

## ORIGINAL RESEARCH ARTICLE

# Proportion and Factors Associated with late Antenatal Care Booking among Pregnant Mothers in Gondar Town, North West Ethiopia

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### Abstract

The proportion of pregnant women initiating prenatal care during first trimester pregnancy is one of the standard clinical performance measures to assess the quality of maternal health care. Aiming to assess the proportion and factors associated with late booking at antenatal care, this health-institution based cross-sectional study was conducted from April to June 2012 among 390 pregnant mothers in Gondar town. The proportion of late entry to antenatal care was 64.9% with the mean time being  $4.5 \pm 1.8$  months of pregnancy. Multiple logistic regression analysis showed that respondents who didn't get information on correct time of booking, perceived the right time of booking beyond 12 weeks of pregnancy, were not autonomous to use antenatal care and recognized their pregnancy by missing periods were more likely to book late. Late booking was high in the study area. Empowering women and providing information, education and communication with emphasis on timely booking is important. (*Afr J Reprod Health 2015; 19[2]: 94-100*).

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**Key words:** Late booking, Antenatal care, Gondar Town.

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### Résumé

La proportion de femmes enceintes qui commencent à fréquenter les centre des soins prénatals au cours du premier trimestre de grossesse est l'une des mesures de la performance clinique standard pour évaluer la qualité des soins de santé maternelle. Visant à évaluer la proportion et les facteurs associés à la réservation tardive pendant les soins prénatals, cette étude transversale basée sur la santé des institutions a été menée d'avril à juin 2012 Parmi 390 femmes enceintes de la ville de Gondar. La proportion de l'entrée tardive de soins prénatals était de 64,9% avec le temps moyen étant de  $4,5 \pm 1,8$  mois de la grossesse. L'analyse de régression logistique multiple a montré que les interrogées qui ne reçoivent pas d'informations sur le bon moment pour faire la réservation, ont perçus le bon moment de la réservation au-delà de 12 semaines de grossesse, n'étaient pas autonomes à utiliser les soins prénatals et ont reconnu leur grossesse par des périodes manquantes, étaient plus susceptibles de faire une réservation tardive. Les cas de réservation tardive était élevé dans la zone de l'étude. Il est important d'autonomiser les femmes et de leurs fournir des informations, de l'éducation et de la communication en mettant l'accent sur la réservation en temps opportun. (*Afr J Reprod Health 2015; 19[2]: 94-100*).

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**Mots-clés:** réservation tardive, soins prénatals, Gondar Ville.

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### Introduction

Globally, there were an estimated 287, 000 maternal deaths in the year 2010. Developing countries accounted for 99% (284, 000) of the global maternal deaths, the majority of which were in sub-Saharan Africa (162, 000) and Southern Asia (83, 000), sub-Saharan Africa region alone accounted for 56% of global burden<sup>1</sup>. In Ethiopia, maternal mortality and morbidity levels are among

the highest in the world. The Maternal Mortality Ratio (MMR) in the year 2011 was 676 per 100,000 live births<sup>2</sup>.

The antenatal period provides excellent opportunities to reach pregnant women with preventive and curative care<sup>3</sup>. It is revealed that the higher the levels of care obtained during pregnancy, the higher the use of safe delivery service will be<sup>4</sup>. This strong positive association between level of care obtained during pregnancy

and the use of safe delivery care may help to explain why antenatal care could also be associated with reduced maternal mortality.

The WHO antenatal care model and the national institute for health and clinical excellence guidelines<sup>5-6</sup> recommend that first ANC booking should occur within the first trimester of pregnancy.

Timely entry to ANC has been found to have tremendous benefits for the fetus. It is recommended that pregnant mothers need to be tested for HIV early during pregnancy and get subsequent tests. This approach helps to reduce vertical transmission of the virus<sup>7</sup>. In addition, mothers who entered to ANC early will receive testing and timely treatment for syphilis. In untreated maternal syphilis, 70%-100% of infants will acquire the infection and one third will be stillborn<sup>8</sup>. Moreover, pregnancy by itself results in nausea and vomiting in almost half of mothers during first trimester<sup>9</sup>. Unless, this pregnancy disorder is treated early and advice given; it might result in nutritional disturbance and might end up with low birth weight and intra uterine growth restriction. Also, the consequence of nausea and vomiting that is craving of non-food substances, which might have potential teratogenic effects will result in spontaneous termination of pregnancy or various congenital anomalies.

During early pregnancy and if possible before conception, it is among strongly recommended interventions to provide micronutrient supplements especially iron and folic acid. Babies of mothers with folate deficiency are more likely to be small for gestational age, delivered pre-term, develop severe language delay and even at high risk for mortality<sup>10-12</sup>. And the problem could be more among mothers living in developing world where the prevalence of nutritional deficiency and parasitic infections are high.

As observed from studies done in sub-Saharan Africa countries<sup>13-15 & 20-21</sup>, the majority of pregnant mothers started getting ANC in the late period of pregnancy. In Ethiopia, in the year 2011<sup>2</sup>, only around one tenth of pregnant mothers started getting ANC before fourteenth week of pregnancy. From these findings we can understand that majority of mothers in the developing world

are lacking the aforementioned benefits of timely commencement of ANC. The aim of this study therefore was to examine the proportion of women who were booked late and associated factors which favor late entry to antenatal care in Gondar town.

## Methods

Health institution based cross sectional study design was used. The study was conducted from April to June 2012, in Gondar town; the capital of North Gondar zone. It is located 741 Km North West to Addis Ababa and 180 Km North to Bahir Dar the capital of Ethiopia and Amhara regional state respectively. In the town, there are five health centers and one referral teaching hospital owned by the government. Projected total populations of 248,784 were found in the town in the year 2010/2011<sup>17</sup>; of which 131,111 were females. Out of total females in the town, women in child bearing age (15-49 years) and pregnant mothers were 58863 and 6842 respectively.

All pregnant mothers who came for ANC visits to government owned institutions were included in the study and those mothers who were sick and in need of emergency intervention were excluded.

A single population proportion formula [ $n = Z_{\alpha/2}^2 p(1-p) / \omega^2$ ] was used to estimate the sample size. The following assumptions were made: 95% confidence interval, margin of error 5% ( $\omega = 0.05$ ) and expecting that 59.8% (p) of mothers would enter in to ANC late (as reported by study done in Addis Ababa)<sup>18</sup>. Computing with the above formula gives a total sample size of 370. Expecting 5% non-response rate, the final sample size calculated to be 390. In the first quarter of the fiscal year 2010/11 report of the town health bureau<sup>19</sup>, 1198 clients were received ANC from all studied institutions. Since the study was conducted for three months duration, the quarter report was taken as study population and skip interval was calculated as  $1198/407 \approx 3$ . By assuming all pregnant mothers were homogenous and all institutions were providing same care, every third client from all health institutions were interviewed by using systematic random sampling technique.

The first client to be interviewed was selected randomly.

A structured and pre-tested questionnaire was used to collect data. Seven diploma nurses had conducted face to face interview and two Bachelor degree Midwives had supervised the data collection process. Training was given to data collectors and supervisors before the actual data collection period. It was focused on aim of the study, data collection procedures and questionnaire items.

Data were collected on mothers' age, mother's age at marriage, marital status, place of residence, family income, educational status, occupation, educational status of the husband, occupation of the husband, age difference between the mother and the husband, distance from health facility, family size; obstetrics variables such as: previous ANC visit, gravidity, parity, history of abortion and still birth, means of pregnancy recognition, awareness of timing at first ANC booking. In addition data on mother's ability of having decision power to use ANC service was included.

In this study gestational age means the age of the fetus in weeks from the last normal menstrual period of the mother. Late antenatal care booking is booking to ANC service after 12 complete gestational weeks. Having decision power on using current ANC is also defined as Mothers ability of deciding by themselves or jointly with their partners to utilize present ANC.

All collected questionnaires were checked for completeness and consistency of responses manually. After cleaning, data were coded and entered in to EPI INFO version 3.4.3 and analyzed using IBM SPSS Statistics version 20. Bi variable and multi variable analysis were done. Logistic regression model was used to identify association between late booking at first ANC and socio-demographic and obstetric factors. The presence and strength of association of variables with late entry to ANC was assessed using odds ratio with 95% confidence interval.

Ethical clearance was obtained from Midwifery department ethical review committee which is a delegate of institutional review board of University of Gondar. A formal letter request of cooperation was written to Gondar town health

office. Public health institutions were communicated with permission letter which was obtained from the town health office. Participants were informed about the purpose and objective of the study and they were also informed that they

have the right to discontinue or refuse to participate in the study. And then a written informed consent was obtained from each study participant. Finally, privacy and confidentiality of information was maintained.

## **Result**

### ***Socio-demographic Characteristics of the Study population***

A total of 390 pregnant women were participated in the study. The median age of respondents was 25 years, and the age ranges from 15 to 45 years. Nearly 94 % of respondents were married, Orthodox Christianity was dominant religion and about 97% respondents were Amhara by ethnicity (Table 1).

### ***Obstetrics Characteristics of the Study population***

This study showed that 56.4% of mothers experienced pregnancy before and 65 % of them had ANC in their preceding pregnancy. Almost half of respondents were recognized their pregnancy by urine test and nearly 85% had a decision power to utilize current ANC (Table 2).

### ***Participants timing at ANC booking***

The proportion of respondents who made their first ANC visit within the recommended time (before or at 12 weeks of gestation) were 137 (35.1%) and who made late (after 12 weeks of gestation) were 253 (64.9%). The timing of first ANC booking ranges from 1<sup>st</sup> month to 9<sup>th</sup> month of gestation. The mean timing was 4.5 months (SD=1.8) (Figure 1).

### ***Reasons given by pregnant mothers for late entry at ANC***

From a total of 253 mothers who booked late at ANC, more than half perceived that it was right

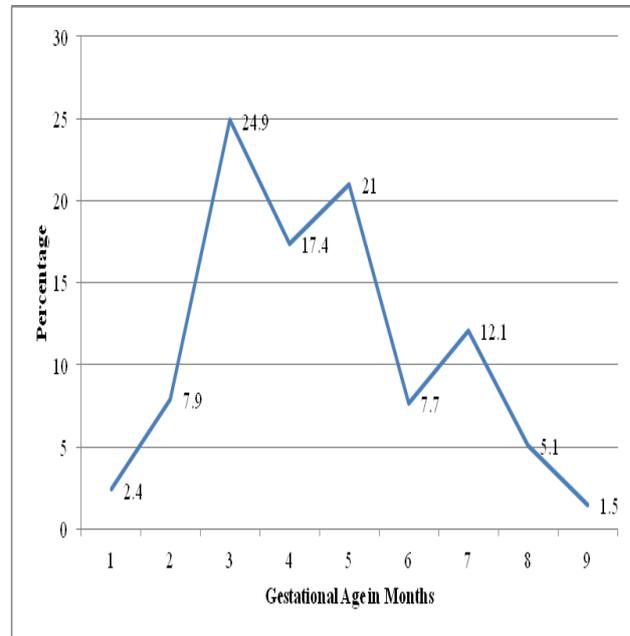
time, while nearly a quarter didn't know the right time. In contrast 12.3% mothers were negligent for the timing at ANC booking (Fig. 2).

**Table 1:** Percentage Distribution of the Study Population by Selected Socio Demographic characteristics; Gondar Town, Ethiopia, April-June 2012

| Variables                       | Late ANC Booking                             | Timely ANC Booking                           | Total (Number (%)) |
|---------------------------------|--|--|--------------------|
|                                 | During Gestational age >12weeks (number (%)) | During Gestational age ≤12weeks (number (%)) |                    |
| <b>n=390</b>                    |  |  |                    |
| <b>Maternal age</b>             |  |  |                    |
| < 20                            | 21 (8.3)                                     | 17 (12.4)                                    | 38 (9.7)           |
| 20-35                           | 213 (84.2)                                   | 118 (86.1)                                   | 331 (84.9)         |
| > 35                            | 19 (7.5)                                     | 2 (1.5)                                      | 21 (5.4)           |
| <b>Marital Status</b>           |  |  |                    |
| Single                          | 6 (2.4)                                      | 7 (5.2)                                      | 13 (3.3)           |
| Married                         | 241 (95.2)                                   | 125 (91.2)                                   | 366 (93.9)         |
| Other †                         | 6 (2.4)                                      | 5 (3.6)                                      | 11 (2.8)           |
| <b>Religion</b>                 |  |  |                    |
| Orthodox                        | 226 (89.3)                                   | 118 (86.1)                                   | 344 (88.2)         |
| Muslim                          | 25 (9.9)                                     | 16 (11.7)                                    | 41 (10.5)          |
| Other ††                        | 2 (0.8)                                      | 3 (2.2)                                      | 5 (1.3)            |
| <b>Ethnicity</b>                |  |  |                    |
| Amhara                          | 245 (96.8)                                   | 135 (98.5)                                   | 380 (97.4)         |
| Other †††                       | 8 (3.2)                                      | 2 (1.5)                                      | 10 (2.6)           |
| <b>Occupation</b>               |  |  |                    |
| House wife                      | 180 (71.1)                                   | 83 (60.6)                                    | 263 (67.4)         |
| Employed                        | 63 (24.9)                                    | 46 (33.6)                                    | 109 (27.9)         |
| Daily laborer                   | 10 (4.0)                                     | 8 (5.8)                                      | 18 (4.7)           |
| <b>Educational status</b>       |  |  |                    |
| Unable to read and Write        | 103 (40.7)                                   | 40 (29.2)                                    | 143 (36.7)         |
| Read and Write                  | 33 (13.0)                                    | 12 (8.8)                                     | 45 (11.5)          |
| Primary                         | 43 (17.0)                                    | 38 (27.7)                                    | 81 (20.8)          |
| Secondary and above             | 74 (29.3)                                    | 47 (34.3)                                    | 121 (31.0)         |
| <b>Monthly Household Income</b> |  |  |                    |
| < 887.5 ETB (Q1 ††††)           | 58 (22.9)                                    | 39 (28.5)                                    | 97 (24.9)          |
| 887.5-2000 ETB (Q1-Q3)          | 159 (62.8)                                   | 74 (54.0)                                    | 233 (59.7)         |
| > 2000 ETB (above Q3)           | 36 (14.3)                                    | 24 (17.5)                                    | 60 (15.4)          |

†Divorced, Cohabit †† Catholic, protestant, Judaism ††† Tigrie, Oromo, "Bete-Israel" ††††Quartile

**Figure 1:** Percentage of Pregnant Women by Gestational age in Month during ANC Booking, Gondar Town, Ethiopia, 2012



### Determinants of late booking at ANC

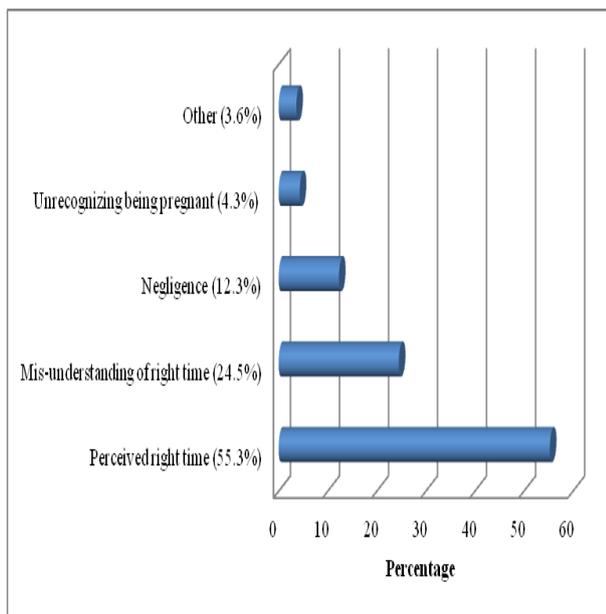
Multiple Logistic regression analysis revealed that: [(AOR (95% CI)): respondents who didn't get information on correct time of booking (1.80 (1.01,3.23)), perceived the right time to book at ANC beyond 12 weeks of pregnancy (3.79 (2.20,6.54)), were not autonomous to use ANC (2.34 (1.14,4.83)) and recognized their pregnancy by missing periods (2.60 (1.59,4.24))] were more likely to book late at ANC (Table 3).

### Discussion

World Health Organization recommends that pregnant mothers, especially those who are living in developing countries shall start ANC booking in the first three months of pregnancy<sup>5</sup>. However, in this study nearly two-third (64.9%) respondents made ANC booking beyond the recommended time. This finding is consistent with the report from Addis Ababa where 59.8% of mothers made their first ANC booking late<sup>18</sup>, but lower than 2011 Ethiopian DHS finding which was 89%<sup>2</sup>. It could be due to the common practices of starting ANC at around fourth months of pregnancy in most urban

of the country and the national representativeness nature of DHS with majority of rural mothers start ANC late.

**Figure 2:** Percent of Respondents by Reason for late booking at ANC, Gondar Town, Ethiopia, 2012



In this study, mothers who didn't get information when to start ANC were nearly two times more likely to book late than those who got information. This finding is supported by studies from Addis Ababa and Nigeria<sup>18 & 20</sup>. These studies suggested that mothers who didn't get information were less likely to start ANC timely. This could be explained by the fact that provision of proper information particularly by health professionals will improve the situation and vice versa.

The current study also revealed that mothers who perceived the right time to book at ANC beyond twelve weeks of pregnancy were about four times more likely to book late than their counterparts. In addition, recognizing pregnancy via missing a menstrual period rather than a urine not associated by backward logistic regression analysis test was a factor found to contribute for late entry at ANC. The possible explanation for this could be the fact that individuals can practice health care seeking to the level of their perception. Also recognizing pregnancy after missing one or two

cycles is common and there after mothers might be reluctant to start ANC soon. Women's involvement in the decision making process is crucial and helps mothers to utilize maternal health services which directly and indirectly reduces maternal morbidity and mortality. As observed in this study, mothers who didn't decide to use ANC by themselves or jointly with their husband were more than two fold to be booked late than the counterparts. Taking part in the decision making process could help the mother to get support from husband that in turn increases utilization of maternal health service as observed in a study done in Tanzania<sup>21</sup>.

**Table 2:** Percentage distribution of study population by selected Obstetric characteristics; Gondar Town, Ethiopia, April-June 2012

| Variables   | Late ANC Booking                             | Timely ANC Booking                           | Total (Number (%)) |
|---|--|--|--------------------|
|   | During Gestational age >12weeks (Number (%)) | During Gestational age ≤12weeks (Number (%)) |                    |
| <b>n=390</b>                                      |  |  |                    |
| <b>Parity</b>                                     |  |  |                    |
| Nullipara   | 99 (39.1)                                    | 71 (51.8)                                    | 170 (43.6)         |
| Para one and above                                | 154 (60.9)                                   | 66 (48.2)                                    | 220 (56.4)         |
| <b>Previous ANC use (n=220)</b>                   |  |  |                    |
| Yes   | 101 (65.6)                                   | 42 (63.6)                                    | 143 (65)           |
| No  | 53 (34.4)                                    | 24 (36.4)                                    | 77 (35)            |
| <b>Means of pregnancy recognition</b>             |  |  |                    |
| Missing period                                    | 147 (58.1)                                   | 45 (32.8)                                    | 192 (49.2)         |
| Urine test  | 106 (41.9)                                   | 92 (67.2)                                    | 198 (50.8)         |
| <b>Any complication of past pregnancy (n=220)</b> |  |  |                    |
| Yes   | 32 (20.9)                                    | 7 (10.6)                                     | 40 (18.2)          |
| No  | 121 (79.1)                                   | 59 (89.4)                                    | 180 (81.8)         |
| <b>Having decision power on using current ANC</b> |  |  |                    |
| Yes   | 207 (81.8)                                   | 125 (91.2)                                   | 332 (85.1)         |
| No  | 46 (18.2)                                    | 12 (8.3)                                     | 58 (14.9)          |

**Table 3:** Association of Factors with late Booking at first ANC, Gondar Town, 2012

| Variables   | Time at ANC Booking |                   | COR (95% CI)       | AOR (95% CI)       |
|---|---------------------|-------------------|--------------------|--------------------|
|   | Late (>12Wks)       | Timely (≤ 12 Wks) |                    |                    |
|   | No. (%)             | No. (%)           |                    |                    |
| <b>n=390</b>                                      |                     |                   |                    |                    |
| <b>Maternal Age</b>                               |                     |                   |                    |                    |
| ≤ 25 years  | 138 (61.6)          | 86 (38.4)         | 1                  |                    |
| > 25 years  | 115 (69.3)          | 51 (30.7)         | 1.41 (0.92,2.15)   | ***                |
| <b>Parity</b>                                     |                     |                   |                    |                    |
| Primigravida                                      | 99 (58.2)           | 71 (41.8)         | 1                  |                    |
| Multigravida                                      | 154 (70.0)          | 66 (30.0)         | 1.67 (1.10,2.55)*  | ***                |
| <b>Got Information when to book at ANC</b>        |                     |                   |                    |                    |
| Yes   | 133 (59.1)          | 92 (40.9)         | 1                  | 1                  |
| No  | 120 (72.7)          | 45 (27.3)         | 1.85 (1.19,2.85)*  | 1.80 (1.01,3.23)*  |
| <b>Perceived right time</b>                       |                     |                   |                    |                    |
| ≤ 12 weeks  | 45 (45.9)           | 53 (54.1)         | 1                  | 1                  |
| > 12 weeks  | 152 (74.1)          | 53 (25.9)         | 3.38 (2.04,5.60)** | 3.79 (2.20,6.54)** |
| I don't know                                      | 56 (64.4)           | 31 (35.6)         | 2.13 (1.18,3.85)*  | 1.19 (0.57,2.48)   |
| <b>Having decision power on using current ANC</b> |                     |                   |                    |                    |
| Yes   | 207 (62.3)          | 125 (37.7)        | 1                  | 1                  |
| No  | 46 (79.3)           | 12 (20.7)         | 2.32 (1.18,4.54)*  | 2.34 (1.14,4.83)*  |
| <b>Family size</b>                                |                     |                   |                    |                    |
| ≤ 3   | 155 (59.6)          | 105 (40.4)        | 1                  | 1                  |
| > 3   | 98 (75.4)           | 32 (24.6)         | 2.08 (1.29,3.32)*  | 1.68 (0.99,2.81)   |
| <b>Means of pregnancy recognition</b>             |                     |                   |                    |                    |
| Missing period                                    | 147 (76.6)          | 45 (23.4)         | 2.84 (1.84,4.38)** | 2.60 (1.59,4.24)** |
| Urine test  | 106 (53.5)          | 92 (46.5)         | 1                  | 1                  |

\* p-value &lt;0.05

\*\*p-value &lt;0.001

\*\*\*Variables

Large scale community based study which considers populations of rural mothers is needed in order to identify various factors which might not be addressed in this study.

## Conclusion and Recommendations

A majority of mothers in this study practiced late booking at ANC. Not getting information when to commence ANC, perceived right time beyond three months of pregnancy, means of pregnancy recognition via missing period and not having

decision power to use current ANC were statistically significant factors for late booking at ANC. Therefore, it is important to provide information, education and communication with emphasis on timely booking at ANC to the community. Also empowering women will have paramount benefit in improving their decision ability.

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