Factors Associated with late Antenatal Care Attendance in Selected Rural and Urban Communities of the Copperbelt Province of Zambia

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ABSTRACT

Background: Despite antenatal care services being provided free of charge or sometimes at a minimal cost in Zambia, only 19% of women attend antenatal care by their fourth month of pregnancy, as recommended by World Health Organization (WHO). An estimated 21% of pregnant women in urban and 18% in rural districts make their first ANC visit by 4th months of pregnancy. A number of factors have been found to contribute to late initiation of Antenatal care among pregnant women and these may vary between rural and urban areas. Therefore, a study aimed at examining factors associated with late ANC attendance amongst pregnant women in selected communities of the Copperbelt Province was conducted.

Methodology: A cross- sectional study using a semi-structured questionnaire was conducted in selected health facilities of Mpongwe and Ndola districts. A total number of 613 women attending antenatal clinic, distributed evenly between Mpongwe rural district (51% (307/613) and Ndola urban district (49% (306/613) were included in the study. Data from the completed questionnaires was entered using Epi Info™ 3.5.1 and finally analyzed with SPSS version 16.0.

Results: The prevalence of late ANC attendance was 72.0 % (n=221) and 68.6% (n=210) in rural and urban districts respectively. However, the difference between two districts was not statistically significant [OR 0.851 (95% CI=0.6, 1.2), p=0.363]. In the rural district, nulliporous women were 59% (AOR 0.411, 95% CI 0.238, 0.758) less likely to initiate ANC late compared to multiparous

women, while the proportion the urban was 48% (AOR 0.518, 95% CI 0.316, 0.848). Inadequate knowledge about ANC resulted into 2.2 times high odds for late ANC attendance (AOR 2.205, 95% CI 1.021, and 4.759) than women who had adequate knowledge in urban district. Women who fell pregnant unintentionally had a higher odds of starting ANC late in both rural [4.2 times (AOR 4.258, 95% CI 1.631, 11.119)] and urban [3.1 times (AOR 3.103, 95% CI 1.261, 7.641)] respectively. The perception of no benefits derived from commencement of ANC early was associated with 4 times (AOR 3.983, 95% CI 1.365, 11.627) likelihood of late attendance in the urban district. Compared to lack of privacy at health institutions, pregnant women in rural were 3.4 times (AOR 3.377, 95% CI 1.180, and 9.660) more likely to initiate ANC late because of long distance to health facilities. Compared to misconceptions on ANC, pregnant women in rural areas were 2.2 times (AOR 2.211 95% CI 1.049, 4.660) more likely to start ANC late because of community norm(less value attached to ANC); while in urban late ANC attendance was 2.9 times (AOR 2.899, 95% CI 1.372, 6.083) higher due to cultural beliefs than misconceptions.

Conclusion: Late antenatal care attendance remains high in both rural and urban districts indicating the need for intensified and more focused utilization of resources aimed at increasing sensitization of the importance of early attendance for high risk groups, such as women with unplanned pregnancies, inadequate knowledge about ANC, cultural beliefs and women who are multiporous.

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INTRODUCTION

Maternal and neonatal morbidity and mortality have continued to be a major problem in developing countries despite efforts to reverse the trend. Globally, more than 500,000 mothers die each year from pregnancy related conditions, and neonatal mortality accounts for almost

40% of the estimated 9.7 million children under-five deaths[1]. Furthermore, ninety nine percent (99%), of maternal and newborn mortality occur in developing countries. The greatest risk of maternal deaths, which is now compounded by the HIV/AIDS pandemic, is faced by women in Sub-Saharan Africa[2]. According to a survey conducted in Zambia, it was reported that maternal mortality ratio stood at 591 per 100 000 live births while neonatal mortality was estimated at 34 per 1000 live births[3].

Research has shown that most of the maternal and neonatal deaths are avoidable[4]. Antenatal care is one of the key strategies for reducing maternal and neonatal morbidity and mortality directly through detection and treatment of pregnancy related illness, or indirectly through detection of women at risk of complications of delivery and ensuring that they deliver in a suitably equipped facility[5]. A number of studies have demonstrated the association between antenatal care attendance and reduction of premature birth, low birth weight, congenital malformations, congenital infections, neonatal tetanus, pre-eclampsia and anaemia[6].

In 2001 the World Health Organization (WHO) issued guidance on a new model of antenatal care (ANC) called goal-oriented or focused antenatal care (FANC), for implementation in developing countries[7]. In this new strategy of focused antenatal care, WHO recommends four antenatal care visits in low risk pregnancies and prescribes the evidence-based content for each visit[8]. Antenatal care constitutes screening for health and socioeconomic conditions likely to increase the possibility of specific adverse pregnancy outcomes, providing therapeutic interventions known to be effective; and educating pregnant women about planning for safe birth, emergencies during pregnancy and how to deal with them[9].

Globally, progress has been made in terms of increasing access and use of antenatal care, although the proportion of women who are obtaining the recommended minimum of four visits is too low[10]. In addition, the first consultation is often made late in pregnancy, whereas maximum benefit requires early initiation of antenatal care. Van Eijk et al. observed that there was a tendency towards late attendance for the first ANC visit in Kenya. The whole of Sub-Saharan Africa lags behind other developing regions[11]

In Zambia ANC services are provided free of charge in most government health institutions and at a minimal cost in private clinics. As a result, the Zambia Demographic and Health survey indicates that the vast majority (94%) of pregnant women receive some antenatal care (ANC) from a skilled provider, most commonly from a nurse/midwife (87%). However, only 19% of women attend antenatal care by their fourth month of pregnancy, as recommended by World Health Organization[3]. Furthermore, in terms of urban and rural variation, 21% of pregnant women in urban and 18% in rural districts had their first ANC visit by 4th months of pregnancy. Mpongwe one of the rural districts in Zambia, showed the same trend. Out of 6,448 antenatal attendance in 2008, only 2,296 pregnant women attended antenatal by the 20th week of their pregnancy, representing 74% of late antenatal attendance[12]. On the other hand, Ndola , an urban district reported 70% late ANC attendance in the same year.

Various studies have reported 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[13,14].

A study aimed at examining factors associated with late ANC attendance amongst pregnant women in selected communities of the Copperbelt Province was conducted. The study was guided by the socio-ecological model because it emphasizes the interaction between, and interdependence of factors within and across levels of health problems[15]. The model was used in order to help explain why some women attend ANC early while others do not.

METHODS

A cross-sectional quantitative study aimed at examining factors that were associated with late antenatal attendance in selected urban and rural districts of the Copperbelt province was consucted. The rural district that was picked was Mpongwe and on the other hand Ndola represented the urban community. Sample size calculation was done using Epi Info™ 3.5.1 (Centers for Disease Control and Prevention, Atlanta, GA, USA). Probability sampling methods by means of multistage sampling technique was used to reach at the pregnant women attending ANC. In Ndola district, 9 of 18 facilities were selected to participate while in Mpongwe district 8 of 15 were selected using systematic sampling. Pregnant women who participated in the study were then selected by simple random sampling. Data was collected using a semi-structured questionnaire and was entered in a database using the double entry system in Epi Info™ 3.5.1 (Centers for Disease Control and Prevention, Atlanta, GA, USA), with in-built consistency and range checks. The database was converted to SPSS version 16.0 for recoding, where necessary, and final analyses. Tabulations of characteristics (factors) were produced to determine

overall distributions. Chi-square was used to test for association and logistic regression to identify significant predictors of ANC attendance. A p value less or equal to 0.05 was considered indicative of a significant factor effect.

RESULTS SAMPLE DESCRIPTIONS

Table 1 shows the socio-demographic characteristics of pregnant women who participated in the study. A total number of 613 women attending antenatal clinics were included in the study with the distribution between 2 districts almost equal; 50.1% (n=307) to Mpongwe and 49.9% (n=306) to Ndola. The majority of the participants were in the age category of 20- 29 years, representing

Table 1: Socio-demographic characteristics of participants (n=613)

Characteristics	Rural n(%)	Urban n(%)
Area of residence		
Participants	307(50.1)	306(49.9)
Age (years)		
< 20	79(25.7)	41(13.4)
20 - 29	140(46.6)	159(52.0)
30 and above	88(28.7)	106(34.6)
Marital status		
Married	266(86.6)	255(83.3)
Single	27(8.8)	44(14.4)
Divorced	9(2.9)	2(0.7)
Widowed	3(1.0)	4(1.3)
Occupation		
Employed	13(4.2)	74(24.2)
Not employed	294(95.8)	232(75.8)
Religion		
Christian	306(99.7)	301(98.4)
Muslim	1(0.3)	5(1.6)
Level of education		
Never been to school	20(6.5)	6(2.0)
Primary	174(56.7)	73(23.9)
Secondary	106(34.5)	167(54.6)
College/University	7(2.3)	57(18.6)

46.6% in Mpongwe and 52.0% in Ndola respectively. Most of the women in the two districts were married [86.6% (n=266) to Mpongwe and 83.3% (n=255) to Ndola]. Unemployment level of participants was 95.8% in Mpongwe compared to 75.8% in Ndola. Almost all participants were Christians (99.7% to Mpongwe and 98.4% to Ndola). Primary school was the highest level of education attained by participants in Mpongwe (56.7%) while the majority in Ndola (54.6%) attained Secondary school.

Obstetric characteristics

Table 2 shows obstetric characteristics of women who participated in the study. Majority of in had 1 or more children before [74.6% (n=229) in Mpongwe compared to 61.4% (n=188) in Ndola]. In Mpongwe the majority of women (56.0%) had 3 or more previous pregnancies while in Ndola the majority (42.2) had 2 previous pregnancies. Most of the respondents had their last child in the age category of 2 to 5 years; the distribution was 52.1% to Mpongwe and 42.2% to Ndola respectively. Information on initiation of ANC revealed that 72% of the participants in Mpongwe booked for ANC late while in Ndola the proportion was 68.6%

Table 2: Obstetric characteristics of participants

Characteristics	Mpongwe n(%)	Ndola n(%)
Parity (number of children)		
Nulliporous	78(25.4)	116(37.9)
1 or more children	229(74.6)	188(61.4)
Gravidity (number of previous pregnancies)		
1	77(25.1)	65(21.2)
2	57(18.6)	129(42.2)
3 or more	172(56.0)	45(14.7)
Age of last child (years)		
< 2	118(38.4)	65(21.2)
2 to 5	169(52.1)	129(42.2)
> 5	26(8.5)	45(14.7)
Antenatal care entry		
Early	86(28.0)	96(31.4)
Late	221(72.0)	210(68.6)

Figure 1: Gestation age distribution at ANC Booking (District 1 represents Rural and 2 Urban)
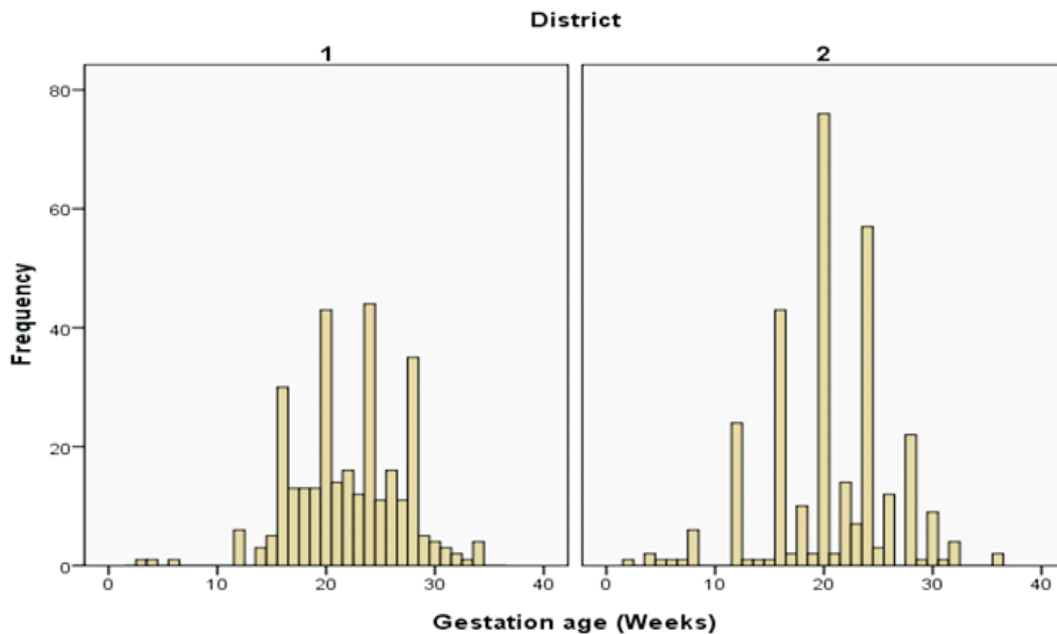
Comparison of the prevalence of late Antenatal care attendance between Mpongwe and Ndola districts

The prevalence of late ANC attendance, as Table 3 indicates was 72.0 % (n=221) to Mpongwe and 68.6% (n=210) to Ndola. However, the difference between two districts was not statistically significant [OR 0.851 (95% CI=0.6, 1.2), p=0.363]

Logistic regression analysis

Table 3: Comparison of the prevalence of Late ANC attendance between Mpongwe and Ndola

Characteristics	ANC Entry		OR	95% CI	p- value
	Early n(%)	Late n(%)			
Area of residence					0.363
Mpongwe	86(28.0)	221(72.0)	0.851	(0.6, 1.2)	
Ndola	96(31.4)	210(68.6)	1		

In the rural district, nulliporous women were59% (AOR 0.411, 95% CI 0.238, 0.758) less likely to initiate ANC late compared to multiparous women, while the proportion in the urban district was 48% (AOR 0.518, 95% CI 0.316, 0.848). In urban areas, the likelihood of women with last child in the age group 2-5 years to start ANC late was 2 times (AOR 2.003, 95% CI 1.079, 3.724) higher than women with last child less than 2 years; also the likelihood of women with last child more than 5 years old was 3 times (AOR 3.222, 95% CI 1.338, 7.761) higher. In Ndola likelihood of women who had inadequate knowledge about ANC to start ANC late was 2.2 times (AOR 2.205, 95% CI 1.021, and 4.759) higher than women with adequate knowledge. Women who fell pregnant unintentionally had a higher odds of starting ANC late in both rural [4.2 times (AOR 4.258, 95% CI 1.631, 11.119)] and urban [3.1 times (AOR 3.103, 95% CI 1.261, 7.641)] respectively. The perception of no benefits derived from commencement of ANC early was associated with 4 times (AOR 3.983, 95% CI 1.365, 11.627) likelihood of late attendance in Ndola.

Compared to lack of privacy at health institutions, pregnant women in rural were 3.4 times (AOR 3.377, 95% CI 1.180, and 9.660) more likely to initiate ANC late because of long distance to health facilities. Compared to misconceptions on ANC, pregnant women in rural were 2.2 times (AOR 2.211 95% CI 1.049, 4.660) more likely to

start ANC late because of community norm(less value attached to ANC); while in urban late ANC attendance was 2.9 times (AOR 2.899, 95% CI 1.372, 6.083) higher due to cultural beliefs than misconceptions. Women who spent longer time traveling to ANC were 13.2 times(AOR 13.189 95% CI 6.931, 25.096) more likely to start ANC late than those who spent less time in rural, while 96% (AOR 1.962, 95% CI 1.100, 3.500) of pregnant women were more likely to start ANC late because of inadequate Health facilities.

Table 4: Predictors of Late ANC attendance in Mpongwe and Ndola-logistic regression

Predictors	Mpongwe				Ndola		
	AOR	95% CI	p-value		AOR	95% CI	p-value
Parity							
Nulliporous	0.411	(0.238, 0.758)	**0.001**		0.518	(0.316, 0.848)	**0.009**
1 or more children	1				1		
Gravidity							
1	1				1		
2	1.991	(0.947, 4.188)	0.69		4.246	(1.907, 9.453)	**<0.001**
3 or more	2.425	(1.362, 4.318)	**0.003**		1.536	(0.905, 2.606)	0.111
Age of last child (years)							
<2	1				1		
2 to 5	1.591	(0.941, 2.689)	0.83		2.003	(1.077, 3.724)	**0.028**
>5	1.709	(0.636, 4.595)	0.288		3.222	(1.338, 7.761)	**0.009**
Inadequate Knowledge about ANC							
Yes	1.374	(0.280, 6.748)	0.696		2.205	(1.021, 4.759)	**0.044**
No	1				1		
Unintended Pregnancy							
Yes	4.258	(1.631, 11.119)	**0.003**		3.103	(1.261, 7.641)	**0.014**
No	1				1		
No perceived benefits of starting early							
Yes	-	-	-		3.983	(1.365, 11.627)	**0.011**
No	1				1		

Table 4: Predictor of Late ANC attendance in Mpongwe and Ndola logistic regression

Predictors	Mpongwe				Ndola		
	AOR	95% CI	p-value		AOR	95% CI	p-value
Institutional hindrances							
Distance	3.377	(1.180, 9.666)	**0.023**		0.827	(0.236, 2.905)	0.767
Long waiting time	1.524	(0.352, 6.601)	0.573		1.909	(0.707, 5.158)	0.202
Attitude of Health workers	1.829	(0.404, 8.270)	0.433		0.434	(0.137, 1.324)	0.156
Privacy	1				1		
Community hindrances							
Misconceptions	1				1		
Community norm	2.211	(1.049, 4.660)	**0.037**		1.089	(0.623, 1.904)	0.765
Cultural beliefs	0.857	(0.444, 1.655)	0.646		2.889	(1.372, 6.083)	**0.005**
Traveling time							
Yes	13.189	(6.931, 25.096)	**<0.001**		1.071	(0.399, 2.879)	0.891
No	1				1		
Inadequate Health facilities							
Yes	1.962	(1.100, 3.500)	0.023		1.27	(0.728, 2.214)	0.4
No	1				1		

DISCUSSION

Prevalence of Late ANC Attendance in Selected Rural and Urban Communities of the Copperbelt Province

Information that was gathered from this study shows that the prevalence of late antenatal care attendance is high in both rural and urban communities. The prevalence of late ANC attendance was 72.0 % in rural and 68.6% in urban districts respectively. This result is slightly lower than what was reported in the Nigerian study where the prevalence of late ANC attendance was 81%[14] and higher than the 41% established in the Australian study[13]. In this study it was found that the difference of late ANC attendance between two districts was not statistically significant. This result is different from what was reported in a study done in Bangladesh where it was reported that early ANC utilization was lower in the rural than the urban communities[15]. There was no significance difference in the proportion of late ANC attendance between rural and urban areas probably because rural areas are more active in the provision of outreach (mobile) maternity services than urban districts.

Factors Associated With Late ANC Attendance

The results from this study suggest that human behavior, in this case late initiation of antenatal care, is affected by a multilayered set of systems; including family, peer group, and neighborhood, as well as effects of health care, social services systems, cultural belief and value system of the society in which individuals live[16].

Intrapersonal factors associated with late ANC attendance

In this study maternal age was not associated with late antenatal care attendance. This is in line with a study done in Sudan where it was observed that there was no effect of maternal age on ANC utilization[17]. This study established that there was a tendency of initiating ANC late amongst women of high parity and gravidity in both rural and urban communities. This could be as result of limited resources in the family and negative perceptions resulting from previous pregnancy experiences. It is also possible that multiparous women feel more confident after previous experience and feel that starting ANC early is not necessary.

Regarding knowledge about ANC, the study revealed that women with adequate knowledge were likely to initiate ANC early compared to those without. This finding is similar to what Tariku and others found out in their study where women who were well informed about ANC were more likely to book for ANC within the recommended time[18]. Furthermore, this study was able to prove that pregnant women who had the perception of no benefits are derived from staring early, tend to start ANC late. Therefore, it could be concluded that health education could be important in the improvement of timing of ANC attendance.

The intention to get pregnant was an important factor in this study. In contrast to women who planned their pregnancy, women who fell pregnant unintentionally were more likely to start ANC late. The finding is in line with study done in New South Wales, Australia where it was indicated that younger women with unplanned pregnancy lacked information about ANC resulting in late attendance[13]. It is believed that wanted pregnancies are more cared for by pregnant women and their spouses; this enable women to book for ANC timely.

Institutional and Public Policy Factors Associated with Late ANC Attendance

In the current study, pregnant women in rural areas reported that availability and accessibility of health facilities could be the cause of late antenatal attendance. This claim was not found to be significantly associated with late antenatal attendance in urban communities. The effect of differences in attendance of antenatal care between the urban and rural areas could be due to differences in distribution of health facilities. Usually, these facilities are disproportionately distributed in favor of urban areas in most developing countries making them more available and accessible to urban women[19]. A study conducted in Haiti revealed that longer traveling time and greater distances to health facilities in rural areas constituted the greatest barriers to antenatal care utilization[20]. Similarly this study established long traveling time, long distance to health facilities and inadequate health facilities were significantly affecting the timing of antenatal attendance. This is in agreement with a study done in Kalabo district of Zambia on maternity services which indicated that distance is a significant factor affecting delay to decide to seek care from health facilities. It also influences the delay caused by the travel time from home to the clinic. The geographical features of Kalabo district, the uneven distribution of facilities and the absence of any roads or transport systems were also hindrance factors to maternity service utilization[21].

Univariate analysis of this study revealed that long waiting time prior to being attended to at ANC facilities was a barrier to initiating ANC in recommended period.

Community Factors Associated with Late ANC Attendance

The study was not able to establish the effect of misconceptions on the ANC attendance. However, it was observed that it was a community norm to attend ANC late in rural communities because of less value attached to it. Additionally, the study revealed that in urban communities cultural (traditional) beliefs played a major role in deterring early antenatal attendance. It is believed that in some cultures mobility of pregnant women is restricted, thus creating a significant barrier to accessing antenatal services. According to Mekonnen et al[22], women who followed a traditional belief system are less likely to use maternity services service than religious groups. Cultural beliefs and practices often lead to self-care and consultation with tradition healers. In most communities women seek advice on important health matters from older women first before turning to health professionals.

Limitations of the Study

Considering that the study was conducted from health facilities, there is a possibility that factors related to attitude of health workers could have been under reported.

The use of different research assistants could have created variances, although they were oriented on questioning and recording of responses. The researcher also checked for completeness of the questionnaire after the interview.

CONCLUSION

Late antenatal care attendance remains high in both rural and urban districts indicating that the importance of early initiation is yet to be appreciated. A number of factors were found to contribute to this problem. Therefore, an approach that involves all stakeholders should be used to address the matter at hand. Resources could be effectively utilized if efforts to increase early antenatal attendance are focused on identified high risk groups.

RECOMMENDATIONS

The study has provided information on the various aspects of late antenatal attendance in urban and rural communities. Therefore, the following recommendations if implemented may improve timely accessing of health services and the quality of service provided;

> District Medial Offices should increase accessibility of ANC services by proving scheduled outreach programs in remote areas

> Ministry of health and District Medical Offices need to provide continuous health education on the importance of timely accessing of ANC services through the media and community sensitization meetings

> Campaign against harmful community norms and cultural beliefs that could hinder mothers from accessing health services

> Ministry of Health should improve on the staffing of health care workers at all levels of service delivery

> Government through Ministry of Health should construct more health facilities to improve availability and accessibility especially in rural areas

> Ministry of health and District Medical Offices should strengthen other aspects of reproductive health such as family planning to reduce on the unintended pregnancies.

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