

Timing of first ANC booking among pregnant women attending ANC at public health facilities, Western Ethiopia.

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Abstract

Background: Early booking of antenatal care is regarded as a cornerstone of maternal and neonatal health care. However, existing evidence from developing countries indicates that lots of pregnant women begin ANC booking lately. According to WHO report 2016, 34% of women made their ANC visit at first trimester of pregnancy. According to Ethiopia Demographic and Health Survey 2016, 62% of pregnant women who gave birth in five years preceding the survey received antenatal care from a skilled provider and 20% of women made their first ANC visit before the four-month of pregnancy. This reveals that that significant proportion of pregnant women have not started ANC timely.

Objective: This study was aimed to assess timing of first ANC booking among pregnant women attending Nekemte referral hospital, East Wollega, Oromia, Ethiopia.

Method: The study was conducted among pregnant women attending ANC clinic at public health facilities in Nekemte town from February to March 2017. A total of 376 pregnant women were included in the study. The average monthly client load from the daily average ANC clients flow of the hospital and health center was taken from the registry book after which systematic random sampling was used to select women who participated in the study. Thus, every other pregnant woman entering ANC service were selected for the study in the public health facilities. Data entry was made using Epi-info version 7.2 and then exported to SPSS version 20 for further analysis. Descriptive statistics were used to describe variables of the study.

Result: Three hundred forty-seven (92.3 %) respondents reported that they were informed when to book ANC of which 165 (47.56%) mentioned that the right time to start ANC is within 12 weeks of gestation. In this study, the timing of the first ANC booking ranged from 8 weeks to 24 weeks of gestation with mean timing of gestational 12 weeks. A total of 163(43.4%) respondents early booked within12 weeks of gestation; while 213 (56.6%) booked after 12 weeks of gestation.

Conclusion: Less than half of the respondents made their first ANC timely. Though early ANC booking was seen to be higher in this study compared to others, it is still below the WHO recommendation. Therefore, factors related to late ANC booking should be further investigated and appropriate intervention should be made to address problems which may arise early time before 12 weeks of gestational age.

Background

Pregnancy is one of the most important periods in the life of woman, family, and society. Globally about 585,000 women died each year from the complication of pregnancy and childbirth factors and 380 pregnant women 110 of them were experienced pregnancy-related complications that lead newborn to die every two minutes, every day, approximately 830 women die from preventable causes related to pregnancy and childbirth. Which is 99% of all maternal deaths occurred in developing countries [1,2].

In connection with the above points of view, having the awareness of early antenatal care and the way to alleviate the potential obstacle related to pregnancy plays a paramount role during the pregnancy period. Early ANC visit is one of the essential things to be exercised to identify and prevent the problems that might cause maternal and newborn deaths [2]. Hence, it is believed that pregnant women are encouraged to start antenatal care as soon as pregnancy detected within 12 weeks of gestation that they are free from any sort of difficulties resulted from pregnancy [3].

Furthermore, the new WHO antenatal care model and the national institute for health and clinical excellence guidelines recommend the first antenatal care booking within the first trimester of pregnancy ahead of time. Screening for HIV infection, which helps early detection and prevention of mother to child transmission and other lab investigations should be carried out during pregnancy [4]. However, existing evidence from developing countries indicated that lots of pregnant women are booking ANC lately [5].

In Ethiopia, maternal mortality ratio was 412/100000 live birth as EDHS 2016 reported [6]. Though most of the pregnant mothers are not beneficiaries, early ANC visit and regular follow up is the one that serves as cornerstone for delivering health information and interventions (i.e. via early dictation of modifiable pre-existing medical condition like heart disease diabetes mellitus, hypertensive disorders, HIV/AIDS and severe anemia that can significantly enhance the health of the mother and the fetus [7].

Thus, inadequate care during pregnancy breaks a critical link in the continuum of care and affects both women and babies. Early ANC helpsthe mother to get adequate time to diagnose and treat the cause accordingly, and give necessary information to identify risk factors by taking accurate past history to judge the status of current pregnancy of a woman [8]. In addition, pregnancy often represents the first opportunity for a woman to establish contact with the health system. There is a large gap between single antenatal visit and the most favorable ANC which would require follow up visits and several preventive interventions. Several conditions that are prevalent in Africa, such as malaria, STIs, maternal and neonatal Tetanus, HIV, Tuberculosis (TB) and some nutritional deficiencies can be addressed during ANC [9].

Antenatal care is one of the means to reduce maternal mortality and morbidity with interventions and information that promote the health, well-being, and survival of mothers and their babies [10]. Timely booking of ANC service has a great importance in seeking early screening for HIV infection and syphilis to prevent mother to child transmission and include ultrasound screening to identify congenital abnormalities and also offered other interventions that can be linked to early ANC components like provision of information about birth preparedness complication readiness plan, nutrition, family planning, breastfeeding and health benefit of delivery with the assistance of skilled health provider [11].

This study was aimed at assessing and identifying factors associated with first ANC booking among pregnant women attending ANC clinic in Nekemte Referral Hospital. and it has an implication for policymakers, health care providers, health educators, and researchers to improve policies related to early booking of ANC.

Methodology

Study area and period

The study was conducted in Nekemte town, East Wollega zone of Oromia regional state. It is a town situated on an area of 31.92 hectares and located 331 kilometers away from Addis Ababa to the west. It is the populated town of the zone having 6 sub-cities and 51 zones and two government Hospitals, two health centers, one NGO, five private clinics. The total population of the Nekemte town estimated to 109,192 with a catchment area of those served in Nekemte town 56876 out of which 31701 are females and 25175 are males and 21194 of women are found in the ages of 15–49 years. The study was conducted among pregnant women attended ANC at Nekemte referral hospital from February to March 2017.

Study design

Institutional based cross-sectional study was conducted among pregnant women who attended ANC at Nekemte Referral Hospital.

Source of population

The source population was all pregnant women in the catchment area.

Study population

The study population was all pregnant women who were attending [ANC.in](#) Nekemte referral hospital.

Eligibility Criteria

Inclusion criteria

Pregnant mothers who were attending an ANC visit who was mentally and physically capable of being interviewed.

Exclusion Criteria

Pregnant women who were seriously sick and unable to respond

Sample size determination

The sample size was estimated using sample size determination formula for a single population proportion formula for which point of estimation was taken from the study done in Gondar university referral hospital in which early imitation of ANC was 47.2% [9]. Therefore, the total sample size was calculated with the marginal error of 0.05, with a 95% confidence interval. Ten percent of the total sample size was considered for non-respondents. Accordingly, a total of 376 pregnant women who attended ANC follow up at Nekemte Referral Hospital during the study period participated as study units.

Sampling Technique

The average monthly client load from the daily average ANC clients flow of the hospital and health center was taken from the registry book. It was 650 and 160 per month in the hospital and the health center respectively which was added up to 810. This ranges from 25–30 clients per day. Systematic random sampling with $810/376 = 2$ was used to select women who participated in the study. Thus, every other pregnant woman entering ANC service were selected for the study in both hospital and health center.

The sample size was allocated proportionally to the client flow of the respective facilities. The first women arrived at the waiting area for ANC clinic on the first day of data collection and met the eligibility criteria was taken as the first candidate for the study. This process continued until the desired sample was attained.

Data collection instrument

The structured questionnaire adapted from other literatures of similar studies was developed in English, translated into Afan Oromo (the official and local language) by language experts. Retranslation from Afan Oromo to English was also made by another expert to ensure consistency.

Pretest questionnaires

The pretest was conducted among pregnant women who were attending ANC in Gute health center which is located in another district than the study area. After conducting the pretest, the consistency of the question was checked and the necessary corrections were made.

Data collection procedures

The data was collected by interviewing pregnant women after getting informed consent. Four B.Sc. degree midwives who were not working at the study facilities participated as data collectors after given two days training on the data collection tools and collection procedures by the principal investigator. Finally, ANC attendants were interviewed based on the preset sampling techniques of the study. The collected data was carefully checked for completeness as well as consistency by the supervisor and any confusion during data collection was handled timely.

Data processing & analysis

After the data collection, data were checked manually for its completeness and consistency. It was entered into Epi-info 7.2 version, cleaned and rechecked for its completeness. The cleaned data was exported to SPSS window versions 20.0 for further analysis.

Logistic regression was used to identify the association between independent and dependent variables. Thus, the independent variables with $p < 0.25$ in the binary logistic regression was transferred to multiple logistic regression model to control for cofounders and the independent variables with $p < 0.05$ were considered as having statistically significant associations with the dependent variable. Finally, frequency,

percentage and mean values were computed; presented using tables, graphs, cross tabs and describing words.

Data quality management

Data quality was ensured during instrument development, collection, coding, entry, and analysis. The questionnaire first translated to Afan Oromo language and retranslated to English before data collection and different translator was used to keeping the consistency of the questionnaire and necessary corrections were made. The data collectors were trained about the purpose of the study and how to administer the questionnaire, training incorporating role play was undertaken on how to approach with participants in the field and interview techniques. The Instrument was tested on 5% of the respondents and correction was taken accordingly. During data collection, the questionnaire was checked for its completeness on a daily basis by supervisors. The data used for pretest was not included in the main study.

Dependent variable

Timing of first ANC booking

Independent variables:

Socio-demographic factors (Maternal age, Educational status, occupation, marital status, income, and residence), parity, past experience of ANC utilization, knowledge and awareness on the importance of timing of first ANC, attitude towards ANC service and husband involvement.

Operational Definitions

Early ANC booking: refers to initiating of ANC before and at the 12th week of gestation.

Late ANC booking: refers to initiating ANC after 12th weeks of gestation.

Predisposing Factors: The socio-cultural characteristics of individuals that exist prior to their service utilization (Maternal Age, Educational Status, Occupation, Marital Status, Ethnicity, Religion, Parity, Attitude towards the care, how the woman valued the care, and knowledge concerning the service).

Enabling Factors: The logistical aspects of obtaining care (distance from health institution, means, and cost of transportation, financial source for care and other expenses, availability of health personnel and facilities, waiting for time, acceptability and approval of pregnancy by women and significant others)

Ethical Approval

The researchers secured ethical clearance and got approval from the Ethical Review Board of Wollega University and support letter was written to the study facilities ahead of the study period. The purpose of

the study was shared with the facility heads, service unit team leaders and study participants. Written consent was obtained from the participants before the interview was commenced.

Result

All 376 ANC attendants who were intended to be included in the study have participated in the study, making the response rate 100%.

Socio-demographic characteristics of respondents

Three hundred fifty (93.1%) of women who involved in the study were in the age between 25–34 years with a median age of 25. The result also indicated that nearly all 373 (99.2%) mothers were married; 217 (57.7%) mothers were housewives, and 101 (27%) were government employee occupationally. Most 336(89.3%) of the mothers were Oromos in their ethnicity. Regarding religion of respondents, the result indicated that the majority of them were protestants 233 (61.97%) followed by Orthodox 89 (24%) and Muslim 52 (13.83%).

Educationally, it was found that 128 (34%) of respondents attended secondary school, and 119 (31.6%) have a college diploma and above, whereas 71 (18.9%) of them have attended primary school. Regarding the educational status of husbands, 154 (41%) of them attended college and higher education, 140 (37.2%) have attended secondary and primary school while 19 (5.1%) can read and write. Most of the respondents, 305 (81.2%) were urban residents. About three fourth of the respondents replied that they had transportation costs to reach the facility (*Table 1*).

Table 1: Socio Demographic characteristics of the respondents at Nekemte Referral Hospital, 2017

Variables		Frequency (n=376)	Percent
Age	15-24	16	4.3
	25-34	350	93.1
	35-49	10	2.6
Marital Status	Married	373	99.2
	Separated (divorced, widowed)	3	0.8
Religion	Orthodox	89	24
	Muslim	52	14
	Protestant	233	62
	Catholic	2	0.4
Ethnicity	Oromo	336	89.3
	Amara	32	8.5
	Tigre	4	1.1
	Gurage	4	1.1
Educational status of mothers	Can't read and write	9	2.4
	Can read and write	49	13
	Primary (1-8)	71	19
	Secondary (9-12)	128	34
	College and above	119	31.6
Educational status of husbands	Can't read and write	4	1
	Can read and write	19	5
	Primary (1-8)	59	16
	Secondary (9-12)	140	37
	College and above	154	41
Occupation of mother	Employed (waged)	101	27
	Merchant	50	13
	House wife	217	57.7
	Others	9	2.3
Residence	Urban	305	81.2
	Rural	71	18.8

Obstetric history of respondents

Among total respondents, 190 (50.5%) were at parity zero while 186 (49.5%) were parity one and above. The result also indicates that majority of the respondents 236(63%) have a history of ever been pregnant two and more times while the rest 140 (37%) reported that they were in their first pregnancy. Of the total

respondents, 37 (10%) had a history of abortion, 10 (3%) had a history of child death and 12 (3.1%) had a history of stillbirth.

Knowledge of respondents on the timing of first antenatal care and early booking

Three hundred forty-five mothers (92%) of respondents perceived that timely ANC booking is important for the health of the mother and fetus. On the other hand, the participants were asked about an appropriate time when to begin ANC booking and 197 (52.4%) reported as it is after 3 months while 179 (47.6%) responded that ANC booking is started within or less than 3months. Mothers were also asked whether they know about a number of ANC visits, 219 (45%) knew about the WHO recommended four ANC visits. Regarding respondents' number of ANC visits, the result indicated that 58(19. 4%) respondents were visiting three times whereas 57(15.2%) two times and 27(7.2%) of them were visiting only once.

Regarding the pregnancy plan, 296 (78.7%) respondents reported that their pregnancies were planned while 80 (21.3%) reported that it was unplanned. About 224(60%) of the respondents were aware of their pregnancy while pregnancy of 113 (30%) was confirmed by a laboratory urine test (*Table 2*).

Table 2. Knowledge of respondents on timing first ANC booking in Nekemte Referral Hospital, 2017

Variables		Frequency (n=376)	Percentage
Considers initiation of early ANC booking as important	Yes	347	92%
	No	30	8%
Is pregnancy Planned?	Yes	296	78.70%
	No	80	21.30%
The way pregnancy was confirmed	Urine test	113	30%
	Missed menses	224	60%
	Physiological change	38	10%
Advises given before starting ANC	Yes	347	92.30%
	No	29	7.70%

Three hundred forty-seven (92.3 %) respondents reported that they were informed when to book ANC of which 165 (47.56%) mentioned that the right time to start ANC is within 12 weeks of gestation. From total participants, about one-third of the participants visited ANC with their husbands during their first visit whereas the rest 64% of respondents replied that their husband was not volunteer to come during the first ANC booking.

Out of the total 376 respondents, 216 (57.45%) replied that they had experience of ANC service utilization prior to the current pregnancy out of which 122 (56.5%) booked after 12 weeks of gestational age.

Timing of ANC booking for the current pregnancy

In this study, the timing of the first ANC booking ranged from 8 weeks to 24 weeks of gestation with mean timing of gestational 12 weeks. A total of 163(43.4%) respondents early booked within 12 weeks of gestation; while 213 (56.6%) booked after 12 weeks of gestation (*Figure 1*).

Discussion

Early dictation of problems in pregnancy leads to timely referrals for women in high risks categories or with complications. This facility based cross-sectional study has tried to assess the timing of first Antenatal care booking and associated factors in Nekemte referral hospital. In this study, it was shown that 43.2 % of the respondents started their ANC within 12 weeks of gestation. The mean gestational age at which the respondent booked was 3.7 months. This finding is almost similar to the research done in Addis Ababa health facilities in 2015 in which 42% of mothers had their first visit within 3 months. On the other way, it is higher compared to the EDHS report of 2016 which showed that 20% of women had their first ANC during the first trimester. This discrepancy may be due to the reason that EDHS covers all remote areas where physical accessibility of health service delivery point is problematic while this study was conducted in one town. Furthermore, the magnitude of early booking in this study is higher compared to the study conducted on a similar topic in Mekele town, northern Ethiopia which revealed that 32.7% booked early [6, 12]. It was also found to be higher compared to the study done in Tanzania and Uganda which shown that 29% and 17% of women booked before four months of pregnancy respectively [13]. These discrepancies may result from the difference in time of the study period and study settings.

However, it is relatively lower compared to the study conducted in Gondar referral hospital which showed that early booking was 47.2% and study in Nigeria in which 46.7% of mothers booked early [10, 14]. It is also below the WHO standard which recommends that every pregnant woman should start the first ANC within the first trimester of pregnancy. This indicates that though things seem better in the study area, there is a lot to do book ANC timely.

Moreover, respondents, those knew the importance of timely booking was seen to be more imitated to book first Antenatal care within the recommended time as compared those who do not know. This goes with study finding in Addis Ababa in which knowledge of mothers on the importance of timely booking was a strong predictor of timing of first ANC booking before the fourth month of pregnancy as recommended time.2016 [14].

Conclusion: Out of the total respondents less than half made their first ANC timely. Though early ANC booking was seen to be higher in this study compared to others, it is still below the WHO recommendation. Therefore, factors related to late ANC booking should be further investigated and

appropriate intervention should be made to address problems which may arise early time before 12 weeks of gestational age.

Recommendations

Enough information about early booking of ANC should be disseminated for all women coming for MCH service during routine service deliveries. Further study should be conducted with mixed methods to explore why pregnant women are not visiting a health care facility once they recognize that they are pregnant at earlier time.

Abbreviations

ANC: Antenatal Care

EDHS: Ethiopia Demographic Health Survey

CSA: Central Statistical Agency

FANC: Focused Antenatal Care

HIV/AIDS: Human Immuno Virus /Acquired Deficiency- Syndrome

NRH: Nekemte Referral Hospital

NHC: Nekemte Health Center

NGO: Non-Governmental Organization

MCH: Maternal and Child Health

MMR: Maternal Mortality Rate

STI: Sexual Transmitted Infection

SPSS: Statistical Package for Social Science

WHO: World Health Organization

WU: Wollega university

SDG: Sustainable Development Goals

UNCIF: United Nations Children Intervention Fund

Declarations

Ethical approval and consent to participate

In conducting this research, the required ethical issues were considered. First, to make the research legal, Ethical clearance & permission letter was obtained the study proposal was, from the ethical review committee of Wollega University, College of Health Sciences, and, Department of public health written informed consent was obtained. The objectives of the study were explained. Participation of respondents was strictly made on a voluntary basis. The participants were informed that the information collected, can be withdrawn from the interview. Confidentiality of responses was maintained throughout the research process. Personal privacy and cultural norms were respected properly. No names were used

Consent for publication

Not applicable.

Availability of data and material

Data will be available on request of the corresponding author.

Competing interests

There is no competing of interest

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Self

Authors' Contribution

All authors have equally participated from proposal development to the drafting, reviewing and finalization of the manuscript.

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Authors Information

The three authors, namely TT, TR, and GF are from Wollega University Institute of health sciences while one author, WD is from Nekemte Referral hospital.

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Figures

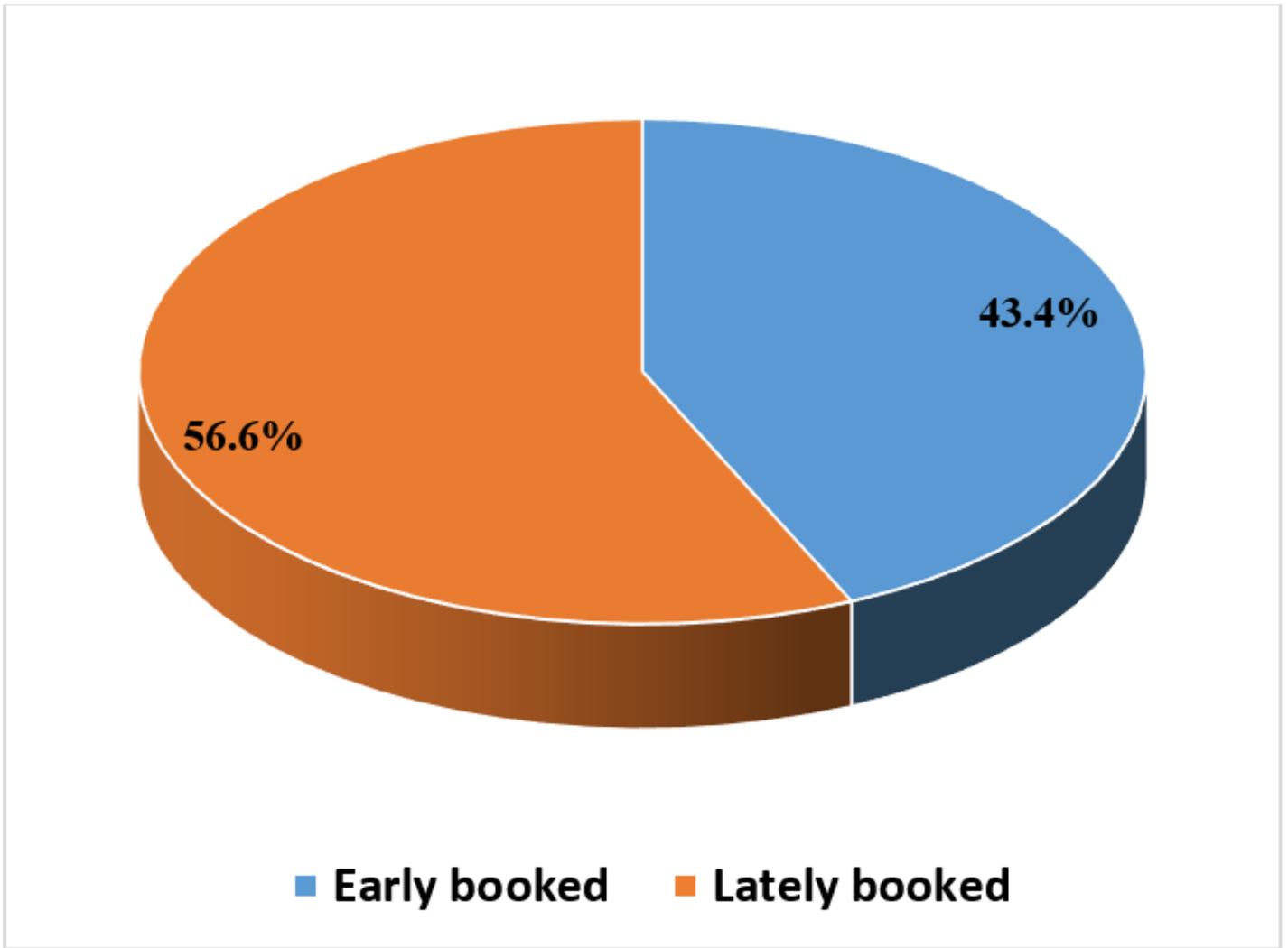


Figure 1

Timing of ANC booking for the current pregnancy Nekemte referral hospital 2017