EFFECTIVENESS OF INTERGRATING COMMUNITY AND HOSPITAL SERVICES REGARDING ANTENATAL CARE SERVICES BY AAC MODEL IN QUETTA, PAKISTAN

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A Thesis Submitted in Partial Fulfillment of the Requirements

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ประสิทธิภาพการบูรณาการชุมชนและการบริการของโรงพยาบาลในการให้บริการการฝากครรภ์ โดยใช้โมเดลเอเอซี ในเมืองเควต้าร์

นายเชย์ มูรี๊ด

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาสาธารณสุขศาสตรดุษฎีบัณฑิต
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Field of Study	Public Health
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เชย์ มูรี๊ด : ประสิทธิภาพการบูรณาการชุมชนและการบริการของโรงพยาบาลในการให้บริการการฝากครรภ์โดยใช้โมเดลเอเอซี ในเมืองเควต้าร์)ประเทศปากีสถาน (EFFECTIVENESS OF INTERGRATING COMMUNITY AND HOSPITAL SERVICES REGARDING ANTENATAL CARE SERVICES BY AAC MODEL IN QUETTA, PAKISTAN), อ.ที่ปรึกษาวิทยานิพนธ์หลัก : ผศ. ดร. รัตนา สำโรงทอง, 125 หน้า.

จากการทบทวนการรายงานความครอบคลุมของการเข้าถึงบริการการฝากครรภ์ใน เมืองเควตาร์ พบว่ามีเพียงร้อยละ 51 ของหญิงตั้งครรภ์โดยเข้ารับบริการฝากครรภ์เพียง 1 ครั้ง และความครอบคลุมของการฝากครรภ์ครบ 4 ครั้ง มีเพียงร้อยละ 14 เท่านั้น จากเหตุผลดังกล่าวผู้ศึกษาจึงได้พัฒนารูปแบบความร่วมมือร่วมใจของหญิงตั้งครรภ์เพื่อเข้าถึงบริการการฝากครรภ์ให้ครบ 4 ครั้ง ตามเกณฑ์มาตรฐานขององค์การอนามัยโลก ภายใต้การ บูรณาการร่วมกันระหว่างชุมชนและการให้บริการของโรงพยาบาล การบริการ การให้คำปรึกษาและการพัฒนาการให้บริการอย่างเต็มรูปแบบ ประชากรกลุ่มตัวอย่างใช้วิธีการสุ่มจากจำนวนหญิงตั้งครรภ์ในไตรมาสแรก จำนวน 100คน จากคลินิกให้บริการผู้ป่วยนอกของโรงพยาบาลรัฐบาลทั้งสองแห่ง รูปแบบการศึกษาวิจัยในครั้งนี้เป็นแบบการศึกษากึ่งทดลองภาคสนาม โดยแบ่งออกเป็นกลุ่มทดลองและกลุ่มควบคุม คือคลินิกบริการการฝากครรภ์ของโรงพยาบาลอย่างละหนึ่งแห่ง การจัดเก็บข้อมูลจำนวนสองครั้งคือก่อนและหลังดำเนินการทั้งสองกลุ่ม ผลการศึกษาพบว่า ความครอบคลุมของการเข้ารับบริการการฝากครรภ์ครบ 4 ครั้ง มีอัตราเพิ่มขึ้นรวมไปถึงมีความรู้ ทัศนคติและความพึงพอใจของหญิงตั้งครรภ์ที่เข้ารับการบริการการฝากครรภ์เพิ่มมากขึ้น โดยก่อนดำเนินการศึกษาวิจัยไม่มีความแตกต่างอย่างมีนัยสำคัญทางสถิติในเรื่องทัศนคติ ความรู้และความพึงพอใจ ทั้งสองกลุ่ม หลังจากการดำเนินการพบว่า มีความแตกต่างกันอย่างเห็นได้ชัดโดยในกลุ่มทอดลอง หญิงตั้งครรภ์เข้ารับบริการการฝากครรภ์ครบ 4 ครั้ง จำนวน 33 คน (ร้อยละ 71.7) และกลุ่มควบคุม จำนวน 11 คน(ร้อยละ23.9) โดยมีความแตกต่างกันอย่างมีนัยสำคัญทางสถิติ ($p < 0.001$) นอกจากนี้ยังมีความแตกต่างในเรื่องความรู้ ทัศนคติ และความพึงพอใจ ที่เกี่ยวข้องกับการฝากครรภ์ทั้งก่อนและหลังดำเนินการอย่างมีนัยสำคัญทางสถิติ($p < 0.001$) สรุปจากการศึกษาในครั้งนี้ชี้ให้เห็นว่าหญิงตั้งครรภ์ได้เข้าถึงบริการการฝากครรภ์เพิ่มขึ้นทั้งในด้านความรู้ , การเปลี่ยนทัศนคติและความพึงพอใจกับบริการด้านการฝากครรภ์โดยการใช้อาสาสมัครสาธารณสุขผู้หญิงเพื่อส่งเสริมให้ผู้หญิงได้เข้าถึงการบริการการฝากครรภ์ครบ 4 ครั้ง ตามเกณฑ์มาตรฐานขององค์การอนามัยโลกเพื่อส่งเสริมการมีสุขภาพที่ดีทั้งแม่และทารกในครรภ์

สาขาวิชา: สาธารณสุขศาสตร์ ลายมือชื่อนิสิต .....

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SHEH MUREED: EFFECTIVENESS OF INTERGRATING COMMUNITY AND HOSPITAL SERVICES REGARDING ANTENATAL CARE SERVICES BY AAC MODEL IN QUETTA, PAKISTAN. ADVISOR: Asst. Prof. Rattana Somrongthong, Ph.D.

The literature review of Antenatal coverage in Quetta city reveals that 51% of pregnant women had only 1 visit for antenatal care and percentage further drops to 14% for 4 antenatal care visits. Considering the above facts a model was developed to increase adherence of pregnant women to WHO recommended 4 times ANC visits, through integrating community and hospital services, counseling, and service mobilization. One hundred pregnant women in their first trimester were randomly selected from the OPD of two government hospitals. The study design was a quasi-experimental study. One hospital served as the control group where as the other as the intervention. Data was collected at two times pre and post in both the groups. The main outcome was the 4 ANC visits completed by pregnant women, and also increase in knowledge, change in attitude and higher satisfaction concerning ANC. At the pretest there was no significant difference in groups regarding, knowledge attitude and satisfaction making the group comparable to conduct the intervention. The posttest results illustrate that there was a significant difference regarding number of ANC visit completed. In the intervention group 33 (71.7%) completed their 4 ANC visits compared to 11 (23.9%) in the control group the difference is statically significant ($p < .001$). There was also difference in knowledge ($p < .001$), attitude ($p < .001$), and satisfaction ($p < .001$) regarding ANC before and after the intervention. The findings of this research suggests that by increasing pregnant women's knowledge, changing their attitudes and increasing satisfaction with health service by using health community workers to encourage women for attending ANC, can help adhere pregnant women to 4 times ANC visits according to the WHO guidelines leading to better health for mothers and the unborn child.

Field of Study: Public Health Student's Signature .....
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For any errors or inadequacies that may remain in this work, of course, the responsibility is entirely my own.

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Abbreviations

AAC	Adherence to Antenatal care
ANC	Antenatal Care
BHU	Basic Health Unit
BMCH	Boland Medical Complex Hospital
CHW	Community health worker
EMRO	Regional Office for Eastern Mediterranean
GATHER	Greet, Ask, Tell, Help, Explain Return
LHW	Lady Health worker
LHV	Lady Health visitor
LHS	Lady Health supervisor
MDG	Millennium Development Goal
MICS	Multi indicators Cluster survey
MNCH	Maternal Newborn and Child health Centre
NMCH	National Program on Maternal Newborn and child Health
OPD	Out patient department
PSQ 18	Patient Satisfaction Questionnaires 18
RHC	Rural Health Centre
SBH	Skilled Birth Attendant
SPH	Sandeman Provisional Hospital
SMI	Safe Motherhood Initiative
TBA	Traditional birth attendant
WHO	World Health Organization

CHAPTER I

INTRODUCTION

Antenatal care (ANC) is the complex of interventions that a pregnant woman receives from health care services throughout pregnancy. The purpose of ANC is to prevent or identify and treat conditions that may threaten the health of the baby and the mother, and also to help a woman approach pregnancy and birth as a safe experience (Banta, 2003). Despite amassed coverage in the last 10 years, ANC still can only continue to realize its considerable potential by improving responsiveness, breaking down the barriers to access and refocusing on effective interventions (WHO, 2005). A study on antenatal care estimated that worldwide only 70% of women ever receive any ANC, whereas in industrialized countries more than 95% of pregnant women receive ANC. The region of the world with the one of the lowest levels of use is South Asia, where only 54% of pregnant women have at least one antenatal care visit (Abou-Zahr Lidia and Tessa, 2003).

Safe Motherhood Initiative (SMI) from 1987 led to a fresh impetus of research, which defined the policy and strategies, needed to combat continuing high levels of maternal deaths in past. The greatest effort has been placed on increasing access to skilled birth attendants and obstetric emergency care (Family Care International, 2007). Fifteen years after the launch of SMI. It is clear that policy to decrease maternal mortality must knit together more closely the separate components of maternal care, from ANC through the prenatal period, in order to have the greatest impact on maternal health (Gerein Mayhew and Lubben, 2002). ANC interventions, in and of themselves, cannot be anticipated to have a major impact on maternal mortality, their purposefulness is to improve maternal and prenatal health, 'this being an end in itself and necessary for improving the health and survival of infants and mothers (WHO and UNICEF, 2003). In addition, the potentiality of ANC as the line of action to increase the rate of births attended by skilled health staff, and its significance as an entry point for other health programs for example malaria, TB, nutrition and also HIV/AIDS is now better understood and applied (Gerein Mayhew and Lubben, 2003)

The traditional approach to ANC, which was based on European models developed in the early 1900s, it adopts that more antenatal visits are better in care for pregnant women. Frequent ANC visits were the norm, and women were classified by risk category to determine their chances of complications and the level of care they would need during pregnancy (Lincetto, 2006). In general, ANC programs in developing countries have been adopted from those in developed countries. These programs, however, have been poorly implemented and largely ineffective. In response, in 2001 the World Health Organization (WHO) designed and tested a focused ANC package that includes only counseling, examinations, and tests that serve an immediate purpose and have a proven health benefit. The WHO recommended reducing the number of antenatal care visits to four, and this has not been found to pose a risk to the health of mother or baby (Carroli et al., 2001).

"*Focused ANC means that provider focus on assessments and action needed to make decisions, and provide care for each woman's individual situation."*

Focused ANC, recognizes three things: First, ANC are a unique opening for early diagnosis and treatment of problems in the mother and prevention of problems in the new born with low cost. Second, the majority of pregnancies progress without complications. Third, all women are considered at risk because most complications cannot be predicted by any kind of risk categorization. Hence all women should receive necessary care and monitoring for complications that are focused (USAIDS, 2007).

The major goal of focused antenatal care is to help women maintain normal pregnancies through:

1. Identification of pre-existing health conditions
2. Early detection of complications arising during the pregnancy
3. Health Promotion and Disease Prevention
4. Birth Preparedness and Complication Readiness

1.1 Rational and Justification

"Fate has allowed humanity such a pitifully meager coverlet that in pulling it over one part of the world, another has to be left bare"

Rabindranath Tagore, who won the Nobel Prize for literature in 1913, uttered these words almost a century ago (WHO, 1988). These words can be clearly seen in disproportions in health of the population in developing and the developed countries; the most astonishing amongst these is doubtless the disparity in the number of maternal deaths (Hazarika, 2010).

Most of the maternal deaths occur overwhelmingly in the developing countries, where pregnancy complications are among the chief killers of women of reproductive age (WHO, 2005). A woman's death affects her family's well being and that of society as a whole. Her family is less able to care for it and forfeits any paid wages and all the unpaid labor she contributed to the household. Her death increases the chances her family will face poverty and malnutrition. Data shows that the death of an adult woman lowers household consumption significantly in the poorest households for at least a year (Greene and Merrick, 2005).

The Millennium Development Goals (MDGs) were established in year 2000 to focus the efforts of governments and development organizations to improve the health, education and well being of people in the most impoverished countries of the world. There were eight goals. One of the eight Millennium Development Goals; MDG5 was to addresses the public health and social problem of maternal mortality, defined as the death of a woman during pregnancy, childbirth or in the postpartum period. The target of the goal is to reduce maternal mortality by three-quarters the maternal mortality ratio between 1990 and 2015 (Bailey, et al., 2006). ANC coverage is one of the indicators for achieving the MDG 5.

An estimated 358,000 maternal deaths occurred worldwide in 2008, a 34% decline from the levels of 1990. Despite this decline, developing countries continued to account for 99% (355,000) of the deaths. Sub-Saharan Africa and South Asia accounted for 87% (313, 000) of global maternal deaths. Eleven countries including Afghanistan,

Bangladesh, the Democratic Republic of the Congo, Ethiopia, India, Indonesia, Kenya, Nigeria, Pakistan, Sudan, and the United Republic of Tanzania, comprised 65% of all maternal deaths in 2008 (Bhutta et al., 2010). It has been estimated that 88–98% of these deaths are avoidable (De Brouwere Tonglet and Van Lerberghe, 1998). Adequate medical care including ANC, skilled birth attendants (SBA) during labor, and care in postpartum period can prevent 75% or more of these deaths (Vanneste et al., 2000).

Measuring maternal mortality remains a challenge. Identifying a maternal death requires accurate data on the deaths of women of reproductive age, including cause of death, pregnancy status and the time of death in relation to pregnancy or childbirth. These data are often missing, misclassified or underreported, particularly in low and middle income countries that lack fully functioning vital registration systems and where many women deliver at home (Bhutta et al. 2010).

A quarter of the world's population resides in five South Asian countries Afghanistan, Bangladesh, India, Nepal and Pakistan. The population is predominantly poor and rural, with both geographical and financial problems limiting access to maternity care (Hussein, et al., 2010). An estimated 109,000 maternal deaths toke place in these countries in 2008, making up 30% of global maternal deaths (Bhutta et al., 2010). There are major gender disparities: female literacy is below 50%, with two to three fold differences between men and women (UNICEF, 2008). This affects women's capacity to work outside the home, and to access and pay for ANC (Sharam, Sawangdee, and Sirirassamee, 2007). Doctors, midwives or nurses attend less than 50% of births in these countries. Many women deliver at home, with littler than 41% occurring in any healthcare facilities (UNICEF, 2008).

1.2 Background

Pakistan is classified as a low-income country according to the Human Poverty Index (HPI-1), it ranks 65th among 102 developing countries. Although the Human Development Index (HDI) has improved from 0.346 in 1975 to 0.539 in 2006, this improvement has been gradual. Pakistan ranks 134 in the 2006 UNDP HDI and most of its

social and development indicators rival poorly with countries of similar level of economic development (UNDP, 2006).

According to the Human Development Report 2006, more than 50% of the country's population is illiterate. Literacy rates of population 10 years and older have increased to 53% as compared to 45% in 2001/02. The net primary school enrolment ratio is 76 % for boys, but only 57% of girls attend school. While both female and male literacy, at 40% and 63% in 2004/05 respectively have increased, the gender gap has not shown any significant reduction. The literacy rate in urban areas is 69.7%, while in rural areas it is 41.6%, and only 26.6% among rural women.

Public health delivery system functions as an integrated health complex that is administratively managed at a district level. The state provide healthcare through a three-tiered healthcare delivery system and a range of public health interventions. The former includes Basic Health Units (BHUs) and Rural Health Centers (RHCs) forming the core of the primary healthcare structure. Secondary care including first and second referral facilities providing acute, ambulatory and inpatient care is provided through Tehsil Headquarter Hospitals (THQs), and District Headquarter Hospitals (DHQs) which are supported by tertiary care from teaching hospitals. Maternal and Child Health Centers (MCHCs) are also a part of the integrated health system; however, the number of MCHC remains limited. The MCHCs, BHUs and RHCs provide basic obstetric care with community outreach programs offered through lady health workers (Fikree and Mir, 2006). Throughout the country, the vast network of health care facilities include 919 hospitals, 5334 BHUs and Sub- Health Centers, 560 RHCs, 4712 Dispensaries, 905 MCH Centers and 288 TB Centers.

The health profile of Pakistan is characterized by high population growth rate, high infant and child mortality rate, high maternal mortality ratio, and dual burden of communicable and non-communicable diseases (WHO and EMRO, 2007). Organized data on routine health is very bad in rural Pakistan (Jokhio Winter and Cheng, 2005). The World Health Organization's estimate of maternal mortality in Pakistan for the year 2008 was 14,000 with Maternal Mortality Ratio (MMR) of 260 per 100,000 live birth with low

estimates 140 and high estimates 490 (Bhutta, 2010). Data on Pakistan in 2007 approximately 64% of women who gave at least one live birth received ANC, 61% did so from a skilled provider, SBA assisted 39% of births. By the utilization of ANC varied from 44% in Sindh to a low of 23% in Balochistan. Of those women who did not use ANC for their most recent birth, 57% responded that institutional delivery was not necessary (The World Bank, 2007).

Despite an elaborate and extensive network of health infrastructure, the health care delivery system in Pakistan has failed to bring about improvement in health status especially of rural populations. Most of the surveys showed that utilization of Government health care services in Pakistan is little. The three most commonly cited reasons are, inaccessible facilities, lack of availability of medicines, and unhelpful staff. Many patients by pass the first level care facility, as they are dissatisfied with the quality of services being offered. Only 33% of the rural population is in access of 5km of health services. There are also significant provincial differences with access, being best in Punjab and worst in Sind (WHO and EMRO, 2007).

1.3 Balochistan

According to the Multiple Indicator Cluster Survey (MICS) 2004, MMR in Balochistan has been estimated to be around 600/100,000 live births, other sources suggests 700/ 100,000 live births (Yasir et al., 2009), maternal mortality for Balochistan is probably at least twice as high as the national average of Pakistan. In Balochistan only 26% women consulted a skilled health worker for ANC. This ranged from 53% in urban to 21% in rural areas (Government of Balochistan and UNICIEF, 2004). Data provided by Gynea & Obst. Department Bolan Medical Complex Hospital (BMCH) Quetta city in 2009; in unit A 19951 patient visited the OPD, 4862 came for the Antenatal visit, from which 1617 came with labor pain, 902 went back and only 715 were admitted in the labor room for delivery.

1.4 Statement of the Problem

Antenatal care is the first contact element during labor process and for reducing complication during partum and post partum period. ANC care utilization in Pakistan is low even conferring to the regional average and in Balochistan it's even worse. This study tried to test an intervention to adhere the pregnant women for WHO recommended 4 times ANC. The title of this intervention model is Adherence to Antenatal care model (AAC) model its purposes was to adhere pregnant women to the WHO recommended 4 visits of ANC at a tertiary care hospital. There were 4 components of AAC model the first component is focused ANC, counseling sessions with the pregnant women, ANC service mobilization at the hospital and integration of community and hospital services through the community health workers (CHWs). The CHWs went to the pregnant women home before their schedule visits and encourage her to visit ANC 4 times.

1.5 Objectives

1.5.1 General objective

Was to assess the effectiveness of the AAC model on pregnant women's adherence to ANC services in two hospitals.

1.5.2 Specific objective

- Number and percentage of ANC visits completed by pregnant women in two Hospitals after the intervention.
- To assess pregnant women's change in knowledge regarding ANC at tertiary care hospitals before and after the intervention.
- To evaluate pregnant women change in attitude towards ANC at tertiary care hospitals before and after the intervention.
- To appraise pregnant women change in satisfaction with ANC services at tertiary care hospital before and after the intervention.
- To establish association of 4 completed ANC visits with level of knowledge attitude and satisfaction of subjects after the intervention.

1.6 Research Questions

Q1. What was the effect of ACC model on pregnant women adherence to ANC services at Boland Medical Complex Hospital?

Q2. What was the level of knowledge of pregnant women regarding ANC services before and after the intervention at tertiary care hospital

Q3. What was the pregnant women attitude toward ANC services before and after the intervention at tertiary care hospitals?

Q4. Were the pregnant women at tertiary care Hospitals satisfied with ANC before or after the intervention?

1.7 Hypotheses

1.7.1 Null Hypotheses

There will be no change in Adherence of pregnant women towards ANC services in the intervention group and control group at tertiary care hospitals.

1.7.2 Alternative Hypotheses

There will be a change in adherence of pregnant women towards ANC services in the intervention group as compared to the control group at tertiary care hospitals

1.8 Study Area

Quetta is the provincial capital of Balochistan a province of Pakistan. Good health services are based upon certain indicators in the form of available medical facilities, preventive and curative measures. The total population in district Quetta in 2010 is estimated at 896,090 (World-Gazetteer, 2010). The first health service indicator, population per doctor indicates that it was 1 per 426 that show that the district situation is very poor in terms of availability of doctors. Similarly gauging from population per hospital bed criterion, we find that there is only one bed for 346 people in public sector.

There are 10 government hospitals working in the district with the total number of beds 2587.There are 18 dispensaries, 3 RHCs with 30 beds, 34 BHUs, and there are 13 Maternal and Child Health Center (MNCH) (Government of Balochistan, 2009). Only two government hospitals are providing Gynea and Obst services that is the Sandeman Civil

Hospital and Bolan Medical Complex Hospital. There are 41 private hospitals working in the Quetta city with total number of beds 961. There is no available date about the private sector involvement in health activities to demonstrate the number of registered cases as a percentage of the total population. Although Quetta city has the best health infrastructure in the province, still much is left to be desired. Quality of services in government hospitals and other health care institutions is a cause of concern. There is an increasing role for the private sector, but this sector caters most probably for the more well to do sections of society. There are 10 government hospitals for a population of around 896,000.

Figure 1 Map of Pakistan

1.9 Conceptual framework

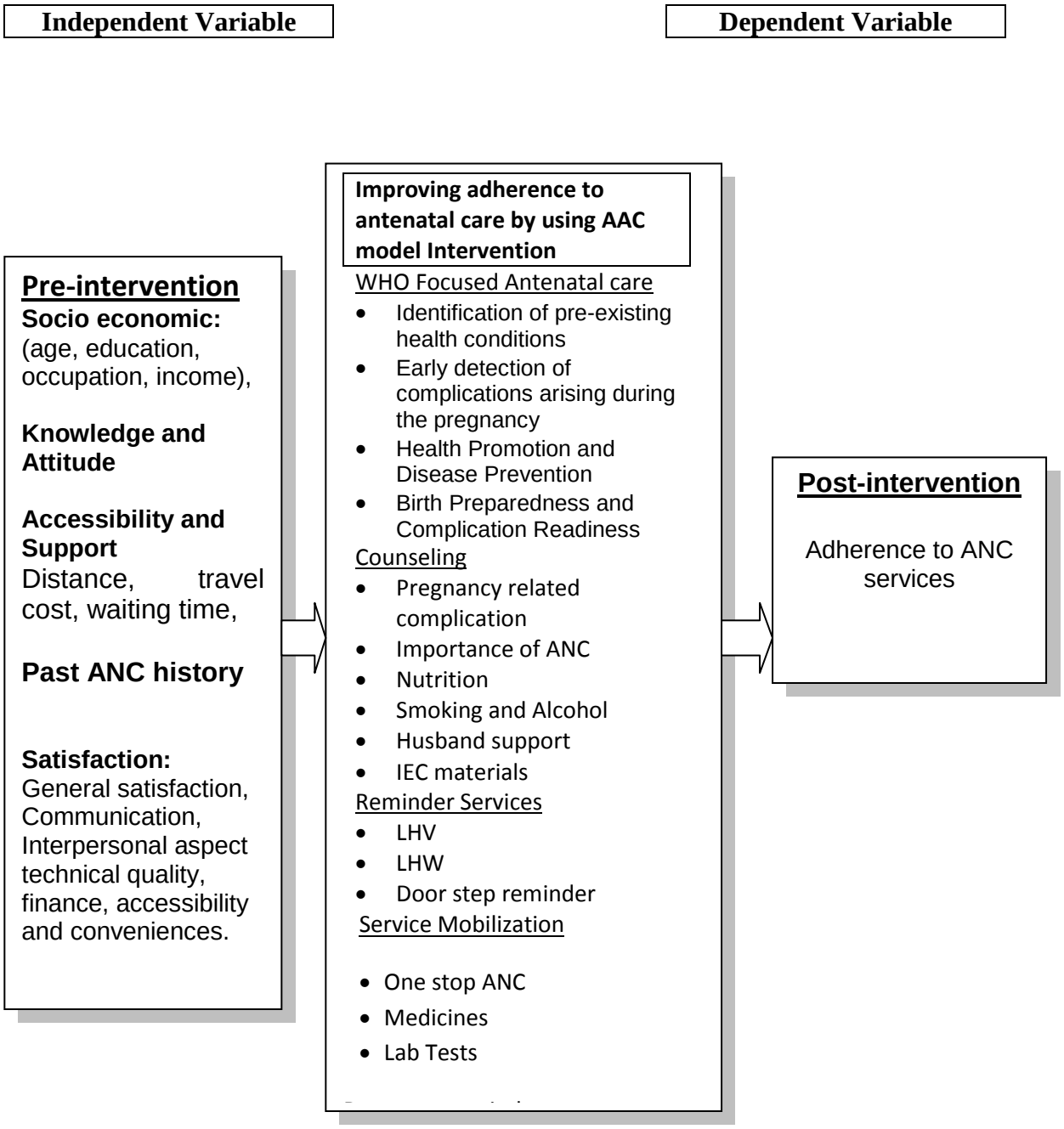

Figure 2 Conceptual Frame Work

1.10 Operational Definitions

AAC Model: mean a intervention which aims was to increase adherence to 4 times ANC visits of pregnant women through counseling, service mobilization and community and hospital integration.

Education: level of education obtained by the women and their husbands

Occupation: refers to present job of the respondent,

Family Income: total income per month of all family members combined

Ethnicity: refers to cast the respondent belongs to

Knowledge: means the information and understanding the women have about the concept of ANC, importance of ANC, Schedule of ANC, services in ANC.

Attitude: means the degree of positive or negative views that women feel towards ANC services.

Accessibility: refers to the distance from the respondents house to the BMCH in kilometer mode of transportation, is it convenient or not and is the mode of transportation expensive or not.

Waiting Time: how long does a respondent have to wait before getting services in minutes and do they think it's long or not.

Support from husband: means the support from husband in term of information, encouragement, advice, and money and accompany women to ANC service.

Satisfactions towards ANC services: means perceptions of the respondents towards general satisfactions towards ANC service, technical quality of the service provider, interpersonal aspect of the provider with the respondent, communication between service provider and respondent, time spent with doctor and Access / Availability / continence of the ANC service.

Past ANC visits: mean the respondent past experience with ANC care during their last pregnancy. Did they attend ANC during their last pregnancy, how many times did they

attend, from where did they go for their ANC service and if no what where the reason for not attending ANC service.

Adherence to ANC services: Means attending ANC total number of 4 visits according to the guidelines of the WHO Focused ANC.

Counseling: Means a person-to-person interaction between then nurse and subject.

IEC material: Are printer pamphlet with information regarding ANC and pregnancy. It is used increasing awareness among pregnant women.

Service Mobilization: Mean improving ANC services at OPD by using existing services and making them more efficient and effective

Reminder Services: Means that community health workers will go to the subject's house encourage and remind them of their appointment with the hospital.

Health Outcomes: Mean that what complication the pregnant women develops during the pregnancy such as anemia, eclamptia, preeclampsia, hypertension, infections and gestational diabetes

Effectiveness: Refers to whether the intervention works in people who it has been offered. The effectiveness of this intervention is increase in Adherence of pregnant women towards 4 times ANC.

1.11 Benefits of the study:

As the proposed study is to assess the efficacy of a model, at the end of the study hopefully following will be the benefits:

1. The model will be increase adherence to 4 times ANC visits, which will help pregnant women have a safer pregnancy.
2. Further this will serve as an evidence for future research to increase adherence to ANC services
3. The policy makers to increase utilization of ANC services can use the model as a tool.
4. This model will help develop relationship between the community and the hospital services in Quetta.

CHAPTER II

LITERATURE REVIEW

2.1 Antenatal Care

Pregnancy is one of the most essential periods in the life of a woman, a family and a society. Extraordinary attention is therefore given to antenatal care by the health care systems of developed and developing countries. The aim of antenatal care is to prevent health problems in mother. The care provided needs to be appropriate and not excessive. New technologies need to be implemented continually, while older services need to be reconsidered. The care for each pregnant woman needs to be individualized based on her own needs and wishes (WHO, 2003). Antenatal Care is desirable for many reasons. It serves as an introduction to the healthcare system, allowing the physician to evaluate non-obstetric conditions such as immunization. It is cost-effective way of delivering long-term health benefit (Perry et al., 1988). It has a positive effect on the detection and treatment of obstetric conditions such as hypertension and diabetes (Rooney Carroli and Villar, 2001). Even in absence of disease, antenatal care leads to healthier pregnancies. Irrevocably, antenatal care has well documented benefits on maternal health (Kessner et al., 1973).

The creation of public health programs to improve the health of women and children has its roots in Europe at the end of the nineteenth century. With hindsight, the reasons for this concern look cynical: healthy mothers and children were seen by governments at that time to be a foundation for economic and political ambitions (WHO, 2005). Not until the late 1930s did the United Kingdom of Great Britain and Northern Ireland authorities adopted that all women should be asked for regular check-ups during pregnancy as an essential part of maternity care, some 30 years after the introduction of formalized labor and delivery care (WHO and UNICEF, 2003).

The idea of organized antenatal has been attributed to proposal made by Ballantyne by end of the 19 century (Ballantyne, 1905). Ballantine's initial interest in antenatal care was focused on the prevention of fetal abnormalities. He later recognized that antenatal care might also reduced maternal, fetal, and neonatal deaths (Browne, 1934).

At mid-century, Eastman described a market reduction in risk for low birth weight among mothers who received “adequate prenatal care”, as defined by having three of more visits (Eastman, 1947).

Kessner reported the next major development in antenatal care in the mid 1970s with Institute of Medicine (IOM). The three-factor health services utilization index proposed by Kessner et al. takes into account the month of pregnancy in which prenatal care begins, the number of visits adjusted for the gestational age at delivery, and the site of care (private vs. public clinical) (Kessner et al., 1973). In 1980, Gotmaker reported the results of an investigation using a modification of the Kessner/IOM index, suggesting that the relationship between prenatal care and infant mortality was restricted to the impact of prenatal care on low birth weight (Gortmaker, 1979). Gotmaker works, along with a 1985 IOM report as a national policy to reduce the risk of low birth weight.

In 1978, the WHO reinforced the idea that the pregnant woman should be monitored using the so-called risk approach, foreseeing the advantage of this managerial strategy based on the measurement of individual risk to improve maternal and perinatal outcome (WHO, 1978). However, the simple idea of screening for risk was subsequently challenged by the evidence that most obstetric emergencies were not recognized in advance, and in fact, occurred in a low-risk group of pregnant women. After this observation a shift occurred, resulting in a re-distribution of the resources toward the improvement of the quality and accessibility of the facilities that provide emergency obstetric care.

In 1987, the Safe Motherhood Initiative outlined a more complex strategy that considered integrating the risk approach with a functioning referral system. It was assumed that most deliveries could be handled safely at the community level provided that cases of obstetric emergency would be sent quickly and effectively to the appropriate health facility where operative delivery, Caesarean section and blood transfusion were all available. In 1997 again it was stated that every pregnancy faces risks and antenatal care programs should not spend scarce resources on screening mechanisms that attempt to

predict a woman's risk of developing complications. The emphasis was placed on improving the accessibility, quality and utilization of emergency obstetric care (EmOC) facilities for women who develop complications (Zanconato et al., 2006).

2.2 Comprehensive VS Focused ANC

The three basic components of comprehensive or traditional prenatal care are

1. Early and continuing risk assessment
2. Health promotion
3. Medical and psychosocial intervention and follow-up

Risk assessment comprises a complete history, a physical examination, laboratory tests, and assessment of fetal growth and well being. Health promotion consists of counseling to promote and support healthful behaviors, general knowledge of pregnancy and parenting, and information of proposed care. Intervention includes treatment of existing illness, modification of behavior, provision of social and financial resources, and referral to and consultation with other specialized provider (Rosen, 1989).

Traditional or comprehensive antenatal care uses a risk approach to sort which women are more likely to experience complications, and accepts that more visits mean better results for mother and baby. Though, many women who have risk factors will not develop complications, while women with no risk factors may do so (Vanneste, et al., 2000; Yuster, 1995). Using a risk approach with its more frequent visits, therefore, does not necessarily improve pregnancy outcomes. Furthermore, when antenatal care is designed using a risk approach, scarce health care resources may be devoted to unnecessary care for "high-risk" women who may never develop complication, and "low-risk" women who may never receive essential care, or may be unprepared to recognize or respond to signs of complications (Family Care International, 2007). Also, frequent visits are often logistically and financially impossible for women to manage, and are a burden on health care systems in developing country like Pakistan (Munjanja Lindmark and Nyström, 1996; WHO, 2002) Many countries adopted the traditional approach without adjusting the interventions to meet the particular needs of their population, without taking

into account their country's available resources and without evaluating the scientific basis for specific practices (Maine, 1991).

A modernized approach to antenatal care emphasizes quality over quantity of visits (Kinzie and Gomez, 2004). This method, focused antenatal care, recognizes three key realities: First, antenatal care visits are a unique opportunity for early diagnosis and treatment of problems in the mother and prevention of problems in the newborn. Second, the majority of pregnancies proceed without complication. Third, all women are considered at risk of complications cannot be foretold by any type of risk categorization. Therefore all women should receive essential care and monitoring for complications that are focused on individual need (Maine, 1991).

2.2.1 Focused ANC

The provision of high quality, basic antenatal care safe, simple, cost effective interventions and that all women should receive it helps maintain normal pregnancies, prevent complications and facilitate early detections and treatment of complications. The major goal of focused antenatal care is to help women maintain normal pregnancies through:

- Aimed assessments based on the women's individual situation to safeguard normal progress of the pregnancy and postpartum/newborn period, and to expedite the early detection of and special care for complications, chronic illnesses and other potential problems that can affect the mother and newborn.
- Individualized care to help sustain normal progress, incorporating preventive measures, supportive care, health messages and counseling.
- Empowering women and families for applicable and effective self care, and birth preparedness and complication readiness planning.

The World Health Organization (WHO) endorses four antenatal care visits for women whose pregnancies are progressing normally, with the first visit in the first trimester (ideally before 12 weeks but no later than 16 weeks), and at 24-28 weeks, 32

weeks and 36 weeks (Villar et al., 2001). Each visits should include care that is appropriate to the women's overall conditions and stage of pregnancy, aid her prepare for birth and care of the newborn. If problems and newborn are detected, the frequency and scope of visits are increased. Focused antenatal care visits generally include the intervention described below (Kinzie and Gomez, 2004)

2.2.2 Health promotion and disease prevention:

It is vital for providers and women to talk about the important issues affecting the woman's health, her pregnancy and her plans for childbirth and the postpartum and newborn period. Discussions should include how pregnancy progresses and how to prepare for birth; how to recognize danger signs, what to do if they arise where to get help; benefits of suitable nutrition and adequate rest; importance of good hygiene; risk of using tobacco, alcohol and drugs; benefits of child spacing; benefits of exclusive breastfeeding; and need for protection against STIs and HIV (USAIDS, 2007; WHO, 2002).

Focused antenatal care should contain the following preventive intervention for all pregnant women in ANC:

- Women should be given immunization against tetanus with tetanus toxoid,. Tetanus causes about 200,000 infant death every year and accounts for 8% of all neonatal deaths (UNICEF, 2002)
- Providing iron/foliate supplementations for Reduction of iron deficiency anemia. Iron deficiency anemia is the single most prevalent nutritional deficiency affecting pregnant women. In endemic countries, the prevention and treatment of hookworm infection and the prevention and treatment of malaria are also important interventions to reduce non-nutritional anemia. (LINKAGES, 2000).

In areas of disadvantageous conditions, diseases or nutritional deficiencies, these services can also be offered:

- Protection against malaria for women living in malaria endemic zone
- Prevention of STI/HIV AIDS and prevention of mother-to-child transmission of HIV
- Presumptive treatment for hookworm
- Protection against vitamin A and/or iodine deficiency
- Defibulation to remove the obstruction to the vaginal opening in type III female genital cutting.

2.2.3 Early detection and treatment of complications and existing diseases

As part of focused assessment, the skilled provider talks with and examines the women for problems that may harm her health or that of her newborn. Complications such as severe anemia, infections, vaginal bleeding, pre-eclamptia/eclamptia, abnormal fetal growth and abnormal fetal position after 36 weeks may cause or be indicative of a life-threatening circumstances. And existing conditions, such as malaria or tuberculosis; HIV, syphilis and other STIs; and diabetes, heart disease, anemia or malnutrition need special treatment during the antenatal period (USAIDS, 2007; WHO, 2002).

2.2.4 Birth preparedness and complication

Focused antenatal care includes attention to a woman's preparations for childbirth, such as getting the support she will want from her provider, family and community, and making arrangements for her newborn. The skilled provider and the woman should plan for the following (USAIDS, 2007; WHO, 2002):

- A skilled provider to be at the birth
- The site for the birth and how to get there
- Items needed for the birth, whether it will be at home or in a healthcare facility
- Money to pay for the skilled attendant and any needed medications

- Support after the birth, including someone to accompany the woman during the birth and someone to take care of her family while she is away

In addition, since 15% of all pregnant women develop a life-threatening complication and most of these complications cannot be predicted, every woman and her family must be ready to respond to such a problem. Every woman should have a plan for the following:

- A person designated to make decisions on her behalf, in case she is unable to make them
- A way to communicate with a source of help (skilled attendant, facility, transportation)
- A source of emergency funds
- Emergency transportation
- Blood donors

2.2.5 Underlying principles of provision of care

There are some general principles that are integral to the provision of high-quality focused antenatal care for pregnant women (USAIDS, 2007; WHO, 2002). ANC Care should be:

- *Women-friendly:* The women's health and survival, basic human right and comfort are given strong importance. The woman's personal needs and penchants are also respected.
- *Inclusive of a women's partner or other family member:* Respect for the household decision-making process, making decision about care help to warrant a fuller and safer reproductive health experiences for the woman, her newborn and her family
- *Culturally appropriate:* Every culture has certain beliefs, rituals, taboos and practices surrounding pregnancy and childbirth. Cultural awareness,

competency and openness are crucial in a care relationship with a woman during this important period in her life.

- *Individualized:* by taking into consideration all of the information known about a women's current health, medical history, daily habits and lifestyle, household situation, cultural beliefs and customs, and other unique circumstances – the skilled provider can individualize components of care for each women.
- *Part of the household-to-hospital continuum of care:* Many of the components of focused antenatal care can be provider at the community level; however, linkages with the formal health care system to imperative to ensure adequate training and supervision of community health workers and functional referral system.
- *Integrated*: focused antenatal care includes STI and HIV testing/ counseling, malaria detection and prevention micronutrient provision, birth planning, emergency planning and family planning counseling.

While effective antenatal care alone will not prevent global maternal and newborn mortality, the quality of care a woman receives during pregnancy plays a vital role in ensuring the healthiest possible outcomes for mother and baby.

2.3 Utilization of Health care

It is generally accepted that use of health care services in any given society is a complex behavioral Phenomenon (Andersen, 1995). Behavioral scientists have explained individual behavior as a function of individual and societal forces as well as the interaction between individual and societal forces. It is difficult to identify which determinants are most persuasive in the decision to utilize health care. Culture, economics, access, perceptions, knowledge, belief in efficacy, age, gender roles, and social roles are all among the extensive list of factors affecting both the choice to seek health care and the assessment of which health care selection to utilize for prevention and treatment of illness (Andersen and Newman, 2005).

Hospital service and health care system are often used synonymously to deliberate the care provided to the patients. Hospitals have a fundamental role in any health care system but most often fail to meet the genuine needs and expectations of the patients. The important role of the hospitals can be conferred on the basis of outcomes, services and trust. The needed outcome against all the inputs is upholding the health and protecting from disability of the people. They are required to provide effective and efficient services to the patient (Farrington-Douglas, 2007).

2.4 Model of health care utilization

One of the most commonly used frameworks for analyzing patient utilization of healthcare services is the behavioral model developed by Andersen, and others. It proposes that people's use of health services is a function of their predisposition to use services, factors that enable or impede use and their need for care. Model of health care utilization aspects at three categories of determinants (Andersen and Newman, 2005):

2.4.1 Predisposing characteristics

This category represents the proclivity to utilize health care services. According to Andersen, an individual is more or less likely to use health services based on demographics, position within the social structure, and beliefs of health services benefits. An individual who believes health services are useful for treatment will likely utilize those services:

2.4.2 Enabling characteristics

This category includes resources found within the family and the community. Family resources comprise economic status and the location of residence. Community resources incorporate access to health care facilities and the availability of persons for assistance

2.4.3 Need based characteristics

The third category includes the perception of need for health services, whether individual, social, or clinically evaluated perceptions of need.

Figure 3 Utilization of Health care services

2.5 Satisfaction

Dictionary definitions attribute the term "satisfaction" to the Latin root satis, meaning "enough". Something that satisfies will adequately fulfill expectations, needs or desires, and, by giving what is required, leaves no room for complaint. Two points arise from these definitions. First, a feeling of satisfaction with a service does not imply superior service, rather that an adequate or acceptable standard was achieved. Dissatisfaction is defined as discontent, or a failure to satisfy. It is possible that consumers are satisfied unless something untoward happens, and that dissatisfaction is triggered by a critical event (Avis Bond and Arthur, 1995). Secondly, satisfaction can be measured only against individuals' expectations, needs or desires. It is a relative concept: something that makes one person satisfied (adequately meets their expectations) might make others dissatisfied (falls short of their expectations).

Dansky and miles (1997) state that from a management perspective, client satisfaction with health care is important for various reasons; First satisfied patients are more likely to uphold a consistent relationship with a specific provider. Second, by identifying bases of patient satisfaction, an organization can address systems weakness, thus improving its risk management. Third, satisfied patients are more probable to follow specific medical regimens and treatment plans. Finally patient satisfaction measurement adds important information on system performance, thus contributing to the organization's total quality management.

When satisfaction is measured, individuals are presumed to rate or evaluate a service or a provider by comparing their personal subjective standards with their perception of the care received. The satisfaction they record is an attitudinal response to this value judgment, and is a subjective evaluation relatively than an objective measure. Their evaluation has been described as cognitively based and emotionally affected (Pascoe Attkisson and Roberts, 1983). It has been contended that satisfaction can be measured on a continuum that ranges from dissatisfaction at one end to very satisfied at the other, and that the position an individual occupies on that continuum is affected by the values, beliefs and expectations that they bring to the encounter, as well as by the features of the encounter itself (Ware and Davis, 1981).

2.6 Conceptual Models of Satisfaction with health care

Several approaches have been used to try to recognize the factors contributing to satisfaction with healthcare. These range from theoretical studies that investigate how different factors co-vary to more detailed theoretical models that attempt to explain the relationship between variables on the basis of underlying principles. There is consensus amongst commentators that a complete definitive conceptualization of satisfaction with healthcare remains to be established, and that understanding of the process by which a user becomes satisfied or dissatisfied is incomplete. In this section, alternative approaches that have been advanced are summarized. A distinction is made between those based on expectations, those focusing on health service attributes, those emanating from economic theory, and those that are holistic in nature.

2.6.1 Approaches based on expectations

This approach draws on market research techniques that are in turn based on psychological theories. In the simplest form, client (dis) satisfaction is viewed as a reflection of the difference between what is expected (E) and what is perceived to have been delivered (D); if $D > E$, the client will be satisfied, but if $D < E$, dissatisfaction results (Cottle, 1990).

Satisfaction arises either from positive experiences confirming positive expectation, or from positive experiences disconfirming negative expectations. Dissatisfaction arises when negative experiences disconfirm positive expectations, or when negative experiences confirm negative expectations. Disconfirmation of expectations affects perceived quality of care, and hence satisfaction (Gotlieb Grewal and Brown, 1994). The expectations approach encirclements an examination of how broader social psychological variables, such as beliefs, affect attitudes to and evaluations of healthcare (Linder-Pelz, 1982).

2.6.2 Approaches based on health service attribute

Another approach that attempts to elucidate the concept of satisfaction emphases on customers' evaluations of health service attributes. These methods use reviews of the available literature or primary research methods to produce lists of critical features that affect satisfaction with healthcare. These features are often incorporated into factor or principal components analysis to validate definable dimensions to the care process.

Although important attributes of care may vary with the context of the investigation, in general they relate to three main issues: the characteristics of the provider, the features of the patient– practitioner relationship, and factors related to the structure and setting of healthcare delivery (Weiss, 1988).

2.6.3 Holistic approaches

Holistic approaches attempt to incorporate all influences on satisfaction and thus to offer a comprehensive framework for exploring interactions between variables that affect consumers' evaluations. Satisfaction is a multi-dimensional concept, derived from an evaluation of varied features of the care experience. The individual stimuli assessed by consumers include the actions, attitudes and appearance of human resources, the physical environment, and organizational aspects of care.

Satisfaction, or dissatisfaction, with attributes of healthcare affects subsequent behavior, with consequences for both the individual consumer and the provider. Although

many other factors are also involved, satisfaction is linked with adherence to medical advice, self-care, and hence with health outcomes. When consumers have a choice of provider, it is also recognized that satisfied customers will use the service again and recommend it to others. Dissatisfaction, on the other hand, leads to changes of provider and adverse publicity (Ware and Davis, 1983).

This holistic approach is an endogenous model. The determination of satisfaction is a dynamic process involving two feedback mechanisms. First, individual attitudes are modified by experiences, which, in turn, alter expectations and value judgments in a way similar to the response shift phenomenon in health-related quality-of-life research (Sprangers and Schwartz, 1999). Secondly, healthcare delivery is affected by both consumers attitudinal responses articulated through feedback mechanisms and behavioral (utilization) responses such as changing provider (Marquis Davies and Ware, 1983).

2.7 Literature review Utilization of Antenatal care

The benefits of antenatal care may not be equivalent for all population subgroups. Many researchers have observed that the use and impact of prenatal care varies across socioeconomic, demographic, cultural, and medical risk groups, suggesting that these characteristics, including pre-existing health status, age education, poverty and environmental conditions, may modify the effect of prenatal care (Murray and Bernfield, 1988) Socio-economic inequities in maternal and child health are present throughout the world, irrespective of a country's level of health and wealth. Survey data from low- and middle-income countries show consistent pro-rich patterns in terms of antenatal and delivery care, access to health services and coverage of preventive and curative interventions (Boerma, et al, 2008; C. Victora, et al., 2010; Victora, 2007).

Many Studies have reported positive association between economic status and use of antenatal care services settings (Babalola and Fatusi, 2009; Coimbra, et al., 2007; Schillaci, et al. 2010)

Age is often presented as a proxy for accumulated experience, including in the use of antenatal care services (Burgard, 2004; Hossain, 2010). Association between age and service utilization has also been inconsistent across studies. A study found that women more than 35 years old were less likely to use prenatal care but more likely to use delivery care compared with women aged 20–35 year (Sharam Sawangdee and Sirirassamee 2007). Another study conducted in Nigeria found relationship between age at the birth of the last child and use of antenatal care services appears to be curvilinear which indicates that use of antenatal services initially increases with age up to a threshold and decreases there after (Babalola and Fatusi, 2009).

In contrast, parity has been found to be negatively correlated with the use of antenatal care services. A study which compared unitization of antenatal care services between in Brazil observed that multipara variable was associated with use of antenatal care (Coimbra, et al., 2007). A study in Jamaica which compared under user of antenatal care observed that highly porous women were late attendees is which indicate that pregnancy is viewed as a natural process which they have been through before and see no need to come for antenatal care services (McCaw-Binns La Grenade and Ashley, 1995).

In some cases, even when a strong association has been reported, such as in the case of the positive relationship between education and the use of antenatal care services (Adamu and Salihu, 2002; Elo, 1992; Goldman and Pebley, 1994). A study in Bangladesh, showed that educational attainment, is a significant predictor that affects the maternal health care utilization. Regarding the use of antenatal care, women with education were substantially more likely to use ANC than women without education (Munsur Atia and Kawahra, 2010). Other studies carried out in developing countries also found education consistently a significant predictor of antenatal service utilization (Babalola and Fatusi, 2009; Iyaniwura and Yussuf, 2009; Pallikadavath Foss and Stones, 2004).

Rural and urban locations have been generally reported to be strongly and negatively associated with the use of antenatal care services (Bloom Wypij and Gupta 2001). Recent Studies carried out in India and Haiti also found that there are significant differences in the use of antenatal care among the urban and rural populations (Alexandre

Saint-Jean and Crandall, 2005; Hazarika, 2010). A study conducted in Turkey did not found any significant difference in the use of antenatal care between urban and rural women (Celik and Hotchkiss, 2000).

Women's autonomy and position in society has been identified as a significant prerequisite for the ability to choose and attend professional care during pregnancy (Kempe, et al., 2010; Sharam, et al., 2007) Antenatal care and skilled birth assistants often, in women's perceptions works against their personal power and authority. This failure results in women failing to seek medical care when needed (Kempe, et al., 2010).

Specific knowledge about the risks of childbirth and the benefits of skilled attendance should increase preventive care-seeking, while recognition of danger signs and knowledge about available beneficial interventions should increase care-seeking for complications (Gabrysch and Campbell, 2009). Few studies consider health knowledge in utilization of services. Also, in Mali, women who are told about complications at antenatal care are more likely to give birth in a facility (Gage, 2007).

Perceived quality of care, which only partly overlaps with medical quality of care, is thought to be a key influence on health care seeking. Assessment of quality of services "largely depends on [people's] own experiences with the health system and those of people they know" (Thaddeus and Maine, 1994). Qualitative studies of service use in the literature report quality of care to be an important issue, with staff attitudes featuring prominently. Many women report dissatisfaction with rude, arrogant and neglectful behavior at health facilities and prefer the care of a TBA or relative (Kyomuhendo, 2003; Ambruoso Abbey and Hussien, 2005).

The obstacle effect of distance is stronger when combined with lack of transport and poor roads, and its disincentive effect is less pronounced if women have serious complications or the reputation of the provider is good (Gabrysch and Campbell, 2009). Even where facilities are conveniently located, they are underused if their quality is considered bad. Where people have the choice between several facilities, they sometimes travel further if the target facility is perceived to offer superior quality care (Ofra, 2004;

Gabrysch and Campbell, 2009). A study conducted in Indonesia found that women who live nearby antenatal care services within 5 kilometers had irregular antenatal care visits compared to those living further away (Effendi, 2008).

2.8 Pakistan

Pakistan sits at the crossroads of the strategically important regions of South Asia, Central Asia and the Middle East. It has a 1,046-kilometre (650 mi) coastline along the Arabian Sea and the Gulf of Oman in the south and is bordered by India to the east, Afghanistan to the west and north, Iran to the southwest and China in the far northeast. Afghanistan's narrow Wakhan Corridor in the north separates it from Tajikistan, and it shares a marine border with Oman.

The territory of modern Pakistan was the site of several ancient cultures, including the Neolithic Mehrgarh and the Bronze Age Indus Valley Civilization, and has undergone invasions or settlements by Hindu, Persian, Indo-Greek, Islamic, Turco-Mongol, Afghan and Sikh cultures. Thus numerous empires and dynasties, including the Indian Mauryan Empire, the Persian Achaemenid Empire, the Arab Umayyad Caliphate, the Mongol Empire, the Mughal Empire, the Durrani Empire, the Sikh Empire and the British Empire, have ruled the area.

As a result of the Pakistan Movement led by Muhammad Ali Jinnah and India's struggle for independence, Pakistan was created in 1947 as an independent nation for Muslims from the regions in the east and west of India where there was a Muslim majority. Initially a dominion, Pakistan adopted a new constitution in 1956, becoming an Islamic republic. A civil war in 1971 resulted in the secession of East Pakistan as the new country of Bangladesh.

Pakistan is a federal parliamentary republic consisting of four provinces and four federal territories. With a population exceeding 170 million people, it is the sixth most populous country in the world and has the largest Muslim population after Indonesia. It is an ethnically and linguistically diverse country, with a similar variation in its geography and wildlife. Its semi-industrialized economy is the 27th largest in the world in terms of purchasing power.

Pakistan's post-independence history has been characterized by periods of military rule, political instability and conflicts with neighboring India. The country continues to face challenging problems, including terrorism poverty, illiteracy and corruption.

2.8.1 Health System

Woefully inadequate health resources in terms of personnel, infrastructure and per capita health expenditure, contributing to high mortality and poor health outcomes, characterize Pakistan's health sector. The physician: population ratio (2000–09) was only 8 per 10,000 populations, and there were only 4 nurses and midwives (taken together) per 10,000 populations, and 6 hospital beds per 10,000 populations. Comparable average figures for lower Middle income countries are 10 physicians, 14 nurses and midwives and 39 hospital beds per 10,000 populations (Ravindran, 2010).

Pakistan has a centralized health care system. The Government takes responsibility to provide free Medical treatment to all citizens in need for health care services. There are 22 tertiary care facilities in Pakistan. They also provide sub-specialty care. These hospitals mainly provide curative services and to a limited extent some preventive services. The majority of the communities have access to a primary care facility within a radius of 5 km. While access to government health facilities is generally good, the utilization levels are low (RAD-AID, 2011). Several surveys have consistently shown that about 80% of clients seek care from the private sector and only 20% visit the government managed facilities for ambulatory care, which is indicative of considerable under-utilized capacity within the system (WHO and EMRO, 2007).

2.8.2 Antenatal care

Pakistan's maternal mortality ratio in 2008 was 260 per 100,000 live births, both higher than the average for lower middle income countries (Bhutta, 2010). According to Pakistan demographic health survey 70% of pregnant women did not receive antenatal care, 23% receive antenatal care by doctor, 3% by nurse, lady health visitor or family welfare worker, and 4% by trained or untrained traditional births attendant (Nisar and Amjad, 2007). According to WHO country health profile 28% of pregnant women attended 4 or more antenatal care visits, where as the regional average is 44 %, 39 % of

the women were attended by a skilled provider during delivery where as the regional average is 59% (WHO, 2011). The inadequate antenatal care provided in Pakistan contributed to poor state of maternal health. A survey conducted at an hospital in Sind, Pakistan majority of women reported that they received care from lady health visitors, and very few from qualified doctors (Nisar and Amjad, 2007). A study conducted in Islamabad, which is the capital of Pakistan, found that antenatal care used in any of the previous pregnancy among women under study was 75.5%. Ignorance about the importance of antenatal care was reported as the main reason for under users (Alam Qureshi and Adil, 2004).

Women's lack of autonomy is a serious constraint to receiving needed care in Pakistan. Cultural restrictions on mobility are a significant barrier to women's access to antenatal care services. A study in urban settlement of Karachi found that 18% of women reported that they could go alone to a health care facility for antenatal checkup, while 82% reported that they were accompanied by a family member (e.g. mother in law, husband and mother)

2.8.3 Antenatal Care in Balochistan

Balochistan is the largest among Pakistan's four provinces, comprising 43 percent of land area of the country. But only six per cent of Pakistan's population or around 8 million people inhabit Balochistan. The Baloch make up 54.7 per cent of the population while 29 per cent are Pashtun. Despite being the richest province in terms of energy and mineral resources, Balochistan remains one of the most under-developed provinces.

In Balochistan, about half of women aged 15- 49 years with a live birth in the past three years consulted any health attendant or worker. This ranged from 74% in urban and 48% in rural areas during pregnancy, only 26% of women consulted a skilled health worker (Private or Government Hospital, Lady Health Visitor) for antenatal care. This ranged from 53% in urban to 21% in rural areas. In urban areas, private clinics are the preferred source for antenatal care 23%, followed by Government Hospital 17% and traditional birth attendant 17%.

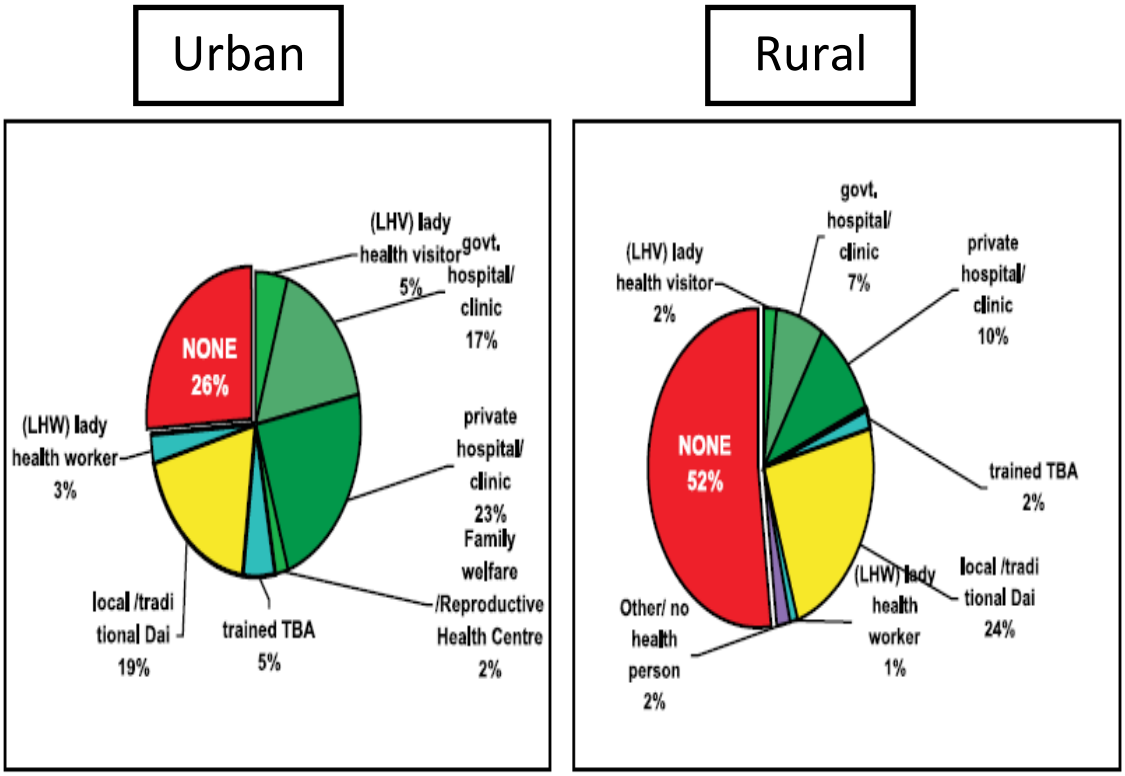

Figure 4 UNCIEF MICS 2004: utilization of ANC in Balochistan

2.9 Theories

Programs and interventions that are based on theory are more likely to help projects meet its key targets. The ability to select relevant health promotion theories or models, and apply them in practice, is a key skill for public health. Researchers and practitioners use theory to investigate answers to the questions of "why," "what," and "how" health problems should be tackled. By pursuing answers to these questions, they elucidate the nature of targeted health behaviors. That is, theory guides the search for reasons why people do or do not engage in certain health behaviors; it helps pinpoint what organizers need to know before they develop public health programs; and it proposes how to devise program strategies that reach target audiences and have an impact. Theory also helps to find which indicators should be monitored and measured during program evaluation. For these reasons, program planning, implementation, and monitoring processes based in theory are more likely to succeed than those developed without the benefit of a theoretical perspective.

2.9.1 The Ecological Perspective: A Multilevel, Interactive Approach

The ecological perspective highlights the interaction between, and interdependence of, factors within and transversely all levels of a health problem. It highlights people's interactions with their physical and socio cultural environments. Two key ideas of the ecological perspective help to find intervention points for promoting health: first, behavior both affects, and is affected by, *multiple levels of influence*; second, individual behavior both shapes, and is shaped by, the social environment (Glanz and Barbara, 2005). To explain the first key concept of the ecological perspective, multiple levels of influence, McLeroy and colleagues (1988) identified five levels of influence for health-related behaviors and conditions (McLeroy, et al., 1988).

Table 1 Ecological Perspective

Concept	Definition
Intrapersonal Level	Individual characteristics that influence behavior, such as knowledge, attitudes, beliefs, and personality traits
Interpersonal Level	Interpersonal processes and primary groups, including family, friends, and peers that provide social identity, support, and role definition

2.9.2 Interpersonal Level

In addition to exploring behavior, individual-level theories focus on intrapersonal factors (those existing or occurring within the individual self or mind). Intrapersonal factors include knowledge, attitudes, beliefs, motivation, self-concept, developmental history, past experience, and skills.

Theory of Planned Behavior (TPB)

This theory provides a framework to study attitudes toward behaviors. According to the theory, the most important determinant of a person's behavior is behavior intent. The individual's intention to perform a behavior is a combination of attitude toward performing the behavior and subjective norm. The individual's attitude toward the behavior includes; Behavioral belief, evaluations of behavioral outcome, subjective norm, normative beliefs, and the motivation to comply (Ajzen and Driver, 1991).

Purpose of Theory:

- To predict and apprehend motivational influences on behavior that is not under the individual's volitional control.
- To identify how and where to target strategies for altering behavior.
- To explain virtually any human behavior such as why a person buys a new car, votes against a certain candidate, is absent from work or engages in premarital sexual intercourse.

If a person perceives that the outcome from performing a behavior is positive, she/he will have a positive attitude forward performing that behavior. The opposite can also be stated if the behavior is thought to be negative. If relevant others see performing the behavior as positive and the individual is motivated to meet the exceptions of relevant others, then a positive subjective norm is expected. If relevant others see the behavior as negative and the individual wants to meet the expectations of these "others", then the experience is likely to be a negative subjective norm for the individual.

Table 2 Interpersonal Levels

Concept	Definition	Measurement Approach
Behavioral intention	Perceived likelihood of performing behavior	Are you likely or unlikely to (perform the behavior)?
Attitude	Personal evaluation of the behavior	Do you see (the behavior) as good, neutral, or bad?
Subjective norm	Beliefs about whether key people approve or disapprove of the behavior; motivation to behave in a way that gains their approval	Do you agree or disagree that most people approve of/disapprove of (the behavior)?

2.9.3 Intrapersonal Level

At the interpersonal level, theories of health behavior assume individuals exist within, and are influenced by, a social environment. The opinions, thoughts, behavior, advice, and support of the people surrounding an individual influence his or her feelings and behavior, and the individual has a reciprocal effect on those people. The social environment includes family members, coworkers, friends, health professionals, and others. Because it affects behavior, the social environment also impacts health. Many theories focus at the interpersonal level, but this monograph highlights Social Cognitive Theory (SCT). SCT is one of the most frequently used and robust health behavior theories. It explores the reciprocal interactions of people and their environments, and the psychosocial determinants of health behavior.

Social Cognitive Theory (SCT)

Social Cognitive Theory (SCT) describes a dynamic, ongoing process in which personal factors, environmental factors, and human behavior exert influence upon each other. According to SCT, three main factors affect the likelihood that a person will change a health behavior: (1) self-efficacy, (2) goals, and (3) outcome expectancies. If individuals have a sense of personal agency or self-efficacy, they can change behaviors even when faced with obstacles. If they do not feel that they can exercise control over their health behavior, they are not motivated to act, or to persist through challenges.

As a person adopts new behaviors, this causes changes in both the environment and in the person. Behavior is not simply a product of the environment and the person, and environment is not simply a product of the person and behavior (Oldenburg Glanz and French, 1999).

Table 3 Intrapersonal Levels

Concept	Definition	Potential change
Reciprocal determinism	The dynamic interaction of the person, behavior, and the environment in which the behavior is performed	Consider multiple ways to promote behavior change, including making adjustments to the environment or influencing personal attitudes
Behavioral capability	Knowledge and skill to perform a given behavior	Promote mastery learning through skills training
Expectations	Anticipated outcomes of a behavior	Model positive outcomes of healthful behavior
Self-efficacy	Confidence in one's ability to take action and overcome barriers	Approach behavior change in small steps to ensure success; be specific about the desired change
Observational learning (modeling)	Behavioral acquisition that occurs by watching the actions and outcomes of others' behavior	Offer credible role models who perform the targeted behavior
Reinforcements	Responses to a person's behavior that increase or decrease the likelihood of reoccurrence	Promote self-initiated rewards and incentives

2.10 The Intervention: Adherence to Antenatal care (AAC) Model

This model is directed at increasing pregnant women adherence to ANC services in a hospital setting.

There are 4 components of this model

1. Provide Focused ANC to the pregnant women
2. Increase knowledge and awareness through ANC counseling
3. Improve service quality related to ANC service
4. Integrating community and hospital service through community health workers

2.10.1 Focused ANC

The World Health Organization (WHO) recommends four antenatal care visits for women, with the first visit in the first trimester (ideally before 12 weeks but no later than 16 weeks), and at 24-28 weeks, 32 weeks and 36 weeks. It is important to note that the basic component of the new WHO model is intended only for the management of pregnant women who do not have evidence of pregnancy-related complication, medical conditions or major health-related risk factors.

2.10.1 Counseling

In the pregnant woman, the general purpose of counseling is to provide her with essential information regarding ANC services. To be specific, the counseling will help the pregnant woman to stay healthy through advising her about health promotion and also to know the common symptoms of health risks that may affect her or her baby. In addition, counseling will be an entry point to the family, in particular to her husband, so they also know the potential risks encountered during pregnancy and get prepared for them both psychologically and economically.

Counseling the pregnant woman is a process of two-way interpersonal communication in which she is informed about possible problems that she may encounter during pregnancy, and make her own decisions about how to respond. When there is a two-way discussion with good understanding of each other, it not only helps the woman to know the possible problems that she may encounter and when to take appropriate action, but it also establishes a trusting relationship with the health personal. Additionally, such two-way communication helps the woman to feel more comfortable and freely express her worries and needs the counselor.

The counseling will be done to both pregnant lady and husband or mother in law by a trained nurse who will be trained according to the guidelines of GATHER counseling. The GATHER approach to counseling--Greet, Ask, Tell, Help, Explain, and Return—has documented effectiveness in FP programs (Rinehart Rudy and Drennan, 1998). The guidelines have been adopted for ANC care. A colored, printed, folded paper with pictures and information on pregnancy, delivery and benefits of ANC services will be provided to

the subjects. The IEC material will be developed by reviewing literature and by the guidelines of the professional in the field. The IEC material will be printed in local language for the better understanding of the subjects.

2.10.3 Integration

Another element of this model is to incorporate community services with hospital services. Reminder service will be provided at the subject home by the LHW and LHV who are working in communities for the government initiated health programs. They will visit the subject's home in their designated community and remind them of their appointment with the hospital. The LHW and LHV will be approached from there concerned offices through Ministry of Health Balochistan, Their support will be ensured and they will get finical incentives because this is not part their of job description.

Table 4 AAC model Intervention

Strategy	Targets	Activities	Outcomes
Counseling	Pregnant women Nurses	GATHER technique Trained counselor IEC Materials	Improved communication with subjects Increase in knowledge
Service Mobilizations	OPD Department Doctors Hospital Administration	One stop ANC Room Medicines Pregnancy test	Less waiting time improve in satisfaction
Integration	CHWs Pregnant women Hospital	Visiting pregnant women's home and to encourage remind them of ANC appointment Facilitate emergency	Creating links between hospital and community through community health services change in attitude with both services
Focused ANC	Pregnant women Doctors	Antenatal care interventions that prevent complications and facilitate early detections and treatment of complications.	Better health for the mothers and the unborn child

CHAPTER III

METHODOLGY

This chapter describes the materials and methods that were used in this study. These include study design, study site, study population and sample size, research instruments, content validity and reliability, data collection, data analysis, study process and ethical consideration. The purpose of the study was to increase adherence of pregnant women towards antenatal care services.

3.1 Study design

The study design of the purposed study was a Quasi-Experimental. In this study women who attend their first ANC were randomly selected from two different hospitals. One hospital subjected to intervention, while the other was used as a control, which provided routine antenatal care services. The main outcome of the intervention (adherence to ANC) was obtained by comparing the two groups at the end of the study period.

A	=	O1	X	O_2
B	=	O_2		O_2

A = Intervention group
B = Control Group
O1 = Baseline
O2 = Follow up
X = Intervention

3.2 Study site

The study was carried out at the department of Gynea & Obst Bolan Medical Complex Hospital (BMCH), and Sandman Provisional Hospitals (SPH) Quetta. Both these are located in Quetta city but are geographically separated. Both of these hospitals are tertiary care hospitals. The BMCH served as the intervention and Sandman hospital as control. Following is the BMCH and SPH basic infrastructure and flow of the patient regarding ANC:

3.2.1 Basic Infrastructure BMCH

The teaching staff is composed of one professor, two asst. professors, two senior registrars, and one junior registrar in each unit. Each unit is also having one gynecologist as well. Other technical staff includes nurses for labor room and ward. In the labor room there are seven trained nurses and six student nurses and in the ward there are five trained nurses and four student nurses.

In each unit there are 40 beds in the wards. The department of Gynea & orbs also has one pharmacist. A total number of 18 supporting staff are also working on different shifts as supporting staff include aiya (TBA) and attendant for both ward and labor room.

3.2.2 Flow of the patients BMCH

According to the data provided by the hospital on average 187 patients visits the OPD in the concerned department per day. Out of which 92 women visit for their ANC and on average 50 % of the pregnant women belongs from third trimester, 15 % are from second trimester and 30% from first trimester.

3.2.3 Basic Infrastructure Sandeman Hospital

The staff is composed of one professor, two asst. professors, two senior registrars, and one junior registrar in each unit. Each unit is also having one gynecologist as well. Other technical staff includes nurses for labor room and ward. In the labor room there are nine trained nurses and seven student nurses and in the ward there are five trained nurses and four student nurses.

In each unit there are 35 beds in the wards. The department of Gynea & Obst also has one pharmacist. A total number of 15 supporting staff are also working on different shifts as supporting staff include aiya (TBA) and attendant for both ward and labor room.

3.3.4 Flow of the patients Sandeman Hospital

According to the data provided by the hospital on average 170 patients visits the OPD in the concerned department per day. Out of which 86 women visit for their ANC and on average 60 % of the pregnant women belongs from third trimester, 25 % are from second trimester and 35% from first trimester.

3.3 Study Population

The study population was the pregnant woman who visited the OPD for antenatal care at Gynea & Obst department of Bolan Medical Complex hospital (BMCH) Intervention hospital and Sandman Provincial Hospital (SPH) control hospital. The sample size were selected based on the following criteria's:

3.3.1 Inclusion criteria

- Subjects qualifying for the basic ANC according to WHO checklist.
- Subjects who visited hospital during first trimester.
- Subject who were local and resident of Quetta city and living here for the past 1 year and before
- Subjects who were proved to be pregnant after pregnancy test from BMCH and Sandman
- Subject who have been pregnant once before the current pregnancy and no more than 5 pregnancy
- Subjects who were 18 or above

3.3.2 Exclusion criteria

- Subjects who were not able to participate in study due to severe physical or mental disability
- Subjects who refused to participate in the study

- Subject who visited OPD late in their pregnancy i.e. after second trimester of their pregnancy
- Subjects who were Afghan refugees.

3.4 Sample size calculation

The sample size calculation for the proposed study was based on effect size of the interventions by expecting the outcomes. As the primary outcome of the interventions was to have four antenatal visits of the pregnant women at Bolan medical complex hospital Quetta for ANC, assuming that 30% of the subjects on routine antenatal care would have 4 visits and it will be of clinical relevance if we observed 40% effect size absolute improvement for those on the intervention group that is 60% of the subjects will have complete 4 antenatal visits (Chan, 2003).

For a two sided test of 5%, using formula

Equation 1 Sample size calculation

$$m \text{ (size per group)} = c \; X \; \frac{\pi_1(1-\pi_1) + \pi_2(1-\pi_2)}{(\pi_1-\pi_2)^2}$$

Where c = 7.9 for 80% power with at 5% level of significance, π_1 and π_2 are the proportion estimates

$\pi_1 = 0.30$, $\pi_2 = 0.60$

Thus

$m = 7.9 \times \{0.30\ (1-0.30) + .60\ (1-0.60)\} / (0.30-0.60)^2$

$= 39.5$ for each group

$= 40x2 = 80$

With an additional 30% to cover drop out, a total of 100 subjects were recruited for the study.

3.5 Sampling method

The representatives of the study population were enhanced by the use of methods of random sampling. Random sampling gives each of the units in the population targeted a calculable (and non-zero) probability of being selected. The technique used for randomization was Systematic Sampling: If a sample of size s is to be taken from a population of size n, then every n/s member of the population is tested.

The samples were selected from two hospitals. To test 4 sample that visit OPD for ANC in one day i.e. according to hospital on average 96 women attend ANC from which 30% (27) are from the first trimester

- We test 27÷4 = 6
- Starting number is selected randomly for 1-4
- For example if 1 then 7, 11, 15

3.6 Research Instrument

A structured questionnaire was used to collect the data. The questionnaire was prepared in English and was later translated in to Urdu language. The questionnaire compromised of 6 parts

3.6.1 Socio demographic characteristic

This part consisted of questions about socio-economic status of the women such as age, women education, husband education, women occupation, husband occupation, monthly family income, family unit, ethnicity, and visit by community health worker.

3.6.2 Knowledge regarding ANC

This part included 12 negative and positive statements with total score of 12, 1 point for a correct answer and 0 point for an incorrect answer, and don’t know. Knowledge is divided into three levels: high, moderate and low.

- Low knowledge = ≤ 6 (60%)
- Moderate knowledge = 7-10(61%-80%)
- High knowledge = ≥ 11 (81% - 100%)

Knowledge statements consisted of statements regarding importance of ANC (1,6,12), number of visits during ANC (3, 4,10), health care of ANC (2,8,9,11), and their misconceptions of ANC (5,7).

3.6.3 Attitude towards ANC

Attitude part included 10 statements with a total score of 50 for measuring the attitude towards ANC services. These sentences consist of 5 positive and 5 negative Statements. Attitude had 3 aspects attitude towards service quality of ANC, towards self in context of ANC, and towards ANC in general. The responses for the statement was adopted from the linkert scale for assessing attitude strongly agrees, agrees, undecided, disagree and strongly disagree.

Attitude was measured in 2 categories positive and negative (Oppenheim, 1992). Mean score was calculated if the subjects cored high then the mean score they were placed in the positive attitude group and vice-versa.

3.6.4 Accessibility, waiting time and support for ANC

This part included question asking about the accessibility and support regarding ANC services. Distance from home to hospital, convenience, mode of transportation and travel cost from home to the hospital. Regarding social support from husband about ANC services a total of 6 statements with yes or no response were also included.

3.6.5 Past ANC visits

This part Included questions asking about their past experience with ANC services. Number of visits during their last pregnancy 1, 2, 3, or 4 and where did they receive their ANC service and if they did not attend ANC what was the main reason.

3.6.6 Satisfaction with ANC services

Patient Satisfaction Questionnaire 18 (PSQ 18) was used to measure the satisfaction with ANC services (Grant, 1994). It aim was to measure satisfaction and guidelines across 7 dimension; General satisfaction, technical quality, communication, interpersonal aspect, time spent with Doctor, availability and convenience. Each item is

accompanied by five response categories (strongly agree, agree, uncertain, disagree, and strongly disagree).

Some PSQ-18 some items are worded so that agreement reflects satisfaction with antenatal care, whereas other items are worded so that agreement reflects dissatisfaction with antenatal care. Satisfaction is measured in two categories high satisfaction and low satisfaction with ANC. After item scoring, items within the same subscale will be averaged together to create the 7 subscale scores.

3.7 Validity and Reliability

The content validity is obtained by expert advice in the field including professors at Chulalongkorn and Bolan Medical Complex hospital. The reliability of the Knowledge and Attitude questionnaire was obtained through pre-test with 30 antenatal care patients attending the OPD in a different hospital. Cronbachs's alpha coefficient will be used to calculate the reliability of the questionnaire.

The patient satisfaction questionnaire has been adopted from the North American patient satisfaction questionnaire short form PSQ 18 (Linda Mackeigan and Larson, 1989) and from WOMB (Women's views of Birth) by Lindsay Smith antenatal satisfaction questionnaire (Smith, 1999).

3.8 Data collection

After getting approval for the study from Pakistan Bioethics Committee, the researcher with the help of four research assistants at least with graduate qualification, trained by the researcher. The questionnaire was taken to the randomly selected control and intervention groups for the baseline. Before conducting the survey an informed consent was provided with each questionnaire to the participants of the study. Furthermore each participant was informed that there is no financial benefit in participating in this study. The date collection was done before the intervention before and at the end of the intervention.

3.9 Data Analysis

Data was analyzed, in aggregate, using The Statistical Package for the Social Sciences (SPSS, v17). Data was entered into SPSS, coded, cleaned and locked before any

analyses were made. Descriptive statistics such as percentage, mean, median and standard deviation (SD) was used to describe the general characteristics of the subjects.

The outcomes of the study were increase of subject's adherence to ANC services at tertiary care hospitals Mc-Nemar chi square was used to compare the number of visits completed. Paired sample t-test was used to analysis difference in knowledge, attitude and satisfaction score before and after the intervention.

3.10 Study Process

The study comprises of three phases. Phase 1 is the preparation for implementation. Phase II is the implementation process of AAC model and Phase III the monitoring of the model and the evaluation of the project.

Phase I Preparation

3.10.1 Permissions

After passing the proposal exam from College of Public Health Sciences Chulalongkorn University the Permission to conduct the research was granted by the Sectary Health Balochistan. After getting permission from up most authority in health department of Balochistan, permission to conduct research in the hospitals were granted by the Medical Superintended of both the hospitals. Later on the provisional coordinators of National Program of FP, & National Maternal Newborn and Child Health program (NMCH) granted the permission to use their community health workers (LHWs & LHVs) or the integration part of the model. The National Bioethics Committee of Pakistan conceded the ethical clearance. All the permission letters can be found in Appendix 10.

3.10.2 Situation Analysis

A situation analysis study was conducted before the intervention in six hospitals in Quetta city. These hospital included two government hospital, two not for profit hospital, and two private hospital. The objective of this situation analysis was to find determinates of ANC utilization in Quetta city. This was a descriptive cross sectional study with 300 pregnant women attending ANC at outpatient department of the hospitals. The results

revealed that the utilization of ANC in the government hospital was the lowest 41% and 80% for the private hospitals. Most subjects and their husband of the government hospital were illiterate. Their income was also low. The subjects from government hospitals also had low knowledge and attitude and more complications. After quantitative survey a formal qualitative discussions were carried out with senior gynecologist and obstetrician, general practitioners providing Gynea and obstetric services and public health officials to rule out further causes and conduct a study to increase ANC utilization. The survey also helped to improve the data collection tool the questionnaire.

Phase II Implementation

3.10.3 Team Building

A team was built for the process of implementation of the AAC model. The team consists of four research assistants, two counselor, and two female Doctors, a female lab technician along with lab attendant working at the study site. The research assistance were selected on the bases of qualification at least graduation and must know any two of the four local languages. Counselors were selected among the nurses working in the hospital and can speak two of the four languages.

3.10.4 Workshop

Workshop was conducted with staff of the Gynea & Obst department of BMCH. This included doctors, nurses, admin staff, and supporting staff. The purpose of the workshop was project introduction. The presentation was about the components of the AAC model; it's benefit and what the researcher plans to do. It was a 30 minutes presentation with questions and answer round. The workshop lasted for about 1 and half hour. After the workshop refreshment were provided to the participant. This workshop was conducted at the conference room of BMCH. At the end of the workshop the Gynea & Obst were agreed to fully participate in the project.

3.10.5 Training of Team for AAC model

The objective of the training was capacity building of the project implementation team. The training was lead by the kind help of Dr. Rukshana Head of Community

Medicine BMCH, Mrs. Fatima expert in GATHER counseling technique, and Dr. Najma Associate Professor Gynea & Obst BMCH. The training format was lecture and discussion based. The training was aided by audiovisual presentation. Role-play technique was also used.

a) Training of the counselor about ANC

The purpose of this training to the counselor was to refresh their knowledge about ANC and pregnancy. Which included:

1. Important of ANC
2. Diet during pregnancy
3. Complications and avoidance in the first, second and third trimester
4. Birth preparedness
5. Family planning
6. Importance of Tetanus toxoid immunization

The training of the counselors was conducted for 3 hours daily for 3 day at the BMCH conferences room.

b) Training of the counselor for GATHER technique

The counselors were trained how to use that GATHER technique to counsel the pregnant women about ANC the modules of the GATHER training can be found in the Appendix E.

c) Training of the Research assistants;

I) The research assistants were given orientation to understand the questionnaire. They were trained for verbal translation of local language (Pashto, Brahvi, Baloch, Persian) if respondents were unable to understand the translated version of the questionnaire in national language Urdu.

II) Role-play technique was used for the exercise to conduct face-to-face interview with study subjects.

The research assistants training were conducted for two days at the hospital.

Step 4: Responsibility of the Technical Staff for AAC Model

a) Doctors:

The doctors were assigned for the following duties

1. General and Physical examination
2. To classify the subject for focused or comprehensive ANC.
3. Ultrasonography of the subjects
4. To provide services for emergency complications

e) Laboratory staff

To collect the laboratory related samples from the subjects and tack to the hospital lab and bring the result report timely to the OPD.

f) Community health workers (CHW)

A meeting was conducted between the researcher and the concerned organization supervisors about the study and task of CHWs.

1. To Coordinate between study subject and hospital
2. To locate the subject
3. To provide reminder services
4. Facilitate subject during emergency

3.10.7 Logistics and Procurement for AAC model

A separate room was allocated for the intervention process by the hospital administration at OPD of both hospitals. Medicine for general problems of focused ANC such as iron supplements, painkillers, vaccines, and vitamins complexes.

3.10.8 Baseline

After the training of the team the next step was to select the study subjects. After the subject have register them self in the OPD of the hospital. The first step was to qualify the subjects according to inclusion/exclusion criteria like age, parity, residence, first trimester pregnancy. Then they were invited to join the study, if they were willing they

had to sign informed consent form. Then the research assistant conducted baseline survey. After getting the baseline the doctors conducted a detailed medical checkup to for classifying if the subject were pertinent for the focused ANC. The above step was conducted in both the hospitals.

3.10.9 Intervention

a) Intervention at the hospital

After the final selection of the subjects following activity was carried out at the hospital:

1. First ANC visit

    - Clinical Examination
    - Clinically Sever Anemia? Hb test
    - Ob. Exam: gestational age estimation, uterine height
    - Gyn. Exam
    - Blood pressure
    - Maternal weight/height
    - Detection of symptomatic STIs
    - Urine test (multiple dipstick)
    - Blood type and Rh requested
    - Tetanus toxoid given
    - Fe/Folic acid supplementation provided
    - Recommendation for emergencies/hotline for emergencies
    - Complete antenatal card.
    - Counseling at the ANC room

2. Second ANC visit and Subsequent ANC Visits

    - Clinical Examination for anemia
    - Ob. Exam: gestational age estimation, uterine height, fetal heart rate
    - Blood pressure

- Maternal weight
- Urine test for protein
- Fe/ folic acid supplementation given
- Recommendation for emergencies
- Counseling

3. Third ANC visit add to second visit

- Hemoglobin test
- Tetanus toxoid
- Instruction for delivery/plan for birth
- Recommendation for lactation/contraception

4. Fourth ANC Visit add to second and third visits

- Detection of breech presentation and referral for external cephalic version
- Complete ANC card, recommend that it be borough to hospital

b) Intervention at the community

After the selection of the each study subject, they were traced with the coordination of the community organization and CHW at their households. Copies of the ANC cards were also provided to the concerned LHWs. Their assignment was to go to the subject's home before the schedule visit and remind them of their visit. If the subject didn't arrived the CHWs were contacted by the hospital to go back to the subject home and remind them second time. This was done whenever the subject's had their scheduled visits. Incase of any emergency during their subjects were told to contact their concerned CHWs. The CHWs were told to facilitate the subjects. The total number of community health worker that participated in study was 10. They were selected according to number of subjects living in there catchment areas.

In the control group hospital that is SPH the subject received care as usual. The subjects were only followed and the trained research assistants collected data two times at the first ANC visit and the last visit.

Phase III: Monitoring and Evaluation

Monitoring was done at two places at the hospital and the community. Main tool for monitoring was to observe and to fix issues.

3.10.10 Hospital

In the hospital the researcher and Lady Medical officer from the hospital admiration were the key agents for monitoring of the AAC model intervention at the hospital.

Responsible Person	**Tasks**
Lady Medical Officer& Researcher	1. To monitor the team 2. Logistics and supplies 3. Finance 4. ANC card 5. Questionnaire

As the lady medical officer were working daily in the Gynea & Obst OPD they used to monitoring the regularity of the staff by checking the attendants register. The lady medical officers were also responsible for the medicines provided to pregnant women, laboratory test equipment, and ultrasound services. At the end of the day lady medical officer with the researcher regularly check the registers for details of services provided through ANC card, expenditures log, medicine log. The questionnaire filled by the subjects was also checked daily for any issues.

Researcher and two ladies health supervisor (LHS) were the key people in monitoring the community services.

Responsible Person	Tasks
Lady health supervisor& Researcher	**1.** Creating Link **2.** Locating Subjects **3.** Communication **4.** Timely Home visits

After the subjects were enrolled the data taken to the head office of the national program, from the data LHW or LHV working at catchment area was selected. Then LHS and the researcher went to the LHW and provided them with subject information and ANC card. Then the LHW would trace the subject and reported back to the lady health supervisor who will then contact the researcher. During the subject visit to the hospital she was asked if the LHW did visit her or not and when did she visit. If there were some issues the researcher would contact the concerned LHW through mobile phone.

3.11 Ethical Consideration

Ethical clearance was taken from the Pakistan Bioethics Committee ref no 4-87/11/NBC-71-/RDC/921. Prior to the any interview, a written consent will be obtained from each respondent. The subjects will be ensured to their rights to refuse and recline from the study at any time during the course of this study. Using code numbers the confidentiality and anonymity will be ensured. Permission letter for the study from the sectary health Balochistan can be found at Appendix N.

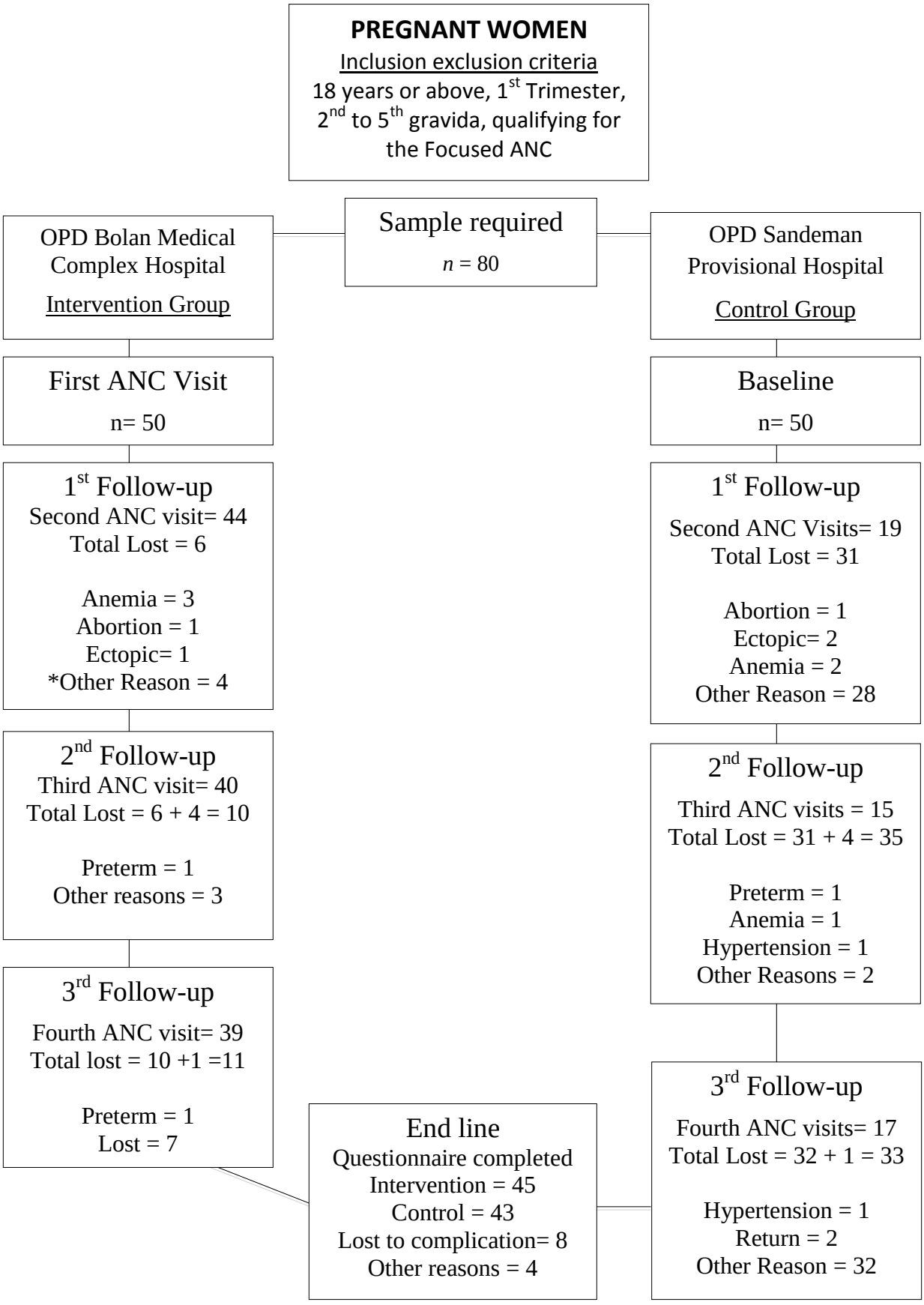

Figure 5 Flow of the subject

*Other reasons means that subject who didn't attended and were lost

CHAPTER IV

RESULTS

The Results consists of analysis and interpretation of the data and analysis obtained from 100 pregnant women attending ANC services during June and July 2011 at two tertiary care hospitals in Quetta City. Two groups pre and post data, study was used to assess the effectiveness of AAC models Intervention on adherence to 4 times ANC visits, change in knowledge, Attitude towards ANC and increase in satisfaction with ANC services. A structured questionnaire was used to collect the data the follow-up survey was conducted at the 4^{th} visit. The subject who didn't attended ANC on their 4^{th} visits they were traced at their residence by the community health workers. Eight subjects were lost due to pregnancy related complications and 4 subjects were lost due to other reason. However 88 subjects from 100 subjects were successfully followed. The results are presented in to two parts:

PART I is the general and socio economic characteristic of the subjects, accessibility, waiting time, support from mother and law and husband in both intervention and control group. These results were statistical analyzed to find out any significant difference between the intervention and control group at the start of the intervention.

PART 2 presents the results for the effectiveness of the AAC model. The effectiveness is assessed by the difference in proportion of pregnant women who completed 4 visits in intervention group compared to the control group. And also change in women's knowledge, attitude regarding ANC and change in satisfaction with ANC services. Further association of knowledge, attitude and satisfaction with 4 ANC visits is also reconnoitered.

PART I: Pre Intervention Characteristics

4.1 General and socio economic characteristics

These parts demonstrate the frequency distribution of selected variables describing the backdrop of the subjects before the intervention. The table 6 shows the age, number of

children, education of subjects and theirs husband's education, family income, family type and visits by community health workers. The groups are tested to find if there was any significant difference between the groups before the intervention.

All the subjects were between the ranges of 19 to 40 with the mean age of 29.85. The numbers of children were 1 to 5 within the range of the set inclusion criteria the mean number of children was 3.15 .For educational attainment 36 (72.0%) subjects in the intervention group had no formal education and 33 (66.0%) subjects in the control group had no formal education.

Concerning husband education 36 (72.0%) subjects husbands in the intervention group had no formal education and 26 (66.0%) subjects in the control group had no formal education where as there 12 (24.0%) husbands in the intervention group had education level high school and above compared to 3 (6.0%) in the control. There was a significant difference $p = 0.037$ between group regarding husband education before the intervention.

Most of the subjects were housewife's 42 (84.0%)for the intervention groups and 48 (96.0%) in the control group. Most of their husbands were working in the private sector 28 (56.0%) in the intervention group and 35 (70.0%) in the control group. The average family income for the subjects was less then 10,000 PRK which is equivalent to 111 US $, within groups 29 (58.0%) subjects in the intervention group and 35 (70.0%) in the control group had family income less then 10,000 PRK. Most of the subjects in both groups were Pashto speaking, 37(74.0%) subjects in the intervention group and 40 (80.0%) in the control group were living in a joint family system.

When asked which one of the community health workers (CHW) visits your home 42(84.0%) in the intervention group said non and 27(54.0%) in the control said of them. In the control group 19(48.0%) said that they were visited by the Lady health Worker (LHW), there was a significant difference between groups $p = .005$ concerning CHWs.

Table 5 General and Socio Economic Characteristics of the subjects and significant difference

Variables	Intervention n=50(%)	Control n=50(%)	P-Value
Age in Years			0.407
≤ 20	-	2(40.0)	
21-15	16(32.0)	19(38.0)	
26-30	19(38.0)	18(36.0)	
≥ 31	15(30.0)	11(22.0)	
Mean ± SD = 29.85, Mini-Max (19-40)			
Number of Children			0.396
1	8(16.0)	4(8.0)	
2	9(18.0)	15(30.0)	
3	11(22.0)	10(20.0)	
4	10(20.0)	13(26.0)	
5	12(24.0)	8(16.0)	
Mean ± SD = 3.15 ± 1.32, Mini-Max (1-1)			
Women Education			0.625
No Formal Education	36(72.0)	33(66.0)	
Primary to secondary school	10(20.0)	14(28.0)	
High School and Above	4(8.0)	3(6.0)	
Husbands Education			0.037*
No Formal Education	23(46.0)	26(52.0)	
Primary to secondary school	15(30.0)	21(22.0)	
High School and Above	12(24.0)	3(6.0)	
Women Occupation			0.092
House wife	42(84.0)	48(96.0)	
Working women	8(16.0)	2(4.0)	
Husbands Occupation			0.238
Unemployed	9(18.0)	4(8.0)	
Government services	13(26.0)	11(22.0)	
Private services	28(56.0)	35(50.0)	
Family Income (US 1$ = 92.0 PKR)			0.388
≤ 10,000	29(58.0)	35(70.0)	
11,000 to 20,0000	15(30.0)	12(24.))	
≥ 21,000	6(12.0)	3(6.0)	
Family Type			0.635
Joint Family	37(74.0)	40(80.0)	
Nuclear Family	13(26.0)	10(20.0)	
Visit By Community Health Worker			0.005*
LHW	6(12.0)	19(76.0)	
LHV	2(4.0)	4(8.0)	
Non	42(84.0)	27(54.0)	
Both	-	-	

* Significant Level at p-value = < .05, ** Fisher Exact Test was applied

4.2 Past ANC history

Past ANC history of the subject are presented in table 7. Most of the subjects 39 (78.0%) subjects in the intervention group and 35 (70.0%) subjects in the control group attended ANC during their last pregnancy. Most of the subject 19 (48.7%) subjects in the intervention group and 17 (48.6%) subjects in the control group went for ANC 2 times. Only 1 (2.6%) subject in the intervention group attended ANC 4 times.

In both the groups 35 (89.7%) and 32 (91.4%) attended ANC at government hospitals. When asked from the subjects who didn't attend ANC what was the main reason for not attending ANC, 7 (63.3%) subjects in the intervention and 10 (58.8%) subjects in the control group said they didn't know about ANC. There was no significant difference between groups regarding past ANC.

Table 6 Past histories of the subjects regarding ANC services in the intervention and control group and significant difference

Past ANC	Intervention n=50(%)	Control n=50(%)	P-Value
ANC during last pregnancy			0.495
No	11(22.0)	15(30.0)	
Yes	39(78.0)	35(70.0)	
Number of Visits	**(n=39)**	**(n=35)**	0.560
1 visit	13(33.3)	10(28.5)	
2 visits	19(48.7)	17(48.5)	
3 visits	5(12.82)	8(22.8)	
4 visits	1(2.5)	-	
≥ 5 visits	1(2.5)	-	
Place of ANC			0.631
Government	35(89.7)	32(91.4)	
Hospital	3(8.5)	3(8.5)	
Other	1(2.5)	-	
Reason for not attending ANC	**(n=11)**	**(n=15)**	0.237
Costly	2(18.1)	-	
Distance	1(9.0)	3(20.0)	
Don't know about ANC	7(63.6)	10(66.6)	
Waiting time	1(9.0)	2(13.3)	
No body to Accompany	-	-	

Significant Level at p – value = < .05, ** Fisher Exact test was applied

4.3 Accessibility and waiting time

According to the table 11 32 (64.0%) subjects in the control group and 27 (54.0%) subjects in the control group were living within 5 km of the hospitals. In the intervention group 31 (62.0%) subjects and in the control group 29 (58.0%) subjects said that it was not convenient for them to go to the hospital for ANC. In the intervention group 41 (82.0%) subjects and in the control group 44 (88.0%) subjects used public transport. In the intervention group 36 (72.0%) subjects and in the control group 39 (78.0%) said traveling was expensive. Regarding waiting time most subjects 22 (44.0%) subjects in the intervention group and 27 (54.0%) subjects in the control group had to wait between 30 to 60 minutes before receiving ANC care where as in the intervention group 21 (42.0%) subjects said that they had to wait more the 60 minutes compared to 16 (32.0%) in the control group. There was no significant difference between groups regarding accessibility and waiting time.

Table 7 Accessibility and waiting time regarding ANC for both the hospitals.

Accessibility and Waiting Time	Intervention n=50(%)	Control n=50(%)	P-Value
Distance from home to hospital in Km			0.441
≥ 15 km	6(12.0)	5(10.0)	
11-14 km	2(4.0)	6(12.0)	
6-10 km	10(20.0)	12(24.0)	
≤ 5 km	32(64.0)	27(54.0)	
Is Travelling Convenient			0.838
No	31(62.0)	29(52.0)	
Yes	19(38.0)	21(42.0)	
Mode of Transportation			0.236
Public	41(82.0)	44(88.0)	
Private	4(8.0)	5(10.0)	
Other	5(10.0)	1(2.0)	
Is travelling Expensive			0.645
No	14(28.0)	11(22.0)	
Yes	36(72.0)	39(78.0)	
Average Waiting Time			0.553
≤ 29 minutes	7(14.0)	7(14.0)	
30-59 minutes	22(44.0)	27(54.0)	
≥ 60 minutes	21(42.0)	16(32.0)	
Waiting Time long			0.100
No	7(14.0)	8(16.0)	
Yes	43(86.0)	42(84.0)	

* Significant Level at p-value = <0.05, ** Fisher Exact Test

4.4 Social support for ANC

According to table 11 there was no significant difference between groups concerning support for ANC by husband and mother in law. In the case of husband 30 (60.0%) subjects in the intervention group and 23 (46.0%) subjects in the control group said that their husband didn't support them by accompany them to ANC visits. For mother in law in the intervention group 11(22.0%) subject and in the control group 18 (32.0%) said that there mother in law supported them by giving them money for ANC. Regarding other components the supports was high from husbands and mother in law. There was no significant difference regarding support in the groups at the baseline.

Table 8 Social Support of Husbands and Mother-in Law regarding ANC in the groups

Social Support	Intervention n=50(%)	Control n=50(%)	P-Value
Husband			
Information	35(70.0)	31(62.0)	0.527
Encouragement	43(86.0)	39(78.0)	0.436
Advise	41(82.0)	38(76.0)	0.624
Money	37(74.0)	39(78.0)	0.815
Accompany	20(40.0)	27(54.0)	0.229
Mother In Law (Dead n=17)	**(n=42)**	**(n=41)**	
Information	35(70.0)	28(56.0)	0.268
Encouragement	35(70.0)	30(60.0)	0.534
Advise	34(68.0)	29(58.0)	0.624
Money	11(22.0)	18(36.0)	0.231
Accompany	26(52.0)	29(58.0)	0.672

*Significant level at p - value = < .05, Fisher Exact test was applied

4.5 Knowledge, Attitude and Satisfaction Scores

The subjects were tested using independent sample t test before the intervention to find any significant difference regarding knowledge, attitude and satisfaction. The score was added to find the mean score. There were no significant differences between groups at the baseline.

Table 9 mean differences of knowledge, attitude and satisfaction between groups at the baseline

Variables	Intervention Group			Control Group			P- value
	Mean (SD)	95 % CI Low	Up	Mean (SD)	95% CI Low	Up	
Knowledge	8.68 (2.03)	-.37434	1.41434	8.16 (2.45)	-.37434	1.41472	0.251
Attitude	27.92 (2.37)	-.75273	1.35273	27.62 (2.90)	-.75325	1.35325	0.537
Satisfaction	57.32 (5.76)	-1.47808	2.47808	56.82 (4.05)	-1.48089	2.48089	0.617

*Significant level at p - value = < .05

PART II: Effectiveness of AAC model

Comparing knowledge, attitude, satisfaction and number of completed ANC visits within groups and across groups, before and after, assessed effectiveness of the AAC model.

4.6 Knowledge and attitude of subjects regarding ANC

Table 7 shows us the percentage of subject who answered correctly to knowledge items concerning importance of ANC, number of ANC visits, Health care of ANC and misconception towards ANC were determined as follow.

The knowledge part of the questionnaire is compromised of 12 statements regarding ANC 6 positive statements and 6 negative statements. It is further divided in to four groups Important of ANC which mean do they think should attended ANC and then number of visits how many times should they visits and when the should start care and

what are the benefits of attending ANC also what are some misconception about ANC. Details of the subject's response in each knowledge item are presented in the appendix k.

Table 10 Percentage of Knowledge of subjects regarding ANC before and after the intervention

#	Knowledge Statements	Correct Answers			
		Intervention Group		Control Group	
		Pre N=50	Post N=45	Pre N= 50	Post N=43
1	Important of ANC	91.3%	95.5%	77.3%	83.7%
2	Number of Visits during ANC	75.3%	91.8%	62.0%	69.7%
3	Health Care of ANC	65.0%	92.7%	69.5%	73.8%
4	Misconception towards ANC	67.0%	91.1%	49.0%	72.0%

Knowledge of ANC was divided in to three levels low, moderate and high. Subjects who scored between 1-6 were put into low knowledge, 7-10 in moderate and 11-12 high. According to table 8 we can see that most of subjects, before the intervention 64.0% in the intervention group had moderate knowledge however after the intervention 71.1% had high knowledge. In the control group we saw that there was change in knowledge from low to moderate but the number of subjects who had high knowledge remained same.

Table 11 Knowledge Level of the subject before and after the intervention

Knowledge Level	Intervention Group		Control Group	
	Pre N=50	Post N=45	Pre N=50	Post N=43
Low	12.0%	2.2%	26.0%	9.3%
Moderate	64.0%	26.7%	56.0%	72.1%
High	24.0%	71.1%	18.0%	18.6%

Attitude towards ANC was measured with 10 statements each statement had 5 responses strongly agree (SA), agree (A), neutral (N), disagree (D) and strongly disagree (SD). There were total of five positive and five negative statements. The minimum score

was 1 and maximum score was 5. For negative statements SA was scored was 1, A = 2, N= 3, D=4 and SD was scored 5 and vice-versa. Each attitude component was divided in to two groups positive and negative by calculating the mean. The percentage of positive attitude of the subjects regarding service quality, self-view and ANC perception are show in table 8. The percentage of the subject who had positive attitudes has increased in both the groups. Details of the subject's response in each attitude item are presented in appendix L.

Table 12 Percentage of positive Attitude of the subjects towards ANC

#	Attitude Statements	Positive Attitude			
		Intervention Group		Control Group	
		Pre N=50	Post N=45	Pre N=50	Post N=43
1	Service Quality view	32.0%	71.7%	28.0%	58.1%
2	Self view	50.0%	71.7%	30.0%	58.1%
3	ANC view	62.0%	84.4%	70.0%	53.4%

Attitude level of pregnant women towards ANC was also divided in two groups positive and negative attitude by calculating mean score. According to the table 10 most subject in the intervention group had negative attitude 58.0% and in the control group 60.0% subjects had positive attitude. After the intervention 71.1 % subject in the intervention group had positive attitude in the control group 65.1% had positive attitude.

Table 13 Percentage of subject with positive and negative attitude

Attitude Level	Intervention Group		Control Group	
	Pre N=50	Post N=45	Pre N=50	Post N=43
Negative	58.0%	28.9%	60.0%	34.9%
Positive	42.0%	71.1%	40.0%	65.1%

Table 11 reveals the statistical change of knowledge and attitude towards ANC services before and after the intervention my comparing mean score. Mean score was calculated by adding up the statements. Wilcoxon signed Rand test was used to determine

the mean difference between the knowledge of the subjects before and after the intervention there was a significant difference in knowledge p = <0.001 for the intervention group. There was no significant difference between before and after in the control group. For attitude of the subjects Pair sample T-test was used to determine the mean difference in attitude before and after the intervention. In the intervention group there was a significant difference p = <0.001 however in the control group there was no significant difference.

Table 14 Mean differences in knowledge and attitude score within groups after the intervention

Variables	Intervention Group			Control Group		
	Pre Mean (SD)	**Post Mean (SD)**	**P-value**	**Pre Mean (SD)**	**Post Mean (SD)**	**P –value**
Knowledge	8.68 (2.03)	11.15 (1.16)	<0.001	8.16 (2.45)	9.16 (1.54)	0.083
Attitude	27.92 (2.37)	38.42 (2.54)	<0.001	27.62 (2.90)	28.23 (2.77)	0.095

* Significant level = <0.05

4.7 Satisfaction with ANC Services

Satisfaction with ANC services was measured with 18 statements each statement had 5 responses strongly agree (SA), agree (A), neutral (N), disagree (D) and strongly disagree (SD). There were total of five positive and five negative statements. The minimum score was 1 and maximum score was 5. For negative statements SA was scored was 1, A = 2, N= 3, D=4 and SD was scored 5 and vice-versa.

These statements tried to measure 7 aspects of satisfaction, general satisfaction (3,17), technical quality (2,4,6,14), communication (1,13), financial aspect (5,7), time spent with doctor (12,15), accessibility and convenience (8,9,16,18). Details of the subject's response in each knowledge item are presented in the appendix M.

Table 15 Percentage of high Satisfaction of subject towards 7 aspect of satisfaction with ANC services

#	Satisfaction statements	High Satisfactions			
		Intervention Group		Control Group	
		Pre N=50	Post N=45	Pre N=50	Post N=43
1	General Satisfaction	48.0%	71.1%	56.0%	48.8%
2	Technical Quality	46.0%	53.3%	32.0%	44.1%
3	Interpersonal skills	60.0%	66.7%	46.0%	53.4%
4	Communication	28.0%	80.0%	32.0%	51.1%
5	Financial Aspect	50.0%	40.0%	44.0%	30.2%
6	Time Spend with ANC staff	48.0%	66.7%	44.0%	58.1%
7	Accessibility and convenience	44.0%	66.7%	60.0%	60.4%

*Significant level at p - value = < .05

In the intervention group regarding general satisfaction 48.0% women before the intervention had high satisfaction where as after 71.1% had high satisfaction. In the intervention group regarding technical quality of the staff 46.0% subjects had high satisfaction where at the posttest 53.3% had high satisfaction. For interpersonal skills in the intervention group 60.0% subjects had high satisfaction whereas after the intervention 66.7% subjects had high satisfaction.

For communication 28.0% subjects had high satisfaction where as the intervention80.0% had high satisfaction. Regarding satisfaction with financial aspects of ANC 50.0% subjects had high satisfaction before the intervention compared to 40.0% after the intervention. For time spent with staff in the intervention group at the pretest 48.0% subjects had high satisfaction compared to 66.7% subjects after the intervention. Regarding accessibility and convenience of ANC service in the intervention group at the pretest 44.0% subjects had high satisfaction whereas after the intervention 60.7% subjects had high satisfaction.

Satisfaction of pregnant women towards ANC is divided in two groups high satisfaction and low satisfaction by the calculating mean score. Mean score is obtained by adding up the statements. According to the table 15 for overall satisfaction most subject

48 % in the intervention group had high satisfaction and in the control group 56.0% subjects had high satisfaction. However after the intervention 64.4% in the intervention group had high satisfaction.

Table 16 Percentage of subjects with low or high satisfaction toward ANC services

Satisfaction Level	Intervention Group		Control Group	
	Pre N=50	Post N=45	Pre N=50	Post N=43
Low satisfaction	52.0%	35.6%	56.0%	49.1%
High satisfaction	48.0%	64.4%	44.0%	51.1%

*Significant level at p - value = < .05, Fisher Exact test was applied

According to the table we find there was a significant difference p = <0.001 in the intervention group after the intervention the mean scored increased. We also find a significant difference p = 0.038 in control group however the mean score had decreased. Paired sample t-test was used.

Table 17 Mean differences in satisfaction score towards ANC

Variables	Intervention Group			Control Group		
	Pre Mean (SD)	Post Mean (SD)	P-value	Pre Mean (SD)	Post Mean (SD)	P –value
Satisfaction	56.97 (4.13)	65.02 (3.28)	<0.001	56.72 (2.45)	54.65 (4.42)	0.038

*Significant level at p - value = < .05, Fisher Exact test was applied

The change in aspects of satisfaction before and after was analyzed by also using paired sample t-test. Table 12 shows us the results of change on aspects of satisfaction with ANC. There are significant differences in the intervention group in all aspects of satisfaction. There was no significant difference between group regarding aspects of satisfaction towards ANC in the control group.

Table 18 Mean differences in 7 aspects of satisfaction towards ANC

Variables	Intervention Group			Control Group		
	Pre Mean (SD)	Post Mean (SD)	P-value	Pre Mean (SD)	Post Mean (SD)	P –value
General Satisfaction	6.26 (1.33)	7.84 (0.877)	<0.001	6.55 (1.18)	6.48 (1.20)	0.798
Technical Quality	13.06 (1.85)	15.44 (1.27)	<0.001	12.86 (1.33)	13.30 (1.48)	0.165
Interpersonal skills	6.97 (1.07)	7.71 (1.01)	0.002	6.62 (0.97)	6.72 (1.20)	0.647
Communication	6.24 (1.11)	7.82 (0.77)	<0.001	6.30 (1.20)	6.34 (1.47)	0.242
Financial Aspect	6.51 (1.21)	7.17 (1.21)	0.009	6.34 (1.47)	6.06 (1.29)	0.326
Time Spend with ANC staff	6.57 (1.37)	7.53 (1.17)	0.001	6.37 (1.29)	6.79 (1.22)	0.175
Accessibility convenience	11.33 (1.47)	15.17 (1.58)	<0.001	11.65 (1.74)	11.79 (1.64)	0.703

4.8 Adherence to 4 ANC visits

According to table 18 38 (76.0%) women attended ANC 4 times in the intervention group. In Control group 12 (24.0%) women attended ANC 4 times. Most of the subject 24 (48.0%) in the control group attended ANC 1 time. There was a significant difference p = <0.001 between groups regarding number of completed ANC visits.

Table 19 Number and percentage of subjects who attended ANC visits and statistical difference between intervention and control group

Variable	Intervention Group n(%)	Control Group n(%)	χ^2	P-value
One ANC Visit	6(8.3)	24(48.0)	29.920	<0.001*
Two ANC Visits	3(4.2)	12(24.0)		
Three ANC visits	3(4.3)	2(4.0)		
Four ANC visits	38(76.0)	12(24.0)		

4.9 Factors associated with 4 times ANC visits during current pregnancy

According to the table 19, knowledge of subjects regarding ANC was statistically associated p = <0.001 with 4 times ANC visits. Sixty percent of the subject who had high knowledge attended ANC 4 times. Attitude of subjects towards ANC was also statistically associated p = <0.001 with 4 times ANC visits. Eighty six percent of Subjects who had positive attitude attended ANC less than 4 times. Satisfaction of subjects with ANC services was statistically associated p = 0.016 with 4 times ANC visits. For satisfaction 68.0% Subjects who had high satisfaction attended ANC 4 times.

Table 20 Association of knowledge, attitude, and satisfaction of subjects with 4 ANC visits or less then 4 ANC visits

Variable	< 4 ANC visits n(%)	4 ANC visits n(%)	χ^2	P-value
Knowledge			29.920	<0.001
Low Knowledge	1(2.6)	24(48.0)		
Moderate Knowledge	27(71.1)	16(32.0)		
High Knowledge	10(26.3)	30(60.0)		
Attitude			18.9533	<0.001
Negative Attitude	33(86.8)	21(42.0)		
Positive Attitude	5(13.2)	29(58.0)		
Satisfaction			4.795	0.016
Low Satisfaction	21(55.3)	16(32.0)		
High Satisfaction	17(44.7)	34(68.0)		

* Significant level is < 0.00

CHAPTER V

DISCUSSION

The discussion part consists of discussion regarding the effectiveness of the project and conclusion of the study and recommendation for further activates regarding this topic. First of there is a background of why this study was conducted.

Maternal health services in Pakistan are provided through all the tiers of the health system. In rural areas both primary and secondary health services including District Head Quarter Hospitals (DHQ), Rural Health Centers (RHC), Basic Health Units (BHU) and Maternal and Child Health Centers (MCH) are available. In addition, about 100,000 Lady Health Workers (LHWs), Lady Health Visitors (LHV), Community Mid Wives (CMW), Trained Birth Attendants (TBA) and Traditional Birth Attendants (Dai) are providing ANC services through both public and private health facilities.

In terms of the United Nations Development Program gender empowerment measurement, Pakistan lies 100th out of 102 countries, which shows that Pakistan has a long way to go with regard to the promotion of gender equality and empowerment of women. Having a subjugated position in the family, women and children need to seek the permission of the head of the household or the men in the family to visit health services (Bhutta, 2004). The poor social status of women and their lack of empowerment also contribute greatly to the lack of ANC utilization.

With other problem in Pakistan one of the most current is the political situation, because of which Pakistan have been the center point of terrorism in the region. From 2001 to 2010 35,000 people have been killed in terrorist activities. The delivery of social services has been disrupted due to the on-going conflict between administration and terrorist (Bari, 2012). This creates a disastrous health situation in these areas such as Quetta city. In Quetta city alone there have 65 terrorists acts in 2012 (Satp, 2012). This makes it very difficult to reach women with pregnancy intervention such as ANC at the communities.

Balochistan province in Pakistan is the most underdeveloped region with low literacy rates and strict cultural values. The tribal system has little space for women's freedom; has marriage system based on polygyny and exchange of women for marriages, their mobility is limited, as is their role in decisions regarding health care during pregnancy. In his book "The Cultural Context of Health: A Baloch Perspective" Doctor Naseer Dashti describes that the health seeking process among Baloch people begins with diagnosis at home by family members and problems are settled during family meetings that address all other family affairs. Family friends and neighbors also play an important role (Dashti, 2008).

In last two decades the government of Pakistan has developed several MCH programs, most of them in collaboration with donor agencies, to improve maternal health status. The federal government controls these with execution branches at the provincial and district levels. These programs include training and provision of equipment to Traditional Birth attendants; Lady Health Workers Program that provides essential primary health care services to communes at their doorstep by 100,000 trained LHWs, linking the health system and the masses.

In addition, government programs aim to provide services to women who for cultural reasons cannot leave their homes in rural areas. The maternal and neonatal child health (MNCH) program is supposed to provide enhanced access to quality maternal and child health and family planning services in the country. Despite these efforts by government of Pakistan a woman for whom pregnancy might become a dangerous event desires more. In Quetta city 14% women attended 4 times (Government of Balochistan and UNCIEF, 2010). ANC is an intervention that can help prevent complication during pregnancy leading to healthy mother and child.

In Quetta city women prefer to go the doctors for ANC rather then to a nurse or others (Government of Balochistan and UNCIEF, 2010). Less doctors work at primary health most of them are working in secondary and tertiary sector. The aim was to integrated community and primary health care through LHWs that are not utilized regularly.

The objective of this study was to evaluate the effectiveness of AAC model intervention on pregnant women's increased adherence to 4 times ANC visits. The other objectives were to investigate the change in knowledge and attitude about ANC care and to find out the change in satisfaction aimed at ANC services. This was a quasi-experimental study with two groups' pre and post. A total of 100 subjects participated in this study.

Before the beginning project a cross sectional study was conducted to find out factors associated with ANC utilization in Quetta city. The subjects were recruited from 6 hospitals in Quetta. The study finding showed that women who attended ANC during last pregnancy were lowest in the Government hospital. Knowledge and attitude of women were found to be associated with increase ANC utilization. Women who were visited by a community health worker attended ANC more times. The purpose of the situation analysis was to assess the local situation.

The purpose of the intervention was to provide Focused ANC, structured counseling, service mobilization, and using community services such as the LHWs and LHVs. The subjects were enrolled in the study at the first ANC visit; they were counseled at the ANC room the purpose of counseling was to provide them with knowledge related to pregnancy, complications, antenatal care, childbirth and also postpartum time. The AAC model room was specially allotted to the team by the hospital administration. Their necessary tests were also collected at the room and the medication required for each visits were given. This activity is part of the service mobilization component of the intervention creating a one-stop ANC services. This was done at each of the following visit.

After the subjects went back they were traced by the LHWs or LHVs at their home to provide them with reminders of their next scheduled visit. A communication channel was developed between the hospital and CHWs through mobile phones; if a subject was late for their schedule visit the hospital will call the concerned CHW to tell them the state of the subject.

The effectiveness of the intervention is discussed with the change in knowledge, attitude and their association with ANC and comparing it with other studies. Increase in satisfaction with ANC services and its effect on adherence to ANC visits are also

discussed and compared with other studies. Finally the effects of community and hospital integration on number of completed ANC visits are also discussed.

5.1 Pre-intervention characteristics

All the subjects were within the ages of 19 to 40. The average number of children for subject was 3 children's, which is adjacent to the current fertilely rate for Pakistan which is 3.17. The results show us that most of subjects didn't have any formal education. Most of the subjects were housewives; their husband's working for the private sector. The subjects had family income less then 10000 PRK per month that is about 111 US $. Most of the subjects were living in joint family in Pakistan most of the people live in the same household even after marriage. Few of the subjects were visited by CHW during their last pregnancies. Around 70% pregnant women attended ANC services during their last pregnancy where as only 2 subjects attended ANC 4 times or more. Most of these subjects attended ANC at the government hospital. Major reason for not visiting ANC was that they didn't know about ANC.

Both the hospitals were within the 5km range of most of the subjects. Still most of the subjects didn't feel that it was convenient for them to go to the hospital. Main mode of transportation used to go the hospital was public transport. The subjects said that they had to wait in average 30 to 60 minutes to receive ANC services during their last pregnancies. Support from husbands and mother in law in the group was generally high although the husband support by accompanying their wife's to antenatal care was less, for mother in law financial support for ANC to the subject was not much.

At start of the study we found that was a significant difference in two characteristics of the subjects between the control group and intervention group. The difference was in husband education and by visits by the community health worker. Husbands in the intervention group had attained more education. In other studies husband education attainment have been found to be associated with ANC utilization however most of these studies were conducted were women also had more education and those studies reveled significant association of women along with their education in white collier communities with husbands education, women's education is also significant a factor (Kabir, et al., 2005; Pllikadavath, Foss, and Stones 2004).

Results from the situation analysis showed that husband education association ANC care utilization but overall utilization among respondents was 40% which is less then nation average which is 61%. Since the effect of husband education may not influence the outcome of the intervention. In the study there was also no significant difference in pregnant women attending ANC during their last pregnancy.

5.2 Effectiveness of the AAC model

5.2.1 Knowledge and Attitude

The use of maternal health services such as ANC is influenced by attitude and cultural belief and also health knowledge is a key factor that enables pregnant women to be aware of the benefits of attending ANC in order to use these services. An example of the Baloch culture neither bleeding in the ante partum nor postpartum periods caused alarm until the appearance of delirium or loss of consciousness. It explains why complications around obstetric bleeding do not usually lead to immediate action by women and her families to go to the hospital (Dashti, 2008).

Findings of this study reveled that the women exhibited significant improvement $p = < 0.001$ in knowledge regarding ANC. There was a significant association of knowledge with the number of completed visits in this study. In the slums of Karachi knowledge about dietary, danger signs, and emergency was significantly associated with ANC utilization (Nisar and Amjad, 2003). In a project in Balochistan by provided information on safe motherhood by pictorial booklets and audiocassettes, they found that women in the intervention group had twice the odd of receiving ANC. The booklet in this study covered topics, which were pregnancy, danger signs, delivery and postpartum (Midhet and Becker, 2010).

There was a positive change in the attitudes of the women who were part of this intervention. The change in attitude was in their perception of the how they felt about service being provided, and how they felt about them self in the context of ANC. The change in attitude was statistically significant $p = < 0.001$. Attitude also had a significant association with utilization of ANC. Poor relationship between patients rude and

unfriendly attitudes of the staff were major reasons women preferred not to be referred to some hospitals (Mathole, et al., 2004).

Effectiveness from an ability to impart health information to patients using interpersonal strategies is to known promote patient health. For example, communication between health providers and patients is improved by demonstrated concern, respect and empathy (Travaline Ruchunskas and D'Alonzo, 2005). Jargon-free communication promotes patients' under- standing of health information given by health professionals (US Departmen of Disease prevntion and Health promotion). Empathy enhances patients' adherence to behavioral and medical treatments (Dziopa, et al., 2009).

Some sort of counseling during the antenatal period has shown to have a significant effect on women knowledge and attitude during the antenatal period. A study found that counseling had significant effect on increasing knowledge, influencing attitude of women concerning pregnancy (Larsa Jennings, 2010). In a study from Indonesia discovered that group counseling in ANC had significantly influenced the knowledge and attitude about pregnancy, complication, safe birth and tacking care of the newborn (Nuraini and Parker, 2005).

5.2.3 Satisfaction

Satisfaction is a complex concept. It involves both a positive attitude and affective response to an experience, as well as a cognitive evaluation of the emotional response (Ross, 1998). In fulfillment theory, patient satisfaction is a function of the outcomes of the experience. Discrepancy theories predict satisfaction based on differences between what is expected or desired and what is received.

There are at least three reasons why satisfaction surveys may provide valuable information. First, along with improved health status, satisfaction is an ultimate outcome of health care. Second, there are several dimensions of health services that patients can observe and evaluate, such as travelling distance, waiting time for an appointment, the physical environment and the interpersonal skills of the staff. Third, satisfaction surveys provide information about patient behavior (Grytten Carlsen and Saku, 2008). In this study 7 aspects of satisfaction were measured; general satisfaction, satisfaction with

technical quality, communication, interpersonal skills, financial aspect of ANC, time spent with staff, accessibility and convenience.

In the study there was a significant change p = <0.001 in the satisfaction with communication before and after the intervention. Reviewed studies suggest that effective communication exerts a positive influence not only on the emotional health of the patient but also on symptom resolution, functional and physiologic status and pain control (Stewart, 1995). Satisfied patients have shown to be more inclined to comply with recommended treatment and keep appointments, and less inclined to shop around for a doctor, than dissatisfied patients (Bleich Ozaltin and Murray, 2009).

There was also a statistical significant change p = <0.001 in satisfaction with the technical quality of the staff. Patients have more likely to be very satisfied with the quality of care they receive when the doctor provides better care than he usually does. Patients do, in fact, recognize and value quality care (Leonard, 2008). The care provider's skills regarding clinical and technical competence and friendliness have been associated with satisfaction in antenatal care (Proctor, 1998). Higher patient satisfaction may also lead to better patient compliance with treatment plans and improved clinical outcomes (Cohen, 2005).

Dissatisfaction with antenatal care has been associated with an insufficient number of antenatal visits (Sikorski, et al., 1996), long waiting times at appointments, lack of continuity of caregiver and of care content (Williams and Thomson, 1996), and lack of information and explanation (Fraser, 1999). Caregiver support during pregnancy not only affects satisfaction with care but also could reduce the likelihood of caesarean section and improve maternal psychosocial outcomes (Hodnett and Federicks, 2010) and have positive long- term effects on health outcomes.

5.2.4 Community and Hospital integration

Since Alma Ata declaration 1978 using community health workers have been an effective component in interventions regarding many health related issues globally. The CHWs in Pakistan including LHWs are providing many activities on maternal and child Health. Each LHW covers 1000 population. They have been working in many different

health's related activities and also in promotion of ANC, safe delivery and postnatal care all over Pakistan. One of the goals of LHWs is to improve the utilization of public health facilities through client referrals.

However in Balochistan LHWs are covering half of the eligible individuals, they are seeing less clients per week and are referring clients more to a private hospital/clinic then their own health facility or government hospital (Oxford, 2009). In this study we also found that the percentage of women who in the past have been visited by a CHW was fewer. There was also a significant difference in the intervention group and control group at the baseline and hence due to this intervention the CHWs visited more and convinced family to make sure to send women to complete 4 ANC visits.

. The community health workers were one of the main components of this study. Subjects were located by the CHWs at their residence from the information provided by the hospital. Then CHWs went to their homes to encourage them, motivated them, and reminded that so they don't miss their appointment with the hospital. This helped create a relationship between the hospital and the pregnant women through the CHWs. The CHWs were from the same communities; they speak the same language, are from same ethnicity this had an influence on the subjects leading to positive attitudes towards ANC. This study found that there was significant difference $p = <0.001$ in the intervention group and control regarding number of completed visits. A framework of CHW Praxis and Patient Health Behavior have also suggested that that CHWs influence patient behavior by enhancing patients' confidence and their attitudes and values toward behavioral change (Pinto Silva and Soriano, 2012).

Evaluation report on a maternal heath program in 10 districts of Pakistan found that in the women's support group meeting which were formed by LHW in their areas had a definite impact on women health seeking behavior. There was a change in attitude towards attending ANC. The utilization for ANC also increased in these areas (Population Counsel and PAIMAN, 2010). Quetta city was not part of this project. In Africa they found that family and community involvement is crucial for healthy behaviors during pregnancy and has been shown to be a major determinant of use of ANC services

(Lincetto, 2006). In Nepal establishing links between the community and the facility can increase utilization of services, including ANC (Manandhar, et al., 2004).

As focused ANC doesn't need special techniques and can be delivered through primary and secondary care through community health workers. The intervention was delivered through staff nurse and a general practitioner; currently Pakistan health system is providing doctors, nurses and community health worker at primary and secondary level. Thus the model can be implemented in secondary and primary level. The sustainability of any intervention relies on the commitment of the government that adopts an intervention for providing health services to the community. This intervention can be used as all the tires of the health system including tertiary, secondary and primary level by integrating community and hospital services.

5.3 Conclusion

The main purpose of the study was to find the effectiveness of the AAC model intervention on adherence to 4 times ANC visits. There were two groups in this study one received the intervention package for other group it was caring as usual. A total of 100 subjects participated in this study. The questionnaire data was collected at two times at the first ANC visits and the fourth visits. Women who didn't attended the 4^{th} visits the questionnaire was taken to their homes. Thirteen of the subjects were lost during the follow up 7 for the control and 5 for the intervention group. The other measurements of the study were knowledge, attitude and satisfaction. And their association with number of visits completed.

Pregnant women in their first trimester were enrolled in this study. They were counseled, their test were taken, medicine were provided and when they went back to their homes a community health worker would go to their homes and reminded them about their scheduled visit. This study hypothesized that the model would be effective on increasing Adherence to ANC. There was no significant difference in these groups before the intervention regarding knowledge, attitude and satisfaction.

Most of the subjects were within the age range of 19-40. The literacy rare was low in the subject and also in their husband similar to the country number. The average family

income was around 112$. Most of the subjects were housewife and their husband working for private services. Some subjects were not been visited by a CHW. The finding of the study revealed that women in the intervention group had attended ANC 4 times, significantly more from the control group. There was also significant change in women knowledge, attitude and satisfaction of the subjects.

Regarding Knowledge most of the subject did say that ANC was important but their information regarding how many visits should they attend, complications and about medical interventions was low. After the intervention there was a significant difference with the intervention group but there was no change in the control group. Knowledge was found to be statically associated with numbers of completed visits. This concludes that the women had better knowledge regarding ANC after the intervention, which influenced adherence to ANC.

Attitude of the subjects also increased in both groups. However the change in attitude in the intervention group was statically significant. In the initial analyses we found that attitude was associated with number of visits completed however after conducting regression analysis attitude was not associated with ANC. Obviously, knowledge and attitude are an intermediate point on any scale that seeks to evaluate the effectiveness of any care program. Knowledge and attitude are not independent of other factors particularly for utilization.

Where as satisfaction with health service has been an important determinant for utilization of health services. People who are not satisfied with the services would go less to these services. In this study there was significant difference in all aspects of satisfaction in the intervention group. After the intervention women were more satisfied with the technical quality of the staff, communication of the staff, time spent with doctor, accessibility and convenience. However there was decrease in satisfaction with the financial aspect of ANC. In this study there was no financial support provided to subjects for travelling, however the medicine, which they general would buy, were being provide free. The drop in financial aspect of satisfaction may be due to travel cost because the subjects attended ANC more times then the last pregnancies. This was not a statistical difference.

In the control there was also statistical difference after the intervention. The satisfaction of subjects had fallen down during the 9-month period it may be because subjects that went to the other services didn't find these services satisfactory. This might be one of the reasons why ANC attendance was less in the control group. Satisfaction was associated with the number of completed visits endorsing that the increase in satisfaction with ANC services is due to the intervention, which led to increase in number of ANC visits at the hospital.

One of the key components of the intervention was to develop a link between hospital and home using community health services (CHWs). This was accomplished by the support of National Program for FP, PHC, PPIU Balochistan LHVs program and National Maternal New Born and Child Health (MNCH) LHWs program. And all the LHWs and LHVs who participated in the study. The subjects were traced at home they were encourage by the CHWs to go to the hospital for their scheduled visits. This helped developed a relationship between hospital and home through the CHW leading to adherence to ANC.

Counseling of the pregnant can increase knowledge of pregnant women regarding pregnancies and why to use ANC. Service mobilization can help change satisfaction with the services. And using community services helped develop trust at the hospital also effecting attitude and satisfactions. This concludes that the intervention was effective in increasing adherence to ANC services at Bolan Medical Complex Hospital by using existing services effectively and efficiently.

5.3.1 Key Success factors of AAC model Intervention

Regarding Community Services

- For success full intervention the support from the community health worker was important. Integrating hospital and community services through proper channel. Home visits increased satisfaction with both services.

Regarding Women

- Building relationship between the women and hospital through the channel of CHWs. Women received information from peers. Increasing knowledge of these women helped improve health behaviors.

Hospital

- Improving services at a hospital was beneficial for the patient's health. Capacity building of hospital staff should be conducted frequently. Monitoring of the staffs behavior with the patients is important.

5.4 Limitations

- In this study a true probability sampling technique was not used limiting our ability to make brooder generalization of the results. True probability sampling was not possible because we didn't have a list of subject from which subject could have been randomly selected, subject were enrolled at the OPDs of the hospitals however systematic sampling was used.

- Results of the effects of the intervention on the provider's sides weren't studied. The results were orientated only towards the subjects.

- Thirteen subject were lost to the follow-up some for more medical reason, some changed hospitals and because they couldn't be located. No tests were conducted to find difference between those who were lost and who completed the follow up.

- As both the hospital were located at the same city there was a probability of contamination between the groups. There were only these two hospitals, which have similar structure and were comparable. We found that only 5 subject were living within the same area in Quetta city. The influence of contamination on this study was little.

- It must be mention that this intervention might not have benefited the pregnant women's that are in the most need of this kind of intervention. Dude to current security situation in Balochistan assessing these women is difficult. But if these interventions reach these women it will be beneficial to the women and the child.

5.5 Recommendations

- As this study proves that building bridges between hospital and community by integrating services can improve utilization of ANC. A continuum of care should be establish for women during the pregnancy in Quetta city.
- Refreshment courses should be carried out from time to time to increase the capacity of the hospital staff and CHWs empowering them to work more efficiently.
- A channel of communication between the hospitals and the community health services should be strengthened for example through by using community health workers.
- The study can be replicated and implemented in other areas for promoting knowledge, attitude and satisfaction of ANC and to increase utilization of ANC services.
- To enable hospitals and community contribute resources willingly the study recommends that hospital and the community services should be transparent and accountable.
- The policy makers should use this as an evidence to develop strategies for improving utilization of ANC service among pregnant women.

5.6.1 Future Research suggestion

- This research should be carried out in larger population for longer period of time get the outcome for subject health and newborn child health.
- A research exhibiting the view of the caregivers such as the counselor, staff and the CHWS should be considered.
- Husband and mother in law should be involved in this kind of intervention to gain further beneficial outcomes.

- A randomized control trial can be the optimum study design test the effectiveness of any given intervention.

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APPENDICES

Appendix A: Consent Form

Sample no…….

Responsible person(s) and institute:

Mr. Sheh Mureed
PhD. Public Health
College of Public health sciences,
Chulalongkorn University Bangkok 10400, Thailand

Date of consent .....

I (Mr. /Mrs. /Ms.) .....

Home address ……

Contact No . .....

I have read and understood all statements in the **informed consent form**. I have also been explained the objectives and methods of the study, as well as possible risk and benefits that may happen to myself upon the participation in the study. I understand that the information the information will be kept confidential and my name will no be disclosed in any case. I shall be given a copy of the **signed informed consent form.**

I have the right to withdraw from the project at any time without any adverse effects upon myself.

Signature……... (Respondent) (Informant) ……

Signature…….. (Researcher) (Mr. Sheh Mureed)

Appendix B: Questionnaire

Sample No ……

Hospital .....

Date of Data collection ……/…../……..

Number of Visit…….

Name : ……

Husband Name: ……

Current Address:

House Number …… Street …… Road …….

Phone Number ……

Socio Demographic Characteristics

Age (in years) ..……

a) Education

□1.No Formal Education □ 2.Primary School □3.Secondary School

□ 4.High School □ 5.Graduation and above □ 6.Islamic Education

c) Occupation

□ 1.House wife □ 2.Government Service □ 3.Private service

□4.Other (specify) …….

d) Husband Occupation

□ 1.Unemployed □ 2.Government Service □ 3.Private service

□ 4.Other (specify) ……

e) Husband Education

□ 1.No Formal Education □ 2.Primary School □3.Secondary School

□ 3.High School □ 4.Graduation and above

f) Family Income (monthly)

□ 1. Less then 10,000 Rs

□ 2. Between 10,000 – 20,000 Rs

□ 3. More then 20,000 Rs

g) Ethnicity

□ 1.Baloch □ 2.Pashto □ 3.Bravi □ 4.Sindhi

□ 5.Punjabi □ 6.Other(specify) ……

h) Family

□ 1.Joint family □ 2.Nuclear Family

I) Visited by community health worker during last pregnancy?

□ Lady Health Worker (LHW)

□ Lady Health Visitor (LHV)

□ Non

□ Both

Knowledge and Attitude regarding ANC services

a) Knowledge towards ANC

Please select only one appropriate answer according to you understanding.

T = True, F = False and DK = don't know

No.	Statements	T	F	DK
K1	Women don't need special care during pregnancy	□	□	□
K2	Health service provider such as doctors, nurses and midwives provides ANC to women.	□	□	□
K3	Pregnant women should wait to receive ANC until they feel fetal movements during pregnancy.	□	□	□
K4	Pregnant women should go to ANC clinic 4 times	□	□	□
K5	Only primipara women should go to ANC clinics	□	□	□
K6	Attending ANC can help prevent complication during pregnancy	□	□	□
K7	Women who don't have any problem during pregnancy should not attend ANC	□	□	□
K8	ANC is an chance to inform pregnant women about the danger signs and symptoms of pregnancy.	□	□	□
K9	Pregnant women don't need to get tetanus toxide injections during ANC.	□	□	□
K10	Pregnant women should attend ANC as soon as if they miss menstrual period.	□	□	□
K11	There is no need of blood testing during pregnancy at ANC clinic	□	□	□
K12	Mother going to ANC clinic services will know about the well being of the baby	□	□	□

b) Attitude towards ANC

Please select only one answer for each item

SA = Strongly Agree, A = Agree, UD = undecided, D = Disagree, SD = strongly disagree

No	Statement	SA	A	UD	D	SD
1	I get good service during ANC	1	2	3	4	5
2	I feel peaceful when I have ANC	1	2	3	4	5
3	I am feared of blood tasting during ANC	1	2	3	4	5
4	I feel exhausted of long waiting time in ANC	1	2	3	4	5
5	I get good support from health personnel during ANC	1	2	3	4	5
6	Its make me relaxed when I meet other pregnant women at ANC	1	2	3	4	5
7	I don't get any helpful information from ANC visits	1	2	3	4	5
8	I feel shy when I get touched on abdomen by health personnel	1	2	3	4	5
9	I feel secure during ANC appointment	1	2	3	4	5
10	In the absence of complications I will not go for ANC	1	2	3	4	5

Accessibility, waiting time and support

a) Distance (kilometers)

□1. ≤ 5 km □ 2. 5 – 10 km □ 3. 11 – 15 km

□ 4. ≥15 Km

b) Is it convenient for you to get to hospital?

□1.Yes □ 2.No

c) Mode of transportation

□1.Private transport □ 2.Public Transport □ 3. Other (Specify) ……..

d) Do you think traveling is expensive?

□ 1.Yes □ 2.No

e) Waiting time at ANC

□ 1) Less then 30 minute □ 2) 30 – 60 minutes □ 3) More then 60 minutes

f) Is waiting time long?

□ 1.Yes □ 2.No

g) Support by Husband

Select one answer for each question

No	Question	Yes	No
Sp1	Husband provides support to get ANC	□	□
Sp1	Husband give you information about ANC services	□	□
Sp3	Husband encourage you to follow the guidelines for ANC services	□	□
Sp4	Husband advice you to go the ANC	□	□
Sp5	Husband provided money for ANC	□	□
Sp6	Husband accompanied for ANC	□	□

f) Support my mother-in-law

Select one answer for each question

No	Question	Yes	No
Sp1	Mother-in-law provided support for ANC	□	□
Sp1	Mother-in-law give you information about ANC services	□	□
Sp3	Mother-in-law encourage you to follow the guidelines for ANC services	□	□
Sp4	Mother-in-law advice you to go the ANC	□	□
Sp5	Mother-in-law provided money for ANC	□	□
Sp6	Mother-in-law accompanied for ANC	□	□

Past ANC visits

a) Number of Children……. (Excluding this pregnancy)

b) ANC during last pregnancy (If no Skip to e)

□ 1.Yes □ 2.No

c) Number of ANC visits

□ 1.One Visit □ 2.Two Visits □ 3.Three Visits

□ 4.Four visits □ 5.Five visits or more

d) Place of ANC

□1.Government Hospital

□2.Private Hospital

□ 3. Other (Specify) ……..

e) Reason for not attending ANC

□ 1.Costly □ 2.Far from home □ 3.Don‘t know about antenatal care
□ 4.Have to wait too much □5. Nobody to accompany to hospital□ 6.Others (specify)……

d) Perceived problems/complication during last pregnancy

Complications	Yes	NO
Anemia	□Yes	□ No
Hypertension	□Yes	□ No
Eclamptia	□Yes	□ No
Abortion	□Yes	□ No
Fibroids	□Yes	□ No
Infections	□Yes	□ No
Hemorrhoids	□Yes	□ No
Anal Fissure	□Yes	□ No

Satisfaction with ANC services

How strongly do you AGREE or DISAGREE with each of the following statements

Statements		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1.	Health personal are good about explaining the reason for medical test for ANC	1	2	3	4	5
2.	I think the hospital has everything needed to provide ANC services	1	2	3	4	5
3.	The ANC services I have been receiving is just about perfect	1	2	3	4	5
4.	Sometimes Health personal make me wonder if their diagnosis is correct	1	2	3	4	5
5.	I feel confident that I can get the ANC service without being set back financially	1	2	3	4	5
6.	When I go for ANC they are careful to check everything when treating me and examining me	1	2	3	4	5
7.	I have to pay more for ANC service than I can afford	1	2	3	4	5
8.	I have easy access to the ANC services I need	1	2	3	4	5
9.	Where I get ANC services, people have to wait too long	1	2	3	4	5
10.	Health personal act too businesslike and impersonal towards me	1	2	3	4	5
11.	Health personal treat me in a very friendly and courteous manner	1	2	3	4	5
12	Those who provide my ANC sometimes hurry to much when the	1	2	3	4	5
13.	Health personal sometimes ignore what I tell them	1	2	3	4	5
14.	I have some doubts about the ability of the Health personal who provide ANC service	1	2	3	4	5
15.	Health personal usually spend plenty of time with me	1	2	3	4	5
16.	I find it hard to get an appointment for ANC service right away	1	2	3	4	5
17	I am dissatisfied with some things about the ANC service I receive	1	2	3	4	5
18	I am able to get ANC whenever I needed it	1	2	3	4	5

Appendix C: Time frame and Budget

Project procedure	Sep 10	Oct 10	Nov 10	Dec 10	Jan 11	Feb 11	Mar 11	Apr 11	May 11	Jun 11	Jul 11	Aug 11	Sep 11	Oct 11	Nov 11	Dec 11	Jan 12	Feb 12	Mar 12	Apr 12	May 12
1.Litrature revive																					
2.Writing proposal																					
3. Proposal Exam																					
5.Ethical consideration																					
6. Pre test Questionnaire																					
7. Intervention																					
8.Data Collection																					
9. Data Analysis																					
9.Thesis and Article writing																					
10. Thesis exam																					
11.Submission for article publication																					
12.Submission of thesis																					

Appendix D: Budget

In baht

Expenditure	**Cost**
Traveling	30,000
Research assistants	40,000
CHW	40,000
Stationary	40,000
Workshop	30,000
Training	30,000
Miscellaneous charges	30,000
Total	240,000

Appendix E: Classifying Form

Criteria for classifying women for the basic component of the Focused ANC

Name of patient: _____ **Clinic record number:** ☐☐☐☐☐☐

Address: _____ **Telephone:** _____

INSTRUCTIONS: Answer all of the following questions by placing a cross mark in the corresponding box.

OBSTETRIC HISTORY	**No**	**Yes**
1. Previous stillbirth or neonatal loss?	☐	■
2. History of 3 or more consecutive spontaneous abortions?	☐	■
3. Birthweight of last baby < 2500g?	☐	■
4. Birthweight of last baby > 4500g?	☐	■
5. Last pregnancy: hospital admission for hypertension or pre-eclampsia/eclampsia?	☐	■
6. Previous surgery on reproductive tract? (Myomectomy, removal of septum, cone biopsy, classical CS, cervical cerclage)	☐	■

CURRENT PREGNANCY	**No**	**Yes**
7. Diagnosed or suspected multiple pregnancy?	☐	■
8. Age less than 16 years?	☐	■
9. Age more than 40 years?	☐	■
10. Isoimmunization Rh (-) in current or in previous pregnancy?	☐	■
11. Vaginal bleeding?	☐	■
12. Pelvic mass?	☐	■
13. Diastolic blood pressure 90mm Hg or more at booking?	☐	■

GENERAL MEDICAL	**No**	**Yes**
14. Insulin-dependent diabetes mellitus?	☐	■
15. Renal disease?	☐	■
16. Cardiac disease?	☐	■
17. Known 'substance' abuse (including heavy alcohol drinking)?	☐	■
18. Any other severe medical disease or condition?	☐	■

Please specify _____

_____

A "Yes" to any ONE of the above questions (i.e. ONE shaded box marked with a cross) means that the woman is not eligible for the basic component of the new antenatal care model.

Is the woman eligible? (circle) **NO** **YES**

If NO, she is referred to _____

Date _____ Name _____ Signature _____

(staff responsible for ANC)

Appendix F: Counseling Module

The Nurses will trained to follow these guidelines on each session with the pregnant women they have been adopted from the GATHER guidelines for Counseling.

Greet You Should

- Welcome each pregnant woman on arrival.
- Discuss in a comfortable and private place.
- Assure the pregnant woman of confidentiality.
- Express caring and acceptance by words and gestures throughout the meeting.
- Explain what to expect.

Ask You Should

- Ask the pregnant woman's reason for the visit.
- Encourage the pregnant woman to do two-thirds of the talking.
- Ask mostly 'open' questions.
- Pay attention to both what the client said and how it was said.
- Put yourself in the woman's shoes — expressing understanding of what she said without criticism or judgment.
- Ask about the pregnant woman's feelings.
- Ask about her preferences.

Tell You Should

- Start the discussion focusing on the pregnant woman's preference(s).
- Discuss the Importance of antenatal care.
- Give information about benefits of attending ANC during pregnancy help her make her own decisions.
- Avoid 'information overload'?
- Use words familiar to the client?
- Discuss the advantages of early reporting if she encountered danger symptoms during pregnancy?

Help You Should

- Let the pregnant women know that the decision is hers.
- Help the pregnant women be able to realize common danger symptoms.
- Help her think over the consequences for her own or her baby's life.
- Advise the pregnant women without controlling and frustrating.
- Let the pregnant women decide.
- Make sure the pregnant women's choices are based on accurate understanding.
- List any medical, social, cultural or religious reasons for making a different decision – probably different from what you might like to achieve.

Explain You should

- Provide what the client wants, if there is no medical reason not to.
- Explain when the woman should come to you if one of the danger symptoms appeared?
- Help her to explain in her own words how much she understands each of the danger symptoms of pregnancy?
- Explain using printed instructions, pictures and diagrams?

Return You should

- Plan when the next visit should be.
- Discuss with the pregnant woman if she can come back with her husband or partner.
- Assure the pregnant woman that she should come back at any time, for any reason.
- Assure her to come back soon, even if she missed the day of her scheduled appointment for some reason beyond her control.
- Assure her that it is her full right to go to any other health facility at any time.
- Thank the pregnant woman for attending for antenatal care.

Appendix G: ANC card

First Visit for all at first contact with clinics, regardless of gestational age. If first visit later than recommended, carry out all activities up to that time DATE: / / .	Visits			
	1st	2nd	3rd	4th
Clinical examination				
Clinically Severs Anemia? Hb test				
Ob. Exam: gestational age estimation, uterine height				
Gyn. Exam (can be postponed until second visit)				
Blood pressure taken				
Maternal weight/height				
Rapid syphilis test performed, detection of symptomatic STIs				
Urine test (multiple dipstick) performed				
Blood type and Rh requested				
Tetanus toxoid given				
Fe/ Folic acid supplementation provided				
Recommendation for emergencies/hotline for emergencies				
Complete antenatal card				
Second Visit and Subsequent Visits DATE: / / .	Gestational age – approx. # of weeks			
		26 wk.	32 wk.	38 wk.
Clinical examination for anemia				
Ob. Exam: gestational age estimation, uterine height, fetal heart rate				
Blood pressure taken				
Maternal weight (only women with low weight at first visit)				
Urine test for protein (only nulliparous women/ women with previous pre-eclamptia)				
Fe/ Folic acid supplementation given				
Recommendation for emergencies				
Complete antenatal card				
Third Visit: add to second visit DATE: / / .				
Hemoglobin test requested				
Tetanus toxoid (second dose)				
Instruction for delivery/ plan for birth				
Recommendations for Lactation/contraception				
Fourth Visit: DATE: / / .				
Detection of breech presentation and referral for external cephalic version				
Complete ANC care, recommend that it be brought to hospital				

Appendix H: Training of Nurses

Goals of Antenatal Care and What Happens at the Antenatal Clinic

1. Early detection and treatment of illness
    - Some women may have health problems that they are not aware of, or that may develop during pregnancy.
    - It is important to treat these problems as early as possible in order to keep mother and child in good health.
    - Some examples of common illnesses during pregnancy: anemia, hypertension, syphilis, other vaginal infections, or HIV.
2. Prevention of illness
    - Give vaccinations or other treatments to prevent illnesses in pregnant women: these include tetanus injections, iron tablets, and medicine to prevent malaria or extra vitamins.
    - If the mother has HIV, she will be given medicine (Nevirapine) to take once labor begins.
3. Being prepared for the birth and complications
    - Pregnant women should be helped to make plans for when the baby comes.
    - She many need to make arrangements for transport and for normal delivery at a health facility, i.e. clinic or hospital. She may need to arrange for traditional birth attendants to be with her if the baby will be born at home.
4. Promote good health in general
    - When a woman visits an antenatal clinic, it is also an opportunity to discuss a variety of health issues. This will help women take good care of themselves and their babies during and after pregnancy.
    - Health issues that may be discussed at the ANC:
        - Care for common discomforts
        - Good nutrition and a balanced diet
        - Hygiene
        - Rest and activity
        - Prevention of diseases
        - Use of harmful substances, i.e. alcohol, tobacco, etc.

- Voluntary counseling and testing for HIV
- Early, exclusive breastfeeding
- Techniques for successful breastfeeding
- Sexual relations and safer sex
- Family planning
- Newborn care

The **first FANC visit** should ideally occur before 16 weeks of pregnancy. You are expected to achieve the following objectives:

- Determine the woman's medical and obstetric in order to collect evidence of her eligibility to follow the basic component of FANC, or determine if she needs special care and/or referral to a higher health facility.
- Perform basic examinations (pulse rate, blood pressure, respiration rate, temperature, pallor, etc.).
- If you think the pregnancy is beyond the first trimester, try to determine the gestational age of the fetus by measuring fundal height
- Provide nutritional advice and routine iron and folacin supplementation. Advising against misconceptions about diet is also important.
- Give advice on malaria prevention and if necessary provide insecticide-treated bed nets (ITNs).
- Check her urine for sugar using the dipstick test
- Advise her and her partner to save money in case you need to refer her, especially if there is an emergency requiring transport to a health facility. She may also need money for additional drugs and treatments. Financial help may be available from local community organizations like women's groups.
- Provide specific answers to the woman's questions or concerns, or those of her partner.

Schedule the **second FANC visit** at 24-28 weeks of pregnancy. Follow the procedures already described for the first visit. In *addition*:

- Address any complaints and concerns of the pregnant woman and her partner.

- For first-time mothers and anyone with a history of hypertension or pre-eclamptia/eclamptia), perform the dipstick test for protein in the urine.
- Review and if necessary modify her individualized care plan.
- Give advice on any sources of social or financial support that may be available in her community.

The **third FANC visit** should take place around 30–32 weeks of gestation. The objectives of the third visit are the same as those of the second visit. In *addition* you should:

- Direct special attention toward signs of multiple pregnancies and refer her if you suspect there is more than one fetus.
- Perform the dipstick test for protein in the urine for all pregnant women (since hypertensive disorders of pregnancy are unpredictable and late pregnancy phenomena).
- Decide on the need for referral based on your updated risk assessment.
- Give advice on family planning
- Encourage the woman to consider exclusive breastfeeding for her baby.

Remember that some women will go into labor before the next scheduled visit. Advise all women to call you at once, or come to you, as soon as they go into labor. Don't wait!

The **fourth FANC visit** should be the final one for women in the basic component and should occur between weeks 36-40 of gestation. You should cover all the activities already described for the third visit. *In addition*:

- The abdominal examination should confirm fetal lie and presentation, At this visit, it is extremely important that you discover women with a baby in breech presentation or a transverse lie
- Provide the woman with advice on signs of normal labor and pregnancy-related emergencies (described in Study Session 15) and how to deal with them, including where she should go for assistance

Appendix I: IEC Contents

A. What are to be done by mothers during pregnancy?

1. Check-up your health by doctor or family welfare visitor regularly
2. Take at least one iron table daily
3. Take nutritious diet and increased amount of food
4. Take at least one hour's rest daily at daytime
5. Immunize yourself against tetanus
6. Take help of trained birth attendant during delivery

B. Problems those may arise during antenatal period and what to do then.

1. Anemia and general weakness
2. Swelling of feet and hands
3. High blood pressure
4. Excessive headache or vomiting
5. Convulsion during pregnancy
6. Unusual pain in abdomen
7. Fever
8. Excessive bleeding or watery discharge without labor pain
9. Abnormal presentation of the baby
10. Spotting

Please contact Bolan Medical Complex o Hospital if any of these complications/emergencies arise. (Larissa Jennings, 2010)

Appendix J: Activities of AAC model

Activities of AAC model:

Are divided into two parts one are the medical examination according to the visits and the second is the topics which will be cover in counseling on each visits

	1st visit	2nd visit	3rd visits	4th visit
	1-18 week	**24-26 weeks**	**32 weeks**	**36-38 weeks**
Goals	Confirm pregnancy and EDD, classify women for basic ANC (four visits) or more specialized care, Screen, treat and give preventive measures. Develop a birth and emergency plan Advice and counsel.	Assess maternal and fetal well being. Exclude PIH and anemia. Give preventive measures, review and modify birth and emergency plan. Advice and Counsel	Assess maternal and fetal well being. Exclude PIH, anemia, multiple pregnancies. Give preventive measures. Review and modify birth and emergency plan. Advice and counsel	Assess material and fetal well-being. Exclude PIH, anemia, multiple pregnancy, and misrepresentation Give preventive measures. Review and modify birth and emergency plan. Advice and counsel
History {ask, check records}	Assess significant symptoms. Take psychosocial medical and obstetric history-confirms pregnancy and calculate EDD. Classify all women (in some cases after test results)	Assess significant symptoms. Check record for previous complications and treatments during the pregnancy. Re classification if needed	Assess significant symptoms. Check record for previous complications and treatments during the pregnancy. Re classification if needed	Assess significant symptoms. Check record for previous complication and treatments during the pregnancy. Re classification if needed
Examination (Look, listen, fell)	Complete general, and obstetrical examination, BP	Anemia, BP, fetal growth, and movements	Anemia, BP, fetal growth, multiple pregnancy	Anemia, BP, fetal growth and movements, multiple pregnancy, malpresentation
Screening and tests	Hemoglobin Syphilis HIV Proteinuria Blood/RH group* Bacteriuria*	Bacteriuria*	Bacteriuria*	Bacteriuria*

Treatments	Syphilis ARV if eligible Treat Bacteriuria if indicates*	Antihelminthic**, ARV if eligible Treat Bacteriuria if indicated*	ARV if eligible Treat Bacteriuria if indicated*	ARV if eligible if breech, ECV or referral for ECV Treat Bacteriuria if indicated
Preventive measures	Tetanus toxoid Iron and Folate+	Tetanus toxoid, Iron and folateIPTp ARV	Iron and folateIPTp ARV	Iron and Folate ARV
Health education advise and counseling	Self-care alcohol and tobacco use nutrition, safe sex, rest, sleeping under ITN, birth and emergency plan	Birth and emergency plan, reinforcement of previous advise	Birth and emergency plan, infant feeding, postpartum/post natal care, pregnancy spacing, reinforcement of previous advice	Birth and emergency plan, infant feeding, postpartum/postnatal care, pregnancy spacing, reinforcement of previous advice

Acronyms: (EDD=estimated date of delivery; BP=blood pressure; PIH=pregnancy induced hypertension; ARV=antiretroviral drugs for HIV/AIDS; ECV=external cephalic version; IPTp=intermittent preventive treatment for malaria during pregnancy; ITN=insecticide treated bednet)

*Additional intervention for use in referral centers but not recommended as routine for resource limited settings

**Should not be given in first trimester, but if first visit occurs after 16 weeks, it can be given at first visit +should also be prescribed as treatment if anemia is diagnoses.

Counseling by the Trained Nurse

Importance of ANC: The subjects (Including husband) will be told that this is a physiological process and needs some special care during the pregnancy. Subjects will be informed that they face some problems related to their health and the baby health. The specialized care (ANC) will provide you information about health, about complication and their prevention, nutrition, vaccination and daily actives, which should be avoided.

Pregnancy complication in first Trimester: There are few condition which create emergency situation

- Bleeding: There are 20 – 25 % chances of bleeding or spotting and is a frequent phenomenon during first trimester and most likely the outcome will be normal and there is 3% chance of abortion. Contact community health work or visit hospital
- Sever Vomiting: When vomiting becomes persistent, frequent or sever it may lead to health problems because of nutrition and fluid needs Contact community health workers or Hospital
- Spontaneous abortion: Pregnancy termination, which is not induced voluntarily before the period of viability i.e. 28 weeks. Risk of spontaneous abortion for women with no history of reproductive wastage is about 15%.
- Ectopic Pregnancy: Sometime you pregnancy is outside you uterus this occurs in 1 out of 500 pregnancy. If you feel severe abdominal pain increase urinary frequency, burning sensation during urination low grade fewer feeling of motion contact doctor.
- Molar pregnancy: When your feel palpitation intolerance to heat increased appetite, fatigue swelling of led visit hospital

Pregnancy complication in Second Trimester:

For most women second trimester is a problem free period

- Bleeding: If you have severe bleeding visit doctor
- Preterm labor: There is about 6-12 % chance of preterm labor

Pregnancy complication in third Trimester:

- Obstetric Problems: Bleeding which can due to Placenta prevail, Abruption placenta other causes such as preterm labor and Fetal Growth retardation
- Medical Problems: Hypertension, gestational diabetes. Aggravation of underlying medical condition like anemia, cardiac disease, kidney problems.
- Warning signs: Persistent swelling of feet or face. Increasing breathless, especially on routine activity. Headaches, blurring of vision, blackouts or giddiness, fever (temperature > 38 C or 100F), high colored urine
- Contact hospital for all of the above conditions

Diet during Pregnancy:

Pregnancy diet ideally should be nutritious and easily digestible. The fetus has been a parasite of the mother for all its nutritional needs up to the first trimester (three months). In the second and third trimester an additional 300-calories/per day is recommended.

- Eat when you are hungry. Take small frequent meals.
- Eat high-quality protein, complex carbohydrates, Sources of proteins, carbohydrates and lots of fruits and vegetables
- Avoid eating at fast food restaurants.
- Carry quality snack foods with you.
- Try to avoid processed food and foods that come pre-prepared in packages (they usually have added fat, sugar or salt.)
- Arm your cupboard and refrigerator with healthy staple foods, which require little preparation – cheese, fresh wholegrain breads, cereals, milk, etc.….

Smoking and other harmful substances: To be on the safe side, it is better not to drink alcohol at all during pregnancy. When you drink alcohol is transported from the mother's blood to that of the fetus. Avoid smoking during pregnancy. Even passive smoking (smoking by partners/close ones) is also harmful to the baby.

Husband Role: The Husbands are the decision makers for the pregnant women. They will be asked to show his involvement in the pregnancy. Show that he cares. He should accompany her to the doctor on her regular visits and also provide financial support. Encourage her to tack naps prevent her from lifting heavy weights.

Appendix K: Knowledge Statements

#	Pre - Knowledge Statements	Intervention n=50(%) Correct Answers	Control n=50(%) Correct Answers	Total n=100
1	Women don't need special care during pregnancy*	44(88.0)	46(92.0)	90
2	Health service provider such as doctors, nurses and midwives provides ANC to women	48(96.0)	43(86.0)	91
3	Pregnant women should wait to receive ANC until they feel fetal movements during pregnancy*	41(82.0)	26(52.0)	67
4	Pregnant women should go to ANC clinic 4 times	24(48.0)	28(56.0)	52
5	Only primipara women should go to ANC clinics*	41(82.0)	32(64.0)	73
6	Attending ANC can help prevent complication during pregnancy	48(98.0)	41(82.0)	89
7	Women who don't have any problem during pregnancy should not attend ANC*	26(52.0)	17(34.0)	43
8	ANC is an chance to inform pregnant women about the danger signs and symptoms of pregnancy	44(88.0)	39(78.0)	83
9	Pregnant women don’t need to get tetanus toxide injections during ANC*	12(24.0)	14(28.0)	26
10	Pregnant women should attend ANC as soon as if they miss menstrual period	48(96.0)	39(78.0)	87
11	There is no need of blood testing during pregnancy at ANC clinic*	26(52.0)	43(86.0)	69
12	Mother going to ANC clinic services will know about the well being of the baby	45(90.0)	38(76.0)	83

* Negative Statements

#	Post - Knowledge Statements	Intervention n=45(%) Correct Answers	Control n=43(%) Correct Answers	Total n=100
1	Women don't need special care during pregnancy*	43(95.6)	40(93.0)	83
2	Health service provider such as doctors, nurses and midwives provides ANC to women	44(97.8)	37(86.0)	81
3	Pregnant women should wait to receive ANC until they feel fetal movements during pregnancy*	38(84.4)	28(65.1)	66
4	Pregnant women should go to ANC clinic 4 times	42(93.3)	34(79.1)	76
5	Only primipara women should go to ANC clinics*	43(95.6)	36(83.7)	79
6	Attending ANC can help prevent complication during pregnancy	43(95.6)	31(72.1)	74
7	Women who don't have any problem during pregnancy should not attend ANC*	39(86.7)	31(72.1)	70
8	ANC is an chance to inform pregnant women about the danger signs and symptoms of pregnancy	44(97.8)	31(72.1)	75
9	Pregnant women don’t need to get tetanus toxide injections during ANC*	40(88.9)	28(65.1)	68
10	Pregnant women should attend ANC as soon as if they miss menstrual period	44(97.8)	34(79.1)	78
11	There is no need of blood testing during pregnancy at ANC clinic*	39(86.7)	34(79.1)	73
12	Mother going to ANC clinic services will know about the well being of the baby	43(95.6)	33(76.7)	76

* Negative statement

Appendix L: Attitude Statements

#	Pre Attitude	Intervention n=50					Control N=50				
		SA	A	N	D	SD	SA	A	N	D	SD
1	I get good service during ANC	1	23	17	4	-	2	30	13	5	-
2	I feel peaceful when I have ANC	2	20	21	7	-	3	14	20	13	-
3	I am feared of blood tasting during ANC*	2	18	16	13	-	1	25	17	7	-
4	I feel exhausted of long waiting time in ANC*	3	23	18	6	-	-	26	14	10	-
5	I get good support from health personnel during ANC	-	28	10	11	1	2	26	14	18	-
6	Its make me relaxed when I meet other pregnant women at ANC	-	28	11	9	2	-	25	17	7	1
7	I don't get any helpful information from ANC visits*	2	20	16	9	3	6	21	13	10	-
8	I feel shy when I get touched on abdomen by health personnel *	2	28	6	12	2	6	22	8	10	-
9	I feel secure during ANC appointment	1	29	14	5	1	8	40	42	10	-
10	In the absence of complications I will not go for ANC*	3	22	8	15	2	5	16	10	18	1

* Negative Statements, SA=Strongly Agree, A = Agree, N= Neutral, D = Disagree, SD = Strongly Disagree.

#	Post Attitude	Intervention n=45					Control N=43				
		SA	**A**	**N**	**D**	**SD**	**SA**	**A**	**N**	**D**	**SD**
1	I get good service during ANC	7	31	4	3	-	2	30	13	5	-
2	I feel peaceful when I have ANC	4	35	5	1	-	3	14	20	13	-
3	I am feared of blood tasting during ANC*	-	6	6	32	3	-	18	12	11	-
4	I feel exhausted of long waiting time in ANC*	-	6	7	31	1	1	20	13	9	-
5	I get good support from health personnel during ANC	7	33	4	1	-	1	23	13	6	-
6	Its make me relaxed when I meet other pregnant women at ANC	6	30	7	2	-	1	25	10	7	-
7	I don't get any helpful information from ANC visits*	-	1	10	32	2	-	10	7	22	4
8	I feel shy when I get touched on abdomen by health personnel *	-	3	8	27	7	-	4	15	18	6
9	I feel secure during ANC appointment	3	34	8	-	-	5	21	11	6	-
10	In the absence of complications I will not go for ANC*	-	5	6	26	8	-	12	6	22	1

* Negative Statements, SA=Strongly Agree, A = Agree, N= Neutral, D = Disagree, SD = Strongly Disagree.

Appendix M: Satisfaction Statements

#	Pre Satisfaction	Intervention n=50					Control N=50				
		SA	A	N	D	SD	SA	A	N	D	SD
1	Health personal are good about explaining the reason for medical test for ANC	2	41	3	4	-	1	40	5	2	1
2	I think the hospital has everything needed to provide ANC services	-	27	29	4	-	1	25	18	6	-
3	The ANC services I have been receiving is just about perfect	1	22	15	12	-	-	19	21	9	-
4	Sometimes Health personal make me wonder if their diagnosis is correct	-	17	18	14	1	-	13	26	9	2
5	I feel confident that I can get the ANC service without being set back financially	-	27	1	13	3	-	23	9	15	3
6	When I go for ANC they are careful to check everything when treating me and examining me	-	37	7	8	-	-	35	3	10	2
7	I have to pay more for ANC service than I can afford*	-	12	5	31	2	-	14	7	25	4
8	I have easy access to the ANC services I need	2	12	8	27	1	1	17	11	29	2
9	Where I get ANC services, people have to wait too long*	1	40	4	5	-	4	32	5	8	1
10	Health personal act too businesslike and impersonal towards me*	-	11	15	23	1	-	17	11	21	1
11	Health personal treat me in a very friendly and courteous manner	1	39	3	7	-	1	33	6	8	2
12	Those who provide my ANC sometimes hurry to much when the*	-	25	3	22	-	1	18	8	23	-
13	Health personal sometimes ignore what I tell them*	1	34	3	12	-	2	29	7	10	2
14	I have some doubts about the ability of the Health personal who provide ANC service *	-	14	15	21	-	-	18	13	19	-
15	Health personal usually spend plenty of time with me	-	39	5	6	-	-	28	10	12	-
16	I find it hard to get an appointment for ANC service right away*	-	25	4	18	-	-	17	10	23	-
17	I am dissatisfied with some things about the ANC service I receive*	-	20	4	26	-	-	14	7	29	-
18	I am able to get ANC whenever I needed it	-	29	12	10	-	-	22	16	12	-

* Negative Statements, SA=Strongly Agree, A = Agree, N= Neutral, D = Disagree, SD = Strongly Disagree.

#	Post Satisfaction	Intervention n=45					Control N=43				
		SA	A	N	D	SD	SA	A	N	D	SD
1	Health personal are good about explaining the reason for medical test for ANC	5	37	1	1	-	1	34	5	3	-
2	I think the hospital has everything needed to provide ANC services	7	33	5	-	-	2	25	10	6	1
3	The ANC services I have been receiving is just about perfect	9	28	6	2	-	-	20	18	5	-
4	Sometimes Health personal make me wonder if their diagnosis is correct	-	2	9	29	5	-	10	20	11	2
5	I feel confident that I can get the ANC service without being set back financially	4	28	9	4	-	-	25	10	8	-
6	When I go for ANC they are careful to check everything when treating me and examining me	7	27	10	1	-	1	28	5	9	-
7	I have to pay more for ANC service than I can afford*	-	9	14	20	4	2	24	4	14	-
8	I have easy access to the ANC services I need	-	25	10	2	-	2	14	9	18	-
9	Where I get ANC services, people have to wait too long*	8	2	6	35	1	3	29	6	4	1
10	Health personal act too businesslike and impersonal towards me*	-	3	6	32	4	-	11	10	20	2
11	Health personal treat me in a very friendly and courteous manner	-	34	3	1	-	1	24	10	8	-
12	Those who provide my ANC sometimes hurry to much when the*	-	3	6	32	4	-	15	5	20	3
13	Health personal sometimes ignore what I tell them*	-	2	7	34	2	1	20	7	14	1
14	I have some doubts about the ability of the Health personal who provide ANC service *	-	4	9	29	3	-	14	8	21	-
15	Health personal usually spend plenty of time with me	5	30	7	3	-	-	24	10	6	-
16	I find it hard to get an appointment for ANC service right away*	-	2	8	33	2	-	17	11	14	1
17	I am dissatisfied with some things about the ANC service I receive*	-	3	9	29	4	-	16	6	29	1
18	I am able to get ANC whenever I needed it	5	28	11	1						

* Negative Statements, SA=Strongly Agree, A = Agree, N= Neutral, D = Disagree, SD = Strongly Disagree.

Appendix N: Permission Letter and Ethical Clearance

No.SO-I(H)29-2605/2004/ 19888-99
GOVERNMENT OF BALOCHISTAN
HEALTH DEPARTMENT
Dated, Quetta the 18th June, 2011

To

1) Medical Superintendent,
Sandeman Provincial Hospital, Quetta.

2) Medical Superintendent,
Bolan Medical Complex Hospital, Quetta.

Subject: - PERMISSION TO CONDUCT DOCTORAL THESIS RESEARCH PROJECT.

The undersigned is directed to refer to the subject cited above and to convey approval of the competent authority allowing Mr. Sheh Mureed, Ph.D Student for collecting of Data from Sandeman Provincial Hospital, Quetta and Bolan Medical Complex Hospital, Quetta for completion of his Ph.D training.

2. The competent authority has desired to cooperate with Mr. Sheh Mureed, Ph.D Student in their research work

(ABDUL WAJID PANEZAI)
Under Secretary-I

Copy forwarded to : -

i. Mr.r. Sheh Mureed, Medical Officer .

CURRICULM VITAE

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Qualifications

MPH (health development systems): Chulalongkorn University, Thailand, 2009

BA (Social Science): Baluchistan University 2007

Work Experience

1. Field Officer: Baluchistan Rural Support program (BRSP) from 2007-2008
2. Reproductive Health Officer: Baluchistan Rural Support program (BRSP) 2009-2010

Research work

1. Thesis for the requirement of MPH, Knowledge Attitude and Preventive Behavior Of Students regarding HIV In Quetta Baluchistan
2. Research paper on KAP on HIV published in the journal of Chulalongkorn University

References

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