

**FACTORS ASSOCIATED WITH EARLY VERSUS LATE ATTENDANCE OF
PREGNANT WOMEN TO THE ANTENATAL CLINIC IN MEDINA
HOSPITAL,MOGADISHU. (A COMPARATIVE CROSS-SECTIONAL STUDY:)**

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DECLARATION

I declare that this dissertation is my original work compiled with the guidance of my supervisors, and that to the best of my knowledge has not been submitted for degree in any other university or published elsewhere. Where reference was made from other sources, published or otherwise, that source has been duly cited.

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DEDICATION

To my parents for their unconditional love, support and encouragement and my daughter who is the comfort of my eyes. Special thanks to my mother without her support, the meaning of my accomplishment would diminish.

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DEFINITION OF OPERATIONAL TERMS

Antenatal care: is care given to pregnant mothers to timely identify and mitigate pregnancy related problems that can harm the mother or fetus.

Early ANC attendance: pregnant mothers who started ANC visits \leq 12 weeks

Late ANC attendance: pregnant mothers who started ANC visits $>$ 12 weeks.

LIST OF ABBREVIATIONS AND ACRONYMS

ANC	–	Antenatal Care
CI	–	Confidence Interval
KNH	–	Kenyatta National Hospital
MDG	–	Millennium Development Goal
NGO	–	National Governmental Organization
NICE	–	National Institute for Health Care Excellence
SDG	–	Sustainable Development Goals
SPSS	–	Statistical Package for Social Software
UNICEF	–	United Nations Children’s Fund
UON	–	University of Nairobi
WHO	–	World Health Organization

ABSTRACT

Introduction: Antenatal care as defined by WHO is care provided by skilled health-care professionals to pregnant women and adolescent girls in order to ensure the best health conditions for both the mother and baby during pregnancy.

Globally during the period 2007-2014 only 64% of pregnant women attended WHO recommended minimum four contacts for ANC, suggesting more needs to be done to address ANC utilization and quality. A number of studies have demonstrated the association between antenatal care attendance and reduction of premature birth, low birth weight, congenital malformations, congenital infections, neonatal tetanus, pre-eclampsia and anemia. So far no conclusive data was found on antenatal care in Somalia as a whole. Some surveys were done by NGOs but face conflict issues in the country. This study seeks to identify factors associated with ANC attendance in both groups, the early versus the late attendees.

Broad Objectives: To determine the prevalence of early vs late attendance of ANC and compare the factors associated with them at Medina hospital, Somalia

Methodology: This is a comparative cross-sectional study conducted among early versus late ANC attendees. The study was conducted at Medina hospital, Somalia. The study population targeted 247 women who attended the antenatal clinic. Participants were assured of privacy and confidentiality.

Data management & analysis: Structured questionnaire was used to collect data. Data was analyzed using IBM statistic SPSS version 23. Descriptive analysis was used to present socio-demographic characteristic of women attending the clinic. Continuous data analyzed by use of mean & standard deviation. Categorical data analyzed and displayed by use of frequencies and proportions. Adjusted odds ratio (OR) and 95%CI was used to quantify association. Statistical significance of association between variables was tested by the use of fisher's or chi square with a p value<0.05 considered to be significant. T-test was used to determine whether continuous data were significantly associated with late attendance.

Results: Out of the 247 women, 149 women attended ANC early (≤ 12 weeks) and 98 women attended ANC late (> 12 weeks). The patient's age ranged from 16 years to 46 years with mean age 28.4 ± 7.17 years. Various sociodemographic characteristics were significantly associated

with late antenatal care attendance Maternal age ≥ 26 years ($p < 0.001$), higher number of residents in the household ($p < 0.001$), distance > 5 km from the nearest health facility ($p < 0.022$) and lack of easy access to antenatal care service ($p < 0.003$) were associated with late attendance. Multiparity was also strongly associated with late attendance (OR=7.51; 95% CI 3.07-18.4; P-value < 0.002). On the contrary, urban residence (OR 3.26, 95% CI 1.33 – 0.82, $p < 0.001$) and higher educational attainment (OR 0.40, 95% CI 0.23-0.67, $p < 0.001$) were associated with early attendance

Conclusion: This study found that three fifths of antenatal clients in Somalia sought antenatal care in the first trimester. Higher educational attainment and lower maternal age were associated with early attendance while the opposite was associated with late attendance.

1.0 INTRODUCTION AND LITERATURE REVIEW

1.1 Introduction

Antenatal care is care provided to mothers who are pregnant by health care professionals. It includes screening and health promotion, as well as disease diagnosis and prevention [1] [2]. Since the beginning of the SDG's, pregnancy related mortality and morbidity has remained high and for this reason WHO released new ANC recommendations 2016 to complement the existing guideline so as to reduce the pregnancy related complications and give women a positive pregnancy experience [3].

Studies done show that leading causes of death among women of reproductive age in developing countries are complications related to pregnancy and childbirth [4] [5]. Approximately 287,000 women die of pregnancy related complications, 99% of these deaths occur in the developing world [6]. The newest guidelines from WHO recommend that women have at least 8 contact visits with the health care provider as early as 12 weeks.

In order to deliver interventions which promote the health of mother and child it is important to have high ANC attendance of the population [2]. Positive pregnancy is sustaining a normal physical characteristics both social and cultural factors; promoting good maternal and neonatal health; and achieving an overall positive labour and motherhood [1]. Despite calls to improve attendance of pregnant women at antenatal clinic, strategies applied to deliver various interventions within the health context and community based is not yet clear.

Most deaths that occur among mothers and children are preventable [7]. ANC is one of the key strategies for reducing maternal and neonatal morbidity and mortality directly through detection and treatment of pregnancy related illness, or indirectly through detection of women at risk of complications of delivery and ensuring that they deliver in a suitably equipped facility [8]. Studies have demonstrated the association between antenatal care attendance and reduction of premature birth, low birth weight, congenital malformations, congenital infections, neonatal tetanus, pre-eclampsia and anaemia [9].

The horn of Africa has a high number of infant deaths when compared to the rest [10] [11]. With the neonatal mortality estimated to be 41-49 per 1000 [12] [13]. Globally under 5 mortality rate dropped to 39 deaths per 1000 live births in 2017 from 93 in 1990- a 58 percent decline [13]. In addition, more than half of women who are pregnant in Somalia have their first antenatal care attendance late despite the importance for an early attendance, though exact figures do not exist. According to the National Institute for Health Care Excellence (NICE) defines late booking as booking after 13 weeks and 6 days [14]. Booking in the first trimester of pregnancy is essential for early detection and prevention of complications during pregnancy [15]. Such practice will ensure safe delivery for the mother and child [16].

A detailed study of factors associated with early versus late attendance at antenatal clinic with a view to identifying possible interventions within the available resources is essential.

2.0 Literature Review

2.1 Background

A qualitative study done 2013 across 3 sub Saharan African countries(Ghana, Kenya, Malawi) showed that women attended at least one antenatal clinic and often after the first trimester [17]. The study also showed that there were different results within the region of sub Saharan Africa when it came to timing of ANC initiation. For example, 11% of women started ANC in the first trimester in Ethiopia (2011), 16% in Nigeria (2008), 47% in Congo (2005), and 55% in Ghana (2008) [17].

Poor women in developing countries face a greater obstetric risk due to low nutrition, limited education and low literacy. Poverty therefore is associated with lack of attendance of ANC [18].

A meta-analysis study done in Ethiopia, showed the maternal mortality ratio at 353 per thousand live births in 2015. With such high figures early initiation of ANC in a timely manner enhances maternal health and reduces complications related to pregnancy and childbirth [19].

Studies have shown that delaying ANC has been associated with multi-parity, low social economic status, no formal education, unwanted pregnancies and status of marriage [20].

It is of paramount importance to gain access to ANC since it promotes mother and child's health. Study shows that among expectant mothers likely to attend 1 ANC visit, the percentage increased from 64% in 1990 to 81% in 2009. Although attendance has improved little is known of the quality of care they receive [21].

A cohort study on under attending of ANC done in Finland between 1985 and 2001 showed that under attending was associated with social and health behavioral risk factors such as unmarried status, lower educational level, smoking and alcohol use [22].

In sub Saharan Africa studies have found that in the period of 1990 to 2015 there was a decline of maternal death by 2.3%. Barriers to seeking better maternal health care should be identified and addressed so as to reduce maternal mortality. Such barriers include poverty, lack of information, distance, inadequate service and cultural practices [6].

SDG 3 targets to reduce maternal deaths by 70 per 100,000 live births by the year 2030 [3]. A Cochrane review of antenatal care showed reduced antenatal visits was associated with increase in perinatal mortality while the still births reduced in women who frequently attended antenatal care [23].

2.2 Previous Studies on Early and Late ANC – Africa Region

A cross sectional survey conducted in South Africa found that a higher proportion of urban women attended ANC late as compared to rural women, the study further established that in urban areas, high socio-economic status, previous miscarriage, private sector utilization, desire to be pregnant and having a partner who was employed were significantly protective of late ANC attendance [25]

A study in South Africa examined association of psychosocial factors with early vs late initiation and frequency of ANC. Analysis was done using household survey which concluded that approximately <50% initiated antenatal care before sixteen weeks gestational period. Practices related to psycho-social factors such as religion and cultural beliefs were a major determinant in late ANC initiation [26]

A study in Nigeria on predictors of late ANC found overall 27%, 62% and 12% of women initiated antenatal care in the first, second and third trimester respectively. Some of the sociodemographic factors were found to be significant predictors of late antenatal visits were maternal education, level of media exposure and place of residence [24]

A demographic health survey in Zambia studied the factors associated with late ANC booking. Information on socio-demographic, social-economic, obstetrical characteristics and timing of the first antenatal visit were extracted on all women aged 15 to 49 years. It was found that increased prevalence of late antenatal care booking was due to presence of unwanted or unplanned pregnancies especially in women younger than 20 years [25]

A study in Zambia determined variables correlated to late ANC. A total number of 613 women attending antenatal clinic were distributed evenly. This study established that proportion of late antenatal care was 72% percent. This high prevalence indicates the need for intensified and more

focused utilization of resources aimed at increasing sensitization of the importance of early attendance for high risk groups [26]

Study in Ethiopia determined variables associated with late ANC and these included low income, low level of education, and lack of advice from health workers among others. [27]

A study in southern Ethiopia [28] assessed factors for ANC initiation. Out of 608 women, 132 [21.71%] had 1st contact within first trimester. Media access, knowledge about the correct time of ANC booking, and having been advised to book within 12 weeks were determinants of first-trimester booking. Health professionals and care providers should provide full information, advice, and appropriate care about early ANC for every mother.

Study in Rwanda assessed the predictors of delayed antenatal care visits. Several factors were found to be significantly associated to delayed antenatal care including distance, unwanted pregnancy, and number of children [29].

A study in Kigali assessed social and behavioral factors that affect timely initiation of antenatal care these included: poverty, culture, marital problems, previous experience, among other barriers [30].

3.0 JUSTIFICATION

The care that is given to the woman during pregnancy, delivery, and postpartum is important for the wellbeing of the mother and the child. All pregnant women are recommended to go for their first antenatal check-up in the first trimester to identify and manage any medical complication as well as to screen them for any risk factors that may affect the progress and outcome of their pregnancy [31]. The first visit which is expected to screen and treat anemia and syphilis, screen for risk factors and medical conditions that can be best dealt with in early pregnancy, and initiate prophylaxis if required (e.g., for anemia and malaria) is recommended to be held by the end of fourth month [32]. ANC helps to ensure the well-being of the mother and fetus through early detection of risks in pregnancy, prevention of pregnancy, and labor complications and ensures the safe delivery of mother and child [33] [34].

In Somalia not much has been done on the field of maternal health care due to the civil war that destroyed much data that was archived by government and since then the governmental structure is reviving with the ministry of health getting to start new researches. So far no local data was found on antenatal care in Somalia as a whole.

This study will document the prevalence and factors associated with early versus late attendance of antenatal care and highlight the needs and gaps in achieving a better outcome. It will also help in designing interventions that will improve early attendance and impact on maternal mortality. In addition, investigating the knowledge of reproductive health, cultural beliefs and accessibility of health centers will help in formulating policies that promote early antenatal attendance. Further, the outcome of this study will help the ministry of health and policy makers to formulate policies that empower women and provide better health care for pregnant women regardless of their socio economic status.

4.0 RESEARCH QUESTION

1. What is the prevalence and factors associated with early versus late attendance at ANC in Medina hospital, Mogadishu?

5.0 OBJECTIVES

5.1 Broad Objective

To establish prevalence and factors associated with early versus late attendance of ANC among pregnant women in Medina Hospital, Mogadishu.

5.2 Specific Objectives

1. To determine the prevalence of early versus late attendance of ANC among pregnant mothers.
2. To determine socio-demographic and cultural factors associated with early versus late attendance of ANC among pregnant mothers.
3. To determine obstetric characteristics associated with early versus late attendance of ANC among pregnant mothers.

6.0 CONCEPTUAL FRAMEWORK

6.1 Narrative

Antenatal care is a very important component of maternal health. It is care given to a pregnant mother in order to achieve a positive pregnancy outcome. Focus has shifted to providing quality care so as to get a healthy mother and baby.

Early attendance at the antenatal clinic by pregnant women has been shown to be associated with reduced still births and also early detection and treatment of maternal complications.

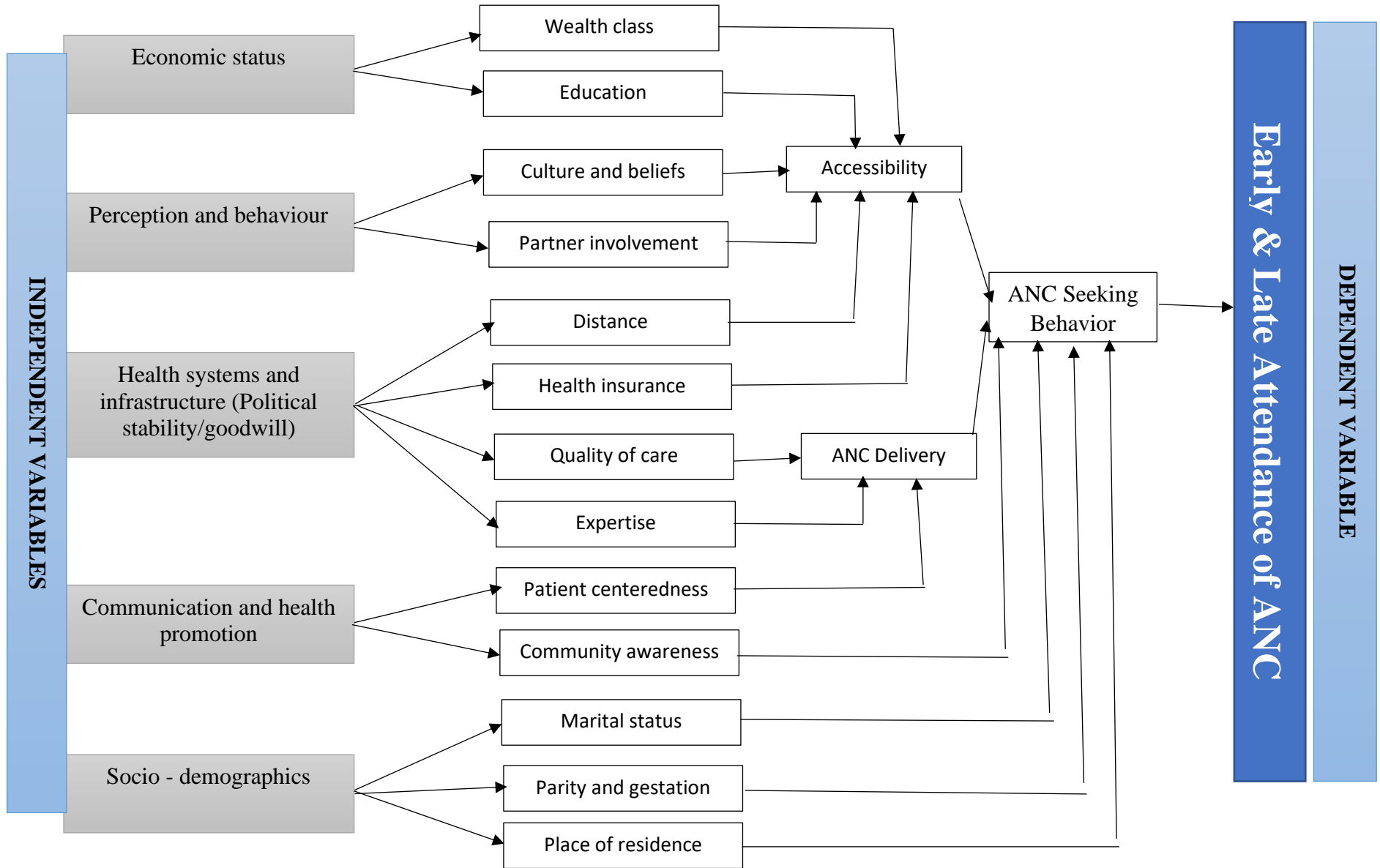
Early initiation of antenatal care is influenced by factors such as marital status, distance to health facility, education of the mother, level of decision making among others. There are several contributing factors each unique to cultural practices and geographical location. Delayed initiation of antenatal care leads to poor maternal and fetal outcome.

To prevent maternal morbidity and mortality there must be political stability and goodwill to create more resources and design better interventions.

Dependent Variable (DV) of the study is early versus late attendance of ANC among pregnant women.

Independent Variables (IV) of the study are socio-demographic and cultural factors, and obstetric characteristics. These include: wealth class, education, culture and beliefs, partner involvement, distance, health insurance, quality of care, expertise, patient centeredness, community awareness, marital status, parity and gestation, and place of residence.

6.2 Schematic Conceptual Framework



7.0 STUDY METHODOLOGY

7.1 Study Design

This is a comparative cross-sectional study conducted among early versus late ANC attendees. This study design is used to determine the prevailing characteristics in a population at a certain point in time. For instance, this study design was used to determine if exposure to socio-demographic and cultural factors and obstetric characteristics might correlate with early or late ANC attendees.

7.2 Study Site and Setting

Mogadishu is the capital and most populated city of Somalia. Located in the coastal Banaadir region on the Indian Ocean. It has a population of around 2,425,000 residents as of April 2017. It is the 210th largest city in the world by population size. The urban area occupies 91 square kilometers (35 sq. mi), with a population density of around 26,800 inhabitants per square kilometer (69,000/sq. mi) [35].

This study was conducted at Medina hospital Mogadishu, Somalia. Medina Hospital is one of Mogadishu's major public hospitals and is located in Wadjir (Medina) district in the western side of Mogadishu. It serves as a referral and teaching hospital and has a bed capacity of 1000, with 50 maternity beds, and operates two theatres. The hospital conducts approximately 200 deliveries per month and 20-25 patients are seen at the antenatal clinic. In its outpatient maternal and reproductive health department the hospital offers antenatal care services, postnatal services and family planning. The department is staffed by nurse midwives who routinely attend ANC clients but an obstetrician is available to review the patients.

7.3 Study Population

The study population comprised consenting gravidae seeking antenatal care at the Medina hospital from December 2018 to February 2019. With a subgroup analysis done for early attendees (≤ 12 weeks) and late attendees (>12 weeks)

7.3.1 Inclusion Criteria

All pregnant women who attended Medina Hospital for antenatal care who consented to participate in the study.

7.3.2 Exclusion Criteria

Pregnant mothers at Medina Hospital for ANC who did not consent.

7.4 Sample Size and Sampling Procedure

7.4.1 Sample Size

The sample size was determined using Fishers formula for cross sectional studies(Cochran).

$$n = \frac{Z_{\alpha}^2 p(1 - p)}{d^2}$$

$Z_{\alpha} = 1.96$, representing critical value for normal distribution at 95% level of confidence

p = percentage of pregnant mothers initiating ANC visits early. UNICEF estimates from 2015 indicate that Somalia is in the group of countries with lowest (< 20%) coverage of recommended amount of care during pregnancy [36].

d = the precision or margin of error will be taken to be 0.05

$$n = \frac{1.96^2 0.2(1 - 0.2)}{0.05^2}$$

Therefore, $n = 246$

7.4.2 Sampling Procedure

Consecutive sampling techniques were appropriate for the selection of mothers during the study period. It was particularly useful to obtain these groups who might be difficult to locate using more conventional means of sampling. The study targeted 246 women (see sample size above) who met the inclusion criteria. Those who consented to participate in the study were assured of privacy and confidentiality.

7.5 Data Variables

Objective	Exposure variables	Outcome variables
Differences in socio demographic and socio economic characteristic	<i>Age</i> <i>Marital status</i> <i>Employment</i> <i>Household dependent</i> <i>Income</i>	<i>Pregnant women attending antenatal care</i>
Knowledge and cultural practices towards ANC	<i>Beliefs</i> <i>Home deliveries</i> <i>Decision making</i>	

7.6 Data Collection and Management

The questionnaire used in the data collection was derived from related questions used in similar studies randomised for the setting in Mogadishu, Somalia. The questionnaire was pretested on 5% of the total sample size in the ANC clinic at Medina hospital Mogadishu, Somalia. The questionnaire was then assessed for its clarity and completeness. Some skip patterns were corrected, questions difficult to ask were rephrased and the consent form modified.

Data was collected by the principal investigator and trained research assistants working under direct supervision of the investigator. Four reproductive health nurses working at ANC clinic at the health institution administered the questionnaire. Each questionnaire was inspected for completeness at the end of the interview. The respondents were probed to complete the missing information. The completed questionnaires were entered into a customized database designed in

MS Access. The database contained data validation checks for reduced data entry errors and ensured that invalid or out-of-range values were identified and verified.

After data entry, data was transferred to IBM Statistics SPSS software for data cleaning and analysis. During data cleaning each variable in the database was inspected using frequency distributions to identify any invalid or inconsistent entries and numeric data inspected for outliers. Any values picked up as invalid, inconsistent or outlying were verified in the original questionnaire and cleaned for errors.

The database containing the electronic data was password protected with restricted access. Only members of the data entry and analysis team had access to the electronic data. The questionnaires were stored in a secure cabinet under the custody of the principal investigator and analysis of the data was done.

7.7 Data Analysis

Data was analyzed using IBM Statistics SPSS version 23. Descriptive analysis of sample characteristics including socio demographic attributes were conducted depending on the type of variables used to collect the attribute. For continuous data e.g. age mean (SD) was calculated and for categorical data e.g. parity and number of ANC visits counts and percentages for each category of the variable was calculated and presented using frequency tables, or charts. The dependent variable was late attendance determined by calculating the percentage of pregnant mothers who presented late for ANC services.

Cross tabulations of the variable for late ANC attendance against sociodemographic factors was used to identify the sociodemographic factors associated with late ANC attendance. Chi square or Fisher's exact test was used to test for statistical significance of associations between categorical variables and late attendance with the T-test used to determine whether continuous data was significantly associated with late attendance.

Odds Ratios and 95% CI from the logistic regression model were presented to show the direction and magnitude of association between late attendance and patient characteristics. All statistical testing was based on an alpha level of 0.05.

7.8 Study Limitations

One the significant limitation of this study was selection and information biases. Similarly given the cross-sectional nature of this study, it was not possible to correlate the antenatal clinic attendance to obstetric outcome. Some of the limitations of a cross-sectional study include the representative sample where certain groups were not captured hence creating selection bias. This study is also unable to measure the incidence of ANC attendance among the studied population.

In Somalia due to cultural or religious views patients might have withheld some information regarding marital status. To overcome this issue, the data collectors were trained on effective interviewing techniques, participants were interviewed privately and female chaperons were available during interviews in case participants requested for them.

7.9 Ethical Consideration

Prior to conducting the study ethical clearance was obtained from the KNH/ UON Scientific and Ethical Review committee and Ministry of Health, Somalia(MOH&HS/DGO/0922/Dec/2018). In addition to obtaining ethical clearance the study applied the ethical principles of autonomy, beneficence and justice.

Autonomy

Participation in the study was voluntary. All participants retained the right to determine what research activities they participated voluntary in and they also were free to withdraw from the study at any time without any adverse impact on the services that they received at the facility. Prior to recruitment written informed consent was obtained from each participant. Information on the study was provided to potential participants, any clarification sought by the participants was provided and they signed indicating that their participation in the study was voluntary.

Beneficence

The investigators strived to maximize the benefits of participation to the participants while minimizing the risks or harms. While there was no direct benefit to individual participants in the study, the data from this study will help in informing the hospital and policy makers on the timing

of ANC initiation and factors that hinder or promote early attendance at Medina Hospital. Such information can be used to improve the experience and outcomes of ANC services in Somali. They were no conceivable direct risks or harm that could arise from participation in the study.

Justice

The participants of the study who undertook the burden of research benefited by getting health education on antenatal care and potentially benefited from the results because the findings of the results were relevant and likely to be implemented to the unique setting of ANC services in Somalia.

8.0 RESULTS

A total of 247 women who consented to participate in the study were enrolled after excluding 11 women who had missing data.

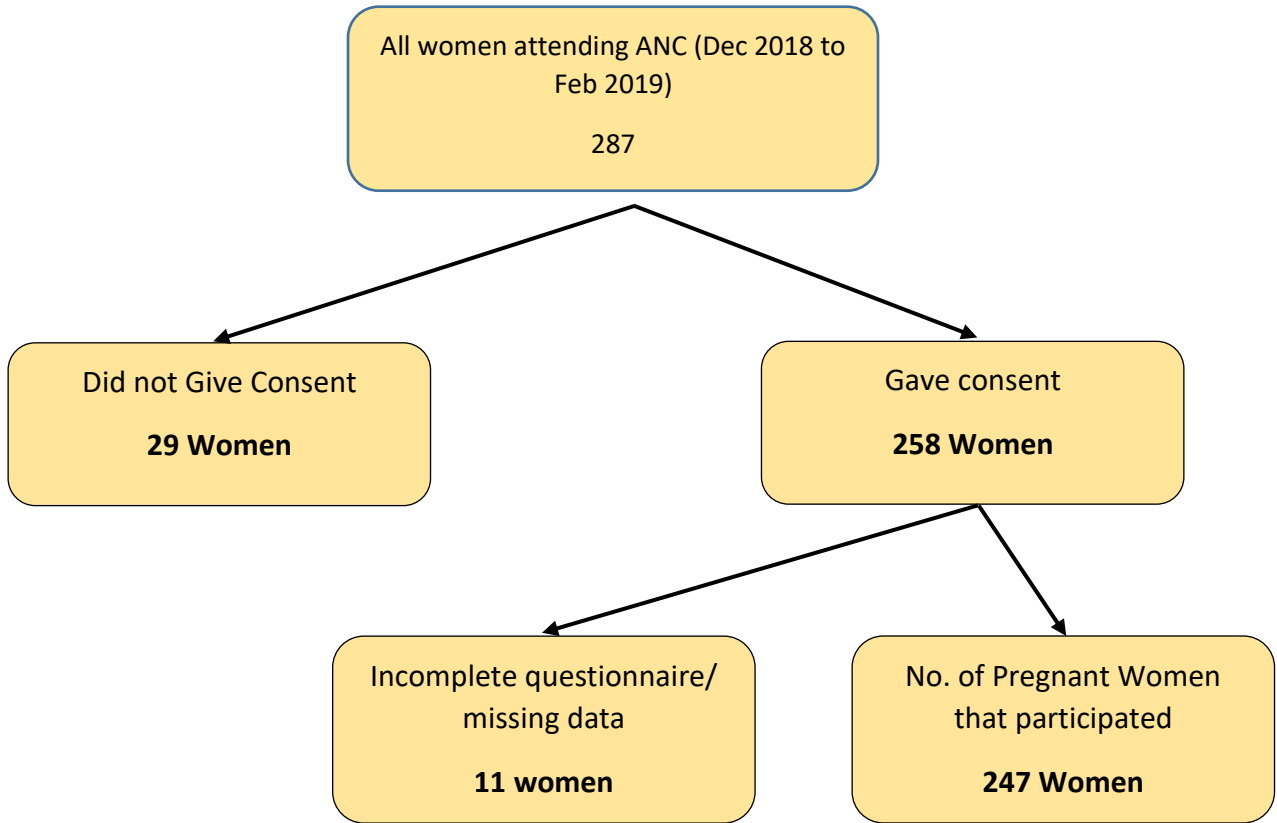


Figure 1: Flow chart of recruitment of study participants

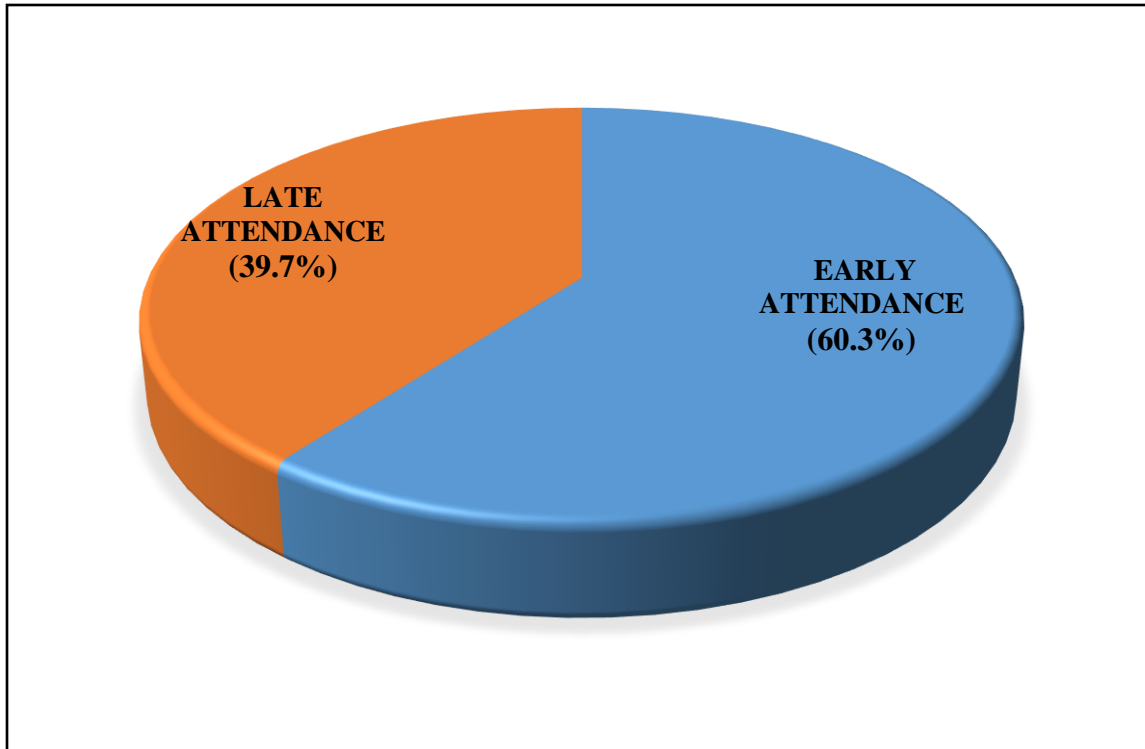


Figure 2: Prevalence of early versus late attendance of ANC among women at Medina Hospital, Mogadishu from December 2018 to February 2019

Out of the 247 women, 149 women attended ANC early (≤ 12 weeks) and 98 women attended ANC late (> 12 weeks).

Table 1: Sociodemographic characteristics of pregnant women attending ANC at Medina Hospital, Mogadishu from December 2018 to February 2019

	Category	Attendance of ANC		Total
		Early	Late	
Maternal age (in years)	16-25	69 (46.3%)	25 (25.5%)	94 (38.1%)
	≥26	80 (53.7%)	73 (74.5%)	153 (61.9%)
Marital status	Married	131 (87.9%)	81 (82.7%)	212 (85.8%)
	Widowed	6 (4.0%)	9 (9.2%)	15 (6.1%)
	Divorced	12 (8.1%)	8 (8.2%)	20 (8.1%)
Residence	Urban	141 (94.6%)	81 (84.4%)	222 (90.6%)
	Rural	8 (5.4%)	15 (15.6%)	23 (9.4%)
Educational attainment	No formal education	38 (25.5%)	45 (45.9%)	83 (33.6%)
	Madrassa	16 (10.7%)	19 (19.4%)	35 (14.2%)
	Primary	13 (8.7%)	2 (2.0%)	15 (6.1%)
	Secondary	28 (18.8%)	12 (12.2%)	40 (16.2%)
	College/University	54 (36.2%)	20 (20.4%)	74 (30.0%)
Employment status	Unemployed	79 (53.0%)	47 (48.0%)	126 (51.0%)
	Employed	70 (47.0%)	51 (52.0%)	121 (49.0%)
Spouse employment status	Unemployed	138 (92.5%)	82 (88.2%)	218 (90.8%)
	Employed	11 (7.5%)	11 (11.8%)	22 (9.2%)
Spouse educational attainment	No formal education	36 (24.5%)	26 (28.0%)	62 (25.8%)
	Madrassa	6 (4.1%)	5 (5.4%)	11 (4.6%)
	Primary	2 (1.4%)	2 (2.2%)	4 (1.7%)
	Secondary	22 (15.0%)	20 (21.5%)	42 (17.5%)
	College/University	81 (55.1%)	40 (43.0%)	121 (50.4%)
No. of people in the house	1	2 (1.3%)	0 (0.0%)	2 (0.8%)
	2	47 (31.5%)	9 (9.2%)	56 (22.7%)
	3	36 (24.2%)	20 (20.4%)	56 (22.7%)
	4	36 (24.2%)	28 (28.6%)	64 (25.9%)
	≥5	28 (18.8%)	41 (41.8%)	69 (27.9%)
Total monthly income (in USD)	0	0 (0.0%)	2 (2.0%)	2 (0.8%)
	100	16 (10.7%)	10 (10.2%)	26 (10.5%)
	200	71 (47.7%)	40 (40.8%)	111 (44.9%)
	≥300	62 (41.6%)	46 (46.9%)	108 (43.7%)

The women attending ANC for the period of study age ranged from 16 years to 46 years with mean age 28.4 ± 7.17 years.

Table 2: Socio-demographic factors associated with early versus late attendance of ANC among pregnant women at Medina Hospital, Mogadishu from December 2018 to February 2019

Variable	Category	Attendance of ANC		Odd ratio (95% CI)	P Value
		Early	Late		
Maternal age (in years)	16-25	69 (46.3%)	25 (25.5%)	REF	0.001
	≥26	80 (53.7%)	73 (74.5%)	0.39 (0.23-0.69)	
Marital status	Married	131 (87.9%)	81 (82.7%)	REF	0.248
	Widowed/ Divorced	18 (12.1%)	17 (17.3%)	0.66 (0.32-1.34)	
Residence	Urban	141 (94.6%)	81 (84.4%)	REF	0.010
	Rural	8 (5.4%)	15 (15.6%)	3.26 (1.33-8.02)	
Educational attainment	Primary and below	67 (45.0%)	66 (67.3%)	REF	0.001
	Secondary and above	82 (55.0%)	32 (32.7%)	0.40 (0.23-0.67)	
Employment status	Employed	79 (53.0%)	47 (48.0%)	REF	0.437
	Unemployed	70 (47.0%)	51 (52.0%)	1.23 (0.74-2.04)	
Spouse employment status	Employed	138 (92.5%)	82 (88.2%)	REF	0.260
	Unemployed	11 (7.5%)	11 (11.8%)	1.66 (0.69-4.00)	
Spouse educational attainment	Primary and below	44 (29.9%)	33 (35.5%)	REF	0.370
	Secondary and above	103 (70.1%)	60 (64.5%)	0.78 (0.45-1.35)	
No. of people in the house	1-4	121 (81.2%)	57 (58.2%)	REF	<0.001
	≥5	28 (18.8%)	41 (41.8%)	3.11 (1.75-5.52)	
Total monthly income (in USD)	0-200	87 (58.4%)	52 (53.1%)	REF	0.409
	>200	62 (41.6%)	46 (46.9%)	1.24 (0.74-2.07)	
Nearest distance to clinic (in Km)	1	48 (32.2%)	26 (26.5%)	REF	0.623
	2	63 (42.3%)	29 (29.6%)	0.85 (0.44-1.63)	
	3-4	27 (18.1%)	26 (26.5%)	1.78 (0.87-3.65)	
	≥5	11 (7.4%)	17 (17.3%)	2.85 (1.17-6.99)	
Easily access ANC*	Yes	139 (93.3%)	73 (74.5%)	REF	<0.003
	No	10 (6.7%)	25 (25.5%)	4.76 (2.17-10.5)	

*Easy access meaning ease of availability of transport and security issues (roadblocks by security forces)

ANC – Antenatal Clinic

CI – Confidence Interval

The sociodemographic characteristics of the study population are shown in table 2. The average age was 28.4 (SD±7.17) years. Maternal age \geq 26 years (OR 0.39, 95% CI 0.23 – 0.69, $p < 0.001$), higher number of residents in the household (OR 3.11, 95% CI 1.75-5.52, $p < 0.001$), distance > 5 km from the nearest health facility (OR 2.85, 95% CI 1.17-6.99, $p = 0.022$) and lack of easy access to antenatal care service (OR 4.76; 95% CI 2.17-10.5; $p < 0.003$) were associated with late ANC attendance. On the contrary, urban residence (OR 3.26, 95% CI 1.33 – 0.82, $p < 0.001$) and higher educational attainment (OR 0.40, 95% CI 0.23-0.67, $p < 0.001$) were associated with early attendance. Although more than half of the participants were unemployed and had a monthly household income < 200 USD, these did not significantly influence the timing of antenatal attendance.

Table 3: Cultural factors associated with early versus late attendance of ANC among pregnant women at Medina Hospital, Mogadishu from December 2018 to February 2019

Variable	Category	Attendance of ANC		Odd ratio (95% CI)	P Value
		Early	Late		
Decision maker in the family	Self	20 (13.4%)	18 (18.4%)	REF	0.294
	Other*	129 (86.6%)	80 (81.6%)	0.69 (0.34-1.38)	
Plan of delivery	Healthcare center	140 (94.0%)	86 (87.8%)	REF	0.093
	Home	9 (6.0%)	12 (12.2%)	2.17 (0.88-5.37)	
Knowledge on timely initiation	Yes	123 (82.6%)	69 (70.4%)	REF	0.026
	No	26 (17.4%)	29 (29.6%)	1.99 (1.09-3.64)	
Information on ANC Use	Health worker	51 (34.2%)	46 (46.9%)	REF	0.153
	Husband	68 (45.6%)	34 (34.7%)	2.71 (0.69-10.6)	
	Neighbour	21 (14.1%)	15 (15.3%)	1.50 (0.38-5.90)	
	Friends	9 (6.0%)	3 (3.1%)	2.14 (0.50-9.27)	

Table 3 shows that women with knowledge on timely initiation were more likely to attend early for antenatal care (OR=1.99; 95% CI 1.09-3.64.12; p-value 0.026).

Table 4: Obstetric characteristics associated with early versus late attendance of ANC among pregnant women at Medina Hospital, Mogadishu from December 2018 to February 2019

Category	Attendance of ANC		Odd ratio (95% CI)	P Value	
	Early	Late			
Parity	0	49 (32.9%)	6 (6.1%)	REF	<0.002
	≥1	100 (67.1%)	92 (93.9%)	7.51(3.07-18.4)	
ANC visits	<5	137 (91.9%)	86 (87.8%)	REF	0.280
	≥5	12 (8.1%)	12 (12.2%)	1.59 (0.69-3.71)	

Table 4: shows the obstetric characteristics of the study population. Multiparity was strongly associated with late attendance (OR=7.51; 95% CI 3.07-18.4; P-value<0.002). Although no statistical significance was demonstrated, 90.3% of the participants had <5 ANC visits during the present pregnancy.

Table 5: Multivariate logistic regression on factors associated with late antenatal visit among pregnant women at Medina Hospital, Mogadishu from December 2018 to February 2019

	Category	Attendance of ANC		AOR (95% CI)	P Value
		Early	Late		
Maternal age (in years)	16-25	69 (46.3%)	25 (25.5%)	REF	0.368
	≥26	80 (53.7%)	73 (74.5%)	1.49 (0.62-3.57)	
Residence	Urban	141 (94.6%)	81 (84.4%)	REF	0.650
	Rural	8 (5.4%)	15 (15.6%)	0.72 (0.17-3.04)	
Educational attainment	Primary and below	67 (45.0%)	66 (67.3%)	REF	0.721
	Secondary and above	82 (55.0%)	32 (32.7%)	0.88 (0.42-1.82)	
No. of people in the house	1-4	121 (81.2%)	57 (58.2%)	REF	0.883
	≥5	28 (18.8%)	41 (41.8%)	0.94 (0.42-2.12)	
Knowledge on timely initiation	Yes	123 (82.6%)	69 (70.4%)	REF	0.206
	No	26 (17.4%)	29 (29.6%)	2.05 (0.67-6.26)	
Parity	0	49 (32.9%)	6 (6.1%)	REF	0.440
	≥1	100 (67.1%)	92 (93.9%)	1.67 (0.45-6.14)	
Nearest distance to clinic (in Km)	0-1	48 (32.2%)	26 (26.5%)	REF	0.650
	>1	101 (67.8%)	72 (73.5%)	0.84 (0.39-1.80)	
Easily access ANC	Yes	139 (93.3%)	73 (74.5%)	REF	0.170
	No	10 (6.7%)	25 (25.5%)	2.59 (0.67-10.1)	

Despite tendencies of women with lower maternal age, higher educational level, urban residence and lower household occupancy to initiate antenatal clinic attendance early, upon multivariate logistic regression, none of the factors that demonstrated univariate/bivariate significance retained statistical significance. This is shown in Table 5.

9.0 DISCUSSION AND CONCLUSION

The findings from this study showed that the prevalence of late antenatal attendance was 39.7% and early attendance was 60.3%. This was consistent with study done in Cameroon that found antenatal attendants who presented for their booking visit showed 44.0% presented late [37]. Even though there is improvement on antenatal care coverage and the World Health Organization is recommending initiating ANC visit in the first trimester, the time of initiation of first ANC visit is varied throughout the world. In the Somalia usually first ANC visit ideally takes place before 16 weeks of pregnancy.

Factors associated with late antenatal attendance among the study population included living in rural residence, distance >5km from the health facility, multiparity, high household occupancy, low educational attainment and difficulty in access.

Women aged over 26 years and a parity of more than 1 were more likely to present themselves late for the first antenatal visit, this is possibly due to the facts that these group of women have other children to care for hence did not get time to attend or they perceived themselves to be experienced in antenatal care and therefore were reluctant to have a timely ANC attendance. This result is consistent with a study done by Njiku et al who found women aged over 35 years were more likely to present themselves late for the first antenatal visit[38] [41]

Those living in the rural areas were 3 times more likely to attend antenatal clinic late compared to their urban counterparts. This was largely due to the fact that in the rural areas there was lack of infrastructure or security reasons like road blocks hindered their access. This result is consistent with what was reported in a study done in Bangladesh where it was reported that early ANC utilization was lower in the rural than the urban communities [39].

This study established that distance to health facilities constituted a barrier to early antenatal care attendance. Long distance to health facilities of more than 5 km significantly affected the timing of antenatal attendance. This is supported by studies done in Kalabo district of Zambia on maternity services which indicated that distance is a significant factor affecting delay to decide to seek care from health facilities [40]. This study also found that mothers who had easy access to

ANC were more likely to attend antenatal care early. Access to ANC influences the delay caused by the travel time from home to the clinic.

The present study demonstrated that women with higher education levels were more likely to initiate ANC early compared to those without. Similar findings have been reported by Njiku et al. [38] whereby women who were well informed about ANC were more likely to book for ANC within the recommended time. This may be attributed to their level of understanding on the importance of early antenatal booking. This also suggests that women with higher education got the information on antenatal care through reading newspapers or watching television than the less educated woman.

Regarding knowledge on timely initiation, the study revealed that women with adequate knowledge on timely to initiation were attending early. This finding is similar to what Grum and Brhane found out that women who were well informed about ANC were more likely to book for ANC within the recommended time [41]. This could be explained by the fact that mothers with education knew the importance of antenatal care for both the mother and fetus.

The study did not find any significant association between decision maker in the family and ANC attendance. However, it was observed that it was a community norm to attend ANC late in rural communities because of less value attached to it. According to Mekonnen and Mekonnen (2002) women who followed a traditional belief system are less likely to use maternity services service than religious groups. Cultural beliefs and practices often lead to self-care and consultation with tradition healers. In most communities women seek advice on important health matters from older women first before turning to health professionals.

CONCLUSION

Factors associated with late antenatal attendance among the study population include: living in rural residence, distance >5km from the health facility, multiparity, high household occupancy, low educational attainment and difficulty in access. Higher educational attainment was a significant factor contributing to early attendance.

RECOMMENDATION

Key strategies that can improve uptake of early antenatal care include: health education strategies to improve health-seeking behavior, increase facilities to improve proximity of health facilities to facilitate access and coverage.

Creating awareness among the population on the importance of antenatal care for the pregnant mother is important in reducing unnecessary maternal death.

There is need to have policies in place to provide free maternal health so that no woman is left behind thus reducing the maternal and neonatal morbidity and mortality.

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11.0 APPENDICES

11.1 Study Questionnaire

Fill in the blank space and tick the appropriate response given

SECTION A: SOCIO DEMOGRAPHIC AND SOCIO ECONOMIC INFORMATION

QUESTIONS

RESPONSE AND CODING

1. Patient number
 2. Age of patient in complete years
 3. Marital status
 1. Married
 2. Single
 3. Widowed
 4. Divorced
 4. Residence
 1. Urban
 2. Rural
 5. Level of education
 1. No Formal Education
 2. Madrassa
 3. Primary
 4. Secondary
 5. Higher Education/ University or College
 6. What is your occupation?
 1. Employed
 2. Housewife
 3. Self Employed
 4. Student
 5. Unemployed
 7. What is your husband's occupation?
 1. Employed
 2. Self employed
 3. Unemployed
-

-
8. What is your husband's educational level?
1. No Formal Education
 2. Madrassa
 3. Primary
 4. Secondary
 5. Higher Education/ University or College
9. How many people live in your house?
1. 1
 2. 2
 3. 3
 4. 4
 5. ≥ 5
10. What is the total monthly income of your family?
1. \$100
 2. \$200
 3. \geq \$300

SECTION B: KNOWLEDGE OF ANC AND CULTURAL BELIEFS

11. Who is the decision maker in your family?
1. Husband
 2. Mother-in-law
 3. Self
12. Time (duration) of pregnancy in weeks
1. ≤ 20 Weeks
 2. 21 – 34 Weeks
 3. ≥ 35 Weeks
13. Time of first ANC visit
1. < 12 Weeks
 2. ≥ 12 Weeks
14. Parity
1. Zero
 2. One and above
15. How far is the nearest clinic?
1. 1 km
 2. 2 km
 3. 3 – 4 km
 4. ≥ 5 km
-

-
16. What is your plan of delivery?
1. MCH
 2. Hospital
 3. Home
17. How many visits in total during this pregnancy?
1. 1 Visit
 2. 2 Visits
 3. 3 – 4 Visits
 4. > 4 Visits
18. Knowledge on timely initiation
1. Yes
 2. No
19. Gestation by date
1. <12week
 2. >12week
20. Someone who inform them about ANC use
1. Health Worker
 2. Husband
 3. Neighbour
 4. Friends
21. Can you easily access the ANC?
1. Yes
 2. No
-

11.2 Study Time Frame

Task	2018 – 2019										
	Jan 2018	Aug 2018	Sept 2018	Oct 2018	Nov 2018	Jan- Feb 2019	Mar 2019	Apr 2019	May 2019	June 2019	July 2019
Concept note											
Proposal development											
Ethics approval											
Data collection											
Data analysis and presentation											
Results presentation & dissemination											
Manuscript writing											

11.3 Budget

Component	Number	Cost (Ksh)	Total (Ksh)
Research assistant	4	50000	50000
Statistician	1	40000	40000
Printing			
Consent forms	247	30	7410
Questionnaires	247	30	7410
Proposal	3	1050	1050
Training cost		20000	20000
Travel cost		60000	60000
Miscellaneous(typing, stationary,copy)		50000	50000
TOTAL			235,870

11.4 Consent Information and Consent Form

Dr Nima A. Hassan is a postgraduate student in the department of obstetrics and gynecology, University of Nairobi. Carrying out a study as part of the requirement for Master of Medicine in Obstetrics and Gynecology.

Study Title: Factors Associated with Early versus Late Attendance of Pregnant Women at Antenatal Clinic in Medina Hospital Mogadishu, Somalia: A Comparative Cross Sectional Study

Principal Investigator: Dr. Nima A. Hassan Tel: 0704192370 and +252612732877

Supervisors: 1- Dr. Rose Kosgei.

2-Dr. Alfred Osoti

Purpose of Study: To determine factors associated with early versus late attendance of pregnant women at antenatal clinic

Study Procedure: The information will be collected using a structured questionnaire that will be administered by the principal investigator (Dr Nima) or research assistant to the study participant.

The data will then be analysed to determine the objectives of the study.

Study approval has been given by the Kenyatta National Hospital/University of Nairobi ethics committee {KNH/UON-ERC}.

I am requesting your participation in this study. I would like to bring to your attention the following ethical considerations which will guide your participation.

1. Participation in this study is purely voluntary.
2. This study carries no extra risk or cost to you.
3. You may withdraw at any point of the questionnaire filling and there won't be any consequences for your decision to withdraw.
4. Any information you provide including details on your demographic characteristics will be treated as confidential.
5. There is no compensation or benefits for participating in this study; you will receive the same standard of care as any other person attending this hospital.

Signing the consent form indicates that you have read the consent form, that your questions have been answered to your satisfaction, and that you voluntarily agree to participate in this research study. You will receive a copy of the signed consent form.

For further information please contact:

Dr. Nima A. Hassan.

Tel: +254 704192370

+252 612732877

Email: nimzaxc@gmail.com.

Kenyatta National Hospital /UoN Ethics Committee

P.O. Box 20,723-00,202

Tel: (254) 020 7263 00 EXT 44102, 44,355

E-mail: uonknh_erc@uonbi.ac.ke

CONSENT FORM

I, the undersigned, do hereby consent to participate in this study whose nature, purpose and objectives have been fully explained to me. I am aware that participation is voluntary and that there are no consequences to withdrawal from the study. I have been informed that all data provided will be used for the purposes of study only.

Signed.....

Date.....

I,.....declare that I have adequately explained to participant the purpose of the of the study and the procedures. I have given the participant time to ask questions and seek clarification regarding the study.

Signed.....

Date.....

11.5 Consent Form in Somali

Oggalaasho la Wargeliyey

Waxaan ahay Dr. Nimco A. Xasan, arday sare ee dhigta jaamacada Nairobi waaxda dhalmada iyo dumarka. Hadda waxaan wadaa cilmi baaris oo qayb ka ah waxyabah looga bahanyahay jaamacadda.

Mawduuca cilmi barista:

Arrimo la xiriira waxaa dhahiya ama so hormariya hooyada uurka leh in ay laso xirirto goobta caafimaadka

Maamulaha Baadhaha: Dr Nimco A. Xasan Tel: 0704192370 iyo +252612732877

Kormeerayaasha: 1. Dr. Rose kosgei

2. Dr. Alfred Osoti

Ujeedada barista: si loo ogaado arimaha keeni kara so hormarid ama dib udhaca hooyada uurka leh iney laso xariirto isbitaal

Habka baarista: Macluumaadka waxaa loo qaadi doonaa iyadoo la isticmaalayo su'aalaha habaysan oo uu qaadi doona baaraha maamulaha (Dr Nimco) ama caawiyaha ka qayb galaya baarista.

Xogta ayaa intaas ka dib la baari doono si loo ogaado ujeedada daraasadda.

Waxa ansixiyay baaritaankaan isbitaalka Kenyatta /jaamacadda Nairobi, guddiga anshaxa {KNH / UON-ERC}.

Waxaan codsanayaa ka qayb qaadashada daraasaddan. Waxaan jeclaan lahaa inaan keeno inaad fiiriso waxyaabaha soo socda ee ku saabsan anshaxa taas oo hagi doonta kaqayb qaadashadaada.

1. Ka qayb qaadashada daraasaddan waa mid aan qasab ahayn.
2. Daraasaddan wax halis ah ay keenaysaa majiro ama faaiido ah.
3. Bartaa doonto ayaa uga bixi kartaa mana jiro wax cawaaqib ah.
4. xog kastoo aad bixisid oo ay ku jiraan faahfaahin ku saabsan sifooyinka waxa ay ahaan doonaan qarsoodi.
5. Ma jiro magdhow ama gunnad aad ku helaysid kaqayb noqoshada daraasaddan; waxaad heli doontaa heerka daryeel oo qofkasta isbitaalka yimado helayo.

Saxiixa foomka ogolaanshaha waxay muujinaysaa in aad akhrisay foomka ogolaanshaha, in su'aalo aalahaadi lagaagao jawaabay si aad ku qanacsan tahay, aadna ogolaatay in aad qayb ka noqoto cilmi barista. Waxaad heli doontaa nuqul ka mid ah foomka oggolaanshaha.

Wixii macluumaad dheeraad ah fadlan la xiriir:

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Ama: Kenyatta National Hospital / UoN Ethics

Committee

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11.6 KNH-UoN ERC Approval



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Ref: KNH-ERC/A/426

4th December 2018

Dr. Nima Hassan
Reg. No.H58/81467/2015
Dept. of Obs/Gynae
School of Medicine
College of Health Sciences
University of Nairobi

Dear Dr. Hassan

RESEARCH PROPOSAL – FACTORS ASSOCIATED WITH EARLY VERSUS LATE ATTENDANCE OF PREGNANT WOMEN AT ANTENATAL CLINIC IN MEDINA HOSPITAL, MOGADISHU (P551/08/2018)

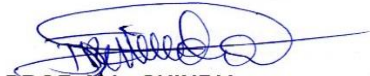
This is to inform you that the KNH- UoN Ethics & Research Committee (KNH- UoN ERC) has reviewed and **approved** your above research proposal. The approval period is 4th December 2018 – 3rd December 2019.

This approval is subject to compliance with the following requirements:

- Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
- All changes (amendments, deviations, violations etc.) are submitted for review and approval by KNH-UoN ERC before implementation.
- Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH-UoN ERC within 72 hours of notification.
- Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.
- Clearance for export of biological specimens must be obtained from KNH- UoN ERC for each batch of shipment.
- Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
- Submission of an *executive summary* report within 90 days upon completion of the study. This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/ or plagiarism.

For more details consult the KNH- UoN ERC website <http://www.erc.uonbi.ac.ke>

Yours sincerely,



PROF. M.L. CHINDIA
SECRETARY, KNH-UoN ERC

c.c. The Principal, College of Health Sciences, UoN
 The Director, CS, KNH
 The Chairperson, KNH-UoN ERC
 The Assistant Director, Health Information, KNH
 The Dean, School of Medicine, UoN
 The Chair, Dept. of Obs/Gynae, UoN
 Supervisors: Dr. Rose Kosgei, Dr. Alfred Osoti

