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RESEARCH

Obstetric outcomes and antenatal access among adolescent pregnancies in KwaZulu-Natal, South Africa

T Govender[a], P Reddy[a]* and S Ghuman[a]

[a]*Department of Community Health Studies, Discipline of Environmental Health, Durban University of Technology, Durban, South Africa*
**Corresponding author, email: PoovieR@dut.ac.za*

Background: Pregnancy among adolescents in South Africa is a growing concern as it may be associated with adverse socio-economic and health impacts. Timeous initiation and optimal utilisation of antenatal care (ANC) services is imperative to ensure positive pregnancy outcomes. However, this is not always possible owing to various challenges.
Methods: A multi-method study design using both retrospective record review and qualitative interviews was undertaken at a district hospital on the North Coast of KwaZulu-Natal, South Africa. Data on ANC attendance trends and obstetric/perinatal outcomes for all recorded adolescent pregnancies (13–16 years) at the district hospital under study was collected over 3 years (2011–2013) ($n = 314$). Qualitative interviews with randomly selected pregnant adolescents were conducted to assess experiences of ANC access and utilisation.
Results: Late ANC booking and reduced ANC visits were common for adolescent pregnancies. Under-utilisation of ANC (i.e. less than 4 visits) was significantly associated with lower gestational age (< 37 weeks) (OR = 2.64; 95% CI = 1.04; 6.74; $p < 0.05$). Low birthweight, low Apgar scores as well as the incidence of maternal anaemia and pregnancy-induced hypertension (PIH) were found to be related to late ANC booking. In-depth interviews suggested that teenagers suffered emotional vulnerability linked to family, partner and financial support. They discussed various barriers linked with accessing ANC while acknowledging perceived benefits.
Conclusion: Adolescent pregnancy was associated with late booking and reduced ANC visits, which was a risk for adverse maternal health outcomes. In-depth interviews suggested numerous challenges associated with ANC access including; financial barriers, attitude of healthcare workers (HCWs), long queues, distance travelled to access ANC services, human immunodeficiency virus (HIV) status and a lack of knowledge.

Keywords: adolescent pregnancy, antenatal care, maternal health

Introduction

A survey by Statistics South Africa in 2013 revealed that 5.4% of females in the 14–19 years age group were pregnant during the 12-month period prior to the survey,[1] while 20 000 pregnancies were reported among schoolgirls in South Africa in 2014.[2] Adolescent mothers are at a higher risk of complications, which may result in increased maternal and neonatal mortality/morbidity.[3] Adequate antenatal care (ANC) attendance can be considered a cornerstone of maternal and perinatal health care, which is directly linked to the Sustainable Development Goals.[4]

In the South African context, basic antenatal care (BANC) is available free of charge. It is recommended that all pregnant women should attend ANC clinics at least four times during their pregnancy; ideally the first visit should be initiated before 12 weeks of pregnancy, with the first follow-up visit at 20 weeks. This programme enables women to be screened to allow the accurate categorisation of patients as high-risk or low-risk during pregnancy.[5,6] Early booking and effective utilisation of ANC services form key strategies in reducing maternal and child mortality. Health promotion as part of the ANC package of services empowers women and promotes health during pregnancy, leading to positive pregnancy and birth outcomes. Numerous initiatives have been implemented to prevent adolescent pregnancy in South Africa. Lovelife, a South African organisation founded in 1999, aims to reduce HIV/AIDS, sexually transmitted infections (STIs) and teenage pregnancies; contraceptives are freely available to all persons over the age of 12 at hospitals and clinics[7] and mandatory life skills–HIV/AIDS education is provided in schools. This was particularly aimed at grades 8–12 to increase awareness and promote responsible attitudes. However, despite these efforts adolescent pregnancy continues to pose a challenge in South Africa.[8]

While previous qualitative studies have found various reasons for delay and the failure to initiate ANC,[9,10] there was no concomitant risk assessment for antenatal and postnatal birth outcomes in these studies. A multi-method study was undertaken to evaluate factors contributing to under-attendance and/or delay in initiation of ANC services among young pregnant adolescents (13–16 years old) as a risk for adverse maternal and birth outcomes. The objectives of this study were to assess the trends of ANC service utilisation by pregnant adolescents (13–16 years) over a three-year period (2011–2013); to evaluate maternal and birth outcomes related to these pregnancies; and, to identify factors influencing access to ANC among pregnant adolescents.

Materials and methods

A multi-method cross-sectional study was conducted at a district hospital on the North Coast of KwaZulu-Natal (KZN). Ethical approval was granted by the KwaZulu-Natal Department of Health as well as the Durban University of Technology Institutional Research Ethics Committee. Informed consent was given by participants in the qualitative study. The quantitative aspect comprised a retrospective record review over three years (2011–2013) while qualitative interviews to determine factors affecting ANC access were undertaken. Interviews were conducted using a semi-structured in-depth interview schedule.

Sampling, selection and data collection

Qualitative

Sampling: Pregnant girls accessing ANC at a district hospital in KZN were selected using a convenient sampling strategy. Girls between the ages of 13 and 16 years were invited to participate in the study.

Data collection: In-depth interviews aimed at exploring reasons for late and under-attendance at ANC clinics during pregnancy were used to gather qualitative data. Data saturation was reached after five participant interviews. The interview schedule included exploratory questions regarding the following: perception of pregnancy, experiences of ANC visits, and access and personal factors affecting ANC attendance. Interviews were audio-recorded, transcribed verbatim and confirmed by an independent person.

Data analysis: Qualitative transcripts were content analysed and the data explored in detail for common themes.[11] Common themes were then coded into sub-themes. Data analysis was done using NVivo Version 10® (QSR International, Doncaster, Victoria, Australia) data analysis software.

Quantitative

Sampling: All maternity case records of pregnant teenagers aged 13–16 years who booked for ANC at the research site within the period 2011–2013 were reviewed.

Data collection: Data were extracted from maternity case records using a specially designed checklist. The following variables were included in the checklist: demographics, antenatal medical information, assessment of the newborn and ANC attendance.

Data analysis

Data were initially captured into Microsoft Excel® software (Microsoft Corp, Redmond, WA, USA) and the process of cleaning and editing the data was completed. Statistical analysis was performed using Stata® version 12 (StataCorp, College Station, TX, USA). Frequency distributions of categorical variables and means, standard deviation and ranges of continuous variables were calculated. Bivariate associations between categorical variables were done using Pearson's chi-square test and Fisher's exact test where applicable. Multivariate regression modelling was done in a backward stepwise method with the inclusion of relevant covariates. Age, HIV status, ANC booking (early vs. late) and ANC attendance (under-utilisation vs. recommended) were used as the independent variables. Anaemia, mode of delivery, condition of perineum, birth complications, gestational age, first APGAR and birthweight were used as dependent variables. Odds ratios were calculated for binary outcome variables; 95% confidence intervals were calculated and *p*-values < 0.05 were considered statistically significant.

Results

The distribution of the sample by age was as follows; 13-year-olds: 7 (2.2%), 14-year-olds: 23 (7.3%), 15-year-olds: 112 (35.7%) and 16-year-olds: 172 (54.8%). Retrospective records showed a total of 314 adolescent pregnancies for the period 2011–2013 and almost all recorded adolescents were primigravidae (98.7%). More deliveries were documented in the year 2013 (131) followed by 98 deliveries in 2011 and 85 in 2012. There were four stillborn babies and two neonatal deaths during this period and this was not explored further. Some 54% (*n* = 170) of all girls booked for their first ANC visit above 20 weeks, which was deemed as late ANC booking; 2% (*n* = 7) did not book for ANC at all prior to birth; these participants are often referred to as non-clinic cases (NCCs). It was alarming to note that 134 (43%) underutilised ANC services by attending only between 0 and 3 visits.

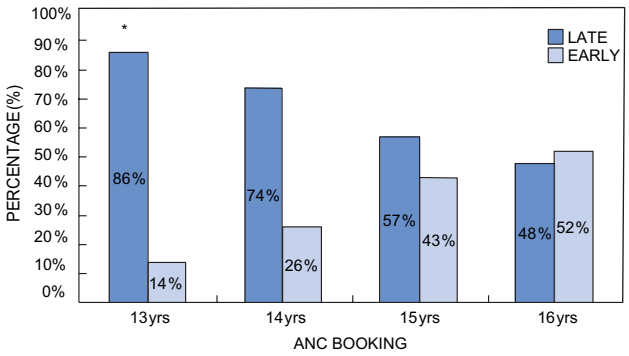

Figure 1: Age stratified by ANC booking in adolescents at a district hospital for the period 2011–2013. Early booking = < 20 weeks; late booking = ≥ 20 weeks ($p = 0.02$*).
*A *p*-value of < 0.05 was considered as statistically significant.

Young maternal age was significantly associated with late ANC booking ($p = 0.02$) (Figure 1). The highest proportion of non-clinic cases (NCCs = 0 visits) was found among 15-year-olds (57%) (Figure 2). Among 13-year-olds only 2% of girls attended the recommended 4–5 visits during pregnancy.

Anaemia (57%) and low birthweight (LBW) (53.1%) were associated with late ANC booking (Table 1). Normal vaginal delivery (46.9%) was linked with attendance of the recommended number of ≥ 4 ANC visits, while the incidence of Caesarean section was linked with attendance of < 4 ANC visits during pregnancy (Table 1). A relationship existed between surgical delivery and reduced number of ANC visits.

Adjusted logistic regression models showed that the condition of the perineum was significantly associated with HIV status (OR = 0.36; 95% CI = 0.16; 0.84; $p < 0.05$) (Table 2). HIV-positive mothers were more likely to have an intact perineum post-delivery. However, HIV-positive adolescents were twice as likely to be diagnosed with anaemia compared with HIV-negative mothers (results not significant). Results given in Table 3 indicate that under-utilisation of ANC (i.e. less than four visits) was significantly associated with lower gestational age (< 37 weeks)

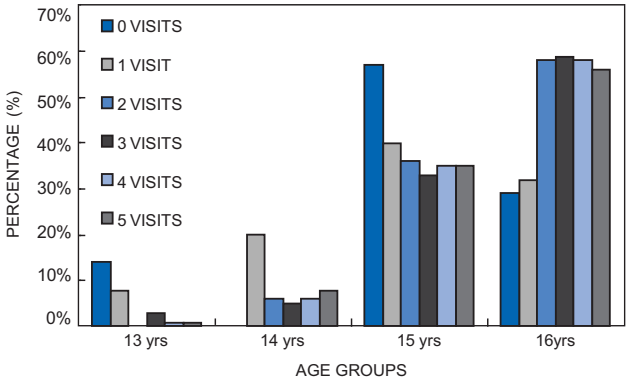

Figure 2: Age stratified by ANC utilisation in young adolescents at a district hospital for the period 2011–2013. 0 visits = nil attendance; 1–3 visits = under-utilisation; 4–5 visits = recommended utilisation ($p = 0.10$).

Table 1: Maternal and neonatal outcomes in pregnant adolescents at a district hospital, between the period 2011-2013 (n=314)[#]

Outcome	Early booking	Late booking	<4 visits	=>4 visits
Mode of delivery				
NVD	103 (46)	121 (54)	119 (53.1)	105 (46.9)
Assisted delivery	2 (66.7)	1 (33.3)	2 (66.7)	1 (33.3)
C-section	40 (46)	47 (54)	53 (60.9)	34 (39.1)
Condition of perineum				
Episiotomy	71 (44.9)	87 (55.1)	85 (53.8)	73 (46.2)
Natural tear	19 (48.7)	20 (51.3)	18 (46.2)	21 (53.8)
Intact	55 (47)	62 (53)	71 (60.7)	46 (39.3)
Maternal Anaemia	43 (43)	57 (57)	55 (55)	45 (45)
Birth weight				
LBW < 2500 g	15 (46.9)	17 (53.1)	16 (51.6)	15 (48.4)
Normal ≥ 2500 g	141 (50)	141 (50)	158 (55.8)	125 (44.2)
Head circumference				
SGA < 33 cm	3 (42.9)	4 (57.1)	2 (33.3)	4 (66.7)
Normal (33 to 37 cm)	217 (70.7)	90 (29.3)	172 (55.8)	136 (44.2)
1st Apgar scores				
Low Apgars < 7	7 (29.2)	17 (70.8)	13 (50)	13 (50)
Normal Apgars 7 to 10	137 (47.9)	149 (52.1)	153 (57.7)	112 (42.3)
Gestational age at delivery				
Preterm < 37 weeks	4 (57.1)	3 (42.9)	7 (35)	13 (65)
Normal ≥ 37 weeks	141 (45.9)	166 (54.1)	167 (56.8)	127 (43.2)
HIV status				
Positive	12 (48)	13 (52)	14 (56)	11 (44)
Negative	132 (46.2)	154 (53.8)	158 (55.2)	128 (44.8)

*p-value < 0.05 was considered statistically significant.
[#]There was missing data in some categories.

Table 2: Adjusted multiple logistic regression models of maternal health outcomes stratified by age, HIV status and ANC utilisation (n = 314)

	Anaemia		Mode of delivery[1]		Condition of perineum[2]	
	OR	CI	OR	CI	OR	CI
Age						
13–14	1.00		1.00		1.00	
15–16	0.82	0.35; 1.94	0.90	0.20; 3.88	1.24	0.54; 2.83
HIV status						
Negative	1.00		1.00		1.00	
Positive	2.04	0.90; 4.66	1.45	0.62; 3.41	0.36	*0.16; 0.84
ANC attendance						
Early booking[3]	1.00		1.00		1.00	
Late booking[4]	1.26	0.78; 2.03	0.95	0.58; 1.56	1.07	0.67; 1.7
No. of ANC visits						
Under-utilisation[5]	1.00		1.00		1.00	
Recommended utilisation[6]	0.99	0.61; 1.60	0.69	0.42; 1.14	1.48	0.92; 2.37

Notes:*p < 0.05 was considered as significant.
[1]Mode of delivery: NVD, C-section, assisted delivery.
[2]Condition of perineum: intact, episiotomy, natural tear.
[3]Early booking: < 20 weeks.
[4]Late booking: ≥ 20 weeks.
[5]Under-utilisation: 0–3 ANC visits.
[6]Recommended utilisation: 4–5 ANC visits.

(OR = 2.64; 95% CI = 1.04; 6.74; p < 0.05). None of the other outcomes tested showed any significant association with age, HIV status, ANC attendance or number of ANC visits.

Participant interviews

All participants were young African adolescents and ranged between 14 and 16 years old. They were all single and financial support was provided by parents and partners. Five major themes emerged from individual interviews: (A) *emotional vulnerability*, i.e. fear, loneliness, shame and disgrace; (B) *barriers to accessing antenatal care*, such as financial barriers, attitude of HCW, long queues, distance travelled to access ANC services, HIV status and lack of knowledge; (C) *emotional and financial support*, namely family and partner support; (D) *importance of education*, school and health education during pregnancy; (E) *benefits of attending ANC* described by participants as health education and empowerment, health and well-being. Of these five themes, three (themes A, B, C) were subsequently identified as posing barriers to access of ANC services and two (themes D, E) were identified as factors that encouraged ANC attendance amongst participants. Detailed descriptions of the themes as well as some supporting quotations from the interviews are presented in Table 4.

The interview process enabled participants to recall their experiences when first discovering they were pregnant (Theme A, emotional vulnerability): 'I felt so scared, I was so shy. I felt like committing suicide the first time I found out that I was pregnant' (Participant 4, aged 16). Participant 4 remembers the great fear and embarrassment that she felt, which was so overwhelming that she even considered committing suicide. Theme B encompassed barriers that adolescents faced when accessing care. One of the barriers faced was the condescending attitudes of HCW's: 'It's the nurses, the way they talk to us. Yes, we are pregnant we can see our mistake. But like if you a human being you have to talk to the other person in a mannered way. Like you got some respect, show some respect about it' (Participant 1, aged 15). Participant 1 elaborated on the lack of respect given to pregnant adolescents by nurses. The majority of participants expressed similar fears about nurses when attending ANC clinics, similar to Participant 1. Emotional and financial support was explored in Theme C. Participants highlighted the positive impact of emotional and financial support during pregnancy. Emotional and financial support from family and partners were conveyed by

Table 3: Adjusted logistic regression models of birth outcomes stratified by age, HIV status, and ANC utilisation (n = 314)

	Gestational age[5]		1st Apgar		Birth weight[6]	
	OR	CI	OR	CI	OR	CI
Age						
13-14	1:00		1:00		1:00	
15-16	1.05	0.23; 4.77	0.38	0.05; 2.90	1.48	0.48; 4.61
HIV						
Negative	1:00		1.00		1:00	
Positive	1.23	0.27; 5.65	1.0	0.22; 4.56	1.21	0.34; 4.29
ANC attendance						
Early booking[1]	1:00		1:00		1:00	
Late booking[2]	0.77	0.32; 1.87	2.10	0.88; 5.00	0.85	0.41; 1.76
No. of ANC visits						
Recommended utilization[3]	1:00		1:00		1:00	
Under-utilization[4]	2.64	*1.04; 6.74	1.37	0.61; 3.08	1.26	0.61; 2.63

*p-value < 0.05 was considered as significant.
[1]Early booking; < 20 weeks.
[2]Late booking; ≥ 20 weeks.
[3]Recommended utilization; 4-5 ANC visits.
[4]Under-utilization; 0-3 ANC visits.
[5]Gestational age; preterm, < 37 weeks; Term, ≥ 37 weeks.
[6]Birth weight; LBW, <2500 g; Normal, ≥ 2500g.

Table 4: Qualitative interviews: themes and sub-themes

	Themes	Sub-themes	Quotations
A.	Emotional vulnerability	Fear and loneliness	(Participant 1: age 15) 'It was about my age, I was just afraid to say my age. I actually didn't even want to say my age. Because I was the only one who was small.'
		Shame and disgrace	(Participant 2: aged 14) 'So you have decided to have a baby at an early age, what you think of yourself, they (people at clinic) said foolish things to us.'
B.	Barriers to accessing antenatal care	Financial farriers	(Participant 5: age 16) 'OK, some of us we come from different families for example most of our parents are not working so ay, I won't have like money to go to the clinic and stuff you know.'
		Attitude of HCW	(Participant 1: age 15) 'It's the nurses the way they talk to us. Sometimes, yes, we are pregnant we can see our mistake. But like if you a human being you have to talk to the other person in a mannered way. Like you got some respect, show some respect about it.'
		Long queues	(Participant 4: aged 16) 'Because I was scared at that time and had to stand in the queue with adults and I was the one who was youngest there.'
		Distance travelled to access ANC services	(Participant 2: aged 14) 'I'm staying far away from the clinic, so it costs me too much for me to travel.'
		HIV status	(Participant 1: age 15) 'Yes they can be afraid of the HIV status because firstly if you didn't use a condom during sex with your partner and you haven't tested before. Now if you coming to the clinic or hospital definitely they will do some check-ups for you. So they [the girls)] are not sure what is gonna come out, cos they don't trust their partner.'
		Lack of knowledge	(Participant 4: aged 14) 'I think they [pregnant adolescents] don't know, they haven't been taught about the clinic.'
C.	Emotional and financial support	Family support	(Participant 2: aged 14) 'Yes, especially my mum, my mum told me that it [pregnancy] is nothing, like she even quoted to me from the Bible.'
		Partner support	(Participant 1: aged 15) 'Firstly I would just say like if I want something to eat, he [boyfriend] will surely bring it at the very same time. If I'm going to the hospital or clinic he takes me over there. If I want something at school like to go and buy because we are at the same school, he goes and buys for me, he carries my bag.'
D.	Importance of education	School	(Participant 4: aged 16) 'Weekdays we have to be in school, we only got a few hours to go to the clinic then go back to school.'
		Health education during pregnancy	(Participant 5: aged 16) 'The nurses help us a lot as [ama-] teenagers; they tell us lots of stuff we not aware about.'
E.	Benefits of attending ANC	Health education and empowerment	(Participant 5: age 16) 'She won't have knowledge if she doesn't attend ANC.'
		Health and well-being	(Participant 4: age 14) 'To know your health and to know your baby if he's well.'

participants as being crucial to the acceptance of the pregnancy and access to ANC services. Participants expressed the importance of education in Theme D. They felt strongly that schooling should be continued throughout pregnancy. All participants acknowledged the benefits of attending ANC, as mentioned in Theme E: 'She won't have knowledge if she doesn't attend ANC' (Participant 5, aged 16). Health education and knowledge were reported to be important benefits of attending clinic among all participants. Health education during ANC was a form of empowerment for adolescents, and the motivation provided during ANC helped to dispel fears related to their pregnancies.

Discussion

This study highlighted ANC attendance trends among pregnant adolescents as well as adverse maternal and birth outcomes associated with such pregnancies. Late ANC booking and reduced ANC visits were common for adolescent pregnancies. Under-utilisation of ANC (i.e. fewer than 4 visits) was significantly associated with lower gestational age (< 37 weeks) (OR = 2.64; 95% CI = 1.04; 6.74; $p < 0.05$). Low birthweight 17 (53.1%), low Apgar scores (1st Apgar: 17 (70.8%) as well as the incidence of maternal anaemia (57 (57%)) were found to be related to late ANC booking. In-depth interviews suggested that teenagers suffered emotional vulnerability such as fear, loneliness, shame and disgrace (Theme A: emotional vulnerability) linked to family, partner and financial support (Theme C: emotional and financial support). Factors found to impede access to ANC among adolescents included nurse's attitude, a fear of HIV testing, health system barriers, a lack of knowledge and financial barriers (Theme B: barriers to accessing antenatal care).

A large proportion of participants suffered from anaemia (haemoglobin levels of < 11 g/dl) (100 (31.8%)) (see Table 1). This could be a result of increased iron demands during puberty and menstruation.[12] In addition, anaemia can be regarded as a sign of poor nutrition and poor health, which may be indicative of socio-economic difficulty in many settings.[13] In this study 57% of adolescents with anaemia had accessed ANC late (see Table 1). According to the BANC guidelines, screening for anaemia is conducted at the first visit and again at 32 weeks of gestation. All pregnant women in South Africa receive ferrous sulphate and folic acid supplements throughout pregnancy; this is an important strategy in the prevention of anaemia[5] and timeous ANC interventions can aid in prevention and prompt treatment of anaemia. Research conducted among adolescents and adults from Latin America reported that adolescents aged ≤ 15 years were at an increased risk for maternal anaemia compared with adults aged 20–24 years.[14] We found that 52% of HIV-positive adolescents booked late for ANC; this could have contributed to the late diagnosis and treatment of anaemia (see Table 1). Late booking could have been due to participants' fear of HIV testing. HIV-positive adolescents in this study were twice as likely to be diagnosed with anaemia compared with HIV-negative mothers (results not significant). A South African study, which entailed a retrospective cohort data analysis of 408 pregnant women in various age groups who were HIV-positive, found that the CD4 count was a significant risk factor for anaemia during pregnancy and post-delivery.[15] Anaemia was more common among women in the advanced stage of HIV infection (CD4 < 200cells/mm^3). A local study based in KZN at the Empangeni Hospital indicated similar findings, where HIV infection was observed to increase the likelihood of anaemia during pregnancy and was more common among cases (56%) than among controls (37%) (OR = 2.11; 95% CI = 1.123, 3.21; $p \leq 0.005$).[16] Upon initiation of ANC, screening for HIV is of great importance. This would help in the Prevention of Mother-To-Child Transmission (PMTCT) programme during pregnancy and delivery, as well as post-delivery. The fear of HIV testing was repeatedly expressed by participants in this study as a factor that would keep young women from attending a clinic. Due to the risky behaviour of adolescents and the lack of condom use, participants feared HIV testing during the initial clinic visit. It was noted that 50.3% of adolescent mothers required episiotomies during delivery, while 37.3% had an intact perineum after delivery. In this study, the condition of the perineum was significantly associated with HIV status (OR = 0.36; 95% CI = 0.16; 0.84; $p < 0.05$). HIV-positive mothers were more likely to have an intact perineum post-delivery. This may be due to the possible avoidance of invasive procedures such as episiotomy during delivery of HIV-positive mothers, to minimise risk of MTCT during delivery.

According to the WHO,[17] all pregnant women with an uncomplicated pregnancy should access at least four ANC visits during the course of one pregnancy. Research in Uganda in 2015 among women of various ages found that most women did not complete the recommended four ANC visits, and almost half of the respondents were not aware of the recommended number of visits ($n = 400$). Participants interviewed in this study showed a lack of knowledge about the benefits of ANC, such as health education during pregnancy (Theme D: importance of education). Some participants acknowledged that one of the benefits of ANC attendance was to obtain more knowledge and health education (Theme E: benefits of attending ANC). Insufficient ANC utilisation in Uganda was identified as a contributory factor to the high rates of maternal and neonatal mortality.[18] In Kenya, research among pregnant women of different ages indicated that the majority of participants (51.9%) attended the recommended number of four or more ANC visits, while 182 (45.2%) attended fewer than four visits and 25 (6.2%) did not attend ANC at all.[19] The following factors were found to be associated with the preference for fewer ANC visits: parity and number of children, age, civil status, education, obstetric history, previous birth experience and timing of pregnancy. Pregnant teenagers suffer most in not obtaining early and adequate ANC.[20] In this study, low birthweight, low Apgar scores as well as the incidence of maternal anaemia and pregnancy-induced hypertension (PIH) were found to be related to late ANC booking.

The majority of adolescents in this study delivered babies of normal weight while 32 (10.2%) delivered low birthweight babies (see Table 1). Results from a comparative study in Cameroon between adolescent ($n = 560$) and adult deliveries ($n = 5\ 997$) found that adolescent deliveries had significantly higher rates of preterm and post-term deliveries.[21]

Late ANC booking was linked with maternal age; the majority (86%) of 13-year-olds booked for ANC late, followed by 74% of 14-year-olds and 57% of 15-year-olds, whilst only 48% of 16-year-olds booked late (see Figure 1). Older maternal age was linked with early booking (see Figure 1). This could be due to older adolescents being more mature and having better knowledge pertaining to pregnancy-related requirements. Younger adolescents may be unsure of the signs and symptoms of pregnancy, which could in turn influence late booking for ANC. In keeping with age, younger adolescents may attempt to conceal the pregnancy due to possible embarrassment and judgement by elders and peers in the community; this may lead to a further delay in accessing care. Most participants in this study realised the impact of their pregnancy on their families and were ashamed of their actions. One participant stated that it

was better to die than deal with the shame of falling pregnant. This could have influenced late ANC booking. All participants viewed emotional and financial support from family and partners as being crucial in acceptance of pregnancy and access to ANC services. Family and partner support, together with concern for well-being of the unborn baby, served as motivating factors in the access of care. The participants also related that waiting in the queue for a long time with adults was a source of distress. They felt judged by adult clients when they entered the clinic, and the waiting caused additional fear and embarrassment. Antenatal care clinics in SA do not have separate facilities or specifically allocated times for adolescents and older women. All pregnant women of different ages access care in the same facilities at the same time.[6]

In this study, ANC booking initiated above 20 weeks was considered as late booking. The earliest ANC booking was initiated at five weeks (year 2011), while the latest booking was at 37 weeks (2012 and 2013). Maternal records revealed that 2% of adolescents did not attend ANC at all (NCCs). The National Department of Health aims at all pregnant females initiating ANC before 20 weeks of gestation.[11] Findings from numerous studies have indicated that young maternal age was linked to late ANC initiation, and is a common problem among adolescents.[22–24] During interviews healthcare workers at the clinic were perceived by the young mothers in this study as being rude and unfriendly. Participants felt that nurses lacked respect for them and this was a deterrent to accessing care. Some participants expressed a fear of nurses when attending the clinic. They found that nurses did not give them respect owing to their young age when falling pregnant. Participants conveyed that if nurses were friendly and did not scold them, it would make it easier for adolescents to attend for ANC. This could have contributed to late accessing of ANC services. These results concurred with results of a London-based study, where negative attitudes from healthcare professionals were found to hinder access to care.[25]

Sustainable Development Goal 3 aims to reduce global maternal mortality to less than 70 per 100 000 live births and to put an end to preventable deaths of newborns and children under five by the year 2030.[26] This will be achievable if ANC access and use is improved, particularly among vulnerable women. Participants interviewed in this study conceded that ANC attendance was important for the health and well-being of their unborn baby but there were numerous challenges associated with access. Adequate utilisation of ANC services is pivotal in maximising the screening and treatment of health conditions during pregnancy. Interventions aimed at improving adolescent-specific service delivery are essential in promoting ANC attendance amongst this vulnerable group.

Study limitations

The views and experiences of un-booked pregnant adolescents were not represented in this study, as the recruitment process took place while patients were waiting in the queue to access care.

Conclusion

The study showed that adolescent pregnancy in this research setting was associated with a risk of late booking and reduced ANC visits, which could lead to adverse maternal and birth outcomes. This is the likely scenario in other districts with the same socio-economic conditions. The lack of timeous care represents missed health-screening opportunities. Thus, urgent strategies are required to curb this public health concern. The information gathered from interviews concluded that the nurse's attitude, a fear of HIV testing, health system barriers, a lack of knowledge and financial barriers hinder an adolescent's access to ANC services.

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Competing interests – The authors declare that they have no competing interests.

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