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Determinants of Early Antenatal Care Booking among Pregnant Women attending Embu Teaching and Referral Hospital, Kenya: A Cross-sectional Survey

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ABSTRACT

Background Information: Antenatal care is a fundamental pillar in ensuring positive maternal and fetal outcome. Even though WHO recommends the initiation of antenatal visits in the first trimester, this varies among pregnant women. This study aimed to determine the factors that determined the early antenatal care booking among pregnant women.
Methods: An institutional based, descriptive cross-sectional survey was carried out in Embu teaching and referral hospital. The study was undertaken from February to April 2023, and involved eighty-seven pregnant women. Data were collected using a researcher administered semi-structured questionnaire. SPSS version 28.0 was used to analyze data. Descriptive statistics were used to summarize the data whereas regression analysis and Chi-square were used to test relationship at 95% CI.
Results: The study indicated that 35.0% of women started antenatal care within 12week gestation. Multivariate logistic regression analysis showed that: [(AOR (95% CI)) maternal age 20-24 years (5.25 (1.29, 21.35)), being married (4.6 (1.52, 13.95)), having a secondary education (3.2(1.17,8.74)) and being employed (2.81(1.01,7.80)) were positive determinants of early commencement to antenatal care.
Conclusion: The proportion of women initiating ANC within the WHO recommended gestation of 12 weeks is low. Woman's age, level of education, marital status and occupation are the positive determinants of early ANC initiation. Health care providers should provide information, education and communication about the benefits of early ANC for every eligible mother. Mass media programmes and campaigns on early initiation of ANC should also be developed to promote early uptake of ANC services among prospective mothers.

Keywords: Antenatal care, first visit, timing, determinants, booking.

INTRODUCTION

The United Nations Member States adopted the 2030 Agenda for Sustainable Development goals (SDGs)in 2015. SDG 3 targets to reduce maternal mortality ratio to less than 70 per 100,000 live births by 2030(1). However, the global maternal mortality ratio(MMR) continues to be unacceptably high(2,3). In 2020, the global MMR increased from 216 in 2015 to 223 per 100,000 livebirths in 2020 with 70% of the maternal deaths occurring in sub-Saharan Africa(4). In Kenya, MMR increased from 483 in 2015 to 530(4). Most of these deaths occur due to preventable causes including bleeding after delivery,

pregnancy induced hypertension and puerperal sepsis(5–7). Early commencement of antenatal care has the potential of improving maternal and fetal outcomes(2,8,9).

World health organization defines antenatal care "as the care provided by skilled health-care professionals to pregnant women and adolescent girls in order to ensure the best health conditions for both mother and baby during pregnancy."(2) The components of antenatal care(ANC) include: risk identification; prevention and management of pregnancy-related or concurrent diseases; and health education and health promotion(2,10). Antenatal care reduces maternal and perinatal morbidity and mortality through early identification and treatment of pregnancy-related complications, as well by identification of women and girls with a heightened risk of developing complications during labour and delivery for appropriate referral to an appropriate level of care(8,10)

New WHO guidelines on antenatal care recommends eight antenatal visits during the period of pregnancy. The first contact should be within 12week gestation followed by other seven contacts at 20,24,28,32,36 ,38 and 40week gestation(2). Studies have shown that early initiation of antenatal care results in improved maternal and foetal outcomes(11–13). Despite this, initiation of ANC within the first trimester remains a challenge especially in sub Saharan Africa(SSA) region. A systematic review by Moller et al established that only 24.9% of pregnant women in SSA start their antenatal care within 12week gestation, compared with 64.3% globally(14). In East Africa countries, more than half of pregnant women seek antenatal care after 12week gestation(15). In Kenya, only about 20.7% of pregnant women adhere to the recommendation of initiating antenatal care in the first trimester(12).

Initiation of antenatal care has been found to be influenced by several factors. Factors promoting early initiation include the place of residence, educational status, maternal age, previous birth experience, zero parity, planned pregnancy, good knowledge of danger signs and previous early ANC visit(12,13,16). Factors associated with late start of ANC include unplanned pregnancy, lack of awareness about pregnancy danger signs, inappropriate perception of ANC starting time, and pregnant women who were unaware of service delivery during working hours at the institution(3,17). There are very few studies that have been carried out in Kenya early initiation of antenatal care. Most studies such as that by Gitonga have focussed on the determinants of Focused antenatal care uptake(18). Therefore, this study aimed at determining the timing of the first antenatal care visit and the determining factors among pregnant women attending antenatal clinic in Embu teaching and referral Hospital in Kenya.

MATERIALS & METHODS

Study Design

An institutional based, descriptive cross-sectional survey was carried out between March and May 2023. It involved pregnant women attending antenatal care visit at Embu teaching and referral hospital. Embu hospital a regional referral hospital for Eastern South region of Kenya serving the counties of Embu, Tharaka Nithi, and part of Machakos and Kirinyaga.

Study Population

All pregnant women attending their antenatal care clinic in the MCH/FP department of Embu teaching and referral hospital. According to the antenatal register, approximately thirty pregnant women attended antenatal care service per day translating to 150 mothers per week since the clinic operates for five days a week. Since data was collected for four weeks, the expected population was 600 pregnant women.

Sample Size and Sampling Procedure

Using the Yamane (1967) formulae for calculation, a sample size of 240 pregnant women was arrived at. Sample members

were selected using systematic random sampling where every 3rd client attending the antenatal clinic was interviewed. This was arrived at by dividing the population which is 600 by the sample size which is 240 giving a th =2.5. This was rounded off to 3. The first respondent was picked randomly from among the first 10 pregnant women seeking antenatal care services using secret ballot. Subsequent women were picked as they arrived at the registration area of the antenatal clinic.

Research Instruments

Data was collected through a semi-structured interviewer administered questionnaire. The content validity of the questionnaire was assessed by a midwifery lecturer and a practicing midwife. The questionnaire was then pretested in Chuka Hospital using 20 mothers to determine the feasibility and reliability. The findings of the pretest used to make necessary adjustments.

Data Analysis

At the end of each day, the questionnaires were checked for completeness and uniformity after which they were coded and entered into the computer for analysis. Statistical Package for Social Sciences (SPSS) 27.0 was used to analyze the data. Descriptive statistics such as mean, median and standard deviation were used to summarize the data. Linear regression analysis and Chi square were used to test relationships at 95% confidence interval. Data was then presented using narration, tables and figures.

RESULT

Socio-demographic Characteristics of the Participants

The mean age of the participants was 26.88 (SD5.7) with most (37.5%, n=90) aged 20-24 years. Two thirds of the participants (65.0%, n=156) are married. Half of the participants (50.0%, n=120) had a secondary level of education, with three quarter (73.8%, n=177) unemployed. Most participants lived within a distance of 5 KM, and slightly more than half (53.8%, n=129) reported use of a family planning method. About half of the participants (51.3%, n=123) have a monthly income of less than 10,000 Kenyan shillings. Most participants (96.4%, n=107) had delivered in the health facility

Table 1: Participants' Socio-demographic Characteristics

Variable	Frequency	Percentage
Age of participants (years)		
Mean ±SD	44.2±7.42	
15-19	9	3.8
20-24	90	37.5
25-29	78	32.5
30-34	24	10.0
35 and above	39	16.3
Marital Status		
Unmarried	84	35.0
Married	156	65.0
Education		
Primary education	27	11.2
Secondary education	120	50.0
Tertiary education	93	38.8
Employment Status		
Unemployed	177	73.8
Employed	63	25.2
Distance from the clinic		
<5KM	105	43.8
5-10KM	99	41.2
>10 KM	36	15.0
Average Monthly Income(Kenya Shilling)		
<10,000	123	51.3
10,000-20,000	66	27.5
20,001-30,000	24	10.0
30,001-40,000	21	8.8
>40,000	6	2.5

Place of last Delivery		
Home	4	3.6
Health facility	107	96.4

Timing of ANC Booking

Only 35%(n=84) had booked antenatal clinic within 12weeks gestation with majority (53.8%, n= 129) booking within 13-24 weeks of gestation. Only 11%(n=27) booked later than 24 weeks.

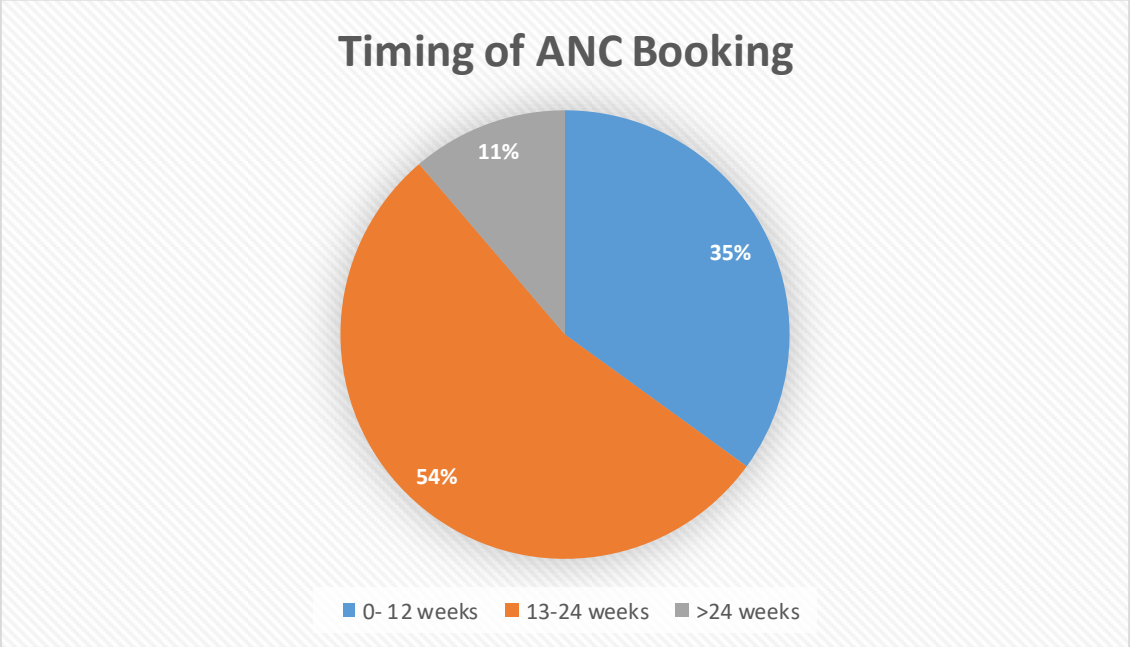

Figure 1: Timing of ANC Booking

Factors Associated with Early Antenatal Booking

There was a significant correlation between marital status and early antenatal clinic booking (X^2=7.923, df=1, p=0.04). Additionally, the education level of the pregnant woman significantly influenced the initiation of Antenatal care (X^2=6.14, df=2, p=0.04). A significant relationship was also found between family planning use before the pregnancy and early ANC booking (X^2=6.036, df=1, p=0.01). Table 2 shows the factors associated with ANC booking.

Table 2: Factors associated with Early ANC Booking

Variable	**Category**	**<12 weeks**	**>12 weeks**	***X*²**	**df**	**P value**
Age in years	15-19	0	9	8.774	4	0.67
	20-24	21	69			
	25-29	36	42			
	30-34	8	8			
	35 and above	24	15			
Marital Status	Unmarried	15	69	7.923	1	0.04*
	Married	78	78			
Education	Primary	15	12	6.418	2	0.04*
	Secondary	30	90			
	Tertiary	48	45			
Occupation	Unemployed	57	120	4.059	1	0.44
	Employed	36	27			
Family planning use	Yes	66	63	6.063	1	0.014*
	No	27	84			
Living Child	Yes	48	63	0.686	1	0.44
	No	45	84			
History of Miscarriage	Yes	27	21	2.581	1	0.108
	No	66	126			
Distance from the facility	<5 km	30	75	3.654	2	0.161
	5-10km	42	57			

	Above 10 km	21	15			
Place of last delivery	Home	2	2	1.693	1	0.193
	Health facility	31	76			
	*Statistically significant at p value <0.05.					

Determinants of Early ANC Booking

Multi-variable logistic regression was carried out to establish the determinants of early ANC booking. After adjusting for the possible effect of confounding variables, the age of the women, their marital status, educational level, and occupation became significant determinants of early ANC booking.

This study showed that women who were aged 20-24 years were five times more like to start ANC early compared to other age groups (AOR=5.257, 95%CI,1.30,21.35). The odds of married women (AOR=4.60, 95%CI, 1.52,13.95). initiating ANC early were four times higher than were not. Women with a secondary level of education were three times more likely to initiate ANC early than women with primary or tertiary level of education (AOR=3.20, 95% CI 1.17, 8.74). The odds of early initiation of ANC visit among mothers who were employed (AOR=2.81, 95% CI 1.01, 7.80) were two times higher than women who were unemployed.

Table 3: Adjusted Odds Ratio for Determinants of Early ANC Booking

Variable	Category	AOR	Confidence interval	P value
Age in years	20-24	5.257	1.30-21.35	0.02*
Marital status	Married	4.60	1.52-13.95	0.01*
Education	Secondary	3.2	1.17-8.74	0.02*
Occupation	Employed	2.81	1.01-7.80	0.04*
	*Statistically significant at p value <0.05.			

DISCUSSION

This study sought to establish the timing of the first antenatal care visit and the determining factors among pregnant women attending antenatal clinic in Embu teaching and referral Hospital in Kenya. WHO recommends that the first ANC visit should be made within 12 weeks gestation(2). In this study it was established that only 35%(n=84) initiated ANC within the 12week gestation. This may be due to women's lack of awareness regarding the importance of early initiation of ANC and the attitude that the woman will make numerous visit before delivery if ANC is started early. The proportion of the women who stated ANC within the recommended period in this study was slightly higher that in several other studies (12,19,20), but similar to a finding by Acup et al(15)

In this study, maternal age was found to be associated with early initiation of ANC. Women aged 20-24 years are five times more likely to book ANC early compared to other age groups. This finding is similar to findings by other studies(3,12,21). Women in this age group are probably having their first child which has been found to positively contribute to early ANC initiation(19). Furthermore, women in this age group are more likely to have acquired knowledge bout ANC through social media exposure.

Bivariate analysis conducted using Chi-square test showed that woman's level of education was significantly associated with early initiation of ANC (X^2=6.418, p=0.04). multivariate regression analysis showed that women with a secondary level of education were three times more likely to initiate ANC early compared to other women. This finding is congruent findings from other studies like that by Alem et al and Gitonga (12,18). However this finding differs from that by Tessema et al who established that women with a tertiary level of education were more likely to initiate ANC early compared to those with lower level of education (21). Having a higher level of education is associated with greater

exposure to information. Therefore, women with a higher level of education may have come across information regarding the benefits of early ANC initiation which may have had a positive influence on them.

Early initiation of ANC was also significantly influenced by marital status (X^2=7.923, p=0.04). Adjusted odds ratio showed that the likelihood of early initiation of ANC was four times higher in married women compared to unmarried ones. This finding concurs with a study other studies that have established that unmarried women were unlikely to start ANC early(14,15,18,19). This may be due to the support that married women get from their partners unlike the unmarried who may hide their pregnancy because of fear of embarrassment (18,22)

This study determined that woman's occupation determine ANC booking. Women who are employed are 2.8 times more likely to initiate ANC within 12week gestation than those who are not. This may be due to the employed women having more finances that may be required for transport and other logistics required for ANC visit. Studies elsewhere have reported similar findings(18,23). This finding however, contradicts findings by

Alibhai et al(24)

CONCLUSION

Through the findings of this study, it can be concluded that the proportion of women initiating ANC within the WHO recommended gestation of 12 weeks is low. Woman's age, level of education, marital status and occupation are the positive determinants of early ANC initiation. Health care providers should provide information, education and communication about the benefits of early ANC for every eligible mother. Mass media programmes and campaigns on early initiation of ANC should also be developed to promote early uptake of ANC services among prospective mothers.

Declaration by Authors

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