Original article

Assessment of antenatal care services in a rural training health center in Northwest Ethiopia

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Abstract: A cross sectional study was conducted to assess the activites of antenatal care (ANC) clinics at a training health centre in Northwest Ethiopia. The records of 364 women who attended ANC at Debark Health Center between September 1995 and November 1996 were reviewed. Data were collected on socio-demographic variables and different risk factors of pregnancy. Only one mother began attendance in the first trimester. The mean frequency of visits was 3 $\pm$ 2.3. The weights heights, and blood pressures of 27, 11, and six women, respectively, were not recorded. No hematocrit and serologic investigations (VDRL) were done. One hundred thirty (34.7%) of the ANC attenders had one or more high risk factors out of which only 101(77.9%) were identified as high risk mothers. According to the records 17(16.8%) high risk mothers were appointed earlier than the " normal" dates. No other special measures were recorded for pregnant women identified as high risk. Only 9(8.9%) high risk pregnant women delivered at the health center. Given the current controversies on the effectiveness of ANC in developing countries in general and risk screening in particular, existing ANC clinics need to be improved to effectively screen women with high risk factors and deal with them appropriately. [*Ethiop. J. Health Dev.* 2000;14(2):155-160]

Introduction

Antenatal care (ANC) is care given to a pregnant woman before delivery. The purpose of ANC is to prepare the mother for child birth in order to promote a favourable outcome for the mother and the child. While several studies suggest that certain components of ANC may have limited impact on reducing maternal morbidity and mortality (1-4), some of the dangers of pregnancy and child birth can be avoided if the pregnant woman attends ANC (5). ANC interventions such as detection and treatment of anemia, detection, investigation and referral of hypertension, and detection and treatment of sexually-transmitted diseases have been found to be effective (6).

ANC is also expected to have positive impact on the development of the fetus and the infant. A study reported that with, maternal risk held constant, low birht weight, neonatal mortality and infant mortality were 1.5 - 5 times higher with late, and less frequent prenatal care than with early, and frequent care (7). Several studies in developed countries have also reported similar results (8, 9). In Europe and North America the ANC coverage was found to be 90-100% (10). For Ethiopia ANC coverage is estimated to be around 30% (11). Thus in developing countries like Ethiopia, the problems related to ANC appear to be two fold: that of low coverage and the in effectiveness of the services to improve pregancy outcome (1, Rosser J. Is the Risk Approach in Pregnancy an Effective Strategy for Reducing Maternal and Perinatal Mortality in the Developing World? Unpublished document, 1995).

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In Ethiopia ANC clinics are expected to provide pregnant women win vital health care messages. Among other things health facilities should provide minimum basic care, such as tetanus toxoid immunization, and iron and folic Aicd supplementation (5). They are also expected to identify high risk groups and give them special care. According to responses of ANC attenders, performances of the ANC clinics were less efficient than what was expected even in areas with relatively adequate manpower and good facilities (12). However, there is little or no report concerning effectiveness of ANC services at different levels of the health care system in the country.

Several reports have incriminated risk screening as having limited impact in improving pregnancy outcome (1, 2,4). Thus it is important to examine risk screening activities at ANC clinics in order to assess their possible impact on the health of mothers and children.

The objectives of this study were to assess the prevalence of risk factors, how efficiently high-risk groups were identified, and whether special care was given to those identified as high risk groups in Debark rural training health centre.

Methods

This cross-sectional study was conducted in Debark Health Center in July - August 1997 by reviewing antenatal care records. Debark Health Centre is one of the rural field training sites of the Gondar College of Medical Sciences for medical and allied health worker students. It is located 110 KMs north of Gondar town. The health center is staffed with one general practitioner, four nurses and five health assistants. Antenatal, Family Planning and Child Health services are run by nurses. Normal delivery is conducted by a health assistant or a nurse. The general practitioner attends to patients when he/she is consulted. Equipment are available for vacuum extraction and forceps delivery. As in most health centers, there are no facilities for blood transfusion, Cesarean section, and for other major operations. The study population were pregnant women who had attended ANC at least once one year prior to data collection. Sample size was calculated assuming 95% confidence level,30% high risk prevalence (estimated from a sample of records) and acceptable difference of 5%. Records were retrieved starting from September (beginning of the Ethiopian Calendar year), 1995 and the required sample size was obtained when records were retrieved until November 1996. Prior to the conduct of the study the head of the health center was consulted and consent was obtained.

Check-lists on socio-demographic variables and different risk factors of pregnancy were prepared for data collection. In this study all women who visited the ANC clinic once or more were considered as ANC attenders. Women with one or more of the following findings were considered as high-risk groups (5):

- Age < 18 years
- Primigravidae > 35 years of age
- Previous Cesearian section (C/S) or vacuum or forceps delivery
- Previous postpartum haemorrhage (PPH)
- Antepartum haemorrhage(APH)
- Height < 150 cm
- More than five pregnancies
- Malpresentations
- Multiple pregnancy
- Hypertension (pre-eclampsia-eclampsia, chronic)
- Diabetes mellitus, heart disease, renal disease, anaemia, tuberculosis, and STIs.

The data were collected by senior medical students of the Gondar College of Medical Sciences and analysed using the EPI INFO statistical package. Percentage distribution of risk factors, proportion of high risk mothers and measures taken for those identified as high risk mothers, risk factors identified by the health centre staff, frequency of visits, and gestational age at first visit were computed.

Results

A total of 364 records of ANC attenders at Debark Health Center were reviewed. As shown in Table 1, the majority of the attenders (51.7%) were in the age group 20-29. Median age of the study population was 25. Most of the women (95.3%) were married, and housewives (91.7%). Ninety three women(25.5%) were nulliparous. Seventy one (19.5%), 56 (15.4%), and 40 (11.0%) had delivered once, twice, and thrice, respectively. The general trend was that the greater the parity, the lesser the number of attenders.

Table 1: **Distribution of mothers attending ANC at Debark Health Center by some socio-demographic charateristics, (Sept. 1995 - Nov. 1996)**

Age (years)	no. of mothers	%
10 - 19	72	19.7
20 - 29	188	51.7
30 - 39	92	25.3
40 - 49	12	3.3
Total	364	100.0
Marital status		
Married	347	95.3
Unmarried	12	3.3
Divorced	3	0.8
Widowed	2	0.6
Total	364	100.0
Occupational status		
House-wives	334	91.7
Gov'nt employees	8.2.2	
Students	7	1.9
No occupation	7	1.9
House-maids	3	0.8
Commercial sex workers	2	0.6
Beggars	2	0.6
Tella Sellers	1	0.3
Total	364	100.0
Parity		
0	93	25.5
1 - 4	195	53.6
5 - 10	71	19.5
Total	359*	98.6

*The parity of five (5) mothers was not recorded on the ANC Charts

One hundred ninety one(53.8%) pregnant women began attending ANC in the second trimester of pregnancy and 163(45.9%) began in the third trimester. Only one mother began attendance in her first trimester (Table 2). As shown in Table 3, 140 (38.5%) mothers visited the clinic only once, 101(27.7%) two-times, and 52(14.3%) three times. The median frequency of visit was 2.0.

Table 2: **Gestational age at first antenatal visit for pregnant mothers attending ANC at Debark Health Center, (Sept. 1995 - Nov. 1996)**

GA at first ANC visit	no. of Mothers	%
First trimester	1	0.3
Second trimester	191	53.8
Third trimester	163	45.9
Total	355*	97.5

* The gestational age at first visit for nine mothers (2.5%) was not recorded.

The weights, heights, and blood pressures of 27, 11 and six women respectively were not recorded. No hematocrit and VDRL investigations were done for the attenders. Table 4 shows the proportion of high risk mothers and those identified as high risk by health centre staff. One hundred thirty (35.7%) attenders were high-risk mothers out of which 101 (77.7%) were identified. As shown in Table 5, forty one (25.2%) pregnant women had more than six pregnancies, 28 (17.2%) previous perinatal death or abortions, 23 (14.1%) previous postpartum haemorrhage and 17 (10.4%) height < 150 cm. Among the high-risk mothers who had more than six pregnancies, only 23(56.1%) were identified as high risk. Similarly, among 28 women who had previous perinatal death or abortions twenty-five were identified. Of the seventeen women who had height < 150 cm ten were identified. Fifteen

Table 3: **Frequency of visits of pregnant mothers attending ANC at Debark Health Center (Sept. 1995 to Nov. 1996)**

Frequency of visits	no. of Mothers	
Once	140	38.5
Twice	101	27.7
Thrice	52	14.3
Four times	34	9.4
Five times	27	5.2
Six times and above	10	2.7
Total	364	100.0

Table 4: **Proportion of high-risk factors identified by criteria and by health workers among ANC attenders at Debark Health Centre (Sept. 1995-Nov. 1996)**

Risk	Total no. of Mothers	%	Identified as high risk	%	Not high risk	%
High-risk'	130	35.7	101	77.7	29	22.3
Low-risk	234	64.3				
Total	364	100.0				

pregnant women were below 18 years of age but only seven of them were identified as high risk mothers.

Among the identified high-risk mothers, some measures were taken only for 17 (16.8%) (appointment earlier than for low risk pregnant women), while no special measures were indicated for the rest. All those with urinary tract infection were treated. For those with other medical illnesses, no records of their treatment or referral were available. Only nine (8.9%) mothers identified as high-risk delivered at Debark Health Center.

Table 5: **Frequency distribution of high risk mothers and proportion identified among high-risk mothers attending ANC at Debark Health Center, (Sept. 1995 - Nov. 1996)***

High-risk factors	Identified by criteria	Identified by Health Workers
More than 6 pregnancies	41	23
Previous abortions	28	25
Previous PPH	23	23
Height < 150 cm	17	10
Age < 18 years	15	7
UTI	10	10
Multiple pregnancy (previous and current)**	6	6
Tuberculosis	5	4
Previous vacuum, forceps	4	4
Hypertension (pregnancy induced, chronic)		
Heart disease	3	3
Malpresentation (breech, transverse)	2	1
STI	1	0
Anaemia	1	1
APH	1	1
Previous prologed labor	1	1
Previous premature delivery	1	1
Malaria	1	1
Total	160	121

* The total observation of the risk factors is greater than the total high risk mothers because some mothers had more than one risk-factors.

** Data not collected separately for previous and current status.

Discussion

Review of the age and parity distribution of women in Debark Town (Community Diagnosis of Debark Town, GCMS, 1997, Unpublished document) revealed that ANC attenders are younger and have lower parity compared to the distribution of the general population of women of reproductive age group. This young age and low parity of the attenders of ANC is in agreement with previous observations (13,14). Such women may be more concerned about their pregnancies than older women with previous uneventful pregnancies. Housewives and married women constituted the great majority of the attenders. This may reflect the general socio-demographic characteristics of the population. Other studies have also reported that married women attend ANC more commonly than divorced or widowed ones (13,14,15).

Only one mother started ANC attendance in

the first trimester whereas almost half of the pregnant women started during the third trimester. This would make complications like congenital syphilis too late to manage. The late onset of attendance could be due to lack of knowledge of when to start. But this needs further study. The median frequency of visit was two. This is below the World Health Organizations recommendation for developing countries which is at least five visits and at least four visits according to the recent more target oriented schedule (16,17).

For some attenders records of weight, height, and blood pressure were lacking. Hematocrit and serological investigations for syphilis (VDRL) were not done. This would make the identification of high-risk mothers to be unlikely with subsequent difficulties in follow-up and management. The reason why measurements which can be done with available facilities were lacking is not clear. Although a WHO working group did not recommend monitoring weight because of lack of evidence to link weight gain with known risk factors, it is unlikely that staff of the health centre did not record weight because of their awareness of this recommendation (17). More than one-third of the women were high risk. A possible explanation is that women who perceived illnesses or thought they may develop health problems during pregnancy are more likely to be attenders (13). About 22% of high-risk mothers were not identified. The figure is large in terms of the morbidity and mortality that is supposed to occur in unidentified high-risk mothers. This is particularly of great importance nowadays, when there is strong arguement against the sensitivity and specificity of risk screening (1, 2, 4, 18, 19). The reasons for low sensitivity and specificity are of two types. The first one is that women in whom no problem could have been detected could run into trouble (Rosser, 1995, unpublished,18). The second reason is due to failure of health professionals to illicit important information on risk factors and failures to take appropriate actions when evidence of increased risk is illicited (4, 18). Grand multi-parity was the leading cause of high-risk. This may be explained by low contraceptive prevalence rate, and early marriage. The detection of such mothers may prevent complications like uterine rupture and malpresentations (5). However, nearly half (43.4%) of them were not identified as high risk.

All women with urinary tract infections were treated and this is to be encouraged. Treatment or referral for some other problems was not recorded. This can make subsequent follow-up difficult. Identified high-risk mothers who delivered at the health center were only nine (8.9%). It is not known where the remaining majority of mothers delivered since referral was not recorded and the nearest hospital is 110 kms away. One of the key expected outputs of ANC being delivery of high risk mothers by qualified attendants with the necessary facilities, ANC objectives were not satisfactorily met at this health center.

The measure taken for high risk attenders was different from others (appointment earlier than those without risk factors) only in 16.8% of the cases. Thus little or no special care is given to the majority of the high risk mothers. Therefore, the findings of this study cast doubt on the advantage of attending ANC in decreasing maternal/perinatal mortlaity significantly in the study area.

A major limitation of this study is that it could not assess the presence of all risk factors since it was a retrospective study that relied on what has been recorded. It is possible that some risk factors could not have been recognized and documented by the attending health workers.

The organization and staffing pattern of this health centre is similar to other health centres in the administrative region of which it is a part and in the country. Therefore, such problems might also occur in other health centres. Since health centres are responsible for the care of the majority of the population in the country, the effect of ANC in improving

pregnancy outcome may be much less than desired. In addition, Debark Health Centre being one of the training health centres, is expected to perform better so that future health workers would be trained in a better or adequate setup.

Therefore, ANC services should be improved to effectively carry out screening high risk mothers as this is the most important though controversial function of ANC services. Appropriate actions should be taken and recorded in relation to identified risk factors. This study has indicated serious problems in ANC service provision. Further studies should be conducted to identify the different aspects of ANC and measures that improve the existing services.

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