Factors determining late antenatal care booking and the content of care among pregnant mother attending antenatal care services in East Wollega administrative zone, West Ethiopia

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Abstract

Introduction: Antenatal care (ANC) is important for both maternal and fetal health. However, the existing evidence from developing countries indicates that most pregnant women attending ANC in their late pregnancy. Little is known about the factors determining ANC booking and the content of care among pregnant women in West part of Ethiopia. Therefore, the present study was conducted to identify factors determining late ANC booking and the content of care among pregnant mother attending antenatal care services in East Wollega administrative zone, West Ethiopia.

Methods: Institutional based cross-sectional study was conducted from July to September, 2014 among 421 pregnant women's attending ANC services in purposively selected health facilities, East Wollega zone, Ethiopia. The pretested-structured questionnaires were used to collect socio-demographic data and predictor factors of late initiation of ANC services. Five trained nurse working at ANC clinic at each health institution administered the questionnaire. The collected data was analysed using SPSS version 20. Results: The prevalence of late ANC booking was 81.5% (343/421) in the study area. Being from Oromo ethnic group (AOR 4.27, (95% CI, 1.48-12.33)), maternal age equal or more than 25 year old (AOR 3.09 (95% CI, 1.53-6.27)), second trimester (AOR 6.05(95% CI, 3.08-11.88)) and third trimester (AOR 7.97 (95% CI, 3.92-16.23)) were main factors identified as contributing (favoring factors) for the likely occurrence of late booking for ANC whereas; monthly income more than and/or equal to 15000 Ethiopian birrs (AOR 0.38 (95% CI, 0.18-084)) were factors compromising (decreasing) the chances for late attendance for the services among the pregnant women.

Conclusion: Late ANC initiation is high in the study area despite the services is provided free of charge. Hence, it is important to provide health education on the timing of ANC among women with reproductive age. Community's awareness on importance of receiving early ANC also needs to be promoted.
Introduction

Worldwide, pregnancy and childbirth related complications are contributing to significant public health problems. The burden is high among developing countries which carries 99% of maternal deaths. Of these, more than half of these deaths occurred in sub-Saharan Africa including Ethiopia [1-3]. Antenatal care (ANC) is one of the four pillars of the initiative for safe motherhood [4]. The main objectives of ANC are: prevention and treatment of obstetric complications, preparation for emergencies, family planning, meeting nutritional, social, emotional needs for pregnant woman, including care and nutrition of the newborn [5]. Women attending ANC visits receive sufficient evidence-based clinical interventions, such as tetanus toxoid immunization, deworming, iron and folic acid supplements, counseling on maternal health, emergency preparedness, management of sexually transmitted infections, administration of antiretroviral therapy in HIV-positive women, supply of essential information about improved hygienic practices and the risks associated with pregnancy and childbirth [6]. The World Health Organization (WHO) recommends that pregnant women in developing countries initiate early prenatal care before the end of the fourth month of pregnancy [7]. ANC for the first trimester is fundamental and decisive to identify and evaluate the risk factors usually present before pregnancy [7]. According to different studies done previously, there are factors associated with late entry to ANC, these include place of residence, ethnicity, age, education, employment status, parity, intention to get pregnant, use of contraceptive methods, economic status, health insurance and travel time [8-13]. However, despite concerted efforts to scale-up ANC services in Ethiopia, the coverage and uptake of the service by the pregnant women remains low and unevenly distributed as the recent demographic and health survey report [3]. There is surprisingly little information on the challenges and obstacles to ANC initiation in the present selected studies area. Therefore, the aim of this study was to assess the factors associated with ANC booking and the content of care among pregnant mothers attending antenatal care services in East Wollega administrative zone, West Ethiopia. Such information provides evidence for the identification of those factors contributing to the poor implementation of ANC services and fills the policy gaps towards improving ANC services.

Methods

Study setting and design: The study was conducted in East Wollega administrative zone, West Ethiopia which located at 328km distance from capital city of Addis Ababa. Total population of the study area was 1,230,402, with 1:1 ratio male to female. The zone has seventeen administrative districts including Nekemte town which is the capital city of the zone. In the zone there are 2 hospitals, 59 health centers and 297 health posts with the zonal health service coverage of 96% [14]. These all health facilities provide ANC service for all pregnant women visiting these institutions free of charge. Cross sectional descriptive study design was conducted among purposively selected five health facilities (Nekemte referral hospital, Nekemte health center, Getema health center, Arjo Gudetu and Sire health center) in four districts of East Wollega administrative zone, Ethiopia between July to September, 2014.

Study population and participant sampling: The study population was all pregnant women attending antenatal care clinic (ANC) at the selected five health facilities during the study period for ANC services. Pregnant women who came for ANC service at these health institutions for the current pregnancy and residents of the zone were included in this study. Pregnant women aged 16-36 years were eligible for participation in the study. A total of 421 pregnant women attending antenatal care clinic (ANC) at the study institutions, were recruited and interviewed using structured questionnaire at the time of exit.

Data collection procedures: The questionnaire used in the data collection was derived from related questions used in similar studies. The questionnaire was also pretested on 5% of the total sample size in the ANC clinic at Gutin health center, Ethiopia. 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 was modified. Five trained nurses working at ANC clinic at each health institution administered the questionnaire.

Data processing and statistical analysis: Data were analyzed by SPSS version 20 for windows. Backward logistic regression model was used to control for the possible cofounders. Finally, multivariate logistic regression analysis was undertaken by including factors found to be significant or marginally at P-value < 0.25 in binary logistic analysis. Statistical significance was evaluated at 95% levels of significance. Those variables with p-value < 0.05 on the final model were identified as the associated factors for ANC late initiation time. If a mother came for ANC before or at 16 weeks of gestation for the first time during the pregnancy; she was considered as having early booking visit (within the recommended time) unless considered as late attendance.

Ethical clearance: Letter of ethical clearance was obtained from the ethical review board of Wollega University. The health centers included in this study were asked permission using formal letters from the university. Informed verbal consent was obtained from the study participants. Privacy of clients and all information related to study participants was maintained confidential.

Results

Socio-demographic characteristics: A total of 421 pregnant women were participated in this study. More than half 254 (60.3%) of the respondents were urban dwellers; majority of them were from oromo 380 (90.3%) ethnic group whereas 250 (59.4%) were protestant followers. Majority 285 (67.7%) of the respondents were in the age group of 18-24 years, with the mean age of 22 years. Great majority 407 (96.7%) were married. Around 352 (83.6%) of the mothers were housewives and 107 (25.4%) illiterate (Table 1). Few mothers 66 (15.7%) were booked for ANC in first trimester, about half 201 (47.7%) of them were Multiparous and 82 (19.5) had large family size (Table 1).

Antenatal care initiation time: Majority of the clients booked for antenatal care service lately 343 (81.5%) where as some 78 (18.5%) booked earlier (Figure 1). There was an overall of higher prevalence of late ANC booking among rural residents (83.2%), Tigray and Gurage ethnic group (84.2%) and participants having lower average monthly income (85.5%). There was also high rate of late ANC booking among illiterate respondents (88.8%), multiparous women (85.1%), more than 25 years old women (90.4) and family having higher family size (91.5%) (Table 1). The prevalence of late ANC booking was increase with material age until 25 years old but decrease then after (Figure 2).

Determining factor for late initiation of ANC and content of care among pregnant women: After adjusting for socio-demographic and contextual factors; being from Oromo ethnic group [AOR 4.27, (95% CI, 1.48-12.33)], maternal age equal or more than 25 year old [AOR 3.09 (95% CI, 1.53-6.27)], second
Conclusion

Our study showed that the late book for ANC was high in study area. This study indicated that low monthly income, maternal age, gestational stage and ethnicity of the women were factors associated with late first antenatal care booking. Hence, it is important to provide health education on the timing of ANC among women with reproductive age. Community’s awareness on importance of receiving early ANC also needs to be promoted.

is known about this topic

- Antenatal care (ANC) is one of the four pillars of the initiative for safe motherhood;
- High prevalence of late ANC booking among most pregnant women in developing countries;
- The coverage and uptake of ANC service by the pregnant women remains low and unevenly distributed in Ethiopia.

What this study adds

- The prevalence of late ANC booking was high (81.5%) in the study area;
- Family income, maternal age, gestational stage and ethnicity of the mother were found to be significantly factor determining the late ANC booking in the area;
- The study shows the need of providing health education on the timing of ANC among women with reproductive age.

Competing interests

The authors declare no competing interest.

Authors’ contributions

Eyasu Ejeta, Regea Dabsu, Olifan Zewide and Elise Merdassa conceived and designed the protocol, performed the data collection, contributed for data analysis and wrote the paper. All authors read and approved the final paper. Eyasu Ejeta, Regea Dabsu, Olifan Zewide and Elise Merdassa contributed equally to this work.

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Tables and Figures

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Figure 1: Antenatal care initiation time among pregnant women attending antenatal care at East Wollega administrative zones, Ethiopian, 2014 (n = 421)

Figure 2: Age based distribution of ANC and content care among pregnant women attending antenatal care at East Wollega administrative zones, Ethiopian, 2014 (n = 421)

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Table 1: Prevalence of late initiation ANC and content care among pregnant women attending antenatal care at East Wollega administrative zones, Ethiopian, 2014 (n=421)

| Socio-demographic variables | ANC imitation | Early n (%) | Total n (%) |
|-----------------------------|---------------|-------------|-------------|
|                             | Late n (%)    |             |             |
| Residence                   |               |             |             |
| Urban                       | 204(80.3)     | 50(19.7)    | 254(60.3)   |
| Rural                       | 139(83.2)     | 28(16.8)    | 167(39.7)   |
| Ethnicity                   |               |             |             |
| Amhara                      | 15(68.2)      | 7(31.8)     | 22(5.2)     |
| Other*                      | 16(84.2)      | 3(15.8)     | 19(4.5)     |
| Oromo                       | 312(82.1)     | 68(17.9)    | 380(90.3)   |
| Religion                    |               |             |             |
| Orthodox                    | 95(79.2)      | 25(20.8)    | 120(28.5)   |
| Muslim                      | 38(82.6)      | 8(17.4)     | 46(10.9)    |
| Protestant                   | 206(82.4)    | 44(17.6)    | 250(59.4)   |
| Other                       | 4(80)         | 1(20)       | 5(1.2)      |
| Occupation                  |               |             |             |
| Employed                    | 50(72.5)      | 19(27.5)    | 69(16.4)    |
| House wife                  | 293(83.2)     | 59(16.8)    | 352(83.6)   |
| Monthly income              |               |             |             |
| <500                        | 177(85.5)     | 30(14.5)    | 207(49.2)   |
| 501-1499                    | 119(79.3)     | 31(20.7)    | 150(35.6)   |
| >1500                       | 47(73.4)      | 17(26.6)    | 64(15.2)    |
| Age( Mean =22.72)           |               |             |             |
| 18-24                       | 220(77.2)     | 65(22.8)    | 285(67.7)   |
| 25-31                       | 110(90.9)     | 11(9.1)     | 121(28.7)   |
| >31                         | 13(86.7)      | 2(13.3)     | 15(3.6)     |
| Education level             |               |             |             |
| Illiterate                  | 95(88.8)      | 12(11.2)    | 107(25.4)   |
| Primary                     | 122(80.8)     | 29(19.2)    | 151(35.9)   |
| Secondary and above         | 126(77.3)     | 37(22.7)    | 163(38.7)   |
| Marital status              |               |             |             |
| Married                     | 332(81.6)     | 75(18.4)    | 407(96.7)   |
| Other**                     | 11(78.6)      | 3(21.4)     | 14(3.3)     |
| Gestational stage           |               |             |             |
| 1st trimester               | 33(50.0)      | 33(50.0)    | 66(15.7)    |
| 2nd trimester               | 160(86.5)     | 25(13.5)    | 185(43.9)   |
| 3rd trimester               | 150(88.2)     | 20(11.8)    | 170(40.4)   |
| Parity                      |               |             |             |
| Uniparous                   | 172(78.2)     | 48(21.8)    | 220(52.3)   |
| Multiparous                 | 171(85.1)     | 30(14.9)    | 201(47.7)   |
| Family size                 |               |             |             |
| <2                          | 161(78.9)     | 43(21.1)    | 204(48.5)   |
| 3-4                         | 107(79.3)     | 28(20.7)    | 135(32.1)   |
| =5                          | 75(91.5)      | 7(8.5)      | 82(19.5)    |
| Number of ANC follow up     |               |             |             |
| One                         | 170(81.0)     | 40(19.0)    | 210(49.9)   |
| Two                         | 113(85.0)     | 20(15.0)    | 133(31.6)   |
| Three                       | 43(81.1)      | 10(18.9)    | 53(12.6)    |
| More than three             | 17(68.0)      | 8(32.0)     | 25(5.9)     |
| Study institutions          |               |             |             |
| Nekemte Health Center       | 123(82.0)     | 27(18.0)    | 150(35.6)   |
| Nekemte Referral Hospital   | 59(68.6)      | 27(31.4)    | 86(20.4)    |
| Getema Health Center        | 23(79.3)      | 6(20.7)     | 29(6.9)     |
| Sire Health Center          | 75(97.4)      | 2(2.6)      | 77(18.3)    |
| ArjoGudatu Health Center    | 63(79.7)      | 16(20.3)    | 79(18.8)    |

*= Tigray, Gurage, **= divorced, widowed, 1$USD=21 Ethiopian birrs
Table 2: Factor associated with late initiation of ANC and content of care among pregnant women attending antenatal care at East Wollega administrative zones, Ethiopian, 2014 (n=421)

| Variable            | Total n (%) | Late ANC Initiation (%) | COR (CI)      | P- value | AOR(CI) | P- Value |
|---------------------|-------------|-------------------------|---------------|----------|---------|----------|
| Residence           |             |                         |               |          |         |          |
| Urban               | 254(60.3)   | 204(80.3)               | 1             | -        | -       | -        |
| Rural               | 167(39.7)   | 139(83.2)               | 1.22(0.73-2.03) | 0.451  | -       | -        |
| Ethnicity           |             |                         |               |          |         |          |
| Amhara              | 22(5.2)     | 15(68.2)                | 1             | -        | -       | -        |
| Other*              | 19(4.5)     | 16(84.2)                | 2.48(0.54-1.43) | 0.241  | 3.51(0.66-18.58) | 0.139    |
| Oromo               | 380(90.3)   | 312(82.1)               | 2.14(0.84-5.45) | 0.110  | 4.27(1.48-12.33) | 0.007*   |
| Religion            |             |                         |               |          |         |          |
| Orthodox            | 120(28.5)   | 95(79.2)                | 1             | -        | -       | -        |
| Muslim              | 46(10.9)    | 38(82.6)                | 1.25(0.52-3.01) | 0.619  | -       | -        |
| Protestant          | 250(59.4)   | 206(82.4)               | 1.23(0.71-2.13) | 0.455  | -       | -        |
| Other               | 5(1.2)      | 4(80)                   | 1.05(0.11-9.84) | 0.964  | -       | -        |
| Occupation          |             |                         |               |          |         |          |
| Employed            | 69(16.4)    | 50(72.5)                | 1             | -        | 1       | -        |
| House wife          | 352(83.6)   | 293(83.2)               | 1.88(1.04-3.43) | 0.037  | 1.88(0.95-3.71) | 0.069    |
| Monthly income      |             |                         |               |          |         |          |
| <500                | 207(49.2)   | 177(85.5)               | 1             | -        | 1       | -        |
| 501-1499            | 150(35.6)   | 119(79.3)               | 0.65(0.37-1.13) | 0.128  | 0.55(0.29-1.03) | 0.063    |
| >1500               | 64(15.2)    | 47(73.4)                | 0.47(0.24-0.92) | 0.028  | 0.38(0.18-0.84) | 0.016*   |
| Age (Mean=22.72)    |             |                         |               |          |         |          |
| <25                 | 285(67.7)   | 220(77.2)               | 1             | -        | 1       | -        |
| >25                 | 136(32.3)   | 123(90.4)               | 2.79(1.48-5.27) | 0.002  | 3.09(1.53-6.27) | 0.002*   |
| Education level     |             |                         |               |          |         |          |
| Illiterate          | 107(25.4)   | 95(88.8)                | 1             | -        | 1       | -        |
| Primary             | 151(35.9)   | 122(80.8)               | 0.53(0.26-1.09) | 0.087  | 0.57(0.25-1.30) | 0.182    |
| Secondary and above | 163(38.7)   | 126(77.3)               | 0.43(0.21-0.87) | 0.019  | 0.52(0.22-1.23) | 0.135    |
| Marital status      |             |                         |               |          |         |          |
| Married             | 407(96.7)   | 332(81.6)               | 1             | -        | -       | -        |
| Other**             | 14(3.3)     | 11(78.6)                | 0.83(0.23-3.04) | 0.777  | -       | -        |
| Parity              |             |                         |               |          |         |          |
| Uniparous           | 220(52.3)   | 172(78.2)               | 1             | -        | 1       | -        |
| Multiparous         | 201(47.7)   | 171(85.1)               | 1.59(0.96-2.63) | 0.070  | 1.52(0.65-3.55) | 0.331    |
| Family size         |             |                         |               |          |         |          |
| <2                  | 204(48.5)   | 161(78.9)               | 1             | -        | 1       | -        |
| 3-4                 | 135(32.1)   | 107(79.3)               | 1.02(0.59-1.74) | 0.940  | 0.65(0.35-1.22) | 0.185    |
| >5                  | 82(19.5)    | 75(91.5)                | 2.86(1.23-6.66) | 0.015  | 1.37(0.52-3.57) | 0.523    |
| Knowledge of ANC    |             |                         |               |          |         |          |
| Yes                 | 359(85.3)   | 294(81.9)               | 1             | -        | -       | -        |
| No                  | 62(14.7)    | 49(79.0)                | 0.83(0.43-1.62) | 0.593  | -       | -        |

COR, odds ratio; AOR, adjusted odds ratio; CI, confidence interval; 1, reference
Antenatal Booking time

Figure 1: Antenatal care initiation time among pregnant women attending antenatal care at East Wollega administrative zones, Ethiopian, 2014 (n = 421)

Figure 2: Age based distribution of ANC and content care among pregnant women attending antenatal care at East Wollega administrative zones, Ethiopian, 2014 (n = 421)