes related to pregnancy and childbirth, and these deaths leave one million children motherless (UNICEF, 1991).

The Ministry of Health (MOH) has emphasised the importance of adequate antenatal coverage for women, by recommending a specified pattern of visits to antenatal clinics. The

aim of this emphasis is to achieve the target of reduction in maternal mortality rate by the year 2000. But there are many factors that prohibit the majority of Saudi mothers from receiving adequate antenatal care. Al-Nasser (1991) found that the majority of women (58.5%), visited the ANC clinics five times or less during their pregnancy, while only 15.2% visited the ANC clinics more than eight times. Some of the factors he cites for such under utilisation, are gestational age, parity and place of delivery.

Studies, like Al-Nasser's are very few. However, the Al-Nasser study may be viewed as an incomplete as it failed to explain the reasons for under utilisation of the ANC clinics. It is therefore expected that this study will provide additional knowledge that could be used to complement the health services information relevant to maternal health care.

3.3 GOAL AND PURPOSE OF THE STUDY:

The choice of research study for a particular project depends first on the overarching goal of the research, the specific analysis objective, and its associated research questions (Crabtree and Miller, 1992). Manly (1992) wrote that:

> "..... it makes no sense to carry out a research study without the objectives being clear both in a general sense and in terms of specific questions to be answered. The nature of the specific questions to be asked will depend entirely on the context of the study".

The main goal of this study is to contribute to the total improvement of Maternal and Child health in the Kingdom of Saudi Arabia. This study is designed to determine the factors that influence the pattern of attendance of pregnant Saudi women at antenatal care clinics in

Primary Health Care Centres (PHCCs) and its effect on the health status of delivery outcomes in Riyadh Area (Map 3.1).

The main objectives of this study are:

- To determine the patterns of attendance at antenatal care clinics in Saudi Arabia.
- To identify factors that influence pregnant women against complying with the recommended patterns of antenatal visits.
- To determine the effect of ANC services on the health status of delivery outcomes.
- To examine the standards of ANC Clinics in the PHC Centers.
- To make necessary recommendations based on the findings of the study.

3.4 SIGNIFICANCE OF THE STUDY:

The services provided at antenatal care clinics (ANC Clinics) in the primary health care centres (PHCCs), are very important not only for the reduction of maternal mortality, maternal morbidity and infant mortality, but also in promoting the health and development of living children, as well those yet to be born. The infant mortality rate (IMR) and the maternal mortality rate (MMR) of a country are considered to be among the most important health indicators. Reduction of both MMR and IMR is a major goal to every country, and this can be achieved by proper utilisation of ANC clinics. Statistics like prenatal and infant mortality are considered not only as indicators of that nation's health, but also as indicators of the effectiveness of antenatal care. Antenatal care then becomes not just a medical concern, but rather, a political issue (Chadwick, 1994).

Map 3.1

Kingdom of Saudi Arabia
(Riyadh Area)

Map 3.1

Kingdom of Saudi Arabia
(Riyadh Area)

The significance of this study is based on the fact that there are plans for expansion of ANC services through the primary health care (PHC) system in Saudi Arabia. However, systematic maternal and child care, and the services available through ANC clinics are still new concepts to Saudi women. Consequently, utilisation of these clinics is low. It is necessary to assess the level of utilisation of the antenatal care clinics (ANCCs) and to study the factors that influence attendance at these Clinics. It is hoped that the findings of this study will become useful for any future planning and policy decisions, regarding Maternal and Child health services in the country.

3.5 STUDY POPULATION:

A population is the theoretically specified aggregation of study elements. A study population is that aggregation of elements from which the sample is actually selected (Babbie, 1992). In a sample survey, the major statistical components are referred to as the sampling plan and the estimation procedures. The sampling plan is the methodology used for selecting the sample from the population. The estimation procedures are the formulae used for obtaining estimates of population values from the sample data and for estimating the reliability of these population estimates (Levy and Lemeshow, 1991). As Smith (1975) asks:

> **"Why should researchers be interested in sampling? Why not take the complete count in research?**

There are two main reasons why a population may be sampled rather than a full census being taken (Manly, 1992):

1. A full census may be impractical because of the cost, manpower, and efforts involved.

2. Sampling is faster and a time saver rather than a full count.

The study population in this study includes all the pregnant women (36 weeks of pregnancy and above) attending the Primary Health Care Centres (PHCCs) in the Riyadh Area.

There are no simple answers to the question of how large a sample should be recruited for survey work. Many formulae that have been applied to the problem, but they alone still can not provide definitive answer (Cormack, 1991). Levy and Lemeshow (1991) wrote:

> "One of the most important problems in sample design is that of determining how large a sample is needed for the estimates obtained in the sample survey to be reliable enough to meet the objectives of the study. In general, the larger the sample, the greater will be the reliability of the resulting estimates."

To answer the question of how large a sample is, the researcher used this equation for determining the sample size (Mark, 1982):

$$n = \frac{Z^2 \text{ X } P\,(1\text{-}P)}{B^2}$$

Where: n = Sample Size
P = Parameter = 0.15
B = Bound = 0.02
Z = obtained from a table of standard normal values for a particular value of confidence coefficient of 95% (CC = 0.95). Z = 1.96.

$$n = \frac{(1.96)^2 \text{ X } 0.15\,(1\text{-}0.15)}{(0.02)^2} = 1225 \text{ Pregnant women.}$$

So, the sample size of this study should not be more than 1225 pregnant women. According to this formula, the researcher determined that 10 percent of the total pregnant women

(11630 pregnant women in 1990) in the selected regions (Al-Dawadmi, Al-Kharj, Hodat Bani Tamim, Al-Aiflaj, Wadi Al-Dawaser, etc.), must be used in this study (MOH, 1991).

3.6 THE RESEARCH DESIGN:

Research design refers to the general plan for conducting the research. Before making observation and analysing, however, the researcher needs a plan. He needs to determine what he is going to observe and analyse why and how (Babbies, 1992). Manly (1992) wrote that:

> "A research study can be thought of as consisting of five related parts: deciding on the objectives of the study, choosing an appropriate study design with adequate sample sizes, collecting the data accurately and consistently, analysing the data with appropriate methods, and producing a final report that includes all the important details about the study. Each of these parts must be carried out properly to ensure that a study is successful."

Rea and Parker (1992) applied eleven stages in their survey. These stages are:

Stage 1: Identification of the focus of the study and methods of research;
Stage 2: The research schedule and budget;
Stage 3: Establishment of an information base;
Stage 4: The sampling frame;
Stage 5: Determination of sample size and sample selection procedure;
Stage 6: Design of the survey instrument;
Stage 7: Pretest of the survey instrument;
Stage 8: Selection and training of interviewers;
Stage 9: Implementation of the survey;
Stage 10: Codification of the completed questionnaires and computerised data entry;
Stage 11: Data analysis and the final report.

The design of this study is based on the analysis of the relationships between the dependent variables (ANC visits) and the independent variables (women-related factors).

The sample of the study was chosen by cluster sampling. A cluster sample is a study of human service agencies within a given state, including departments of health, hospitals, clinics and PHC centres. This sampling is applied by dividing the state into regions. These regions are called clusters. A sample may then be chosen from the population in each region (Marks, 1982). The researcher used cluster sampling for two important reasons, namely *feasibility* and *economy*. Cluster sampling is the only feasible method of sampling because the only sampling frames, readily available for the target population, are lists of clusters. This is especially true for surveys of human population for which the household serves as the listing unit. Cluster sampling is also the most economical form of sampling. Not only are listing costs almost always lowest for cluster sampling, but also travelling costs are often the lowest. Cluster sampling is advantageous in surveys of institutions such as hospitals and PHC centres (Levy and Lemeshow, 1991).

In this study, the sample was carried out at 30% of PHC centres that are distributed in the Riyadh Area according to its regions (Table 3.1).

Number of selected PHC Centres = Total number of PHC Centres X 30/100

= 201 X 30/100 = 61 PHC Centres

To select these PHC Centres from each area, Riyadh Area was divided into 15 regions (eg. Al-Dwadmi region, Kharj region, Al-Majmah region, etc.) (Map 3.2). Each region was subdivided into three types of PHC Centre, according to the number of people they serve. From each type of PHC Centres, the centres will be selected using simple random sampling.

For example:

Number of PHC Centres in Sajer = Total number of PHCCs in Sajer X 30/100

= 10 X 30/100 = 3 PHC Centres.

These PHC Centres are: A. Sajer PHC Centre serves 8474 people.

B. Faithat Al-Ser PHC Centre serves 1894 people.

C. Al-Sakran PHC Centre serves 965 people.

According to the predicted number of pregnant women in each PHC Centre's catchment area, the proportional formula will be used to determine the number of pregnant women who will be selected for this study.

- Number of questionnaires in each region = Total number of Pregnant Women/Total Number of PHC Centres X 10/100 X PHC Centre in this region.
- Number of questionnaires in each PHCCs = Number of people in PHC Centre catshment area/Total population in this region X Total number of questionnaires.

For example:

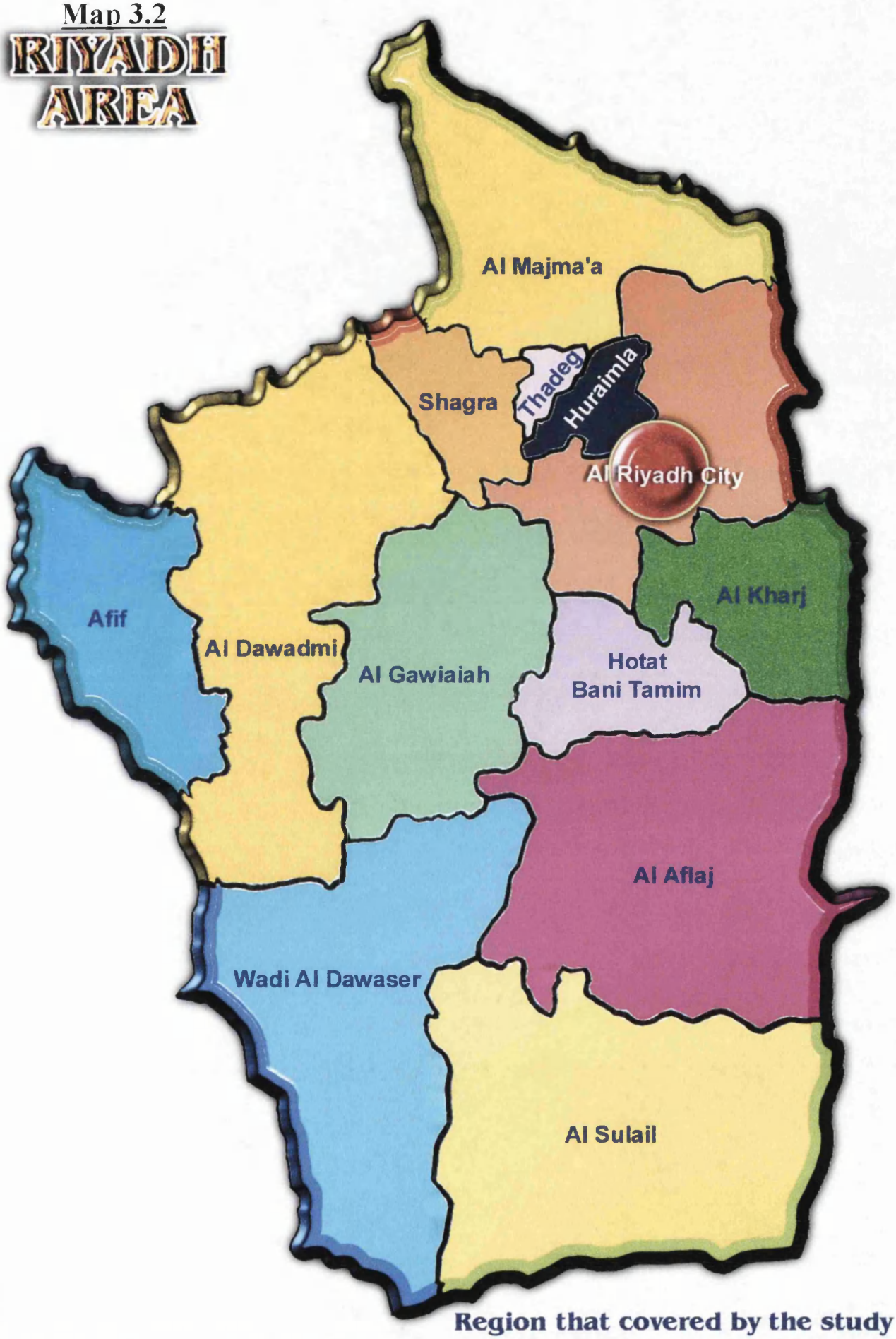
Number of questionnaires in Sajir = 11630/201 X 10/100 X 10 = 59 Forms

Number of questionnaires in each PHCCs = 8474/11333 X 59 = 44 Forms.

See table 3.2.

Map 3.2

RIYADH AREA



Region that covered by the study

TABLE 3.1
THE DISTRIBUTION OF PHCCs IN RIYADH REGIONS

REGIONS	POPUL-ATION	NO. OF PHCCs	SELECTED PHCCs	No. of Que-stionnaires
Al-DAWADMI	84225	42	12	247
AL-KHARJ	121640	19	6	112
HODAT BANI TAMIM	27449	10	3	59
AL-AIFLAJ	39096	12	3	70
WADI AL-DAWASER	36792	9	3	53
SHAGRA	20737	12	3	70
AL-MAJMAAH	40033	16	5	94
AFIF	34800	9	3	53
HURAIMLA	4998	5	2	29
HUDAT SUDAIR	9259	8	3	47
SAJIR	19751	10	3	59
AL-ZULFI	29571	10	3	59
AL-GAWIAIAH	38522	27	8	158
AL-SULAIL	14588	6	2	18
THADEG	7115	6	2	35
TOTAL	**528576**	**201**	**61**	**1163**

Statistics collected by the researcher. Riyadh City PHCCs (66 PHCCs) is excluded from this study

TABLE 3.2
Number of questionnaires in each PHCCs

SAJIR PHCCs	POPULATION IN EACH PHCC	PERCENTAGE	NO. OF QUESTIONNAIRES
Sajir	8474	75%	44
Faithat Al-Ser	1894	17%	10
Al-Sakran	965	8%	5
TOTAL	11333	100%	59

A systematic sample will be used in order to select every second pregnant women (36 weeks of gestation and above) who attended these PHCCs. The number of subjects selected in each centre will be based on the number of pregnant women who visited the PHCCs during the study period.

All the interviewers (Social Workers and Nurses) spoke the Arabic language. So, the three types of questionnaires were translated into Arabic in very simple and clear language. In order to ensure that changing the language of the questionnaires did not affect its meaning and the concepts, the researcher should be aware of the translation. Bulmer and Warwick (1983) wrote that:

> ".....back-translated, is therefore more commonly used. The questionnaire is translated from the original language to the local language. It is then translated independently, by another translator, back from the local language into the original language. The result then compared to identify and correct semantic errors in translation."

Following the above advice, the questionnaires were translated into Arabic language by the researcher, then another translator translated them back into English. Following this, some small adjustments were made to match the aims of the questionnaires. The translation was double-checked by two Arabic specialists with regard to its accuracy. The aim of this effort was to ensure that changing the language of the instruments did not affect the meaning and the understanding of the questions.

3.7 QUESTIONNAIRE DESIGN:

One of the most important components of a survey design is the set of questionnaires used to collect the data. However these questionnaires should be organized into a set of operations, which will increase the efficiency of the procedure and result for the study.

At this stage, the researcher studied the wording of questions, the element of time with respect to questionnaire length, procedure for collecting data, and computerization of data. The researcher tried to design the questionnaires for this study in a way to be easily to understood and internally consistent and must lend itself to appropriate and meaningful data analysis.

Sirken suggested a fine-step sequential procedure for designing questionnaires, which is applicable to any type of survey. These five –step operations are (Levy and Lemeshow, 1991):

1- Specifying the information to be collected.
2- Selecting the data collection strategy.
3- Ordering the questions.
4- Structuring the questions.
5- Spacing the questions.

3.7.1 Specifying the Information to be Collected :

The first step in the questionnaire preparation was to gather important facts and various methods to collect information in a standardized form from the articles, literatures, books and journals. The next step in the questionnaire preparation, after gathering the highlighted important factors, all the statements were then modified to construct a brief and clear statement.

The easier the statement to understand the effectiveness of data collection will have a better outcome. These questionnaires were prepared originally in English when they are finally designed. Hence the respondents are Arabic speaking, these questionnaires were translated into Arabic Language for the purpose of easy identification of the given questions and clarity on the instructions and other information needed by the respondents.

3.7.2 Selecting the Data Collection Strategy:

In order to ensure proper data collection strategy, the questions must be worded in such a way that the respondents understand every word. In this study when the researcher finalized the questionnaires and retest them, he trained midwives, nurses and social workers for interview pregnant women. In a direct interview, however, this step is less crucial so long as the interviewer tells the pregnant women the meaning of the question.

3.7.3 Ordering the Questions:

In this step, the researcher design two types of questionnaires. Questionnaire Type A includes demographic characteristics (such as: age, nationality, duration of marriage, employment status, income, etc..), includes clinical related variables (such as: ANC location, changing physicians and nurses, period of consultation, etc..) and also includes pregnant women related variables (such as : baby-sitter, travelling type, house type, etc..)

Questionnaire type B includes information related to her baby (such as: baby weight, sex, height, health status, etc..).

The questionnaire method used by the researcher intended to collect exact degree of responses from the respondents, wherein, the respondent can express herself in her own words and at the same time can maintain anonymity.

3.7.4 Structuring the Questions:

Once the factors have been ordered in same meaningful way, the next operation is the actual structuring or wording of the questions to be asked. In structuring each question, the researcher must consider the following issues (Levy and Lemeshow, 1991):

1- Does these questions elicit the information that is needed?

2- Would the respondent be willing to answer the questions?

3- Would the respondent be able to answer the question?

If the required information has been listed according to these questions, the missing items of information or of including irrelevant questions is minimized.

3.7.5 Spacing the Questions :

Once the wording or structuring of the questions is completed, the last operation in questionnaire construction involves the actual appearance of the questionnaires.

The researcher finally came out with two types of draft questionnaires that he believed they would obtain the information necessary to achieve the goals of the study (See App. 1-A and 1-B). The two types of questionnaires were given to five experts from General Department of

Health Centres in MOH, in order to express a view on the general presentation of the questionnaire, the degree of simplicity or awkwardness of filling the questionnaire, the degree of comprehensibility of the statements and the timing needed to answer all the questions.

3.8 VALIDITY AND RELIABILITY OF INSTRUMENTS:

When the researcher constructs and evaluates measurements, they must pay special attention to two technical considerations: validity and reliability. Validity refers to an instrument's ability to actually test what it is supposed to test. Reliability is a matter of whether a particular technique, applied repeatedly to the same object, would yield the same result each time (Treece & Treece, 1982; Marks1982 and Babbie, 1992). Treece and Treece wrote that:

> "It is much more difficult and important to establish validity than to establish reliability; but the research instrument must have validity if a study is to be meaningful and worthwhile. If the instrument is valid, it can be used for prediction, as a representative of that which is to be measured, and to tell us something about the subjects."

Then, they added:

> "If a measurement technique measures any factor accurately, even thought it may not be the factor we want to measure, the technique is still reliable. If a technique is inaccurate and its measurements are inconsistent (unreliable) then it is not valid."

The validity of a measure may be evaluated in four ways: face validity, criterion validity, construct validity, and content validity (Kaluzny & Veney, 1980; and Babbie, 1992). Bryman and Cramer (1992) added three more techniques to measure validity. These are predictive validity, convergent validity, and discriminant validity.

The researcher selected and used face validity because it is the most obvious, simple, and straightforward (Kaluzny and Veney, 1980). Face validity, or logical validity, involves an analysis of whether the instrument appears to be a valid scale (Treece and Treece, 1982).

To measure face validity of instruments in this study, a group of jurors is selected. Mouly (1978) stated that:

> "The help of outside consultants is essential; outsiders, being generally more objective, can recognise flaws that the investigator is invariable too close to see."

The group of jurors included two statisticians and two experts from Primary Health Care Department in General Directorate of Health Affairs - MOH, and three PHC physicians, two nurses and one administrator from the Al-Salam PHC Centre. Thus, the total number of jurors was ten. At that time, jurors were asked independently to review and evaluate questionnaires. Some amendments and modifications based upon their comments and feedback were carried out.

The translation of questionnaires into Arabic and then, back to English with the double checking by two Arabic specialists in order to ensure that changing the language of the instruments did not affect the meaning and the understanding of the questions, is part of increasing the validity. Also the pilot study, as discussed in the following section, 3.10, necessarily leads to higher validity (Bauman, 1980).

The reliability of a measurement, as stated by Bailey (1982):

> "..... is simply its consistency. A measure is reliable if the measurement does not change when the concept being measured remains constant in value."

Much effort has gone into ensuring that the study undertaken was reliable. In this matter great effort was made to ensure that the questions were very clear, simple and unambiguous through the assistance of the jurors and the translators. Also, interviewers were trained how to address the questions to the subjects.

Several methods are employed to test the reliability of the instruments. These methods are test-retest method, split-half method, equivalent test method, and the Kuder-Richardson method (Treece and Treece, 1982). Bryman and Cramer (1992), and Babbie (1992) added three more methods, which are: Cronbach's alpha method; using established measures; and research-worker reliability.

In order to measure the reliability of the instruments, the researcher selected and used test-retest method, because it is relatively easy to evaluate and gives a good result (Kaplan and Saccuzzo, 1997). Therefore, the questionnaires (Type A) were given again to 22 pregnant women who returned to PHC Centres after the initial test. These pregnant women were a part of the selected sample at the pilot stage. Later, the questionnaires (Type B) were given to the interviewers to re-evaluate the status of the newborns that related to these pregnant women. The results of the two surveys were then compared. Then, alpha coefficient was used to determine the internal reliability. The result was computed using the SPSS program and found that the alpha coefficient was 0.9685 in type A and 0.9452 in type B. These results were considered to be an acceptable level of reliability (Cramer, 1994; and Polgar & Thomas, 1991).

3.9 THE TRAINING OF INVESTIGATORS:

The quality of the data collection depends largely on the type of investigators used for the purpose and their efficient supervision as well. A well-trained investigator can ask the questions in a better way to the respondents and can gain more accurate information from the respondents. Also, supervision is essential to ensure the better quality of data collected. Therefore, in this research, I have selected one supervisor from each region who is medically qualified, i.e. a Graduate in Medicine. They were trained by the researcher emphasising the importance and objectives of the research.

The second stage of selection was the recruitment of investigators from each region. Towards this, we have selected either a social worker or a nurse who is assigned to each PHC. Separate training was conducted in each region and the investigators were trained by the researcher and the supervisor in each region.

3.10 THE PILOT STUDY:

Before the actual data collection starts, a pilot study may be run on a small sample to test the quality of the instrument used for the research. A pilot study can test many aspects of proposed research. Pretesting the research instrument and conducting the pilot study are important to the success of an investigation, and precede the gathering of data for the actual research project (Treece and Treece, 1982). Pilot observations and interviews are conducted in situations and with people as close to the realities of actual study as possible. Ideally, pilot

study participants should be drawn from the target population and they should know that they are part of a pilot and not the actual study. With the results of the pilot, the researcher may revise his research plans, his interview questions, and even his way of presenting himself (Glesne and Peshkin, 1992). Thus the purpose of the pilot study is: (1) to make improvements in the research project, and (2) to detect problems that must be solved before the major study is attempted (Treece and Treece, 1982).

The pilot study was undertaken for this study from 26th November 1995 to 26th December 1995, in which 75 pregnant women consented to enrol. The objective of the pilot study was to evaluate the tools used for data collection, test the wording, clarity of the questions, improve the interviewer skills, data entry, and database management. The questionnaire forms were administered to this group at three PHC Centres at Al-Kharj Area. These PHC Centres are Al-Yamamh PHC Centre, Al-Wasida PHC Centre and Al-Regaib PHC Centre. Pregnant women involved in the pilot study were not included in the actual sample.

According to the results of the pilot study, pregnant women responses and other experiences, the questionnaire was modified and the procedure was discussed with the regional supervisors and interviewers.

3.11 METHOD OF DATA COLLECTION:

In order for the estimates from the survey to be valid and reliable, the data collection should be very carefully planned, so that the data can be collected according to design, in an

orderly manner and with enough flexibility to allow for occasional crises to be handled (Levy and Lemeshow, 1992). With a large data set, it is easy for errors in recording to occur, and the probability of this will increase considerably if the data have to be transcribed before they can be analysed. Hence, if possible, the original records should be made in such a way that they can be entered directly into a computer (Manly, 1992).

In addition to data collection, survey operations go through data management. Data management includes receiving data from the field and preparing it for the editing process, manual and computer editing of these data into a computerised database, and the retrieval and transform these data into formats that can be used to prepare summary reports and statistical analyses (Levy and Lemeshow, 1992).

Data collection in this study has been carried out in three sites:

First: The number of PHC Centres and the previous studies that related to this subject were gathered from MOH, Health Centres Department and Medical Research Department respectively, King Saud University Library, King Abdulaziz City for Science and Technology Library, Medical College Library in Riyadh, King Abdulaziz Library, and some private libraries.

Second: Before collecting the data, the researcher contacted the Statistical Department in the Directorate of Health Affairs at Riyadh Area to review the available monthly census reports of each selected PHCC which contain information about the number of pregnant women registered at the centre, and the number of families and individuals that the PHC Centre has served

(Appendex--2). Also, an official letter from the Hospitals Affairs Department, Riyadh Directorate Health Affairs, was sent to the Region's Hospitals' managers who were responsible for the selected PHC Centres. Then the Hospitals' managers helped this study by sending an official letter to each of the selected PHC Centres in his Region in order to assist, facilitate and cooperate with the researcher in carrying out the field study for this subject.

Third: Then the study was carried out at the ANCs of the selected PHC Centres. In the antenatal care clinic a brief explanation of the purpose of the study was given to the pregnant women, and assurance was given that the information gathered will be treated confidentially and will be used only for research purposes. The researcher chose supervisors (Physicians) from each Region and trained them for distributing, following-up and collecting the questionnaire forms from the selected PHC Centres, and acting as a communication channel between the researcher and the interviewers (nurses or social workers) in these Centres. Then the questionnaire forms were completed at each participating PHCC by a nurse or a social worker, after training by the Regional supervisor in how to interview pregnant women and how to collect accurate data. The researcher chose direct, face-to-face contact with the pregnant women because of its advantages. These advantages, as listed by Cormack et al (1991) are:

"1. People are more likely to discard questionnaires or leave sections blank; faced with an interviewer, the likelihood of a fuller response to all questions is more likely;
2. Some subjects will be unable to complete self-report questionnaires through blindness, illiteracy, poor education, or limited comprehension or reasoning. Very young, old, or anxious people may also be put off by the demands of the self-report questionnaire;
3. Areas of uncertainty or ambiguity can be clarified, avoiding the misinterpretations and possible awareness of conclusions, which might arise from the questionnaire;

4. Some forms of interview allow the subject to expand on their response: this is rarely possible or likely in a self-report questionnaire. The subject may talk expansively where he/she would not write detailed or lengthy responses;
5. The interviewer can control the context of the response by his presence: it is not unknown for respondents to seek assistance from friends or colleagues, thereby contaminating results;
6. Additional data on the performance, attitude, and degree of understanding of the subject, can be collected by the interviewer. The supplementary observations may be used to qualify final conclusions, or as preparation for the design of other interview schedules and research hypotheses."

Then, the questionnaire forms were collected weekly by the Regional supervisors and checked on site to make sure they had been completed. The medical record number and the name of the pregnant woman had been written on each questionnaire form. The investigator and the Regional supervisor chose five forms randomly in order to cross check the information gathered with the information available in the medical record, especially regarding the number of visits to the ANC clinic made by the respondents.

3.12 DESCRIPTION OF STUDY VARIABLES:

3.12.1 Dependent Variable:

The dependent variable in the study is the number of pregnant women visits to the antenatal care clinics (ANCCs) at the selected Primary Health Care Centres (PHCCs) in Riyadh. The number of visits are grouped as follows, according to WHO standards:

1. **Ideal visits**: when the pregnant woman attended the ANC Clinic for the first time within the first trimester (The first three months of pregnancy) and subsequently made more than nine visits during the pregnancy period.

2. **Regular visits**: when the woman attends the ANC Clinics from six to nine times during the pregnancy period.

3. **Irregular visits**: when the woman attends the ANC Clinics less than six times during the pregnancy period.

3.12.2 Independent Variables:

A. DEMOGRAPHIC CHARACTERISTICS:

1. Age
2. Nationality
3. Duration of marriage
4. Weight of the pregnant woman
5. Height of the pregnant woman
6. Employment status
7. Employment status (her husband)
8. Level of education
9. Level of education (her husband)
10. Family income
11. Adequacy of the family income
12. Number of deliveries
13. Number of babies less than 5 years
14. Space between children
15. Smoking habit
16. High-risk factors in a previous pregnancy.
17. High-risk factors in a present pregnancy.

B. CLINICAL RELATED VARIABLES:

1. Antenatal care clinic location
2. Waiting time before seeing by physician

3. Changing physician in each visit
4. Changing nurse in each visit
5. Period of consultation
6. Doctor's nationality
7. Nurse's nationality
8. Doctor's sex
9. Lack of explanations
10. Communication level with doctor
11. Communication level with nurse
12. Doctor's qualification
13. Evaluation of clinical instruments

C. PREGNANT WOMEN RELATED VARIABLES:

1. Baby-sitter
2. Travailing type
3. Distance from ANC Clinic
4. House type
5. Place of delivery
6. Type of delivery
7. Infants' sex
8. Infants' survival status
9. Weight of the infant
10. Height of the infant
11. Health status of the infant

3.13 METHOD OF DATA ANALYSIS:

The most exciting part of social research comes when the researcher's efforts at data collection bring him to the point of analysing those data, looking at descriptive patterns and causal relationships among variables (Babbie, 1992). Crabtree and Miller (1992) wrote that:

> "analytic techniques are more objective (separate the researcher from the object of research), scientific (valid, reliable, reproducible, accurate, and systematic), general (lawlike regularities), technical (procedural, and mechanical), and standardise (measurable, and verifiable).

The main purpose of this study is to examine the pregnant women's number of visits to the antenatal care clinics and to examine the relationships between the study dependent variable and a set of selected independent variables that are hypothesised to have significant influence on the dependent variable. Data will be analysed by Statistical Packages for Social Sciences (SPSSPC+). To achieve the goal, the data will be analysed and described in two parts:

3.13.1 Descriptive Part:

A major purpose of many social scientific studies is to describe situations and events (Babbies, 1992). In this part, frequency distribution and percentages of the responses were used in order to describe the results of the data that are obtained from the study sample. These analyses are mostly univariate type.

3.13.2 Analytical Part:

In this part bivariate analysis and multivariate analysis (discriminant analysis) models were used in order to test the existence of significant relationships between the independent variables and the dependent variable. A probability of 0.05 or less was considered as significant. Discriminant analysis is a statistical technique that permits the study of differences between two or more groups, with respect to several variables analysed simultaneously (Dansky and Brannon, 1996). It uses mathematical techniques to determine the way of computing scores that results in the best separation among the groups (Norusis, 1986). There are three type of discriminant analysis: **direct** (all the variables enter the equations at once), **hierarchical** (these variables enter according to a schedule set by the researcher), and **stepwise** (statistical criteria alone determine the order of entry). The third (stepwise) method, therefore, is the most generally applicable (Kinnear and Gray, 1995) that was used by the researcher.

CHAPTER FOUR

DESCRIPTIVE ANALYSIS

4.1 DEMOGRAPHIC AND SOCIAL CHARACTERISTICS

4.1.1 AGE
4.1.2 NATIONALITY
4.1.3 HEIGHT
4.1.4 WEIGHT
4.1.5 DURATION OF MARRIAGE
4.1.6 EDUCATION LEVELS
4.1.7 HUSBANDS' EDUCATION LEVELS
4.1.8 EMPLOYMENT STATUS
4.1.9 HUSBANDS' EMPLOYMENT STATUS
4.1.10 INCOME
4.1.11 ACCOMMODATION TYPE
4.1.12 NUMBER OF BABIES IN THE HOME
4.1.13 NUMBER OF BABIES AT HOME

4.2 ANC DATA CHARACTERISTICS

4.2.1 TRANSPORT TYPE
4.2.2 WAITING TIME AND TIME SPENT IN ANTENATAL EXAMINATION
4.2.3 PHYSICIAN NATIONALITY
4.2.4 CHANGING PHYSICIAN
4.2.5 OPPORTUNITY OF ASKING QUESTIONS
4.2.6 COMMUNICATION WITH PHYSICIANS AND NURSES
4.2.7 DIFFERENT PHYSICIAN IN EACH VISIT
4.2.8 DIFFERENT NURSES IN EACH VISIT
4.2.9 NUMBER OF THEIR VISITS
4.2.10 VISITS GROUPS

4.3 CLINICAL DATA CHARACTERISTICS

4.3.1 NUMBER OF DELIVERIES
4.3.2 PROBLEMS DURING THEIR PREVIOUS PREGNANCIES
4.3.3 PROBLEMS DURING THEIR PRESENT PREGNANCIES
4.3.4 SMOKING HABITS
4.3.5 TYPE OF DELIVERY
4.3.6 DELIVERY PLACES
4.3.7 NEWBORN SEX
4.3.8 INFANT MORTALITY RATE
4.3.9 NEWBORN WEIGHT
4.3.10 NEWBORN HEIGHT
4.3.11 NEWBORN HEALTH STATUS
4.3.12 EVALUATION OF ANC CLINICS
4.3.13 PHYSICIANS' QUALIFICATION
4.3.14 NUMBER OF TRAINING COURSES

4.4 CONCLUSION

CHAPTER FOUR
DESCRIPTIVE ANALYSIS

The safe motherhood and child survival programmes are of prime importance for the vulnerable group of pregnant women, lactating mothers and pre-school children. Among the maternal care characteristics, antenatal care refers to the pregnancy-related health care provided to the women. Further, improved nutritional status coupled with improved antenatal care, can help to reduce the incidence of low birth weight babies and thus reduces perinatal, neonatal, and infant mortality. Yet again, the number of antenatal check-ups and the timing of each check-up are important as far as the health of the women is concerned. Those children whose mothers receive antenatal care during pregnancy, experience lower risk of death than their counterparts.

Two other important maternal care characteristics often discussed are the place of delivery and assistance at delivery. Children who delivered at home and assisted by untrained persons are found to experience higher risk of death than their counterparts. Further, the size of a woman's baby, her preparation for lactation, and iron and folic intake of both the mother and the child depends upon the mother's nutritional status at the time of conception as well as her diet during pregnancy (World Health Organisation, 1994).

Thus, in this chapter, the distribution of the sample selected from the Riyadh Area is discussed according to different characteristics. Dividing the chapter into three sections, the first section discuss the socio-demographic characteristics of the study sample, while the second focuses on the antenatal care characteristics of the women. The final section discusses the clinical informations of the sample in detail.

4.1 DEMOGRAPHIC AND SOCIAL CHARACTERISTICS:

Many studies have found that socio-economic and demographic characteristics are the major contributing factors in the acceptance of maternal and childcare services (Wolff, 1994). Among them, age of the mother, her educational status, work status, husbands education and work status, height and weight of the mother etc. are prominent in affecting her acceptance of antenatal care services. We, therefore, in this section, discuss the distribution of the sample according to different socio-economic and demographic characteristics.

4.1.1 AGE :

TABLE 4.1
The distribution of the sample by age group

AGE	FREQUENCY	PERCENT
Less than 20	82	7.1
20 – 24	248	21.3
25 – 29	281	24.2
30 – 34	255	21.9
35 – 39	212	18.2
More than 39	85	7.3
TOTAL	1163	100.0

Many studies have shown that the favourable reproductive age group for safe delivery of children is between 20 and 35 (Knodel and Hermalin, 1984; Kost and Amin, 1992). It is clear from Table 4.1 that about 67 percent of the pregnant women belonged to age group 20 and 34 years. An early or late pregnancy risk the child's as well as the mother's health. From the sample, about 33 percent of the respondents were in that high risk groups. A high proportion (25 percent) of women continue childbearing late into their thirties and forties. Of those in the

high-risk categories, 7 percent (82) were aged below 20 years, 18 percent (212) were aged between 35 and 39 years, and 7 percent (85) were aged above 39 years.

4.1.2 NATIONALITY :

TABLE 4.2
The distribution of the sample according to nationality

NATIONALITY	FREQUENCY	PERCENT
SAUDI	1008	86.7
ARABIAN	138	11.9
NON-ARABIAN	17	1.5
TOTAL	1163	100.0

The above table shows that (Table 4.2) among the total of 1163 sampled women selected for the study, a majority of the pregnant women (86.7 percent) were Saudi Nationals. Among the other categories, 11.9 percent were other Arabian Nationals, while only 1.5 percent were Non-Arabian Nationals. Ethnicity of the population may influence not only the demographic characteristics, but also many health-related factors as well. In many countries, delay in reporting for expert care is a crucial factor, with economic, cultural, social, religious barriers and illiteracy being contributory factors to the tendency to delay in reporting to ANC clinics (Fitzpatrick et al., 1997). Woman's low status, however, is the most important determining factor in many countries. In other words, women from a particular region may follow traditions, which she followed in her earlier life but which affect the current practice of maternal and child health care. In such cases, she may abstain from going to the clinics for ANC (Mascarenhas et

al., 1992). It is therefore of immense interest to highlight differences in maternal and childcare between different populations.

4.1.3 HEIGHT :

TABLE 4.3
The distribution of the pregnant women according to their height

HEIGHT	FREQUENCY	PERCENT
Less than 150 cm	140	12
150 - 155 cm	446	38.3
155 - 161 cm	431	37.1
162 - 168 cm	134	11.5
169 - 174 cm	11	0.9
More than 174 cm	1	0.1
TOTAL	1163	100.0

Another important factor that was considered in this study is the height of the pregnant women. The characteristics of the study population by their height are displayed in Table 4.3 which demonstrates that 88 percent (1023) of the pregnant women were taller than 150 cm. However, the remaining 12 percent (140) were considered to be potentially at risk with a height of less than 150 cm. The height of the women could be partially genetically inherited, however, it is also affected by the nutritional status of the mother, which in turn is affected by the socio-economic characteristics of the family. A short maternal height may be related to delivery complications (Hall, 1990).

4.1.4 WEIGHT:

TABLE 4.4
The distribution of the sample by weight

WEIGHT	FREQUENCY	PERCENT
Less than 56 kg	116	10.0
56 - 65 kg	297	25.5
66 - 75 kg	363	31.2
76 - 85 kg	224	19.3
86 - 95 kg	105	9.0
More than 95 kg	58	5.0
TOTAL	1163	100.0

Table 4.4 shows the weight of the pregnant women. A healthy woman can deliver a child of adequate weight, which has a lower risk of suffering poor health. It is expected that a healthy woman will also belong to an economically well-to-do family and will have access to maternal and child care provision. In the study sample, 76 percent (884) of the pregnant women weighed between 56 and 85 kg, while the remaining 24 percent of the respondents were generally considered to be at risk because of their weight. Of these high-risk groups, 10 percent (116) weighed less than 56 kg, while 9 percent (105) weighed between 86 and 95 kg and 5 percent (58) weighed more than 95 kg. Birth weight tends to reflect the mothers' health and nutritional status and predicts the future growth and development of the child (Wilcox et al., 1993).

4.1.5 DURATION OF MARRIAGE:

TABLE 4.5
The distribution of the sample by duration of marriage

DURATION	FREQUENCY	PERCENT
Less than 5 years	333	28.6
5 - 9 years	280	24.1
10 - 14 years	240	20.6
15 - 19 years	166	14.3
More than 19 years	144	12.4
TOTAL	1163	100.0

While considering the marital duration of the sample, Table 4.5 shows that a high proportion (29 percent) of the women had a marital duration of less than 5 years. On the other hand, the table further shows that as the marital duration increases, the proportion of pregnant women reduces, which indicates that most of the women limited their childbearing to the early years of marriage. When the duration of marriage increases to more than 19 years, only a small proportion of the women (12%) were pregnant, again showing that the majority of these women did limit the family building process to the early years of marriage. As the marital duration increases, a woman may have more pregnancies and might have acquired greater knowledge of the importance of antenatal care. Hence, we may hypothesise a greater number of antenatal visits depending on the number of pregnancies. However, the socio-economic condition of the population has also increased over the time and hence those women who married recently will probably be from a better socio-economic background and hence may be better aware of the value of ANC visits. Thus, the number of ANC visits might therefore be due to either the socio-economic status of the family or to the experience gained from the number of deliveries.

4.1.6 EDUCATION LEVELS:

TABLE 4.6
The distribution of the sample by education levels

EDUCATION LEVEL	FREQUENCY	PERCENT
Illiterate	495	42.6
Elementary	255	21.9
Secondary	290	24.9
University	123	10.6
TOTAL	1163	100.0

Illiteracy is one of the major factors which may adversely affect the acceptance of maternal and child care services. The distribution of pregnant women according to their educational level, Table 4.6, shows that a large majority of the pregnant women were illiterate (43 percent). Explaining the importance of maternal education on the acceptance of maternal and child care factors, Ware (1984) explored the idea that education not only enhances knowledge about these factors, but also changes the behaviour of women towards the treatment of their children. The result further shows that, 22 percent had only were attended elementary school, while 25 percent attended secondary school and only 11 percent had attended higher education institutions.

4.1.7 HUSBANDS EDUCATION LEVELS :

TABLE 4.7
The distribution of the sample according to their husbands education levels

EDUCATION LEVEL	FREQUENCY	PERCENT
Illiterate	251	21.6
Elementary	351	30.2
Secondary	328	28.2
University	233	20.0
TOTAL	1163	100.0

Examining the educational status of the pregnant woman's husband, Table 4.7, shows that 22 percent (251) of the husbands were illiterate, 30 percent (351) had attended elementary school only, and 20 percent (233) had higher levels of education. ANC visiting is associated with the husband's education level. It has an impact on maternal and childcare. A better educated man is likely to have a better educated wife and moreover will have a better socio-economic status. Further, comparing the education of both women and their husbands, it may be seen that husbands are better educated than their wives. This result is comparable with an earlier study conducted in Saudi Arabia showing that female literacy rate (48 percent) was far below the male literacy rate (73 percent) in 1990 (UNICEF, 1992).

4.1.8 EMPLOYMENT STATUS:

TABLE 4.8
The distribution of the sample by employment status

EMPLOYMENT STATUS	FREQUENCY	PERCENT
Housewife	932	80.1
Government Employee	160	13.8
Student	64	5.5
Non-Govern. Employee	7	0.6
TOTAL	1163	100.0

Table 4.8 shows that the majority, 80 percent (932) of the pregnant women were housewives, i.e. not working outside the home. Nineteen percent (224) were either government employees or students and only 0.6% were employed elsewhere. Many studies have noted that a woman who is not working might have a better socio-economic background and thus adopt a better maternal care as well (Cleland and Ginneken, 1988). However, there are exceptions as well that the poor economic status of the household force the women to work and due to their low education, they work in low paid jobs. Moreover, the social and economic status of a woman largely depends on which sector she works in. The key to the impact of woman's employment is whether work becomes a way to the means of their livelihood. Woman's decision making power may improve in countries where woman's education and employment are advanced, and hence the acceptance of ANC visits as well. Further, societal views of woman's work may reflect an increased self-worth for working women, or lower status, or even the failure of her husband adequately to provide for family welfare (Cochrane et al., 1980).

4.1.9 HUSBANDS EMPLOYMENT STATUS:

TABLE 4.9
The distribution of the sample by husbands employment status

EMPLOYMENT STATUS	FREQUENCY	PERCENT
Student	11	0.9
Business	102	8.8
Military Employee	353	30.4
Civil Employee	530	45.6
Private Sector Employee	66	5.7
Other	101	8.7
TOTAL	1163	100.0

The distribution of pregnant women according to their husband's occupation in Table 4.9 shows that a large proportion (76%) of the husbands work in the public sector. Of these, 46 percent (530) were civil employees and 30 percent (353) were military employees. Only small proportions of the husbands were working in the private sector. The husband's employment status may be considered as a proxy for the economic status of the family. Those who are engaged in professional jobs have a better standard of living which in turn may determine the acceptance of maternal and child care factors. Also, it may be expected that the women, whose husband's are well employed or educated, will also be educated and thus are better at caring for themselves and their children than their poorer counterparts (Rahman et al., 1997). Hence, it may note that the occupation of the husband, education of husband and the woman are correlated and a well employed or educated husband would motivate his pregnant wife to accept the required ANC services. In other words, the employment status of the husband is

significantly associated with his wife's delivery at a health institution. Also, infant and child mortality are primarily influenced by the occupation of the husband or the socio-economic condition of the household (Rahman et al., 1997).

4.1.10 INCOME:

TABLE 4.10
The distribution of the sample by monthly income

MONTHLY INCOME	FREQUENCY	PERCENT
Less than 3000 SR	225	19.3
3000 - 5000 SR	581	50.0
5001 - 7000 SR	242	20.8
7001 - 10000 SR	82	7.1
More than 10000 SR	33	2.8
TOTAL	1163	100.0

Decomposing the study population into its monthly income, it may be seen from table 4.10, that about 69 percent of the families earned less than 5000 Saudi Riyal (800 UK Pounds) per month. That means a large proportion of this population has a low economic standard. Moreover, among them nearly 20 percent have a monthly income of less than 3000 Saudi Riyal. On the other hand, only a small proportion of families come from a high-income family, as about only 10 percent have a monthly income above 7000 Saudi Riyal.

In any population, the economic standard of a family is measured by its income. Families with low economic status often seems to have low access to antenatal care services. Low family income has a significant negative effect on ANC visits and the child mortality rate. It also associated with low birth weight and intrauterine growth retardation. Equal opportunities

in education and employment would represent a first step towards improving woman's status by giving them a source of income and increased independence. An increase in family income has a positive effect on the use of modern child health services (Chadwick, 1994). Thus, we may expect a relationship between family income and visits to the ANC Clinics.

TABLE 4.11
The distribution of the sample according to their opinions if their family's income was sufficient

	FREQUENCY	PERCENT
No	447	38.4
Yes	716	61.6
TOTAL	1163	100.0

An important aspect of a family's income level is whether the earnings are sufficient for the family to enjoy a good living standard. Their perception of the family income may be one of the factors that affect the acceptance of ANC services for themselves and for their children. Exploring their perception of family income, although we have seen that a large majority of the families are in low income groups, only about 38 percent (447) reported that their family income was not sufficient enough to meet their needs (as shown in table 4.11). Thus, it is clear that although most of the families are in low-income group, they are quite happy with their income. However, this might affect their dietary intake and hence the nutritional status of both the mother and the child and due to this women need to have more antenatal visits to ensure better health (Chadwick, 1994).

4.1.11 ACCOMMODATION TYPE:

TABLE 4.12
The distribution of the sample by accommodation type

HOUSE TYPE	FREQUENCY	PERCENT
Villa	407	35.0
Flat	276	23.7
Mud house or alike	453	39.0
Tent	27	2.3
TOTAL	1163	100.0

The type of residence not only explains the economic situation of the family, but also explains the environmental surroundings of the household. A woman living in a villa or flat will enjoy good economic condition as well as surroundings, while those living in a mud house or a tent would suffer a poor situation around the household. Table 4.12 shows the distribution of the pregnant women according to their accommodation. About 39 percent reside in mud-houses, 35 percent (407) in villas, 24 percent (276) in flats, and only 2 percent (27) reside in tents.

4.1.12 NUMBER OF BABIES AT HOME:

TABLE 4.13
The distribution of the sample according to
the number of babies aged less than 5 years in the home

BABIES AGED LESS THAN 5 YEARS	FREQUENCY	PERCENT
No	179	15.4
Yes	984	84.6
TOTAL	1163	100.0

Table 4.13 demonstrates another factor that might influence attendance at the primary health care centres, namely the presence of pre-school age children at home. Having pre-school children at home may mean that the women cannot attend antenatal services. The majority of the women in the sample (85%) have children aged less than 5 years old, while only 15 percent have no children aged under 5 years at home. This very large majority who have children at home may be a factor influencing or restricting their use of the services (Al Mazrou and Farid, 1991).

4.1.13 NUMBER OF BABIES AT HOME:

TABLE 4.14
The distribution of the sample according to the availability of baby-sitter in their houses

BABY-SITTER	FREQUENCY	PERCENT
No	452	38.9
Yes	409	35.2
Seldom	159	13.7
NA	143	12.3
TOTAL	1163	100.0

As noted in 4.13, one of the reasons why women abstain from visiting the ANC Clinics may be the presence of a young child at home. That is, if there is another child at home, the women forced to be at home to look after that older child if there are no other family members present at home. In other words, the absence of others' at home to look after the child restricts the mother's visits the ANC clinic. Thus, the presence of a baby-sitter at home might provide her with adequate time to visit the clinic for maternal and child care services. Table 4.14 shows the distribution of the women according to the presence of baby-sitters who can take care of their children. About 39 percent (452) women responded negatively that they have no baby-sitters, while 35 percent (409) have baby-sitters at home and 14 percent (159) have occasionally used baby-sitters.

TABLE 4.15

The distribution of the sample according to their opinions that a baby-sitter in their houses affects ANC attendance

DOES BABY-SITTER MAKE THE ANC VISIT EASIER	FREQUENCY	PERCENT
No	18	1.5
Yes	1101	94.7
Do not know	44	3.8
TOTAL	1163	100.0

From the Table 4.14 it has seen that a higher proportion of families do not have any baby-sitters. It is clear from Table 4.15 that a large proportion of the women (about 95 percent) reported that presence of such people does make it easy to visit. Only a marginal proportion reported that the presence of a baby-sitter would not affect their ability to visit.

4.2 ANC DATA CHARACTERISTICS:

4.2.1 TRANSPORTATION FACILITY:

TABLE 4.16
The distribution of the sample according to their transport type

TRAVELLING TYPE	FREQUENCY	PERCENT
Car	872	75.0
Walk	87	7.5
Both	204	17.5
TOTAL	1163	100.0

Studies have demonstrated that the availability and accessibility of proper modes of transportation are factors influencing higher access to the maternal and childcare facilities. In other words, the low acceptance among the rural women is attributed to a lack of facilities in the rural community, coupled with other socio-economic factors. Examining the distribution of pregnant women, according to the type of transportation they used to visit the ANC Clinics, Table 4.16, shows that most of them, (75%), visited the ANC Clinics by car, while only 8 percent (87) travelled on foot.

NB: The issue of transport has a quite special significance in Saudi Arabia because women are not allowed to drive vehicle.

TABLE 4.17
The distribution of pregnant women who
walked to ANC Clinics according to the time that they spent walking

TIME	FREQUENCY	PERCENT
Less than 10 minutes	126 (43.3%)	10.8
11 - 20 minutes	109 (37.5%)	9.4
More than 20 minutes	56 (19.2%)	4.8
SUB TOTAL	291 (100%)	25.0
NA (Women used cars)	872	75.0
TOTAL	1163	100.0

The distance to the nearest ANC clinic has been noted as a major hindrance to the acceptance of services (Raghupathy, 1996). This research further examined the average distance travelled to reach the ANC Clinic (Table 4.17). From the total sample of 1163 women, 25 percent (291) women travelled by foot or by both means (foot and car) and we examined the time consumed for reaching the ANC clinics. It may be noteworthy that out of the total sample, about 11 percent (43 percent of those who travelled by foot or by both means) took less than 10 minutes to reach the clinic. This shows that the facility is available near to their residence. However, 38 percent (about 9 percent of total sample) took 11 minutes to 20 minutes to reach the clinic, while another 19 percent (about 5 percent) spent more than 20 minutes. Of these 291 (25 percent) women, only 87 travelled by foot to the ANC clinics (table 4.16).

4.2.2 WAITING TIME AND TIME SPENT IN ANTENATAL EXAMINATION:

TABLE 4.18
The distribution of the sample according to the waiting time before being examined

WAITING TIME GROUP	FREQUENCY	PERCENT
Less than 15 minutes	673	57.9
15 - 30 minutes	415	35.7
31 - 45 minutes	59	5.1
More than 45 minutes	16	1.4
TOTAL	1163	100.0

It may be expected that the waiting time at the Clinic to see the physician could be a factor that would influence women to make another visit (McCaw-Binns, 1995). If they have to wait for a long time before attending the physician, it may adversely affect their choice to return. Table 4.18 shows the distribution according to the "waiting time before being seen by physicians". More than half of the pregnant women in the sample waited less than 15 minutes before being seen by their physicians. Only about 6 percent waited more than 30 minutes. Thus, it may be concluded that the service provided at the clinic is quite good, as far as waiting time is concerned.

TABLE 4.19
The distribution of the sample according to
the average time spent in antenatal examination

AVERAGE TIME GROUP	FREQUENCY	PERCENT
Less than 15 minutes	713	61.3
15 - 30 minutes	407	35
31 - 45 minutes	33	2.8
More than 45 minutes	10	0.9
TOTAL	1163	100.0

Another aspect of the maternal and childcare services examined in this study is the duration of the antenatal check-ups (Mason, 1989). It was found that duration of the examination was short for a large majority of the pregnant women. About 61 percent of the pregnant women spent less than 15 minutes in their examination (Table 4.19). However, a few women (about 4 percent) spent more than 30 minutes in their examination, but they could be those women who were being given more attention, in the later stages of their pregnancy.

4.2.3 PHYSICIAN NATIONALITY:

TABLE 4.20
The distribution of the sample according to the physicians' nationality

NATIONALITY	FREQUENCY	PERCENT
Arab	1039	89.3
Non-Arab	124	10.7
TOTAL	1163	100.0

Table 4.20 shows the distribution of the pregnant women according to the nationality of their physicians. Most of the pregnant (89 percent) women visited Arab physicians for their antenatal care, while only 11 percent visited non-Arabs. Thus, we may infer that pregnant women in Saudi Arabia prefer to visit Arab physicians for their ANC. However, it is interesting to note that not one single Saudi physician was working in the selected PHC Centres during the time of the study.

4.2.4 CHANGING PHYSICIAN:

TABLE 4.21
Distribution of the sample according to
whether they see different physicians on each ANC visit

CHANGING PHYSICIAN	FREQUENCY	PERCENT
No	602	51.8
Yes	559	48.0
Do not know	2	0.2
TOTAL	1163	100.0

Table 4.21 reflects the high turnover of physicians who conduct antenatal care check-ups. As many as 48 percent of the pregnant women met a different physician on their visits. There are many factors to explain this. One possible factor is that most of the PHC centres only have one physician and his/her vacation forces the women to visit a new physician who is working in the same PHC. It could also be due to the fact that once the physician's term is completed in the PHC, he is transferred or resigns, or sometimes the PHC centre manager might not be happy with a male doctor and has replaced him with a female physician. It is also may be due to the fact that the women were dissatisfied with the service provided by a physician and therefore they choose to change their provider. Some of the reasons for changing the physicians are examined in the next table.

TABLE 4.22
The distribution of the sample according
to the sex of their physicians during the last five visits

PHYSICIAN'S SEX	FREQUENCY	PERCENT
Male	52	4.5
Female	300	25.8
Male and Female	207	17.8
NA	604	51.9
TOTAL	1163	100.0

The sex of the physician is an important factor that affects attendance at antenatal care clinics (Al-Nasser, 1994). Table 4.22 shows the distribution of pregnant women who changed their physician for their next contact, by sex of the physician they contacted for the latter visit. A majority of the pregnant women did not change (about 52 percent) the physician but the rest did changed the physician during their next visit. Among the total sample, 26 percent (300) of the pregnant women visited only female physicians while 18 percent (207) were examined by both female and male physicians. A very small proportion (5 percent) of the women met male physicians for their antenatal check-ups, as seen in Table 4.22.

TABLE 4.23
The distribution of the sample according
to the sex of their physicians during the last five visits

PHYSICIAN'S SEX	FREQUENCY	PERCENT
Male	132	11.3
Female	492	42.3
NA	539	46.3
TOTAL	1163	100.0

It is clear from the Table 4.23 that a large proportion of the pregnant women visited female physicians for their antenatal check-ups. Examining the distribution, 42 percent (492) saw only female physicians and only about 11 percent (132) saw male physicians only, as shown in table 4.23. However, it is interesting to note that a large proportion of the sample did not reveal the sex of the physician whom they visited for their antenatal care.

4.2.5 OPPORTUNITY FOR ASKING QUESTIONS:

TABLE 4.24
The distribution of the sample according to
the opportunity to ask questions of their physicians

OPPORTUNITY OF ASKING QUESTIONS	FREQUENCY	PERCENT
No	195	16.8
Yes	519	44.6
Seldom	449	38.6
TOTAL	1163	100.0

Table 4.24 presents the distribution according to their opportunity to ask questions of their physicians. It is claimed this practice clears many doubts the women has and as the women gets more chances for asking questions, the more comfortable she is (Thorley and Rouse, 1993). Among the study population, 45 percent responded 'yes' to the question showing that the physicians did give them the opportunity to ask questions. However, although about 39 percent seldom got opportunity to ask questions, about 17 percent responded 'no' to the question. In other words, a large proportion (56 percent) of women did not get enough chances to ask questions of their physician.

4.2.6 COMMUNICATION WITH PHYSICIANS AND NURSES:

TABLE 4.25
The distribution of the sample according to
their understanding of communications with their physicians

COMMUNICATION LEVELS	FREQUENCY	PERCENT
Not understood	210	18.1
Little understood	377	32.4
Understood	481	41.4
Well understood	95	8.2
TOTAL	1163	100.0

Table 4.25 shows that the sample is fairly evenly split over the comprehension of the physicians questions. A large proportion of the pregnant women (about 51 percent) either did not understand, or rarely understood the questions which physicians asked. This lack of communication may be due to the different nationality of the physician or the low educational level of the pregnant women. Moreover, only about 8 percent of the women understood the physician's question very well, showing a need for better communication between the patient and the physician. This is an odd result if only because in this provision, unlike many hospitals primary health care physicians do speak Arabic. However, they may not share the Saudi dialect.

TABLE 4.26

The distribution of the sample according to their understanding of the communications with their nurses

COMMUNICATION LEVELS	FREQUENCY	PERCENT
Not understood	41	3.5
Little understood	324	27.9
Understood	684	58.8
Well understood	114	9.8
TOTAL	1163	100.0

We have seen that the communication between the physicians and the pregnant women was not particularly good. But while examining the same between nurses and the women (Table 4.26), it was found that the nurses were much more successful than doctors in communicating with the pregnant women, although about 30 percent still lack comprehension.

4.2.7 DIFFERENT PHYSICIAN IN EACH VISIT:

TABLE 4.27
The distribution of the sample according to their opinions that different physicians will influence their ANC attendance

DIFFERENT PHYSICIANS	FREQUENCY	PERCENT
No	449	38.6
Yes	648	55.7
Do not know	66	5.7
TOTAL	1163	100.0

Analysing the women's opinions about visiting different physicians on each visit, as a factor for not attending ANC Clinics, Table 4.27 clearly indicates that, while a fairly high proportion (56 percent) responded that changing the physician did affect their motivation to visit the ANC Clinics, 39 percent answered that a change in the physician would not affect the number of visits to the ANC Clinics. We also have seen in one of the earlier tables (Table 4.23) that among those who revealed the sex of the physician, whom they visited, most of the women approached female physicians. Moreover, among those women who changed their physician, a higher proportion approached female physicians. Thus, we may conclude that, the effect of changes in physician in the number of visits could be either due to a poor service given by the physician or the women prefer to have a female physician's service.

4.2.8 DIFFERENT NURSES IN EACH VISIT:

TABLE 4.28
The distribution of the sample according to their opinions
that different nurses in each visit will influence their ANC attendance

DIFFERENT NURSES	FREQUENCY	PERCENT
No	546	46.9
Yes	549	47.2
Do not know	68	5.8
TOTAL	1163	100.0

Table 4.28 shows the distribution of the pregnant women according to their opinions about the effect of seeing different nurses each time they visit the service, as a factor for non-attendance at ANC Clinics. While, in the earlier table (Table 4.27), we found that choosing different doctors affects the number of visits to the ANC centres, Table 4.28 shows that about 47 percent of the women responded that changing the nurses would affect their choice of the number of visits. However, almost the same proportion responded that this would not affect in their number of visits. It is clear from these two tables (Table 27 and Table 28) that the effect of frequent changes of physician may explain the number of ANC visits, but not true in the case of a change of nurses.

4.2.9 NUMBER OF THEIR VISITS:

TABLE 4.29
The distribution of the sample according
to the number of their visits to the ANC Clinics per month

MONTHS VISITS	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
No visits	1098	774	613	556	561	532	451	467	109
Percent	94.4	66.6	52.7	48.7	48.2	45.7	38.8	40.2	9.4
One visit	65	383	545	587	595	610	482	385	715
Percent	5.6	32.9	46.9	50.5	51.2	52.5	41.4	33.1	61.5
Two visits	0	6	5	10	6	20	229	305	257
Percent	0	0.5	0.4	0.9	0.5	1.7	19.7	26.2	22.1
Three visits	0	0	0	0	1	1	1	6	72
Percent	0	0	0	0	0.1	0.1	0.1	0.5	6.2
Four visits	0	0	0	0	0	0	0	0	10
Percent	0	0	0	0	0	0	0	0	0.9
TOTAL	1163	1163	1163	1163	1163	1163	1163	1163	1163

It may be recalled that the time at which the pregnant women visited her first antenatal check-up is an important factor for explaining her health status during pregnancy and childbirth (Young et al., 1990). This not only affects her health, but also determines the child's health. Table 4.29 shows the distribution of pregnant women according to their number of visits to ANC Clinics in each month. Most of the pregnant women (94 percent) did not attend the ANC Clinics during the first month of their pregnancies, with only 6 percent attending at that time. As the months of pregnancy increase, the proportion of women with no ANC visits reduced and by the ninth month of pregnancy, the percent of women who did not attend the clinic declined sharply to 9 percent, compared to 62 percent who attended the ANC Clinics once and 29 percent who made more than one visit.

4.2.10 VISITS GROUPS:

TABLE 4.30
The distribution of the sample according to visits groups (Dependent Variable)

VISITS GROUPS	FREQUENCY	PERCENT
Less than 6 visits	686	59.0
6 - 9 visits	269	23.1
More than 9 visits	208	17.9
TOTAL	1163	100.0

One of the main aspects of this research is the factors' associated with the number of antenatal visits to the ANC Clinics. While exploring the number of visits, as may be seen in Table 4.30, the distribution of visits (Dependent variables) is skewed towards a lesser number of visits (less than 6 visits). A large proportion of pregnant women (59 percent) attended the ANC Clinics less than 6 times, while 23 percent (269) attended the clinics between 6 to 9 times and 18 percent (208) attended more than 9 times. Education level has been noted as an important factor influencing women to pay more visits to the clinics (Belizan et al., 1995) and that may be a factor in this data too. Educated women might be more aware of the importance of an adequate number of visits, for better health. Studies have also emphasised the importance of having more visits, so that the mother and child have better health during pregnancy and after childbirth (Al-Shamary et al. 1994).

4.3 CLINICAL DATA CHARACTERISTICS:

4.3.1 NUMBER OF DELIVERIES:

TABLE 4.31
The distribution of the sample by number of deliveries

NUMBER	FREQUENCY	PERCENT
None	132	11.3
1 - 3 deliveries	448	38.5
4 - 6 deliveries	285	24.5
More than 6 deliveries	298	25.6
TOTAL	1163	100.0

If a woman has more deliveries, she may better understand the importance of antenatal check-ups. On the other hand, illiterate women often have higher parities. Further, the knowledge and acceptance of antenatal care is closely related with the educational status of the women. Many researches show that there is a direct relationship between education and the acceptance of ANC services (Belizan, 1995). Thus, it is difficult to explore the independent effect of this factor on the number of ANC visits. However, the distribution of pregnant women, according to the number of deliveries, as shown in Table 4.31, indicates a significance proportion (39 percent) have had only, at most, three deliveries. However, over fifty percent of the women had experienced 4 or more deliveries.

4.3.2 PROBLEMS DURING THEIR PREVIOUS PREGNANCIES:

TABLE 4.32
The distribution of the sample according to
the problems that they had during their previous pregnancies

FACTORS	FREQUENCY	PERCENT
None	583	50.1
Anaemia (AN)	136	11.7
Eclampsia. (EC)	14	1.2
Two or more spontaneous abortions (SA)	84	7.2
Gestational Diabetes (GD)	14	1.2
Still birth (SB)	21	1.8
Premature labour (PL)	15	1.3
Antepartum hemorrhage (AH)	10	0.9
Postpartum hemorrhage (PH)	9	0.8
Congenital anomalies (CA)	4	0.3
Delivery of a baby less than 2.5 kg (<2.5)	19	1.6
Delivery of a baby more than 4 kg (>4.0)	9	0.8
Intrauterine fetal death (IFD)	7	0.6
Cervical Incompetence (CI)	2	0.2
Cervical operation (CO)	3	0.3
Previous Caesarean section (PCS)	52	4.5
Ectopic pregnancy (EP)	2	0.2
Other medical problems	36	3.1
AH & PCS & OP	3	0.3
AN & <2.5	36	3.1
AN & PL	7	0.6
SA & PH	6	0.5
AH & PCS	18	1.5
AN & GD	10	0.9
SA & SB	11	0.9
GD & SB	10	0.9
SA & IFD & CO	1	0.1
AH & >4.0	4	0.3
PCS & >4.0	16	1.6
SA & GD & PH	4	0.3
SA & PCS	5	0.4
PL & AH & <2.5	2	0.2
SB & CA	3	0.3
SB & <2.5	5	0.5
SA & AH	1	0.1
TOTAL	**1163**	**100.0**

Table 4.32 shows the distribution of pregnant women according to medical problems they had suffered in their previous pregnancies. Majority of the women (50.1%) in this study had not experienced any medical problems in their previous pregnancies; 12 percent (136)

suffered anaemia, 7 percent (84) had two or more spontaneous abortions; 2 percent (21) still birth; another 3 percent (36) suffered several medical problems (Such as hypertension, heart diseases, renal failure, bronchial asthma or diabetes mellitus). One hundred and forty three (12%) pregnant women had suffered two or more medical problems during their previous pregnancies. It is also noted in studies that anaemia is a major medical complication observed among pregnant women in Saudi Arabia (Hartley, 1980).

4.3.3 PROBLEMS DURING THEIR PRESENT PREGNANCIES:

TABLE 4.33
The distribution of the sample according to
the problems that they have during their present pregnancies

FACTORS	FREQUENCY	PERCENT
None	710	61.0
Anaemia (AN)	277	23.8
Eclampsia.	9	0.8
Gestational Diabetes (GD)	43	3.7
Toxoplasmosis.	7	0.6
Hepatitis "B".	1	0.1
Depression.	15	1.3
Other medical problems (OMP)	75	6.4
AN & GD	15	1.3
AN & OMP	11	0.9
TOTAL	**1163**	**100.0**

It is often stated that if a woman faces problems during pregnancy, this may influence her decision to accept the health care services (Brabin et al., 1998). The distribution of women who had medical problems associated with their present pregnancy. Table 4.33 shows that about 24 percent suffered anaemia, while 6 percent had other medical problems such as hypertension, heart diseases, renal failure, bronchial asthma, or diabetes mellitus. However, a large majority of the women (61 percent) were free from any medical problems in their current

pregnancy. Those women who suffer from anaemia have a greater chance of delivering children with a similar characteristic (Ross, 1998).

4.3.4 SMOKING HABITS:

TABLE 4.34
The distribution of the sample according to their smoking habits

DO YOU SMOKE?	FREQUENCY	PERCENT
No	1154	99.2
Yes	9	0.8
TOTAL	1163	100.0

Distribution of pregnant women according to their smoking habits shows that a very low percent (about 1 percent) of women indulged in the habit of smoking during their pregnancy, (Table 4.34). Smoking not only affects the pregnant woman's health, but also affects the health status of the child in the uterus. The woman who has the associated risk factors for poor pregnancy outcomes such as smoking habits, short inter-birth intervals, higher order births, low birth weight etc. sought prenatal care less often than women with no risk factors (Feifer, 1992). These factors may not be the important determinant in explaining the antenatal visits, but socio-economic characteristics might be the mediating mechanism between these risk factors and antenatal care visits.

4.3.5 TYPE OF DELIVERY:

TABLE 4.35
The distribution of the sample according to type of delivery

TYPE OF DELIVERY	FREQUENCY	PERCENT
Normal	925	79.5
Ventouse	61	5.2
Breech	24	2.1
Forceps	25	2.1
Caesarean	128	11.0
TOTAL	1163	100.0

The distribution of pregnant women according to type of delivery (Table 4.35) shows that most of the women (80 percent) had a normal delivery. However, 11 percent of the deliveries were by caesarean section and 9 percent were by ventouse, breech and forceps. Many studies have explored the possible complications that can arise due to early delivery (before 20 years) and late delivery (35 and above years) (Reichman and Pagnini, 1996). We have noted earlier that a large majority of the births in the study population occurred during their prime reproductive age, although a small proportion experienced pregnancy late in their reproductive life. Non-normal delivery might be due to irregular visits to the ANC clinics, which are related to many other factors explained in this study. Also, we may note that nationally, about 4 percent of the deliveries are ventouse, while 2.3 percent are in breech and another about 1 percent forceps in the Kingdom (MOH,1994).

4.3.6 DELIVERY PLACES:

TABLE 4.36
The distribution of the sample according to their delivery places

DELIVERY PLACE	FREQUENCY	PERCENT
Hospital	984	84.6
PHC Centre	105	9.0
House	71	6.1
Tent	3	0.3
TOTAL	1163	100.0

Table 4.36 shows the distribution of the sample according to their delivery places. If the delivery takes place in hospitals, it is likely to be safe, as far as the health of the mother and child is concerned (Frankenberg, 1995). The result shows that majority of the pregnant women (85 percent) were delivered in hospitals, while 9 percent delivered their child in PHC Centres, 6 percent in their houses and a minute proportion (0.3 percent) were delivered in their tents. There may be a relationship between place of delivery and education. The women who belong to the low education category often deliver their child either at their own home, parents home, or in public facilities such as PHC's etc. This phenomenon may need more study. Due to their poor knowledge about the importance of proper care during pregnancy, poorly educated women deliver at their own home or parents home. The economic condition of the household means they cannot afford private clinics.

4.3.7 NEWBORN SEX:

TABLE 4.37
The distribution of the sample according to the sex of their infants

SEX	FREQUENCY	PERCENT
Boy	588	50.6
Girl	575	49.4
TOTAL	1163	100.0

The distribution of the pregnant women by sex of their infants shows that about 51 percent of the children were male indicating a slightly favourable sex ratio towards male children in the study sample (Table 4.37). In families, where parents prefer for a particular sex of the child, the sex ratio at birth will be favourable towards the preferred sex. Scientific advance has produced instruments to determine the sex of the child in advance, which in turn may influence the mother's access to the maternal and childcare provision.

4.3.8 INFANT MORTALITY RATE:

TABLE 4.38
The distribution of the sample according to their infant mortality rate

STATUS	FREQUENCY	PERCENT
Live	1128	97.0
Dead	35	3.0
TOTAL	1163	100.0

Exploring the infant mortality rate in the study population, table 4.38 shows that the infant mortality rate is relatively low (30 per 1000 live births) which is better than many developing countries. It may be noted that the current estimate does not deviate much from the WHO estimate for Saudi Arabia (27 deaths per 1000 live births) for the year 1998. According to the World Health Organisation (1998), the infant mortality rate at the global level is estimated as 57 deaths per 1000 live births, while for Eastern Mediterranean countries it estimated at 69 deaths per 1000 live births. The infant mortality rate is considered to be an explicit indicator of the health status of a society. The survival status of the new-born child immediately after the birth, depends largely on the care taken by the mother during pregnancy (Aras, 1996). Hence, this variable may sometimes be treated as a proxy, to explain the acceptance of maternal and childcare received by the mother and the child.

4.3.9 NEWBORN WEIGHT:

TABLE 4.39
The distribution of the sample according to their infants' weight

WEIGHT	FREQUENCY	PERCENT
Normal	875	75.2
Less than 2.5 kg	167	14.4
More than 4 kg	86	7.4
Dead	35	3.0
TOTAL	1163	100.0

Analysing the distribution of the pregnant women according to their infants' weight (Table 4.39) shows that most of the infants (75 percent) were born with an average weight between 2.5 and 4.0 kg. However, a sizeable proportion of the births (about 14 percent) are considered to be under weight (with a weight less than 2.5 kg), while about 7 percent were over weight, at more than 4.0 kg. The weight of the child depends greatly on the health condition of the mother (Ware, 1984). If the mother is anaemic and underweight, her children are likely to have a low birth weight. Moreover, if the mother receives maternal and childcare services properly, she is likely to enjoy better health than those who do not, which enables her to deliver a healthy child.

4.3.10 NEWBORN HEIGHT:

TABLE 4.40
The distribution of the sample according to their infants' height

HEIGHT	FREQUENCY	PERCENT
Less than 45 cm	55	4.7
45 - 49 cm	324	27.9
50 – 54	705	60.6
55 – 59	43	3.7
More than 60	1	0.1
Dead	35	3.0
TOTAL	1163	100.0

The height of the child is probably hereditary. However, the height of a new born child may also relate to the health condition of the mother, which in turn may be related to her utilisation of maternal and child care facilities. Moreover, increase in height after birth depends on how the child gets his/her treatment and care. Table 4.40 shows the distribution of the pregnant women according to their infants' height. The result shows that most of the infants (61 percent) were between 50 cm and 54 cm in their height. However, a sizeable proportion (28 percent) were between 45 cm and 49 cm, while a marginal (0.1 percent) were with more than 60 cm.

4.3.11 NEWBORN HEALTH STATUS:

TABLE 4.41
The distribution of the sample according to their infants' health status

HEALTH STATUS	FREQUENCY	PERCENT
Good	1031	88.7
Ill	97	8.3
Dead	35	3.0
TOTAL	1163	100.0

Table 4.41 shows the distribution of the infants' health status. Most of the infants (89 percent) were in a good health immediately after the birth, while only 8 percent were suffering from some kind of problem. As discussed earlier, the health status of the child largely depends on the health of the mother. Further, maternal health is closely associated with her prenatal and antenatal care in addition to her nutritional status (Ware, 1984). Thus, we may conclude that the health status of the children in this study population was quite good.

4.3.12 EVALUATION OF ANC CLINICS:

TABLE 4.42
Evaluation of the ANC Clinics

EVALUATION	FREQUENCY	PERCENT
Inappropriate	4	6.6
Fair	28	45.9
Good	29	47.5
TOTAL	61	100.0

Table 4.42 shows the evaluation of the 61 ANC Clinics, which that might be a factor for influencing ANC attendance. About 48 percent of the ANC Clinics were well equipped, 46 percent were of fair quality, while 7 percent was deemed inappropriate in both the furniture and instruments. The choice of further visit to the ANC clinic depends on the facilities available at the clinic and the service provided to the pregnant women. If the ANC Clinic provides a good facility to their clients, it might influence an adequate number of visits (Williams et al., 1989). One may conclude from this table that some of the provision in the study area needs to be improved.

4.3.13 PHYSICIANS QUALIFICATION:

TABLE 4.43
Qualification of physicians in ANC Clinics

QUALIFICATION	FREQUENCY	PERCENT
Resident	54	88.5
Specialist or higher	7	11.5
TOTAL	61	100.0

Table 4.43 shows the qualifications of physicians working in the ANC Clinics at PHC Centres. The majority of the physicians (89%) were residents, and only 12 percent were specialists or higher, in the field of antenatal care. This suggests a poor level of staffing in the clinics. Better-trained physicians at the clinics could attract more pregnant women anticipating a better service. This accords with other findings in studies of PHC in Saudi Arabia, where the qualifications and experience of physicians in this field are not particularly good (Al Darrak, 1999).

4.3.14 NUMBER OF TRAINING COURSES:

TABLE 4.44
Distribution of physicians according to the number of training courses they had in the field of maternity care

NUMBER	FREQUENCY	PERCENT
None	7	11.5
One course	22	36.1
Two courses	22	36.1
Three courses	8	13.1
Four courses	2	3.3
TOTAL	61	100.0

It is surprising to note that in the study area, about 12 percent of the physicians have not attended any of the training course, while about 53 percent had attended two or more training course in the field of maternity care (Table 4.44). When a physician has attended training programmes in the field of maternity care, he/she should be able to perform his/her responsibility in a better way (Swenson, 1993). Thus, it indicates that more training programmes need to be given to the physicians to improve the service.

4.4. CONCLUSION:

The research outlined in the literature explored the possible factors associated with the antenatal clinical visits by the pregnant women. Examining the distribution of pregnant women according to the different characteristics, the researcher found that the women in the safe delivery age group (20-35 years) represent a majority of the births. A majority of the sample is Saudi nationals and high proportions are giving birth in their later stages of marriage. About 43 percent of the sample women and 22 percent of their husband are illiterate, showing the low social status of some of these people. A large majority (80 percent) of the women are housewives and a large proportion of the husbands are either military or civil employees. As far the economic standard of the family is concerned, looking at the income of the family, about 70 percent of the women belong to families with less than 5000 SR income per month. However, for a majority, the family income is sufficient for their daily life. Overall, a large percent of the total sample live in poor socio-economic conditions, which is clear from looking at the type of house, the education of both women and their husband's and the family income. Women also seem to deliver children with short birth intervals, as about 85 percent had a child younger than 5 years. A large proportion of the women take care of their children themselves, but about 35 percent have a baby-sitter at home. Also, about 95 percent of the women claimed that a baby-sitter at home affects their ANC attendance.

Most women used a car as the means of transport to visit the ANC clinic, but among those who walked, some took more than 10 minutes to reach the clinic. Also, about 42 percent of the women had to wait more than 15 minutes to receive their clinical examination. The examination time varied from woman to woman and about 39 percent spent more than 15

minutes in their clinical examination. Though most physicians are Arab's, about 48 percent had a change of their physician on the different visits. Among the women who changed physicians, about 48 percent revealed the sex of the physician they visited during a subsequent visit, and of those, 54 percent visited only female physician, while another 37 percent visited both male and female physicians in their next visits. Only about 54 percent of all the sample disclosed the sex of the physician they visited and among them, a majority approached a female physician. It was noted that a large proportion of women did not, or seldom got, the opportunity to ask questions of their physician, and also many of them did not understood the communication between them. Women perceived that changing physicians' did affect further visits to the ANC clinics, but changing nurses did not appear to influence the number of visits. The study also shows that 94 percent of the pregnant women did not visit the clinic in the first month of pregnancy, a very small proportion were not receiving ANC care by the ninth month of pregnancy. It may be also noted that about 41 percent women attended more than 6 times during their pregnancy.

This chapter also analyses the distribution of women according to different clinical data characteristics. Among the sample, about 50 percent of the pregnant women had experienced 4 or more deliveries, showing a large family size in the study population, while 11 percent had no deliveries. Anaemia is recorded as a major problem faced by the women in their previous pregnancies, followed by abortion. This shows the women's poor health status for the present delivery. Nearly 24 percent of the women had an anaemic problem in their current pregnancy, while another 6.4 percent had some other medical problems. Complicated delivery risks the life of both mother and child and though the majority of deliveries in the study sample were normal, about 21 percent face some kind of delivery complications, which indicates a high risk group. If

the delivery takes place in a hospital, they are considered to be safer than other deliveries and most of those deliveries did take place in hospitals.

Infant mortality is considered as key indicator of the socio-economic status of any population. The infant mortality rate in the study population is as high as 30 per 1000 live births, which is quite satisfactory when compared with developing countries. Though the infant mortality rate was 30 per 1000 births, another 83 children are in poor health. The child is at risk if it is under weight or over weight. The weight of the child is partly the consequence of the maternal nutritional status. About 14 percent of the children born to the study population were under weight, while another 7 percent were over weight.

CHAPTER FIVE

BIVARIATE AND DISCRIMINANT ANALYSIS

5.1 BIVARIATE ANALYSIS

5.1.1 AGE
5.1.2 NATIONALITY
5.1.3 HEIGHT
5.1.4 DURATION OF MARRIAGE
5.1.5 EDUCATION LEVEL
5.1.6 HUSBANDS' EDUCATION LEVEL
5.1.7 EMPLOYMENT STATUS
5.1.8 HUSBANDS' EMPLOYMENT STATUS
5.1.9 FAMILY INCOME
5.1.10 NUMBER OF DELIVERIES
5.1.11 WAITING TIME
5.1.12 AVERAGE ANC EXAMINATION TIME
5.1.13 PHYSICIAN'S SEX
5.1.14 TYPE OF EXPLANATION
5.1.15 COMMUNICATION LEVEL WITH PHYSICIANS
5.1.16 COMMUNICATION LEVEL WITH NURSES
5.1.17 DIFFERENT PHYSICIAN IN EACH VISIT
5.1.18 DIFFERENT NURSE IN EACH VISIT
5.1.19 NUMBER OF BABIES AGED LESS THAN 5 YEARS OLD
5.1.20 USING BABY-SITTER
5.1.21 PROBLEMS DURING PREVIOUS PREGNANCIES
5.1.22 PROBLEMS DURING PRESENT PREGNANCIES
5.1.23 TYPE OF TRANSPORT
5.1.24 TYPE OF ACCOMMODATION
5.1.25 TYPE OF DELIVERY
5.1.26 PLACE OF DELIVERY
5.1.27 NEWBORN STATUS
5.1.28 NEWBORN WEIGHT
5.1.29 NEWBORN HEIGHT
5.1.30 NEWBORN HEALTH STATUS

5.2 STEPWISE DISCRIMINANT ANALYSIS

5.3 CONCLUSION

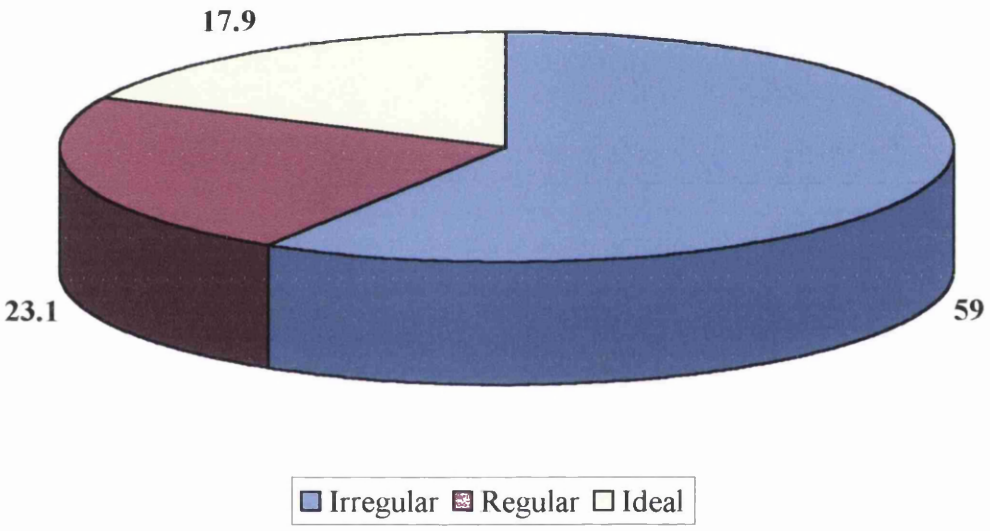
CHAPTER FIVE
BIVARIATE AND DISCRIMINANT ANALYSIS

5.1 BIVARIATE ANALYSIS

In the previous chapter, we explored the distribution of the respondents according to different characteristics and drew certain conclusions. However, the univariate results may not provide enough support to explain the most important and significant factors in explaining the acceptance of ANC services. Thus, the current chapter emphasises more elaborately the association between the number of visits and the different characteristics (variables) considered. In other words, this section examines the influence of the independent variables on the dependent variable (number of ANC visits), which are studied with the help of contingency tables. The research independently examined the effect of each of the variables on the dependent variable to explore the importance of each of the variables considered. Chi-squared statistics are used to test the significance of the association between the two variables and a probability of 0.05 or less, was considered as significant. In addition to this, a multivariate analysis also carried out, by way of discriminant analysis, to explore the most important covariates in explaining the antenatal visit pattern in the study population.

As a first step, it examined the pattern of pregnant women's antenatal care visits to the clinics (Figure 5.1). It may be seen from the figures that 59 percent women were irregular in their visits, while 23.1 percent were regular and only 17.9 percent were ideal.

Figure 5.1
Pattern of ANC visits



As socio-economic and demographic factors often used to explain the causes women's ANC visits, the following section deals with the pattern of ANC visits according to different socio-economic and demographic characteristics.

5.1.1 AGE:

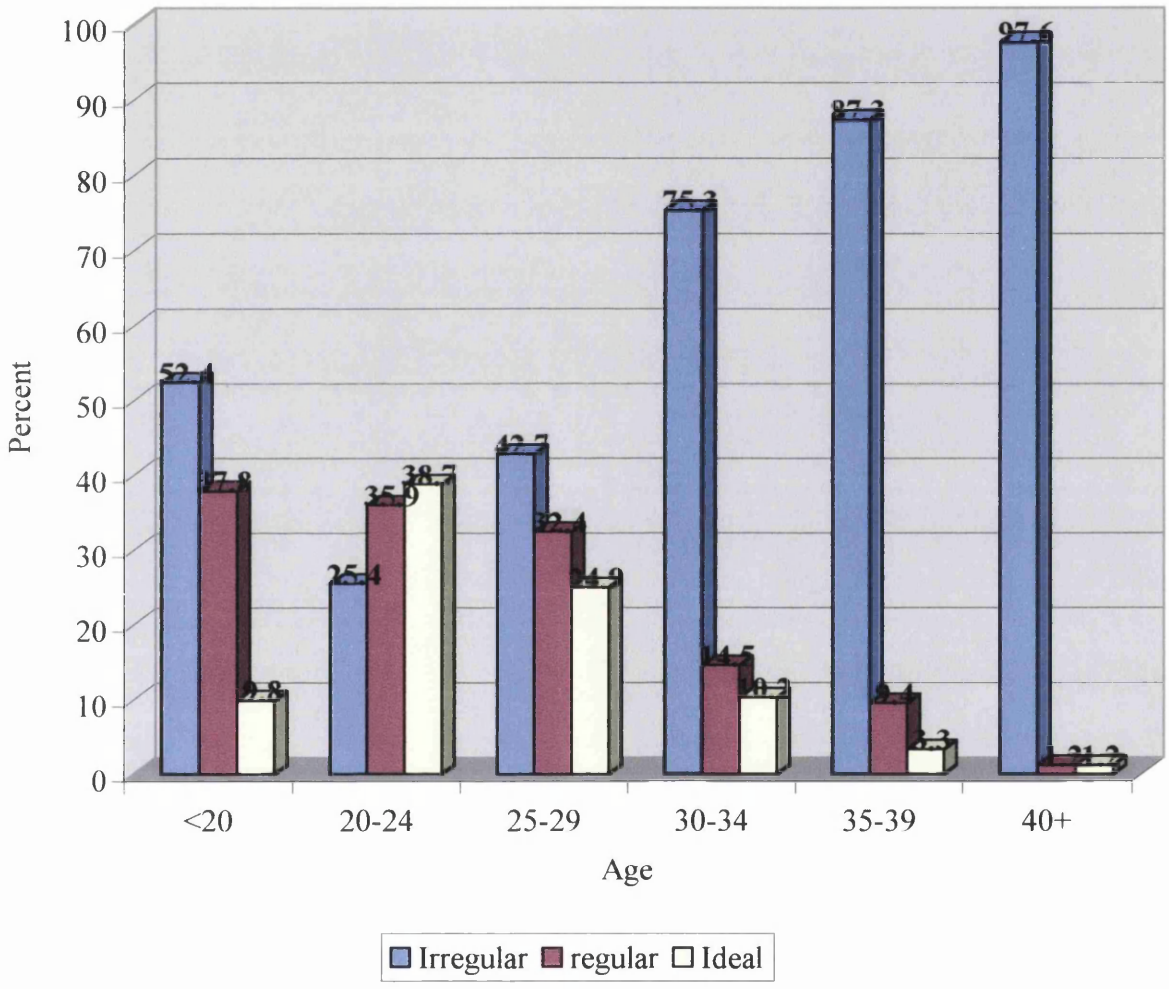
TABLE 5.1
Distribution of pregnant women according to their number of visits to ANC Clinics based on their age

AGE	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Less than 20 years	43 (52.4%)	31 (37.8%)	8 (9.8%)	**82 (7.1%)**
20 – 24 years	63 (25.4%)	89 (35.9%)	96 (38.7%)	**248 (21.3%)**
25 – 29 years	120 (42.7%)	91 (32.4%)	70 (24.9%)	**281 (24.2%)**
30 – 34 years	192 (75.3%)	37 (14.5%)	26 (10.2%)	**225 (21.9%)**
35 – 39 years	185 (87.3%)	20 (9.4%)	7 (3.3%)	**212 (18.2%)**
More than 39 years	83 (97.6%)	1 (1.2%)	1 (1.2%)	**85 (7.3%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 10 d.f. = 318.8; p = <0.0000.

Related to the study question "Is there any significant relationship between the age of the pregnant women and the number of ANC visits made by them", Table 5.1 shows that the age of these women does have a significant influence on the number of ANC visits. Pregnant women, aged between 20 – 25 years, appear to have the best pattern of visits to ANC Clinics. Only 25 percent (63) of those aged between 20 - 25 were irregular, 36 percent (89) were regular, and 39 percent (96) were ideal. Further examination of the association between ANC visits and other age groups, shows that women aged more than 39 years have the worst pattern of visits to ANC Clinics; 98 percent of them were irregular, 1 percent were regular, and 1 percent were ideal. This finding is in accordance with that of Al-Shammari et al. (1994) who noted that pregnant women, aged less than 20 years, were better in their ANC visits than those aged more than 30 years.

Figure 5.2
Pattern of ANC visits by age of the Pregnant Woman



5.1.2 NATIONALITY:

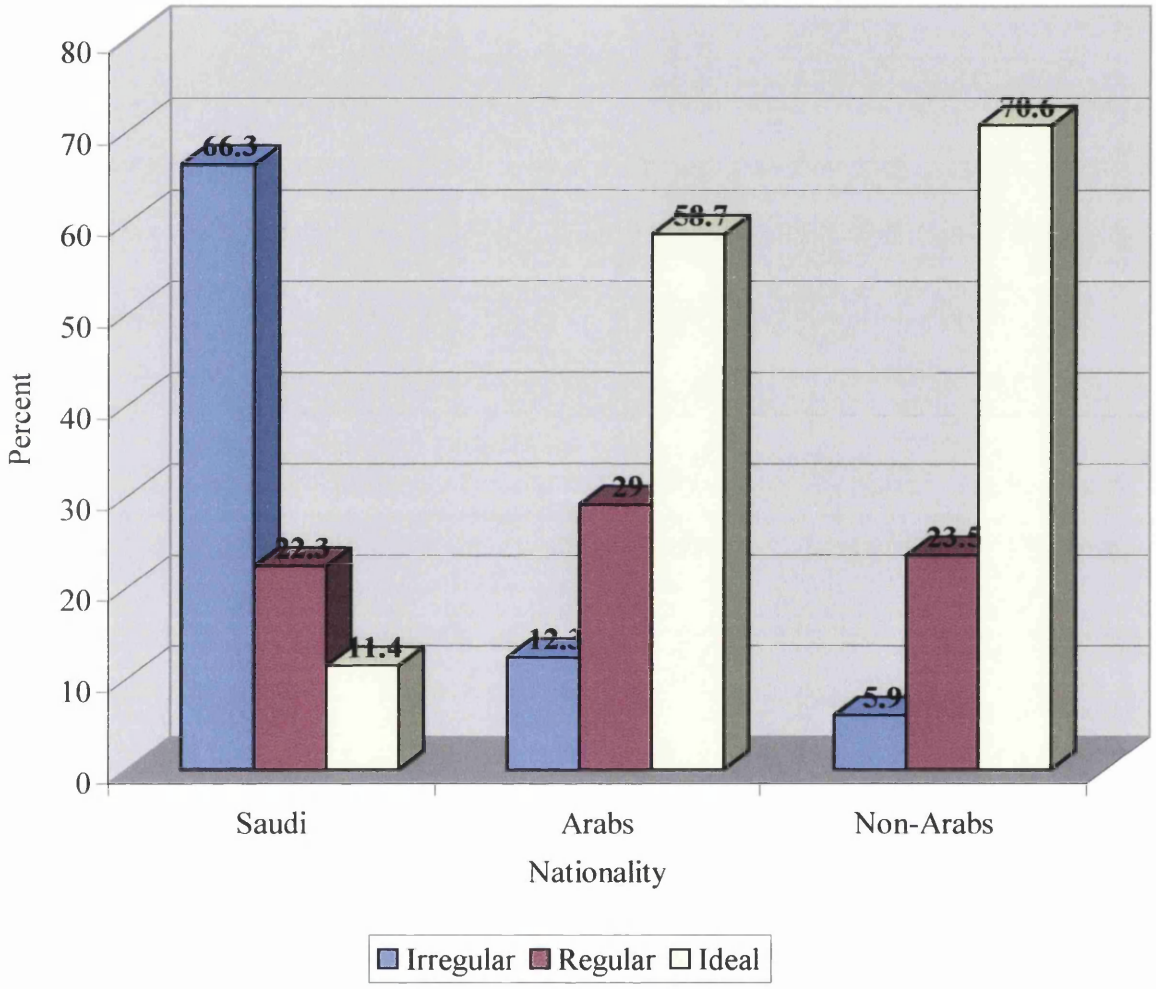
TABLE 5.2
Distribution of pregnant women according to
their number of visits to ANC Clinics based on their nationality

NATIONALITY	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Saudi	668 (66.3%)	225 (22.3%)	115 (11.4%)	**1008 (86.7%)**
Arabs	17 (12.3%)	40 (29.0%)	81 (58.7%)	**138 (11.9%)**
Non-Arabs	1 (5.9%)	4 (23.5%)	12 (70.6%)	**17 (1.5%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 4 d.f. = 249.0; p = <0.0000.

Examining the association between the pregnant women's nationality and the number of ANC visits, table 5.2 shows that the nationality of pregnant women appears to have a significant influence on their ANC visits. Most of the respondents (87%) were Saudi nationals, a similar population to that of Al-Nasser (1991). In his study 86.5 percent (1684) were Saudi nationals, and 12.9 percent (251) were non-Saudi Arabs. We may note that visits to the ANC clinics were far better in the cases of Non-Arabian and Arabian pregnant women, than in Saudi women. As in Al-Nasser's (1991) study, this study also shows that only about 6 percent of the non-Arabian population were irregular, while 24 percent were regular and 71 percent were ideal. On the other hand, among the non-Saudi Arabian women, 12 percent were irregular, 29 percent were regular and 59 percent were ideal. Finally, among the Saudi women, about 66 percent were irregular, 22 percent were regular and only 11 percent were ideal. The discussion of educational level (see Table 5.5) may shed some light on this. This finding is not in accord with that of Al Shammari (1994) who found no difference between Saudi and Non-Saudi women.

Figure 5.3
Patter of ANC visit by Nationality of Pregnant women



5.1.3 HEIGHT:

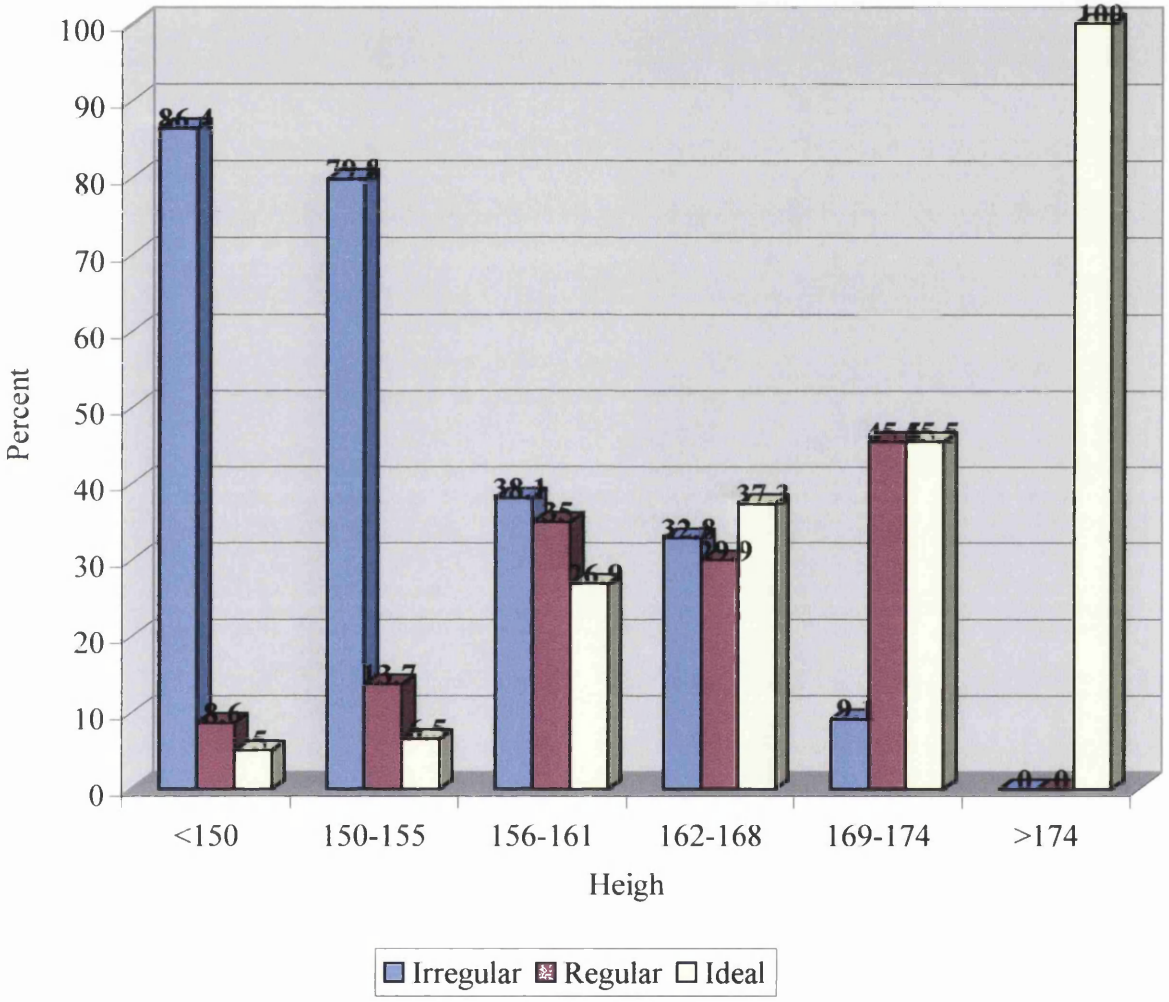
TABLE 5.3
Distribution of pregnant women according to
their number of visits to ANC Clinics based on their height

HEIGHT	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Less than 150 cm	121 (86.4%)	12 (8.6%)	7 (5.0%)	**140** **(12.0%)**
150 - 155 cm	356 (79.8%)	61 (13.7%)	29 (6.5%)	**446** **(38.3%)**
155 - 161 cm	164 (38.1%)	151 (35.0%)	116 (26.9%)	**431** **(37.1%)**
162 - 168 cm	44 (32.8%)	40 (29.9%)	50 (37.3%)	**134** **(11.5%)**
169 - 174 cm	1 (9.1%)	5 (45.5%)	5 (45.5%)	**11** **(0.9%)**
More than 174 cm	0	0	1 (100.0%)	**1** **(0.1%)**
COLUMN TOTAL	**686** **(59.0%)**	**269** **(23.1%)**	**208** **(17.9%)**	**1163** **(100.0%)**

Pearson's Chi-Square value for 10 d.f. = 266.9; p = <0.0000.

Exploring the relationship between the height of the pregnant women and the number of ANC visits they made, Table 5.3 shows that the height of pregnant women appears to be a significant variable influencing the number of ANC visits. A taller a pregnant women is the more likely she is to visit the ANC clinics regularly, unlike her shorter counterparts. The majority of the women who were irregular in their visits were less than 155 c.m. tall. Those women who were more than 155 c.m. were more regular or ideal in their ANC visits. That suggests that when the height increases women are more likely to be more regular or ideal in their visiting patterns. Of those women whose height ranged between 162 c.m. and 168 c.m., 33 percent were irregular, 30 percent were regular and 37 percent were ideal. Of those women whose height ranged between 169 c.m. and 174 c.m., only 9 percent were irregular, while 45.5 percent were regular and 45.5 percent were ideal in their visits.

Figure 5.4
Pattern of ANC visits by Height of the Woman



5.1.4 DURATION OF MARRIAGE:

TABLE 5.4
Distribution of pregnant women according to
their number of visits to ANC Clinics based on their duration of marriage

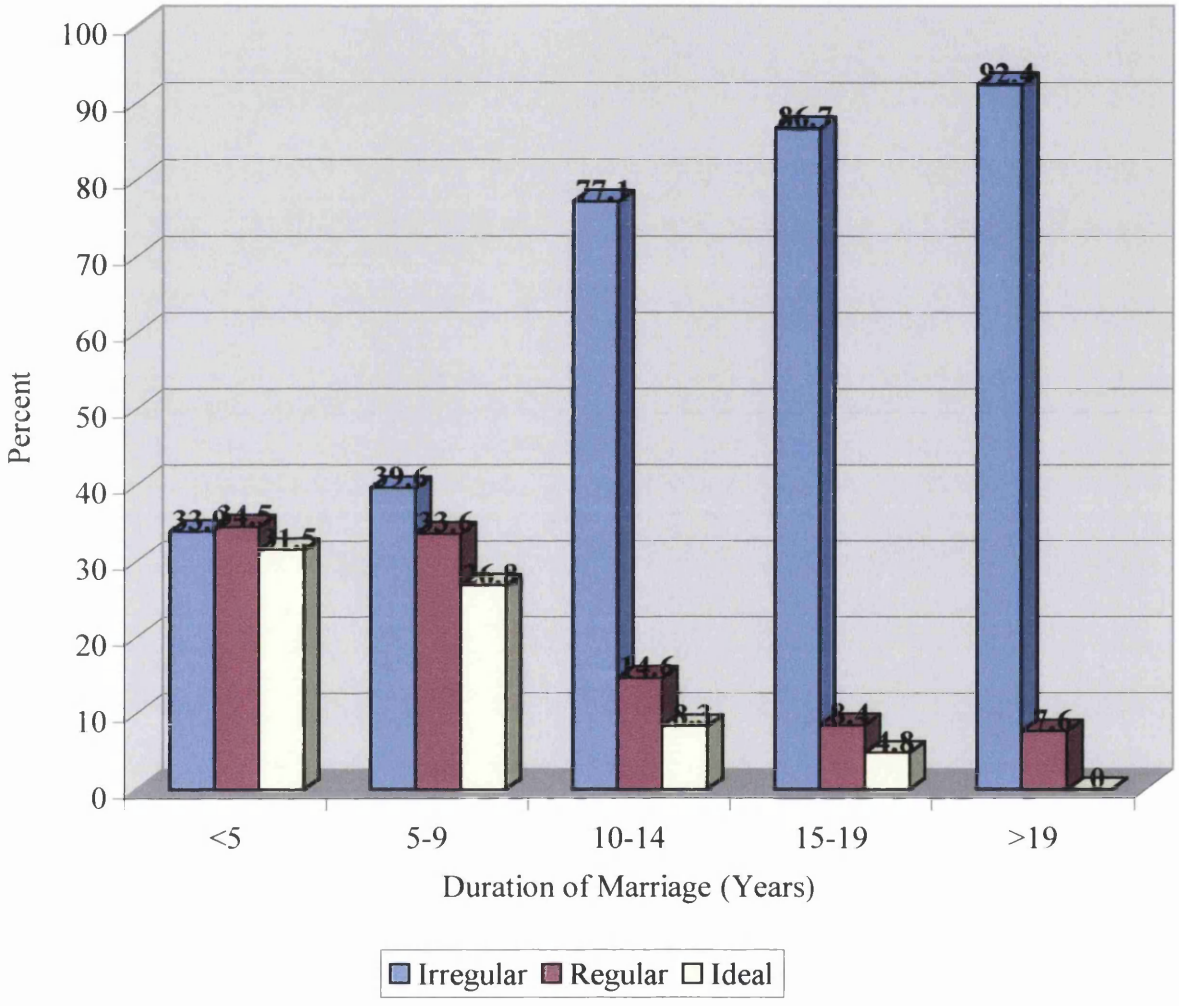
DURATION	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Less than 5 years	113 (33.9%)	115 (34.5%)	105 (31.5%)	**333 (28.6%)**
5 - 9 years	111 (39.6%)	94 (33.6%)	75 (26.8%)	**280 (24.1%)**
10 - 14 years	185 (77.1%)	35 (14.6%)	20 (8.3%)	**240 (20.6%)**
15 - 19 years	144 (86.7%)	14 (8.4%)	8 (4.8%)	**166 (14.3%)**
More than 19 years	133 (92.4%)	11 (7.6%)	0	**144 (12.4%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 8 d.f. = 286.3, p = <0.0000

In the previous chapter of this research explained that the distribution of the pregnant women in this study is skewed towards those who are in the short marital duration group. The above table (Table 5.4) shows the association between marital duration and the number of antenatal visits. From the table, it is clear that the duration of marriage is a significant variable influencing the number of antenatal visits. Further, the table shows that as the duration of marriage increases, using intervals from less than 5 years to more than 19 years, a higher proportion of women become irregular in their ANC visits. However, women in the two lowest categories, i.e. less than 5 years and 5-9 years, show a uniform pattern in their ANC visits. To show the difference more clearly, among those women whose marriage duration was less than 5

years, about 33.9 percent were irregular in their visits, while another 34.5 percent were regular, and 31.5 percent were ideal, as compared to those women who had been married for more than 19 years, where 92.4 percent were irregular and 7.6 percent were regular in their visits. We may conclude from this table that there is negative relationship between marriage duration and the number of ANC visits. As the marriage duration decreases the number of ANC visits increases. As explained earlier, this data may not be quite as conclusive as it appears because those who married more recently will have enjoyed greater socio-economic benefits than would those women who married earlier. Also the discussion following Table 5.1.10 may shed further light on this issue.

Figure 5.5
Pattern of ANC visits by Duration of Marriage



5.1.5 EDUCATION LEVEL:

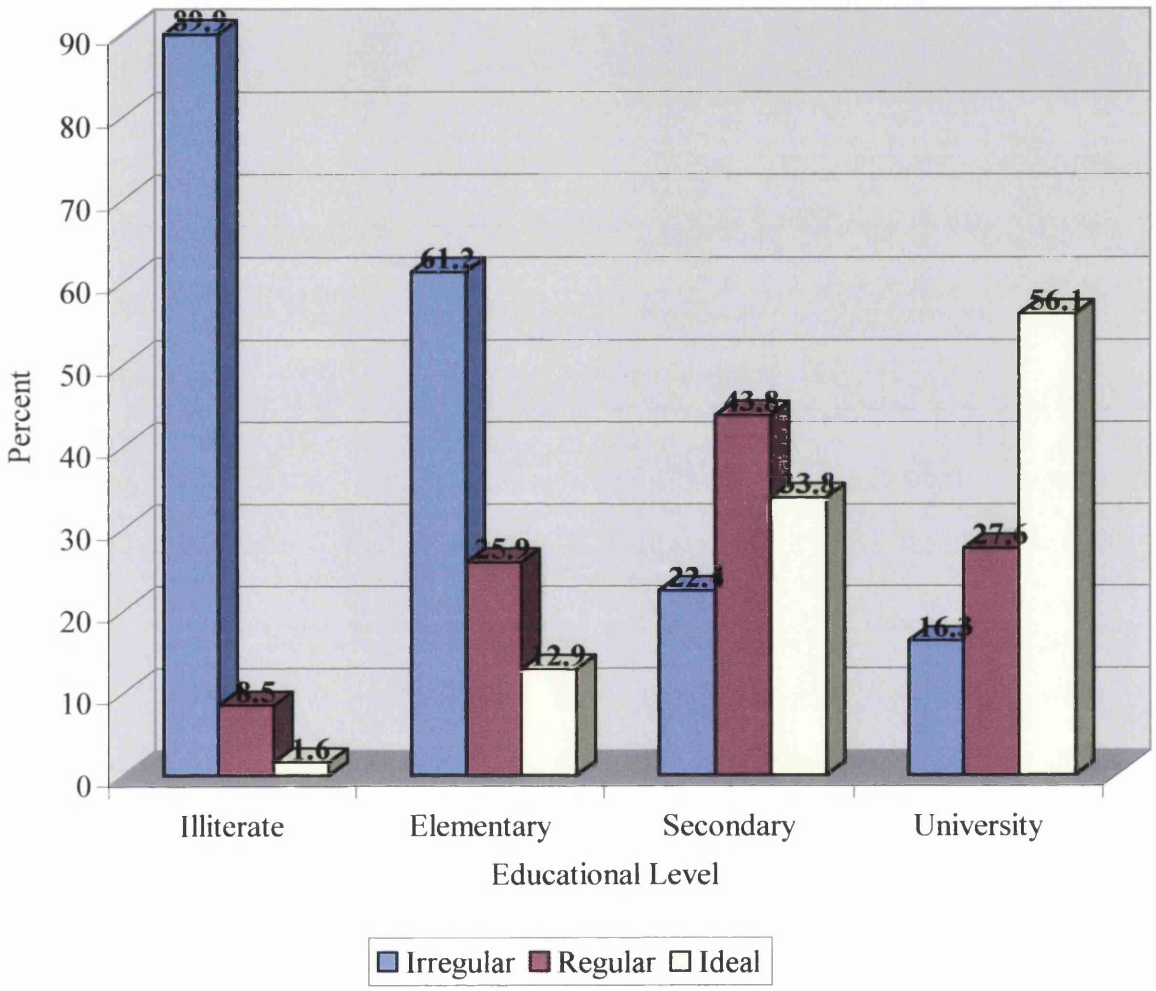
TABLE 5.5
Distribution of pregnant women according to
their number of visits to ANC Clinics based on their education level

EDUCAT. LEVEL	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Illiterate	445 (89.9%)	42 (8.5%)	8 (1.6%)	**495** **(42.6%)**
Elementary	156 (61.2%)	66 (25.9%)	33 (12.9%)	**255** **(21.9%)**
Secondary	65 (22.4%)	127 (43.8%)	98 (33.8%)	**290** **(24.9%)**
University	20 (16.3%)	34 (27.6%)	69 (56.1%)	**123** **(10.6%)**
COLUMN TOTAL	**686** **(59.0%)**	**269** **(23.1%)**	**208** **(17.9%)**	**1163** **(100.0%)**

Pearson's Chi-Square value for 6 d.f. = 503.8; p = <0.0000.

As noted in chapter 2, the education level of women is one of the core variable used to explain many of the demographic and health care factors in a population. Hence, this study looked at the relationship between the educational level of the pregnant women and the pattern of their ANC visits. Table 5.5 shows that the educational level of the pregnant women has a significant influence on their ANC visits. When women have been educated to high school level and above, they are more likely to be ideal in receiving antenatal care from the clinics (56.1 percent) compared to pregnant women who are illiterate (only 2 percent were ideal). Higgins et al. (1994) have also drawn the similar conclusion that educated mothers are more likely to receive adequate ANC than are those with less than a high school education. These figures support the idea that as women become better educated, they will show a significantly better pattern of ANC visits. Morrison (1989) noted that higher education not only presumes higher

Figure 5.6
Pattern of ANC visits by Educational Level



economic standing, but also suggests a more informed approach to both self-care and the use of the health care system. These findings also agree with Al-Shammari's study (1994) who found that highly educated mothers tend to make more antenatal visits than other less educated groups.

5.1.6 HUSBANDS' EDUCATION LEVEL:

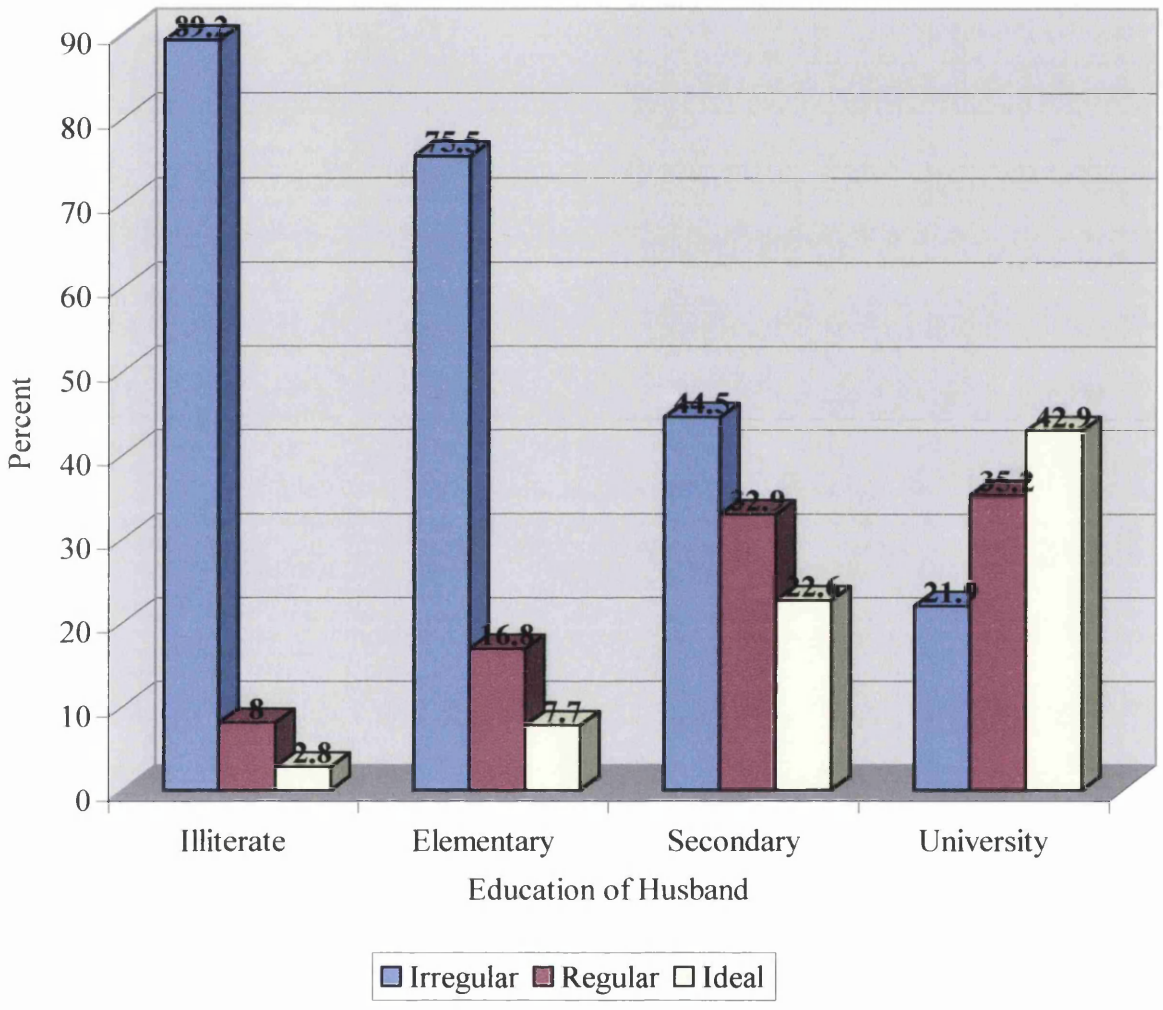
TABLE 5.6
Distribution of pregnant women according to
their number of visits to ANC Clinics based on their husbands' education levels

EDUCAT. LEVEL	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Illiterate	224 (89.2%)	20 (8.0%)	7 (2.8%)	**251 (21.6%)**
Elementary	265 (75.5%)	59 (16.8%)	27 (7.7%)	**351 (30.2%)**
Secondary	146 (44.5%)	108 (32.9%)	74 (22.6%)	**328 (28.2%)**
University	51 (21.9%)	82 (35.2%)	100 (42.9%)	**233 (20.0%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 6 d.f. = 318.5; p = <0.0000.

The husband's education level is not only considered to be a social variable but may also be treated as an economic indicator (Rahman et al., 1997). Thus, analysing the correlation between the women's husbands' education levels and the number of the visits to ANC Clinics, see Table 5.6, it may be seen that the educational level of the husband is significant in helping to explain their wife's number of ANC visits. The highest proportion of irregular visits (89%) and (76%) was found among the illiterate and elementary groups respectively, compared to 22 percent (51) among the educated group. For those showing an ideal pattern, about 43 percent of

Figure 5.7
Pattern of ANC visits by Education of Husband



their husbands had obtained university education level, but only 3 percent (7) were illiterate. The cause for such high regularity among the educated group is probably due to their greater awareness of the heath services and their benefits. Also, educated husbands may be better able to organise their time to take their wives to ANC clinics, than are illiterate husbands who are busy earning their living and have little control over their time.

5.1.7 EMPLOYMENT STATUS:

TABLE 5.7
Distribution of pregnant women according to
their number of visits to ANC Clinics based on their employment status

STATUS	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Housewife	641 (68.8%)	184 (19.7%)	107 (11.5%)	**932** **(80.1%)**
Govern. Employee	33 (20.6%)	52 (32.5%)	75 (46.9%)	**160** **(13.8%)**
Student	12 (18.8%)	29 (45.3%)	23 (25.9%)	**64** **(5.5%)**
Non-Government Employee	0 0	4 (57.1%)	3 (42.9%)	7 **(0.6%)**
COLUMN TOTAL	**686** **(59.0%)**	**269** **(23.1%)**	**208** **(17.9%)**	**1163** **(100.0%)**

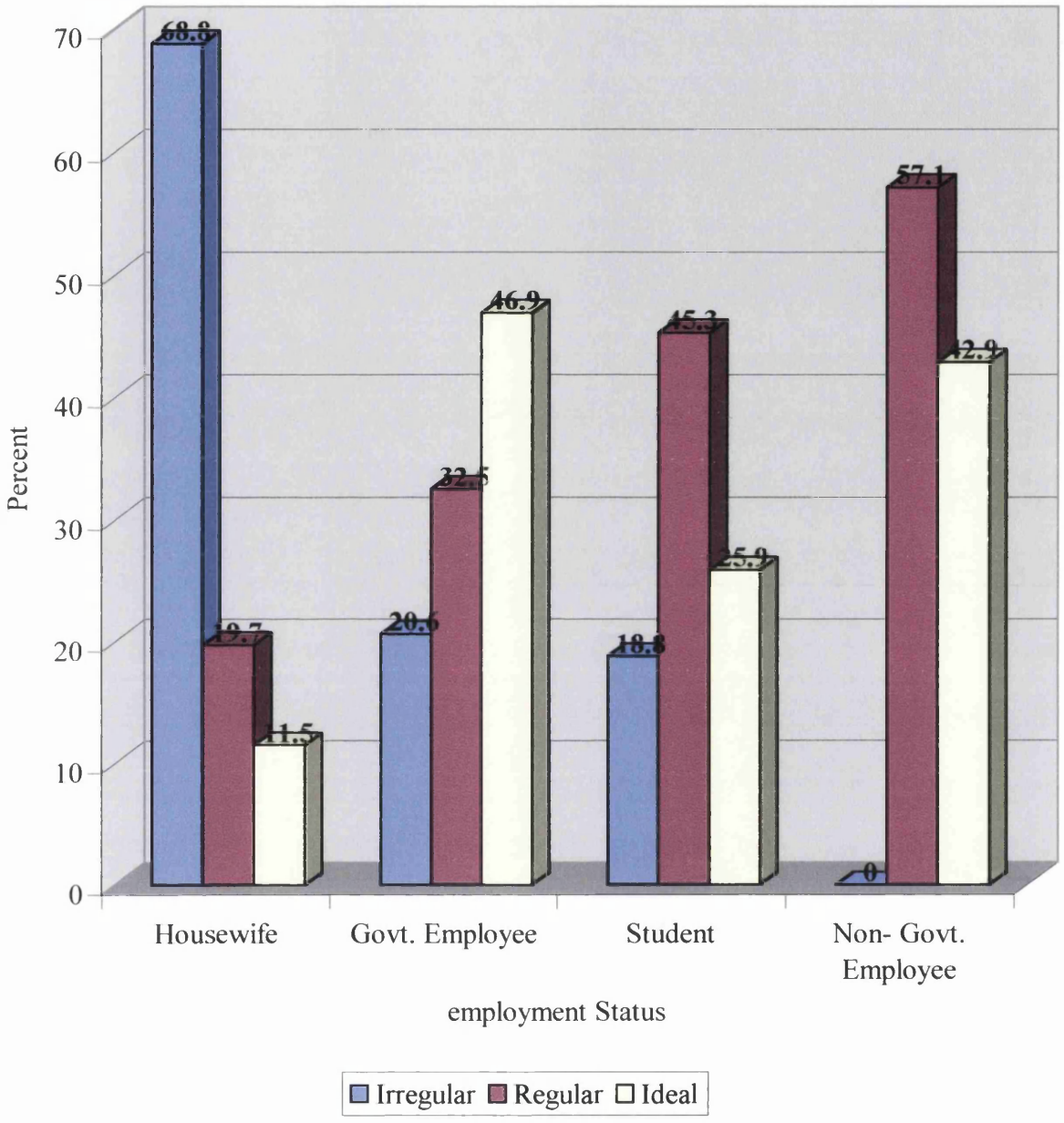
Pearson's Chi-Square value for 6 d.f. = 215.2; p = <0.0000.

Examining the relationship between women's employment status and visits to the clinics, Table 5.7 shows that the employment status of pregnant women has a significant influence on their ANC visits. Pregnant women, who do not work, have the highest proportion of irregular visits (69%) as compared with pregnant employees and students. About 47 percent

(75) of pregnant government employees were ideal in their visits, and 32.5 percent (52) were regular. Also 42.9 percent (3) pregnant women from the non-government sector were ideal and 57.1 percent (4) were regular. Among the pregnant women who were studying, 25.9 percent (23) were ideal and 45.3 percent (29) were regular. While considering the attendance of non-working pregnant women, only 11.5 percent (107) were ideal and 19.7 percent (184) were regular in their visits. This study is in agreement with Al-Shammari et al. (1994) findings that working women achieved more visits than housewives. Part of the explanation for this will be in the fact that government employees do have several allowances made fir them during pregnancy-which will encourage visits. This will discussed later in chapter 6.

NB: On the Bar Chart (see over), although the data for non-government employees look very convincing their small number (total 7) means that no conditions may be drawn.

Figure 5.8
Pattern of ANC visits by Pregnant Women's Emplyment Status



5.1.8 HUSBANDS' EMPLOYMENT STATUS:

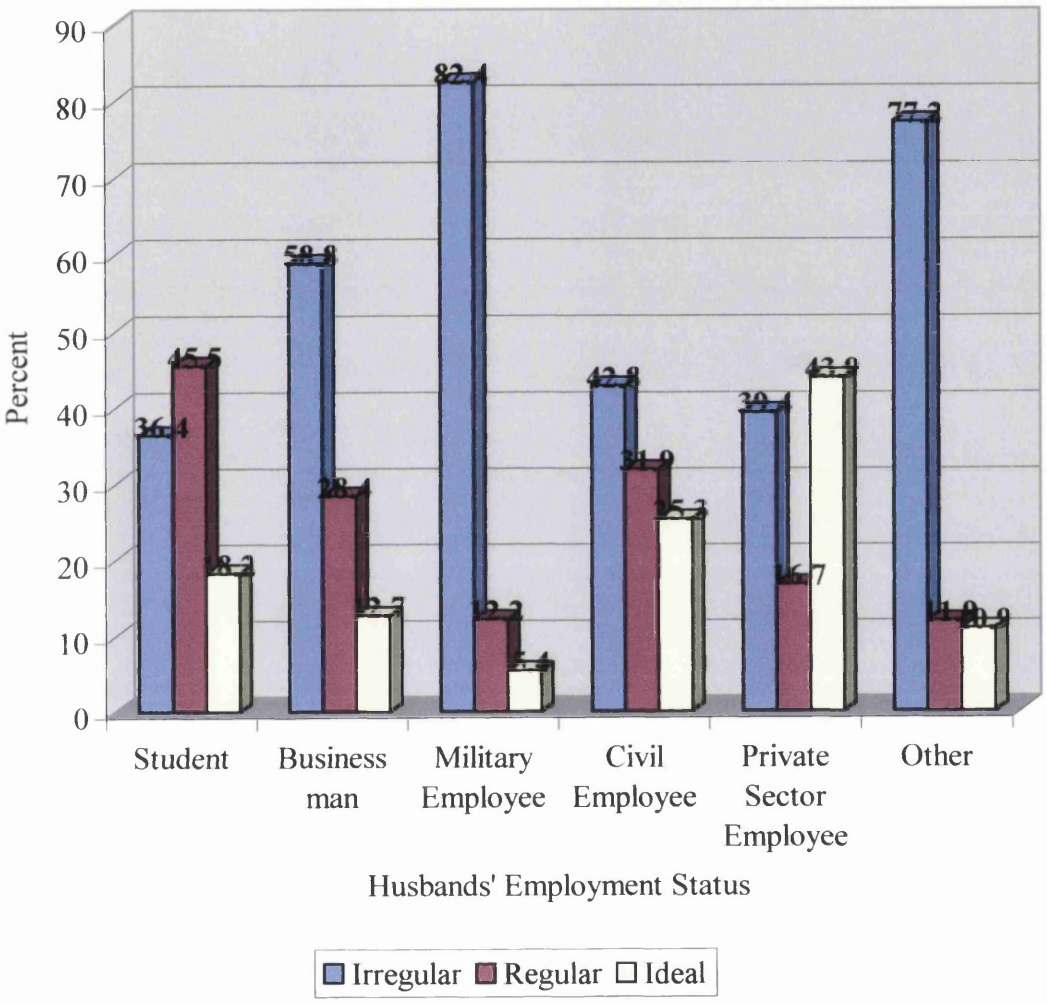
TABLE 5.8
Distribution of pregnant women according to their number of visits to ANC Clinics, based on their husbands' employment status

STATUS	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Student	4 (36.4%)	5 (45.5%)	2 (18.2%)	**11 (0.9%)**
Business man	60 (58.8%)	29 (28.4%)	13 (12.7%)	**102 (8.8%)**
Military employee	291 (82.4%)	43 (12.2%)	19 (5.4%)	**353 (30.4%)**
Civil Employee	227 (42.8%)	169 (31.9%)	134 (25.3%)	**530 (45.6%)**
Private Sector Employee	26 (39.4%)	11 (16.7%)	29 (43.9%)	**66 (5.7%)**
Other	78 (77.2%)	12 (11.9%)	11 (10.9%)	**101 (8.7%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 10 d.f. = 189.9, p = <0.0000

Studying the association between pregnant women's husband's work status and the number of ANC visits she made, it appears that the husband's employment is a significant variable in determining the number of antenatal visits (Table 5.8). The highest proportion of irregular visits was found among the wives of military employees (82.4 percent), while the highest proportion (43.9 percent) of ideal visits was found among the wives of private sector employees. The presence of husbands' at the residence probably influences the wife towards an adequate number of ANC visits (Rahman et al., 1997). Military employees are frequently away from home.

Figure 5.9
Pattern of ANC visits by Husbands' Employment Status



NB: In this analysis we have 66 private sector employees and thus reasonable inferences may be drawn. On the evidence, here it seems that wives of private sector employees do have a "good" pattern of attendance at clinics

5.1.9 FAMILY INCOME:

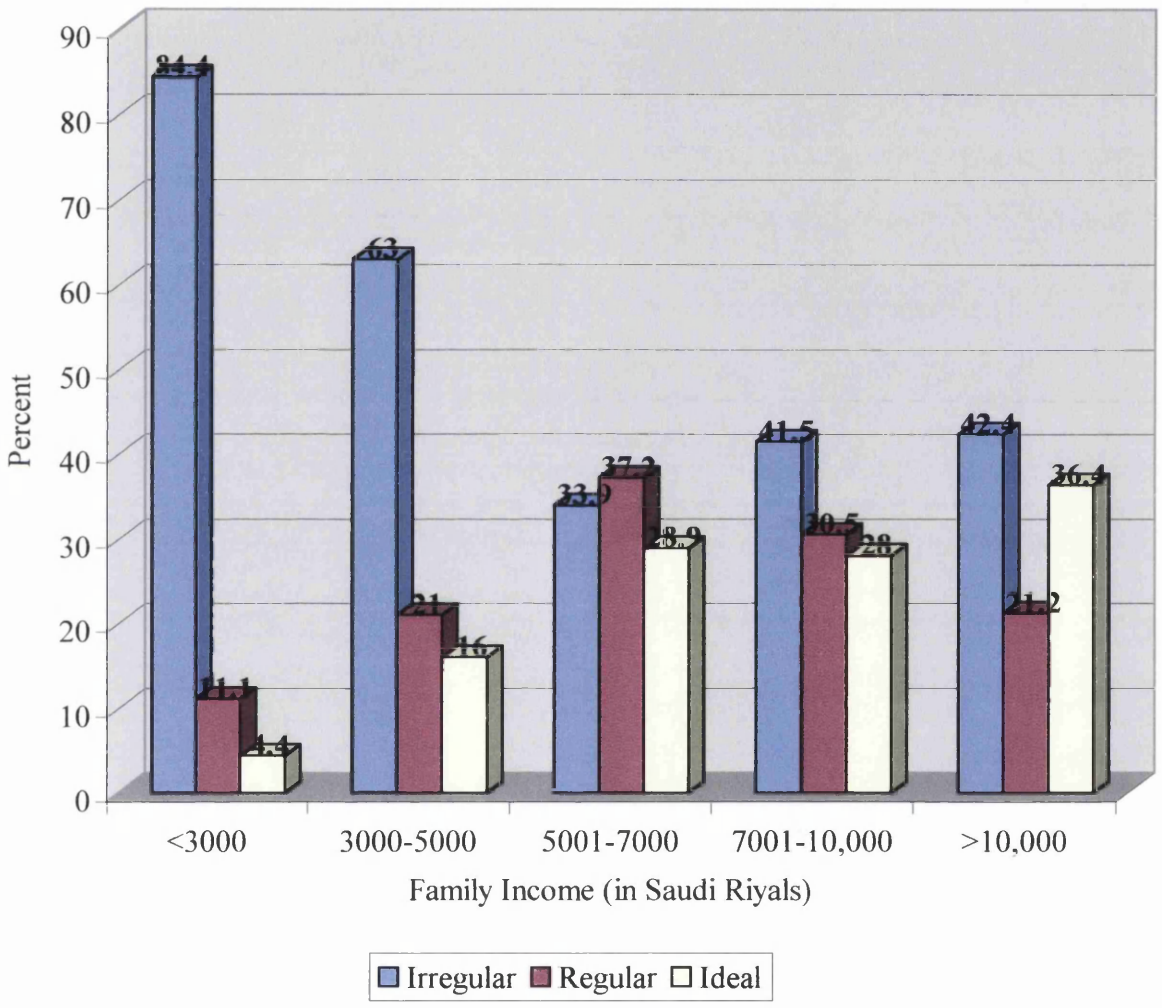
TABLE 5.9
Distribution of pregnant women according to their number of visits to ANC Clinics based on their families incomes per month

FAMILY INCOME	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Less than 3,000 SR	190 (84.4%)	25 (11.1%)	10 (4.4%)	**225 (19.3%)**
3,000 - 5,000 SR	366 (63.0%)	122 (21.0%)	93 (16.0%)	**581 (50.0%)**
5,001 - 7,000 SR	82 (33.9%)	90 (37.2%)	70 (28.9%)	**242 (20.8%)**
7,001 - 10,000 SR	34 (41.5%)	25 (30.5%)	23 (28.0%)	**82 (7.1%)**
More than 10,000 SR	14 (42.4%)	7 (21.2%)	12 (36.4%)	**33 (2.8%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 8 d.f. = 147.2; p = <0.0000.
One UK pounds = 6.0 Saudi Riyals (SR)

Related to the study question "Is there any significant relationship between the monthly family income of the women and the number of their ANC visits", Table 5.9 shows that there is a relationship between the two variables. As shown, when the family's monthly income increases, the number of visits to the clinic also increases. Of those women from families which earn a monthly income of less than 3,000 SR, only about 4 percent (10) were ideal, 11.1 percent (25) were regular, and 84.4 percent (190) were irregular. For those women whose monthly family income was greater than 10,000 SR, about 36 percent (12) were ideal, 21.2 percent (7) were regular and 42.4 percent (14) were irregular. This figure may be slightly misleading

Figure 5.10
Pattern of ANC visits by Family Income



because the high income groups might be able to use private home visits by a physician, but the two groups between 5,000 and 10,000 SR also show much better pattern than their poorer counterparts. Furthermore, income, to some extent, reflects educational status and, at the same time, it may well be related to other variables.

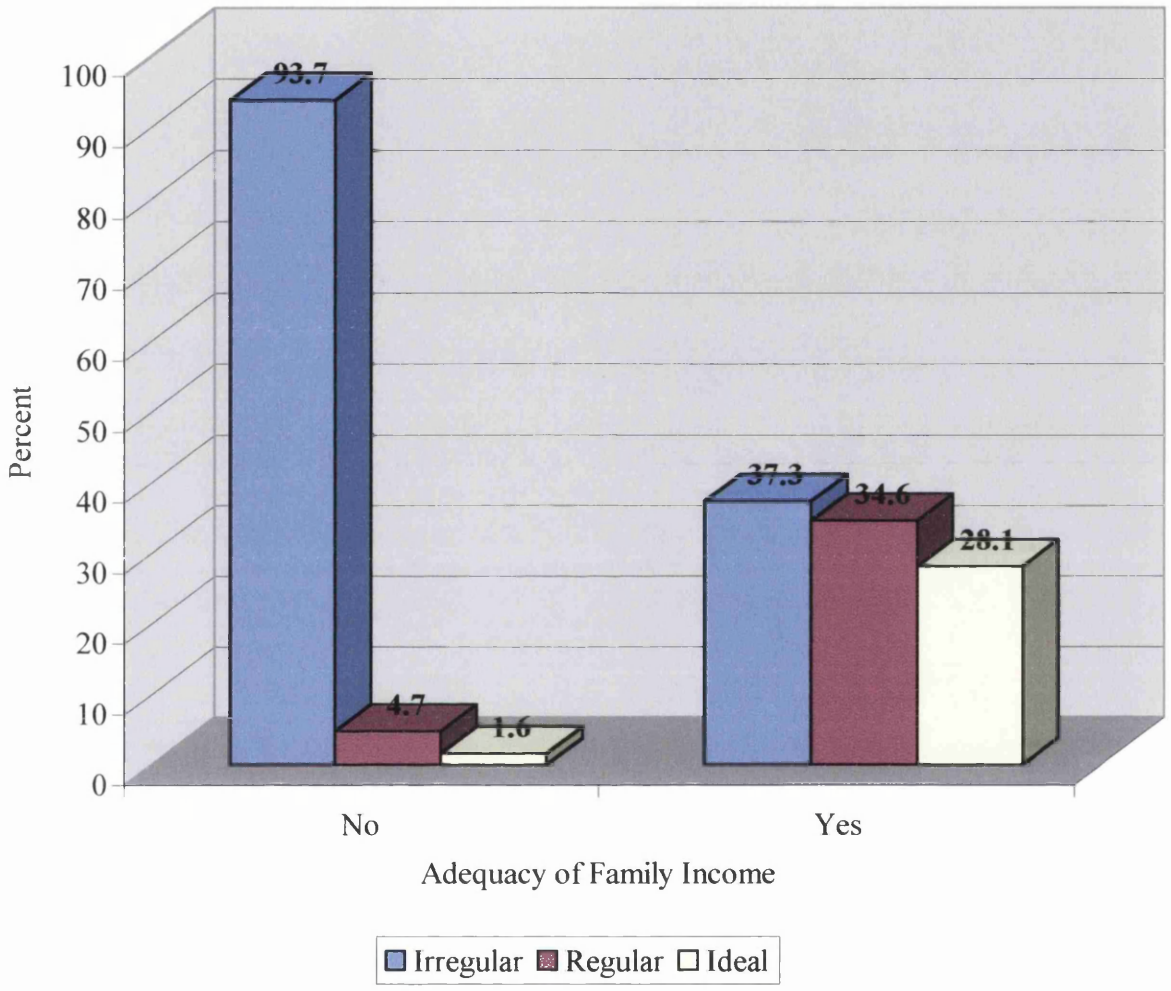
TABLE 5.10
Distribution of pregnant women according to their number of ANC visits based on their adequacy of families' incomes

ADEQUACY OF FAMILY INCOME	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
No	419 (93.7%)	21 (4.7%)	7 (1.6%)	**447 (38.4%)**
Yes	267 (37.3%)	248 (34.6%)	201 (28.1%)	**716 (61.6%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 2 d.f. = 363.4; p = <0.0000.

Exploring the association between income and the number of antenatal visits, the research examined the relationship between the perceived adequacy of pregnant women's family incomes and the number of their ANC visits (see Table 5.10. The results clearly indicate a significant relationship between the number of visits to ANC Clinics and the perceived adequacy of family incomes. Among those women who said that their family income was not enough to meet their needs, about 94 percent (419) made irregular visits, 4.7 percent (21) made regular visits, and only 1.6 percent (7) display ideal visits. Those women who claimed that their family income was sufficient to meet their needs, registered many more visits to the clinics. Among this group with sufficient family income, about 37 percent (267) were irregular, 34.6

Figure 5.11
Pattern of ANC visit by Adequacy of Family Income



percent (248) were regular, and 28.1 percent (201) were ideal. The increase in the number of ANC visits among those who have higher income is again probably related to the fact that women from these families are better educated and hence more aware of the importance of using PHC Centres. Women from poor families not only suffer poor diet, housing and basic facilities, but also lower self-esteem and increased social isolation (Chadwick, 1994) that results in inadequate antenatal care (Higgins et al 1994).

5.1.10 NUMBER OF DELIVERIES:

TABLE 5.11
Distribution of pregnant women according to their number of visits to ANC Clinics based on their number of previous deliveries

NUMBER	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
None	34 (25.8%)	57 (43.2%)	41 (31.1%)	**132 (11.3%)**
1 - 3 deliveries	173 (38.6%)	140 (31.3%)	135 (30.1%)	**448 (38.5%)**
4 - 6 deliveries	210 (73.7%)	51 (17.9%)	24 (8.4%)	**285 (24.5%)**
More than 6 deliveries	269 (90.3%)	21 (7.0%)	8 (2.7%)	**298 (25.6%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

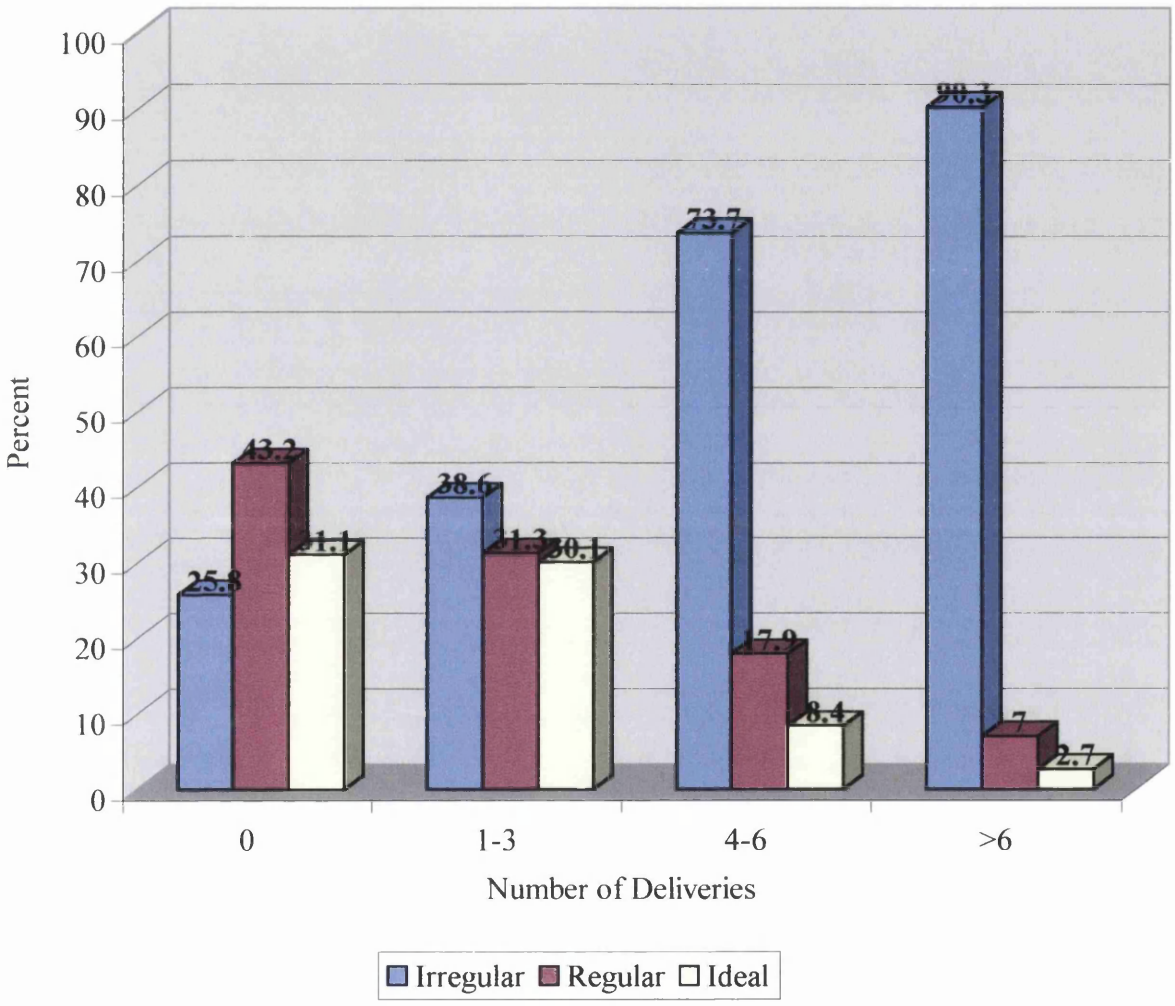
Pearson's Chi-Square value for 6 d.f. = 291.7, p = <0.0000.

Related to the study question "Is there any significant relationship between the number of previous deliveries and the number of their ANC visits", Table 5.11 shows that the number of previous deliveries does have a significant influence on their pattern of ANC visits.

The number of deliveries is inversely proportional to the number of ANC visits. Only 25.8 percent (34) of pregnant women in their first pregnancy, made irregular visits, while 43.2 percent (57) were regular and 31.1 percent (41) were ideal. On the other hand, women who have had 4-6 deliveries were less likely to be regular in their ANC visits; about 74 percent were irregular, 17.9 percent (51) were regular and only 8.4 percent (24) were ideal in their visits. For those who have had more than 6 deliveries, about 90 percent (269) were irregular in their ANC visits, 7 percent (21) were regular and only 2.7 percent (8) were ideal.

We must note that women who have fewer pregnancies might be better educated, or enjoy higher economic status (Bongaarts, 1985). The education level of women is probably one of the factor's that limits family size. Also, women who are well educated appear to use the maternal and childcare services more frequently than those women who are less well educated. With this variable there is also the possibility that "familiarity breeds concept".

Figure 5.12
Pattern of ANC visit by Womens' number of Deliveries



5.1.11 WAITING TIME:

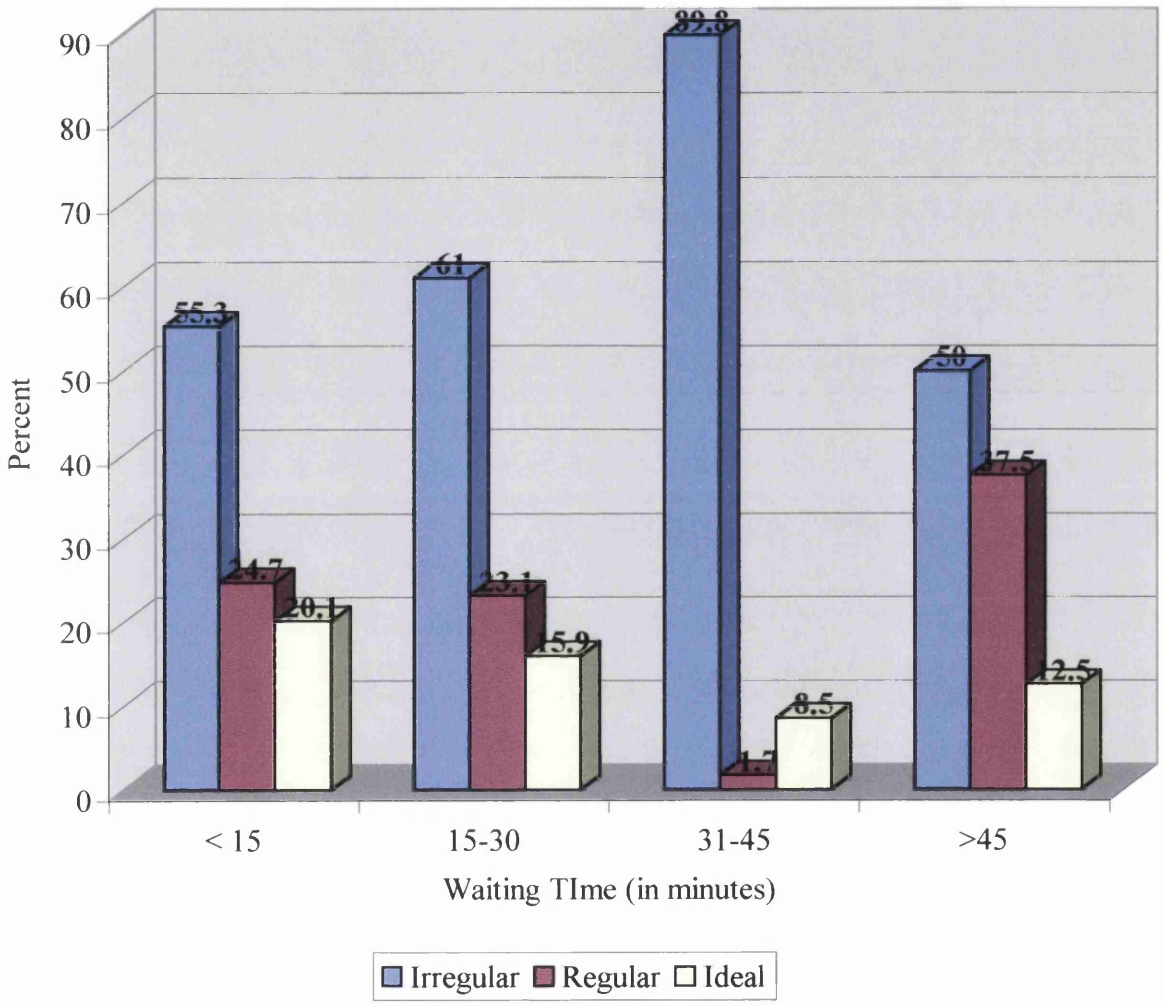
TABLE 5.12
Distribution according to the number of visits to ANC Clinics based on the waiting time before being seen by physicians

WAITING TIME	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Less than 15 mts	372 (55.3%)	166 (24.7%)	135 (20.1%)	**673 (57.9%)**
15 - 30 mts	253 (61.0%)	96 (23.1%)	66 (15.9%)	**415 (35.7%)**
31 - 45 mts	53 (89.8%)	1 (1.7%)	5 (8.5%)	**59 (5.1%)**
More than 45 mts	8 (50.0%)	6 (37.5%)	2 (12.5%)	**16 (1.4%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 6 d.f. = 31.3; p = <0.00002

Examining the association between the waiting time before being seen by the physician and the number of ANC visits, Table 5.12 shows that the waiting time before being seen by a physician has a significant influence on the total number of their ANC visits. After registration, a pregnant woman usually has to wait before she is seen by the doctor. Of the total number interviewed, 673 (58%) waited for less than 15 minutes before being seen by the physician, 415 (36%) had waited between 15 - 30 minutes, 59 (5%) waited between 31 - 45 minutes and only 16 (1%) had waited for more than 45 minutes. Among those who waited for less than 15 minutes about 55 percent (372) were irregular in their visits to ANC Clinics, while 24.7 percent (166) were regular and 20.1 percent (135) were ideal. On the other hand, among those pregnant women who waited between 31-45 minutes, about 90 percent (53) were irregular, 1.7 percent (1) were regular and 8.5 percent (5) were ideal. It is clear from the above table that longer waiting times tend to reduce the regularity of women's attendance at the clinic. This may be related to other factors, which are covered by this work such as children at home, the availability of babysitters and distance from PHC Centres. This is in accordance with Nasah et al. (1991) finding that one of the main factors affecting the attendance of pregnant mother's at the Maternal and Child Health Centre in Yaounde, Nigeria, was the long waiting time before being seen by doctors or midwives.

Figure 5.13
Pattern of ANC visits by Waiting Time at the Clinic



5.1.12 AVERAGE ANC EXAMINATION TIME:

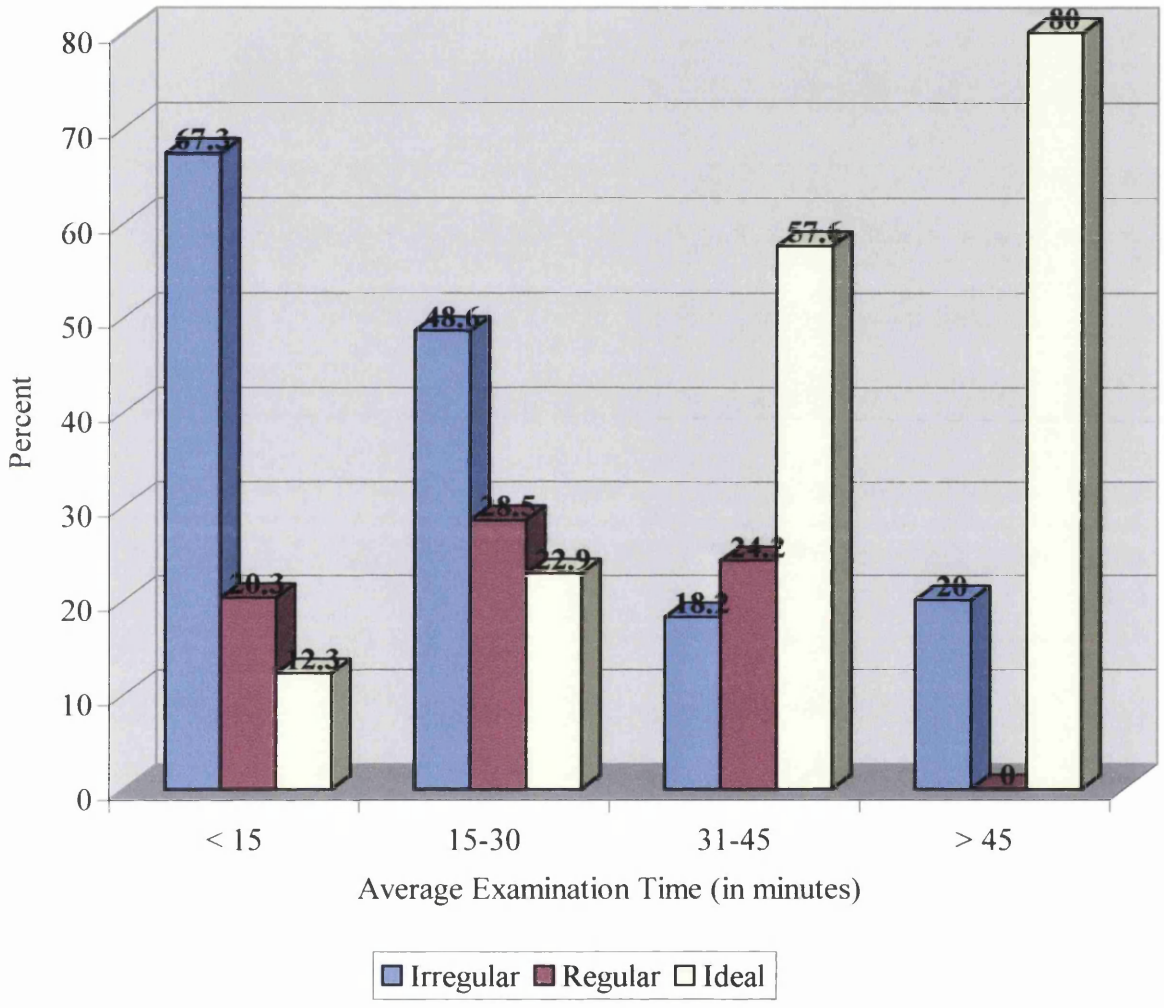
TABLE 5.13
Distribution of pregnant women according to their number of ANC visits based on their average examination time

AVERAGE TIME	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Less than 15 mts	480 (67.3%)	145 (20.3%)	88 (12.3%)	**713 (61.3%)**
15 - 30 mts	198 (48.6%)	116 (28.5%)	93 (22.9%)	**407 (35.0%)**
31 - 45 mts	6 (18.2%)	8 (24.2%)	19 (57.6%)	**33 (2.8%)**
More than 45 mts	2 (20.0%)	0 0	8 (80.0%)	**10 (0.9%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 6 d.f. = 106.0; p = <0.00000.

Exploring the duration of the examination, it may be seen that this variable does have a significant association with the number of antenatal visits to the clinics. Table 5.13 shows that those women who spent a longer time with their physicians are more regular and ideal visitors than are other groups. Those who spent more time with the physician also would have adequate opportunity to discuss their status with their physicians. Most of those interviewed (61%) spent less than 15 minutes with their physicians and among those only about 12 percent (88) were ideal in the pattern of their ANC visits. Moreover, a large proportion (67.3 percent) was irregular in attendance at the ANC services, while the remaining 20.3 percent (145) were regular. Those women who spent more than 30-45 minutes were more regular in their visits to the ANC clinics with about 58 percent (19) being ideal, 24.2 percent (8) regular and only 18.2 percent (6) being irregular. Again, 80 percent of the women who spent more than 45 minutes with their physician were ideal in their visits, but the remaining 20 percent were irregular.

Figure 5.14
Pattern of ANC visits by Average ANC Examination Time



5.1.13 PHYSICIAN'S SEX:

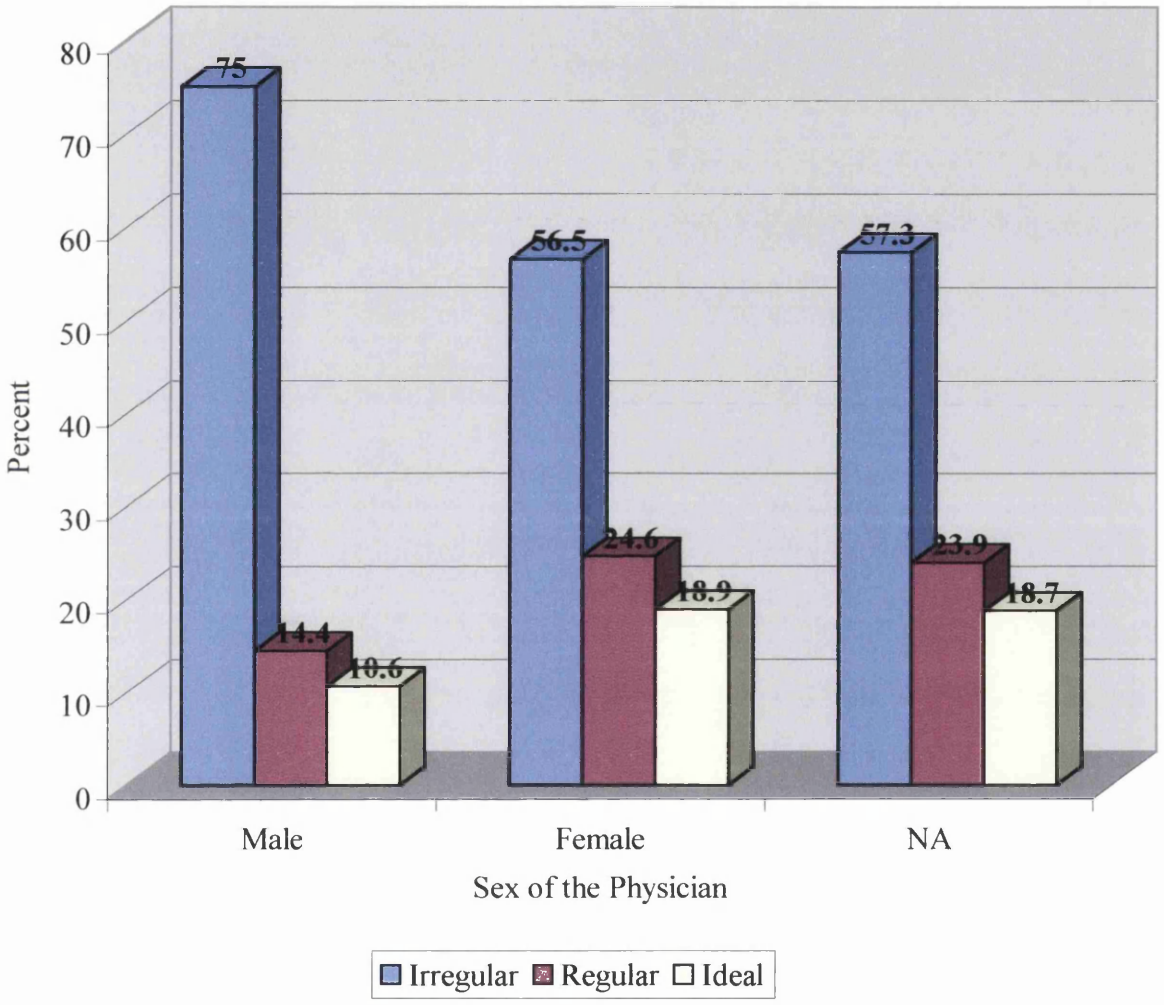
TABLE 5.14
Distribution of pregnant women according
to their number of ANC visits based on the physicians' sex

PHYSICIAN SEX	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Male	99 (75.0%)	19 (14.4%)	14 (10.6%)	**132** **(11.3%)**
Female	278 (56.5%)	121 (24.6%)	93 (18.9%)	**492** **(42.3%)**
NA	309 (57.3%)	129 (23.9%)	101 (18.7%)	**539** **(46.3%)**
COLUMN TOTAL	**686** **(59.0%)**	**269** **(23.1%)**	**208** **(17.9%)**	**1163** **(100.0%)**

Pearson's Chi-Square value for 4 d.f. = 15.9; p = <0.00318.

We have noted in an earlier chapter that most of the pregnant women see a female physician for their antenatal check-up. Examining the relationship between the physicians' sex and the number of their ANC visits, Table 5.14 shows that the physicians' sex does have a significant influence on their ANC visits. Most of the physicians who work in ANC Clinics are female (42%). Pregnant women who visited female physicians have a slightly higher number of visits than those who saw a male physician. About 19 percent (93) of the pregnant women who visited a female physician at the clinics were ideal in their visits, and another 24.6 percent (121) were regular. However, a large majority of the women (56.5 percent) remained irregular in their visits. On the other hand, among those women who visited male physicians, only about 11 percent (14) were ideal in their visits and 14.4 percent (19) were regular. Seventy five percent (99) were irregular, which is clearly higher than the number of those who visited female physicians. However this data is far from conclusive because 46.3 percent of the respondents did not answer this question

Figure 5.15
Pattern of ANC visits by Sex of the Physician



5.1.14 TYPE OF EXPLANATION:

TABLE 5.15

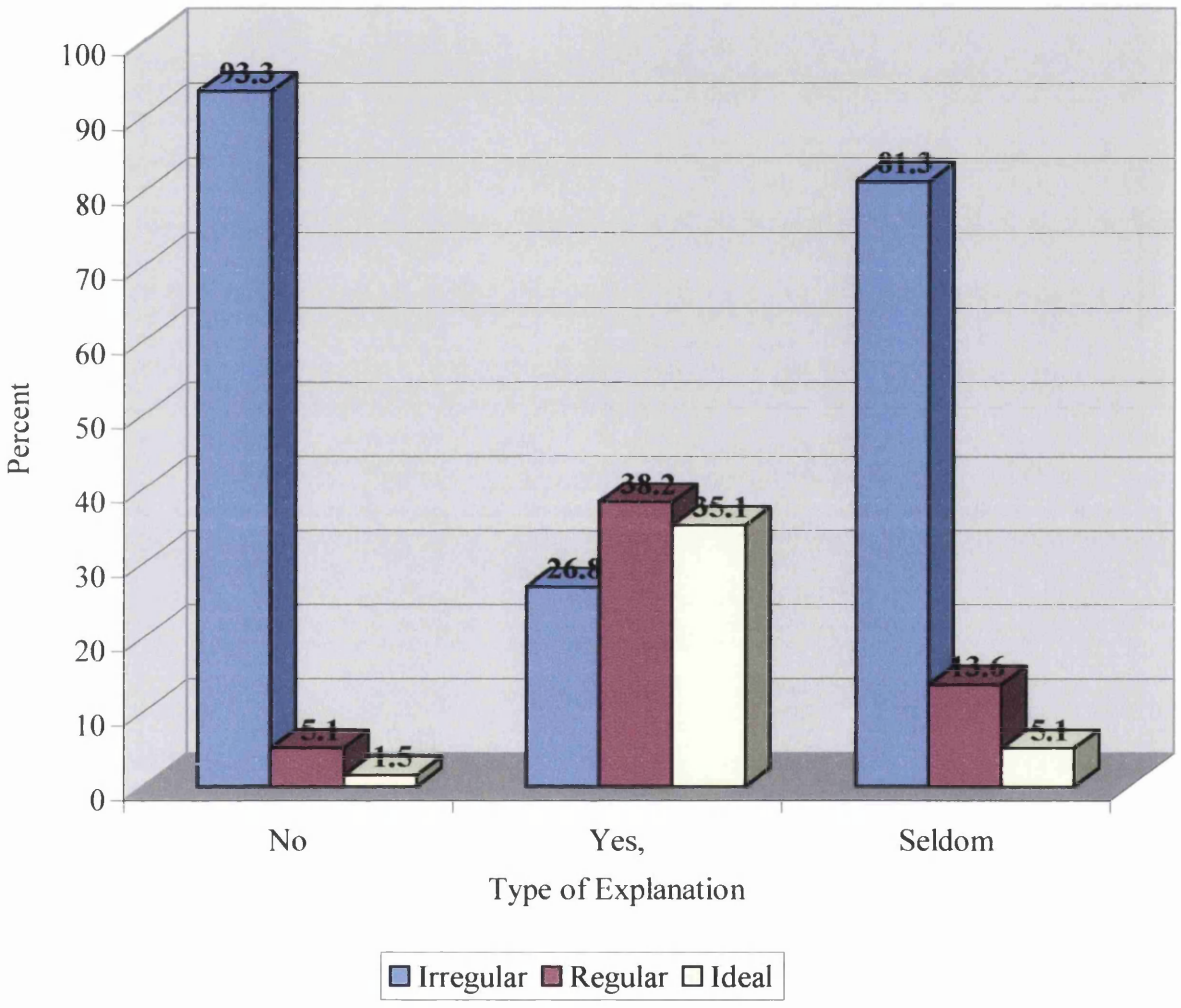
Distribution of pregnant women according to their number of ANC visits based on the type of explanation from physicians

EXPLANATION	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
No	182 (93.3%)	10 (5.1%)	3 (1.5%)	**195 (16.8%)**
Yes	139 (26.8%)	198 (38.2%)	182 (35.1%)	**519 (44.6%)**
Seldom	365 (81.3%)	61 (13.6%)	23 (5.1%)	**449 (38.6%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 4 d.f. = 419.5; p = <0.00000

Adequate opportunity to ask questions during her antenatal examination, is significantly related to the number of ANC visits (Table 5.15). Those women, who had sufficient explanation from their physicians, conformed more to an ideal or regular pattern in their visits to the ANC Clinics than did those who could not ask questions. Questions asked by patients are a relatively straight forward feature of consultations. One hundred and eighty two (35%) women, who could question their physicians, were ideal in their visits, 198 (38%) were regular, and 139 (27%) were irregular. Only 3 (2%), of those who could not ask any questions were ideal in their ANC visits, 10 (5%) were regular and 182 (93%) were irregular. Hall et al. (1985) indicated some possible reasons for lack of communication between women and physician. According to them, a large majority of the women seems to have no topics they wish to discuss, and this is probably related to the finding in table 5.5, because when women are better educated, they have better communication with their physicians and nurses, and they may have greater ability to create the opportunity to ask questions. This appears to lead to a more regular or ideal visit pattern.

Figure 5.16
Pattern of ANC visits by Type of Explanation from Physician



5.1.15 COMMUNICATION LEVEL WITH PHYSICIANS:

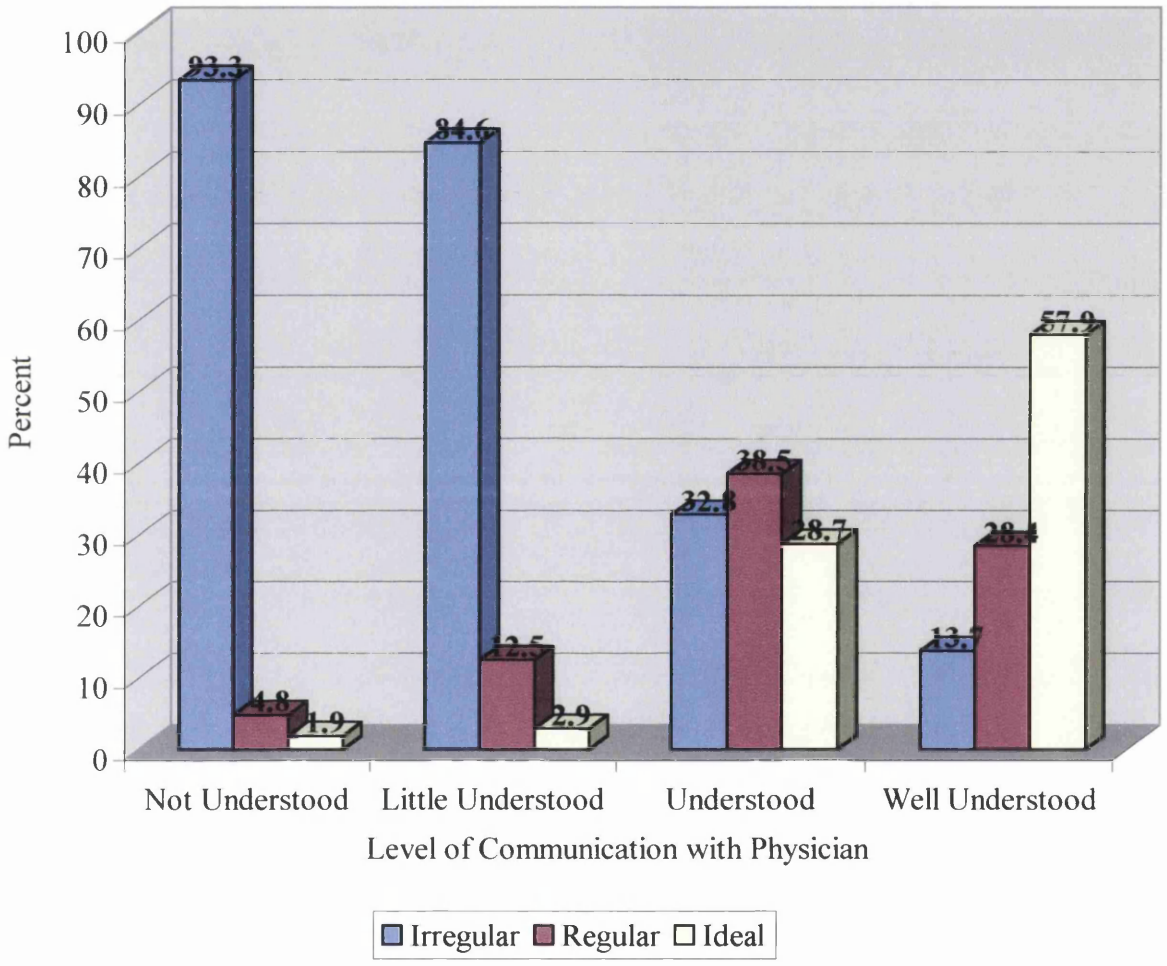
TABLE 5.16
Distribution of women according to their number of ANC visits based on the communication levels with physicians

LEVEL	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Not Understood	196 (93.3%)	10 (4.8%)	4 (1.9%)	**210 (18.1%)**
Little Understood	319 (84.6%)	47 (12.5%)	11 (2.9%)	**377 (32.4%)**
Understood	158 (32.8%)	185 (38.5%)	138 (28.7%)	**481 (41.4%)**
Well Understood	13 (13.7%)	27 (28.4%)	55 (57.9%)	**95 (8.2%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 6 d.f. = 465.6; p = <0.00000

The most frequent complaint raised by patients is that professional staff providing care, fail to give sufficient information about their condition or treatment (Smith, 1994). In some places pregnant women are encouraged to question the professionals and to share their own experiences and feelings. This usually takes about 30 minutes, but may last up to an hour (Thorley, 1993). Narang (1994) reported that communication with health personnel was considered to be a problem by more than half of his sample, who had difficulty in understanding their physicians. Related to the question "Is there any significant relationship between the communication level with the physician and the number of ANC visits", table 5.16 shows that communication levels, with the physician have a significant influence on the women's ANC visits. Communication levels between pregnant women and their attending physicians were measured in terms of whether the physician was 'well understood', 'somewhat understood', 'little understood' or 'not understood'. Among those who well understood their physicians only

Figure 5.17
Pattern of ANC visits by Pregnant Women's Level of Communication with Physician



13 (14%) were irregular in their visits, 27 (28%) were regular and 55 (58%) were ideal. On the other hand, among those women who had not understood their physicians, 196 (93%) were irregular, 10 (5%) were regular, and 4 (2%) were ideal.

5.1.16 COMMUNICATION LEVEL WITH NURSES:

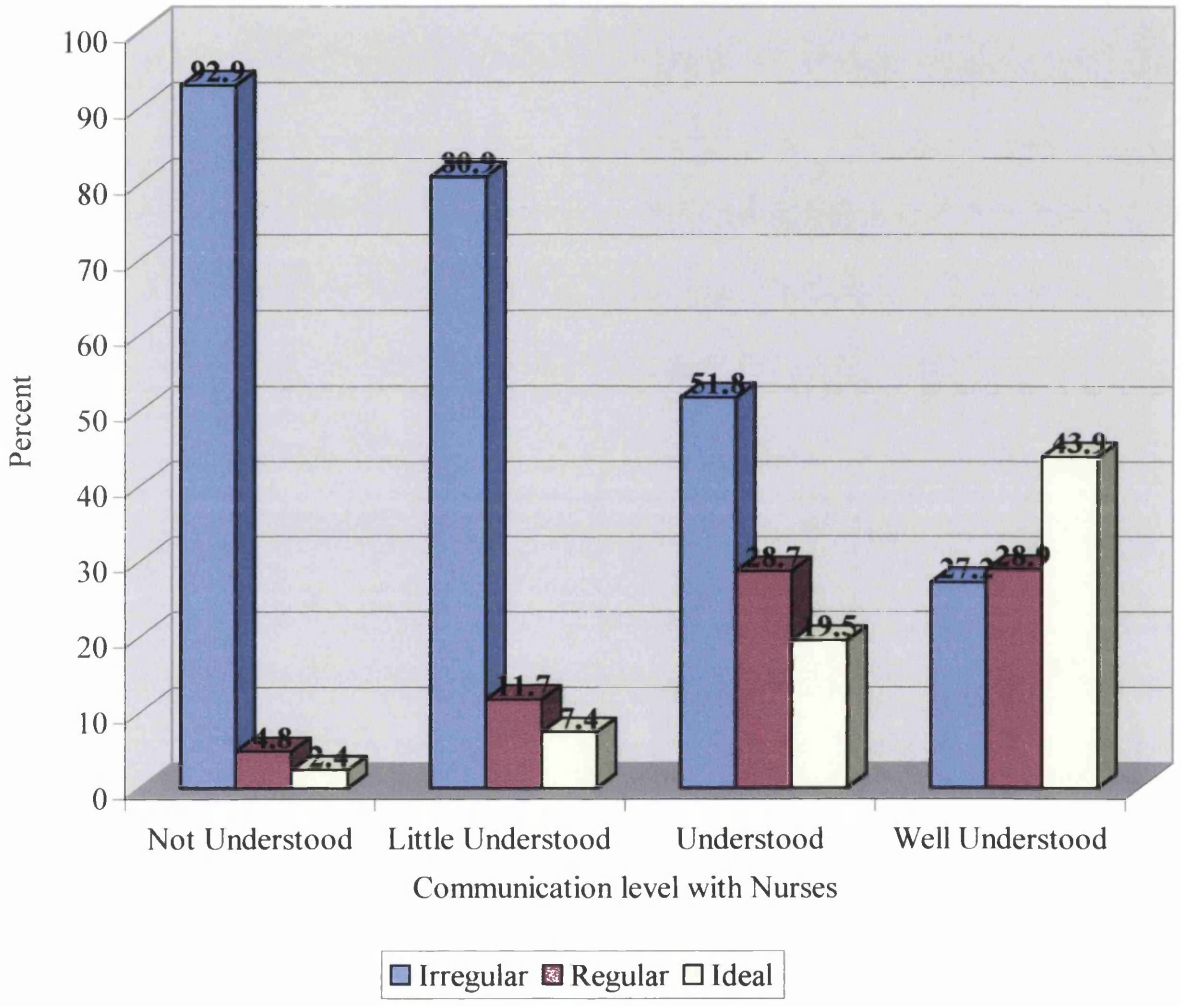
TABLE 5.17
Distribution of pregnant women according to their number of ANC visits based on the communication levels with nurses

LEVEL	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Not Understood	39 (92.9%)	2 (4.8%)	1 (2.4%)	**42 (3.6%)**
Little Understood	262 (80.9%)	38 (11.7%)	24 (7.4%)	**324 (27.9%)**
Understood	354 (51.8%)	196 (28.7%)	133 (19.5%)	**683 (58.7%)**
Well Understood	31 (27.2%)	33 (28.9%)	50 (43.9%)	**114 (9.8%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 6 d.f. = 164.6; p = <0.00000.

Related to the question "Is there any significant relationship between the woman's communication level with the nurses and the number of their ANC visits", table 5.17 shows that the communication level with the nurses also has a significant influence on the pattern of ANC visits. The communication levels between pregnant women and their nurses were measured in terms of whether they were 'well understood', 'understood', 'little understood' or 'not understood'. Only one (2%) of those who had 'not understood' had ideal visits, 2 (5%) had regular visits and 39 (93%) had irregular visits. On the other hand, 50 (44%) of those who had 'well understood' their attending nurses were ideal, 33 (29%) were regular, and 31 (27%) were irregular.

Figure 5.18
Pattern of ANC visits by Pregnant Women's Communication Level with Nurses



5.1.17 DIFFERENT PHYSICIAN ON EACH VISIT:

TABLE 5.18

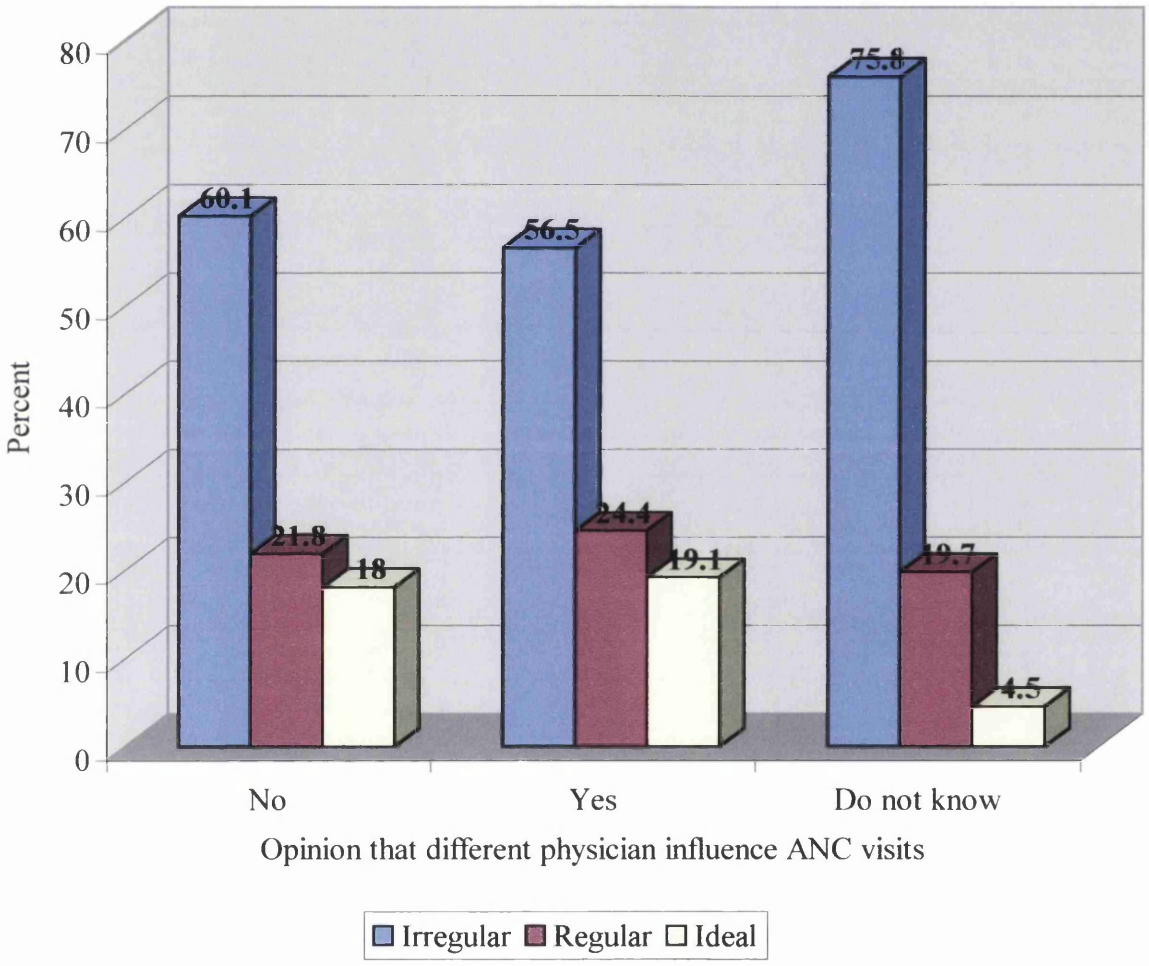
Distribution of pregnant women according to their number of ANC visits based on their opinions that different physicians in each visit will influence ANC visits

OPINION	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
No	270 (60.1%)	98 (21.8%)	81 (18.0%)	**449 (38.6%)**
Yes	366 (56.5%)	158 (24.4%)	124 (19.1%)	**648 (55.7%)**
Do not know	50 (75.8%)	13 (19.7%)	3 (4.5%)	**66 (5.7%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 4 d.f. = 12.2; p = <0.01605.

Women who experienced continuity of caregivers (Physicians and midwifes), were less likely to wait for long periods in the ANC Clinics, were more likely to feel well prepared and in control during labour, and felt better able to discuss problems with their caregivers (Corkill, 1995). So, for this study changing the physicians on different visits was considered as a possible factor influencing the pattern of ANC visits. Pregnant womens' opinions, about changing the physician on each visit, seems to have a significant effect upon attendance at the ANC Clinics (Table 5.18). Six hundred and forty eight (56%) thought that seeing a different physician did affect the number of visits, 449 (39%) thought that it did not, while 66 (6%) had no opinion. The group which said 'yes' to the effect of physician change, had a marginally higher proportion of ideal visits with 19 percent, compared to 18 percent in case of those who said 'no' to the effect. Similar may be seen among those who had regular visits.

Figure 5.19
Pattern of ANC visits by Opinion of Different Physician on each visit influence ANC visits



5.1.18 DIFFERENT NURSE IN EACH VISIT:

TABLE 5.19

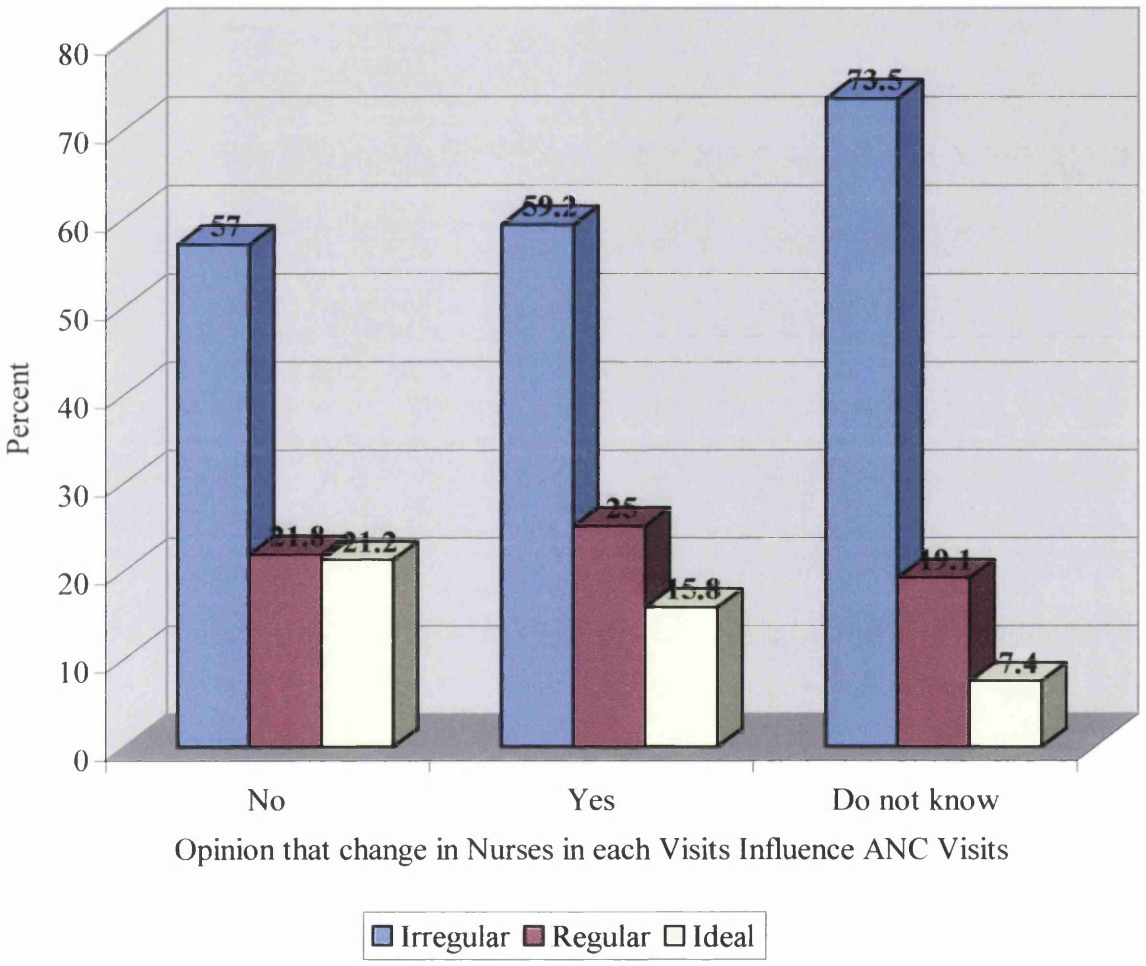
Distribution of pregnant women according to their number of ANC visits based on their opinions that different nurses in each visit will influence ANC visits

OPINION	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
No	311 (57.0%)	119 (21.8%)	116 (21.2%)	**546 (46.9%)**
Yes	325 (59.2%)	137 (25.0%)	87 (15.8%)	**549 (47.2%)**
Do not know	50 (73.5%)	13 (19.1%)	5 (7.4%)	**68 (5.8%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 4 d.f. = 13.5; p = <0.00929

Related to the study question "Is there any significant relationship between the change of nurses on each visit and their attendance and number of ANC visits", Table 5.19 shows that seeing different nurse on each visit does not have any significant influence on the pattern of ANC visits. This table shows that the two groups 'yes' and 'no' are quite similar in their pattern of attendance. We may therefore conclude that this variable is not an important factor.

Figure 5.20
Pattern of ANC visits by Pregnant Women's Opinion that Different Nurses in Each Visits influence ANC visits



5.1.19 NUMBER OF BABIES AGED LESS THAN 5 YEARS OLD:

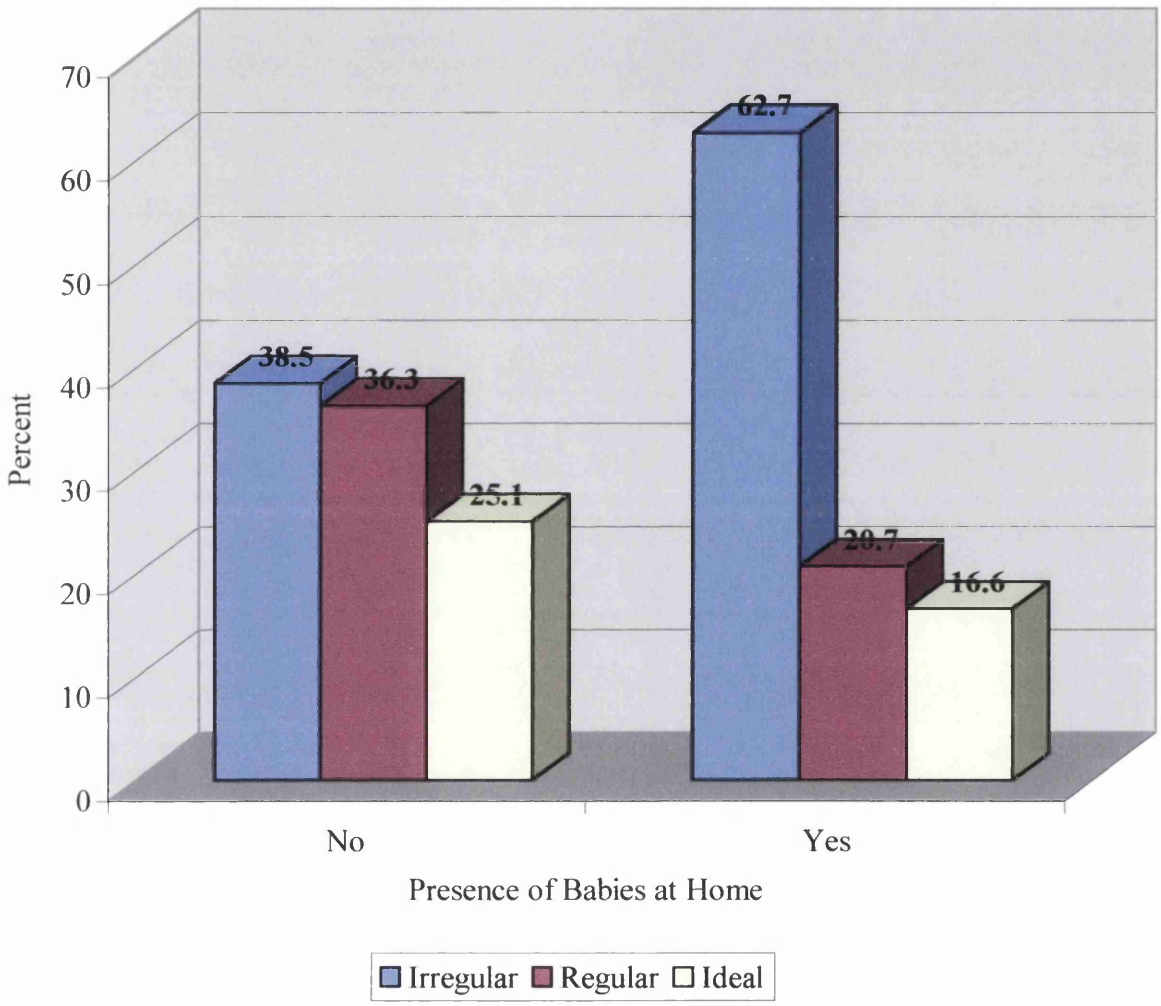
TABLE 5.20
Distribution of pregnant women according to their number of ANC visits based on the presence of children aged less than 5 years

BABIES <5 YRS	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
No	69 (38.5%)	65 (36.3%)	45 (25.1%)	**179 (15.4%)**
Yes	617 (62.7%)	204 (20.7%)	163 (16.6%)	**984 (84.6%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 2 d.f. = 37.1; p = <0.00000.

The responsibility for other children can be a barrier to care (Buekens, 1990). Table 5.20 shows that the presence of children, aged less than 5 years, has a significant influence on the number of ANC visits. Those women who do not have children under 5 years of age were more regular or ideal in their visiting patterns than those who had children. Of those women who do not have a child aged less than 5, 36.3 percent were regular and another 25.1 percent were ideal in their visits, while the remaining 38.5 percent were irregular. On the other hand, only about 20.7 percent (204) of those women who had a child aged less than 5 years, were regular in their ANC visit, 16.6 percent were ideal, but the remaining 62.7 percent were irregular.

Figure 5.21
Pattern of Pregnant Women's ANC visits by presence of Babies at home



5.1.20 USING BABY-SITTER:

TABLE 5.21
Distribution of pregnant women according to their number of ANC visits and the availability of baby-sitters during their ANC visits

CATEGORY	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
No	384 (85.5%)	45 (10.0%)	23 (5.1%)	**452 (38.9%)**
Yes	159 (38.9%)	135 (33.0%)	115 (28.1%)	**409 (35.2%)**
Seldom	97 (61.0%)	30 (18.9%)	32 (20.1%)	**159 (13.7%)**
NA	46 (32.2%)	59 (41.3%)	38 (26.6%)	**143 (12.3%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 6 d.f. = 241.8; p = <0.00000

Examining the relationship between the pregnant women's attendance, the number of ANC visits, and the availability of baby-sitters, Table 5.21 reveals a significant association between these two variables. Among those who did have a baby-sitter, 38.9 percent (159) were irregular in their visits to the clinics. The proportion of those who were regular in their visits was about 33 percent (135), while another 28.1 percent were ideal. On the other hand, among those who responded that they did not have a baby-sitter, 85.5 percent (384) were irregular, 10 percent (45) were regular and only 5.1 percent (23) were ideal. From the data, the researcher found a further correlation. Women who were educated, employed, having high income, and had a baby-sitter, show a greater number of ANC visits than any other group. Brown (1988) wrote, from results of two multivariate analyses that women who had no one to care for their other children had 1.7 to 2.6 more times the probability of having insufficient ANC than others (Buekens, 1990).

5.1.21 PROBLEMS DURING PREVIOUS PREGNANCIES:

TABLE 5.22
Distribution of pregnant women according to their number of ANC visits based on their previous pregnancy complications

DISEASE	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
None	256 (43.9%)	176 (30.2%)	151 (25.9%)	**583 (50.1%)**
Anaemia	89 (65.4%)	32 (23.5%)	15 (11.0%)	**136 (11.7%)**
Eclampsia	12 (85.7%)	1 (7.1%)	1 (7.1%)	**14 (1.2%)**
Two or more spontaneous abortions	59 (70.2%)	15 (17.9%)	10 (11.9%)	**84 (7.2%)**
Gestational diabetes	6 (42.9%)	6 (42.9%)	2 (14.3%)	**14 (1.2%)**
Still birth	14 (66.7%)	6 (28.6%)	1 (4.8%)	**21 (1.8%)**
Premature labour	12 (80.0%)	2 (13.3%)	1 (6.7%)	**15 (1.3%)**
Antepartum haemorrhage	8 (80.0%)	0	2 (20%)	**10 (0.9%)**
Postpartum haemorrhage	4 (44.4%)	4 (44.4%)	1 (11.1%)	**9 (0.8%)**
Congenital anomalies	2 (50.0%)	1 (25.0%)	1 (25.0%)	**4 (0.3%)**
Delivery of a baby less than 2.5 kg	18 (94.7%)	1 (5.3%)	0	**19 (1.6%)**
Delivery of a baby more than 4.0 kg	9 (100.0%)	0	0	**9 (0.8%)**
Intrauterine fetal death	7 (100.0%)	0	0	**7 (0.6%)**
Cervical operation & incompetence	2 (40%)	2 (40%)	1 (20%)	**5 (0.4%)**
Previous caesarean section	43 (82.7%)	4 (7.7%)	5 (9.6%)	**52 (4.5%)**
Other medical problems	28 (73.7%)	7 (18.4%)	3 (7.9%)	**38 (3.3%)**
More than one medical problem	117 (81.8%)	12 (8.4%)	14 (9.8%)	**143 (12.3%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 32 d.f. = 180.4; p = <0.00000.

A significant association between complications suffered by pregnant women during the previous pregnancies, and the number of their ANC visits has also been observed (Table 5.22).

Most of pregnant women who had some problems during their previous pregnancies were irregular in their ANC visits. About 50 percent (583) did not have any complications during their previous pregnancies and 56 percent of them made more than 6 visits. (No cases were registered under tumours of uterus and tumours of ovary that were listed on the questionnaire.) More than 12 percent of the women had more than one problem and among them, 81.8 percent (117) were irregular in their visits while 8.4 percent (12) were regular and the remaining 9.8 percent (14) were ideal visitors to the clinics. Further, among anaemic women, about 65 percent were irregular, 23.5 percent were regular and the remaining 11 percent were ideal in their visits.

5.1.22 PROBLEMS DURING PRESENT PREGNANCIES:

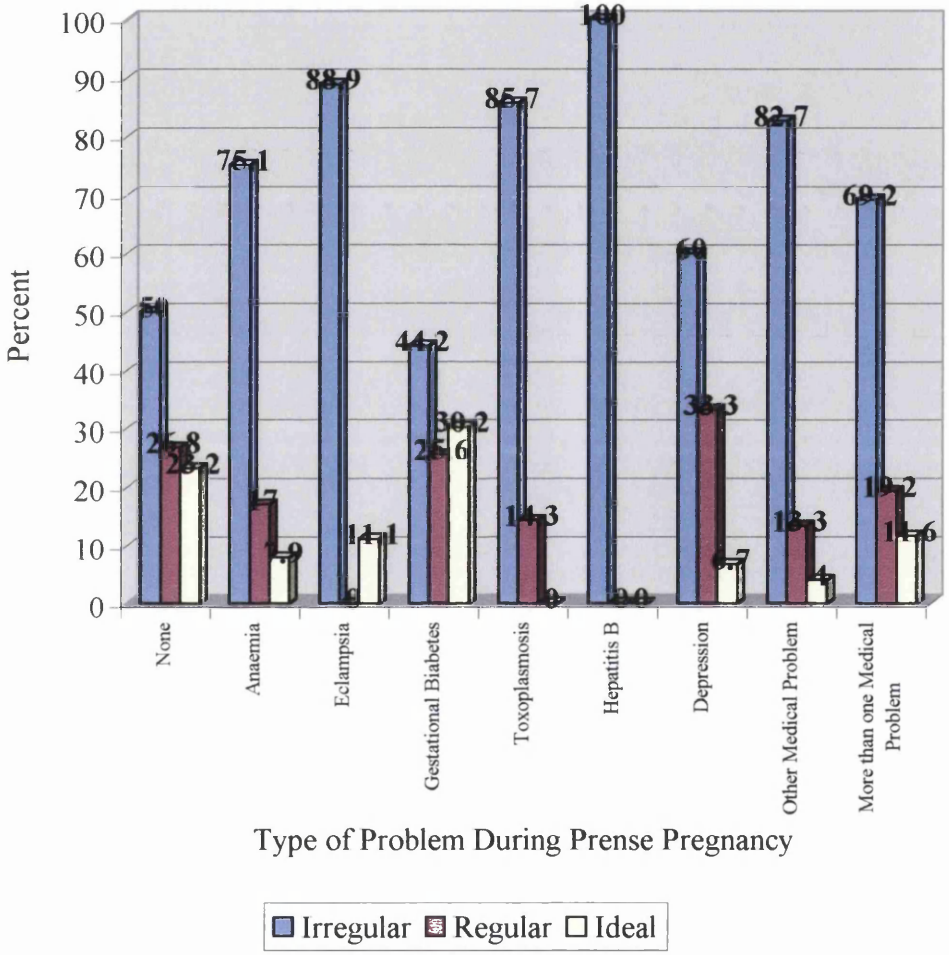
TABLE 5.23
Distribution of pregnant women according to their number of ANC visits based on their present pregnancy complications

DISEASE	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
None	355 (50.0%)	190 (26.8%)	165 (23.2%)	**710 (61.0%)**
Anaemia	208 (75.1%)	47 (17.0%)	22 (7.9%)	**277 (23.8%)**
Eclampsia	8 (88.9%)	0	1 (11.1%)	**9 (0.8%)**
Gestational diabetes	19 (44.2%)	11 (25.6%)	13 (30.2%)	**43 (3.7%)**
Toxoplasmosis	6 (85.7%)	1 (14.3%)	0	**7 (0.6%)**
Hepatitis 'B'	1 (100.0%)	0	0	**1 (0.1%)**
Depression	9 (60.0%)	5 (33.3%)	1 (6.7%)	**15 (1.3%)**
Other medical problem	62 (82.7%)	10 (13.3%)	3 (4.0%)	**75 (6.5%)**
More than one medical problem	18 (69.2%)	5 (19.2%)	3 (11.6%)	**26 (2.2%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 16 d.f. = 94.6; p = <0.00000.

In the earlier section, we found that those women had experienced previous pregnancy complications were irregular in their visits. This section explores the association between complications of the present pregnancy and the number of antenatal visits and also found a significant negative relationship between these two variables (Table 5.23). A high proportion of the women did not suffer any diseases during their current pregnancies, but most of those who experienced diseases during their current pregnancies were irregular in their ANC visits. Pregnant women who had no complications, during previous or present pregnancies, were more regular or ideal in their visits, than other groups. It was noticed in this study that pregnant

Figure 5. 22
Pattern of Pregnant Women's ANC visits by Problems during Present Pregnancy



women who have gestational diabetes in the present pregnancy showed a better attendance pattern than did women with other complications. This may indicate that these PHC Centres have good gestational diabetes follow up programs and some women are co-operating with the program.

5.1. 23 TYPE OF TRANSPORT:

TABLE 5.24
Distribution of pregnant women according to
their number of ANC visits based on the means of transport used

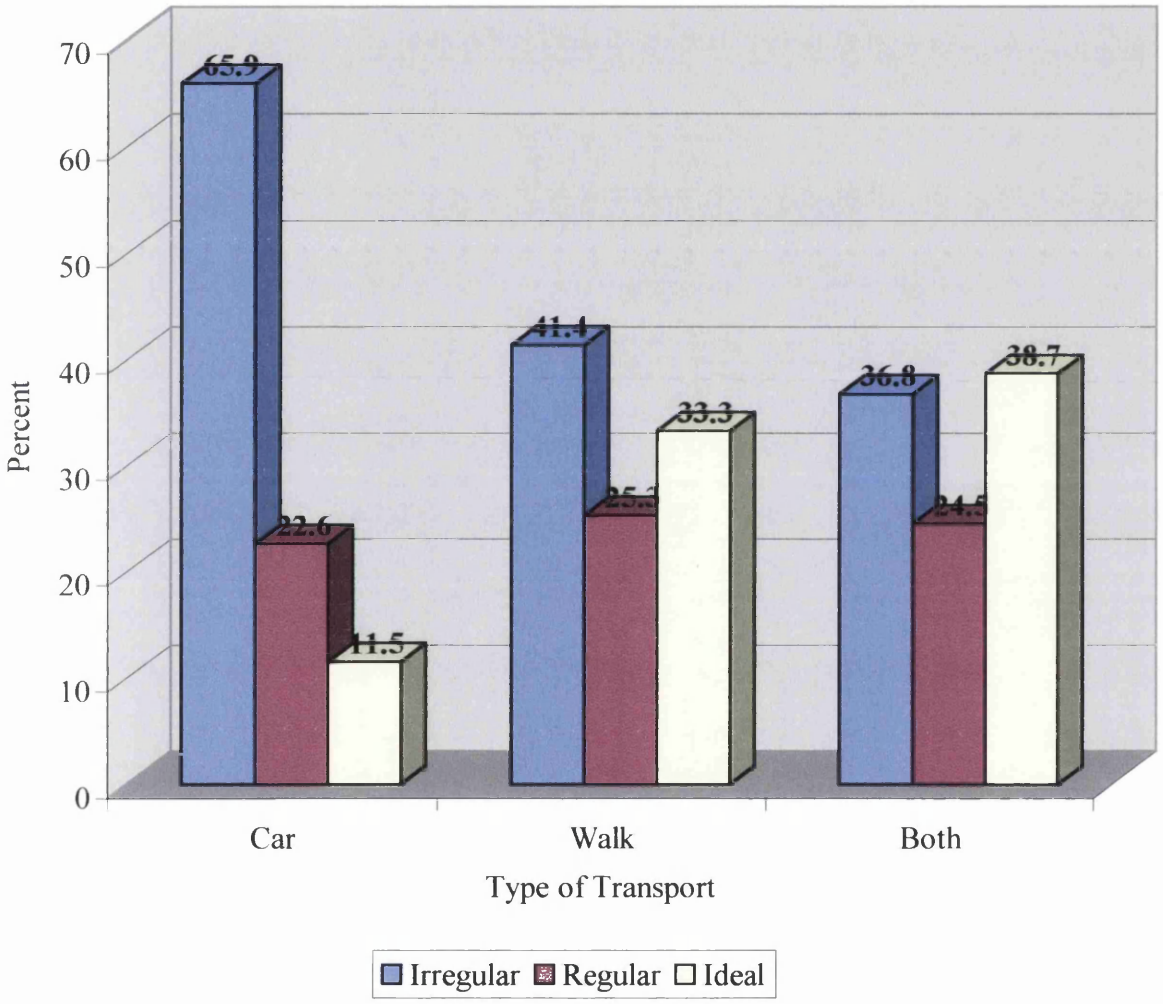
TRANSPORT TYPE	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Car	575 (65.9%)	197 (22.6%)	100 (11.5%)	**872** **(75.0%)**
Walk	36 (41.4	22 (25.3%)	29 (33.3%)	**87** **(7.5%)**
Both	75 (36.8%)	50 (24.5%)	79 (38.7%)	**204** **(17.5%)**
COLUMN TOTAL	**686** **(59.0%)**	**269** **(23.1%)**	**208** **(17.9%)**	**1163** **(100.0%)**

Pearson's Chi-Square value for 4 d.f. = 110.5; p = <0.00000.

Related to the study question "Is there any significant relationship between the means of transport that pregnant women use and the number of their ANC visits", Table 5.24 shows that there appears to be a significant relationship between the means of transport used by the women to travel to PHC Centres and the number of their ANC visits. In developing countries, outpatient attendance generally decreases exponentially with distance. In a rural area of Kenya, Voorhoeve et al. (1982) found a decrease in antenatal care attendance from 93 percent at 8 km

to 69 percent at 24 km distance from the hospital (Buekens, 1990). In this study, the majority of women (75 percent) went to the ANC Clinics by car, while only 7.5 percent (87) walked. It is interesting to note that the latter have a better pattern of ideal visits (33 percent) than the former (12 percent). But the maximum use of the clinics seems to be by women who use both means of transportation. About 12 percent (100) of the women who used their cars, 33 percent (29) who walked and 39 percent (79) who used both means of transportation, showed an ideal pattern of ANC visits. It is also noted that the women who used either type of means of transportation, car or walking, they are more ideal than those use only one mode. This could simply be due to the fact that those women who use cars may not have another form of transportation if their husbands are busy, while women who use both means of transportation, could use either cars or walk to ANC Clinics.

Figure 5.23
Pattern of Pregnant Women's ANC visits by Type of Transport



5.1.24 TYPE OF ACCOMMODATION:

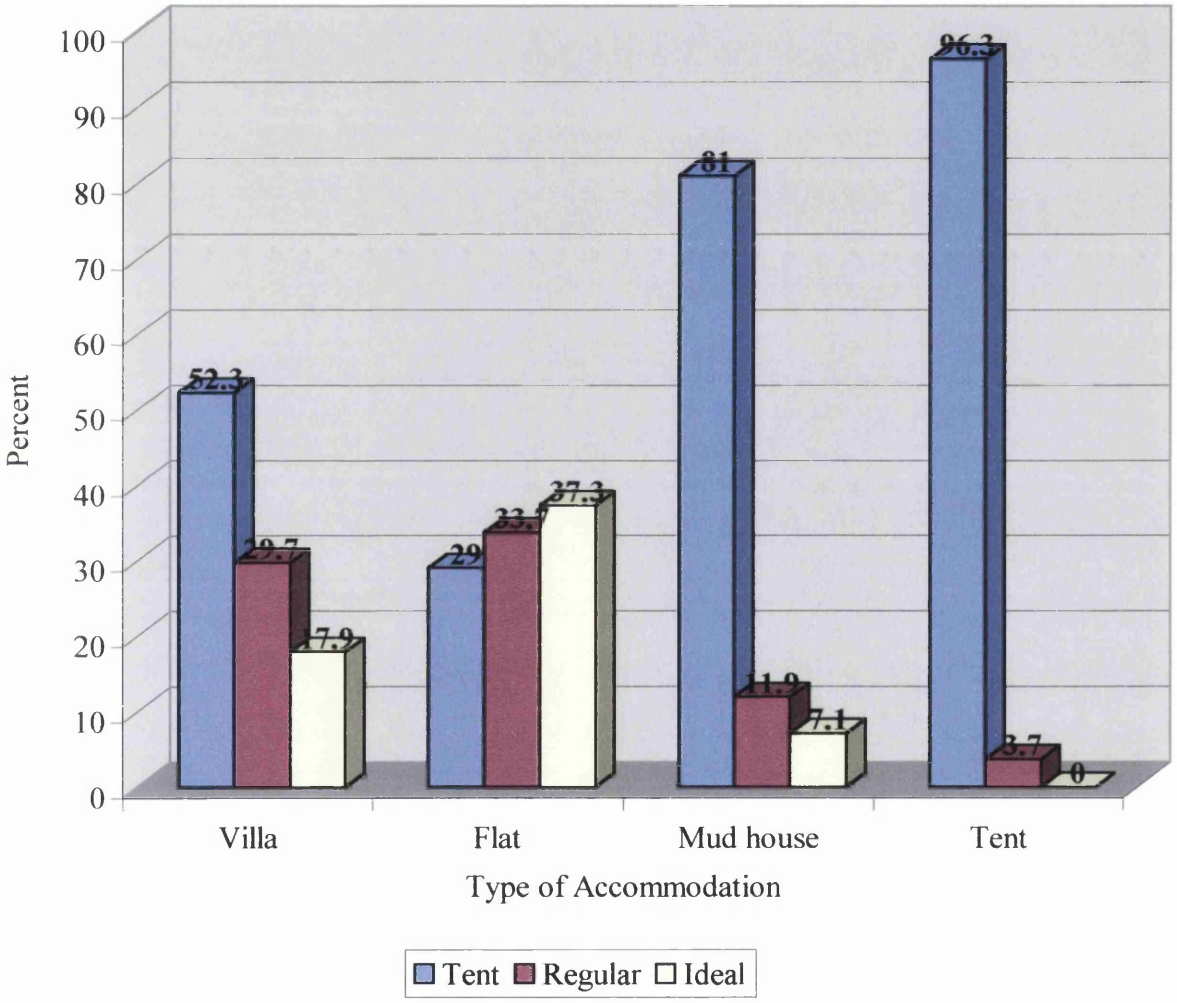
TABLE 5.25
Distribution of pregnant women according
to their number of ANC visits based on their accommodation type

ACCOMMODATION TYPE	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Villa	213 (52.3%)	121 (29.7%)	73 (17.9%)	**407 (35.0%)**
Flat	80 (29.0%)	93 (33.7%)	103 (37.3%)	**276 (23.7%)**
Mud house or alike	367 (81.0%)	54 (11.9%)	32 (7.1%)	**453 (39.0%)**
Tent	26 (96.3%)	1 (3.7%)	0	**27 (2.3%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 6 d.f. = 231.6; p = <0.00000

The research also examined the importance of type of accommodation as a factor for explaining pattern of antenatal visits. It has seen that this variable is significantly related to the number of antenatal visits. Women who lived in flats were more regular or ideal visitors than others. Among those who live in flats, 29 percent (80) were irregular in their visits, 33.7 percent (93) were regular and 37.3 percent (103) were ideal. Of those women who lived in tents, 96 percent were found to be irregular in their visits and only one (4 percent) was regular. A similar pattern may be seen among those who live in mud houses. It is probable that the women who live in a flat or a villa will be in socio-economically better-off groups.

Figure 5.24
Pattern of Pregnant Women's ANC visits by Type of Accommodation



5.1.25 TYPE OF DELIVERY:

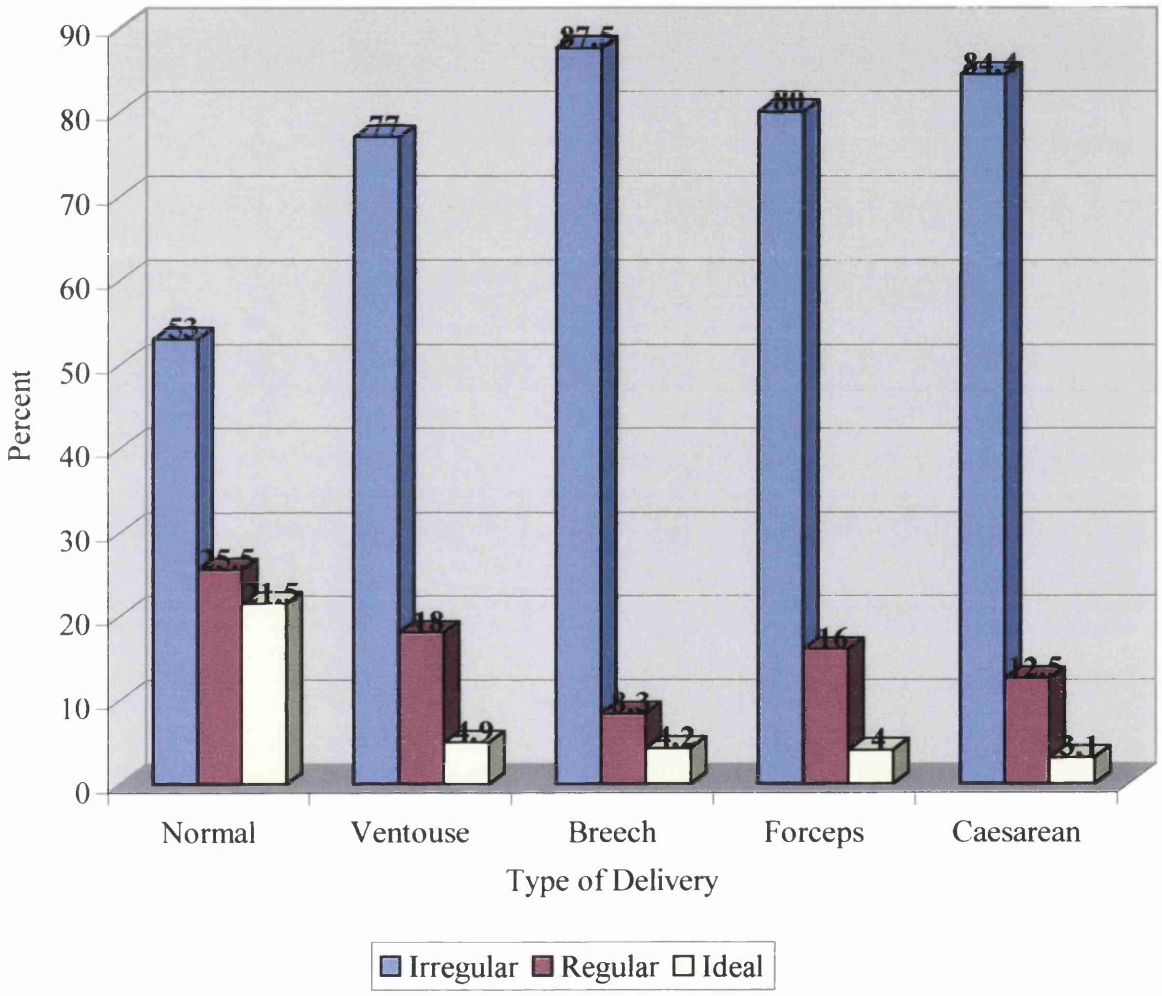
TABLE 5.26
Distribution of pregnant women according to their number of ANC visits based on the types of their deliveries

TYPE	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Normal	490 (53.0%)	236 (25.5%)	199 (21.5%)	**925 (79.5%)**
Ventouse	47 (77.0%)	11 (18.0%)	3 (4.9%)	**61 (5.2%)**
Breech	21 (87.5%)	2 (8.3%)	1 (4.2%)	**24 (2.1%)**
Forceps	20 (80.0%)	4 (16.0%)	1 (4.0%)	**25 (2.1%)**
Caesarean section	108 (84.4%)	16 (12.5%)	4 (3.1%)	**128 (11.0%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 8 d.f. = 73.6; p = <0.00000.

Much literature suggests that the health of women is associated with the type of deliveries they undergo, although it is also related to many other delivery characteristics. While examining the association between type of delivery and number of antenatal care visits, it may be observed, in Table 5.26, that these variables are significantly related. Most of the pregnant women (80%) had normal deliveries, but the remaining 20 percent were delivered by other methods (Ventouse, breech, forceps and caesarean section). Out of these (238), 77 percent (47) who delivered by ventouse were irregular in their visits, 18 percent (11) were regular and 5 percent (3) were ideal. Similarly, pregnant women who delivered by breech or forceps show a poor pattern of visits to ANC Clinics, compared to those who had normal deliveries. Also, among those who had a caesarean section, 84 percent (108) were irregular, 13 percent (16) were regular and only 3 percent (4) were ideal in their ANC visits. According to the Saudi MOH

Figure 5.25
Pattern of Pregnant Women's ANC visits by Type of Delivery



Annual Health Report (1996) national figures indicate that 85 percent (44686) of deliveries were normal, 3 percent (1845) delivered by ventouse, 2 percent (1302) delivered by Breech, 5 percent (239) delivered by forceps and 8 percent (4402) delivered by caesarean section. The calculated Caesarean rate in this study is considered to be low, compared to 20.3 percent in Teaching Hospitals in the USA and the 23.5 percent overall national rate in USA (Sanchez-Ramos, 1994).

5.1.26 PLACE OF DELIVERY:

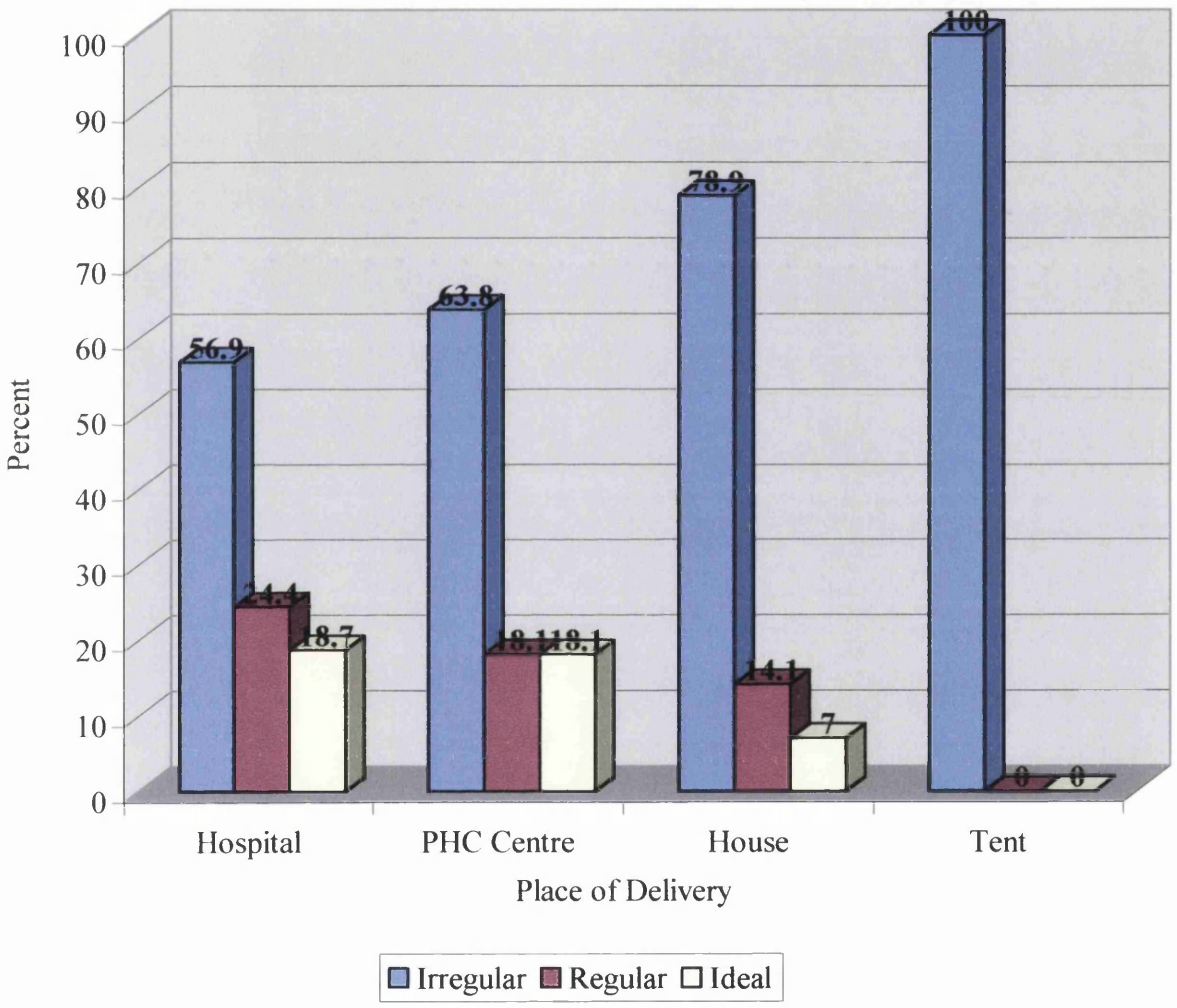
TABLE 5.27
Distribution of pregnant women according to their number of ANC visits based on the places of their deliveries

PLACE	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Hospital	560 (56.9%)	240 (24.4%)	184 (18.7%)	**984 (84.6%)**
PHC Centre	67 (63.8%)	19 (18.1%)	19 (18.1%)	**105 (9.0%)**
House	56 (78.9%)	10 (14.1%)	5 (7.0%)	**71 (6.1%)**
Tent	3 (100.0%)	0	0	**3 0.3**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 6 d.f. = 17.4. p = <0.00807.

It has been noted in many studies that those who belong to socio-economically lower strata, deliver their children either at their own or their parents' home (Mboup, 1999). The reasons given for this practice usually centre on a lack of knowledge about delivery care. This research has examined the association between the place of delivery of the present pregnancies and the number of ANC visits. Table 5.27 shows that the place of delivery does appear to have a significant relationship with their ANC visits. Most of the women (85 percent) delivered in hospitals, 9 percent (105) delivered in the PHC Centres, while only 6 percent (71) delivered in

Figure 5.26
Pattern of Pregnant Women's ANC visits by Place of Delivery



their houses, and another, marginal 0.3 percent, delivered in their tents. Women who delivered in hospitals or PHC Centres seem to have more regular and ideal visits than those who delivered in their houses or tents. Women who delivered in tents registered neither regular nor ideal visits.

5.1.27 NEW-BORN STATUS:

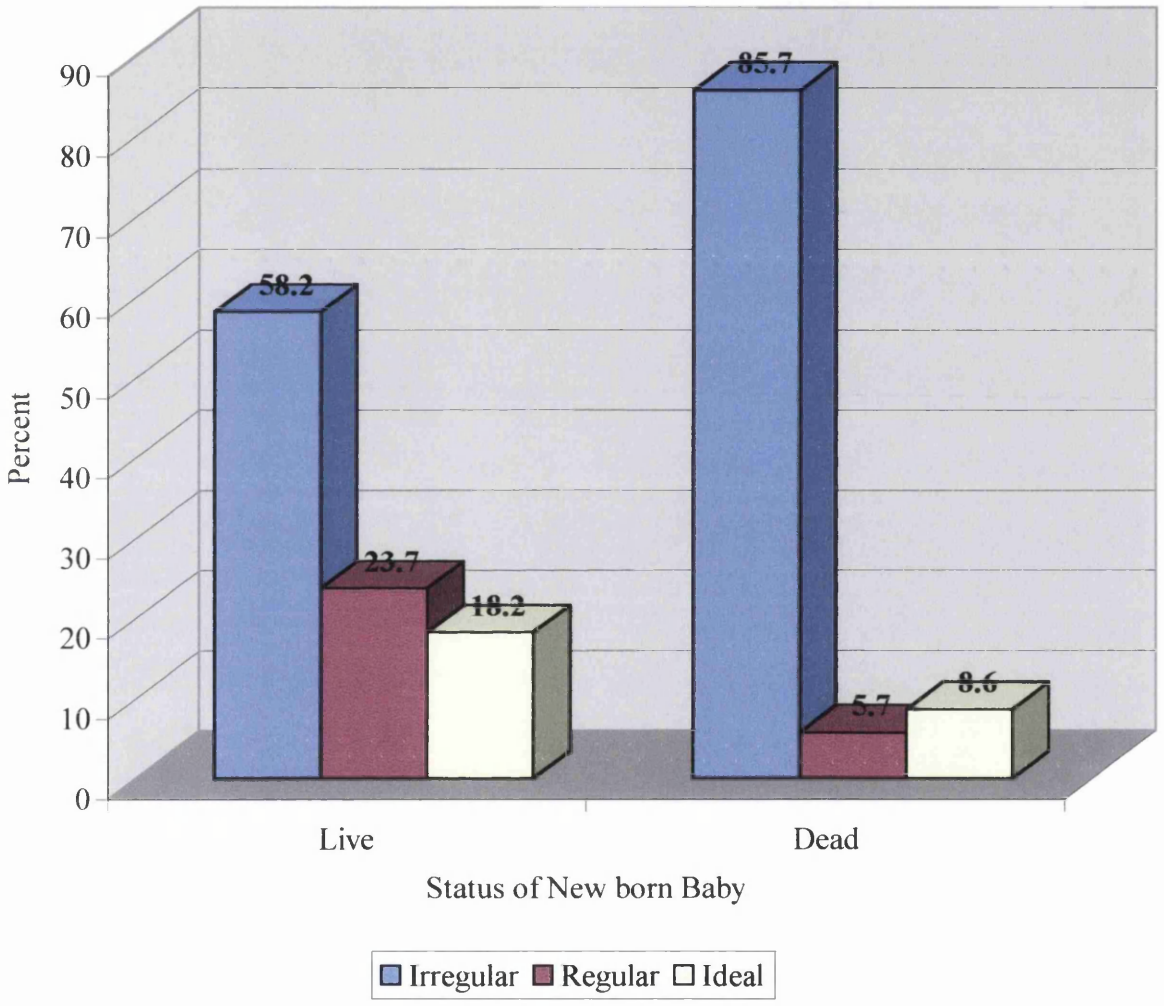
TABLE 5.28
Distribution of pregnant women according
to their number of ANC visits based on their baby's survival status

STATUS	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Live	656 (58.2%)	267 (23.7%)	205 (18.2%)	**1128 (97.0%)**
Dead	30 (85.7%)	2 (5.7%)	3 (8.6%)	**35 (3.0%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 2 d.f. = 10.9, p = <0.00440.

The survival status of the child may be used as a proxy for the health status of the population. In other words, it may be related to the health status of the mother and the maternal care she received while pregnant. Hence, this research examined the relationship between the infants survival status in the first week after birth, and the number of ANC visits. It may be seen in Table 5.28 that the infant's survival status after birth has a statistical relationship with the mothers' visits to ANC Clinics. The majority of infants (97 percent) in this study were registered as live infants; of these 58.2, percent (656) of the mothers' were irregular in their ANC visits, 23.7 percent (267) were regular and 18.2 percent (205) were ideal. This table also shows that 3 percent of the total were still-born, and out of these, 85.7 percent (30) of the mothers were irregular, 5.7 percent (2) were regular and 8.6 percent (3) were ideal in their ANC visits.

Figure 5.27
Pattern of Pregnant Women's ANC visits by New born Baby's Status



5.1.28 NEW-BORN WEIGHT:

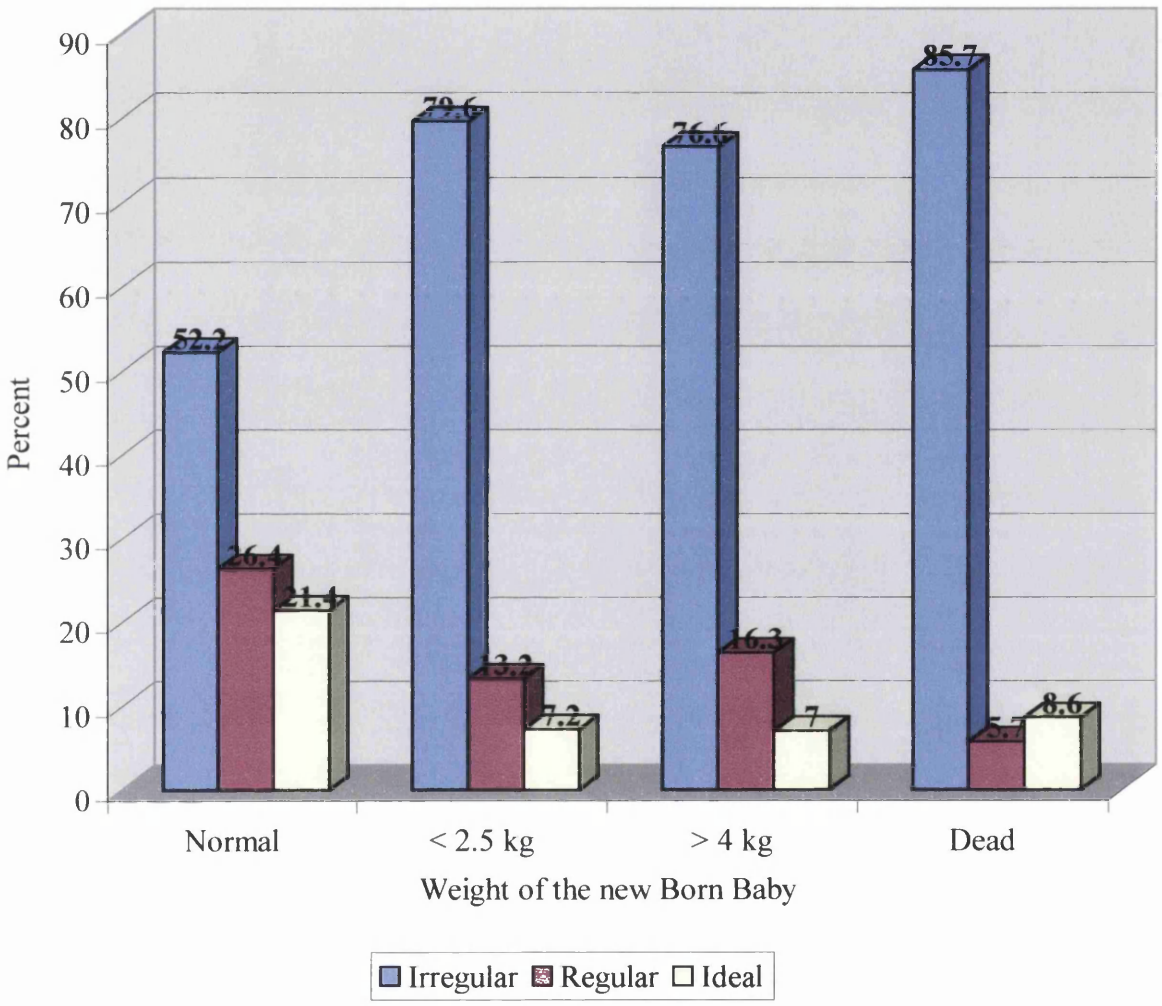
TABLE 5.29
Distribution of pregnant women according
to their number of ANC visits based on their infants weight

WEIGHT	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Normal	457 (52.2%)	231 (26.4%)	187 (21.4%)	**875 (75.2%)**
Less than 2.5 kg	133 (79.6%)	22 (13.2%)	12 (7.2%)	**167 (14.4%)**
More than 4 kg	66 (76.6%)	14 (16.3%)	6 (7.0%)	**86 (7.4%)**
Dead	30 (85.7%)	2 (5.7%)	3 (8.6%)	**35 (3.0%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 6 d.f. = 69.3; p = <0.00000

In the study by Keeping et al. (1989), it was shown that failure to maintain adequate ANC contact has a correlation with low birth weight. This study also shows that the weight of the infants, in the first week after delivery, does have a relationship with the mothers' ANC visits, as shown in Table 5.29. Most of the babies, (75.2 percent), have a normal weight (between 2.5 and 4.0 kg), 14.4 percent (167) weighed less than 2.5 kg and 7.4 percent (86) weighed more than 4 kg. Among those of normal weight, about 52 percent (457) of the mothers were irregular in their ANC visits, 26.4 percent (231) were regular and 21.4 percent (187) were ideal. Among those who weighed less than 2.5 kg, 79.6 percent (133) of the mothers were irregular in their ANC visits and 7.2 percent (12) were ideal. In the group of infants who weighed more than 4 kg, 76.6 percent (66) of the mothers were irregular in their ANC visits and only 7 percent (6) were ideal.

Figure 5.28
Pattern of Pregnant Women's ANC visits by Weight of the New-Born Baby



5.1.29 NEW-BORN HEIGHT:

TABLE 5.30
Distribution of pregnant women according
to their number of ANC visits based on their infants height

HEIGHT	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Less than 45 cm	43 (78.2%)	10 (18.2%)	2 (3.6%)	**55 (4.7%)**
45 - 49 cm	211 (65.1%)	61 (18.8%)	52 (16.0%)	**324 (27.9%)**
50 - 54 cm	374 (53.0%)	190 (27.0%)	141 (20.0%)	**705 (60.6%)**
55 - 59 cm	28 (65.1%)	5 (11.6%)	10 (23.3%)	**43 (3.7%)**
More than 59 cm	0	1 (100.0%)	0	**1 (0.1%)**
Dead	30 (85.7%)	2 (5.7%)	3 (8.6%)	**35 (3.0%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 10 d.f. = 43.2; p = <0.00000.

Nutritional status is sometimes measured through the height of the child (Kemgo, 1999). Related to the study question "Is there any significant relationship between the height of the infants in the first week after delivery and the number of the mothers visits to ANC Clinics", Table 5.30 shows that the height of the infants during the first week after birth has a statistical relationship with their mothers ANC visits. The majority of the infants (61 percent) ranged between 50 cm and 54 cm and only one (0.1 percent) was taller than 59 cm. Those mothers' whose children's' height was more than 50 cm. were found to be more ideal in the ANC visits than those mothers' who delivered small children.

5.1.30 NEWBORN HEALTH STATUS:

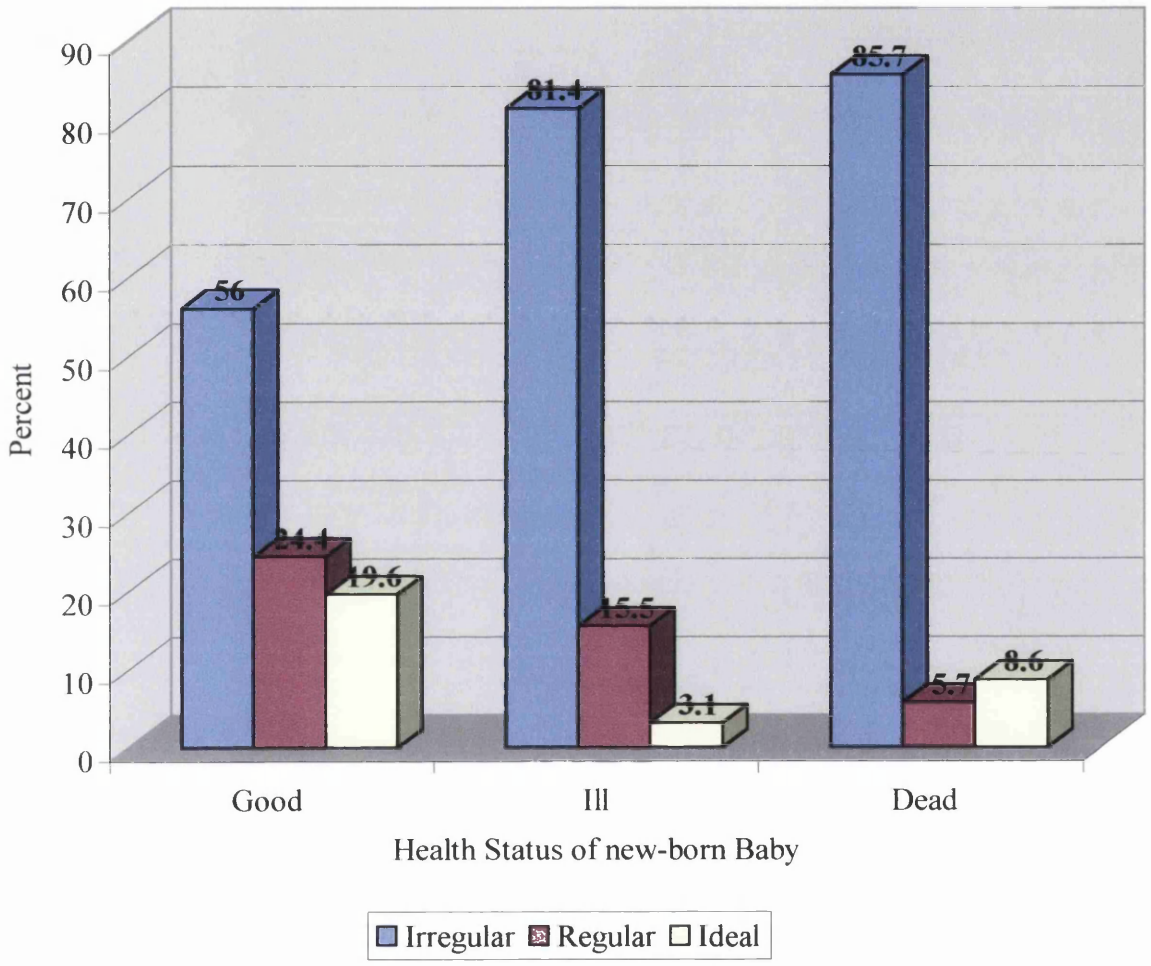
TABLE 5.31
Distribution of pregnant women according to
their number of ANC visits based on their infants health status

STATUS	IRREGULAR	REGULAR	IDEAL	ROW TOTAL
Good	577 (56.0%)	252 (24.4%)	202 (19.6%)	**1031 (88.7%)**
Ill	79 (81.4%)	15 (15.5%)	3 (3.1%)	**97 (8.3%)**
Dead	30 (85.7%)	2 (5.7%)	3 (8.6%)	**35 (30.0%)**
COLUMN TOTAL	**686 (59.0%)**	**269 (23.1%)**	**208 (17.9%)**	**1163 (100.0%)**

Pearson's Chi-Square value for 4 d.f. = 37.2, p = <0.00000

Examining the association between the nutritional status of the child and the number of ANC visits, we noted a significant relationship between the two variables. The health status of the child, during the first week after delivery, appears to be related to the health of the mother and the maternal care she has received during pregnancy. Table 5.31 shows that the health status of the infants during the first week of life has a significant relationship with the number of the mothers' ANC visits. Most of the babies (89 percent) were in a good health status, while 8.3 percent (97) of infants suffered poor health status. Among those who had poor health status, 81.4 percent (79) of their mothers were irregular in their ANC visits, 15.5 percent (15) were regular and only 3.1 percent (3) were ideal in their ANC visits. On the other hand, of those children who were in good health during the first week of life, a relatively higher proportion of the mothers were regular or ideal in visiting antenatal clinics.

Figure 5.29
Pattern of Pregnant Women's ANC visits by Health status of the New-born Baby



5.2 STEPWISE DISCRIMINANT ANALYSIS:

In this section, we shall examine the important covariates that determine the number of antenatal visits at the ANC clinics. Using the multivariate approach, stepwise discriminant analysis procedure, we shall treat the number of antenatal visits as the dependent variable, and all other variables as independent. The advantage of this procedure is that it ascertains the strength of association of each independent variable with the dependent variable.

TABLE 5.32

Summary table of all independent variables that done according to the Stepwise discriminant analysis procedures

STEP	QUES. NO.	INDEPENDENT VARIABLES	CHANGE IN Wilks' Lambda	P-Value
1	Q.A6	Pregnant Women Education Level	0.39513	0.0000
2	Q.A11	Adequacy of Families' incomes	0.08071	0.0000
3	Q.A3	Height of Pregnant Women	0.03345	0.0000
4	Q.A2	Pregnant Women Nationality	0.03209	0.0000
5	Q.A1	Age of Pregnant Women	0.01922	0.0000
6	Q.A20	Communication Level With Physicians	0.01003	0.0000
7	Q.B1	Type of Delivery	0.00417	0.0000
8	Q.A19	Type of Explanations	0.00419	0.0000
9	Q.A27	Type of Transport to PHCCs	0.00596	0.0000
10	Q.A25	Using Babysitters During Visits	0.00430	0.0000
11	Q.A4	Weight of Pregnant Women	0.00383	0.0000
12	Q.B3	Baby Sex	0.00329	0.0000
13	Q.A18	Physician Sex (2)	0.00305	0.0001
14	Q.A13	Average an Examination Time	0.00395	0.0000
15	Q.A10	Monthly Family Income	0.00535	0.0000
16	Q.A17	Physician Sex (1)	0.00214	0.0006
17	Q.A7	Pregnant Women Husbands Education Level	0.00232	0.0011
18	Q.B6	Height of the Pregnant Women Baby	0.00190	0.0020
19	Q.B5	Weight of the Pregnant Women Baby	0.00163	0.0041
20	Q.A9	Pregnant Women Husbands Occupation	0.00158	0.0087
21	Q.A32	Type of Accommodation	0.00144	0.0242
22	Q.A12	Number of Babies	0.00088	0.0468
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23	Q.B2	Delivery Place	0.00071	0.1098
24	Q.A23	Women Opinion About Different Nurses	0.00112	0.1135
25	Q.A5	Marriage Duration	0.00058	0.1714
39	Q.B4	Baby Status	0.00004	0.9178

Table 5.32 explains the multivariate discriminant results using the step-wise analysis. This procedure includes the independent variables in to the model in the order of their importance. In other words, the most important variables are added in the model first, then the next important variable and so on. Thus, from the table, it is clear that education level of the pregnant women is the most important significant variable in explaining the antental clinical

visits. It further shows that the ANC visits have a significant relationship with a range of other factors such as: adequacy of families' incomes, height of the pregnant women, pregnant womens' nationality, age of pregnant women, communication level with physicians, type of delivery, type of explanations, type of transport to PHCCs, using babysitters during visits, weight of pregnant women, baby's sex, physician's sex (2), average explanation time, monthly family income, physician's sex (1), pregnant womens' husband's education level, height of the pregnant women's baby, weight of the pregnant women's baby, pregnant womens' husband's occupation, type of accommodation and number of deliveries she had given.

There are some factors that were significant in bivariate analysis but they were found to be insignificant in descriminant analysis. These factors are: duration of marriage, pregnant woman's occupation, waiting time before seeing by physician, communication level with nurses, pregnant women's' opinions about seeing different physicians in each visit, pregnant women opinions about different nurses in each visit, number of babies aged less than 5 years old, their previous pregnancy compliance, their present pregnancy compliance, place of delivery, baby status, and baby health status.

More clearly, the pregnant woman's education level is by far the most significant factor. While looking at the Lamda coefficient, it may be stated that the education of the women explained about 39.5 percent of the total variation in the antenatal care clinical visits. Further, the second factor, which is significant and accounted for a large part of the variance in pregnant women's ANC visits is adequacy of family income with about 8 percent variance explained by this variable. In addition to these two variables, the other variables, listed also have a significant

effect on antenatal visits, though the percentage variance explained is not high. The height of pregnant women explained about 3.4 percent variation, while her nationality explained about 3.2 percent. The age of pregnant women explains about 1.9 percent. Communication level of the women with the physicians though explained only about 1 percent of total variation remained highly significant. As we explained in the earlier section, this variable could determine the woman's further visit if she could follow the physician well. Other significant variables such as type of delivery explained about 0.42 percent of total variation, while the type of explanations about 0.42 percent, type of transport to PHCCs about 0.6 percent and use of babysitter during visits about 0.43 percent. In additon to this, the weight of pregnant women accounted for about 0.38 percent of variance, sex of the child accounted about 0.32 percent, physician sex (2) accounted about 0.3 percent, average an explanation time that spent with physician was 0.4 percent, monthly family income of the family accounted about 0.5 percent and physician sex (1) accounted about 0.21 percent total variation in the antenatal care acceptance. Further other variables which are significant in the step-wise discriminant analysis are the husbands education level which explained about 0.23 percent of the variation, while the height of the baby accounted about 0.19 percent, the weight of the baby accounts for about 0.163 percent, the husbands' occupation about 0.158 percent, type of accommodation about 0.144 percent and the number of babies was 0.088 percent of the total variation.

5.3 CONCLUSION:

The current chapter explains the possible factors associated with the visits to the ANC clinics through both bivariate and multivariate analysisup. It shows that many of the independent variables under study are significantly associated with antenatal clinical visits. In

particular, pregnant women's education level and adequacy of families' incomes have a very significant effect on the ANC visits. As explained earlier, women who are well educated or from a family where the income is adequate enough to meet their living costs, are likely to be more aware or have access to such facility when compared to other women. Also, the analysis shows that the height and age of the pregnant women, the communication level with physicians, type of delivery, type of transport to PHCCs and using babysitters during visits. We may explain that the communication between physician and the woman are significant in the sense that if the woman could communicate well with the physician, she would feel free to have further visits. In other words, if the family has a better means of transportation to the clinic, she would be more comfortable to visit the clinic. Also, this variable is highly correlated with the economic standard of the household. That is, if the family has a car as a means for transportation, they would be from a better family who has found to be more aware about the practice of antental care services. The bi-variate analysis further shows that weight of pregnant women, baby's sex, physician's sex, average explanation time, husband's education level, height of the child, child's weight, husband's occupation, type of accommodation and number of deliveries she had given are significantly determining the frequency of ANC visits.

When the researcher tested all the variables by step-wise discriminat analysis, it was found that some of the variables changed its significance level from the bi-variate chi-square test. In other words, some of the variables, which were significant in the Chi-square test, became insignificant in the multivariate discriminant approach (Table 5.32). More clearly, the variables, place of delivery, duration of marriage, baby status and opinion of women about different nurses became insignificant in the multivariate approach. It may be noted that the

educational level of the women as the foremost significant factor in explaining the variations in the attendance pattern. This variable alone explained about 39.5 percent of the total variation in explaining the acceptance of antenatal services. When the education of the woman increases, she would have a different attitude towards her health and her children's health. Thus, realising the importance of ANC, she would go for adequate number of visits to the clinics. However, it has found that the adequacy of family income, height of the women and her nationality are playing a major role in the pattern of attendance. It is clear that socio-economic factors, and education of the woman in particular is more supportive than other factors in determining the patter of ANC visits.

Though socio-economic factors are core in explaining the total variations in the acceptance of antenatal care services, other factors like age, communication level with physicians, type of delivery, type of explanations, type of transport, presence of babysitter, weight of the women, child's sex. We found that the most ideal visitors are those pregnant women in the age group 20-29 years. If a woman become pregnant before 20 years, she might not be aware about the importance of ANC, while those woman of older ages (30+) might be less educated and the awareness about the importance of antenatal care visits might be less as compared to those in the middle age group (20-29). Presence of a baby-sitter determine the woman's ANC visit as she would be more comfortable to leave the child at home and go for the clinical visit. The study also identifies the significant effect of physician sex, average time spent with physician, family income, physician sex, husband's education, height and weight of the child, husbands occupation, type of accommodation, and number of children in explaining the number of antenatal visits.

CHAPTER SIX

DISCUSSION

6.1 INTRODUCTION

6.2 DISCUSSION

CHAPTER SIX

DISCUSSION

6.1. INTRODUCTION:

With the inception of a series of Health Development Plans in Saudi Arabia, the overall level of health of both women and children improved, with an increasing proportion of women seeking the antenatal care services over the period. Priority was also given to increase the number of primary health care centres in the Kingdom and to enhance the quality of services provided to the users. Primary Health Care (PHC) aims at promoting and protecting the health of women who are of child bearing age (15-49) so that the reproductive life of women is compatible with a state of health and well-being and that all children they reproduce have a better possibility for healthy growth and development (General Directorate of Health Centres, 1986). Antenatal care is one of the main functions of maternal care, which is part of the comprehensive health care provided to women during their pregnancy. The priority aim is to provide adequate measures to ensure a healthy mother and thus a healthy baby at the end of pregnancy (Al-Mazrou et al., 1990).

Today, the concept of prenatal care encompasses health assessment, medical services, social services, health education and psychological support (George, 1980). The task of offering

and managing health care during pregnancy requires an astute assessment of maternal and foetal health status during initial and follow-up visits. This assessment must include all pertinent information about the physical and psychological parameters of maternal well being and about foetal well being. Information obtained from each assessment of maternal and foetal health status is needed to develop an appropriate plan for health care supervision, particularly to identify high-risk situations (Adams, 1983). The PHC centres in Saudi Arabia have implemented programmes to promote the health of pregnant women by emphasising the importance of adequate antenatal health coverage through a recommended pattern of attendance in the antenatal care clinics (ANCCs).

With easy access to the services, a majority of pregnant women do seek ANC at a clinic, which has improved the health status of the population and in particular that of women and children. However, there are women who are not receiving the recommended course of ANC, and these have been ignored by researchers. With this in view, this research aimed to study the factors that mitigate against pregnant women complying with the recommended pattern of ANC visits and then to make recommendations based on the findings of the study.

The research focussed on analysing the factors that restrict the pregnant woman's dropout from the required ANC visits, by way of univariate, bivariate and finally multivariate discriminant analysis. In the foregoing chapters, the researcher explored the distribution of pregnant women and the association between the number of visits and a range of different

characteristics. The present chapter, however, discusses the general findings of the study and the conclusions that may be drawn from it.

6.2 DISCUSSION

A number of studies have been conducted to assess the health needs of the population and identify the importance of various socio-economic, demographic, and behavioural factors in the acceptance of antenatal care services by pregnant women. In some research, attention has been given to explaining the direct effect of these characteristics on ANC service acceptance as specific factors after attempting to control the effect of others. The present study specifically aims at examining the possible correlates of pregnant women's ANC acceptance.

Generally, the reproductive life span of a woman is between 15 and 49 years of age, but the "ideal" age to conceive and deliver is between 20 and 35 years of age (Curtis et al., 1993). A delivery before the age of 20, or after the age of 35, needs particular attention, as the delivery may hold risk for the life of both mother and child. Many studies have identified "age at delivery" as an important factor in the acceptance of ANC visits and in this research, we too observed that age at delivery appears to be a significant variable in determining the number of visits.

All sorts of ideas have been generated to explain this phenomenon. For example, some claim that as a woman ages she makes more contacts with informed people, which might influence her pattern of ANC visits (Fitzpatrick et al., 1997). However, one could equally argue

that familiarity breeds contempt and a woman who has had several deliveries might not value such a service. However, several pregnancies might have a cumulative effect in making a woman more aware of the delivery of health care services.

In this study, the researcher found that women in the safe reproductive age group of 20 to 30 years, were more regular in their visiting patterns than were women in age groups that lay outside that span (see page 165). Age at delivery alone is thus not a complete indicator of attendance patterns and is probably related to other variables. However, age at delivery, coupled with other variables, especially levels of education and household standard of living, do appear to be inter-related. Al-Shammari et al (1994) found that women aged under 20 were better in their attendance patterns than were women over 30 but again, with that research, one is left wondering whether or not educational level might not be a better predictor.

Al-Shammari and his co-workers also found that the nationality of pregnant women (in their categorization Saudi and non-Saudi) showed little difference in their patterns of attendance. But in this study, when the researcher divided the population into "Saudi", "Other Arabian" and "non-Arab" it was found that the worst patterns of attendance were shown by the Saudi women, whilst other Arabian were better and the non-Arab component were the best (see page 167). The researcher also noted that of the non-Saudi women, 49 percent had received a reasonable level of education, as opposed to only 5 percent of the Saudi sample. Education and standard of living enjoyed by the household were also found to be strongly related.

Another finding in this study is that the patterns of attendance and the height of the women were also related variables (see page 169). The taller the woman the more likely she is to show regular or ideal patterns of ANC attendance. Moreover the worst patterns of attendance were shown by women who were less than 155 c.m tall. Discussions with clinicians about this finding (also noted elsewhere, Hall, 1990) have been inconclusive. Although to an extent height may be genetically determined, it is also influenced by diet. Poor diet, especially in early years, may lead to diminished growth. Diet may well reflect the economic circumstances of a family. As some of the women in the study were Bedouin or first generation settled Bedouin, there may well be some truth in this suggestion but as this factor was not central to the design of this research, such an explanation must remain an untested theory.

The researcher found a significant association between marital duration and the number of antenatal visits. When the marital duration was low, a higher proportion of women were regular in their ANC visits. In other words, there is an inverse relationship between the marriage duration and the number of their ANC visits. We may reasonably argue, that over time, the socio-economic status of the population has improved. Those who married in the recent past probably have better social living conditions (education, income, family type etc.) than those who married in earlier times and that could be one of the reasons for the increase in the number of ANC visits (see page 171).

Education does seem to be a key variable and has been identified in many studies as an indicator of health care behaviour in any population (Brown et al., 1993). In this study, we have found that the better-educated women do show better patterns of ANC attendance. As the

educational level of the women increases she shows more and more use of antenatal services. Those women who had achieved a high-school level or above showed more ideal patterns of attendance, whilst the worst levels were clearly associated with those women who were poorly educated or illiterate (see page 174). A similar finding was produced by Higgins et al (1994) who found that educated mothers received adequate ANC, as opposed to women who had not attained high school education. Morrison (1989) extended this argument with the view that higher education not only presumes higher economic standing but also suggests a more informed approach to health care and the use of the health care system. Al Shammari et al (1994) also found that well educated mothers tend to make more antenatal visits than did less educated women.

A husband's education may also be correlated with that of his wife, so the researcher explored this factor as a covariate for the number of ANC visits. The husband's education may be considered, in most societies, as a proxy for their socio-economic status. Families with a good socio-economic standing tend to send their children to better schools and well-educated people tend to find the better jobs. In this research, it has been noted that the husband's education level is a significant variable in determining the wife's number of ANC visits. The higher the husbands' educational level the more likely it was that his wife would seek antenatal care. All that this implies is that educated families are better aware of the importance, inter alia, of ANC services (see page 176).

Another clearly associated variable was the employment status of the women (see page 178). Where a family enjoys a poor economic status, the woman is forced into work in order to

ensure the survival of the family. The work they find may well offer little flexibility or support during periods of pregnancy and thus they may never find the time to visit a clinic. Women in less oppressive forms of employment may well be able to find the time to make the visits. This issue also related to the previous paragraph about the husband's status. Men in managerial or administrative positions may well be able to find the time to take their wives to clinics and their salaries will allow them to own a motor car.

This research also gained another insight into the effect of employment. Women, who were employed, especially in the government sector, were better in their pattern of attendance than those employed in the private sector, who, in turn, were better than those who were not employed. Al Shammari (1994) also found that working women achieved more visits than did housewives. Possibly some of the working women belong to socio-economically sound families than do their non-working social peers, which might enhance their knowledge of and access to maternal and child health care. It was also noted, in the discussions the researcher had with the women in the sample, that some of them visit the ANC clinic to obtain sick leave, rather than for the service. The present civil service policy is that sick leave to attend a private clinic is accepted for one day, but to visit a PHC Clinic is acceptable for sick leave of between three to five days. Hence, it might be possible that, to avoid working, women will attend an ANC Clinic to obtain sick leave, rather than for the services ANC provides.

The best patterns of attendance were found among those women whose husbands were employed in the private sector, as opposed to those husbands who were employed in the military services or other forms of state employment (see page 181). There may be a simple explanation

for this, because husbands who are employed in the military services tend to be away from home for long periods and thus are not available to take their wives to the clinics.

Many studies have identified economic status as being a key variable in the use of health care services (Rahman et al., 1997). In most studies, the economic status of a family is measured through the occupation of the husband, which thus becomes a proxy for family income. In this study, the researcher has looked at the income of the family and has found a relationship between the level of monthly family income and the number of ANC visits (see page 183). As family income increases the women become more regular in their number of ANC visits. However, income cannot be treated separately from other variables, as it will reflect education, domestic facilities, especially transport, and residential location. The higher the economic status the more likely that the people will live in good residential areas, in close proximity to a clinic. This does not mean that ANC is only available in desirable residential locations, but it is likely to be in a modern purpose built clinic rather than a poorly converted building (Al Darrak, 1999).

The perception of the adequacy of income also appears to have an influence on the pattern of ANC visits. Income levels that are perceived as not being adequate for survival appear to inhibit ANC visits. Where the women perceived their income to be adequate they also displayed a better pattern of ANC visits. Where income was perceived as inadequate the women became irregular in their visits (see page 185). Once again a set of variables seems to interact. High income is associated with better education levels, better domestic conditions and greater awareness of the health care system. Low incomes are associated with poor diet,

housing and basic facilities as well as lower self-esteem and increased social isolation (Chadwick, 1994). It also has been shown to result in inadequate antenatal care (Higgins et al 1994). The same finding was revealed by Williams et al (1989), who found that inadequate income is a key factor in reduced antenatal care.

One of the variables, often found in the literature, is that previous experience of deliveries is a factor influencing the number of antenatal visits, which is possibly where the notion of familiarity and contempt derives from. That explanation however is facile. It is true that there is a correlation between the number of deliveries and reduced antenatal care and this research does demonstrate an inverse proportion. However, the women with the greatest number of children appear to be largely found in the lowest socio-economic groups. Even though the Kingdom has made astonishing strides in health care provision, there still remains a socio-economically deprived element that will see children as an essential insurance against old age. Those women who had experienced a lesser number of births also tended to belong to better socio-economic families and were better educated (see page 187). Thus, one might argue that education is a major factor in limiting family size.

All of this leads one to an inexorable conclusion that the utilization of health care facilities is related to socio-economic status and education level, which lead to a greater awareness of the need to utilize health care provision. In any terms this is a depressing finding and is certainly not new. However, given the enormous amount of money that is poured into the Kingdom's health care we must ask why this is so? Al Darrak (1999) found profound weaknesses in the provision of primary health care. Health care in Saudi Arabia is still

dominated by acute provision, which is found in hospitals. Antenatal clinics cannot be seen as simply extensions of a hospital. It also begs a question about the status of health education in the Kingdom because. as this research suggests, those who need the service most are the least likely to be able to use it. The provision does exist, but as has been discussed in other work, it is not being used.

There are further indications of the nature of the problem to be found in this research, some of which enlarge on the work of Al-Darrak (1999). One of the issues he discussed was the amount of time women had to wait in order to see a physician. In this research it has been found that the less the amount of time spent waiting to see a physician the more likely it was that patterns of attendance would be regular or ideal (see page 190). This factor mitigates against those women who are obliged to leave other young children at home and is also associated with the distance from the home to the clinic. This finding has also been found elsewhere. Nasah et al (1991) in Nigeria, found that a key variable was the hours that could be spent waiting to be seen by a physician. The longer the time spent in the waiting room, the less likely it was that woman would attend.

Then there was the length of time spent with the physician. This will influence clinical decisions, especially if there are potential delivery problems or indeed if the woman has experienced previous gynaecological problems. In this study, the researcher has observed a strong correlation between the duration of a consultation and the likelihood that the woman would continue to visit the clinic. Where there are potential delivery problems or previous gynaecological indications, then the physician is likely to appraise the patient of these and this

increases the likelihood of her return. It is also possible that longer consultations increase the level of trust between physician and patient (see page 192).

The sex of the physician was also studied. Although it was not a major factor, there was an indication that consultations with a female physician are more likely to ensure the return of the patient. It is not improbable to suggest that women who live in a relatively sheltered society are more likely to discuss their gynaecological problems with a female physician. Saudi Arabia does not produce enough physicians, male or female. Much of PHC is delivered by expatriate, usually Arabic speaking male practitioners, who are essentially short-term economic migrants (see page 194). This has resulted in a situation where there is insufficient continuity of care and no system of patient registration, which means that some women may visit another PHC centre.

This current research also delved further into the doctor-patient relationship. The opportunity for pregnant women to ask questions in their consultations was shown to have a significant effect upon attendance. When the pregnant woman felt that she was satisfied with the explanations and answers given, she was more likely to be regular in her attendance. The researcher also found that the women in this study were more likely to ask questions when faced with a female physician (see page 196). A study by Hall et al (1985) also showed few women appeared to ask questions of their physicians and in that study only a small number felt that they had the opportunity to question the physician. It also is more likely that better educated women will ask questions and this may well lead to more regular patterns of attendance.

Researchers have found that the most frequent complaint voiced by patients is that the professional staff providing care failed to provide sufficient information about their condition or treatment (Smith 1994). When pregnant women were encouraged to ask questions and share their experiences and feelings, it was found that consultations could last from 30 minutes to an hour (Thorley, 1993). In Narang et al's (1994) study, it was found that communication with health care professionals was felt to be a major problem for half the sample, who reported difficulty in understanding their physicians.

In this research the respondents were asked to evaluate their communication with the physician on a scale "Well understood", "Somewhat understood". "Little understood" or "Not understood". It was found that those who claimed to have "Well understood" had a high level of regular or ideal visits, as compared to those who did not understand, who showed very poor patterns of attendance (see page 198). The same test was also applied to communication with nurses, which produced a similar pattern of responses (see page 200).

When the research examined the continuity of care, both by physicians and midwives, where continuity existed, the waiting time was also much less and, as other research has found (e.g. Corkill 1995), women feel well prepared and in control during labour and more able to discuss problems with care-givers. Thus in this research, a change in physician for each visit was included, to find out if it influenced patterns of attendance. A large proportion of the women expressed the opinion that a change in physician would influence their decision to attend. Curiously, those who expressed this view were either regular or ideal in their visiting patterns (see page 202). This suggests that these respondents did see the same physician and

would resent a change because of the effect it would have on their ability to work with the person they knew. Midrs (1988) reported that a lack of continuity of care was a factor that affected the continuity of attendance. Similarly McIlwaine (1980) found that 84 percent of women preferred to see the same doctor as did Graham and McKee (quoted in Rose 1985), who found that 81 percent of their respondents held the same view. Changes in nursing staff did not appear to have an effect on attendance patterns (see page 204).

All of this reflects upon the problematic nature of PHC in the Kingdom. Al Darrak (1999) dealt with this issue at length in his study and identified all sorts of problems that mitigate against effective delivery of such services. What we are looking at here is a commentary upon the relationships that can be found between doctors and their patients. There is no "tradition" of continuous patient care in the Kingdom. Although there has been PHC provision for the past fifty years, it has always been seen as a second-class service, when compared to hospitals. Patient records are not common and there are poor relationships between PHC physicians and their counterparts in hospitals. Patients may check into a hospital without any prior consultation with a general practitioner. Doctors are appointed to serve in PHC clinics and quickly try to get a post in a hospital. Many doctors come to work for three to four years and return to their home country. Patients can even shop around from clinic to clinic and may thus undergo the same examination two or three times. Clearly, this has an undesirable effect upon antenatal and postnatal care. Hospitals have extended their outpatient services and specialist clinics into activities that elsewhere, are undertaken in PHC centres.

It is not unreasonable to claim that the nine months of pregnancy and the following twelve months are crucial times in the life of mother and child but the health care delivery system does seem to be failing a large proportion of Saudi women. The most seriously disadvantaged are those women who already have young children at home and lack even temporary support to enable a visit to the clinics.

This research did focus upon these women and found that those who had children under the age of five (thus not old enough to go to school) consistently made less visits to the clinics than most of their other counterparts. To investigate this further the presence of a baby-sitter was explored and this was found to have significant effect upon attendance. Those who had such help showed a higher proportion of regular or ideal visits than did those who did not have such support (see page 206).

It is possible for a mother to take her children to a clinic but again, distance and the availability of transport, become an issue. Thus in addition to education, employment, high income and residential area, the researcher added the availability of a baby-sitter as a factor that influences attendance (see page 208). Brown (1988), describing the results of two multivariate analyses of women who had to care for young children, found that those who had no one to care for their children showed 1.7 to 2.6 times more probability of having inadequate ANC, than others.

It might be expected that experience of previous complications in pregnancy would lead to a higher number of antenatal check-ups. It is true that there are some women who, for genetic

reasons, experience frequent problems in pregnancy. Curiously, in this research, it appears that those women who had experienced problems in earlier pregnancies are more likely to be irregular in their visits. As may be noted, nearly half of the study sample reported some sort of complication in a previous pregnancy. Yet, among those who had experienced no complications in earlier pregnancies, about 56 percent had made six or more visits. In the sample, one woman in eight reported that they had experienced more than one complication and yet, of these, 81.8 percent were irregular in their visits, while only about 8 percent were regular and the remaining 9.8 percent were ideal. Of those who reported an anaemic condition, 65 percent were irregular in their visits (see pages 210, 212). However, there is some heartening evidence in that those women who reported gestational diabetes in their present pregnancy, were also showing a much more ideal pattern of attendance than did women with other complications. This may reflect the effort that has been put into gestational diabetes programmes at PHC centres and the fact that women are co-operating with them. It is also worth noting that since the medication is quite expensive in pharmacies and is hard to get in the public hospitals, such women will try to be regular in their PHC visits, in order to have enough and continued medication.

Often emphasised is the importance of transportation as a major factor in explaining the acceptance of antenatal care services. In any society, particularly for its rural population, the availability and accessibility of transportation facilities is vitally important. In this study sample, the mode of transportation is seen as a factor that explains the number of ANC visits. A few studies have also established an exponential relation between distance and outpatient attendance. It may be interesting at this point to mention a study done in a rural area of Kenya by Voorhoeve et al. (1982) which showed that a decrease in antenatal care attendance from 93

percent to 69 percent respectively at 8 km and 24 km distance from the hospital. This current research has shown that a majority of the educated women went to the ANC Clinics by car, while only a low proportion (7.5 %) went by foot. It is also interesting to note that those who went by foot had a more ideal visiting pattern than those who visited the clinic by car. However, those women who used both means of transportation showed even better regular visiting patterns than others. This could be probable due to the fact that those women who use cars as their transportation means may not have another form of transportation if their husbands are busy, while women who use both means of transportation, could use either cars or walk to ANC Clinics, because they live close enough (see page 214).

In many studies, the type of accommodation has been considered as a proxy for the economic status of the household. In other words, if the family is sound in terms of economic criteria, their homes display better facilities. A significant relation found between type of accommodation and number of antenatal visits shows that these two are highly correlated. A large proportion of those who live in flats were more regular or ideal compared to those who live in tents. Among those living in tents, about 96 % were irregular in their visits. Also, a similar pattern is seen among those pregnant women who live in a mud house (see page 217). This may only reflect the possibility that the economic status of a household, combined with the woman's educational status, could be a major contributing factor in determining attendance patterns.

It is suggested that in undergoing the pregnancy, women should receive the required number of antenatal check-ups. Examining the relationship between the length of the pregnancy

period and antenatal check-ups, the researcher found a significant relationship between the pregnancy month and the number of ANC visits. It is interesting to note that only a very small proportion (6 %) visited ANC clinics for antenatal care in the first month of pregnancy. However, the researcher found that this small proportion continued their clinical visits into their late pregnancy as well. The researcher has shown that women who attended the ANC clinics, during the first month of their pregnancies, are more regular and ideal in their visits than other groups, throughout the pregnancy period (see page 144). Probably they are aware of the importance of having early and frequent antenatal care for the better health of mother and child.

The researcher also looked into the proportion of women registered in the clinics by each month of their pregnancy. Exploring the relation between her antenatal care acceptance and the pregnancy in the 9^{th} month, there is a significant relation between these two characteristics. By the 9^{th} month of their pregnancy, only a marginal proportion (9.4 %) of women were not registered, while the rest of the sample had visited once or more. Among those women, the pregnant women who had made fewer visits were more irregular, compared to those women who made a higher number of antenatal visits to the clinics (see page 144).

The health of a woman is also related to delivery characteristics, and the type of delivery is often discussed in the literature. The significant association between type of delivery and the number of antenatal care visits illustrates the importance of delivery characteristics in the antenatal care services. Though the study sample shows that most of the women (80%) had normal deliveries, there was a significant number who delivered by other methods (Ventouse, breech, forceps and caesarean section). It is also interesting to note that those pregnant women

who had normal deliveries were frequent visitors to the antenatal care clinics, unlike those who experienced delivery complications (see page 219). This highlights the importance of antenatal services for a normal delivery. According to the Saudi MOH Annual Health Report (1996) 82 percent of deliveries were normal, 3 percent were delivered by ventouse, 2 percent by Breech, 5 percent by forceps and 8 percent delivered by caesarean section. However, the present research found that about 80 percent deliveries were normal, 5 percent were delivered by ventouse, 2 percent by breech, 2 percent by forceps and 11 percent by caesarean. The Caesarean rate in this study was low, compared to the 20.3 percent in Teaching Hospitals in the USA and the 23.5 percent overall national rate in the USA (Sanchez-Ramos, 1994).

The place of delivery not only influences the child's chances of survival, but also reflects the socio-economic status of the family. In other words, those families who belong to socio-economically poor strata, are likely to deliver their children in their own home, or their parents home, rather than in the hospital. One obvious reason for restricting themselves to home delivery could be lack of knowledge about antenatal and delivery care. An examination of the place of delivery and the number of antenatal care visits, shows a significant relationship between these two variables. Though most of the pregnant women (85%) delivered in hospitals, and 9% delivered in the PHC Centres, the remaining 6% who delivered in their houses or in their tents, were irregular visitors at the clinic (see page 221). In other words, those who delivered in the hospital were regular or ideal users of a clinic's antenatal care services. This could happen because they would be from a better socio-economic background, and would have adequate knowledge about the importance of delivery care.

Infant mortality has long been considered as an explicit indicator of the socio-economic and health status of a population. Low socio-economic population groups experience high infant and child mortality, while high socio-economic groups always show low infant and child mortality. Thus, survival status of the child can be used as a proxy for the health status of the population. Therefore the child's chances depend on the health status of the mother and the maternal care she received while she was pregnant. If the mother visits antenatal care clinics as required, the children of such mothers have a better chance of survival. Not only was the relationship between the survival status of the child and antenatal visits significant, but also a majority of infants (97%) were registered as live infants (see page 223). Moreover, among those mother's whose children were born alive, they all seem to have had better antenatal care than those whose child died. Thus, the researcher may conclude that the greater the number of antenatal visits, the higher is the chance that the children will live.

This may also explain why, at this moment, inadequate antenatal care appears to influence the birth weight of the child. Keeping et al. (1989) show a relationship between these two factors, namely the failure to obtain adequate ANC, and low birth weight of the child. They also emphasise the importance of antenatal care visits for a healthy child in its early life. Though most of the babies (75.2%) delivered were of normal weight (between 2.5 and 4.0 kg), the remaining proportion of births showed abnormal weight. In this study it was also noticed that those women who made more regular or ideal visits to the clinics, delivered more normal weight children than those who were not regular. In other words, those women who delivered under weight or over weight children were irregular visitors at the clinics (see page 225). However, the importance of socio-economic factors cannot be ruled out in this aspect, as

educated and well-off families usually keep a better dietary regime and hence are likely to deliver normal babies. Thus, socio-economic factors might explain part of this relationship.

In addition to the weight of the baby, the height of the child is also considered as a health or nutritional indicator. There is a significant relation between the height of the child in the first week of his/her life and the number of antenatal care visits. Again, the majority of the infants (61%) height ranged between 50 cm and 54 cm and only a marginal 0.1% was taller than 59 cm. Infants, who were less than 45 cm in height, were born to mothers who had not utilised the ANC Clinics (see page 226). The height of the child may be influenced by the nutritional status of the mother, which may be partly attributed to the antenatal care services she received at the time of her pregnancy. It is also true that social and economic status of the family would influence the nutritional status of the pregnant women. Hence again the importance of socio-economic factors cannot be ruled out.

The researcher examined found a strong association between the health status of the child and the antenatal care visits of the mother. However, the researcher may note at this point that the nutritional status of the child is clearly correlated with its health status. Hence, by identifying the health of the child, the researcher was able to observe that most of the children who had a good health status also had mothers who were regular or ideal in their ANC visits, compared to those children with a poor health status, in their early days of life, whose mothers were irregular (see page 228).

Further, the multivariate approach explored a strong relationship between the socio-economic factors, such as the education level of the pregnant women, the adequacy of family incomes, the consequent improvement of family status, and a better access to the services (see page 231). However the complexity of the findings also shows that a large number of other variables do have some effect upon the whole process. The researcher also found that the height of the mother, her nationality, age, communication level with physicians, nature of explanations given, average time spent in consultations, physicians sex, type and access to transport, availability of baby-sitters, husband's education level, husbands occupation, family income, weight and height of the baby, type of accommodation and the number of deliveries, all interact in some way to influence the nature of attendance at clinics. But, of all of these the key variables that stand out are, the educational level of the woman, her family income, height, nationality, age and communication with the physician. In one way or another, the remaining variables appear to be functions of one of these.

CHAPTER SEVEN

CONCLUSION AND RECOMMENDATIONS

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The last century witnessed dramatic technological advances many of which have contributed to a radical improvement of the health status of people in many countries. In underdeveloped and developing countries, some have been able to dramatically reduce infant and child mortality, as well as the hazards associated with infancy, through the application of well-tested and relatively cheap health interventions. In developing countries, as noted in the literature review, much research has been able to identify priorities to allow even poor countries to make progress in this field. In nearly all of these countries great attention has been paid to the provision of ante and postnatal care because of the influence such interventions have upon the health of the nation. Although this has not happened everywhere, the progress that has been achieved owes a lot to the Alma Ata Declaration of 1977.

Generally speaking, in Saudi Arabia, the health care delivery system is good and certainly well-funded but few studies have been undertaken to explore how well such health care provision is used. The Ministry of Health produces annual volumes of statistics that reflect the overall national picture but, like most such information, this tends to be a macro-level collection of data characterized by an understandable preference to show successes. What is not done are the micro-level analyses that need to be undertaken to try to explore the importance of different covariates in determining the receipt of these services.

In most countries it is fairly common to note that even if services are widely available, the acceptance rate can be disappointing. It is also known that socio-economic factors, behavioural and cultural factors are of considerable significance in determining the acceptance of health care services. What this research has shown is that education levels, particularly of the women, play a major role in determining the acceptance of ante-natal health care provision.

In this study, the researcher has followed a group of pregnant mothers through their pregnancy and into postnatal care. The very limited examination of post-natal care was included to examine the outcomes. What was found in some senses is not new. Those who use the services provided are largely not those who truly need them. In that sense, this thesis has done little more than discover the wheel. As was noted in the literature survey, the well-educated middle and upper middle classes are the prime beneficiaries of the service. The poor, for all sorts of reasons, seem to be excluded.

The significant factor that has emerged is the educational status of the mother. Of all the variables studied, this seems to be the key factor. However, educational status does not exist in isolation. It is also a surrogate for social status, economic status and all that derives from such factors. Even the curious factor, the height of the mother, can be explained, through variables such as diet, or economic and educational status.

This all raises an interesting problem. There can be no doubt that the government has taken its obligations, under the agreements that followed the Alma Ata declaration, very

seriously and it would be difficult to argue that the services are under funded. Provision for the health care delivery has been made in every town and city, although as Al Darrak (1999) found, some of the premises leave something to be desired. One must admit that judged upon the findings of Al Darrak (1999) and Al Shammari (1994), there are problems with the delivery of all forms of PHC and the entire system of health care is still dominated by expensive hospitals. There is poor communication between primary care practitioners and hospitals. A substantial number of doctors do not speak Arabic or even if they do it will be dialect that is not familiar to Saudis. Worse still, to plug the gap in provision, large numbers of quite old Egyptian doctors are hired for three or four years and, as such, they can have little interest in the notion of continuous care.

One may expect the physician's experience to be an important factor in the service acceptance, but when considering the sex of the physician, a female physician certainly improves the acceptance level of the antenatal care services by the pregnant women in this society. Probably, women will find it easier to talk with female physicians rather than their male counterparts. Also, since Islam requires women to cover their face in the presence of a non-family male, unless it is an emergency, this means that women prefer to go to a female physician. It is thus important to accept that the sex of the physician plays an important role in the health scenario of pregnant women. It was seen from the study that communication between the physician and the women also has a major role to play in ensuring further visit by the women to the antenatal care clinics. If both the physician and the pregnant women are able to communicate well, those women seem to continue their visits in the clinics. Also, if the women gets enough opportunities to discuss their doubts, they are likely to continue further receipt of

ANC services. If women can communicate well with their physician, they will be able to ask and understand their doubts and fears.

Some of the remedies are also ill-considered. In a genuine attempt to ease the pressure on the system, hospitals are attempting to develop what is known as "seamless health care" which is a euphemism for extending secondary health care into primary provision. As this is attempted within the resources that currently exist it means that doctors and nurses have to respond to ever-increasing demands on their time with a consequent dilution of provision. In the last decade, even a country with the wealth that is enjoyed by Saudi Arabia has found that health care is becoming fearfully expensive.

If the service exists and is available to all, (as it is,) we still need a better understanding of why some sections of the community do not appear to avail themselves of what is offered. Some of the answer may lie in the particular problems of the current staffing of the PHC services but that is not sufficient to explain the considerable shortfall in the uptake of this service. It must be remembered that the sample used in this thesis was of users. Nobody truly knows how many births occur in tents or mud houses because they only impact upon the needed care system when some emergency happens.

Other explanations include the possible effects of a very conservative and traditional culture that does not encourage female patients to consult with male doctors. Matters pertaining to conception and birth are highly sensitive in any culture, especially among Bedouins and people in the countryside. All of which brings us back to education.

It would, in an ideal world, be possible to devise a package of reforms that would totally change the situation. The system should be restructured to provide the country with Saudi born clinicians and nurses along with a reconsideration of the role of PHC. Finding and training the clinicians will take at least ten to fifteen years and finding Saudi nationals, who are prepared to train and work as nurses, would need something tantamount to cultural brain surgery. Less than ten percent of nurses in Saudi Arabia are Saudi nationals. There is no great tradition of nursing although caring for the sick is a fundamental tenet of Islamic culture. To achieve this change in staffing will need at least two decades. There are some tentative moves towards redefining the role of PHC, if only for economic reasons, but as yet, the system is dominated by professionals who see hospitals as the basis of health care.

Although the training of new clinical staff might be a long term strategy the re-training of local staff might offer some hope. It has been noted elsewhere that apart from the basic clinical training many of those involved in PHC have no other training or qualifications (Al Darrak, 2000). It is now common for western medical staff to receive training, not just in clinical specialisms, but also in the social skills necessary for that work. That being the case, although it is not known as yet in Saudi Arabia, the possibility that doctors and nurses might receive specialist training in the skills of dealing with pregnant women does hold some interest. It would clearly have to be developed within a medical school, which offers more hope than if it were to be left to one or other of the interested ministries.

People do not use this service, either because they do not know of its existence or because they do not understand what antenatal care can achieve. The education of women is a relatively new phenomenon in most Arab countries and the evidence of this thesis is that those who have benefited most from the major social and economic reforms that have taken place, seem to be the prime users of the service. During the literature research, effort was expended to try to uncover the status of health education in the Kingdom. As far as doctoral research is concerned there was only one study (Al Melgrim, University of Wales, 1996) and, it is understood, another has just started. The extant study examined the cancer education campaign that was conducted in Riyadh in the early 1990's. Because there are no real criteria or goals, it is very difficult to know how successful or otherwise the campaign was. The bulk of the campaign was confined to video presentations and pamphlets provided in PHC centres, thus only the users of those centres found out what the campaign was about.

It has been claimed that antenatal education, to impart knowledge about the services, to relieve anxiety, to gain more confidence, should be provided in health education classes in ANC clinics. This might provide better knowledge about pregnancy and childcare needs of the woman (Hibbard, 1989). Such education programmes should be conducted by women with relevant information about pregnancy and labour, in addition to providing reading materials and more opportunity for the women to discuss problems with midwives during the training classes at the clinic. It is also stated that the antenatal education in the ANC clinics should be a learning opportunity for both the midwives and women. Midwives should use every opportunity to offer women information, and should not retain their knowledge to share with the minority of women who are able to attend classes, or who are articulate enough to gather information from the

midwife. Through such knowledge sharing process an ideal situation could begin to develop – a situation where choice for both midwives and women becomes a reality (Hancock, 1994). However this still means that only the users of clinics would benefit.

Another very simple solution might lie in the ability of some of these PHC centres to provide some form of childcare facility whilst the mother is with the clinician. It certainly would be possible in some of the purpose built clinics, where there is plenty of space and the only real cost would be supervision. This would however not be possible in some of the conversions in urban areas where, perhaps the bulk of the problem is to be found.

The heart of the solution has to be seen in somehow reaching out to those women who do not attend, or who attend on an irregular basis. Sadly there is no evidence of a rapid solution to this problem anywhere. It is true that a number of factors will slowly ease the problem, not the least being the education of women, for which there is a special Ministry, and the settlement of nomadic populations in new towns. But those remedies will take as long as it takes to train a cadre of female Saudi physicians and nurses. One improvement has occurred through legal reform. In order to register the birth of a child it is necessary to show that it has received basic health prevention inoculations, that are only available in clinics and hospitals. Without birth registration it is not possible to send a child to school, or to gain a passport. However even that intervention will probably not touch the poorest, or the nomads.

It seems likely that part of the answer will lie in the provision of some form of health education campaign aimed at potential users. Every town has television coverage that reaches

out into the most remote parts of the country. Unfortunately there is little experience of this type of mass education in most of the Gulf countries. However, if help can be found to design such a strategy, it would at least target some of the "at-risk" population. By coupling this with basic health education, aimed at 14-17 years old school children, further advances might be possible.

Whilst such a campaign might be easy in some countries, the potential problems in Saudi Arabia are considerable. To achieve the above would require the whole-hearted cooperation of two or three quite separate departments of government. The Ministry of Health certainly has the resources and ability to develop a mass health-education programme using the mass media, but a school based programme would involve the Head Quarters for Girls Education as well as the Ministry of Higher Education and Head Quarters for National Guards. The problems involved in such cooperative activity have been well-documented by al Mojallid in his doctoral study (Univ. of Wales 1996).

As with many of the other studies that have been produced, especially in Swansea, the same problem seems to appear time and again. The rulers of the country make laws and provide resources with all of the best intentions in the world. The problem does not lie there. It is what happens next, when a policy has to be converted into action, that determines the success or failure of any such intentions. Immediate pressures will always derive from the "chattering classes" if only because they make a noise. The problem that this research raises is how do we ensure that the essential provision of an equitable service reaches the silent masses? It is only when that problem is recognised that the will to address the issues can happen.

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APPENDIX

APPENDIX 1: QUESTIONNAIRES

APPENDIX 1-A: QUESTIONNAIRE TYPE A
APPENDIX 1-B: QUESTIONNAIRE TYPE B
APPENDIX 1-C: QUESTIONNAIRE TYPE C

APPENDIX 2: MONTHLY CENSUS REPORTS OF PHCC

APPENDIX 2-A: MONTHLY PHCC DATA
APPENDIX 2-B: MATERNAL HEALTH CARD

Appendix 1-A

Questionnaire Type A

Form No.:_____.
Medical Record Number: _____. First Name: _____.
Name of the Area: _____.
PHC Centre's Name:_____. Date: / / .

Please check the following (/) against your answer:

1. Your age is:
   (1) Less than 20 years. (2) 20 - 24 years.
   (3) 25 - 29 years. (4) 30 - 34 years.
   (5) 35 -39 years. (6) 40 years and more.

2. Your nationality is:
   (1) Saudi. (2) Arabian. (3) Non-Arabian.

3. Your height is:
   (1) Less than 150 cm. (2) 150 - 155 cm.
   (3) 155 - 161 cm. (4) 162 - 168 cm.
   (5) 169 - 174 cm. (6) more than 174 cm.

4. Your weight is:
   (1) Less than 56 kg. (2) 56 - 65 kg.
   (3) 66 - 75 kg. (4) 76 - 85 kg.
   (5) 86 - 95 kg. (6) more than 95.

5. For how many years have you been married ?
   (1) Less than 5 years. (2) 5 - 9 years.
   (3) 10 - 14 years. (4) 15 - 19 years.
   (5) More than 19 years.

6. What is your educational level ?
   (1) Illiterate. (2) Elementary School.
   (3) Secondary School. (4) University.

7. What is your husband's educational level ?
   (1) Illiterate. (2) Elementary School.
   (3) Secondary School. (4) University.

8. What is your occupation ?
   (1) Housewife. (2) Government Employee.
   (3) Student. (4) Non-Gover. Employee.

9. What is your husband's occupation ?

(1) Student. (2) Business.
(3) Military Employee. (4) Civil Employee.
(5) Private Sector Employee. (6) Other

10. What is your monthly family income ?

(1) Less than 3,000 SR. (2) 3,000 - 5,000 SR.
(3) 5,001 - 7,000 SR. (4) 7,001 - 10,000 SR.
(5) More than 10,000 SR.

11. Is your income enough for your needs ?

(1) Yes. (2) No.

12. How many times have you been delivered of a baby ?

(1) None. (2) 1 - 3 times.
(3) 4 - 6 times. (4) More than 6 times.

13. For how long do you wait in your last visit before you are seen by the doctor ?

(1) Less than 15 minutes. (2) 15 - 30 minutes.
(3) 31 - 45 minutes. (4) More than 45 minutes.

14. How long did the doctor spend with you on average at last visits ?

(1) Less than 15 minutes. (2) 15 - 30 minutes.
(3) 31 - 45 minutes. (4) More than 30 minutes.

15. At the last visit, what was your doctor's nationality?

(1) Saudi. (2) Arabian.
(3) Non-Arabian.

16. During the last five visits, was there any change in physician ?

(1) Yes. (2) No. (3) Don't know.

17. If yes in Q13, what were the physicians' sex ?

(1) Males (2) Females. (3) Males and females.

18. If no in Q13, what was the physician's sex ?

(1) Male. (2) Female.

19. Does the doctor give you the opportunity to ask questions during the examination ?

(1) Yes. (2) Seldom. (3) No.

20. While you are talking with the doctor, do you think that you are:

(1) Not understood. (2) Little understood.
(3) Understood. (4) Well understood.

21. While you are talking with the nurse, do you think that you are:
(1) Not understood. (2) Little understood.
(3) Understood. (4) Well understood.

22. Do you think that deferent physician on each visit influences not attending the antenatal care clinic ?
(1) Yes. (2) No. (3) Don't know.

23. Do you think that deferent nurse in each visit influences not attending the antenatal care clinic ?
(1) Yes. (2) No. (3) Don't know.

24. Do you have children less than five years old?
(1) Yes. (2) No.

25. If yes, do you have a baby-sitter ?
(1) Yes. (2) Seldom. (3) No.

26. If baby-sitter is available, do you think that it is easier to you to attend the antenatal care clinic ?
(1) Yes. (2) No. (3) Don't know.

27. While you are coming to the PHC centre, do you:
(1) Use a car. (2) Walk.
(3) Both.

28. If you walk:
For how long do you walk ?
(1) Less than 10 minutes. (2) 11 - 20 minutes.
(3) More than 20 minutes.

29. Have you suffered from any of the following problems in your previous pregnancy ? (You can chose more than one).

FACTORS	YES	NO
(1) Anemia.		
(2) Eclampsia.		
(3) Two or more spontaneous abortions.		
(4) Gestational Diabetes.		
(5) Still birth.		
(6) Premature labour.		
(7) Antepartum hemorrhage.		
(8) Postpartum hemorrhage.		
(9) Congenital anomalies.		
(10) Delivery of a baby less than 2.5 kg.		
(11) Delivery of a baby more than 4 kg.		
(12) Intrauterine fetal death.		
(13) Tumours of uterus.		
(14) Tumours of ovary.		
(15) Cervical Incompetence.		
(16) Cervical operation.		
(17) Previous Caesarian section.		
(18) Ectopic pregnancy.		
(19) Medical problems (Such as hypertension, hart diseases, renal failure, bronchial asthma or diabetes mellitus).		
(20) Other problems, Specify		

30. Have you suffered from any of the following problems in this pregnancy ? (You can chose more than one).

FACTORS	YES	NO
(1) Anemia.		
(2) Eclampsia.		
(3) Gestational Diabetes.		
(4) Toxoplasmosis.		
(5) Toxaemia.		
(6) Rubella.		
(7) Hepatities "B".		
(8) Depression.		
(9) Medical problems (Such as hypertension, hart diseases, renal failure, bronchial asthma or diabetes mellitus).		
(10) Other problems, Specify		

31. Do you smoke ?

(1) Yes. (2) No.

32. Your house condition:

(1) Villa. (2) Flat.

(3) Mud house or alike. (4) Other, Specify .....

33. How many times you visited the antenatal care clinic during each of the following months of your pregnancy ?

Month	No.of visits	Month	No.of visits	Month	No.of visits
First		Forth		Seventh	
Second		Fifth		Eighth	
Third		Sixth		Ninth	

Appendix 1-B

Questionnaire Type B

Name of the Area:_____.
PHC Centre's Name:_____.

ANC Clinic Stocks

Instruments	Standard	Available Number	The Quality
Office with drawers	1		
Chair	1		
Chair for attendants	2		
Examination table	1		
Bed sheet	1		
Bed cover	1		
Bed curtain	1		
Equipment cupboard	1		
Maternal card	1		
Maternal register	1		
Hand washing basin	1		
waste basket	1		
Side lamp	1		
Doppler	1		
Speculoe (diff. sizes)	15		
Sponge holding	1		
Gloves	1		
Sphygmomanometer	1		
Adult weighing machine	1		
Thermometer	1		
Urine dip stick	1		
Steriled gauze	1		
Artery forceps	2		
Umbilical Scissors	1		
Baby nasal suction	2		
Needles	2 (Box)		
cream	10		
Methargin	1		
Medical swabs	5 (Box)		
Stethoscope	1		
Fetal stethoscope	1		

The quality of the instrument can be measured by: Good, Fair, or Bad.

Appendix 1-C

Questionnaire Type C

Name of the Area:_____.
PHC Centre's Name:_____.

Health Status of the Infant at the First Week of Delivery

No	Mothr Name	Que No.	Type of Dlivry	Place of Dlivry	Infnt Sex	Infnt Status	Infnt Weigt	Infnt Heigt	Infant Helth Status	Type of Disese	Comments

Que No. = the number that written on the Questionnaire Type A. for each pregnant women.
Type of Delivery = defined as: **(1)** Normal D. **(2)** Ventouse. **(3)** Breech. **(4)** Forceps. **(5)** C.S. **(6)** Others.
Place of Delivery = defined as: **(1)** Hospital **(2)** PHC Centre. **(3)** House. **(4)** Tent.
Infant's sex = defined as: **(1)** Male. **(2)** Female.
Infant's status = defined as: **(1)** Alive. **(2)** dead.
Infant's Weight = defined as: **(1)** Normal (2.5kg - 4.0kg). **(2)** Less than 2.5kg. **(3)** More than 4.0kg.
Infant's Health Status = defined as: **(1)** Good. **(2)** Bad.
Type of Disease = defined as: **(1)** Nothing. **(2)** The name of disease that the infant have had at the first week of delivery.

Appendix 2

Appendix 2A

المملكة العربية السعودية
وزارة الصحة
مديرية الشئون الصحية في منطقة الرياض

بطاقـــة الأمـــومـــة
MATERNAL HEALTH CARD

تاريخ التسجيل
Date of registration :

مركز صحي
Health Centre:

منطقه
Region:

رقم الملف العائلي
Family File No.:

رقم التسجيل
Registration No.:

إسم المريضة
Patient's Name:

العمر
Age:

الجنسية
Nationali

المهنة
Occupation:

إسم الزوج
Husband's name.

العنوان
Address:

رقم التليفون
Tel. No.:

أقرب شخص للاتصال به عند الضرورة
Emergency contact (Relative):

رقم التليفون
Tel. No.:

Gravida:	CYCLE: L.M.P.:
Para: Abortions:	E.D.D.: E.D.D revised to.:
No. of living children:	Contraception: ☐ Pills
S.B. /N.N.D.	☐ IUCD

First visit complaint

MEDICAL HISTORY

- ☐ Anaemia
- ☐ B. Asthma
- ☐ Heart Disease
- ☐ Hypertension
- ☐ Diabetes
- ☐ Allergies
- ☐ U.T.I.
- ☐ Epilepsy
- ☐ Drugs (specify)
- ☐ Others

SURGICAL HISTORY

- ☐ Laparotomy (specify)
- ☐ D&C
- ☐ Cerv. Sutures
- ☐ Pelvic floor repair
- ☐ Others

Blood transfusion

- ☐ Reason

SUMMARY OF LABOUR

Date of admission to labour room : Time: Gestation:

Presentation & Position: State of membrane: F.H.S.:

Date & T[illegible]e of delivery: Duration of labour :

[illegible]elivery: Blood loss: _____ ML

[illegible]erinuem: ☐ Intact ☐ Tear([illegible]egree) ☐ Episiotomy (type):

Lacerations (type): ☐ Anaesth.

Placenta: ☐ Complete ☐ Incomplete ☐ Method of delivery:

Baby's sex: ☐ Single ☐ Twin(s) ☐ Alive ☐ S.B. Wt.:

Cong. anomalies: Apgar score: ☐ 1st min. ☐ 5th min.

Resuscitation: ☐ No ☐ Yes (Type)

POST PARTUM COMPLICATIONS:

DISCHARGE STATUS

Date & Time of Discharge:

Temp.: B.P.: Pulse: Breasts:

Lochia: Perineum: Drugs (incl. Anti D): Rubella vac. ☐ Yes ☐ No

POST NATAL HOME VISITS BY MIDWIFE الزيارات المنزلية

		FIRST الأولى	SECOND الثانية	THIRD الثالثة
Date	التاريخ			
Temp.	الحرارة			
B.P.	ضغط الدم			
Breast	الثدي			
Uterus	الرحم			
Perineum	العجان			
Lochia	السائل النفاسي			
Baby's: Cond.:	حالة الطفل			

POSTNATAL EXAMINATION 6 WEEKS AFTER DELIVERY IN P.H.C.

Patient's complaint & duration:

General examination: Temp.: B.P. Weight: Breasts:

Chest: Heart: Abdomen: L.L.

Pelvic examination:

Special Investigations:

Treatment & Recommendation:

Name of Physician & Signature: Date:

RISK FACTORS

Age & Parity

- ☐ Age less than 18 years
- ☐ Age over 38 years
- ☐ Primigravida age 30 years or more
- ☐ Parity - more than 5

Past obstetric & Gynae History

- ☐ SB / NND
- ☐ Foetal abnormality
- ☐ Antibodies in prev. preg./Rh Incomp.
- ☐ Hypertension
- ☐ Eclampsia
- ☐ Spontaneous abortion x 2
- ☐ Premature labour (28-37 wks.)
- ☐ Previous cervical suture
- ☐ Prev. C.S./Hysterotomy/Myomectomy
- ☐ Previous forceps/vacuum delivery
- ☐ Prolonged labour
- ☐ Precipitate labour
- ☐ Antepartum Haemorrhage
- ☐ Postpartum Haemorrhage
- ☐ Pelvic floor repair

Maternal Health

- ☐ Chronic illness
- ☐ Sex. transmit. disease
- ☐ Infertility with Medical advice
- ☐ Uterine anomaly including fibroids
- ☐ Family H/O of diabetes
- ☐ Family H/O of fetal abnormality

Factors in Pregnancy

- ☐ LMP uncertain ± 2 wk
- ☐ IUCD insitu/On pill after concep.
- ☐ Multiple pregnancy
- ☐ FM decreased/absent
- ☐ Poor wt.gain
- ☐ Breech > 36 wks.
- ☐ PV Bleeding
- ☐ Unstable lie > 34 wks.
- ☐ Other problem

Booking Examination

- ☐ BP-140/90 & more
- ☐ Maternal wt. +/more than 85kg.
- ☐ Maternal wt. less than 45kg.
- ☐ Primigravida+Height<152 cm.
- ☐ Cardiac murmur detected/referred
- ☐ Uterus large/small for dates
- ☐ Other pelvic mass detected

Investigations

- ☐ Glycosuria
- ☐ Proteinuria
- ☐ Bacteruria
- ☐ Decrease HB <10.5%

Completed by: Signature:

Date:

NOTE:

1. Pregnancy with any risk factor should be referred to the hospital once reported.
2. Routine follow up cases will be referred to the hospital at 16 weeks, then at 30, 36 Wks. gestation.

FAMILY HISTORY

- ☐ Diabetes
- ☐ Hypertension
- ☐ T.B.
- ☐ Twin(s)
- ☐ Psychiatric illness
- ☐ Cong. abnormalities
- ☐ Consanguinity

PATIENT'S OBSTETRIC HISTORY

Date of Del.	Gest	Sex	Place of Del.	Birth Wt	Mode of Delivery	Complications esp. PET. Anaemia. APH. PPH	Remarks on child

PHYSICAL EXAMINATION

Height
Teeth
Breasts
Nipples
C.V.S.
Resp. S.
G.I.T
C.N.S.
Varicose veins

LABORATORY RESULTS

Pt. Bld. Grp & Rh.
Husb. Bld. grp & Rh (if necessary):

V.D.R.L.:
F.B.S.:
Antibodies titre:
HBs.

T.P.H.A.:
P.P.B.S.:
Rubella titre:
HBe.
Toxoplasmosis titre:

ULTRASOUND SCAN

Date:

☐ Single	B. P. D.	= Gest. Age:	Presentation
☐ Twin(s)	F.L.	= Gest. Age:	Fetal wt.
☐ Alive	A/C	= Gest. Age:	Liquor
☐ IUFD	Cong. anomalies	Placental site	Fetal activity

Date	Wt	BP	Urine			HB	Edema	Maturity			Present	Engagm	FHS		Complaints
			Alb	Sug	Ke			Date	USS	Fund					

Appendix 2B

المملكة العربية السعودية
وزارة الصحة
الشؤون الصحية بمنطقة / محافظة _____
قطاع : _____
مركز صحي : _____

أنشطة وخدمات المركز الصحي

خلال شهر ..... عام ١٤هـ

- يراجع من قبل إدارة الرعاية الصحية الأولية بالمنطقة وترسل نسخة للمركز الصحي .
- ترسل لإدارة الإحصاء بالمديرية .

مطبعة الشؤون الصحية بالشرقية ١٥-٥-٩ A

رقم المنطقة بالحاسب الآلي : ☐☐

رقم المركز الصحي بالحاسب الآلي : ☐☐☐☐

☐ حضري (داخل المدن)　　☐ ريفي (خارج المدن)

١- بيان عدد السكان والأسر من واقع آخر مسح سكاني :

الجنسية	الجنس	الفئات العمرية						الإجمالي	عدد الأسر
		أقل من سنة	١-٤	٥-١٤	١٥-٤٤	٤٥-٦٠	أكثر من ٦٠		
سعودي	ذكر								
	انثى								
غير سعودي	ذكر								
	انثى								
المجموع									

٢- بيان القوى العاملة بالمركز خلال الشهر :

الجنسية	الجنس	أطباء		طبيب اسنان	تمريض	قابلة	فني صيدلي	فني مختبر	فني أشعة	مراقب صحي	فني إحصاء	إداري	مستخدم	أخرى
		عام	طب اسرة											
سعودي	ذكر													
	انثى													
غير سعودي	ذكر													
	انثى													
المجموع														

B 9 5 1

٣- إجمالي المراجعين للمركز خلال الشهر :

الجنسية	العيادات العامة	الأسنان	الحوامل	الطفل السليم	مجموع مراجعي العيادات	الضماد والحقن	المختبر	الأشعة	مجموع الخدمات المساندة
سعودي									
غيرسعودي									
المجموع									

٤- مراجعي الأمراض المزمنة :

نوع المرض		مرضى السكري			مرضى ضغط الدم			مرضى الربو		
الجنسية	الجنس	المسجلين	الجدد	المحالين	المسجلين	الجدد	المحالين	المسجلين	الجدد	المحالين
سعودي	ذكر									
	انثى									
غير سعودي	ذكر									
	انثى									
المجموع										

العدد المتوقع للمصابين حسب المؤشرات الوطنية :

مرضى السكري : ..... - مرضى ضغط الدم المرتفع : ..... - مرضى الربو : .....

٥- الإحالات والردود الراجعة خلال الشهر :

الجنسية	الجنس	نوع الإحالات			المجموع	الردود الراجعة
		إسعافية أوليه	طارئة	عادية		
سعودي	ذكر					
	انثى					
غير سعودي	ذكر					
	انثى					
المجموع						

C ٩-٥-١٥

٦- عيادة الأسنان

نوع الخدمة			عدد المراجعين
الإجراءات العلاجية	الأشعة	إطباقية	
		ذروية	
		خارج الفم	
	الخلع	لبني	
		دائم	
		جراحي	
	الجراحة	جراحة	
		متابعة	
	الحشو	مؤقت	
		أملجم	
		كومبوزيت	
		لاينومر زجاج	
	علاج العصب	لبني	
		تهيئة	
		حشو	
	علاج اللثة	كحت جير	
		جراحة لثة	
	أمراض فم		
الإجراءات الوقائية		توعية صحية	
		رعاية حوامل	
		حشو الحفر	
		فلوريد موضعي	

بالغين	ذكور	
	إناث	
أطفال	ذكور	
	إناث	
المجموع		
سعودي		
غير سعودي		
جديد		
متابعة		

أدوية منصرفة ١= ٢= ٣= ٤= ٥= ٦=

١- مضادات حيوية ٢- مسكنات ٣- غسول ومضمضة للفم ٤- علاج لتقرحات الفم ٥- أدوية للحساسية ٦- أخرى

D ٩-٥-١٥

٧- خدمات رعاية الأمومة خلال الشهر :

عدد النساء في سن الإنجاب : [ ] عدد المتزوجات منهن : [ ]

العدد / الجنسية	إجمالي الحوامل المسجلات	الحوامل الجدد	المعرضات للخطر	زيارات الحوامل خلال الشهر	وفيات الأمهات خلال الشهر			
					الإسم	الجنسية	العمر	سبب الوفاة
سعودي								
غير سعودي								
المجموع								

	عدد النساء اللاتي أنهين حملهن خلال الشهر	عدد الزيارات أثناء الحمل		عدد زيارات النفاس		إستكمال تحصينات الكزاز *	
		أقل من ٥ زيارات	٥ زيارات فأكثر	خلال العشرة أيام الأولى	نهاية الفترة	أكمل	لم يكمل
سعودي							
غير سعودي							
المجموع							

	مكان الميلاد				نتيجة الحمل				
	بالمنزل		بالمركز الصحي	بالمستشفى	مولود حي			إجهاض	مولود ميت
	بإشراف	بدون			طبيعي	مبتسر	أقل من ٢,٥كجم		

* من تلقين الجرعة الثانية أثناء الحمل الحالي أو الجرعة المنشطة لمن سبق تطعيمهن

٨- رعاية الطفولة :

الجنسية	الجنس	عدد الأطفال المسجلين أقل من عام	التحصينات الأساسية		عدد الأطفال المسجلين أقل من ٥ أعوام	عدد من رضعوا طبيعياً	عدد المعرضين للخطر أقل من ٥ سنوات	وفيات الأطفال			
			أكملوا التحصينات الأساسية خلال الشهر	بلغ عمرهم ١١ شهراً، ولم يكملوا التحصينات الأساسية				من الولادة - ٧ يوم	٧ يوم - أقل من شهر	شهر - أقل من عام	عام - أقل من ٥ سنوات
سعودي	ذكر										
	انثى										
غير سعودي	ذكر										
	انثى										
المجموع											

عدد الأطفال الذين يقل وزنهم بالنسبة لعمرهم (تحت المنطقة C في منحنى النمو) خلال الشهر :

ذكور	
إناث	

٩- الأمراض الشائعة في الرعاية الصحية الأولية وعدد مرات التردد خلال الشهر:

المرض	الرقم الكودي	الجنسية والجنس				المجموع	العمر بالسنين					
		سعودي		غيرسعودي			أقل من ١	١-٥	٥-١٥	١٥-٤٥	٤٥-٦٠	أكثر من ٦٠
		ذكر	أنثى	ذكر	أنثى							
الأمراض الطفيلية والمعدية	٠١١											
الديدان المعوية	٠١٢											
مرض السكري	٠١٣											
أمراض الدم والجهاز المناعي	٠١٤											
ضغط الدم المرتفع	٠١٥											
أمراض القلب والأوعية الدموية	٠١٦											
أمراض العين	٠١٧											
أمراض الأذن والماستويد	٠١٨											
التهابات الجهاز التنفسي العلوي	٠١٩											
الإلتهابات الرئوية	٠٢٠											
الربو	٠٢١											
أمراض الفم والأسنان	٠٢٢											
أمراض المعدة والمرئ والأمعاء الدقيقة	٠٢٣											
أمراض القولون والمستقيم الشرج	٠٢٤											
أمراض الجهاز البولي	٠٢٥											
أمراض الثدي	٠٢٦											
أمراض أعضاء الحوض عند النساء	٠٢٧											
مضاعفات الحمل	٠٢٨											
أمراض الجهاز التناسلي عند الرجال	٠٢٩											
أمراض الجلد والنسيج الخلوي	٠٣٠											
امراض الجهاز العضلي والعظمي	٠٣١											
الأمراض النفسية والعصبية	٠٣٢											
الإصابات والحوادث والتسممات	٠٣٣											
الحروق	٠٣٤											
أمراض الإسهال	٠٣٥											
أخرى	٠٣٦											

١٥-٥-٩-١٠

١٠- إحصائية التطعيمات خلال شهر عام م (يكتب الشهر الميلادي المنتهي)

نوع التطعيم	لقاح شلل الأطفال				اللقاح الثلاثي البكتيري				لقاح الإلتهاب الكبدي الوبائي			لقاح بي سي جي	لقاح الحصبة	لقاح MRR	لقاح نكاف	لقاح حصبة ألمانية
الجرعة	أولى	ثانية	ثالثة	منشطة	أولى	ثانية	ثالثة	منشطة	أولى	ثانية	ثالثة					
أطفال أقل من عام																
عام - أقل من عامين																
عامين فأكثر																
جميع الأعمار المستهدفة																
جميع الأعمار المستهدفة																
المتعاقد																

الحوامل			نساء في سن الإنجاب			أخرون		
أولى	ثانية	منشطة	أولى	ثانية	منشطة	أولى	ثانية	منشطة

تطعيمات أخرى توضح				

أمصال ولقاحات أخرى : طلبة - مخالطين - حملات - عمال أغذية

ضد التيفود			ضد الحمى الشوكية		مخالط شلل أطفال	مخالط حصبة	مخالط حصبة المانية	مخالط التهاب كبدي للكبار	لقاح الكلب	مصل عقرب	مصل افعى	مصل الكزاز	جاما جلوبيولين عضلي
١	٢	٣	حملات	مخالطين									

عدد الأطفال المستهدفين بالتطعيم :

- من واقع الحصر السكاني - مواليد العام السابق - المؤشر الوطني للزيادة السنوية في السكان .

G ٩-٥-١٥

١١- عدد الحالات المبلغة بالأمراض المستهدفة بالتحصين خلال شهر ..... لعام ١٤٢هـ

المرض / موقف التطعيم	الحصبة		الدفتريا		السعال الديكي		الكزاز		شلل الأطفال		الدرن		الإلتهاب الكبدي ب		حصبة المانية		نكاف	
	إصابة	وفاة	إصابة	وفاة	إصابة	وفاة	إصابة	وفاة	إصابة	وفاة	إصابة	وفاة	إصابة	وفاة	إصابة	وفاة	إصابة	وفاة
مطعم																		
غير مطعم																		
غير معروف																		
المجموع																		

١٢- نشاط المختبر: يوجد | | لا يوجد | |

نوع الفحص	الدم			بول	براز	بصاق	المجموع
	شكلي	مصلي	كيماوي				
سعودي							
غير سعودي							
المجموع							

النتائج الإيجابية:

نوع الإصابة	بلهارسيا بولية	بلهارسيا معوية	دوستناريا	ملاريا	أخرى تحدد	أخرى تحدد	المجموع
سعودي							
غير سعودي							
المجموع							

١٣- نشاط الأشعة :

الجنسية	عدد المراجعين	عدد الأفلام
سعودي		
غير سعودي		
المجموع		

١٤- الجراحات الصغرى والغيارات والحقن :

الجنسية	جراحات صغرى	غيارات	حقن
سعودي			
غير سعودي			
المجموع			

١٥- أنشطة الصحة العامة :

النشاط	مصادر المياه			زيارات محلات الأغذية			الإستقصاء الوبائي	لقاءات التوعية الصحية		المجموع
	أخذ عينات	متابعة	المجموع	أخذ عينات	متابعة	المجموع		داخلية	خارجية	
عدد الزيارات خلال الشهر										

١٦- نشاط مشاركة المجتمع :

أ- لجنة أصدقاء الصحة : يوجد ☐ عدد اللقاءات ☐ لا يوجد ☐

ب- لجنة صديقات الصحة : يوجد ☐ عدد اللقاءات ☐ لا يوجد ☐

١٩-٥-١٥

COMMONLY ENCOUNTERED DISEASES IN P.H.C

CODE NO.	DISEASE
011	INFECTIOUS & PARASITIC DISEASES
012	HELMINTHIASIS (tapeworms,round worms etc...)
013	DIABETES MILLITUS.
014	BLOOD DISEASES (anaemias all types,bleeding diathesis, lukeamias...etc)
015	HYPERTENSIVE DISEASES all types
016	HEART & BLOOD VESSELS DISEASES (valaular heart dis.,I.H.D.,varicositsis
017	EYE DISOTDERS (trachoma,inflamatory disotders,forders,foreign bodies,allergic cond,cataract..etc)
018	EAT 7MASTOID DISEASES (otitis all types,imfections of eustachin,tympanic meb.,mastoid & vestibule including deafness,hearing desects,foreign bodies...etc)
019	ACUTE RESPIRATOTY T. INFECTIONS (nose, sinuses, pharynx, tonsils, larynx, bronchi..etc
020	PNEUMOBIAS ALL TYPES.
021	BRONCHIAL ASTHMA
022	MOUTH & TEETH DISOTDERS (caries,gengivitis,ulcers,& dis. tongue & buccal mucosa.)
023	DISOTDERS OF OESOPHAGUS, STOMACH & SMALL INTESTINE (dyspepsia, gastritis, peptic ulcer... etc)
024	DISOTDERS OF LATG INTEST., RECTUM & ANAL CANAL (colitis , irrit , colon, bleeding /rectum , anal fissure,haemorrhoids , perianal adscess, fistulae in ano ...etc.
025	DISEASES OF KIDNEY , URETERS & URINARY BLADDER (ingections,urolithiasis..etc)
026	DISEASES OF FEMALE BREAST (mastitis,fissured nipple,lump...etc)
027	DISORDERS OF FEMALE PELVIC ORGANS: OVARIES, TUBES,UTERUS,CERVIX & VAGINA (including dysmenorrgea & uterine bleeding)
028	PREGNANCY : HIGH RISK & COMPLICATIONS
029	DISORDERS OF MALE REPRODUCTIVE SYSTEM (undescend .testicle, hydrocele ,hematocele, prostatitis,impotenital anomalies.....etc)
030	DISEASES OF SKIN & SUB CUTANIOUS TISSUE (inflamatory,allergic including disorders og hair ,nails & sebacious glands)
031	DISORDERS OF MUSCLOSKELETAL SYST.
032	PSYCOLOGICAL & NEUROLOGICAL DISOTRDERS (depression alltypes, sche-sophrenia, paralttic disorders,....etc)
033	TRAUMATIC DISORDERS & POISONING (sprains,fractures,dislocation,openwounds....etc)
034	BURNS(all types & degrees)
035	DIARRRHEAL DISEASES
036	ALL OTHERS not mentioned above

K ٩-٥-١٤

إعداد فني الإحصاء	مراجعة مدير المركز الصحي	مراجعة مشرف القطاع
.....	.....	.....

يعتمد : المساعد للرعاية الصحية الأولية

.....

- تم تفريغها بواسطة إدارة الإحصاء بمنطقة / محافظة : .....

يعتمد : مدير الإحصاء

- يجب أن ترفع هذه الإستمارة من المركز الصحي الى الشؤون الصحية في فترة أقصاها ثلاثة أيام .
- يجب أن ترفع الإستمارة التفريغية الى إدارة الإحصاء بالوزارة في مدة أقصاها عشرة أيام من بداية الشهر .

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