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Original Research Article

Factors Associated With Utilisation of Antenatal Care Services by Pregnant Women Aged Between 18 and 49 Years in Masvingo Province

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ABSTRACT

Objectives: The study sought to identify factors associated with utilization of antenatal care (ANC) services by women aged between 18-49 years in Masvingo Province

Methods: An analytical cross sectional study guided by Anderson and Newman conceptual Framework of Health Services Utilisation, was carried out at Masvingo Provincial hospital to identify predisposing, enabling and need related factors associated with ANC utilization by pregnant women aged 18-49 years. Utilisation of ANC services was defined as the number of ANC visits that a client makes during one pregnancy. Those who had at least four ANC visits before birth during their pregnancy were classified as having utilised ANC services. Women in ANC who were 36 weeks pregnant, aged between 18 and 49 years, attending ANC at Masvingo Provincial Hospital during the data collection period and were willing to participate in the study were included. Simple random sampling using the lottery method was then used to select study participants. A total of 207 pregnant women were interviewed.

Results: The prevalence of non-utilization of ANC services in Masvingo Province was 48%. Statistically significant predisposing factors associated with non-utilization of ANC services were having nil/primary level of education (COR=14.45; 95% CI: 1.843-113.356), family income of less than US $500 (COR= 2.837, 1.534-5.247) and not being married (COR= 2,839; 95%CI: 1.045-7.714). Statistically significant enabling factors associated with non-utilization of ANC services were not having a planned pregnancy (COR=6.665; 95% CI: 3.528-12.591), not being encouraged to go for ANC check-up (COR=4.440; 95%CI: 2.452-8.042), not having autonomy to seek health care (COR= 4.231; 95%CI: 2.277-7.861) and not having a previous normal vertex delivery (COR=2.139; 95%CI: 1.219-3.752). Statistically significant need related factors which were associated with non-utilization of ANC services were not having been satisfied with the care provided in ANC (COR=5.277; 95%CI: 2.565-1086), not having used ANC services before (COR=4.173; 95%CI: 1.479-11.802) and not having knowledge about the risks associated with pregnancy (COR=3.518; 95%CI: 1.881-6.58).

Conclusion: There is need for the Ministry of Health and Child Care's Family Health department in conjunction with the department of nursing services, to carry out community awareness campaigns on the importance of antenatal care utilisation.

Key words: Antenatal Care, Factors associated, Utilisation. Analytical cross sectional

1.0 INTRODUCTION

The World Health Organization (WHO) estimated that 580,000 women of reproductive age die each year from complications arising from pregnancy, and a high proportion of these deaths occur in sub-Saharan Africa. The ratio of maternal mortality in the region is one of the highest in the world, reaching levels of 686 per 100,000 live births (World Bank, 2015). Women play a principal role in the rearing of children and the management of family affairs, and their loss from maternity-related causes is a significant social and personal

tragedy. WHO (2014) estimates suggests 88-98% of all pregnancy related deaths are avoidable if all women utilised reproductive health services. Antenatal care (ANC) services is one of the four pillars of safe motherhood hence its utilisation is one of the important factors to reduce the incidence of maternal death.

ANC is an important determining factor of maternal health outcomes and one of the basic constituents of maternal care on which the life of mothers and babies hinge on. It is the entry point to health care system and concludes whether a mother will deliver in a health facility and whether she will take the baby for preventive services like immunizations and growth monitoring.

ANC is the health care given to pregnant women so that they have safe pregnancy and healthy babies. The WHO technical Working Group (2014) has recommended a minimum level of care to be four antenatal care visits throughout the pregnancy. Despite efforts by the Government of Zimbabwe to offer free ANC services, Masvingo Province still experiences high numbers of maternal deaths. This study aimed at finding out factors associated with ANC utilization by pregnant women aged 18-49 years in Masvingo Province.

2.0 MATERIALS AND METHODS

An analytical cross sectional study guided by Anderson and Newman conceptual Framework of Health Services Utilisation, was carried out at Masvingo Provincial hospital to identify predisposing, enabling and need related factors associated with ANC utilization by pregnant women aged 18-49 years. The study was carried out in Masvingo Province. Masvingo Provincial Hospital (MPH), being the site for the study is the referral centre for the whole province of Masvingo. Women in ANC who were 36weeks pregnant, aged between 18 and 49 years, attending ANC at Masvingo Provincial Hospital during the data collection period and who were willing to participate in the study were included. The required sample size of the study participants was determined by Dobson's (1984) single population proportion formula using the assumptions of z, the standardized normal distribution value for the 95% CI, which is 1.96, p=0.122, an estimate of frequent ANC utilization among the rural mothers in Ethiopia because they were feeling sick (Zeine et al, 2010) and taking Δ, the margin of error to be 5.0%. A sample size of 165 study participants was required at analysis stage. Assuming a 75% response rate, the minimum sample size was 207.

The study respondents were selected through simple random probability sampling. On average Masvingo provincial hospital reviews 20 women per day. Each day an exhaustive list of study participants using the ANC register was generated. Simple random sampling using the lottery method was then used to select participants for the study. The dependent variable for the study was utilisation of ANC services**.** Utilization was defined as at least 4 ANC visits to a health facility before giving birth. Those who would have had at least four ANC visits before birth during their pregnancy were classified as having utilised ANC services. The independent variables were classified into three categories. The predisposing independent variables which were age, family size, parity, marital status; educational attainment, occupation, area of residence and religion. Enabling independent variables were accessibility of health facility, cost of ANC services, autonomy in decision making, availability of ANC services, availability of midwife/doctor, having a planned pregnancy while the need related independent variables were patient satisfaction levels, perception of illness, and ANC advice from health workers, previous ANC attendance and history of abortion. Primary data was collected from participants by means of a pretested structured interviewer administered questionnaire. The questionnaire contained both closed and open ended questions in

English and Shona. Epi-info version 3.5.3 statistical package was used for data cleaning and analysis.

Descriptive statistics such as frequencies and their corresponding percentages were used to analyse the socio-demographic characteristics of the study participants. Measures of central tendency such as the median were used to analyse continuous data such as age while percentages were used for nominal as well as categorical variables such as marital status. Bivariate analysis was used for the purpose of determining the empirical relationship between ANC utilization and independent variables while multivariate logistic regression was used to identify independent determinants of ANC utilization. Multivariate analysis was done to allow for efficient estimation of measures of association between independent factors and ANC utilization while controlling for a number of confounding variables simultaneously. Odds ratios (crude and adjusted) and their corresponding 95% Confidence Intervals as well as p-values were reported. A p-value of less than 0.05 was considered statistically significant.

Ethical considerations

Permission to carry out the study was sought and granted by the Medical Research Council of Zimbabwe, the Provincial Medical Director Masvingo Province and the University of Zimbabwe's Joint Review Committee (JREC). Each questionnaire was accompanied by a letter of informed consent. Study participants were informed about the purpose of the study, its nature, and harm or benefits through the informed consent form. The consent form assured participants privacy and confidentiality of any information they gave. Participants were instructed to report to MRCZ and to the University in case of any harm or unfairness. All participants were issued an informed consent form where they would read and sign that they have agreed to be interviewed.

3.0 RESULTS

Table 1: Utilization of ANC by selected background characteristics among women aged 18-49 years in Masvingo Province. (n=207)

Variable	Utilization of ANC services		P-Value
	< 4 ANC visits	4 + ANC visits	
Marital status			
Married	83 (83%)	101 (94%)	0.241
Single	13 (13%)	3 (3%)	
Widowed	1 (1%)	1 (1%)	
Divorced	3 (3%)	0 (0%)	
Separated	0 (0%)	2 (2%)	
Residence			
Urban	60 (61%)	76 (71%)	0.076
Rural	39 (39%)	31 (29%)	
Age group			
<20	18 (18%)	4 (4%)	0.391
20-35	60 (60%)	76 (71%)	
>35	22 (22%)	27 (25%)	
Median age (Q_1 ; Q_3)	30 (25 ; 35)	31 (27; 36)	0.062
Highest level of education	0 (0%)	0 (0%)	0.072
Nil	12 (12%)	1 (1%)	
Primary	61 (61%)	59 (55%)	
Secondary	27 (27%)	47 (44%)	
Tertiary			
Partner highest level of education	2 (2%)	2 (2%)	0.068
Nil	2 (2%)	0 (0%)	
Primary	40 (43%)	30 (29%)	
Secondary	50 (53%)	73 (70%)	
Tertiary			
Employment status			
Employed	28 (28%)	60 (56%)	0.426
Unemployed	72 (72%)	47 (44%)	
Religion			
Traditional	6 (6%)	3 (3%)	0.076
Christianity	82 (82%)	101 (94%)	
Moslem	2 (2%)	2 (2%)	
Apostolic	10 (10%)	1 (1%)	
Monthly income (in US Dollars)	24 (24%)	5 (5%)	0.052
less than $100	55 (55%)	56 (52%)	
$100- <$500	21 (21%)	46 (43%)	
$500 and above			
Parity			
< 3 children	55 (55%)	71 (66%)	0.063
3 + children	45 (45%)	36 (34%)	

A total of 207 pregnant women were interviewed. Of these, 100 (48%) of the women had less than four ANC visits while 107 (52%) had at least four ANC visits. Sixty percent of women who had less than 4 ANC visits and seventy one percent of those who had at least 4 ANC visits were in the 20 to 35 year age group. Eighteen percent of those who had less than 4 ANC visits and 4% of those who had at least 4 ANC visits were less than 20 years of age. The median age in years for those who had less than 4 ANC visits was 30 years (Q_1=25, Q_3=35) and that for those who had at least 4 ANC visits was 31 (Q_1=27, Q_3=37). ANC utilization was high among women having less than three children, among women whose religion is Christianity, among women with secondary level of education

and among the employed. There were no statistically significant difference between those who had less than 4 ANC visits and those who had at least 4 ANC visits with regards to marital status, residence, age group, and highest level of education, partner highest level of education, employment status, religion, income and parity ($p > 0.05$) as shown Table 1.

Figure 1 shows the prevalence of ANC services utilization in Masvingo province. The largest proportion 84(41%) of the study participants had four ANC visits followed by 22% who had three ANC visits during their current pregnancy. Overall, 100 (48%) could not fully utilize ANC services (less than four ANC visits) during their current pregnancy.

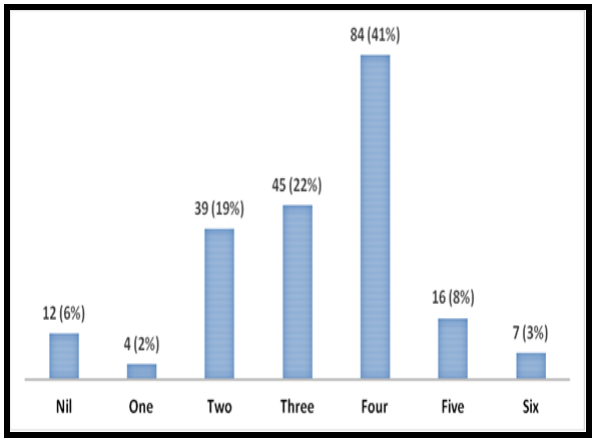

Fig1: Distribution of study participants by number of ANC visits attended during the current pregnancy, Masvingo Province, 2017(n=207)

Table *2* summarizes the Predisposing factors associated with utilization of ANC services.

Table 2: Predisposing factors associated with utilization of ANC services in Masvingo province, 2017(n=207)

Variable	Utilization of ANC services		COR	95% CI
	< 4 ANC visits	4 + ANC visits		
Educational level				
Nil + Primary	12	1	**14.45**	**1.843-113.356***
Secondary and above	88	106		
Partner education level				
Nil + Primary	4	2	2.289	0.409 – 12.179
Secondary and above	90	103		
Mothers' occupation				
Employed	28	60	**0.305**	**0.171-0.544***
Unemployed	72	47		
Partner employment status				
Employed	21	8	**3.488**	**1.463 – 8.318***
Unemployed	73	97		
Parity				
< 3 children	55	71	0.620	0.353-1.087
3 + children	45	36		
Family income				
Less than US$500	79	61	**2.837**	**1.534-5.247***
US $ 500 and above	21	46		
Age group in years				
< 30	44	39	1.37	0.789-2.393
30 + years	56	68		
Marital status				
Divorced+single+widowed+separated	14	6	**2.839**	**1.045-7.714***
Married	83	101		
Area of residence				
Rural	39	31	1.59	0.892 – 2.848
Urban	60	76		

* Statistically significant factors

Women whose highest level of education was nil/primary were 14.45 times more likely not utilizing ANC services as compared with those who had secondary/tertiary and the results are statistically significant (COR=14.45 ; 95% CI: 1.843-113.356). Other statistically significant factors associated with non-utilization of ANC services were family income (COR= 2.837, 1.534-5.247) and marital status (COR= 2,839; 95%CI: 1.045-7.714). Women who reside in rural areas were 1.59 times more likely not utilize ANC services as compared with those who live in urban areas though the results were not statistically significant (COR= 1.59; 95%CI: 0.892 – 2.848). Women who were employed were 0.305 times more likely to utilize ANC services as compared to those who were

unemployed and the results are statistically significant (0.305; 95%CI: 0.171-0.544).

Table 3 summarizes the enabling factors which were associated with utilization of ANC services

Table 3: Enabling factors associated with utilization of ANC services in Masvingo province, 2017(n=207)

Variable	Utilization of ANC services		C0R	95% CI
	< 4 ANC visits	4 + ANC visits		
Having a planned pregnancy				
No	59	19	**6.665**	**3.528-12.591***
Yes	41	88		
Having autonomy to seek health care				
No	80	52	**4.231**	**2.277-7.861***
Yes	20	55		
Being encouraged by husband for ANC check up				
No	61	29	**4.440**	**2.452-8.042***
Yes	36	76		
Having a previous normal vertex delivery				
No	46	70	**2.139**	**1.219-3.752***
Yes	52	37		
Distance to nearest facility				
10km and above	78	94	2.039	O.965-4.311
Less than 10 km	22	13		
Average waiting time before being served at the facility				
Less than one hr	24	39	**0.543**	**0.296-0.994***
one hr and above	76	67		
Paying for ANC services				
Yes	74	81	1.138	0.604-2.144
No	26	25		

* Statistically significant factors

Statistically significant factors associated with non-utilization of ANC services in Masvingo province were not having a planned pregnancy (COR=6.665; 95% CI: 3.528-12.591), not being encouraged to go for ANC check-up (COR=4.440; 95%CI: 2.452-8.042), not having autonomy to seek health care (COR= 4.231; 95%CI: 2.277-7.861) and not having a previous normal vertex delivery (COR=2.139; 95%CI: 1.219-3.752). Other risk factors which were associated with non-utilization of ANC services were distance of more than 10 km from the nearest facility (COR= 2.039; 95%CI: O.965-4.311) and paying for ANC services (COR= 1.138; 95% CI: 0.604-2.144). Those who waited for less than one hour before being served at the facility were 0.543 times more likely to utilize ANC services as compared to those who waited for more than one hour.

Table 4 summarizes the need related factors associated with ANC services utilization

Table 4: Need related factors associated with utilization of ANC services in Masvingo Province, 2017(n=207)

Variable	Utilization of ANC services		COR	95% CI
	< 4 ANC visits	4 + ANC visits		
Having a previous abortion				
Yes	19	19	0.908	0.449-1.838
No	79	87		
Having a previous stillbirth				
Yes	16	26	1.666	0.832-3.337
No	82	80		
Having Diabetes Mellitus				
Yes	12	22	1.877	0.873-4.003
No	86	84		
Having experienced APH during previous pregnancies				
Yes	26	26	0.886	0.471-1.667
No	70	79		
Having knowledge about the risks associated with pregnancy				
No	55	86	**3.518**	**1.881-6.58***
Yes	45	20		
Having used ANC services before				
No	83	102	**4.173**	**1.479-11.802***
Yes	17	5		
Having been satisfied with the care provided in ANC				
No	60	95	**5.277**	**2.565-1086***
Yes	40	12		

* Statistically significant factors

Results displayed in table 4 shows that not having been satisfied with the care provided in ANC (COR=5.277; 95%CI: 2.565-1086), not having used ANC services before (COR=4.173; 95%CI: 1.479-11.802) and not having knowledge about the risks associated with pregnancy (COR=3.518; 95%CI: 1.881-6.58) were statistically significant need related factors associated with non-utilization of ANC services in Masvingo Province. Women who had a previous abortion (COR=0.908; 95%CI: 0.449-1.838) and those who had experienced APH during previous pregnancies (COR=0.886; 95%CI: 0.471-1.667) were more likely to utilize ANC services as compared to those who did not, although the results were not statistically significant.

Table 5: Most significant factors after logistic regression

Variable	Adjusted ODDs Ratio	95%CI	p-value
Having a previous caesarean section	3.11	1.05 – 9.18	0.030
Being encouraged by husband for ANC check-up	7.17	2.48 – 20.73	0.003
Previous ANC Booking	1.32	1.18-4.87	0.04
Paying for ANC services	0.29	0.11 – 0.78	0.001
Residing in rural areas	1.36	1.02 – 6.86	0.008
Having been satisfied with the care provided in ANC	9.46	3.91 – 27.65	< 0.0001

4.0 DISCUSSION

Results from this study showed that 78% of the pregnant women were referred to deliver at Masvingo Provincial Hospital and the reasons for referral as highlighted by the study participants were having a previous Caesarean section and no doctor at the facility, no blood at the facility, grand multiparity, low Haemoglobin level, pregnancy induced hypertension, poorly controlled diabetes mellitus, elderly prim up, having blood group O negative, intrauterine death and having a bad obstetric history. These women were referred to the hospital since they required specialized medical care or treatment and some had signs of pregnancy related complications. According to Ngxongo et al (2015) pregnant women are referred so that certain obstetric emergencies can be predicted through antenatal screening and this strategy eventually reduces maternal mortality.

On prevalence of ANC utilization, the study results showed that 52% of the study participants had at least four ANC visits in Masvingo Province. According to Ngxongo et al (2015) four visits are sufficient for uncomplicated pregnancies and WHO (2014) recommends at least four ANC visits in the course of pregnancy. However, results from this study also reported a worrying prevalence of non-utilization of ANC services of 48%. Various reasons on why women utilize ANC services in Masvingo Province are discussed in the next paragraphs. In Uganda it was also reported that 35% of pregnant women receive no antenatal care at all during pregnancy (Uganda results from 2002 survey).

Our study found that predisposing factors which were associated with antenatal care utilization in Masvingo Province were having secondary/ tertiary educational level, being employed, having less than three children, earning more than $500 per month, being married and living in an urban area. Similar results were also reported in a study by Jalina et al, (2013) who found that women's educational status, religion, age at marriage and ownership of the house were associated with utilization of ANC services. A study done in Peru showed that mothers with primary educational level were more likely to attend ANC than women who were unable to read and write (Zeine et al, 2010). According to Jalina et al, (2013) the type and place of residence affects utilization of maternal health care services. This is so because most trained health professionals such as doctors are found in urban areas. Further, family size was found to be a

strong predictor of antenatal care utilization in that mothers who live in a household having less than three children were eight times more likely to utilize ANC than those living in a household with greater than five children (Zeine et al, 2010).

On marital status, results from this study showed that those who were married were more likely to utilize ANC services as compared to those who were single/ widowed/ separated/ divorced (COR=2,837, 1.534-5,247). These results disagreed with what was found in a study by Ngatho, Michael, and Kingsley, (2015) who found that mothers who were single or divorced were more likely to attend focused antenatal care than mothers who were married. Women who are either single, separated or divorced are independent or can decide independently as per rising need to go for ANC. On the other hand this independency can hinder utilization as these women might lack support from their partners especially financial or moral to attend antenatal care services.

Results from this study also showed that those who were employed had higher chances of utilizing ANC services as compared to those who were unemployed. The employed may be having resources required to access ANC services unlike those who are not employed and they are also likely to be highly educated (Zeine et al, 2010).

Enabling factors associated with utilization of ANC services in Masvingo province were also reported. According to the study results not having a planned pregnancy, not being encouraged to go for ANC check-up, not having autonomy to seek health care, and not having a previous normal vertex delivery were not associated with utilization of ANC services in Masvingo Province. These results agreed with what was found in a study by (Zeine et al, 2010) who reported that women whose pregnancy were planned and wanted were more likely to utilize ANC service than those who had unplanned and unwanted pregnancy. Similar results were also reported by Jalina et al, (2013) who found that women who have adequate knowledge of pregnancy related risks were found to be utilizing ANC more than those had no such knowledge and that about half of the women who were not utilizing ANC services did not know the complications which may arise with hypertension and diabetes in pregnancy.

Previous history of sickness during pregnancy was also found to be the other enabling factor associated with ANC utilization in Masvingo Province. A study by Zeine et al (2010) shows that in Ethiopia, 12.2% of the rural mothers visited a health institution because they were feeling sick. Results from this study also showed that distance of more than 10 km from the nearest facility was associated with non-utilization of ANC services in Masvingo Province (COR=2.039; 95%CI:0.965-4.311). Similar results were also reported in a study by Zeine et al, (2010) who found that mothers who were residing within walking distance (less than an hour) from a health facility were about 4 times more likely to utilize antenatal care than those residing further (greater than 2 hours).

The other enabling factor associated with utilization of ANC in Masvingo Province was paying for ANC services. Our results revealed that paying for ANC services was associated with non-utilization of ANC services. This shows that Government of Zimbabwe policy of providing free maternal health services is not consistently or effectively implemented. Women are still routinely instructed by health workers to bring essential medical supplies for delivery as these are frequently unavailable at Masvingo Provincial hospital and also pay for procedures like caesarian section. Similar results were also reported by Jalina et al, (2013) who found that financial reasons and unavailability of transport to the facility were the main reasons for not utilizing ANC services by pregnant women. This was also supported by Tanveer et al (2015) who found that women in the poor socioeconomic class

were less likely to utilize ANC services as compared to those in the high socioeconomic class. In addition, results from this study showed that in Masvingo Province, there were higher chances of utilizing ANC services among women who waited for less than one hour before being served at the facility as compared to those who waited for more than one hour. Similar results were also found in a study by Zeine et al, (2010) which showed that long waiting time at the facility was associated with not attending ANC.

Need related factors associated with ANC utilization in Masvingo Province were also identified. Not having been satisfied with the care provided in ANC (COR=5.277; 95%CI: 2.565-1086) and not having used ANC services before (COR=4.173; 95% CI: 1.479-11.802) were statistically significant need related factors associated with non-utilization of ANC services in Masvingo Province. A study by Tanveer et al (2015) also found that women who were satisfied with care provided in antenatal care and those who appreciated the behaviour and skills of the doctors were more likely to utilize ANC services. The person who is best able to offer ANC services is the person with midwifery skills who is part of and lives in the community she or he serves. According to Ikamari (2007) women who had utilized ANC services before were more likely to utilize these services for their subsequent pregnancies as compared to those who did not.

4.1 Limitations to the study

This study tried as much as possible to address its aim; however they were some unavoidable limitations which need to be addressed for future similar studies. For instance, out study findings were based on self-reported information which may be affected by response bias. This has an effect on our results in that they may be different from the actual opinions or facts held by the respondents participating in the sample. In most cases, this type of bias results from respondents giving inaccurate information. In addition, the thoughts of those women who delivered before and after the study were contacted were not captured. Furthermore, the study results cannot be generalised to the population of pregnant women aged 18-49 years outside Masvingo Province. Finally, since the questionnaire development and its pretesting were conducted by the researcher, it is unavoidable that in this study, certain degree of subjectivity can be found. In fact, it would have been sort of objective if it had been decided by two or three researchers

5.0 CONCLUSION

The study showed that 48% of the pregnant mothers reviewed at Masvingo Provincial had less than four ANC visits while 52% had at least four ANC visits. Sixty percent of the women had less than 4ANC visits and seventy one percent of those who had at least 4 ANC visits were in the 20 to 35 year age group. Eighteen percent of those who had less than 4 ANC visits and 4% of those who had at least 4 ANC visit were less than 20 years of age.

Statistically significant predisposing factors associated with utilisation of ANC services in Masvingo Province, were having secondary/tertiary level of education, having monthly income of more than $500, being married and being employed.

Enabling factors associated with utilisation of ANC services in Masvingo Province were having planned pregnancy, being encouraged to go for ANC check-up, waiting for less than one hour before being served at the facility, having autonomy to seek health care and having a previous normal vertex delivery and these were statistically significant. Other enabling factor was having a previous abnormal delivery although the results were not statistically significant.

Statistically significant need related factors associated with utilisation of ANC services in Masvingo Province were having been satisfied with the care provided in ANC, having used ANC services before and

having knowledge about the risks associated with pregnancy.

These study results indicates that there is still great need to educate women on importance of ANC utilisation as well as the community at large in order to improve utilisation of these services and promote a healthy pregnancy.

Conflict Of Interest: The authors declare that there is no conflict of interests regarding the publication of this article

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