ADDIS ABABA UNIVERSITY

FUCULTY OF MEDICINE

SCHOOL OF PUBLIC HEALTH

Magnitude and Factors Affecting Late Initiation of Antenatal Care Service Utilization among Pregnant Women in Government Health Institutions, Mekelle Town, Ethiopia.

BY

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Key words: Antenatal care, Late booking, Gestational age, Risk factors

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ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal care
CI	Confidence interval
EDHS	Ethiopian Demographic and Health Survey
Hb	Hemoglobin
Hc	Health Center
HIV	Human Immunodeficiency Virus
MDG	Millennium Development Goal
MOH	Ministry of Health
MTCT	Mother to Child Transmission
NGO	Non Government Organization
OR	Odds Ratio
PMTCT	Prevention of Mother to Child Transmission
Rh	Rhesus factor
SPSS	Statistical package for social science
STIs	Sexually Transmitted Infections
VDRL	Veneral disease research laboratory
WHO	World Health Organization

Key words: Antenatal care, Late booking, Gestational age, Risk factors

ABSTRACT

Background: Antenatal care is concerned mainly about preventive, early diagnosis and treatment of general medical and pregnancy associated disorders. For it to meaningful, timely initiation is recommended. However, late entry to antenatal care is still a major problem. Pregnant women who do not have timely and appropriate care would be ill-equipped to make choices that will contribute to their own well-being. Assessment of magnitude and factors affecting late initiation of antenatal care among pregnant women in antenatal clinics is helpful for future planning.

Objective: To assess the magnitude and factors affecting late initiation of antenatal care service utilization among pregnant women who attended antenatal care clinics in Mekelle town governmental health institutions during the study period.

Methodology: Across sectional facility based study was conducted in Mekelle town from February 1, to March 1, 2010 on 419 pregnant women attending antenatal care at government health institutions. Data collection tools were adopted from different literatures, modified to the local context and pre-tested. Face-to-face interview of women were done by trained Nurses. Consecutive sampling technique was employed to select the study subjects. Bivariate analysis was employed to see the association between variables and the final model was constructed using stepwise logistic regression selection method. Ethical clearance was obtained from Ethical committee of Addis Ababa University School of Public health office before starting data collection.

Results: Mean ages of the respondents were 26.2 ± 5.4 years. Prevalence of late entry to antenatal care was 64.7%. The timing of antenatal care booking ranges from 1st month to 8th months of gestation. The median timing was 4 months (SD 1.6). Multivariate analysis revealed that respondents age, educational status, knowledge on the benefit of ANC to child health, wantedness of pregnancy, and recommended gestational age to start ANC (OR= 0.12, 95% CI: 0.34,0.39),(OR=0.12,95%CI:0.34,0.39),(OR=4.65,95%CI:1.04,20.75),(OR=2.61,95%CI:1.00, 6.77), and (OR=27.49, 95%CI:9.49, 79.64),respectively were found to be independent predictors of initiation time of antenatal care service utilization.

Conclusion:- Late booking is still a major problem in this part of the study area. Public health education and reducing unwanted pregnancy would be helpful in reducing the problem.

Key words: Antenatal care, Late booking, Gestational age, Risk factors

1. INTRODUCTION

1.1 Background

The fifth Millennium Development Goal (MDG5) is to improve maternal health through preventing unplanned and high-risk pregnancies and providing care in pregnancy, childbirth and the postpartum period to save women's lives. Protecting the health of mothers during reproduction safeguards their future contributions to society and ensures the health and productivity of future generations. Supervision of maternal health is an essential component of primary health care. This involves regular antenatal checkups and referral to hospital if any complications are anticipated (1).

Antenatal care is care given to pregnant women before delivery. The purpose of ANC is to improve pregnancy outcome for both the mother and fetus. To achieve this objective, the service is organized into a booking [first visit] and a follow up clinic. The aims and objectives of the first visit are primarily to establish a rapport with the client and collect information to evaluate the state of health of the mother, and her preparedness for motherhood and chart the likely course of the pregnancy (2).

The traditional and being implemented model of ANC which is organized as a visit of every month up to 28 weeks of gestation, fortnight from 28 to 36 weeks of gestation, and weekly after 36 weeks of gestation is termed as risk approached (2, 3). The focused antenatal care approach recognizes that every pregnant woman is at risk for complications. In this model, four ANC visits are recommended for most pregnant women. Ideally for developing countries, the first visit during first 16 weeks; the second, close to week 26; the third around week 32; and the fourth and final visit between weeks 36 and 38 (3).

1.2 Statement of the Problem

Pregnancy and childbirth are natural and often eventful processes that many women are at risk for developing complications during pregnancy and childbirth. Complication of pregnancy and childbirth are the leading causes of disability and death among women in the reproductive age (15-49) years in developing countries (4). Globally one woman dies each minute as the result of pregnancy. An estimated, over half a million maternal deaths occur every year and over 99% of these deaths take place in developing countries (5). The lifetime risk for a woman in sub-Saharan

Key words: Antenatal care, Late booking, Gestational age, Risk factors

Africa of dying from pregnancy related causes is about 1 in 16 which is more than 500 times higher than for a woman in northern Europe (6). Maternal mortality is only the tip of the ice-berg. For every mother who dies a maternal death, 15 to 20 others will suffer serious long-term complications, while over 100 will suffer acute complications (5, 6).

Antenatal care is concerned mainly about prevention, early diagnosis and treatment of general medical and pregnancy associated disorders. For it to be meaningful, timely initiation is recommended. However, late entry to ANC is still a major problem. The magnitude of the problem is more pronounced in developing countries including Ethiopia where the majority of women wait for their second or third trimester for initiation of ANC or may appear only when there is an illness or pregnancy associated complications (7).

1.3 Rationale of the Study

Studies on maternal death in many developing countries suggested that inadequate utilization of ANC and low levels of awareness of danger signs of pregnancy and delivery contributes to continuing high maternal mortality ratios. Despite this assumption and fact, majority of pregnant women in developing country including Ethiopia, are booking late to utilize ANC during their second and third trimesters provided that the service is physically accessible and provided free of payments which compromise the objective of the service in many aspects.

Timely utilization of ANC is among the key strategies in reduction of maternal mortality. However, only little is known about factors that affect timely entry to ANC service utilization even among the low percent of service users. Therefore, the purpose of this study was to describe the magnitude and factors affecting late initiation of antenatal care service utilization among pregnant women attending ANC services in public health facilities in Mekelle town, Tigrai region. Considering this study besides serving as one of my graduate requirements, is expected to provide relevant information on factors that affect initiation time of ANC service utilization which can be utilized for future service improvement as part of an overall action for improving the low utilization of maternity care services in the study area as well as a baseline information for future country wide similar studies in Ethiopia.

2. LITRATURE REVIEW

2.1. Overview of Antenatal Care and Antenatal Care Utilization

Effective antenatal care (ANC) can improve the health of the mother and give her a chance to deliver a healthy baby. Regular monitoring during pregnancy can help detect complications at an

early stage before they become life-threatening emergencies. However, one must realize that even with the most effective screening tools currently available, one cannot predict which woman will develop pregnancy related complications. Hence, every pregnant woman needs special care and have to recognize that every pregnancy is at risk, ensure that ANC is used as an opportunity to detect and treat existing problems, make sure that services are available to manage obstetric emergencies when they occur and prepare pregnant women and their families for the eventuality of an emergency (8).

Appropriate antenatal care is important in preventing adverse pregnancy outcomes for both the mother and the baby but many mothers in the developing world do not receive such care (9). The antenatal period presents important opportunities for reaching pregnant women with a number of interventions that may be vital to their health and well-being and that of their infants (10). Under normal circumstances, WHO recommends that a women without complications have at least four ANC visits to provide sufficient care and for identification of pre-existing health conditions, a minimum level of care has been recently recommended by WHO technical working group. This includes:-

- First visit by the end of the fourth month (16 weeks) – to screen HIV, syphilis and treat anemia, screen for risk factors and medical conditions and to take appropriate measure.
- Second visit at four to six months (16-24 weeks) of pregnancy.
- Third visit at eight months (32 weeks) of pregnancy to screen for pre-eclampsia, multiple gestations, anemia and to further develop individualized birth plan.
- Fourth visit at nine months (36 weeks) of pregnancy-to identify fetal lie/presentation, and to update the birth plan; screen and treat for anemia.

It is possible during these visits to detect health problems associated with pregnancy. In the event of any complications, more frequent visit are advisable and admission to a health facility may be necessary (9, 11, 12).

2.2. Prevalence of pregnant women who entered ANC late

According to a study conducted in Australia, there were a significant number of women who entered ANC late by any definition: 41% entered ANC after 12 weeks, 16% after 17 weeks and 10% after 20 weeks. The mean pregnancy duration at entry to ANC was 12.8 weeks and the median duration was 12 weeks (13).

Similarly, the finding of the study done on late antenatal care booking and its predictors among pregnant women in South Western Nigeria indicated that prevalence of late entry to antenatal care was 82.6%. Mean gestational age at booking was 20. Maternal education and age remained significant factors influencing late booking (14).

Another study in Durban, South Africa indicated that, 71(23.4%) were "early bookers", 145 (47.9%) were "late bookers" and 87 (28.7%) were "unbooked". The majority of participants presented for formal "booking" late in pregnancy; 47.9% "booked" at a gestational age of six months after the last menstrual period (15).

According the study done in rural western Kenya, factors affecting early initiation of ANC, Among the 559 ANC attendees who could recall when they first attended, 78 women (14%) started ANC visits in the first trimester, 355 women (64%) started in the second trimester, and 126 women (23%) in the third trimester (16).

A study on assessment of antenatal care services in rural training health center in Northwest Ethiopia indicated that (53.8%) pregnant women attending ANC in the second trimester of pregnancy and (45.9%) began in the third trimester (17). Similarly, the determinants of antenatal care utilization in Arsi, central Ethiopia, most of the attainders (40.4%) made their first prenatal visit in their second trimester, 27.1% in their third trimester of pregnancy and only 32.5% of women attended prenatal care in their first trimester of pregnancy (18).

Another study done in Adama, Ethiopia on factors affecting initiation time of antenatal care service utilization, concerning their gestational at their first ANC visit 49.4% visited a healthy facility before the first four months, 35.2% within 4-6 months of pregnancy duration while the rest 15.4% visited a care provider for ANC during their third trimester for the first time (19) .

According to EDHS, 2005 only 6 percent of women make their first ANC visit before the fourth month of pregnancy. The median duration of pregnancy for the first ANC visit is 5.6 months. The median duration of pregnancy for the first ANC visit is 4.2 months for urban women compared with 6.0 month for rural women. In urban settings where the health services are physically accessed and ANC at the governmental health institutions are provided free of pay, only 32.4% of mothers seek the service before 16 weeks of gestation and 30.1% of pregnant mothers did not uptake the service at all. This is very much far from this figure in rural dwellers (20).

2.3. Factors Affecting Initiation Time of ANC Service Utilization

2.3.1. Socio-demographic Variables

A. Maternal age

Younger and older women are different in their usage of maternal health Services. In general, younger women are less likely to enter ANC than older. Study in Australia, indicated that

younger women tended to enter ANC later than older women. For example, 56% of women in their teens entered ANC late while only 36% of women in their 30's entered ANC late. An adolescent pregnancy is high risk situation because of those mothers physical and psychological immaturity [13]. A community based study conducted in Addis Ababa to assess pattern of ANC utilization and preference of place of delivery, reported that ANC attendance rate was lower among the younger women and women older than 30 years of age (21).

B. Maternal Education

Education is found to be the most determinant factor for of maternal health (2). A study done in Nigeria those who had primary school education or none were more likely to register late compared to those who had secondary school education and above. Pregnant women, whose husband had primary school education or none, would more likely book late compared to those whose husband had secondary school education and above (14).

C. Marital status

In a community based cross-sectional survey of 384 pregnant women from Jimma town(South West Ethiopia) to assess antenatal care services utilization and factors associated, most of the antenatal care service utilizes are married(77.7%) (22).

D. Family income

A finding from Bangladesh shows that mothers in the wealthiest households are more than twice as likely to receive ANC as mothers in the poorest households. Women from wealthier households have higher number of (at least 4) ANC visits. A similar finding from Jakarta, Indonesia, the mothers with low family income were 2.33 times more likely to have irregular ANC visit compared with the high income group (12, 23).

According to the study conducted on antenatal care services utilization and factors associated in Jimma town (South West Ethiopia), about 85% of the pregnant women attending ANC earn a monthly salary of 300 and more Eth Birr (22).

E. Occupation

A study in Nigeria indicates that those who earned lesser income were more likely to book late compared to those who earned more. In another study conducted among Indonesian ANC attendants, housewife status had higher percentage of inadequate and late utilization compared to

others. Spouses of educated and government employed men had a lower percentage of late and less frequent utilization compared to others (14, 24).

2.3.2. Obstetrics History

A. Parity

Parity is also found associations with maternal health utilization. There is significant reduction in maternal health service utilization and early booking with increase parity. A study done in Nigeria indicates that, multiparous women were more likely book late compared to nulliparous women by (78.7%) (14, 25).

B. Mothers child birth experience

Mother's previous experience of undesired birth outcome is also one of the positive determinants for maternal health service utilization and early booking. A study conducted in Nigeria indicated that, those who had no problems in the last delivery, were more likely to book late compared to those who had problems (14).

2.3.3. Influence of Husband/Spouse and Significant others

In a study in Nigeria, reason for delay to seek ANC was reported by 17.2% of mothers was husband's denial of care (25).

2.3.4. Health Service Factors and Past experience

A. Pervious utilization of service

Pervious utilization of care is thought to be one of the factors for utilization of maternal health care. In a study done in rural western Kenya, from total 635 participants incomplete and inadequate services at the ANC visited were complaints mentioned by 29% of women who visited ANC. These women were more likely to start ANC in the third trimester (28% versus 20%) among women who did not complain about the quality of ANC services (16).

B. Physical access to service

The accessibility and availability of antenatal healthcare facilities were assessed as part of the secondary outcome measures that affect ANC service utilization. In a study done in rural western Kenya, Most women (93%) reported walking to the ANC; walking times ranged from 1 minute to 3 hours (median: 40 minutes). Although distance was cited as a barrier to ANC use, women (18%) did not visit the nearest ANC (16).

C. Cost of maternal service

Financial constraints were also seen as a factor for late booking of ANC in different literatures (27). In a study done in rural western Kenya, from total 635 participants 64 women (10%) never attended an ANC during their most recent pregnancy. The most frequently mentioned reasons for

not attending were not seeing the need to attend (36%), expenses of transport or the cost of the ANC (27%), belief that the care was not adequate (22%), and distance to the ANC (14%) (16).

D. Perceived quality of service

Understanding on previous quality of service at health care has positive association with early utilization of ANC (28). The perception of quality of care is a factor to utilize health services .Study conduct in South Africa reported that about 32% claim as the interaction with care provider during ANC is poor, they were given little information about the status of infant and when they expected to deliver. In this study the reason for delay to attending ANC was spending time searching for an alternative place to attend ANC because of fears of poor care at health institution (29).

2.3.5. Perceived waiting Time

A study conducted on antenatal care utilization and factors associated in Jimma, Ethiopia when respondents are asked their reasons for not initiating early antenatal care (41.7%), unsatisfaction with the waiting time (22).

2.3.6. Perceived unwanted pregnancy

The study done by Rafiqul in Bangladish reported that pregnant women who did not want baby and whose husbands' are not concerned about their pregnancy had higher percentage of late entry to ANC and inadequate utilization compared to their counter parts. A husband's concern about pregnancy complication showed a significant and positive impact on their spouse's utilization of health care services during pregnancy (26).

2.3.7. Knowledge about when to book and awareness on pregnancy related complication

A .Knowledge about when to book

The study done on healthcare attendance patterns by pregnant women in Durban, South Africa indicated that when women were asked about when a pregnant woman should commence antenatal care, it was found that, in two of the groups, a large proportion did not know when to book, the "early bookers" and the "late bookers"; 24 of 71 (33.3%) and 25 of 145 (36.4%) did not know when to book, respectively. On the other hand, 24 of 87 (28%) of the

"unbooked" group did not know when to book for antenatal care (15). Pregnant women who acquired less information about ANC from health care providers were nearly 7.5 times more likely to utilize the antenatal care lately compared to those who wanted baby. Pregnant women who had good knowledge on antenatal care had the lowest percentage of inadequate ANC utilization compared to those with poor knowledge. There was significant association between type of last delivery and utilization of antenatal care services (24).

B. Awareness on pregnancy related complication

Knowledge on pregnancy related complications has positive association with early utilization of ANC. Mothers who were experienced a life-threatening condition use ANC early two times more likely than the others (28). In Nigeria, one study reported that 24.1% of mothers provide reason for timely booking was due to the occurrences of complications in the previous pregnancies (27). A study in Jimma, Ethiopia both attainders and non attainders were interviewed about their knowledge of dangerous health problems associated with pregnancy. Surprisingly out of those who attended ANC only 7.9% respondents fail to mention any of the danger signals during antenatal period and pregnant woman's knowledge of the danger signs of pregnancy showed statistically significantly associated with utilization of antenatal care services in intervening the problem will be faced in the future. It was observed that pregnant women who can identify health problems the more they attend the antenatal care services (22).

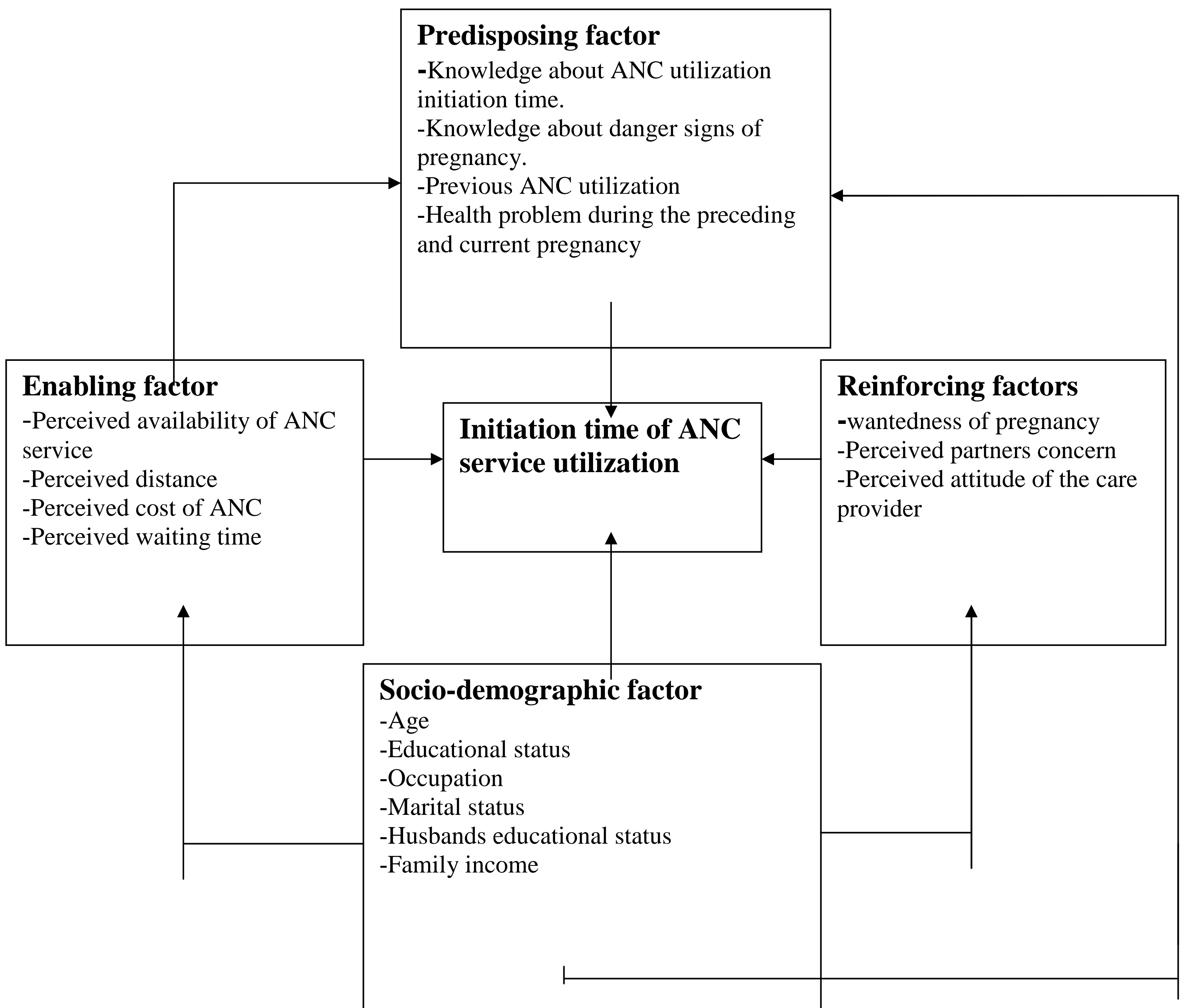
Predisposing factor
-Knowledge about ANC utilization initiation time.
-Knowledge about danger signs of pregnancy.
-Previous ANC utilization
-Health problem during the preceding and current pregnancy
Enabling factor
-Perceived availability of ANC service
-Perceived distance
-Perceived cost of ANC
-Perceived waiting time
Initiation time of ANC service utilization
Reinforcing factors
-wantedness of pregnancy
-Perceived partners concern
-Perceived attitude of the care provider
Socio-demographic factor
-Age
-Educational status
-Occupation
-Marital status
-Husbands educational status
-Family income

Figure 1**:** Conceptual frame work on factors affecting initiation time of ANC service utilization among pregnant women. Source: Adopted from literature (30, 31).

3. OBJECTIVES

3.1. General Objective

1. To assess the magnitude and factors affecting late initiation of antenatal care service utilization among pregnant women who attend ANC in government health institutions.

3.2. Specific Objective

1. To assess the prevalence of late initiation of ANC among pregnant women who attend ANC service.
2. To assess factors contribute to late initiation of ANC visit.

4. METHODS

4.1 Study area and Study period

This study was conducted in Mekelle town, which is 776 km, North of Addis Ababa. The population of Tigray regional state and Mekelle town is 4.4 million and 222,458 respectively. The town has 10 localities called "Tabias". There are different governmental and non-governmental organizations with in the city. Concerning the governmental health institutions with in this town, there are 3 Hospitals (1 governmental and 2 private), and 3 health centers. All

government health institution of the town was selected. Data was collected from February 1, to March 1, 2010.

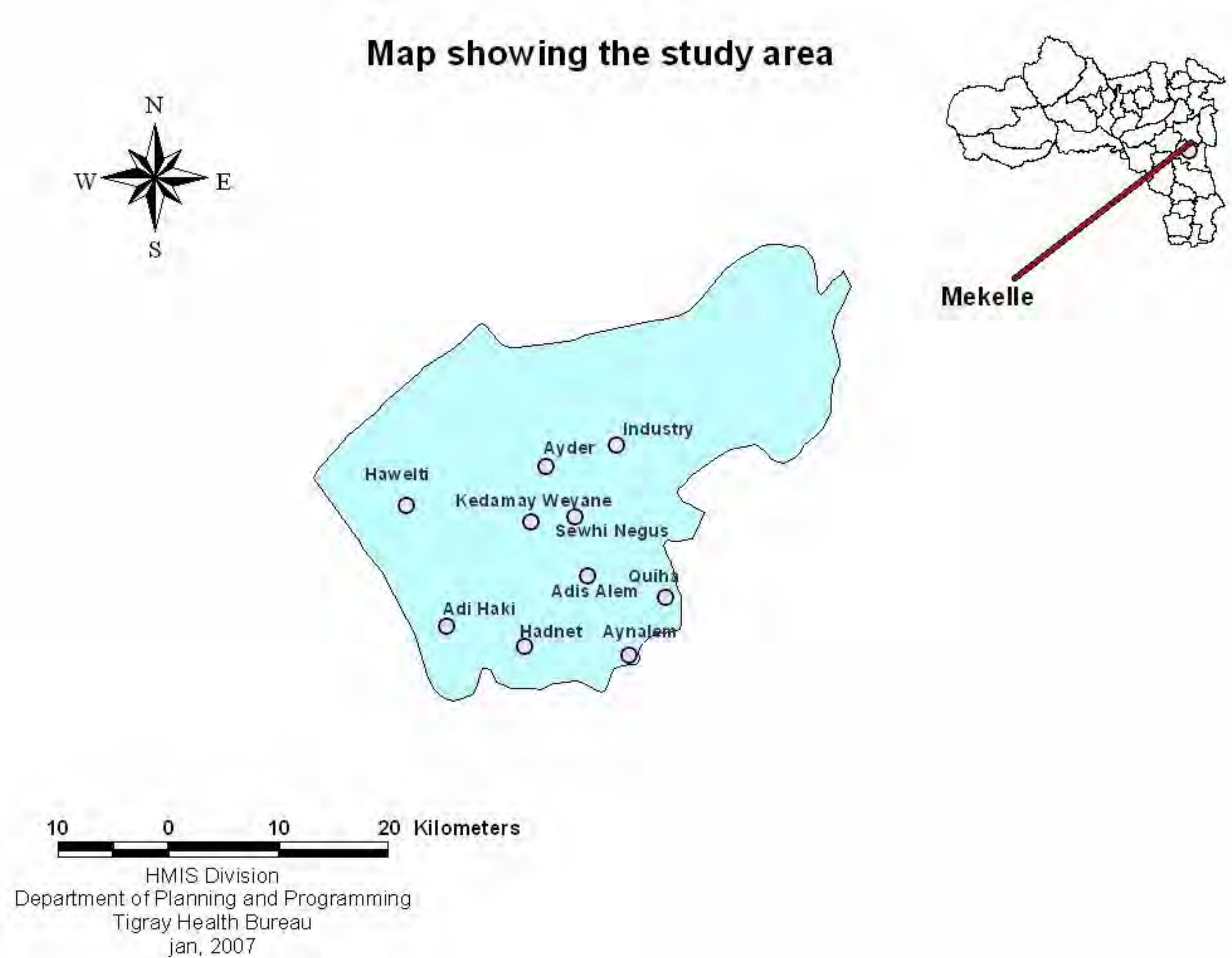

Figure 2: Map of Mekelle town

4.2. Study design.

Institutional based cross-sectional quantitative survey was used to collect data from pregnant women who attend ANC in government health institutions of Mekelle town.

4.3. Population

4.3.1. Source of population:

All pregnant women who came to ANC clinic of the specified health units during the study period.

4.3.2. Study population

All Mekelle town resident pregnant women attended ANC at the governmental health institutions during the study period.

4.3. 3.Inclusion and exclusion criteria

The inclusion criteria:-

- Attending ANC clinics in public sector.

The exclusion criteria:-

- Those pregnant women critically ill and unable to respond.
- Pregnant women age less than 18 years.

4.4. Sample size determination

Sample size (n) was determined using single population proportion formula. Since there was a prevalence of late initiation of antenatal care in Adama, Ethiopia, 2009 which is 51% was used (p), margin of error (d), standard Z score of 1.96 corrosponding to 95% confidence interval (zα/2). EPINFO was used to calculate the required sample size for a cross sectional population survey of single population with the following assumptions.

$$n_o = (Z_{\alpha/2})^2 \frac{P(1-P)}{d^2}$$

Where:

n_o= the sample size to be determined
Z= standardized normal distribution curve value for the 95% CI which is 1.96
P= estimated proportion of late initiation of ANC utilization among pregnant women of ANC service utilization in Adama, Ethiopia is 51%.
d= margin of error.

$$n = \frac{[1.96]^2 . 0.51[1-0.51]}{(0.05)^2} \qquad n=384$$

Considering 10% non response rate, the final sample size will be 422.

4.5. Sampling procedure

Initially, data on the total number of pregnant women who attended ANC between February 1 to March 1, 2010 were obtained considering only one visit for each client during a one month period. After the percentage contribution of each health unit was estimated from this finding the total sample size was proportionally allocated among the four health units. Finally 33.6%, 22.3%, 23.2% and 20.9% of the total sample size was allocated to Mekelle Hospital, Semen HC, Kasech HC, and Mekelle HC respectively. All ANC attending women during the study period that fulfilled the inclusion criteria were included consecutively until the required sample size is obtained. Clients who had a repeat visits during the study period were interviewed only once.

4.6. Data collection

4.6.1. Data collection tools

Structured questionnaire was developed in English addressing socio-demographic characteristics, obstetric information, and knowledge on ANC utilization, the availability and accessibility of ANC service and in addition checking the available records and observing the client during examination. The questionnaire was translated in to local language ‘’Tigrigna’’ by a person who has good ability of both languages for better understanding. The questionnaire was again rechecked by another individual of similar ability in order to see the consistency of contents of the instrument.

4.6.2. Data collection procedure

Four data collectors which are diploma nurses and one supervisor (BSC Nurse) were recruited and trained to act as data collectors and a supervisor respectively. The Tigrigna version questionnaire was introduced to data collectors and the supervisor and pretested on pregnant women in a near by the town “Queha Hospital” who were not be eligible for the study before three day of actual data collection. The training would consist of the objectives of the study, introduction of questionnaire format, procedures of interviewing the questionnaire & guiding them and methods of reporting to supervisor. The role and communication of supervisor to data collection facilitators & coordinators were thoroughly explained.

Pretesting was carried out using the prepared format in the selected hospital. Discussion took place on the following day concerning the filled formats, guiding procedures and communication between data collectors & supervisor. Corrections made on items that were ambiguous or unacceptable to the communities’ norms. A supervisor was responsible for all data collectors; He helps data collectors if any problem arises and report for coordinator for further help. The data collectors nurses collect the structured questionnaires and submit to supervisor & then to coordinator which were rechecked for any problem. Face-to-face interview was employed. Data was collected at waiting room immediately following the consultation at ANC clinic.

4.6.3. Data quality control

Adjustments were made on the appropriateness of the data collection instrument based on the feedback of pre-tested questionnaire. Supervision was carried out through out data collection period both by the supervisor and by principal investigator to keep the quality of data correctly

completed. Questionnaires were collected from data collectors by supervisors and submitted to principal investigators.

4.7. Operational Definition

Antenatal care: - is the care given to pregnant women so that they have safe pregnancy and healthy baby.

Late entry to ANC: - starting ANC visit after 16 weeks of pregnancy duration

Availability of antenatal care service: getting the service during the whole working times with out any restriction.

4.8. Study variable

4.8.1. Dependent Variable

- Early entry to antenatal care
- Late entry to antenatal care

4.8.2. Independent variable

- **Socio-demographic variables**
  - Age
  - Educational status
  - Marital status
  - Religion
  - Family income
  - Educational status of the respondents husbands
  - Occupation of respondents
- Predisposing factors
  - Knowledge about ANC initiation time
  - Knowledge about danger sign of pregnancy
  - Previous ANC utilization
- Enabling factors
  - Perceived availability of ANC services
  - Perceived distance
  - Perceived cost of ANC service
  - Perceived waiting time
- Reinforcing factors

- Wantedness of pregnancy
- Perceived partners' concern about pregnancy associated health problems
- Health problems during the preceding and current pregnancy

4.9. Data processing and analysis

Quantitative data was entered using Epi Info version 3.3.2 exported and cleaned using SPSS and analyzed by SPSS (Statistical Package for Social Science) for windows version 15.0. A statistical test of logistic regression was applied to analyze the relationship between certain variables and time of antenatal care initiation. Socio demographic data, timing of ANC visit and knowledge of ANC visit were summarized and presented by frequency tables and summery statistics. Timing and factors affecting late initiation of ANC were also summarized and presented by graphs, tables and other summery measures. The strength of association between variables was determined using odds ratio, with 95% confidence interval. Significant variables (P< 0.05) at bivariate also further analysed by stepwise logistic regression analysis method to compute adjusted odds ratio of the selective variables.

4.10. Ethical consideration

Ethical clearance was obtained from Institutional Review Board Faculty of Medicine, Addis Ababa University. Official permission was secured from regional health bureau, zonal health office. The respondent was informed about the objective and purpose of the study and verbal consent was taken from each respondent. They were also informed about their right of not participating in the study or with drawing at any time. Personal privacy and dignity be respected. Confidentiality of the information was secured and collected anonymously**.**

4.11. Dissemination of result

The final report of the study will be presented to the School of Public Health, Faculty of medicine, and Addis Ababa University as partial fulfilment of Masters of public health in Reproductive health. Finally the result of study will be disseminated to study area, zonal health department, and regional bureau and other relevant organization, possibly will be published in scientific journals and presenting in scientific conferences like EPHA.

5. RESULTS

5.1. Socio-demographic characteristics of the respondents

Out of 422 pregnant women initiated to be included in this study, 419 [99.3] have responded to the interview. The rest 3[0.7] did not respond to the interview. In this study a total of 419 pregnant women in the government health institutions in Mekelle town were interviewed. Three hundred seventeen (75.7%) of the respondents were in the age group of 20-34 years,72(17.2%) < 20 years and 30 (7.2%) 35-49 years with a mean age of the respondents was 26.2 years ranging from 18-40 years. With regard to religion 371(88.5%) were Orthodox Christian while 37(8.8%) were Muslims.

The majority 409 (97.6%) belong to the Tigray ethnic group. Regarding educational status most of the respondents were primary and secondary school 146 (34.8%) and 136 (32.5%) respectively.

By occupation most were housewives 212(50.6) followed by government employee 80(19.1%). Concerning marital status, 379(90.5%) of the women were currently married followed by 30(7.2%) single and the rest 10(2.4%) were divorced and widowed.

With husband's education of the respondents' the majority 143(34.1) were secondary school followed by 102(24.3) were college and above. Regarding the occupation of the respondents' husbands', 153(36.5%) were private employee followed by 130(31%) were government employee.

Seventy one (16.9%) of the respondents had monthly income less than < 600 Birr per month, 226(53.9%) had monthly income between 600-1400 birr while 122(29.1%) reported >1400 Birr per month (Table 1).

Table1: Socio-demographic characteristics of antenatal care attendant women in government health institutions, Mekelle, 2010.

Variables	**Number(n=419)**	**%**

Age distribution (years)	**n=419**	
<20	72	17.2
20-34	317	75.7
35-49	30	7.2
Mean ± SD		26.2 ± 5.4
Religion		
Orthodox Christian	371	88.5
Muslim	37	8.8
Catholic	10	2.4
Protestant	1	0.2
Educational status of the respondents		
Can not read and write	64	15.3
Read and write	26	6.2
Primary	146	34.8
Secondary	136	32.5
College and above	47	11.2
Occupation of respondents		
House wife	212	50.6
Government employee	80	19.1
Private employee	69	16.5
Student	38	9.1
Daily laborer	17	4.1
Others	3	0.7
Marital status		
Married	379	90.5
Single	30	7.2
Divorced	7	1.7
Widowed	3	0.7
Husbands' educational status	n= 380	
Can not read and write	18	4.3
Read and write	34	8.1
Primary	83	19.8
Secondary	143	34.1
College and above	102	24.3
Family income		
< 600 birr	71	16.9
600-1400 birr	226	53.9
> 1400 birr	122	29.1

5.2. Obstetric characteristics of the respondents

Of the total respondents 137(32.7) were primigravida while 282(67.3) were multigravida. Hundred sixty one (38.4%) of respondents were parity zero, while the rest 258(61.6%) were parity one and above. Two hundred fifty (59.7%) of the multiparous women had ANC follow up for their preceding pregnancy while 169(40.3%) had no any follow up of ANC. Sixty four (15.3%) of respondents had history of at least one abortion and the rest 355(84.7%) had no a history of abortion. Majority of the women 510(79.4%) reported that their last pregnancy or delivery has been planned; where as 132 (20.6%) said that it was not planned. Among the total respondents 94(22.4%) reported that their current pregnancy is unwanted and unplanned (Table 2).

Table 2: Obstetric characteristics of antenatal care attendant women in governmental health institutions, Mekell, 2010.

Variables	Number	%
Gravidity	**n= 419**	
1	137	32.7
2-3	182	43.4
4-5	69	16.5
>5	31	7.4
Para		
Para 0	161	38.4
Para 1-2	170	40.6
Para 3-4	62	14.8
Para > 5	26	6.2
Wantedness of pregnancy		
Yes	325	77.6
No	94	22.4
Ever had abortion		
Yes	64	15.3
No	355	84.7

5.3. Respondents knowledge about antenatal care service utilization.

As shown in table 3, 386(92.1%) reported that ANC follow -up has benefits to the health of the mother and 18(4.3%) they don't know its benefit, while 380(90.7%) mentioned its benefit for the health of the child, and 27(6.4%) they don't know its benefit.

Regarding the knowledge about the recommended gestational age to start ANC visit, 212(52%) reported before fourth month of pregnancy followed by 140(33.4%) who reported after 4-6 months, 15(3.6) reported after six months and 46(11%) do not know the exact time of initiation ANC.

Concerning the knowledge about the recommended frequency of visit 118(28.2%) reported they do not know the recommended frequency of visit, 260(62%) reported four times and more, 41(9.8%) said 1-3 time.

Three hundred seventy four (89.3%) of respondents husbands' were concerned about health problems that they may encounter during their pregnancy while 39(9.3%) were not concerned the rest 6(1.4%) respondents husbands' were not alive.

Table 3: Knowledge about ANC services utilization among antenatal care attendant women in government health institutions, Mekelle town, 2010.

Variables	Number	%
Benefit of ANC follow up to maternal health	**n=419**	
Yes	386	92.1
No	18	4.3
I do not know	15	3.6
Benefit of ANC follow up to child health		
Yes	380	90.7
No	27	6.4
I do not know	12	2.9
Recommended gestational age to start ANC		
Before 4 months	212	52
4-6 month	140	33.4
7-9 month	15	3.6
I do not know	46	11
Recommended frequency of visits		
4+ times	260	62
1-3 times	41	9.8
I don't know	118	28.2
Perceived partner's concern		
Yes	374	89.3
No	39	9.3
Others	6	1.4

5.4. Perception of respondents on health service utilization.

Of the total respondents 408(97.4%) had a perception that ANC service is available throughout the working hours with in the government health institution while 5(1.2%) of the respondents perception was ANC service is available during the limited times, 6(1.4%) of this group didn't know whether the service given throughout the working time.

Regarding their perception on distance of their home from health facility 284(67.8%) were very close to the health facility while 55(13.1%) reported that the health facility was too far from their home. All the respondents reported that they are told to return for ANC but 28(6.7%) had no plan to return.

Concerning their future plan on the place of delivery 329(78.5%) of the respondents planned to give birth with in the health institution, 59(14.1%) of the respondents planned to give birth at home and 31(7.4%) were not decided the place of delivery. Majority of the respondents 391(93.3%) were satisfied by the service given in the health facility.

Concerning the perception of transport cost to reach the health service, 323(77.1) were stated as not problem while 38(8.1%) described as a major problem. Waiting time 368(87.8) < 2 hr, 41(9.8) while 10(2.4) stayed in the health facility for ANC examination.

Majority of the clients 391(93.3), and 367(87.6) of the respondents were comfortable in the service given in the health institutions and the money that paid for the service respectively (Table 4).

Table 4: Perception on the availability and accessibility of ANC service among antenatal care attendant women in government health institutions, Mekelle, 2010.

Variables	Number	**%**
Perception on distance from health facility	**n= 419**	
Very close	284	67.8
Average	80	19.1
Too far	55	13.1
Would you return to this facility for ANC service		
Yes	391	93.3
No	28	6.7
Where do you planned to give birth		
Health facility	329	78.5
At home	59	14.1
Do not know	31	7.4
Perception on transport cost to health facility from their home		
Not problem	323	77.1
Moderate problem	62	14.8
Major problem	34	8.1
Waiting time in the health facility		
< 2 hr(short)	368	87.8
2-3hr(fair)	41	9.8
> 4 hr(long)	10	2.4
How did you describe the money you paid		
Not problem	367	87.6
Moderate problem	36	8.6
Major problem	16	3.8

5.5. Respondents awarenss on danger signs of pregnancy encounter health problems during the preceeding and current pregnancy.

Out of the total respondents 136(32.5%) knew one or more danger signs of pregnancy while 283(67.5%) of the respondents did not know any of pregnancy associated danger signs. From respondents who said “yes” 68(50%) were able to name persistent vomiting, 62(45.6%) vaginal bleeding, 45(33.1%) cessation of fetal movement, 34(25%) extreme fatigue, 25(18.4%) face and leg swelling,21(15.4%) persistent headache, 22(16.2%) also mentioned other common signs and multiple response like multiple pregnancy, offensive vaginal discharge and early rupture of pregnancy (Figure 3).

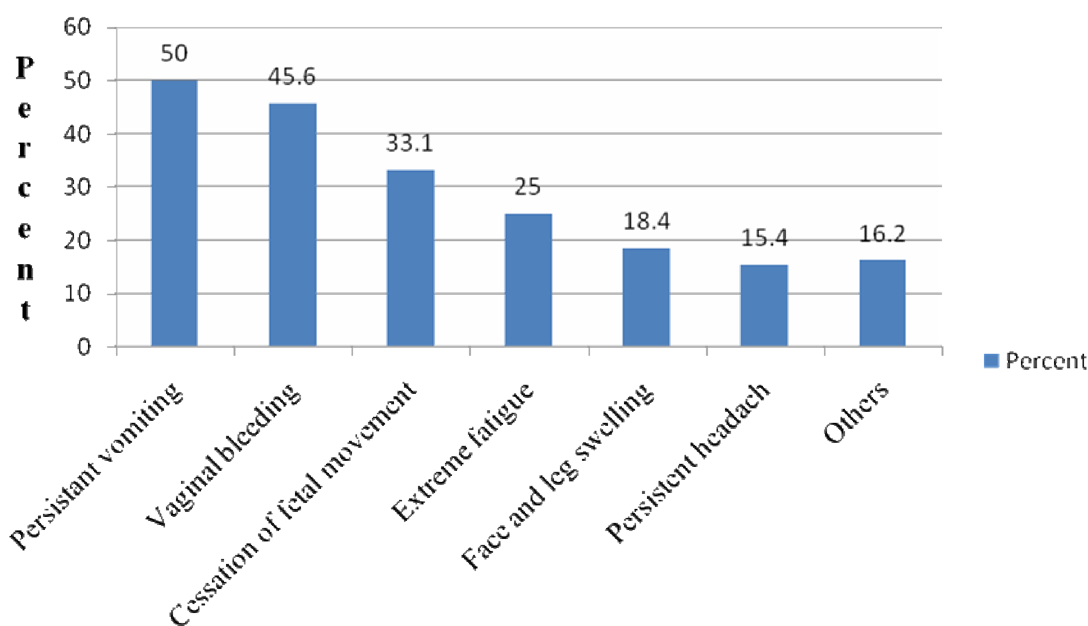

Figure 3: Percentage distribution of respondents’ knowledge on danger signs of pregnancy among ANC attendants in government health institutions, Mekelle, 2010 (n=136)

From the multiparous women 68(24.1%) of them reported history of different pregnancy associated health problem during the preceding pregnancy while 95(22.7%) of the total respondents had similar report for their current pregnancy.

From respondents who encountered health problem during preceding pregnancy were able to name persistent vomiting 46(67.6%), persistent headach 22(32.4 %), face and leg swelling 10(14.7%), vaginal bleeding 15(22.1%), extreme fatigue 19(27.9%) and others 2(2.9%).

Among the total respondents 95(22.7%) had encountered health problem in the current pregnancy and the most common health problems were persistent vomiting 78(82.1%), extreme fatigue 44(46.3%), persistent headach 11(11.6%), face and leg swelling 1(1.1%), vaginal bleeding 4(4.2%) and others 5(5.3%).

Table 5: Perceived susceptibility and encountered health problems during the preceding and current pregnancy among ANC attendant women in government health institutions, Mekelle, 2010.

Variables	Yes	No
History of health problems during the preceding pregnancy	68(24.1%)	214(75.9%)
Which health problem did you encountered	n= 68	n=68
Persistent vomiting	46(67.6%)	22(32.4)
Persistent headache	22(32.4%)	46(67.6%)
Face and leg swelling	10(14.7%)	58(85.3%)
Vaginal bleeding	15(22.1%)	53(77.9%)
Extreme fatigue	19(27.9%)	49(72.1%)
Cessation of fetal movement	3(4.4%)	65(95.6%)
Others	2(2.9%)	66(97.1%)
History of health problems during the current pregnancy	95(22.7%)	324(77.3%)
Which health problem did you encountered		
Persistent vomiting	78(82.1%)	17(17.9%)
Persistent headache	11(11.6%)	84(88.4%)
Face and leg swelling	1(1.1%)	94(98.9%)
Vaginal bleeding	4(4.2%)	91(95.8%)
Extreme fatigue	44(46.3%)	51(53.7%)
Others	5(5.3%)	90(94.3%)

*More than one response is possible.

5.6. Magnitude and reasons for late entry of ANC

One hundred seventy two (41.1%) of the respondents were on the first visit while 247(59%) had on their second and beyond that visit.

The prevalence of the source population who made their first ANC within the recommended time [before 16 weeks of gestation] were 148 (35.3%) while those who booked late [after 16 weeks of gestation] were 271 (64.7%). The timing of first ANC booking ranges from 1st month to 8th months of gestation. The median duration of pregnancy for the first antenatal care visit was 4 months [SD=1.6] [Figure 4].

Figure 4: Proportion by time of ANC visit, Mekelle, 2010.

With regard to the time of initiation of antenatal care visit, it was observed that the peak gestational age of pregnancy when most mothers sought medical attention was from 3-5 months and it is low both before and after that time (Figure 5).

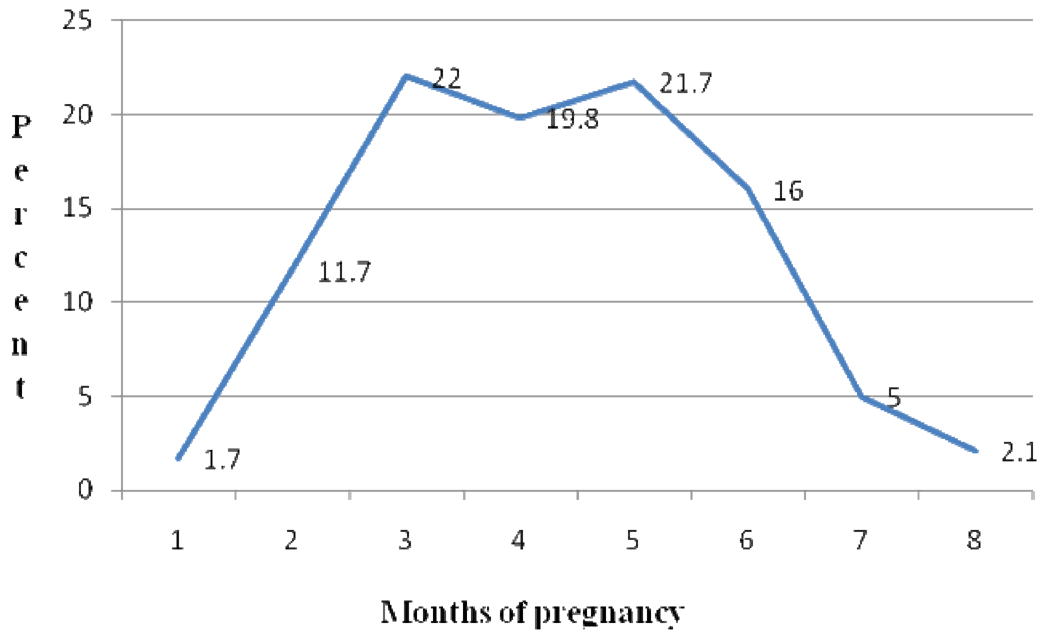

Figure 5: Time of initiation of ANC visit, Mekelle town, 2010.

Among the total respondents' 271(64.7%) started their first ANC follow up after fourth month of pregnancy, women reported the primary reason for late attendance of ANC during their pregnancy to be that inadequate knowledge on the benefit of early attendance 128(47.2%), 111(41%), while being in the state of good health during the current pregnancy 104(38.4%), said too busy to attend ANC early, 39(14.4%) stated that clinics are too far from their home, 29(10.7%) were due to unplanned pregnancy not concerned to come early and other multiple reasons (Figure 6).

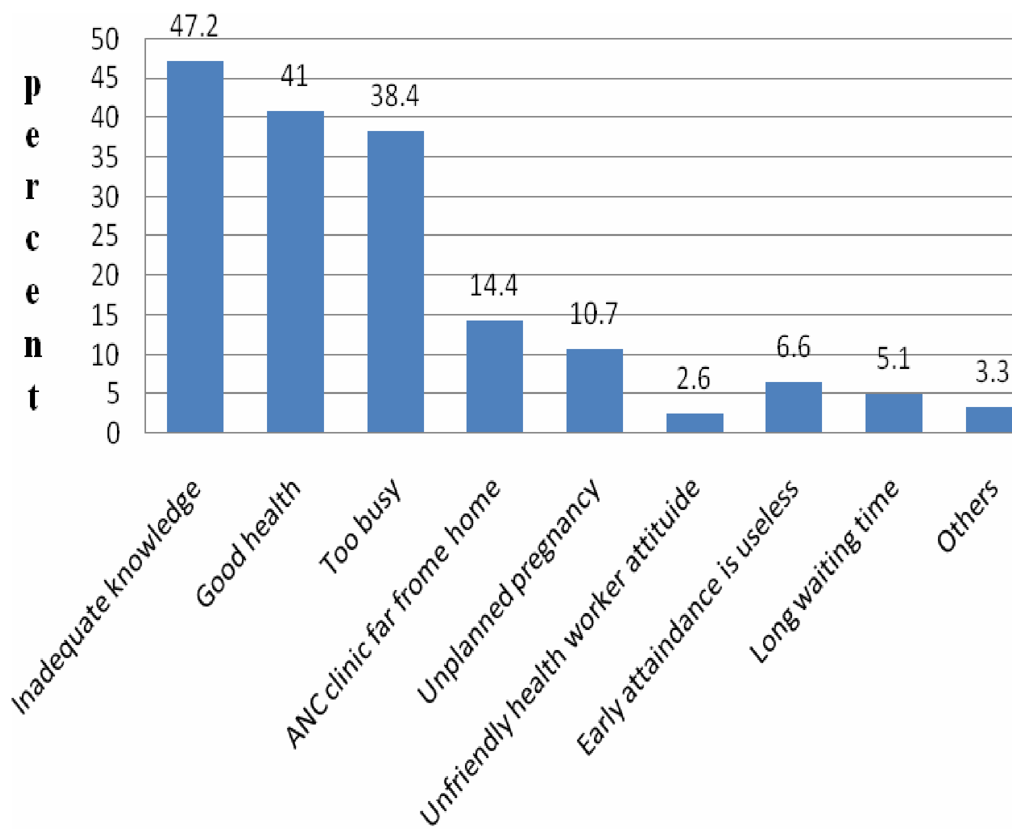

Figure 6: Percentage distribution of respondents' reason for late ANC follow-up starting among ANC attendants in governmental health institutions, Mekelle, 2010.

5.7. Socio-demographic characteristics associated with initiation time of ANC service utilization.

Mothers in the age group 35-49 years were tended to enter ANC early than mothers whose age were < 20 years (COR= 0.22, 95% CI= 0.08, 0.59).

Women's whose educational level were college and above were less likely to initiate their ANC visit lately during their pregnancy than uneducated women (COR= 0. 042, 95% CI= 0.016-0.105). Pregnant women whose husband had college and above education would less likely to book late compared to those whose husband uneducated (COR = 0.200, 95% CI= 0.062, 0.650).

In relation to family income those who earned lesser income (less than 600 ET birr) were more likely to book late compared to those who earned more (COR= 3.5, 95% CI= 1.835-6.874). Marital status of women was not significantly associated with initiation time of ANC service utilization (Table 6).

Table 6: Bivariate analysis for socio-demographic variables associated with initiation time of ANC service utilization among antenatal care attendant women in government health institutions, Mekelle, 2010.

Variables	Initiation time of ANC service utilization		COR(95%CI)
	Timely	Lately	
Age at interview(in years)			
< 20	9	63	1
20-34	127	190	0.21(0.10,0.45)*
35-49	12	18	0.22(0.08,0.59)*
Educational status of respondents			
Illiterate/ Read and write	12	78	1
Primary school	17	129	1.17(0.53,2.57)
Secondary school	82	54	0.10(0.50,0.20)*
College and above	37	10	0.04(0.02,0.11)*
Occupation of respondents			
House wife	48	164	1
Government employee	64	19	0.07(0.04,0.14)*
Private employee	16	53	0.97(0.51,1.85)
Students	15	23	0.45(0.22,0.93)*
Daily laborer	4	13	0.95(0.29,3.05)
Marital status			
Married	138	241	1
Single	8	22	1.58(0.68,3.63)
Divorced/ Widowed	2	8	2.29(0.48,10.94)
Husbands educational status			
Can not read and write	4	14	1
Read and write	8	26	0.93(0.24,3.64)
Primary school	13	70	1.54(0.44,5.42)
Secondary school	53	90	0.49(0.15,1.55)
College and above	60	42	0.20(0.06, 0.65)*
Husbands occupation			
Government employee	70	60	1
Private employee	36	117	3.79(2.28, 6.30)*
Private buisness	18	31	2.01(1.02, 3.95)*
Daily laborer	11	32	3.39(1.58, 7.31)*
Family income			
< 600 birr	16	55	1
600-1400 birr	70	156	0.65(0.35,1.21)
>1400 birr	62	60	0.28(0.15, 0.55)*

*Statistically significant at P< 0.05

5.8. Obstetric characteristics associated with initiation time of ANC

Women whose pregnancy were unplanned and unwanted were 2.072 times more likely (95% CI= 1.223, 3.510) to start ANC service service utilization lately than women whose pregnancy were planned and wanted.

Women whose pregnancy $\geq$ 5 were 3.9 times more likely (95% CI=1.425, 10.851) to start ANC service utilization lately than women who were pregnant for the first times. Multiparous women (Para $\geq$ 5) were 2.99 times more likely (95% CI=1.075, 8.338) to start ANC service utilization lately than those nulliparous women.

Women who had not experienced health problem in the current pregnancy 4.3 times more likely (95% CI=2.675, 7.000) to start ANC service utilization lately than those who had experienced health problem in the current pregnancy.

In this study no statistically significant association were observed between history of abortion and ANC follow up during the preceeding pregnancy with initiation time of ANC service utilization (Table 7).

Table7: Bivariate analysis for obstetric characteristics associated with initiation time of ANC service utilization among antenatal care attendant women in government health institutions, Mekelle, 2010.

Variables	Initiation time of ANC service utilization		COR(95% CI)
	Timely	Lately	
Gravidity			
1	59	78	1
2-3	68	114	1.27(0.81,1.99)
4-5	16	53	2.51(1.31,4.82)*
>5	5	26	3.93(1.43,10.85)*
Para			
0	67	94	1
1-2	64	106	1.18(0.76,1.84)
3-4	12	50	2.97(1.47,6.00)*
≥5	5	21	2.99(1.08,8.34)*
ANC follow up during the preceding pregnancy			
Yes	83	167	1
No	65	104	0.79(0.53,1.19)
Health problem during the current pregnancy			
Yes	59	36	1
No	89	235	4.33(2.68,7.00)*
Ever had abortion			
Yes	18	46	1
No	130	225	0.68(0.38,1.22)
Wantedness of pregnancy			
Yes	126	199	1
No	22	72	2.072(1.22, 3.51)*

*Statistically significant at P< 0.05

5.9. Knowledge and perception of clients associated with ANC initiation

Mothers unaware of danger signs of pregnancy were 2.1 times (95% CI=1.380, 3.213) more likely to start ANC service utilization lately than who were aware of danger signs of pregnancy.

Mothers who reported the recommended gestational age of pregnancy to start ANC service between 4-6 months, 7-9 months and I do not know 25.1, 3.2, 8 times more likely (95% CI=11.686,54.060, 1.277,8.357, 3.575,17.914) respectively, to start their ANC service utilization lately than who reported a recommended gestational age of before 4 months for the initiation of ANC service utilization. Similarly, mothers who reported the recommended frequency of ANC visit of > 4 times 17.3% (95% CI=0.066,0.454) less likely to start ANC visit lately than those mothers who reported the recommended frequency of ANC visit 1-3 times.

Knowledge on the benefit of ANC service utilization to women's and child were 4.3, and 3.2 more likely (95%CI=1.485,12.493, 1.341,8.022) respectively, to start their ANC service utilization lately than women's who know the benefit of ANC to both the mother and child.

In this study no statistically significant association was observed between percived partners concern and with initiation time of ANC service utilization (Table 8).

Table 8: Bivariate analysis for knowledge and perception of clients associated with initiation time of ANC service utilization among antenatal care attendant women in governmental health institutions, Mekelle, 2010.

Variables	Initiation time of ANC service utilization		COR(95%CI)
	Timely	Lately	
Do you have danger signs during pregnancy			
Yes	64	72	1
No	84	199	2.11(1.38,3.21)*
Perceived partners concern			
Yes	133	241	1
No	13	21	0.89(0.43,1.84)
Benefits of ANC to maternal health			
Yes	144	242	1
No/I do not know	4	29	4.31(1.49,12.49)*
Benefit of ANC to child health			
Yes	142	238	1
No/I do not know	6	33	3.28(1.34,8.02)*
Recommended frequency of visits			
1-3 times	5	36	1
4^+	116	144	0.17(0.07,0.45)*
I do not know	27	9	0.47(0.17,1.31)
Recommended gestational age start ANC			
Before 4 months	125	82	1
4-6 months	8	132	25.13(11.69,54.06)*
7-9 months	7	15	3.27(1.28,8.36)*
I do not know	8	42	8.00(3.58, 17.91)*

*Statistically significant at P< 0.05

5.10: Health service factors and perception of clients associated with ANC initiation

Clients who reported too far distance of the health facility from their home were 3 times (95% CI= 1.483, 6.322) more likely to start ANC service utilization lately than clients who reported their home is too close to the health facility.

Women's who perceived ANC service availability during working hours, perception of transport cost to health facility, comfortable in the service given, waiting time in the health facility and the money paid for the service were not show statistically significant association with their initiation time of service utilization in this study.

Table 9: Bivariate analysis for health service factors and perception of clients associated with initiation time of ANC service utilization among antenatal care attendant women in governmental health institutions, Mekelle, 2010.

Variables	Initiation time of ANC service utilization		COR(95%CI)
	Timely	Lately	
Availability of ANC service through out working hours			
Yes	132	252	1
No	9	10	0.58(0.23,1.47)
I do not know	7	9	0.67(0.25,1.85)
Perception on distance from health facility			
Very close	115	169	1
Average	23	57	1.69(0.98,2.89)
Too far	10	45	3.06(1.48,6.32)*
Perception on transport cost to health facility from their home			
Not problem	123	200	1
Moderate problem	16	46	1.77(0.96,3.26)
Major problem	9	25	1.71(0.77,3.78)
Waiting time in the health facility			
< 2 hr(short)	123	245	1
2-3hr(fair)	19	22	0.58(0.30,1.12)
> 4 hr(long)	6	4	0.34(0.09,1.21)
Comfortable in the service given			
Yes	142	249	1
No	6	22	2.09(0.83,5.28)
How did you describe the money you paid			
Not problem	122	245	1
Moderate problem	16	20	1.75(0.71,4.31)
Major problem	10	6	1.65(0.59,4.63)

*Statistically significant at P< 0.05

5.11. Independent predictors of magnitude and factors affecting late initiation of ANC service utilization.

The final model was constructed using stepwise logistic regression selection method. Variables which showed significant association in each model were included in the final model. Although significant in bivariate analysis most of the explanatory variables were no longer significant when other factors were controlled.

Among all the variables of socio-demographic entered in multiple logistic regression analysis, only six variables were identified as predictors of late initiation of ANC service utilization. The variables were "age, education of the mother, knowledge about the benefit of ANC to child, wantedness of pregnancy, knowledge about recommended gestational age to start ANC service utilization and occurrence of health problem in the current pregnancy.

The odds ratio of initiating for women's whose age between 20-34 were 11.5% less likely to start their ANC service utilization lately than those whose age < 20 years. Those reported secondary level educational status of women were 5.1% less likely to start their ANC service utilization lately than those illiterate/read and write group. ANC service utilization 4.6 times more late for those who had no awareness on benefit of ANC to child health.

Women who perceived that the current pregnancy not wanted were 2.6 times more likely to start their ANC late compared to those women who wanted the pregnancy. Those who reported the recommended gestational age of pregnancy to start ANC service utilization between 4-6 months were 27.4 times more likely to start ANC service utilization lately than who reported before 4 months and women who did not encounter health problem in the current pregnancy were 4.6 times more likely to start ANC lately than those encounter health problem (Table 10).

Key words: Antenatal care, Late booking, Gestational age, Risk factors

Table10: Multivariate analysis for magnitude and factors affecting late initiation of ANC service utilization among antenatal care attendant in government health institutions, Mekelle, 2010.

Variables	COR(95% CI)	AOR(95% CI)
Age		
< 20 years	1	1
20-34 years	0.21(0.10,0.45)	0.12(0.34,0.39)*
35-49 years	0.22(0.08,0.59)	0.01(0.00,0.09)*
Educational status of respondents		
Illiterate/ Read and write	1	1
Primary school	1.17(0.53,2.57)	1.09(0.36,3.29)
Secondary school	0.10(0.50,0.20)	0.05(0.02,0.09)*
College and above	0.04(0.02,0.11)	0.04(0.01,0.21)*
Benefit of ANC to child health		
Yes	1	1
No/ I do not know	3.28(1.34,8.02)	4.65(1.04,20.75)*
Wantedness of pregnancy		
Yes	1	1
No	2.07(1.22,3.51)	2.61(1.00,6.77)*
Recommended gestational age start ANC		
Before 4 months	1	1
4-6 months	25.13(11.69,54.06)	27.49(9.49,79,64)*
7-9 months	3.27(1.28,8.36)	0.69(0.17,2.87)
I do not know	8.00(3.58,17.91)	1.66(0.46,5.90)
Health problem during the current pregnancy		
Yes	1	1
No	4.33(2.68,7.00)	4.66(0.17,0.87)

*Statistically significant at P< 0.05

5.12. Observation result of work environment

Provider and health facility environment were evaluated in governmental health institutions of Mekelle town based on prepared checklist, observation were conducted to assess the general environment of the clinics, how the providers where handling the clients. A total of four observations done in the selected health institutions. It was observed in all level of health worker and the observation is done by principal investigator.

The observation was done to assess availability of equipment for ANC examination, availability of laboratory investigation, recording of information in the client's card and registration book, availability of adequate waiting room, appointment schedule and delivering of appropriate health information to pregnant women.

With regard to availability equipment/material for ANC examination there were adequate available of chair, table, examination beds, fetescope, measuring tape in all selected facilities of the health institutions. Equipments such as blood pressure apparatus, stetescope, and weighting scale, were not adequately available and functional in all selected health facility.

Regarding laboratory examination, blood group, Rh factor, Hb testing, VDRL testing, HIV and HBSAG were done in Mekelle Hospital and Semen health center; however, HBSAG was not done in Mekelle health center and Kasech health center.

Recording of client's information in client's card and registration book for the service given like tetanus toxoid immunization, gestational age of pregnancy and weight of clients, in Mekelle hospital, Mekelle health center and kasech health center, were registered incompletely.

In all facilities there were not adequate weighting rooms and availability of sitting chairs for their clients. Concerning appointment schedule and delivering of appropriate health information to pregnant women most of the health providers were not in position to examine clients before four months duration. In three facilities (Semen Hc, Kasech Hc, Mekelle Hc) clients who came for antenatal examination with in 1-2 months after missed period were appointed to come at four months duration. Health education about the purpose of ANC, hygiene, nutrition and immunization were not given in all selected health facility except in Mekelle hospital (Table 11).

Table 11: Observational Check list to assess the magnitude and factors affecting late initiation of antenatal care service utilization service among pregnant women in the governmental health facility of Mekelle town,2010.

S.N	Observational check list	Availability of equipment and supplies			
		Mekelle Hospital	Mekelle Hc	Semen Hc	Kasech Hc
1	Availability of equipment/material for ANC examination?				
	Chairs and table for examination	1	1	1	1
	Examination beds	1	1	1	1
	Fetescope	1	1	1	1
	Weighting scale	2	2	2	2
	Measuring tape	1	1	1	1
	Stethoscope	2	2	2	2
	Blood pressure measurement apparatuses	2	2	2	2
2	Availability of all laboratory investigation?				
	Blood group testing	1	1	1	1
	RH factor	1	1	1	1
	Hb testing	1	1	1	1
	VDRL testing	1	1	1	1
	HIV testing	1	1	1	1
	HBSAG testing	1	2	1	2
3	Recording of information in the client's card and registration book?	2	2	1	2
4	Availability of adequate waiting room?	2	2	2	2
5	Appointment schedule for subsequent examination	1	2	2	2
6	Delivering of health education	2	2	2	2

Remark: *1 available of the material/equipment or providing the task

*2 not given the service/ not functional the material/ equipment/ incomplete recording

6. DISCUSSION

Timely initiation of ANC service utilization is important for early detection and treatment of adverse pregnancy related outcomes. The world health organization recommends that pregnant women in developing countries should seek ANC with in the first four months of pregnancy. But, ANC utilization of many women is not in line with the recommendation when the timing of initiation of antenatal care is considered. Individual's socio-demographic and economic characteristics accounted more for the variation in pregnancy duration at entry to ANC that needs from the global fact of view (11). As little is known about the factors influencing initiation time of ANC service utilization in the study area, this study has provided pertinent on factors affecting initiation time of ANC service utilization.

The study attempted to assess the magnitude and factors affecting late initiation of antenatal care (ANC) in Mekelle town. This study has indicated that 271 (64.7%) of pregnant women started antenatal care services utilization lately. Of the total respondents 241(57.5%) started their ANC visit between 4-6 months while 30(7.2%) started during the third trimester of pregnancy. This finding is higher than the report from Australia in which only 16 % of ANC attendants started their ANC visit after 4 months of gestation (13). The discrepancy between the two reports can be explained by the differences between the two study settings as the later was conducted in a developed country.

The finding of this result is higher in study done in Adama, Ethiopia on factors affecting initiation time of antenatal care service utilization, concerning their gestational at their first ANC visit 49.4% visited a healthy facility before the first four months, 35.2% within 4-6 months of pregnancy duration while the rest 15.4% visited a care provider for ANC during their third trimester for the first time (19) . This might be due to mis-understanding of the health professionals that encourage the pregnant women to come at four months for the first ANC visit and majority the benefits of early booking is not yet well appreciated.

This study has shown that the timing of antenatal care visits is associated with a range of socio-demographic, obstetric and knowledge factors. Maternal age showed significant association with

ANC service utilization timely. Younger women tended to enter ANC later than older women, as younger women, especially teenagers, are more likely to have unplanned pregnancies, less educated, lack of information and the resources to access ANC service. This finding is consistent with the studies done in Australia, Nigeria, Indonesia and a study done in Arsi zone(14,18,24).

Regarding educational level, pregnant women who attended college and above started ANC service utilization more timely than uneducated women. The result was supported by the studies done in Nigeria, Indonesia, Addis Ababa and Arsi zone (14, 18, 24), in which literacy of women showed a significant association with respect to timely utilization of antenatal care services, indicating the impact of education on awareness and better educated women would likely appreciate the importance of early service utilization more than the less educated ones. This emphasizes the importance of education on antenatal care.

Husbands' educational status showed significant association with initiation time of ANC service utilization and pregnant women whose husbands' educational status college and above were initiate timely compared with compared with pregnant women whose husbands' educational status can not read and write this finding is consistent with the study done in Nigeria(14). The possible explanation for this might be due to husbands' might encourage their partners for early ANC service utilization.

The pregnant women who were government employees had the lowest percentage of late ANC service utilization compared with those who were house wives. This finding also similar with studies done in Nigeria and Indonesia as government employed women were in better educational status and this contributes for better utilization of health service (14, 24). Pregnant women whose husband had college and above would less likely book late compared to those whose husband had uneducated. This finding is also consistent with study done in Nigeria; the possible explanation were educated husband's would likely appreciate the importance of early booking more than the less educated ones as a result the possibility of influencing on early usage of ANC to their wives become higher(14).

Family income showed significant association with initiation time of ANC service utilization. Mothers whose family income less than 600 Birr per month more likely to start ANC service utilization lately than women who were higher income. This is explained by pregnant women with higher income has better opportunity for expenditure of health care and most of the women were educated that result in early booking of ANC. This finding is also consistent with the finding of study done in Nigeria (14, 23).

In this study no statistically significant association was observed between marital status and initiation time of ANC service utilization. The possible explanation for this might be do to small proportion of divorced or separated that may not reveal differences compared to married women.

Women whose pregnancy ≥ 5 were 3.9 times more likely to start ANC service utilization lately than women who were pregnant for the first times. This study is similar with the study done in Nigeria. The possible explanation could be nulliparous women mostly would first seek counseling from multiparous women who were considered to be more experienced and would eventually in most instances discourage early booking as seen in this study.

In this study it was found that as parity increases the chance of early booking will decrease. respondents with no parity were about two times more likely to be booked ANC within the recommended time compared to respondents with parity one and above. This finding is similar with studies done in Nigeria and Addis Ababa (14, 22). The possible explanation could be multiparous women who were considered to be more experienced and would eventually in most instances discourage early booking as seen in this study.

The proportions of respondent with history of at least an abortion [induced and/or spontaneous] were 15.3%. History of abortion did not showed statistically significant relation with early booking in this study which was found inconsistent with the study done in India (10). This might be due to small proportion of spontaneous abortions and related birth outcomes that may not reveal differences.

Women whose pregnancy was unplanned and unwanted were 2 times more likely to start ANC service lately than women whose pregnancy were planned and wanted. This finding is consistent with studies done in Bangladish (26). The possible reason could be unwanted and unaware of pregnancy are factor for delay to seek ANC timely.

Knowledge about danger signs of pregnancy was found to be independent predictor of ANC service utilization starting time and this also supported by the study done in Indonesia, where increasing awareness of women regarding the potential health problems that they may encounter during their service seeking timing (24). In this study awareness of danger signs of pregnancy is lacking in about (67.5%) of the respondents.

Clients who doesn't experienced health problem in the current pregnancy were 4.3 times more likely to start lately than those experienced health problem in the current pregnancy. Pregnant woman's who experienced danger signs of pregnancy showed statistically significantly associated with utilization of antenatal care services in intervening the problem will be faced in the future. It was observed that pregnant women who can identify health problems the more they attend the antenatal care services (22).

Mothers knowledge about recommended gestational age of pregnancy to start ANC service utilization and recommended frequency of ANC visits are important predictors of timely ANC service utilization, those who have a knowledge on appropriate gestational age to start ANC and recommended frequency of visits started the visit timely than the group who did not know the correct timing and frequency. Reasons for starting ANC service utilization has also a significant association with service utilization starting time as those who started the visit because of the presence of health problem delay the visit in the absence of illness.

Clients who reported an average and too far distance of the healthy facility from their home were 1.7 and 3 times, respectively more likely to start ANC lately than clients who reported their home is too close to the health facility and this finding consistent with reports from rural Kenya and Indonesia(16,24).

Perception of the mothers about importance of ANC for the health of the mother and her fetus was found high. Bivariate analysis showed that respondents who doesn't perceive the benefit of ANC to the mother and child 4.3 and 3.2 times more likely late in initiation of ANC respectively. This finding is consistent with the study done in Indonesia (24). The possible explanations for this might be due to both of the countries were developing countries which have similar socio-economic character.

The respondents were also asked to mention factors that would prevent them from utilizing ANC services timely. They cited limited knowledge on the benefit of early attendance, being in the state of good health during the current pregnancy, too busy to attend ANC as some of the reasons that would contribute to late utilization of the service in the study area and this is consistent with the finding of the study done in Indonesia (24).

The finding of this study also indicated that 6.7% of the ANC attendants had no plan to return for the subsequent ANC visit even though they were told to do so by the care providers. Additionally, 14.1% of the respondents planned to give birth at home, 78.5% of the respondents decided to give birth at health institutions while 7.4% still not decided where to give birth.

This study indicated that there are different factors which affect initiation time of ANC service utilization. In general, Knowledge about danger signs of pregnancy, perceived susceptibility to pregnancy associated health problems, knowledge about recommended frequency of ANC service utilization, wantedness of pregnancy , age, gravity, parity, educational status of the mother, occupation of the mother and distance of the health facility from their home were showed significant association during bivariate analysis.

In the final model only age of the respondents, educational status, knowledge about recommended gestational age to start ANC service utilization, knowledge on the benefit of ANC to child health, wantedness of pregnancy and health problem during the current pregnancy were found to be independent predictors of initiation time of ANC service utilization. Improving quality of the service delivery and effective monitoring and evaluation of the service through various means is critically important for improving the utilization of antenatal care services.

7. Strength and Limitations of the study

7.1. Strengths of the study

- There is scarcity of studies on this title the research findings helps to make evidence based decision for program implementation on timely initiation of ANC at the study area as well as in similar settings.
- It is generalizable to urban areas where there is access to the health facility.
- Employment of multiple regression analysis to control the effect of confounding factors is another strong side of the study.

7.2. Limitations of the study

- As the study relied on the verbal response, the possibility of recall bias was likely.
- Lacks generalizability to the community and the rural population.

8. CONCLUSIONS

- In conclusion, this study indicated that significant proportion of women (64.7%) commenced ANC service utilization late; evidencing that timely ANC service utilization is yet to be appreciated.

- According to the finding, there are different factors which affect initiation time of ANC service utilization. Among the whole variables, age of the respondents, educational status of the women, knowledge on the benefit of ANC to child health, knowledge about the recommended gestational age to start ANC service utilization, wantedness of pregnancy, and health problem in the current pregnancy

9. RECOMMENDATIONS

Based on the finding of the study the following recommendations are made:

- The zonal health bureau has to carefully consider health promotion activities with in the town; should take into consideration awareness raising on timely utilization of ANC service, and pregnancy risk.

- Public enlightenment and incorporation of the benefit of early ANC service utilization in the routine health information dissemination activities by government health institutions with in the town is mandatory.

- Training on focused ANC should be given to health care providers.

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11. ANNEXES

IDNo________

ANNEX -1. QUESTIONAIRE (ENGLISH VERSION)

ADDIS ABABA UNIVERSITY FACULTY OF MEDICINE
SCHOOL OF PUBLIC HEALTH

A QUESTIONNAIRE PREPARED TO ASSESS THE MAGNITUIDE AND FACTORS AFFECTING LATE INITIATION OF ANTENATAL CARE AMONG PREGNANT MOTHER IN GOVERNMENT HEALTH INSTITUTIONS OF MEKELLE TOWN.

A. Information Sheet:

Good morning, Good afternoon, good evening [According to its convenience]. My name is___________________________ I came from Addis Ababa university Medical faculty, School of public health. I am here to gather informational about the health of women who attend antenatal care in this health institution. You are kindly requested to be included in the study, which will have importance in improving maternal health services. I would like to ask you about your entry time to ANC visit and issues related pregnancy and child birth. I would like to inform you that your name will not be written anywhere in this paper. There are no risks associated with participating in this study. Participation in this study or refusal to participate will not affect your ability to access health services or any other services. The interview takes about 15 to 20 minutes to complete. Participation in this survey is voluntary and you can choose not to answer any personal questions or all the questions. But I kindly request your willingness to participate in the survey to met its goals and benefit for future generation.

Are you willing to participate in the interview?

[ ] Yes, Go to next interview [ ] No, Thank you! Proceed to next eligible participant

If you have something to ask concerning the study, you can contact the principal investigator.

Name: Daniel H/selassie	Address of the institutional review board
Phone number: 0912802981	Phone number: 0115538734
Email: danielhail@yahoo.com	P.o.box: 9086
	Email: aaumfirb@yahoo.com

Thank you!

Verbal consent form for the study participants

I have been briefly informed about the study and I clearly understood the objective. Since it doesn't affect my personal life, I don't need any remedy. Consequently, I here approve my consent voluntarily to take part in the study as an interviewee.

Name of interviewer__________ Signature of interviewer__________

If you have something to ask concerning the study, you can contact the principal investigator.

Name: Daniel H/selassie
Phone number: 0912802981
Email: danielhail@yahoo.com

Address of the institutional review board
Phone number: 0115538734
P.o.box: 9086
Email: aaumfirb@yahoo.com

Thank you!

Instruction

The questionnaire has six parts; some of the questions have their own set of Instructions please follow the instructions strictly

NO	Questions	Response	Skip
Part One: Socio-demographic variables			
101	Address	______	
102	Age	______Years.	
103	Religion	1. Orthodox 2. Catholic 3. Muslim 4. Protestant 10. Others(specify)_________	
104	Ethnicity	1.Tigre 2. Amhara 3. Oromo 10. Others(specify)_________	
105	Educational status	1. Illiterate (cannot read and write) 2. Read and write 3. Primary(1-8) 4. Secondary(9-12) 5. College and above	
106	Occupation	1. House wife 2. Government employee 3. Private employee 4. Student 5. Daily laborer 10. Others(specify)__________	
107	Marital status	1.Married 2. Single 3. Divorced 4. Widowed	If yes to 2,3,4 skip to 110

108	What is your husbands' educational status?	1. Illiterate (cannot read and write) 2. Read and write 3. Primary (1-8) 4. Secondary(9-12) 5. College and above	
109	What is your husband's occupational status?	1. Government employee 2. Private employee 3. Private business 4. Student 5. Daily laborer 10. Others (specify)________	
110	Average family income per month (Ethiopian Birr)	1. < 600 birr 2. 600-1400 birr 3. >1400 birr 88. I don't Know	
Part Two: Obstetric information			
201	Gravida including abortions	1. 1 2. 2-3 3. 4-5 4. 6+	
202	Para[Number of live births] you have	1. 0 2. 1 3. 2 4. 3 5. 4 6.> 5	
203	Ever had abortion	1.Yes 2.No	
204	How many times have you come for	1. Once	

Key words: Antenatal care, Late booking, Gestational age, Risk factors

	ANC for this pregnancy including today?	2. Two 3. Three 4. Four and more	
Part three: History of current ANC			
301	Is your current pregnancy is wanted?	1.Yes 2. No	
302	How many months pregnant were you when you first received ANC? (Approximately)	________months	
303	Why you decide to start [begin] the follow up that mentioned in Q 302?	1. I perceive it is appropriate time 2. From my previous experience 3. Busy time 4. Economic factor [money constraints] 5. Because of unplanned pregnancy 6. To diagnose pregnancy 10.Others [specify]__________	
304	Where do you plan to give birth? **Listen carefully**. **Do not read out list. Tick one best response.**	1. At health facility 2. At home 3. I did not decided	
Part four: Knowledge of respondents on timing of ANC utilization			
401	At what months/gestational age do you think it is good to start ANC after amenorrhea? **Listen carefully. Do not read out list. Tick one best response**.	1. Before 4 months 2. 4-6 months 3. 7-9 months 4.When there is a problem/feeling ill 88. I don't know	

402	How many times do you think a woman needs to go for ANC at a health facility during pregnancy? **Listen carefully**. **Do not read out list. Tick one best response.**	1. Once during pregnancy 2. 2 times 3. 3 times 4. 4 times 5. More than 4 times 10. Others(specify)________ 88. I don't know	
403	What do you think would be the benefits of ANC? **Listen carefully**. **Do not read out list.**	1. Maternal health 2. Child health 3. Both 10. Others (specify):_________ 88. I don't know	
404	Is your initial ANC visit after the 16th weeks of pregnancy?	1.Yes 2. No	If No Skip to 406
405	If your response is yes to Q 404, what are the reasons for not attending ANC before 16th weeks of pregnancy? **Listen carefully**. **Do not read out list. More than one answer is possible**	1. Inadequate knowledge about the benefit of early attendance 2. Being in a state of good health 3. Too busy to attend ANC clinic 4. ANC clinic too far from my home 5.Because of unplanned pregnancy 6. Perceived long waiting time 7. Husbands' disapproval 8.Unfriendly health workers attitude from previous experience 9. Early ANC attendance is useless 10. Others(specify)________	
406	Do you know danger signs during pregnancy?	1.Yes 2. No	If No skip to 501

407	If yes to Q 406, can you mention some of them? **Listen carefully**. **Do not read out list. More than one answer is possible**	1.Persistant vomiting 2 Persistent headache 3.Face and leg swelling 4.Vaginal bleeding 5.Extreme fatigue 6.Cessation of fetal Movement 7. Multiple pregnancy 10. Others (specify)_____	

Part five: Illness experience and perceived susceptibility to pregnancy related health problems

501	Did you have ANC follow up during the preceding pregnancy?	1. Yes 2. No 10.others(specify)______	
502	Did you experience a health problem during the preceding pregnancy?	1.Yes 2. No 88. I don't remember	If the response 2 & 88 skip to 504
503	If your response is Yes to Q 502 mention the health problems you experienced.	1. Persistent vomiting 2 Persistent headache 3.Face and leg swelling 4.Vaginal bleeding 5.Extreme fatigue 6.Cessation of fetal movement 10. Others (specify)____	
504	Did you experience a health problem during this pregnancy before your	1. Yes 2. No	If No skip to 506

	first ANC visit?		
505	If your response is Yes to Q504 mention the health problems you experienced.	1.Persistant vomiting 2 Persistent headache 3.Face and leg swelling 4.Vaginal bleeding 5.Extreme fatigue 6.Cessation of fetal movement 10. Others (specify)____	
506	Do you think that your husband or partner is concerned about the health problem that associates with pregnancy?	1.Yes 2.No	
	Part six: Health service related factors that affect late initiation of ANC		
601	Do you think ANC service is available throughout the working hours in this health facility	1.Yes 2. No 88. I don't know	
602	How do you feel about the distance from your home to this health institution?	1. Very close 2. Average 3. Too far	
603	Transportation cost that you paid for coming & back to this health service	1.Not problem 2.Moderate problem 3.Major problem	
604	What is the maximum waiting time you spend to complete checkup?	1. < 2 hrs(short) 2. 2-3 hrs(fair) 3. >4hrs(long)	
605	Did you comfortable in the service given by health professional during	1. Yes 2. No	

	ANC examination?		
606	Would you return to this facility for ANC service	1.Yes 2.No 88.I do not know	
607	Is there any payment you were asked for checkup?	1. Yes 2. No	If No skip to 609
608	If yes for Q 606, for what services you paid?	1. For consultation [card and Examination] 2. For laboratory 3. For ultrasound 4. For drugs 10.Others[specify]__________	
609	How do you describe the money you paid for service?	1. No problem 2. Moderate problem 3. Major problem 10. Others[specify]	
610	How do you describe the approach of staff ?	1. Good 2. Not good	

Observations check-list

S.N	Observational check list	Observation results			
		Mekelle Hospital	**Mekelle Hc**	**Semen Hc**	**Kasech Hc**
1	Availability of equipment/material for ANC examination?				

	Chairs and table for examination				
	Examination beds				
	Fetescope				
	Weighting scale				
	Measuring tape				
	Stethoscope				
	Blood pressure measurement apparatuses				
2	Availability of all laboratory investigation?				
	Blood group testing				
	RH factor				
	Hb testing				
	VDRL testing				
	HIV testing				
	HBSAG testing				
3	Recording of information in the clients card and registration book?				
4	Availability of adequate waiting room?				
5	Appointment schedule for subsequent examination				
6	Delivering of health education				

ANNEX-II

QUESTIONNAIRE –TIGRIGNA VERSION　　　　　　　　**መለለይ ቑፅሪ_______**

ናይ ትግርኛቃለ መሕተቲ ቅጥዒ

ንተሳተፍቲ ዝወሃብ ሐፅር ሐበሬታ ቅጥዒ

ኽመይ ሐዲርኺ/ዉዒልኪ ሽመይ---ይብሃል፡፡አብዚ ዝግበር ፅንዓት ኣሎ፡፡ ናይቲ ፅንዓት ዐላማ አብ ከተማ መቐለ ዝርከባ ነፍሰ-ፅራት ኽይዲ ምክትታል ጥንሲ ምአዝ ከምዝጅምራን አብ ኽይዲ ዘጋጥሙ ፀገማትን መፅናዕቲ ሐበሬታ

Key words: Antenatal care, Late booking, Gestational age, Risk factors

ዝእክቡ ሰባት ሐደ እዩ። ኣብዚ መፅናዕቲ ብምስታፍኪ ኣቀዲመ የመስግን ። ሐደ ሐደ ሕቶ ክሓትት እዩ።ዝውድኦ ግዜ 15-20 ደቂቃ እዩ ዝኸውን። ኣብዚ መጠይቕ ሽምኪ ኣይፀሐፍን ዝሃብክዩ/ዝሃብክናኒ መልሲ ንማንም ኣይናገርን። ብተወሳኺ ኣብዚ መፅናዕቲ ምስታፍ ብድልየት እዩ። ኣብ ኸይዲ ምምላስ ኩሎም ወይ ኸአ ሐደ ሐደ ሕቶታታት ምምላስ ትኽእሊ ኢኺ ብተወሳኺዉን ኣብዚ ፅንአት እዚ ተዘይተሳተፍኪ ጥዕና ግልጋሎት ናይ ምርካብ መሰልኪ ሕልዉ እዩ። ይኹንድኣምበር እዚ ፅንአት ኣብ ጥዕና ኣዲታት ዝህቦ ግልጋሎት ጥዕና ምምሕይሽ ዓብይ ረብሓ ስለዘለዎ እትህብና/እትህባና ሓበሬታ ብጣዕሚ ጠቓሚ እዩ።ስለዝኸነ ኣብዚ መፅናዕቲ ኽትሳተፊ/ኽትሳተፋ ብኣኽብሮት እዩ ይሓትት።

ኣብቲ ፅንአት ንኽትሳተፊ ፈቓደኛ ድየን?

[ ] እወ ናብቲ ቀፃሊ ገፅ ይስገራ______ [ ] ኣይፋሉን: የቐንየለይ ፈቓደኛ ኣይኮንኩን______

ብዛዕባ እቲ መፅናዕቲ ሕቶ ተልይዎን ምስቲ ዋና መፅናዕቲ ዘካይድ ሰብ ክራኽባ ይኽእላ እየን።

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ናይ ተሐታቲት ድሊየት መራጋገፂ

ብዛዕባ እቲ መፅንአቲ እኹል ዝኾነ ሐበሬታ ዝተዉሃበኒ እንትኾን ብዝረኸብክዋ መብርሂ ዓጊበ እየ። በዚ ቃለ መሕተቲ ንምስታፍ ዝተስማዕማዕኹ እንትኾን እቲ ቃለ መሕተቲ ኣብ ዝኾነ እዋን ናይ ምቁራፅ መሰልኪ ሕልዉ እዮ።

ናይ ሐታታይ ሽም ________________ናይ ሐታታይ ፊርማ________________

ብዛዕባ እቲ መፅናዕቲ ሕቶ ተልይዎን ምስቲ ዋና መፅናዕቲ ዘካይድ ሰብ ክራኽባ ይኽእላ እየን።

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የቐንየለይ

ክፍሊ ሓደ: ናይ ተሳተፍቲ ማሕበረ-ኢኮኖሚያዊ ዝምልከቱ ሕቶታት

ተ.ቁ	ሕቶ	መልስን መፍለይ ቁፅሪን	ዝለል ናብ
101	አድራሻ	------------	
102	ክንደይ ዕድመኺ? ብሙሉእ ዓመት	------------ዓመት	
103	ናይ ኣየናይ ብሔር ተኸታሊት ኢኺ?	1.ትግራይ 3.ኦሮሞ 2.አምሐራ 10.ካልእ(ይገለፅ) ----------------	
104	ናይ ኣየናይ ሃይማኖት ተኸታሊት ኢኺ?	1. ኦርቶዶክስ 2. ካቶሊክ 3. ሙስሊም 4.ፕሮቴስታንት 10. ካልእ(ይገለፅ) ----------------	
105	ደረጃ ትምህርቲኺ ክንደይ እዩ?	1.ምንባብ ምፅሓፍ ዘይትኽእል 2.ምንባብ ምፅሓፍ ዝትኽእል 3.ቐዳማይ ብርኪ ቤት ትምሀርቲ(1-8) 4.ካልአይ ብርኪ ቤት ትምሀርቲ(9-12) 5.ኮሌጅን ካብኡ ንላእሊ	

106	ኩነታት ስራሕኺ ይገለፀለይ?	1.ኣብ ገዛ ትውእል ስራሕ ዘይብላ 2.ናይ መንግስቲ ሰራሕተኛ 3.ናይ ዉልቀ ስራሕ ትሰርሕ 4.ተምሐሪት 5.መዓልታዊ ሰራሕተኛ 10. ካልእ(ይገለፅ) ----------------	
107	ኩነታት ሓዳርኪ?	1.በዓልቲሓዳር 2.ምንምአይተመርዓኹን 3.ዝተፈትሐት 4.ሰብኣያ ብህይወት ዘየለ 10. ካሊእ(ይገለፅ) -----------	መልሳ 2፣3፣4 እንድህር ኾይኑ ዝለል ናብ ሕቶ 110
108	ናይ በዓል ገዛኺ ትምህርቲ ደረጃ ይገለፀለይ?	1.ምንባብ ምፅሓፍ ዘይኽእል 2.ምንባብ ምፅሓፍ ዝኽእል 3.ቐዳማይ ብርኪ ቤት ትምሀርቲ(1-8) 4.ካልኣይ ብርኪ ቤት ትምሀርቲ(9-12) 5.ኮሌጅን ካብኡ ንላእሊ	
109	ናይ በዓል ገዛኺ ኩነታት ስራሕ ይገለፀለይ?	1.ናይ መንግስቲ ሰራሕተኛ 2.ናይ ዉልቀ ስራሕ ዝሰርሕ 3.ናይ ዉልቀ ትካል ዘለዎ 4.ተምሐሪ 5.መዓልታዊ ሰራሕተኛ 10.ካልእ(ይገለፅ) ----------------	
110	ናይ ስድራኺ ወርሓዊ እቶት ክንደይ እዩ?	1.ትሕቲ 600.00 ብር 2.600.00 - 1400.00 ብር 3.ልዕሊ 1400.00 ብር	

ክፍሊ ክልተ ፤ ምስ ጥንስን ወሊድ ዝተተሓዙ ሕቶታት

ተ.ቁ	ሕቶ	መልስን መፍለይ ቁፅሪን	ዝለል ናብ
201	ክንደይ ግዜ ነፍሰፅር ኾይንኺ ?	1.1 2.2-3 3.4-5 4.6+	

202	ብሕይወት ዘለዉ በዝሒ ክንደይ ቆልዑ ወልድኪ?	----------ቆልዑ	
203	ጥንሲ ምንፃል ገጢምክዶ ይፈልጥ?	1.እወ 2.የለን 88.መልሲ የብለይን	
204	ናብ ኽትትል ምርመራ ጥንሲ ክንደይ ግዜ መፅዒኺ ብተወሳኽዉን ምስ ናይ ሎሚ?	1.1 2.2 3.3 4.4ን ካብኡ ንላዕሊ	

ክፍሊ ሰለስተ፡ ኩነታት ክትትል ጥንሲ

301	እዚ ናይ ሓዚ ጥንሲ ኣብ ድልየት ዝተመስረተ ድዩ?	1.እወ 2.የለን	
302	እዚ ናይ ሓዚ ጥንሲ ምርመራ ዝጀመርክዮ ኣብ ክንደይ ወርህኽን እዩ?	________ ወርሒ	
303	ብመሰረት ሕቶ ቑፅሪ 302 መልስኽን ኣብቲ ዝተገለፀ እዋን ምርመራ ዝጀመርክናሉ ምኽንያት እንታይ እዩ?	1.ትኽክለኛ ግዜ ምኻኑ ስለዝተገንዘብኩ 2.ካብ ዝሐለፈ ልምዲ 3. ግዜ ስለዘይብለይ 4. ገንዘብ ስለዘይብለይ 5. ዘይተደለየ ጥንሲ ስለዝኾነ 10.ካልእ(ይገለፅ) ----------------	
304	ኣበይ ንምዉላድ ትደልይ? **ካብቶም መማረፅ ከይተንብብ ዝመለሰቶም ኽበብ**	1. ኣብ ጥዕና ትካል 2. ኣብ ገዛ 88. መልሲ የብለይን	

ክፍሊ ኣርባዕተ፡ ናይ ተሓታቲት ኩነታት ፍልጠት ኽትትል ምርመራ ጥንሲ ንምፍላጥ ዝተዳለወ ሕቶታት

401	ኣብ ክንደይ ወርሒ እዩ እቲ ፅቡቕ ግዝ ጥንሲ ምርመራ	1.ቅድሚ 4 ወርሒ 2.4-6 ወርሒ	

	ዝጅመረሉ ? **ካብቶም መማረፅ ከይተንብብ ዝመለሰቶ ኽበብ**	3.7-9 ወርሒ 4.ሕመም ክስመአካ **10.**ካልእ(ይገለፅ) ---------------- **88.**መልሲ የብለይን	
402	አብ ግዜጥንሲ ሐንቲ ነብሰፅር እስካብ ትወልድ ኽንደይ ግዜ ኽትትል ምርመራ ጥንሲ ክትገብር አለዋ? **ካብቶም መማረፅ ከይተንብብ ዝመለሰቶ ኽበብ**	**1.**1 ግዜ 2.2 ግዜ 3.3 ግዜ 4.4 ግዜ 5.ካብ 4 ግዜ ንላዕሊ **10.**ካልእ(ይገለፅ) -------------- **11.**መልሲ የብለይን	
403	ጥቕሚ ኽትትል ምርመራ ጥንሲ እንታይ እዩ? **ካብቶም መማረፅ ከይተንብብ ዝመለሰቶ ኽበብ**	1.ንአዶ ጥዕና 2.ንቆልዑ ጥዕና 3.ንኽልተኦም **10.**ካልእ(ይገለፅ) -------------- **88.**መልሲ የብለይን	
404	ናይ መጀመርታ ኽትትል ምርመራ ጥንሲ ዝጀመርክዮ ድህሪ 16ተ ሰሙን ድዮ ነይሩ?	**1.**እወ **2.**የለን	መልሳ የለን ኮይኑ ሕቶ 406
405	እንድሕር ሕቶ 404 መልስኺ እወ ኾይኑ እንታይ እዮ እቲ ምኽንያት ቕድሚ 16ተ ሰሙን ዘይጀመርኪ? **ካብቶም መማረፅ ከይተንብብ ዝመለሰቶም ኽበብ**	1.ጥቕሚ ቐዲምካ ምምፃእ ፍልጠት ስለዘይብለይ 2.አብ ፅቡቕ ጥዕና ስለዝነበርኩ 3.ግዜ ስለዘይብለይ 4.እቲ ትካል ጥዕና ርሕቐት ስለዘለዎ 5.ኽፍሊት ስለዝበዝሐ 6.አብ ትካል ጥዕና ብዙህ ስዓት ስለዘፅብዮ 7.ብዓል ገዛይ ስለዘይፈቐደለይ 8.ጥዕና ሰብ ሞያ አብ ዝሐለፈ ግዜ	

		ብደምቢ ስለዘየታአናግዱ 9.ቐልጢፍካ ምምፃእ ጥቕሚ ስለዘይብሉ **10.**ካልእ(ይገለፅ) --------------	
406	ሐደገኛ ምልክታት ሕማም ጥንሲ ትፈልጢ ዶ?	**1.**እወ **2.**የለን	*መልሳ የለን* ሕቶ 401
407	እንድሕር ሕቶ 307 መልስኺ እወ ኾይኑ እንታይ እዮም? እቶም ምልክታት **ካብቶም መማረፅ ከይተንብብ ዝመለሰቶም ኽበብ**	**1.**ብዙሕ ግዚ ንዓቐብ ምቫል 2. ብዙሕ ግዚ ርእስኻ ምሕማም 3. ገፅኻን እግርኻ ምሕባጥ 4. ካብ ብልዕቲ ኽባቢ ደም ምፍሳስ 5. ብጣዕሚ ድኻም ይስመዓኒ 6. ምንቕስቓስ ቐልዓ ጠጠው ምባል 10. ካልእ(ይገለፅ) --------------	

ክፍሊ 5፡ ምስ ጥንሲ ዝተትሓዘ ናይ ጥዕና ፀገማትን ግንዛቢ ንምፍላጥ ዝተዳለወ መጠይቕ

501	አብ ዝሓለፈ ኽትትል ምርመራ ጥንሲ ትከታተሊ ዶ ነይርኺ?	**1.**እወ **10.** ካልእ(ይገለፅ) ------- **2.**የለን	
502	አብ ዝሐለፈ ጥንሲ ሕማም ገጢምኪ ዶ ነይሩ?	**1.**እወ **2.**የለን **88.**መልሲ የብለይን	እንድህር መልሳ 2 ወይ 88 ኮይኑ ሕቶ 504
503	እንድሕር **ሕቶ 502** መልስኺ እወ ኾይኑ እንታይ እዮም ምልክታት ሕማም ዝስመአኺ ዝነበሩ? **ካብቶም መማረፅ ከይተንብብ ዝመለሰቶም ኽበብ**	**1.**ተደጋጋሚ ተምላስ 2.ብሩትእ ርእሲ ሕማም 3. ገፅኻን እግርኻ ምሕባጥ 4. ካብ ብልዕቲ ኽባቢ ደም ምፍሳስ 5. ስሚኢት ድኻም ምህላዉ 6. ናይ እሸል ምንቕስቓስ ጠጠዉ ምባል 10. ካልእ(ይገለፅ) --------------	
504	ቅድሚ ናብ ምርመራ ምምፃእኺ	**1.**እወ	እንድህር መልሳ

Key words: Antenatal care, Late booking, Gestational age, Risk factors

	አብ ናይ ሐዚ ጥንሲ ሕማም ገጢምክ ዶ ነይሩ?	2.የለን	የለን ኮይኑ ዝለል 506
505	እንድሕር ሕቶ 504 መልስኺ እወ ኾይኑ ዝተሰመኣኪ ሕማም እንታይ እዮም? **ካብቶም መማረፂ ከይተንብብ ዝመለሰቶም ኽበብ**	1. ተደጋጋሚ ተምላስ 2. ብሩትእ ርእሲ ሕማም 3. ገፅኻን እግሪ ምሕባጥ 4. ካብ ብልፅቲ ኽባቢ ደም ምፍሳስ 5. ስሚኢት ድኻም ምህላዉ 6. ናይ እሽል ምንቕስቓስ ጠጠዉ ምባል 7.ካልእ(ይገለፅ) --------------	
506	ብዓል ገዛኺ ወይ ኣርክኺ ምስ ጥንሲ ዝተትሐዘ ዘጋጠመኪ ሕማም ይግደስ ዶ?	1.እወ 2.የለን	

ክፍሊ ሽድሽተ፤ምስ ቕድመ ወሊድ ናይ ጥዕና ምርመራ አገልግሎት አብ ምርካብ ዘሎ ርሕቐትን ናይ ትራንስፖርት ኽፍሊት ንምፍላጥ ዝተዳለዎ መጠይቕ

ተ.ቑ	ሕቶ	መልስን መፍለዪ ቁፅሪን	ዝለል ናብ
601	ኽትትል ምርመራ ጥንሲ ኣብቲ መፅእሉ ግዜ ሙልእ አገልግሎት ትረኽቢ ዶ?	1.እወ 2.የለን 88.መልሲ የብለይን	
602	ርሕቐት ጥዕና ትካል ካብ ገዛኺ ክንደይ ይወስድ?	--------- ደቒቓ/ስዓት	
603	ናብዚ ጥዕና ትካል ንምምፃእን ንምምላስ ዝኸፈልኦ ናይ ገንዘብ መጠን?	1.ምንም አይከፈልኩን 2.ዝኸፈላ እንተኾይነን______ ቕርሺ	
604	ኣብ ጥዕና ትካል ንክትትል ጥንሲ ምርመራ ዝወሰደኪ ደቒቓ/ስዓት ክንደይ እዩ?	1.< 2 ስዓት 2. 2-3 ስዓት 3. > 4 ስዓት	
605	ብ ጥዕና ሰብ ሞያ ዝዉሃብ ኣገልግሎት ብኸመይ ይገልፅኦ?	1.ፅቡቕ 2. ፅቡቕ ኣይኮነይ	

606	ንተመሳሳሊ ኣገልግሎት ናብዚ ጥዕና ትካል ይምለሳ ዶ?	1እወ 2. ኣይምለስን 88. ኣይፈለጥኩን	
607	ንክትትል ጥንሲ ምርመራ ክፍሊት ትጥየቒዶ?	1.እወ 2.የለን	እንድህር መልሳ የለን ኮይኑ ዝለል 610
608	እወ እንድህር ኮይኑ ንሕቶ 607 ንኣየኖት ግልጋሎት እዮ ክፍሊት ዝህተታ?	1.ንምርመራ 2.ን ላብራቶሪ 3.ኣልተራሳዉንድ 4.ንመድሓኒት 5.ን ካልዕ(ይገለፅ)	
609	ዝኸፈልክንኦ ገንዘብ ብኸመይ ይገልፅኦ?	1.ፅገም የብሉይ 2.ማዕኸላይ 3. ኣብይ ፅገም እዩ	
610	አቀራርባ ጥዕና ሰብ ሙያ ብከመይ ይገልፅኦ?	1.ፅቡ`ቕ 2. ፅቡ`ቕ ኣይኮነይ	

ናይ ትዕዝብቲ መከታተሊ ቅጥዒ

.1	ናይ ትዕዝብቲ መከታተሊ	ን`ቅድመ ወሊድ ዘድልዮ አቑህት ምህላዎም መረጋገፂትዕዝብቲ			
		መቐለ	መቐለ	ሰሜን	ካሰሸ

		ሆስፒታል	ጥዕናጣቢ ያ	ጥዕናጣቢያ	ጥዕና ጣቢያ
1	ንቕድመ ወሊድ ክትትል ጥንሲ ዘድልዮ አቑሁት አሎዶ?				
	ወንበርን ጠረጴዛ				
	መዳመሂ እሽል				
	ሚዛን				
	ሜትር				
	መዳመሂ				
	መእቀኒ ፀቕጢ ደም				
2	ንቕድመ ወሊድ ክትትል ጥንሲ ዘድልዮ ኩሎም ናይ ላብራቶሪ ምርመራ አሎዶ?				
	ዓይነት ደም መመርመሪ				
	አር ኤች ምርመራ				
	ሄሞግሎቢን ምርመራ				
	ቪዲአርኤል ምርመራ				
	ኤችአይቪ ምርመራ				
3	ካብ ወሊድ ክትትል ጥንሲ ዝርከብ ሐበሬታ ብትክክል አብ መዝገብ ይሰፍር ዶ?				
4	ቅድሚ ምርመራ መእታወን መእረፊ ክፍሊ አሎዶ?				
5	ንቕድመ ወሊድ ክትትል ጥንሲ መአዝ ከምትመፅእ ይዝረበኪ ዶ				
6	አድላይ ዘበለ ናይ ጥዕና ሐበሬታ ክትትል ይዝረባዶ?				

ANNEX-III

LETTERS DECLARATION

I, the undersigned, declared that this is my orginal work, has never been presented in this or any other

University, and that all the resources and materials used for the thesis, have been fully acknowledged.

Name : **Daniel Haileselassie**

Signature_______________

Place : Addis Ababa, Ethiopia

Date of submission : June 2010

This thesis has been submitted for examination with my approval as university advisor.

Name : **Fikre Enqueselassie (Phd)**

Signature :____________________

Key words: Antenatal care, Late booking, Gestational age, Risk factors