ORIGINAL ARTICLE

Community based study on the timing of prenatal care in Jimma town

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Abstract: ***Early prenatal care is known to be among the most effective health interventions for prevention of maternal morbidity, mortality and to improve pregnancy outcome. With the main objective of identifying maternal factors that would most explain variation in the timing of prenatal care in the health facilities, this community based cross-sectional study was conducted in Jimma town, southwestern Ethiopia, in August 1997. The study included a total sample of 695 women who gave to a live birth within 12 months before the survey date. Pretested questionnaire was administered using trained field staff. Logistic model was selected for the analysis using late (third trimester or no) prenatal care as a criterion of inadequacy. The finding shows that 29% of women in Jimma town received inadequate prenatal care (19% did not attend antenatal clinics at all and 10% delayed the start of this care up to the third trimester of pregnancy) and only 26% started prenatal care within the first trimester. The median gestational age at first visit was six months. In the multivariate logistic regression analysis, low level of maternal education, inadequate household income, high parity (five or more children ever born), pregnancy that occurs out-of-wedlock, unplanned pregnancy, and husband's negative attitude towards the services all significantly predicted the highest likelihood for late or no prenatal care. Possible policy implication of the findings is discussed.***

Introduction

The alarming rate of maternal mortality in developing countries in general, and in Ethiopia in particular, is partly explained by the fact that fewer women receive prenatal care and fewer births are attended by trained health personnel (1-3). Early and quality prenatal care is believed to have a beneficial impact on birth weight and reduces sufferings during pregnancy as well as the rates of

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perinatal, neonatal, infant, child and maternal mortality (4-6). Studies conducted in Ethiopia also indicated its positive association with pregnancy outcome (7-10). However, the observed association may not imply a cause-effect relationship considering the methodology employed in these studies.

According to the Ethiopian Ministry of Health, health facilities are expected to provide pregnant women with prenatal care services including health education, advice and encouragement about their pregnancy, and detailed assessment of their health starting before the 10th week of gestation (11). However, coverage of prenatal care is generally low in Ethiopia and most pregnant women start attending the service late often after six months of pregnancy (12). Thus, where there seems to be a general agreement that prenatal care begun after the 6th month of pregnancy is inadequate (9,13), no detailed and systematic study has been conducted in Ethiopia in general that attempted to asses factors of timing of this care. Although studies of how specific variables affect a given health outcome are also important, studies on how these variables are interrelated and how they might be manipulated to enhance pregnancy outcome is taken as a point of departure in this paper.

With this understanding, the study analyzed factors that explain variation in the start of prenatal care. Mothers were interviewed on their demographic, socioeconomic, and prenatal behavior. The study focused on urban setting among heterogeneous population where socioeconomic and demographic differentials are marked and where physical accessibility to health facilities is assumed to be similar. Findings of the study are expected to have a wide appeal to policy makers, public health managers, providers of health services and the community in general.

Methods

Source of data for this study was a community based cross-sectional survey of 695 randomly selected women who were usual residents of Jimma town and who gave to a live-birth within twelve months prior to the date of interview. Administratively, Jimma town is divided into 21 Urban Dwellers Associations (UDA) in which one zonal hospital, one health center, three health stations and more than five private clinics were available at the time of the survey. To obtain the required unit of analysis, a cluster sampling design was used. UDAs were clusters of ultimate sampling unit. Besides other considerations, this procedure was mainly preferred as there was no reason to assume strong homogeneity in prenatal care behavior among mothers within a given UDA relative to those in other UDAs in the area. Thus, eligible women residing in the randomly selected area frame were all interviewed. Until the required sample size was reached, UDA was picked at random. Information was collected in August 1997 employing pretested questionnaire by trained field staff.

Variables, together with their levels, measured on each respondent include:

Dependent variable:

Timing of prenatal care: early, late

Explanatory variables:

Age in years: <20, 20-24, 25-29, 30-34, 35+

Ethnicity: Oromo, Amhara, Dawro, Guragie, Kaficho, others

Religion: Christian, Moslem

Education: Illiterate, grade 1-6, grade 7-8, grade 9+

Perceived household income: inadequate, average, sufficient
Marital status: married, unmarried
Parity: 1, 2-4, 5+
Pregnancy wanted?: wanted, unwanted
Husband's attitude towards prenatal care: positive, negative
Possession of radio: yes, no

Timing in this study refers to the duration of pregnancy until she made her first prenatal care visit in the health facility. For analytical purpose, the start of prenatal care was dichotomized into two levels: *early* (which takes on a value 1) for within 6 months of pregnancy and *late* (with value 0) if within the third trimester or no prenatal care.

The analysis started with univariate presentation of data. Secondly, bivariate cross-tabulations was carried out to explore the strength of the relationship between variables. Finally, multivariate analysis was carried to assess simultaneously the relationship of several variables. Given that the main interest of the study is in the relative effect of maternal factors on the timing of prenatal care, the logistic regression model is preferred. This model is suitable since it considers the relationship of a binary response factor and a set of quantitative or categorical explanatory variables. All tasks regarding data entry and analysis were done using SPSS software. The odds of early prenatal care attendance, as a result of being in a category of a given explanatory factor relative to the reference category, were estimated using a maximum likelihood procedure. Tests of significance followed the Wald Statistics.

Result

The study was conducted on 695 women who delivered live born babies within twelve months preceding the survey. Univariate distribution of the respondents reveals that majority of them (60.3%) belong to the age group 20-29. About 64% were followers of Christian religion and the remaining being Moslem. On the other hand, the dominant ethnic groups were Oromo (35.7%), Amhara (19.6%), Dawro (15.0%), Guragie (12.4%), and Kaficho (7.9%). Almost half (51.1%) of the women attended at least junior secondary schooling, 30.6% had primary education and the remaining 18.3% were illiterate. The largest proportion (84.2%) reported as married at the time of their pregnancy ended in a live birth. Almost half (47.8%) declared that their family monthly income was not adequate to fulfil family needs whereas 40.4% and 11.8% said 'average' and 'sufficient', respectively. Likewise, 29% were inhabitants of households without functional radio. About 38% of the study individuals were para 1 and 19% had given birth to 5 or more live births. For 53% of the sampled women, the pregnancy was unwanted.

Table 1 shows distribution of the number and timing of visits made to prenatal clinics. The data indicate that 565 (81.3%) of the women went to prenatal clinics at least once out of which 19% did so because they had illness during pregnancy. The remaining 18.7% did not make any visits to health facilities for prenatal check-up. The main reasons for not having had any visit were reported to be absence of illness during pregnancy (40%), lack of time (22%), and lack of

knowledge about the relevance of such services (15%).

The proportion of the total women who made 4 or more visits was 69.5%. The median number of visits among all women and attendees was 6 and 7, respectively. While 71% of mothers started prenatal care within the first six months of gestation, 10.4% of them presented at the sixth month of pregnancy or later. Among those who attended at least once, 12.7% did so after 6 or more months of pregnancy. Hence, 202 (29.1%) of the women either did not receive prenatal care from health facilities or delayed it up to the third trimester of pregnancy. The median time at the start of prenatal care visits was 6 months among all women and 5 months among attendees.

Table 1: Number and Timing of 1st Prenatal Clinic Visit, Jimma Town, August 1997.

Characteristics	No. (%) of Women
Number of Visits:	
0	130 (18.7)
1-3	82 (11.8)
4-6	196 (28.2)
7-9	137 (19.7)
10+	150 (21.6)
Total	695 (100.0)
Median	6.0
Months Pregnant at 1st Visit:	
< 3	182 (26.2)
3 - 6	311 (44.7)
≥ 6	72 (10.4)
None	130 (18.7)
Total	695 (100.0)
Median	6.0

Table 2 depicts estimated logistic regression results. Using *late* (third trimester or no) prenatal care as a criterion of inadequacy, respondents were cross - tabulated with ten variables selected among many others measured on each woman after assessing the problems of multicolinearity. Prenatal care delay seems to be less likely for women aged 20-34 than extreme age groups, Amhara than the remaining ethnic categories, Christian than Moslem mothers, and among those having functional radio. However, the observed relationships failed to reach a statistically acceptable level net of other factors in the model. The effects of age, ethnicity, religion, and radio possession are not included in the table.

Women's educational level and income significantly discriminate between timing. The odds of early prenatal care initiation consistently increase as the level of mothers' education increase. Relative to illiterate, the odds of starting prenatal care within six months of pregnancy is 1.72 times higher for a woman who attended primary level education, 2.23 times higher for junior secondary level education, and 2.29 times higher for secondary level of education or higher. Similarly, women who believe that their household income is average or sufficient to attain family ends are more likely to receive early prenatal care than those in the reference category (p-value < 0.01)

Unmarried women, either due to marital dissolution or never being married at the time of the last pregnancy, were more likely to delay or receive no prenatal care than married ones. Net of all other variables, the odds of early prenatal care for married woman was 1.63 times higher than that for unmarried woman (p-value < 0.001).

Number of children ever born to women shows strong association with timing of prenatal care. Early prenatal care was less likely among mothers of

Table 2. Odds of Early Prenatal Care (Before the Third Trimester), by Selected Maternal Characteristics, Jimma Town, August 1997.

Characteristics [a]		n	OR [95% CI]
Education (None)		127	
Grade 1-6		213	1.72* [1.06, 3.60]
Grade 7-8		113	2.23‡ [1.29, 3.83]
Grade 9+		242	2.29‡ [1.37, 3.83]
Household Income (Inadequate)		332	
Average		281	2.18‡ [1.34, 5.54]
Sufficient		82	2.83ξ [1.69, 4.73]
Marital Status (Unmarried)		110	
Married		585	1.63ξ [1.31, 2.04]
Parity (5+)		135	
1		266	1.41 [0.88, 2.57]
2-4		294	2.30ξ [1.48, 3.57]
Pregnancy (Unwanted)		366	
Wanted		329	2.44ξ [1.48, 4.03]
Husband's Attitude (Negative)		143	
Positive		552	8.33ξ [4.93, 14.09]
Constant	0.70	-	
Model Chi-square	271.2ξ	-	

* Significant at $p < 0.05$ ‡ Significant at $p < 0.01$ ξ Significant at $p < 0.001$
[a] The reference category is in parentheses
OR = Odds Ratio
CI = Confidence Interval

high (at least 5) or one parity than those with 2 to 4 children ever born ($p< 0.001$).

Unwanted pregnancies have very low chances of receiving early prenatal care than wanted pregnancies. Controlling other characteristics of the mother, pregnancies that were not wanted or unplanned were 2.44 times more likely to receive delayed or no prenatal care than wanted pregnancies (p-value < 0.001).

Another most powerful predictor of prenatal care was spouse's attitude. Women whose partner's attitude towards prenatal care services is negative were less likely to receive early prenatal care (P-value < 0.001).

Discussion

The over all impression given by this study is that women in Jimma town receive some prenatal care services, but a significant proportion were not adequately covered, particularly considering the availability of services. Twenty-six percent received prenatal care within the first trimester of pregnancy. About 29% of the mothers either started prenatal care in the third trimester or

received no care at all (19%). These proportions were 23%, and 49% among women in Yirgalem town, respectively; 25% did not attend antenatal care (14). In Gulelle district of Addis Ababa, 39% of the pregnant women in the third trimester did not attend antenatal clinics even once (15). Mesfin and Farrow, reported that 52% of the women in urban Arsi Zone did not attend antenatal clinic (16). The observed difference in the estimates between our study on the one hand, and the previous two studies on the other, may be accounted for by two factors. First, these three groups of mothers may differ in terms of their prenatal care behavior attributed to differentials in area of residence, socioeconomic, demographic and prenatal service factors. Second is the methodological difference. The study from Gulelle district, Addis Ababa, was based on selected third trimester pregnant women, whereas the Arsi Zone study merged two different population groups (women in the third trimester of pregnancy and three months post delivery).

The proportion of women in our study who use prenatal care in health facilities (81%) was lower than that of women in Eritrea and Kenya. Almost all (98%) pregnant women in urban Kenya and over 85% in urban Eritrea receive prenatal care either from physicians or nurses or midwives (17,18).

In this study women's level of education, marital status, income, parity, pregnancy planning status, and husband's/partner's attitude towards prenatal care were all found to be independent predictors of timing of prenatal care. Educational level is found to be among the most important factors explaining variation in the timing of prenatal care. Educated mothers are less influenced by traditional practices that are contrary to modern health care, may be aware of the relationship between early care and birth outcomes and more capable of dealing with modern institutions (19).

Being married shows a relatively independent effect on mothers timing of prenatal care compared to unmarried ones. Marital status was described as one of the factors associated with prenatal care utilization in the literature (20). Unmarried women may act as proxies for households headed by single women, especially among adults. Thus, one would expect greater delay for singles due to less income than households with two potential earners. In addition, unmarried women are more likely to have experienced unintended pregnancy.

Women's perceived adequacy of household income is also important predictor for prenatal care utilization. This is similar to what has been reported by other studies (14-16). On the other hand, radio possession did not show net significant effect on early prenatal care as expected. This might be due to its positive association with income.

The risk of delay to seek prenatal care was higher among mothers of high parity or primiparas with more pronounced effect for high parity (5 or more children ever born). Mothers with low parity are younger and hence, may lack knowledge of the relevance of early care while mothers who have many children may have shortage of time. They care for many children besides other works. Also, mothers of high parity may be less inclined to attend prenatal clinics, especially if previous deliveries were smooth. In this study, parity explained most of the variations in prenatal care due to age. Mean parity consistently increased with maternal age.

The proportion of unwanted pregnancies among the study women is

53%, which compares to 51% among women in Yirgalem town (14). According to estimate made by Wakbulcho and Moller, 40% of pregnancies were unwanted among Addis Ababa women (21). In general, women whose pregnancies are wanted obtain prenatal care earlier than unwanted pregnancies. It seems reasonable to assume that a woman who has planned pregnancy will be more highly motivated to seek early prenatal care to ensure a highly successful outcome. Similarly, she might be more concerned about the wellbeing of the fetus, and less reluctant to adopt what may be a major change in life style to increase fetal well-being (22). Specifically, women who desire to become pregnant are apt to be better prepared emotionally and financially for the demand of pregnancy and childbearing. On the other hand, women with unwanted pregnancies may initially attempt to deny their pregnancies particularly if not within marriage for fear of the consequences such as social stigmas that could be attached to illegitimate births. Thus, these women may be less likely to obtain prenatal care, especially early in pregnancy. Clearly, polices aimed at reducing unwanted births would increase the average use of prenatal care among women who desire to have a baby. Easy access to and effective use of contraception needs to be encouraged particularly among young, poor and unmarried women.

Husbands' or partners' positive attitude towards prenatal care was also among the most important predictors for starting prenatal care in the study. The influence of husband's attitude has also been noted on contraceptive use (23). Therefore, efforts to improve husbands' or partners' attitude would probably increase utilization of health services by women.

The most frequent reason for not attending prenatal clinics was being in a state of good health, i.e., absence of illness during pregnancy. This indicates poor awareness of the respondents about the advantages of prenatal care. Studies in Yirgalem and Arsi Zone reported similar reasons (14,16). Even among attendees, a substantial proportion of them initiated prenatal care owing to health problems they had during pregnancy. Thus, women lack appropriate knowledge of these services. Strengthened health education activities could raise the awareness of women about the benefits of early prenatal care.

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