Original Article

Antenatal Care Utilisation among Adolescent Mothers in Ngozi Province, Burundi

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Abstract

Background: Globally pregnancy and childbirth complications are the leading cause of death among adolescents, with evidence showing that antenatal care (ANC) is a very effective preventive intervention. In Burundi, there is limited information on the extent to which pregnant adolescents utilise such services. **Objective:** To assess the ANC utilisation and factors associated with its use among adolescent mothers in Ngozi Province, Burundi. **Materials and Methods:** A cross-sectional, health facility-based study among 216 adolescent mothers who had given birth within two years preceding this study, using structured questionnaires and records from previous ANC booklets. A multistage random sampling technique was used to select respondents while the utilisation of ANC was determined by the frequency of ANC visits and the time when the women enrolled for the first ANC visit. **Results:** The majority (98.1%) of adolescent mothers in Ngozi Province used ANC services. Most respondents (64.8%) initiated ANC services within the first trimester while 57.8% attained the minimum of four recommended ANC visits. Marital status ($P = 0.001$), geographical location ($P = 0.009$), occupation of the partner ($P = 0.002$) and type of the last pregnancy ($P = 0.012$) were associated with ANC initiation within the first trimester while marital status ($P < 0.001$), respondent's employment ($P = 0.003$) and type of last pregnancy ($P < 0.001$) were associated with appropriate ANC frequency. **Conclusion:** This study revealed a high use of ANC services among adolescent mothers, although more than one-third attended ANC late. There is therefore the need to put more effort into improving early booking for ANC.

Keywords: *Adolescent mothers, antenatal care, clinic attendance, East and Central Africa, immunisation clinics, utilisation*

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Introduction

Globally, an estimated 21 million girls aged 15–19 years become pregnant yearly with about 12 million deliveries.[1] While adolescent fertility has dropped globally, the rate has remained significantly high in sub-Saharan Africa, at approximately 100 births per 1000 adolescent women.[2] Adolescent pregnancy constitutes a global public health concern, with pregnancy and childbirth complications the leading cause of death among girls aged 15–19 years worldwide.[3,4]

Adolescent mothers are especially vulnerable to these complications due to increased biological, social and economic risks associated with early pregnancy and childbirth.[5] Typically, approximately 70,000 adolescent mothers die yearly worldwide due to underdeveloped physical characteristics for motherhood and social disadvantages.[3,6] This is worsened by the high prevalence of unsafe abortions among adolescents, contributing to poor health outcomes, the maternal mortality, morbidity and long-term health problems.[1] In addition to the health consequences, adolescent pregnancy is associated with social stigma, rejection by parents and peers and long-term economic consequences to individuals, families and communities.[2,7]

In Burundi, maternal mortality ratio is estimated at 334 per 100,000 live births,[8] which is high in comparison to other countries, and this is exacerbated by a high prevalence of adolescent pregnancy. Likewise, pregnancy-related deaths among adolescents account for 24.1% of the overall maternal mortality in Burundi.[8,9] The situation is worse in Ngozi Province where 15% of adolescent girls aged 15–19 years were found to be pregnant and 2% are already mothers, according to the recent Demographic and Health Survey in Burundi.[10]

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Research has shown the role that antenatal care (ANC) plays in preventing the adverse health consequences associated with pregnancy, by exposing women to health education on risk factors and promoting delivery by a skilled attendant or in a health facility.[5] Furthermore, ANC provides the opportunity to detect and treat anomalies of pregnancy, and to deliver preventive health services such as immunisation, prophylactic treatments and HIV testing and counselling services.[2,6]

In Burundi, the interventions to improve sexual and reproductive health (SRH) among youth and adolescents have mainly focussed on reducing the number of unintended pregnancies through the integration of SRH services into the minimum health care package in specific health facilities, strengthening SRH education in schools, and community mobilisation for use of such services.[11,12] Despite these efforts, the rate of adolescent pregnancies has remained high, ranging from 8% to 10%.[10] In relation to the ANC attendance, studies have not explicitly documented the utilisation of ANC, especially among adolescent mothers. Therefore, this study sought to assess the ANC utilisation and factors associated with its use among adolescent mothers in Ngozi Province of Burundi.

Materials and Methods

This study was carried out in Ngozi Province in Burundi. Burundi is a country in East-Central Africa bordered by Rwanda to the north, Tanzania to the East and South, and the Democratic Republic of the Congo to the West. It is a landlocked country administratively divided into 18 provinces, with each further divided into several communes. According to the latest census report, the population of Ngozi Province is estimated at 660,717 inhabitants[13] and it has the highest prevalence of adolescent pregnancy in Burundi, according to the latest DHS report.[14]

This study was a cross-sectional study carried out between June 01, 2021, and July 31, 2021, among two hundred and sixteen consenting mothers, who had delivered while aged 19 years old and below within two years preceding this study and were residing in Ngozi Province. Mothers who did not have their ANC booklets, whose ANC booklets were missing, and ANC health records notes could not be retrieved were excluded from this study.

The sample size was determined using a formula for cross-sectional studies.[15] The formula is expressed mathematically as $n = z2 \times pq/d2$ where n is the sample size; $Z = 1.96$ at 95% confidence level; $P = 15\%$ is the estimated prevalence of teenage pregnancy in Ngozi Province (DHS, 2017)[14]; q is the proportion not expected to be pregnant $(1 - p) = (1 - 0.15) = 0.85$; $d = 0.05$ is the tolerable standard error. From the equation, the minimum sample size calculated is $= (1.96)^2 (0.15) (0.85)/(0.05)^2 = 195.92$, assuming 10% of the non-responsiveness rate, the final sample size was arrived at by $[(0.10 \times 196) + 196] = 216$ adolescent mothers.

A multistage random sampling technique was used to select respondents. In the first stage, two communes Ngozi and Ruhororo, were selected using simple random sampling out of nine communes in Ngozi Province, with one located in the urban area and another in the rural area. In the second stage, 12 health facilities were identified in Ngozi and 8 health facilities were identified in Ruhororo according to the latest DHS report[14] as providing post-natal services. Out of the 20 identified health facilities, five were selected by simple random sampling in each of the two communes, and these served as the source of respondents. This was done using a lottery method whereby the main investigator put the names of facilities providing post-natal care services on slips of paper and called another person to pick five by chance. The five health facilities selected in Ngozi commune are: CDS Ngozi, ABUBEF Ngozi, CDS Gika, CDS Mivo, and Ngozi Hospital, and the five health facilities selected in Ruhororo commune are CDS Ruhororo, CDS Mubanga I, CDS Mubanga II, CDS Mugomera, and CDS Burasira. Lastly, a purposive sampling technique was used to select research respondents from the selected health facilities. This involved selecting consenting participants consecutively until the sample size for each health facility was complete.

Respondents were selected from post-natal clinics and child vaccination centres. A structured interviewer-administered questionnaire designed from available literature and face validated by the supervisors was used to collect data. The questionnaire was designed to ensure that the information collected from the respondents meets the research objectives. It was translated into Kirundi, the national language and unique mother tongue understood by most Burundians. A pre-test was conducted on 20 recently delivered mothers from a commune which was not part of the study population, to validate the data collection tool. The questionnaire consisted of 4 sections: Section A assessed respondents' demographic and socio-economic characteristics, section B assessed their awareness about of ANC, section C assessed respondents' perception toward ANC and D was used to collect information on the utilisation of ANC services.

The utilisation of ANC was measured by two main components: the number of ANC visits made also referred to as ANC frequency in this study, and the time when the women enrolled for the first ANC visit (ANC timing). To avoid recall bias, these details were obtained from their ANC booklets.

The data was entered into Statistical Package for Social Sciences version 25.0, Chicago, Illinois, USA, for analysis with statistical significance set at 5% ($P \leq 0.05$). Descriptive statistics were used to determine different proportions: proportions of respondents who attended ANC timely and

those who were late, and proportions of respondents with appropriate (≥4) and inappropriate (<4) ANC visits. The Chi-square test was used to show the association between the utilisation of ANC (timing and frequency of ANC) and socio-demographic factors.

Ethical clearance was obtained from the University of Ibadan/University College Hospital (UI/UCH) Ethics Committee (UI/EC/21/0206). In addition, an introduction letter to conduct the study was obtained from the Burundian Ministry of Health. Written informed consent was obtained from all respondents and the principle of confidentiality, autonomy, beneficence, non-maleficence and justice was maintained in this study.

Results

The majority (75.0%) of the respondents were in the age group of 18–19 years when they delivered, and more of the respondents (56.0%) were single. A higher proportion (57.9%) of the mothers were rural residents while most of the mothers (53.7%) had a primary level of education. About two-thirds (69.3%) of the respondents were farmers while about half were protestants (49.1%). Half of the respondents (50.0%) had less than 50,000 Burundian francs as their monthly income (with 1$ = BIF 1968). Most of the respondents' last pregnancies were unintended (54.2%) and regarding parity, the majority (88.4%) were in their first pregnancy. This is shown in Table 1.

The majority (98.61%) of respondents attended ANC during their last pregnancy, out of which most were at the public health facilities (77.9%). Only 38% of respondents attended following advice, with most from their baby's father (45.7%). Figure 1 shows the distribution of respondents according to the time they initiated ANC, with 64.8% attending timely that is, within the first 12 weeks. Most (36.5%) were not aware of the need to initiate ANC within the first trimester and were afraid (31.1%) that their parents were not yet aware of the pregnancy.

Figure 2 shows the number of ANC visits by the respondents, with the majority 125 (57.87%) attending the four recommended ANC visits. Initiating ANC late (37.4%) was the major reason for respondents not completing the minimum recommended number of visits.

Socio-demographic factors associated with ANC use were assessed using the Chi-square test of association. ANC timing was statistically significantly associated with marital status ($P = 0.001$), residential location ($P = 0.009$), occupation of the partner ($P = 0.002$) and type of last pregnancy ($P = 0.012$). On the other hand, marital status ($P < 0.001$), occupation of the respondent ($P = 0.003$), and type of last pregnancy ($P < 0.001$) were statistically significantly associated with the status of ANC frequency. This is shown in Table 2.

Table 1: Socio-demographic characteristics of study respondents

Variable	Frequency	Percentage (%)
Age group at last pregnancy (years)		
14–17	54	25.0
18–19	162	75.0
Marital status		
Single	121	56.0
Married	95	44.0
Occupation		
Unemployed	28	13.0
Petty trader	28	13.0
Farmer	160	74.0
Residential location		
Urban	91	42.1
Rural	125	57.9
Highest Educational level		
None	28	13.0
Primary	116	53.7
Secondary	70	32.4
University	2	0.9
Religion		
Protestant	107	49.1
Catholic	87	40.3
Islam	22	10.2
Monthly income in BIF		
<50,000	108	50.0
50,000–199,999	81	37.5
≥200,000 and above	27	12.5
Nature of last pregnancy		
Intended	99	45.8
Unintended	117	54.2
Parity		
One	191	88.4
Two	24	11.1
Three	1	0.5

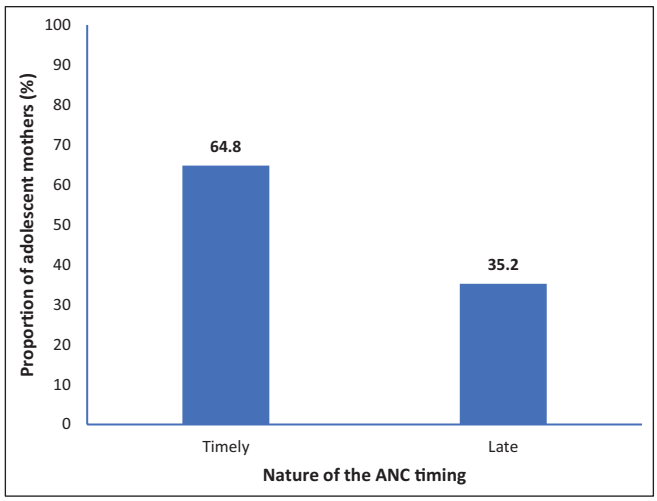

Figure 1: Timing of initiation of ANC by study respondents (*N* = 213)

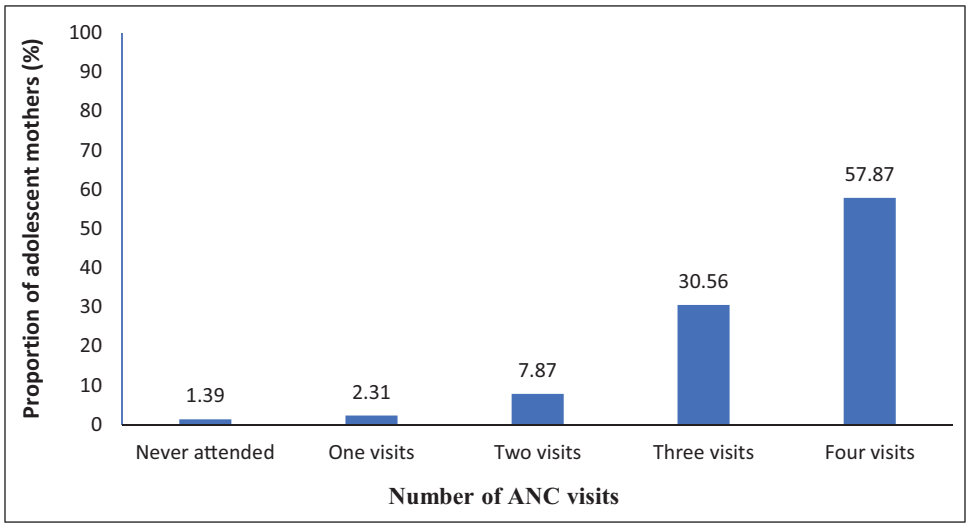

Figure 2: The number of ANC visits made by the respondents (*N* = 216)

Table 2: Factors associated with ANC utilization (timing and frequency) among the study respondents

Variable	ANC timing		Chi square	*P* value	ANC frequency		Chi square	*P* value
	Late initiation *N* (%)	Timely initiation *N* (%)			Less than four visits *N* (%)	Four or more visits *N* (%)		
Age at last pregnancy (years)								
14–17	23 (42.6)	31 (57.4)	1.98	0.161	28 (51.9)	26 (48.1)	2.79	0.095
18–19	52 (32.1)	110 (67.9)			63 (38.9)	99(61.1)		
Marital status								
Single	55 (45.5)	66 (54.5)	12.72	0.001*	67 (55.4)	54 (44.6)	18.4	<0.001*
Married	21 (22.1)	74 (77.9)			25 (26.3)	70 (73.7)		
Residential location								
Urban	41 (45.1)	50 (54.9)	6.72	0.009*	39 (42.9)	52 (57.1)	0.03	0.853
Rural	35 (28.0)	90 (72.0)			52 (41.6)	73 (58.4)		
Occupation								
Unemployed	14 (50.0)	14 (50.0)	3.67	0.16	20 (71.4)	8 (28.6)	11.36	0.003*
Petty trader	11 (39.2)	17 (61.8)			11 (39.3)	17 (60.7)		
Farmer	51 (31.9)	109 (68.1)			60 (37.5)	100 (62.5)		
Occupation of the partner								
Employed (salaried)	25 (55.5)	20 (45.5)	15.29	0.002*	23 (51.1)	22 (48.9)	6.99	0.072
Petty Trader	15 (23.8)	48(76.2)			20 (31.7)	43 (68.3)		
Farmer	25 (29.0)	61 (71.0)			30 (34.9)	56 (65.1)		
Daily worker	11 (50.0)	11 (50.0)			12 (54.5)	10 (45.5)		
Religion								
Protestant	38 (35.5)	69 (64.5)	0.03	0.982	44 (41.1)	63 (58.9)	0.144	0.931
Catholic	30 (34.5)	57 (65.5)			38 (43.7)	49 (56.3)		
Islam	8 (36.4)	14 (63.6)			9 (40.9)	13 (59.1)		
Nature of last pregnancy								
Intended	26 (26.3)	73 (73.7)	6.38	0.012*	27 (27.3)	72 (72.7)	16.55	<0.001*
Unintended	50 (42.7)	67 (57.3)			64 (54.7)	53 (45.3)		
	76	140			91	125		

*Values are significant at $P < 0.05$

Discussion

Our study showed a high usage of ANC services. Among 216 respondents, 213 (98.61%) attended ANC and this is similar to findings from studies on adolescents' pregnancy in Ghana and India which revealed 98.3% & 83.9% attending ANC respectively.[16,17]

Regarding ANC timing, the majority (64.8%) timely initiated ANC services (within the first trimester of pregnancy).

This corroborates with 63.0% of pregnant adolescents who reported registering their pregnancies within the first trimester.[16,17] In our study, the major reasons for late ANC initiation were a lack of information (36.5%) regarding the right time to initiate ANC and failing to recognise that they were pregnant. The other reason raised was that adolescents were afraid that their parents would know about their pregnancy. This could be because the majority (54.2%) of the pregnancies were unintended.

Concerning the ANC frequency, while 98.61% had reported ANC visits, only 57.87% reached the four recommended visits. In agreement with our findings, a study conducted in Uganda[18,19] reported that even though 60% of adolescent mothers attended four recommended ANC visits and above, still many other adolescents do not complete the required four ANC visits. In our study, a non-negligible proportion (42.13%) of respondents did not achieve four ANC visits and the major reason for not reaching four ANC was late initiation which made them miss some appointments. This shows that there is a need to improve knowledge of early booking for ANC through public health education including the media and in schools and institutions.

In this study, most respondents who got pregnant while single declared that they did not attend early because they felt ashamed and feared that the parents would get to know about their pregnancies. In addition, adolescent mothers who were living with their partners during the pregnancy were more likely to initiate ANC timely than those who were in their parents' house. This could be explained by the fact that those who live with their partners are generally proud of the pregnancy making it easy for them to disclose the pregnancy. Residents of rural areas were more likely to initiate ANC timely. Several studies previously reported that urban residents are likely to use maternal services more than rural residents.[20-22] This discrepancy is usually due to poor health-seeking behaviour and perception among rural women as well as difficult physical access to the health facilities. The contrary in Ngozi Province could be explained by the existence of many NGOs focussing their interventions on maternal and child health in the rural part of the region and the existence of women groups and dynamic community health workers.

Also, in this study, adolescent mothers whose pregnancies were unintended were less likely to attend ANC early. This may be due to initial fear of pregnancy and delay in confirmation of pregnancy or informing their parents, thereby resulting in late initiation of ANC. additionally, it may be necessary to provide psychological support and ensure that their education is not adversely affected by pregnancy.

In this study, ANC frequency was found to be significantly associated with marital status, occupation of the respondent, and type of the latest pregnancy. Married adolescent mothers were more likely to attend the four recommended ANC visits than those who were single. This finding corroborates with a study conducted in Ghana, which reported that cohabiting and single women were less likely to attend four ANC compared to married women.[23]

Respondents who got pregnant intentionally were more likely to attend ANC four times than those whose pregnancies were unintended. This was in line with the study conducted in Ghana where women with wanted pregnancies were found to attend ANC at least four times more than those with unwanted pregnancies.[23]

The limitation of our study was that it was health facility-based and did not include information from adolescent mothers in the community, so our observation that most adolescent mothers in Ngozi Province use ANC services may not be the same if adolescent mothers in the community are included. Also, this study was carried out during the COVID-19 pandemic, and this might have affected the initiation and frequency of attendance of ANC by adolescent women. Women who do not have their booklets and whose health records were not retrieved were excluded from the study, so whether these groups of women are different from those that have booklets with respect to some characteristics and ultimately antenatal clinic attendance could not be ascertained with this study design. A further study with a different study design may be able to explore this explore this limitation.

There is therefore the need to raise awareness about ANC. Community health workers and mass media could be good vehicles of such information in the community, and interventions should focus on addressing other underlying issues associated with late ANC attendance. Future studies focussing on ANC utilisation among adolescent mothers should include adolescent mothers based in the community.

Clinical trial registration

Not applicable. Ethical clearance was obtained from UCH/UI IRB (UI/EC/21/0206)

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Conflicts of interest

There is no conflict of interest.

Authors contribution

The study was conceived by LII. LII, OOO, and OSA participated in the study design while LII was involved in the recruitment of study participants under the supervision of

OOO and OSA. LII participated in the data entry, analysis and interpretation of results while LII, OOO, and OSA were involved in the writing and editing of the manuscript.

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