

## Timely Booking and Factors Associated with First Antenatal Care Attendance among Pregnant Women in Public Health Centers, Addis Ababa

Tsigereda Abebe<sup>1</sup>, Shiferaw Letta <sup>2\*</sup>, Ewenat Gebrehana<sup>3</sup> and Belete Feyera<sup>4</sup>

<sup>1</sup>Yekatit 12 Hospital Medical College, Addis Ababa, Ethiopia.

<sup>2</sup>School of Nursing & Midwifery, College of Health and Medical Sciences, Haramaya University, Harar, Ethiopia.

<sup>3</sup>St. Paul's Millennium Medical College, Addis Ababa, Ethiopia.

<sup>4</sup>Ambo University, Faculty of Health and Medical Sciences, Ambo, Ethiopia

### Abstract

**Back ground:** Antenatal Care (ANC) is the care given to pregnant women during pregnancy and it is one of the pillars of maternal health services. Adverse pregnancy outcomes can be minimized if antenatal care is received timely or early in the pregnancy, during the first 16 weeks of gestation for the first time and continued until delivery. The objective of this study was to assess the timely booking and the factors associated with the first ANC attendance among pregnant women in the public health centers in Addis Ababa.

**Methods:** A facility-based cross-sectional quantitative study design was conducted on 422 pregnant women from ten randomly selected health centers in Addis Ababa. Data were collected through a structured interview, and they were extracted from the record. The sample size was allocated proportional to the number of pregnant women attending ANC in each of the health centers. A timely booking for first ANC attendance during the first 16 weeks of gestation was an outcome variable. A logistic regressions analysis was employed to see the effect of the independent variables on the dependent variable.

**Results:** The proportion of pregnant women who timely booked for first ANC attendance was 110 (26.1%) and the rest (312(73.9%)) initiated during the late pregnancy period. Young pregnant women or <25 years old women (AOR=2.56, 95% CI: 0.11-3.72), being a government employee (AOR=0.49, 95% CI: 0.26-0.94), nulliparous pregnant women (AOR=1.36, 95% CI: 0.69-1.76) and knowledge of obstetric danger signs (AOR=2.13, 95% CI: 1.49-11.25) were statistically significant with timely booking for first ANC attendance.

**Conclusion:** According to the findings of this study, most of the pregnant women did not book for their first ANC attendance in a timely manner. The timely booking showed significant association with younger age (<25years), nulliparity and having knowledge of at least two obstetric danger signs. However, the mothers who were working in government institutions were less likely to book in a timely manner. Targeted health education is required for pregnant women, especially those who are older, primiparous and multiparous, and who do not know about obstetric danger signs, about the importance of timely booking for ANC and obstetric danger signs to escalate their awareness. The authors strongly suggest that all pregnant women who are working in government institutions should get official permission for ANC follow up. For a better understanding of the issues, the authors recommended a wide-ranging study that addresses all aspects of obstetric issues of pregnant women at all level of health facilities.

**Key words:** *Antenatal care, parity, gravidity, obstetric danger signs*

**Citation:** Abebe, T., Letta, S., Gebrehana, E., and Feyera, B. 2017. Timely Booking and Factors Associated with First Antenatal Care Attendance among Pregnant women in Public Health Centers, Addis Ababa. *East African Journal of Health and Biomedical Sciences*, Volume 1 (2): 21-28.

### Introduction

Antenatal Care (ANC) is the care given to pregnant women during pregnancy and it is one of the pillars of maternal health services. Adverse pregnancy outcomes can be minimized or avoided if ANC is received early in the pregnancy. A timely booking for the first ANC is a booking for the first time during the first 16 weeks of gestation. The World Health Organization (WHO)

recommends that a pregnant woman without complications should have at least four antenatal visits, the first of which should take place in the first trimester. The first visit helps to screen and treat anemia, syphilis, Human Immune-Deficiency Virus (HIV) and other medical conditions that can be best dealt with in early

pregnancy and initiate prophylaxis if required (WHO, 2003; United Nations, 2009).

Studies have shown that most of the maternal and neonatal deaths are avoidable (Simon *et al.*, 2002). 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 pregnant women at risk of complications of delivery and ensuring that they deliver in a suitably equipped facility (Trinh *et al.*, 2006). The United Nations reported that, every year, at least half a million pregnant women die as a result of complications during pregnancy, childbirth or 6 weeks following delivery. Almost all (99%) of these deaths occur in developing countries (UN, 2009). In untreated syphilis, 70% to 100% of infants will be infected and one-third will be still born. Pregnant women should also be offered iron and folic acid supplementation early in the pregnancy (WHO, 2003). Insufficient knowledge about the danger signs of pregnancy among women is one of the major contributing factors for maternal deaths (Kabakyenga *et al.*, 2011). The most common danger signs that can increase the risk of maternal deaths during pregnancy are vaginal bleeding, convulsions/fits, high fever, abdominal pain, severe headaches, blurred vision, absence of fetal movements, gush of fluid from vagina and foul smelling vaginal discharge (Solomon *et al.*, 2015). Knowledge of obstetric danger signs is also important for seeking obstetric care and timely referral (Kakaire O *et al.*, 2011).

Ethiopia has recorded an encouraging improvement in ANC coverage (at least one visit) in the last decade: from 27% in 2000 to 42% in 2011 and 17% in 2014. However, receiving adequate ANC is still a real challenge and only 11.2% of the pregnant women began attending ANC in the first trimester, while only 19% made the recommended number of four visits (CSA, 2011 & 2014).

Studies done in Debre Birhan, Hadiya zone, Addis Ababa, and Gonder showed that 26.2%, 33.6%, 40%, 35.4%, and 47.4% of pregnant women started ANC in the first trimester, respectively (Abosse *et al.*, 2010; Tariku *et al.*, 2010; Zegeye *et al.*, 2013; Belayneh *et al.*, 2014; Gudayu *et al.*, 2014).

There are noticeable inconsistencies among the findings of different studies and little is known about the factors that influence the timely booking for the first ANC attendance. Some of these factors are maternal age, marital status, state of pregnancy, parity, educational status, knowledge of ANC, birth outcomes, and accessibility of service.

Therefore, the aim of this study was to answer two major research questions: What is the proportion of timely booking for first ANC attendance among the pregnant women in selected public health centers in Addis Ababa? What factors predominantly influence the ANC booking?

## Materials and Methods

### *Setting*

A facility based cross-sectional quantitative study design was conducted in Addis Ababa, the capital city of Ethiopia, where there are 10 public hospitals and 67 health centers. For this study, ten public health centers were randomly selected: Semen, Shiroma, Woreda 17, Kotebe, Saris, Kirkos, Teklehaymanot, Kolfe, Arada and Bole. Data were collected from December to January 2014.

### *Participants and Sampling Procedure*

All the pregnant women who were attending ANC in Addis Ababa public health centers during the study period were the source population whereas all the pregnant women who sought their first ANC in the selected public health centers from December to January 2014 were the study population. The study subjects were recruited from every fifth case among those pregnant women who came for first ANC visit and were willing to participate in the study. The sample size was calculated using a single population proportion formula based on the following assumptions: the proportion of timely booking for first ANC attendance (P) was 40% (Tariku *et al.*, 2010) with a 95% confidence interval and 5% non-response rate. Thus, the calculated sample size was 406. The sample size was also calculated for the factors associated with timely booking for first ANC attendance using EPI-INFO stat calc Version 7.0. A total of 422 participants were used for the whole study.

### *Measurements*

A timely or early booking is a booking of pregnant women attending ANC for the first time during the first 16 weeks of gestation. Any booking by the women after

16 weeks of gestation or after first trimester was considered late appearance for ANC (WHO, 2003). A timely booking for the first ANC attendance was the outcome variable. The independent variables were socio-demographic factors (maternal age, education, religion, family's monthly income, marital status), obstetric history (gravidity, parity, knowledge of at least two obstetric danger signs), and state of pregnancy (intended or unintended), as well as perceived number of ANC visits, previous stillbirth or neonatal loss, history of spontaneous abortion, previous surgery on the reproductive tract and history of chronic diseases. The pregnant women who came for ANC service were the primary source of data.

#### **Data Collection Procedure**

The study participants were interviewed using a structured questionnaire. The questionnaire was first prepared in English, then it was translated into Amharic, and finally, to check for consistency, back into English. Five BSc nurses and health officers collected the data and supervised the process. They were given a three-day training on the methods, objectives, data quality and data collection process. The questionnaire was pretested on 5% of the total sample size. This study was reviewed and approved by Institutional Health Research Ethics Review Committee (IHRERC) of Haramaya University, College of Health and Medical Sciences. The interviewer ensured confidentiality and verbal consent was obtained from the study subjects before the data collection. The women were interviewed in a separate room after they had received the ANC service. The data were checked for completeness by the principal investigator and the supervisors on a daily basis.

#### **Data Processing and Analysis**

The data were coded and entered to EPI-INFO Version 3.5.3 statistical software and analyzed using SPSS Version 20. The dependent (outcome) variable was dichotomized into timely/early and late booking for ANC attendance. To see the effect of the independent variables on the outcome variable, multiple logistic regression analysis was performed (by controlling possible confounders) for the factors that showed a statistically significant association in the bivariate analysis. The degree of association between the outcome and the independent variables was assessed using OR and 95% CI. Statistical significance was set at  $p < 0.05$ .

## **Results**

### **Socio-Demographic Characteristics of Study Participants**

Four hundred and twenty-two pregnant women who booked for ANC attendance at the selected public health centers were interviewed. More than half of them 229 (54.3%) were below 25 years, with a mean age of 24 years. Of all the study participants, 391 (92.7%) were married, 202 (47.9%) were Orthodox, 228 (54%) attended primary school, 142 (33.6%) were government employees, and 266 (63%) earned more than 1000.00 ETB/month (Table.1)

Table.1.Socio-demographic Characteristics of pregnant women attending Antenatal Care (ANC) in public health centers in Addis Ababa, 2014

Characteristics	Frequency (n=422)	Percentage (%)
<b>Age (yrs.)</b>		
<25	229	54.3
26-35	181	42.9
>35	12	2.8
<b>Marital status</b>		
Married	391	92.7
Single	31	7.3
<b>Religion</b>		
Orthodox	202	47.9
Muslim	103	24.4
Protestant	82	19.4
Catholic	35	8.3
<b>Educational Status</b>		
Unable to read & write	75	17.8
Primary(1-8)	228	54.0
Secondary & above	119	28.2
<b>Occupation</b>		
Govt. employee	142	33.6
NGO employee	67	15.9
Private employee	127	30.1
House wife	86	20.4
<b>Family's monthly income (ETB)</b>		
<400.00	24	5.7
401.00-1000.00	132	31.3
>1000.00	266	63.0

***Obstetric, Past Medical and Surgical History***

Out of the 422 pregnant women, 312 (73.9%) booked for the first ANC late, after 16 weeks of gestation, whereas the rest booked timely or early, within the first 16 weeks of gestations. Two thirds of the women (294 (69.7%)) thought that the first ANC booking is after 16 weeks of gestations. Almost half of the participants (223(52.8%)) reported that the recommended number of ANC is more than 4 times. Two hundred four (48.3%) of the study subjects knew at least two obstetric danger signs. Of all the respondents, 297 (70.4%) reported that the current pregnancies were intended, 256 (60.6%) of them were gravid II, 291 (69%) were primiparous or multiparous, 412 (97.6%) had not undergone reproductive tract surgery, and 415 (98.3%) and 413 (97.9%) had no history of still birth or neonatal loss and abortion, respectively. Most of the pregnant women (417(98.8%)) did not have a history of chronic diseases such as diabetes and hypertension (Table 2).

***Factors Associated With Timely Booking for First Antenatal Care***

Young age, being a government employee, being nulliparous and having knowledge of at least two obstetric danger signs were the independent predictors of a timely booking for the first antenatal care attendance. The respondents who were below 25 years of age were 2.6 times higher odds for the timely booking for ANC (AOR=2.56, 95% CI: 1.11-3.72) than the pregnant women who were aged >35 years. The government employees were less likely to be booked by 50 % (AOR= 0.49, 95% CI: 0.26-0.94) than the housewife respondents. Nulliparous pregnant women were 1.3 times (AOR=1.27, 95% CI: 1.10-1.76) more likely to be booked for ANC at the recommended time compared with primiparous and multiparous women. The respondents who knew at least 2 obstetric danger signs were 2 times (AOR=2.13, 95%CI: 1.49-11.25) more likely to be booked for ANC timely than their counterparts (Table 3).

Table 2. Obstetric, Medical and Surgical History of pregnant women attending Antenatal Care (ANC) in Public Health Centers in Addis Ababa, 2014.

Characteristics	Frequency (n=422)	Percentage
Booking for first ANC attendance		
Timely/Early(before 16wks)	110	26.1
Late (after 16wks)	312	73.9
Knowledge of time for first ANC booking		
Before 16 weeks of Gestation	128	30.3
After 16 weeks of gestation	294	69.7
Perceived Number of ANC		
<4 times	199	47.2
>4 times	223	52.8
Knowledge of at least two obstetric danger signs		
Yes	204	48.3
No	218	51.7
State of current pregnancy		
Intended	297	70.4
Unintended	125	29.6
Gravidity		
I	153	36.3
II	256	60.6
≥III	13	3.1
Parity		
Nulliparous	131	31.0
Primiparous & Multiparous	291	69.0
Previous reproductive tract surgery		
Yes	10	2.4
No	412	97.6
Previous stillbirth/ neonatal loss		
Yes	7	1.7
No	415	98.3
History of abortion		
Yes	9	2.1
No	413	97.9
History of chronic diseases		
Absent	417	98.8
Present	5	1.2

Table.3. Factors Associated with Timely Booking of First Antenatal Care Attendance among Pregnant women in Public Health Centers, Addis Ababa, 2014.

Characteristics	First Antenatal Care Attendance		COR(95%CI)	AOR (95% CI)
	Early No. (%)	Late No. (%)		
Age (in years)				
<25	64(27.9)	165(72.9)	2.74(0.06-2.01)	2.56(1.11-3.72)*
26-35	44(24.3)	137(75.7)	1.07(0.11-2.53)	1.05(0.14-3.44)
>35	2(16.7)	10(83.3)	1	1
Level of Education				
Unable to read & write	19(25.3)	56(74.7)	1	1
Primary(1-8)	57(25.0)	171(75.0)	1.91(1.04-3.46)	1.16(0.59-2.26)
Secondary & above	34(28.6)	85(71.4)	1.69(1.08-2.65)	1.24(0.74-2.07)
Occupation				
Government employee	47(33.1)	95(66.9)	0.60 (0.26-0.94)	0.49 (0.26-0.95)*
NGO employee	14(20.9)	53(79.1)	1.93(0.42-2.06)	0.93(0.44-2.24)
Private worker	17(19.8)	69(80.2)	0.76(0.37-1.42)	0.73(0.38-1.48)
Housewife	32(25.2)	95(74.8)	1	1
Religion				
Orthodox	52(25.7)	95(74.3)	2.26(0.96-4.41)	2.06(1.03-4.93)
Muslim	33(32.0)	70(68.0)	1.94(0.73-3.75)	1.66(0.84-4.48)
Protestant	33(40.2)	49(59.8)	1.48(0.58-3.09)	1.35(0.63-3.51)
Catholic	10(28.6)	25(71.4)	1	1
Parity				
Nulliparous	45(34.4)	86(65.6)	1.36(0.79-2.01)	1.27(1.10-1.76)*
Primi & Multiparous	83(28.5)	208(71.5)	1	1
Had Knowledge of at least 2 obstetric danger signs				
Yes	59(27.1)	159(72.9)	2.24(1.25-17.96)	2.13(1.49-11.25)*
No	51(25)	153(75)	1	1

\* Statistically significant association (P&lt; 0.05)

## Discussion

The proportion of pregnant women who appeared for the first ANC service during the first 16 weeks of gestation was 26.1%, which is higher than the numbers reported by the Ethiopia Demographic Health Survey (EDHS) in 2011 (11%) and in 2014 (17%). This figure is lower than the extent found in Gonder (35.4%) (Central Statistical Agency, 2011 & 2014; Gudayu *et al.*, 2014), in Addis Ababa (40.0%), in Gonder (47.4%), and in Australia (59%) (Trinh *et al.*, 2006; Tariku *et al.*, 2010; Belayneh *et al.*, 2014). The proportion is consistent with the results from similar studies in Hadiya zone (33.6 %), Debre Birhan (26.2%), Zambia (31.4%), and Nigeria

(26.4%) (Abosse *et al.*, 2010; Ndidi *et al.*, 2010; Banda *et al.*, 2012; Zegeye *et al.*, 2013). Generally, the 26.1% timely booking found in our study is lower than the WHO recommendation and thus the benefits of timely booking are not yet well appreciated. This might be due to lack of awareness or knowledge about the right time for first appearance. The other reason might be the respondents' previous experience, as nearly two thirds of the participants were multiparous pregnant women who felt confident without ANC. Like similar study findings in Gonder and Damascus (Bashour *et al.*, 2014; Belayneh *et al.*, 2014; Gudayu *et al.*, 2014), in this research, young

age (<25 years old) showed association with timely booking for ANC service. The possible explanation could be young pregnant women during their first pregnancy might be more careful about their pregnancy and therefore they seek institutional care more than older pregnant women do. In addition, young pregnant women might have better awareness about the importance of timely booking for ANC than older ones have. However, a study in UK reported young age (less than 20 years) as a predictor for late antenatal attendance (Cresswell *et al.*, 2013).

Not only age, but also occupation influences the booking (Kawungezi *et al.*, 2015). In this study, being a government employee decreased the timely ANC booking by 50% compared to being a housewife. This is probably because the ANC visit time is the same as the government working hours. Therefore, this might require further exploration.

Being nulliparous and knowing at least two obstetric danger signs were other predictors of timely booking for first antenatal care attendance. Even though many studies have been conducted, they have not shown the association of knowledge of obstetric danger signs with timely booking. For instance, the studies done in Arba Minch and Debaytilatgin district reported that 75.9% and 43.2% of the pregnant women did not have awareness about obstetric danger signs that could occur during pregnancy, labor, and postnatal period (Workineh, 2014; Taddesse, 2015). Similarly, the findings in Debre Birhan (Solomon *et al.*, 2015) and Tsegedie District (Hailu *et al.*, 2014) identified that 61.4% and 35.1% of the pregnant women did not know about obstetric danger signs. But study in Zambia revealed that having knowledge of obstetrics danger signs might stimulate the women to book timely for ANC (Banda *et al.*, 2012). A study in Addis Ababa showed that pregnant women who were well informed about ANC were more likely to book for ANC within the recommended time. After a thorough literature review we failed to find a single study done to explore the correlation between knowledge of obstetric danger signs and antenatal care initiation time. Therefore, a wide-ranging study will be required to address all aspects of obstetric issues and related complications.

In this study, nulliparous respondents initiated ANC in a timely manner, and this finding is consistent with a study in Addis Ababa that stated that as parity increases,

the experience of timely booking for ANC attendance decreases (Tariku *et al.*, 2010). Likewise, the findings from Zambia also recognized that there was a tendency to book for ANC in a timely manner among women of low parity (Banda *et al.*, 2012). This is probably because primiparous and multiparous pregnant women rely on their past experience and feel more confident.

This study had some limitations. It was limited to public health centers and also used a relatively low sample size. Substantiating the findings with a qualitative study would have strengthened the results.

## Conclusion

According to the findings of this study, most of the pregnant women did not book early for the first ANC attendance. The pregnant women who were young, nulliparous and had knowledge of at least two obstetric danger signs booked in a timely manner whereas those who were government employees presented later.

## Recommendations

Targeted health education is required for pregnant women (older age, primiparous and multiparous, and those who do not know about obstetric danger signs) about the importance of early booking for ANC and obstetric danger signs to escalate their awareness.

The authors strongly suggest that all pregnant women who are working in the government institutions should get official permission for ANC follow up. Pregnant women who are young, nulliparous and have knowledge of at least two obstetric danger signs should be encouraged at the health facility level to book for ANC in a timely manner in the subsequent pregnancies. The authors also recommend that a wide-ranging study that addresses all aspects of obstetric issues of pregnant women at all level of health facilities will be crucial for better generalization of the findings of this study

## Acknowledgments

We would like to thank Haramaya University and Addis Continental Institutes of Public Health for providing us this opportunity. Furthermore we are grateful to Addis Ababa Health Bureau and Addis Ababa Public Health Centers for their cooperation in facilitating the field work and study participants for providing this valuable information.

## Competing interests

The author(s) declare that they have no competing interests.

## Authors' Contributions

TA participated in conception, designing of the study and analyzed and interpreted the data. SL participated in the designing of the study, analysis, write-up and drafting of the manuscripts. EG and BF designed the study, and analyzed and interpreted the data, critically reviewed and drafted the manuscript. Authors read and approved the final manuscript.

## References

- Abosse, Z., Woldie, M. and Ololo, S. 2010. Factors Influencing Antenatal Care Service Utilization in Hadiya Zone. *Ethiop J Health Sci*, 20(2), 75-82.
- Banda, I., Michelo, C. and Hazemba, A. 2012. Factors Associated with late Antenatal Care Attendance in Selected Rural and Urban Communities of the Copperbelt Province of Zambia. *Medical Journal of Zambia*, 39(3).
- Bashour, H., Abdulsalam, A., AlFaisal, W. and S.Cheikha. 2014. Patterns and determinants of maternity care in Damascus. *Eastern Mediterranean Health Journal*, 14(3).
- Belayneh, T., Adefris, M. and Andargie, G. 2014. Previous early antenatal service utilization improves timely booking: cross-sectional study at university of Gondar hospital, northwest Ethiopia. *J Pregnancy*, doi: 10.1155/2014/132494
- Central Statistical Agency. 2011. Ethiopia Demographic and Health Survey Addis Ababa.
- Central Statistical Agency. 2014. Ethiopia Mini Demographic and Health Survey Addis Ababa.
- Cresswell, J. A., GeYu, Hatherall, B., Morris, J., Jamal, F. and Renton, A. A. 2013. Predictors of the timing of initiation of antenatal care in an ethnically diverse urban cohort in the UK. *BMC Pregnancy and Childbirth*, 13(103).
- Gudayu, T. W., Woldeyohannes, S. M. and Abdo, A. A. 2014. Timing and factors associated with first antenatal care booking among pregnant mothers in Gondar Town; North West Ethiopia. *BMC Pregnancy Childbirth*, 14(287). doi: 10.1186/1471239314287
- Hailu, D. and Berhe, H. 2014. Knowledge about obstetric danger signs and associated factors among mothers in Tsegedie district, Tigray region, Ethiopia 2013: community based cross-sectional study. *PLoS One*, 9(2), e83459. doi: 10.1371/journal.pone.0083459
- Kabakyenga KJ, Ostergren P, Turyakira E and KO, P. 2011. Knowledge of obstetric danger signs and birth preparedness practices among women in rural Uganda. *Reproductive health*, 8, 33(10).
- Kakaire O, Kaye DK and MO, O. 2011. Male involvement in birth preparedness and complication readiness for emergency obstetric referrals in rural Uganda. *Reprod Health*, 8(12).
- Kawungezi, P. C., AkiiBua, D., Aleni, C., Chitayi, M., Niwaha, A., Kazibwe, A., . . . Nakubulwa, S. 2015. Attendance and Utilization of Antenatal Care (ANC) Services: Multi-Center Study in Upcountry Areas of Uganda. *Open J Prev Med*, 5(3), 132-142. doi: 10.4236/ojpm.2015.53016
- Ndidi, E. P. and Oseremen, I. G. 2010. Reasons Given by Pregnant Women for Late Initiation of Antenatal Care in the Niger Delta, Nigeria. *Ghana Med J*, 44(2), 47-51.
- Simon, S., R, B. and JA, M. 2002. Does Incomplete Growth and Development Predispose Teenagers to Preterm Delivery? A Template for Re-search. *Journal of Perinatology*, 22(4), 315-323.
- Solomon, A.A., Amanta, A., Cherkose, E. and Badi, M.B. 2015. Knowledge About Danger Signs of Pregnancy and Associated Factors Among Pregnant Women in Debra Birhan Town, Central Ethiopia. *Science Journal of Public Health*, 3(2), 269. doi: 10.11648/j.sjph.20150302.27
- Tadesse, D., Dile, M., Asmama, T. and Gedefaw, M. 2015. Knowledge of Obstetric Danger Signs and its Associated Factors in Debayilatgin District, Ethiopia: A Community Based Cross Sectional Study. *Gynecology & Obstetrics*, 05(09). doi: 10.4172/2161-0932.1000315
- Tariku, A., Melkamu, Y. and Kebede, Z. 2010. Previous utilization of service does not improve timely booking in antenatal care: Cross sectional study on timing of antenatal care booking at public health facilities in Addis Ababa. *Ethiop. J. Health Dev*, 24(3), 226-233.

- Trinh, L. T. and Rubin, G. 2006. Late entry to antenatal care in New South Wales, Australia. *Reprod Health*, 3, 8. doi: 10.1186/1742-4755-3-8
- United Nations (UN). 2009. The Millennium Development Goal Report.
- WHO. 2003. Antenatal care in developing countries: Promises, achievements and missed opportunities: an analysis of trends, levels and differentials.
- Workineh, Y., Hailu, D., Gultie, T., Degefu, N., Mihrete, M., Shimeles, M., Alemu, M. 2014. Knowledge of obstetric danger signs and its associated factors in Arba Minch town, Ethiopia (Vol. 2).
- Zegeye, A. M., Bitew, B. D. and Koye, D. N. 2013. Prevalence and determinants of early antenatal care visit among pregnant women attending antenatal care in Debre Berhan Health Institutions, Central Ethiopia. *Afr J Reprod Health*, 17(4), 1306.