

Infant feeding practices of teenage mothers attending a well-baby clinic in a public hospital in Umlazi, KwaZulu-Natal, South Africa

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Objective: This study aimed to determine the breastfeeding practices of urban, predominantly isiZulu speaking, South African teenage mothers, and to examine factors associated with breastfeeding.

Study Design and Methods: A cross-sectional study was conducted with 73 mothers (aged 15 to 19 years) who were attending a well-baby clinic for their infant's scheduled 14-week immunisation visit. A face-to-face interview was conducted with each mother in isiZulu ($n = 66$) or English ($n = 7$) by a trained research assistant. Close ended questions included; socio-demographic characteristics; obstetric history; and, breastfeeding practices while open-ended questions explored reasons for early cessation of breastfeeding, and perceptions of how the family, health care workers, and the school could support teenage mothers with breastfeeding.

Results: All 73 mothers had initiated breastfeeding; however, by the time of the interview, 31.5% had stopped breastfeeding. A multivariate logistic regression model was used to predict the likelihood of early breastfeeding cessation. The odds ratio of early breastfeeding cessation for teenage mothers below the age of ≤ 17 years was 17.3% higher compared to teenage mothers older than 17 years (OR 1.17, 95% CI:0.617–2.269); 8.6% higher for teenage mothers who completed their grade 11 and above compared those who did not complete grade 11 and above (OR 1.17, 95% CI:0.617–2.269); and, 79.5% (OR 1.795, 95% CI:0.565–5.739) higher for teenage mothers who experienced breastfeeding problems compared to mothers without breastfeeding problems. However, since the 95% CI for these odds ratios spanned the null value (1.0), the increased odds were not statistically significant.

Conclusion: The elevated odds of early breastfeeding cessation were associated with a young maternal age (≤ 17 years) and experiencing breastfeeding problems. This highlights the importance of targeting adolescent mothers for support and promotion of breastfeeding, noting the influence of society and peer pressure. It is also clear that the healthcare workers, schools and communities have an important role to play in supporting breastfeeding teenage mothers, especially in providing accurate information and support for the prevention of breastfeeding problems.

Keywords: infant feeding practices, teenage mothers, well-baby clinic

Background

The Lancet 2016 series has recently reported the value of breastfeeding not only to the physical health of the infant but also to their emotional and intellectual development.¹ Additionally, the value of breastfeeding to mothers themselves has been emphasised. In this series, it has also been highlighted that the scaling up of breastfeeding to a universal level could lower the number of annual world-wide deaths from 823 000 children younger than 5 years and 20 000 mothers from breast cancer.¹

South Africa has a low exclusive breastfeeding (EBF) rate. The latest national data at the time this study was conducted estimated EBF rates up to 6 months of age to be 7.4%.² A recent study in KwaZulu-Natal (KZN) found that 76.1% of mothers were mix feeding by 14 weeks post-delivery, although only 32.7% of women intended to mix feed by this stage.³ This was despite the presence of routine Prevention of Mother-to-Child Transmission (PMTCT) services, which promoted EBF. In addition to low EBF rates, South Africa's infant mortality rates, although showing some improvement, still remain unacceptably high with poor access to healthcare services, malnutrition and poor living conditions being three of the leading contributors to child deaths.⁴

The South African National Department of Health has recognised that promotion of exclusive and extended breastfeeding can play an important role to improve these mortality rates. At the

historic Tshwane meeting in 2011, the Minister of Health committed the government to protect, promote and support breastfeeding.⁵ To reinforce this message, a decision was made that free formula milk would no longer be provided in public health facilities - as part of the PMTCT programme.

The reasons for the erosion of the breastfeeding culture in South Africa are varied; however, one of the important reasons is likely the aggressive marketing of breastmilk substitutes by the infant feeding industry and lack of clarity regarding optimal infant feeding practices in the context of the HIV/AIDS epidemic.⁶ Although no South African figures are available, the extent of marketing is obvious from United States figures, which show 2014 global sales of US\$ 44.8 billion.⁷

One group of mothers who are especially in need of the knowledge on the benefits of breastfeeding and protection from the influences of media are adolescent mothers, since they are often insufficiently resourced to ameliorate these risks or empowered to counteract media pressures. In an African context, this group is identified as the group that is likely to have the least self-efficacy and assertiveness and, thus, likely to succumb to peer pressure.⁸

Adolescent pregnancies are of concern world-wide since they often lead to obstetric or neonatal complications. Neonatal mortality rates increase in adolescent pregnancies. According

to the World Health Organisation (WHO), every year there are approximately 15 million pregnancies in young women aged between 15 and 19 years. The majority of these pregnancies occur in under-developed or developing countries. In 2013, more than 99 000 school girls fell pregnant in South Africa, at a rate of about 271 per day for that year. This is a dramatic increase from the 81 000 pupils who fell pregnant the previous year.⁹ Although health professionals are aware of the vulnerability and lack of support of adolescent mothers, they are often at a loss as to how to provide the necessary support to assist these mothers.

Clinical evidence points to the fact that breastfeeding has significant benefits for both the baby and the mother, and that these outweigh the barriers that may be experienced. While the majority of women initiate breastfeeding, many mothers prematurely discontinue due to difficulties they encounter rather than maternal choice.⁵ Healthcare professionals have generally identified women at high-risk of poor breastfeeding practices using non-modifiable variables. However, to better guide the development and evaluation of effective interventions, prediction of these high-risk mothers should rather be based on modifiable variables. Researchers indicate that one modifiable factor that may be used to identify high-risk breastfeeding women and predict early attrition is maternal confidence.¹⁰ Teenage mothers are at a vulnerable stage of their life's journey but it is the optimum point to help them change their thought processes and bring about positive behavioral change as individuals and in society as a whole.

The aim of the study was therefore to investigate the perceptions and factors influencing teenage mothers in their infant feeding practices. In the process of gaining insight into the mindsets of teenage mothers, it is hoped that useful information will be gathered from these interviews. This information will be useful to design interventions aimed at modifying the understanding or perceptions of teenage mothers around the benefits of breastfeeding and the consequences of not breastfeeding in order to improve the breastfeeding rates in South Africa.

To the best of our knowledge this data does not exist in KZN or South Africa.

Methodology

Study design and data collection tools

A cross-sectional descriptive study was conducted at the Well-Baby Clinic of Prince Mshiyeni Memorial Hospital (PMMH), Umlazi, a semi-rural district of KwaZulu-Natal. This was a preliminary exploratory study; therefore, the study cohort comprised of a convenience sample of mothers who could be recruited during the 4-month study period. This cohort of teenage mothers attending the clinic were interviewed by a study research assistant at the 14-week infant immunisation visit – a recognised period of time when mothers may introduce a change to the infant's feeding practices.¹⁰

The survey instrument (a structured questionnaire) was designed and validated by a sample group of 5 teenage mothers, who were from a similar background and socio-economic status, in order to ensure that the questions were understandable.

The research assistant was trained prior to the study to conduct individual interviews using the pre-tested questionnaire. The interviews were mainly conducted in isiZulu ($n = 66$) and the rest in English ($n = 7$). Questions included close-ended questions

around socio-demographic characteristics, obstetric history, and breastfeeding practices. Baby's details including the birth weight, mode of delivery and peri-partum problems were obtained from Road-to-Health-Booklets (RTHB). Open-ended questions were also used to explore reasons for early cessation of breastfeeding and perceptions of how the family, health care workers and the school could support adolescent mothers with breastfeeding.

Study site and population

The study population was a convenient sample of 73 teenage mothers attending the Well-Baby Clinic of PMMH. The study sample included all mothers who were aged ≤ 19 years, with infants less than 19 weeks old and who attended the clinic during the study period (September to December 2015) for the 14-week immunisation according to the Extended Programme of Immunisation (EPI). The mothers who were not from the Umlazi district were not included in the study.

Ethical considerations

The study was approved by the Biomedical Research Ethics Committee of the University of KwaZulu-Natal (Ref: BF 224/13). Written informed consent was obtained from the mothers prior to the interview and the interviews were conducted in a separate room specified for this purpose at the Well-Baby Clinic to maintain confidentiality. Names of the participants were not recorded on the questionnaires, only the study identity number. These questionnaires were kept in a locked cupboard and the electronic database was secured, and only the primary investigator had access to the database.

Analysis of Data

Statistical analyses were performed using SAS Enterprise Guide version 7.12 (HF1, SAS Institute Inc., Cary, NC, USA) and IBM SPSS version 23 (SPSS Inc., Chicago, IL, USA). T-tests were used to determine significance for continuous data and Chi-square/Fisher's exact tests were used for categorical data. A p -value < 0.05 was considered statistically significant. A multivariate logistic regression analysis was used to determine which factors best predicted early breastfeeding cessation.

Results

General characteristics of participants

All 73 women reported that their pregnancy was unplanned (100% unintended pregnancies). Only one of the 73 mothers was married and 71 (97.26%) of the remaining 72 were not living with their partners. The age range of those enrolled in the study ranged from 15 to 19 years, with a mean age and standard deviation (SD) of 17.73 ± 1.28 years old. The distribution of other sociodemographic and clinical characteristics are shown in Figure 1.

Out of the 73 participants, 62 (84.9%) were at school when they fell pregnant and 11 (15.1%) were in some form of employment. Of the 62 who were at school, 19 (30.6%) did not return to school after delivery. The main reason for not returning to school was to take care of the baby at home.

Knowledge around breastfeeding

All mothers attended an antenatal clinic and were asked in the interview to recall one important piece of information on breastfeeding, which they remembered receiving at the antenatal clinic. The majority ($n = 58$; 79.4%) reported that they were informed that breastfeeding would assist in protecting and preventing disease; 7 (9.6%) remembered that breastfeeding is economical; 4 (5.5%) recalled that exclusive breastfeeding is the best; and, 4

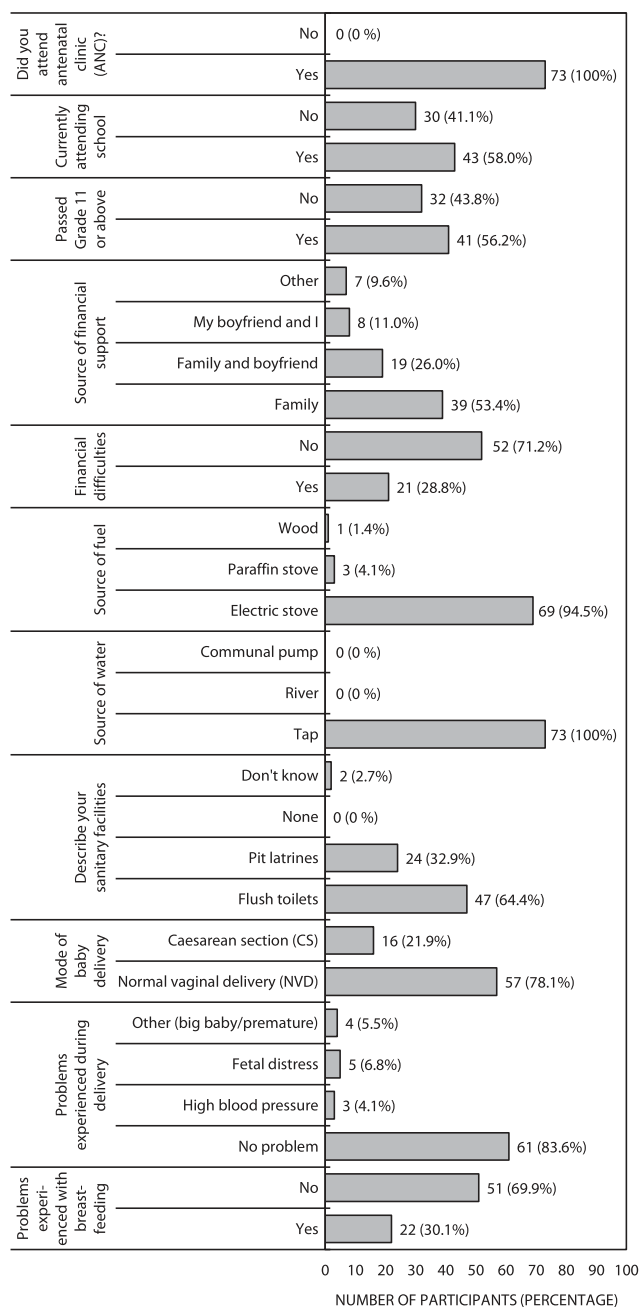


Figure 1: Sociodemographic and clinical characteristics of mothers ($n = 73$).

(5.5%) reported that they remembered being reassured that they could breastfeed their babies despite being HIV-positive.

Reasons for cessation of breastfeeding and difficulties experienced

All 73 adolescents initiated breastfeeding and 16 of these reported experiencing some difficulty with breastfeeding. The difficulties experienced included insufficient milk ($n = 13$; 81.3%) and mastitis or nipple pathology ($n = 3$; 18.8%).

At the time of the interview, only 50 (68.5%) of the mothers were still breastfeeding. In the 23 mothers who had stopped breastfeeding earlier than expected, cessation of breastfeeding occurred between 1 and 84 days, with a mean and SD of 45.42 ± 28.44 days and a median of 56 days. Amongst the 23 adolescents that had early cessation, 18 of them responded when

asked for the reasons for early cessation, and these were: insufficient milk ($n = 9$, 50%); going back to school ($n = 5$, 27.8%); and, advised by a family member to stop breastfeeding ($n = 4$, 22.2%).

Support for breastfeeding mothers

In the 50 mothers who were still breastfeeding, 13 (26%) stated that family could motivate and support them with breastfeeding; 4 (8%) suggested that family could help by buying food for them; 27 (54%) did not know; and, 6 (12%) did not respond.

In response to the question on how they envisaged how healthcare workers could assist young women with breastfeeding, 12 of 50 (24%) mothers felt that healthcare workers could encourage and educate, while 1 (2%) thought that provision of medication and techniques for breastmilk production would be helpful; 31 (62%) did not know and 6 (12%) did not respond. In addition, at the time of the interview, 31 of the mothers who were in school were asked if breastfeeding at school would be difficult. Only 6 of the 31 (19.3%) adolescents felt it would be difficult.

When asked how schools could make breastfeeding easier, 16 out of the 31 (51.6%) adolescents suggested that schools should encourage/support and motivate mothers; 5 (16.1%) felt it would be good for schools to provide education around breastfeeding; and, 10 (32.3%) did not know how schools could help.

Reported breastfeeding practices

At the 14-week interview/visit, a total of 37 (50.7%) mothers reported they were exclusively breastfeeding and 36 (49.3%) were either giving breastmilk together with other foods or not giving any breastmilk (Figure 2).

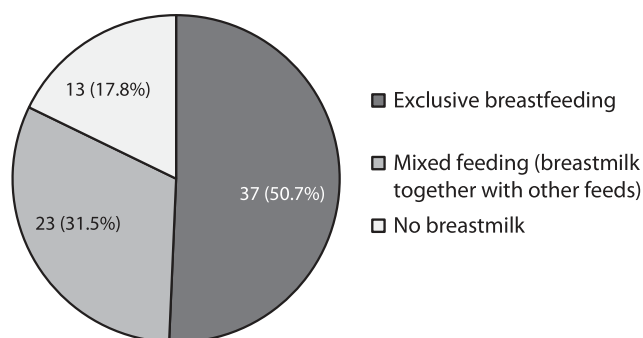


Figure 2: Infant feeding practices of mothers attending a well-baby clinic at 14 weeks immunisation ($n = 73$).

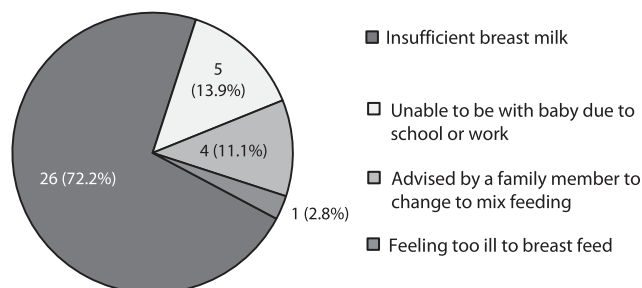


Figure 3: Reasons given by mothers for not exclusively breastfeeding their infants ($n = 36$).

The reasons for offering other foods, or mix feeding, was: insufficient breast milk ($n = 26$; 72.2%); unable to be with baby due to school or work ($n = 5$; 13.9%); advised by a family member to change to mix feeding ($n = 4$; 11.1%); and, mother was feeling too ill to breastfeed ($n = 1$; 2.8%) (Figure 3).

Table 1: General characteristics of teenage mothers who were or were not breastfeeding at 14 weeks postpartum

Characteristics	Mother currently breastfeeding at 14 weeks		p-value
	Yes (n = 50)	No (n = 23)	
Age (mean ±SD)	17.68±1.33	17.83±1.19	0.655
Marital status			
Single & not living with a partner	48	23	0.331 [*]
Living with a partner	2	0	
Have other children			
Yes	2	1	0.945 [#]
No	48	22	
Employment status			
Unemployed	42	20	0.784 [*]
Full-time employed	1	0	
Part-time employed	7	3	
Currently attending school			
Yes	31	12	0.423 [#]
No	19	11	
Infant's current weight (mean ±SD)	3.05±0.66	2.94±0.74	0.554
Experiencing financial difficulties?			
Yes	14	7	0.831 [#]
No	36	16	
Source of fuel:			
Electric stove	47	22	0.773 [*]
non-electric	3	1	
Flush toilet in home			
Yes	31	17	0.319 [#]
No	19	6	
Mode of baby delivery:			
Normal Vertex Delivery (NVD)	39	18	0.980 [#]
Caesarean section (CS)	11	5	
Remembering ANC message:			
Yes	16	42	0.156 [#]
No	7	8	
Completed grade 11 or above			
Yes	27	14	0.645 [#]
No	23	9	
Baby's Birth weight ≤ 2.5 kg			
Yes	8	4	0.882 [#]
No	42	19	
Experiencing breastfeeding difficulties			
Yes	12	10	0.092 [#]
No	38	13	

Notes: The results are given as mean \pm SD or n (%).

p: *chi-test, *Fisher's test.

Factors associated with early breastfeeding cessation

The general characteristics of mothers who were breastfeeding compared to those who had already ceased breastfeeding by their 14-week visit are shown in Table 1.

A chi-squared/Fisher's exact test was used to describe if there was a significant association between explanatory variables and early breastfeeding cessation (Table 2). None of the explanatory variables indicated significant association with early breastfeeding cessation.

Table 2: Association of breastfeeding characteristics with early breastfeeding cessation using chi-squared test

Variable	Chi-square value	Significance ($p < 0.05$)
Age < 17 years	0.009	0.926 [#]
Completed Grade 11 or above	0.212	0.645 [#]
Continuing with school	0.628	0.428 [#]
Caesarian delivery	0.001	0.980 [#]
Experiencing Problems during delivery	0.282	0.596 [#]
Baby birth weight < 2.5 kg	0.022	0.880 [#]
Having electric stove:	0.083	0.626*
Having flush toilet:	1.112	0.292 [#]
Remembering ANC message on breastfeeding preventing disease	2.011	0.156 [#]
Experiencing Financial difficulties:	0.046	0.831 [#]
Experiencing breastfeeding difficulties	0.284	0.092 [#]

*Fisher's test.

[#]Chi-square test.

Table 3: Factors associated with early cessation of breastfeeding among teenage mothers: binary logistic regression analysis

Odds Ratio Estimates and Confidence Intervals				Significance <i>p</i> -value
Variable	Odds ratio	95% Confidence Interval		
		Lower	Upper	
Age ≤ 17 years	1.173	0.617	2.269	0.626
Completed Grade 11 or above	1.086	0.259	4.585	0.910
Continuing with school	0.837	0.181	3.775	0.816
Infant birth weight ≤ 2.5 kg	0.670	0.105	4.271	0.660
Caesarian delivery:	0.972	0.208	4.402	0.971
Experiencing Problems during delivery	0.473	0.050	3.189	0.461
Experiencing breastfeeding difficulties	1.795	0.565	5.739	0.318

A multivariate logistic regression model was then used to predict the likelihood of early breastfeeding cessation (Table 3). The odds ratio of early breastfeeding cessation for teenage mothers below the age of ≤ 17 years was 17.3% higher compared to teenage mothers older than 17 years (OR 1.17, 95% CI:0.617–2.269); 8.6% higher for teenage mothers who completed Grade 11 and above compared those who did not complete Grade 11 and above (OR 1.086, 95% CI:0.259–4.585); and, 79.5% higher for teenage mothers who experienced breastfeeding problems compared to mothers who did not experience breastfeeding problems (OR 1.795, 95% CI:0.565–5.739). However, since the 95% CI for these odds ratios spanned the null value (1.0), the increased odds are not statistically significant.

Discussion

All the teenage mothers initiated breastfeeding; however, 31.5% failed to maintain breastfeeding by the infant's 14-week immunisation visit. Although a breastfeeding initiation ratio similar to this study was documented, a very low six-month EBF rate of 12% was reported in a recent South African study conducted in 4 provinces.¹¹ This rate is far below the 2014 International Conference on Nutrition Rome Declaration on Nutrition and the post-2015 Development Agenda target of 50%.¹¹ This finding from our study reveals that teenage mothers experience difficulty maintaining their initial decisions to breastfeed their babies and this is a pivotal point to target in terms of education and promotion of exclusive breastfeeding for six months and continued breastfeeding up to 24 months.

The fact that all 73 women did not plan their pregnancies only makes their journey as a young mother all the more difficult as their minds are not in tune with the expectations of motherhood, the transition of being cared for to the role of caring for their infant is challenging.¹² Psychological stress associated with difficulties of being an adolescent mother could impact a mother's ability to continue breastfeeding.^{13,14} Similar to older mothers, the adolescent mothers also cited 'insufficient milk' as the most important reason for not exclusively breastfeeding.

Our results were not unexpected by comparing them to other recent studies. The main finding of this study showed that a young age of ≤ 17 years, completing Grade 11 or above and experiencing breastfeeding difficulties were associated with early breastfeeding cessation. It can be expected that younger adolescents were less likely to continue since it may be related to the lower levels of emotional maturity. In a US study, similar reports of differences between the younger and older adolescents has been reported.¹⁵ The association found in this study between early cessation and mothers having progressed further with their education (8.6% higher) has also been reported by others.⁷

Association of breastfeeding cessation with experiencing breastfeeding difficulties was not unexpected as this has been reported in several studies,^{11,15} and highlights the need for correct information and support to be provided to adolescents at all levels, namely clinics, community and school.

The teenage mothers did however appear to receive adequate knowledge around breastfeeding and its importance at the antenatal clinic as evidenced by the fact that the majority ($n = 58$; 79.4%) reported that they recalled being informed that breastfeeding would assist in protecting and preventing disease. It was therefore not surprising that all 73 adolescents initiated breastfeeding. However, not all continued breastfeeding, with 23 (31.5%) having ceased breastfeeding as early as 14 weeks of age.

Although the information in the breastfeeding counselling training received by healthcare workers in the KZN province is adequate, what is needed is for follow-up in-service training to highlight the points that should be emphasized, especially for adolescents. One of the major reasons for early cessation was reported to be insufficient milk, which again underlines the point that regardless of this information being provided in the antenatal breastfeeding education talks given to mothers, knowledge is not sufficient to change behaviour and additional interventions are needed as highlighted in the Lancet series.⁷ In view of understanding the importance of multi-faceted intervention strategies, the province of KZN has in fact recently embarked on such an intervention aimed at social media and increased support to promote breastfeeding. The other two reasons for early cessation, specifically going back to school and advice by a family member, highlights the importance that support could make in changing these perceptions. In our setting where grandmothers play an extremely vital role in the lives of their grandchildren and the community as a whole, this group could be targeted and trained to provide positive messages to teenage mothers. Given the Department of Health's ongoing staff shortages and lack of resources, which greatly impact on service delivery, staff are spending less quality time on counselling and education around breastfeeding practices, making it vital to include community in breastfeeding promotion efforts.

Despite this increased knowledge and awareness around breastfeeding, considerable barriers still exist. This study showed that all the adolescent mothers enrolled in the study did attempt and intend to breastfeed; however, a relatively large proportion (31%) chose to leave school because of the birth of the baby – highlighting the importance of ancillary programs to prevent teenage pregnancy. Additionally, adequate messages and education should be provided to encourage teenage mothers that continued breastfeeding is possible, even if they return to school. Schooling and work are perceived as large barriers to continuing breastfeeding in South Africa. It is therefore encouraging that the government and corporate companies are making calls for an increase in maternity leave, which will be one way of overcoming this barrier. Furthermore, civil society should be encouraged to continue advocating for these concessions. Another obvious option is to consider ways that schools can be supportive of the teenager's breastfeeding. While bringing the child to school may not be logistically possible, making some allowances for teenage mothers may be possible. Despite special allowances, emotional support and understanding would be important both at school and health institutions. This highlights again the importance of educational efforts and community efforts to change perceptions and give correct information to adolescent mothers and their families. Navigating the dilemma of how to discourage teenage pregnancy while making provisions for teenage mothers to bring their children to school for breastfeeding is a debate that all stakeholders need to engage in. The importance of mothers expressing breastmilk that can be used by caregivers to feed the infant while the mother is at school is an important strategy to be encouraged, and is one of the messages that should be highlighted in the antenatal education provided to adolescent mothers.

The extent to which fear of HIV transmission through breastfeeding is involved in the infant feeding decisions of the adolescent mothers enrolled in our study could not be explored as we did not feel that it was ethical in the context of this study to collect information about the mother's HIV status. At the time of this study, South Africa had however already adopted the WHO's Option B+ strategy for PMTCT, which encouraged breastfeeding for HIV infected women and provided antiretroviral drugs to all mothers from early pregnancy, throughout the breastfeeding period and

beyond. It is likely that this policy was in fact already implemented, accounting for a higher than expected number of mothers who did in fact initiate any breastfeeding. Despite this switch in policy as discussed above, considerable barriers still remain for women to continue breastfeeding for longer than 3 months and to practice exclusive breastfeeding during the first 6 months.

Despite the vital role of breastfeeding in a child's life, we are faced with significant barriers in resource limited settings, as well as a variety of structural and ideological barriers. Appropriate support from the government, community and family is likely to bring about a change in mindsets of teenage mothers. A meta-synthesis of 16 qualitative studies on infant feeding attitudes and practices in sub-Saharan Africa identified maternal knowledge, healthcare support, family resources and cultural expectations as key factors influencing breastfeeding across regions and settings.¹⁶ In addition, self-efficacy or a woman's confidence in her ability to breastfeed successfully is strongly predictive of breastfeeding initiation and duration. Interestingly, psychosocial dynamics were more predictive of exclusive breastfeeding than demographics combined.¹⁷⁻¹⁹

Limitations

Since this study was within one urban clinic with a small sample size, the findings may not be a true reflection of all South African teenage mothers and cannot be generalised for the rural population. As with all studies of this nature there is a risk that mothers may feel intimidated and may not respond truthfully. To minimise this risk, we did employ a female research assistant with a similar background to that of the mothers in the study. We believe that since the research assistant was a non-health professional, who did not wear any sort of uniform and had been specifically trained to be friendly and accepting of the teenagers, this risk was minimised. Despite these attempts there were several questions where mothers were asked for their opinions where many either said they 'did not know' or did not want to respond. This may be related to this particular study group of teenagers who may find such questioning an imposition and also do not want to spend too much time in the clinic setting.

Another limitation was that we did not collect data on whether mothers initiated breastfeeding within the first hour of infant birth, a factor which is associated with increased likelihood of EBF and continued breastfeeding. In addition HIV status of mothers was not collected.

Since this was a preliminary exploratory study, a screening experimental design approach was adopted to study factors influencing infant feeding practices of the teenage mothers. The sample size was not sufficient to be able to clearly model the factors associated with early breastfeeding cessation in teenage mothers. This was obvious with three of the variables, namely age < 17 years, completed Grade 11 and above, and experiencing breastfeeding problems, which had large confidence intervals crossing the null point despite having an odds ratio above one. This information will be useful to future studies allowing design of sufficiently powered studies, which can more accurately investigate the influences on infant feeding practices.

Conclusion

The elevated odds of early breastfeeding cessation associated with young women ≤ 17 years and experiencing breastfeeding problems highlight the importance of targeting adolescent mothers for support and promotion of breastfeeding bearing in mind the influence of society and peer-pressure. It is also clear

that the healthcare workers, schools and communities have an important role to play in supporting breastfeeding teenage mothers, especially in providing accurate information and support for the prevention of breastfeeding problems.

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