

Timing and Determinants of First Antenatal Care in Dire Dawa, Eastern Ethiopia

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Abstract

Background: Late initiation of first Antenatal Care (ANC) is said to occur when pregnant women start their first ANC booking at 16 weeks or more gestation. Though ANC coverage has increased to 87.4% recently in Dire Dawa city, majority pregnant women start their first ANC visit late. The objective this study was to assess the first ANC timing and its determinants among pregnant women attending ANC services in public health facilities of Dire Dawa city Administration, Eastern Ethiopia. **Subjects and Methods:** Facility based cross sectional study design was employed from January to February 2017 that involved a sample size of 413 pregnant women attending antenatal care who were selected by random systematic sampling and a convenience sampling techniques respectively. This study employed descriptive statistics .Bivariate and multivariate logistic regression analysis. The multivariate logistic regression analysis was used to assess associations while simultaneously controlling potential confounding factors. The strength of associations were measured through COR (crude odds ratio) and AOR (adjusted odds ratio). Confidence interval of 95% and p-value <0.05 were applied to determine significance of association. **Results:** This study revealed prevalence of late first ANC visit 50.6% and the determinants of first ANC timing were; parity AOR=19.6, CI(10.2-41) P-value =0.0001, history of previous abortion AOR=0.39, CI(0.22-0.97) P-value =0.03, history of previous caesarian section AOR=0.3, CI(0.12-0.7) P-value =0.004, history of problems in the last delivery AOR=0.23, CI(0.09-0.56) P-value =0.002, history of died children AOR=0.01, CI(0.001-0.8) P-value =0.02, knowledge of appropriate time of first ANC AOR=1.74, CI(1.1-2.8) P-value =0.01, knowledge on benefits and dangers of starting first ANC early and late respectively AOR=2.82, CI (1.65-4.93) P-value =0.003. **Conclusion:** Half/significantly high proportion of the pregnant women studied in public health facilities in Dire Dawa city administration. initiate their first ANC late.

Keywords: Antenatal care timing, determinants.

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Introduction

Antenatal care(ANC) is a type of care given for women during pregnancy and it is one of the pillars of maternal health service The aim of ANC service is to early identify and manage problems of both the pregnant mother and her fetus and to ensure that each newborn child has a good start (WHO/UNICEF, 2003).

Under normal circumstances, the World Health Organization (WHO) recommends that a woman without complications should have at least four ANC visits. Ideally, the first is during first trimester; the second, close to week 26; the third around week 32; and the fourth and final is between weeks 36 and 38. The first offers an opportunity to establish baseline information on the general wellbeing of the mother and the pregnancy. It also helps the expectant mothers' preparedness for motherhood and charts the likely course of the pregnancy (Abouzahr, C.et. al, 2003;

WHO/UNICEF, 2003).

Late booking of first ANC is said to occur when pregnant women start their first ANC booking at 16 weeks or more. Early first ANC booking is more beneficial in preventing adverse pregnancy outcomes and timely referrals for women in high-risk categories or with complications (WHO/USAID, 2008; Banta, D., 2003; Carla et al, 2003).

Though 62% of all pregnant women received ANC from skilled provider in Ethiopia nationally and the ANC coverage has increased to 87.4% recently locally in Dire Dawa city, minority (20.4%) of the pregnant women made their first ANC before the fourth month of pregnancy in 2016. The median duration of pregnancy at first ANC was 4.9 months (EDHS, 2016).

According to Ethiopia's ministry of health report, it was unlikely that women initiate ANC early enough in pregnancy to follow the full basic component of the Focused ANC (Federal Democratic Republic of Ethiopia Ministry of Health, 2010).

Maternal mortality ratio of 412 for every 100,000 live births and the neonatal mortality rate of 29 per 1,000 live births were reported in 2016. These levels indicate that maternal and infant mortality are among the highest in the world (EDHS, 2016).

Factors like socio-demographics, obstetric characteristics, ANC services quality and accessibility are reported to be determinants of first ANC timing in several studies; however, their association with ANC timing varies in type and strength among different study settings. Thus, a factor that is found to be predictor in one study might be a factor that has not association at all in another study. Likewise, a positive predictor in one study might be a negative predictor in another study (Okunlola et al, 2006; Tariku A. et. al, 2010; Isaac B. et. al, 2012; Gulema H. et. al, 2017).

Maternal and neonatal morbidity and mortality have continued to be a major problem in developing countries despite efforts to reverse the trend. Globally, more than 500,000 mothers die each year from pregnancy related conditions, and neonatal mortality accounts for almost 40% of the estimated 9.7 million children under-five deaths. About 99% of maternal deaths occur in developing countries and approximately three-quarters of them are considered avoidable (World Health Organization, 2014). Many women in sub-Saharan Africa; tend to wait to start antenatal care until the second or third trimester (Wang et al, 2011)

Rationale

Though antenatal care is provided free of payment, physically accessible and its coverage is increasing recently most of pregnant women start ANC booking. This situation contributes to an increase in pregnant women’s chance of infant and maternal morbidity and mortality.

From the point of view of prenatal screening and complication prevention components of antenatal care, those pregnant women who booked after the recommended period of booking time are not benefiting from early pregnancy screening and counseling.

There was no adequate information or researches which address the magnitude and associated factors of first ANC timing in Ethiopia in general and in Dire Dawa city administration in particular. Therefore, this study was undertaken to assess the timing of first antenatal care booking and its predictors among pregnant women attending ANC in public health facilities of Dire Dawa city administration, Eastern Ethiopia.

Subjects and Methods

The study was conducted in Dire Dawa city administration between January and February, 2017.

Facility based quantitative cross-sectional study was used. The Study population was all selected pregnant women attending antenatal care in public health facilities in Dire Dawa city administration during the study period and pregnant women who were unable to hear, inpatients, unconscious, and mentally disable were excluded.

The sample size (n=413,) was determined based on the single population proportion formula considering 57.6% ,proportion of late booking among ANC attendees (Ethiopian Mini Demographic Health Survey, 2016),95% confidence level with 5%. degree of precision and 10% contingency.

Systematic probability sampling method at sampling interval (k) =2 was used to select the study units.

The data were collected by structured and semi structured questionnaires after obtaining ethical approval from Dire Dawa University and respective administration health bureau, informed consent and maintaining privacy and confidentiality issues.

Data quality was assured by training of data collectors , pretesting on 5% of the sample size was done in health facility which was not be included in the study, supervision of the entire data collection process ,reviewing and thorough data cleaning .

Data processing and Analysis

After the completion of data collection; cleaning, editing and coding was done; then data were entered using EPI Info version 3.2.2 and analyzed using SPSS version 16.0. Mean, median, mode, standard deviation and range were used in descriptive statistics. Bivariate and multivariate logistic regressions were applied to observe the associations between independent variables on the outcome variable that were measured through AOR (adjusted odds ratio) while simultaneously controlling for other potential confounding factors. Significance of association was determined at 95% confidence interval and p-value <0.05

Results

There were 413 pregnant women who were enrolled in the study and the response rate was 100%. The proportion of respondents who made their first ANC within the recommended time (before 16 weeks of gestation) was 204 (49.4 %) while those who booked late (16 weeks and after of gestation) were 209 (50.6%). The mean and median times to initiate ANC were 3.56 and 4 months (16 weeks) respectively. The timing of first ANC booking ranges from 1- 8 months of gestation.

a) Socio-demographic characteristics results

Table 1: Respondents` socio demographics n=413, 2017.

AGE group of respondents(years)	Frequency	Percent
<19	38	9.2
19-24	159	38.5
25-30	163	39.5
31-36	46	11.1
>36	7	1.7
Ethnicity of respondents		
1=oromo	218	52.8
2=Somali	29	7.0
3=amhara	112	27.1
4=tigre	6	1.5
5=gurage	31	7.5
6=other	17	4.1

Monthly Income status of respondents(in Ethiopian birr)		
<1500	151	36.6
1500-3000	194	47.0
≥3000	68	16.4
Residence Place		
1=rural	99	24
2=urban	314	76.0
Religion status		
1=orthodox	125	30.3
2=protestant	37	9.0
3=Muslim	251	60.8
Marital status		
1=single	7	1.7
2=married	399	96.6
3=divorced	5	1.2
4=widowed	2	0.5
Educational status		
1=unable to read and write	140	33.9
2=able to read and write	4	1.0
3=grade 1-8	118	28.6
4=grade 9-12	85	20.6
5=10+certificate	32	7.7
6=diploma	25	6.1
7=degree and above	6	1.5
Occupation status		
1=government employee	29	7.0
2=private employee	31	7.5
3=housewife	281	68.0
4=private job	54	13.1
5=farming	14	3.4
6=other	4	1.0

b) Obstetrical characteristics results

Out of all the respondents 286(69.2%) were multigravida, 255(61.7%) malitiparous. There was in 8 (18.9%) at least one abortion, 11 (1.7%), at least one stillbirth 9%, problem in the last delivery and 31 (7.5%) previous caesarian section past history respectively.

c) Service utilization and predictors of ANC booking initiation time results

Table 2: Responses to service utilization and predictors of ANC booking initiation time N=413, 2017

How do you rate the importance of ANC for your mother?	Frequency	Percent
1=Highly important	381	92.3
2=MEDIUM	29	7.0
3=LOW	2	0.5

How do you rate the importance of ANC for your fetus?		
1=Highly important	374	90.6
2=MEDIUM	33	8.0
3=LOW	5	1.2
How many times do you think a woman needs to go for ANC during pregnancy?		
1=1st visit	12	2.9
2=2nd visit	29	7.0
3=3rd visit	121	29.3
4=≥4th visit	250	60.5
Payment status of current ANC checkup		
1=not paid	243	58.8
2=paid for examination/investigation/medication	170	41.2
If you paid for any service charge, what is the maximum money you paid for a visit?		
1=≤50 birr	116	68.2
2= >50 birr	54	31.8
How do you know your pregnancy?		
1=missed period	286	69.2
2=physiological body changes	50	12.1
3=ultrasound	3	0.7
4=urine test	73	17.6
How many times did you receive antenatal care during this pregnancy?		
1=this is my first visit	171	41.4
2=2 times	120	29.1
3=3 times	68	16.5
4=≥4 times	53	12.8
Was there any one who advised you to start your first ANC check up?		
1=yes	400	96.9
2=no	9	2.2
current pregnancy planning and wanting status		
1=planned	338	81.9
2= unplanned	75	18.1
Why you decided to start the follow up at that particular time?		
1= i am told that is the right time	191	46.2
2=financial reason	4	1.0
3=booking was convenient	161	39.0
4=getting free time	18	4.4
5=other	38	9.2
First ANC booking time For your current pregnancy		
Early[before 16 weeks(4 months)]	204	49.4
Late[at 16 weeks (4 months) and more]	209	50.6

d) First ANC booking time and predictors association results

Table 3: association of socio-demographics with first ANC timing N=413, 2017

AGE in years					
	Late booking	Early booking	COR [95% CI]	AOR[95% CI]	P-value
<18	28	10	2.1[0.39-11.06]	2.06[0.33-11.73]	=0.73
19-24	94	65	1.08[0.23-5]	2.04[1.86-9.26]	
25-30	66	96	0.5[0.11-2.37]	1.13[0.02-13.72]	
31-36	16	30	0.4[0.07-2.1]	1.73[0.2-3.72]	
>36	4	3	Ref		
Monthly income(BIRR)					
<1499	78	72	1.1[0.72-1.62]	1.12[0.72-1.63]	p-value=0.57
≥1500	130	132	Ref		
Ethnicity					
1=oromo	117	101	1.02[0.38-2.76]	1.03[0.36-2.83]	p-value=0.35
2=Somali	11	17	0.57[0.17-1.94]	1.78[0.79-4.11]	
3=amhara	55	57	0.85[0.3-2.3]	1.19[0.75-1.89]	
4=tigre	1	5	0.17[0.01-1.86]	0.75[0.1-13.9]	

5=gurage	15	16	0.83 [0.25-2.7]	1.23[0.57-2.65]	
6=other	9	8	Ref=1		
Residence					
Rural	55	43	1.34[0.85-2.12]	1.63[0.85-2.13]	P-Value =0.4
Urban	153	161	Ref=1		
Religion					
1=orthodox	61	64	0.93[0.61-1.44]	0.94[0.6-1.47]	p-value=0.96
2=protestant	21	16	1.29[0.64-2.59]	0.94[0.6-1.47]	
3=Muslim	126	124	Ref=1		
Marital status					
1=Not married	6	1	6.02[0.71-50.5]	6.17[0.89-143.8]	P-Value =0.17
2=ever married	202	203	Ref=1		
Educational status					
1=unable to read and write	74	65	1.33[0.73-2.4]	1.1[0.11-11.2]	P-Value =0.35
2=able to read and write	2	2	1.17[0.15-8.8]	1.3[0.71-1.98]	
3=grade 1-8	58	60	1.13[0.61-2.09]	1[0.58-1.8]	
4=grade 9-12	45	40	1.3[0.68-2.5]	1[0.4-2.3]	
5=certificate and above	29	34	Ref=1		
Occupation					
1=government employee	11	18	0.76[0.23-2.7]	0.3[0.09-1.1]	P-Value =0.48
2=private employee	19	12	1.97[0.6-6.41]	0.39[0.1-1.32]	
3=housewife	143	137	1.3[0.5-3.4]	0.53[0.22-1.36]	
4=private job	27	27	1.25[0.4-3.6]	0.61[0.2-1.67]	
5=farming	8	10	Ref=1		

Table 4- Association of predictors with first ANC timing N=413, 2017

Parity	Late booking	Early booking	COR [95% CI]	AOR [95% CI]	P-Value
Nulliparous(0)	115	12	19.78[10.4-37]	19.6[10.2-41]	P-Value =0.0001**
Para ≥1	93	192	Ref=1		
Gravidity					
Primigravida	203	198	1.23[0.36-4.09]	1.22[0.32-5.1]	P-Value =0.05
Multigravida	5	6	Ref=1		
History of previous caesarean delivery?					
1=YES	8	23	0.31[0.13-0.72]	0.3[0.12-0.7]	P-Value =0.004**
2=NO	200	181	Ref=1		
History of problem with the last delivery					
1=YES	8	29	0.24[0.1-0.54]	0.23[0.09-0.56]	P-Value =0.004**
2=NO	200	175	Ref		
History of abortion					
1=yes	25	53	0.38[0.23-0.55]	0.39[0.22-0.97]	P-Value =0.03**
2=no	183	151	Ref		
History of still births					
No(0)	203	198	1.22[0.36-4.1]	1.3[0.3-5.1]	P-Value =0.99
Yes (≥1)	5	6	Ref		
Number of children died					
0	1	187	0.005[0.0002-0.2]	0.01[0.001-0.8]	PV= 0.02**
≥1	1	1	Ref		
Cost of transportation paid from health facility to home					
1=0	112	120	0.93[0.18-4.72]	0.8[0.53-1.3]	P-Value =0.81
2=1-50birr	93	81	1.14[0.22-5.84]	0.78[0.65-1.3]	
>50birr	3	3	Ref		
Paying status and reason in current pregnancy checkup					
1=not paid	123	116	1.06[0.7-1.5]	1.05[0.7-1.6]	P-Value =0.94
2=paid	85	85	Ref		
Knowledge on benefits of early and dangers of late first ANC initiation					
Good	135	171	2.83[1.69-4.73]	2.82[1.65-4.93]	P-Value =0.003**
Poor	23	83	Ref		
Knowledge on the appropriate time to start ANC booking					
<4 months	135	171	1.75[1.09-2.79]	1.74[1.1-2.8]	P-Value =0.01**
≥4 months	33	73	Ref		
importance of ANC to pregnant women health rating					
1=Highly important	185	189	1.46[0.24-8.8]	0.47[0.2-1.23]	P-Value =0.51

2=MEDIUM	21	12	2.62[0.38-17.98]	1.5[0.2-17.7]	
3=LOW	2	3	Ref		
importance of ANC to the fetus health rating					
1=Highly important	188	193	0.48[0.3-1.6]	0.5[0.2-1.3]	P-Value =0.94
2=MEDIUM	18	10	0.9[0.07-11.2]	0.39[0.01-6.4]	
3=LOW	2	1	Ref		
advice getting from someone to start ANC					
YES	294	196	1.3[0.3-4.9]	1.29[0.2-6.7]	P-Value =0.74
NO	4	5	Ref		
Pregnancy Planning status					
planned	176	162	1.25[0.74-2.1]	0.7[0.16-4.1]	P-Value =0.46
unplanned	32	37	Ref		

**statistically significant variables

Discussion

This study finding of pregnant women first ANC booking time at 16 and more weeks of gestation (late) 50.6 % prevalence is almost similar when compared to prevalence of first ANC late booking 49.2% in Yem, south west Ethiopia (Bahilu T. et. al, 2008) and 50.3% in Dilla, south Ethiopia. (Tadele G. et. al, 2016) but, lower as compared to the national prevalence of first ANC late booking of 57.8% (EMDHS 2014), to 54.5% prevalence of first ANC late booking study result found in Holeta, south Ethiopia (Birmeta K. et.al, 2012), to 59.8 % in Addis Ababa (Tariku A. et.al, 2010) , to 68.6% in kembata tembaro, south Ethiopia (Tesfalidel et. al, 2014), to 64.6% in Gondar, north west Ethiopia (Temesgen W. et. al, 2012) and to 73.8% in Debrebirhan, central Ethiopia (Amtachew M. et. al, 2013). This could be due to the further expansion of health extension activities in the country over the last four to five years or due to the presence of both urban and rural health extension program in Dire dawa city administration.

However; the late ANC booking prevalence of this study finding is higher to the study results in developed western counties like Australia showed that almost all first ANC booking visits are early. In Australia, 62% of women attended in the first trimester (less than 14 weeks) nationally (Banta D, 2003; WHO/USAID, 2008; AIHW, 2016). This could be due to socio- economic-demographic and health delivery system differences between Ethiopia and the developed western countries.

The median pregnancy age at first ANC of 4 months found in this study is higher as compared with study results reported by most developed western counties like Australia which is 3 months on average (Banta D, 2003; WHO/USAID, 2008; AIHW, 2016). This could be due to the poor socio- economic status in Ethiopia and the advanced health delivery system in developed western countries. But is lower as compared when compared with Ethiopia's national median of first ANC timing 5.2 months (EMDHS 2011), median pregnancy age at first ANC 5 months in Holeta (Kidist Birmeta, 2012) and Tanzania (Gross K. et.al, 2012) which could be similarly due to the further expansion of health extension activities in the country over the last four to five years or due to the presence of both urban and rural health extension program in Dire dawa city administration.

'Parity' as determinant of first ANC timing found in this study is in line with the reports` of study results revealed done in Ethiopia towns of Debrebirhan (Amtatachew M. et.al 2013), kembata tembaro (Tesfalidel et. Al, 2014), Holeta (Birmeta K. et.al, 2012) and Tanzania (Gross K. et.al, 2012)

knowledge on appropriate time to start ANC booking, knowledge of the benefits of early first ANC and knowledge of the dangers of late first ANC timing` as predictor of first ANC timing found in this study are consistent with study result found in Gondar, north west Ethiopia (Temesgen W. et. al, 2012)

Factors like` problem in the last pregnancy` and `having history of previous abortion` which are found to be predictors of first ANC timing in this study are consistent with study result found in Yem, south west Ethiopia (Bahilu T. et. al, 2008) and Tanzania (Gross K. et.al, 2012)

Other factors like; primigravidity, previous caesarian section and having history of died children` which were found to be significant predictors of first ANC timing in this study are inconsistent as compared with other studies done in Zambia (Isaac B. et.al, 2012), Tanzania (Gross K. et.al, 2012), Nigeria (Ndidi EP, et.al, 2010), and Lesotho (Phafoli SH, et.al, 2013) which could be due to differences in methodology, study population socio- demographics or the ANC services delivery system among these settings.

Conclusion

- Half/significantly high proportion of the pregnant women studied in public health facilities in Dire Dawa city administration. initiate their first ANC late.
- Significantly associated factors with timing of first ANC booking were; parity AOR=19.6, CI(10.2-41) P-value =0.0001,, history of previous abortion AOR=0.39, CI(0.22-0.97) P-value =0.03, history of previous caesarian section AOR=0.3, CI(0.12-0.7) P-value =0.004, history of problems in the last delivery AOR=0.23, CI(0.09-0.56) P-value =0.002, history of died children AOR=0.01, CI(0.001-0.8) P-value =0.02, knowledge of the appropriate time of starting ANC booking AOR=1.74, CI(1.1-2.8) P-value =0.01, knowledge on benefits and dangers of starting first ANC early and late respectively AOR=2.82, CI (1.65-4.93) P-value =0.003. Therefore; strengthening of awareness creation interventions, counseling services, capacity

building of health extension workers and mass media advertizing programs on early initiation of first ANC follow up are recommended.

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