



Knowledge, attitudes and practices associated with post-natal PMTCT in breastfeeding mothers living with HIV

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ABSTRACT

Despite interventions tailored to prevention of mother-to-child of HIV and reported improvements on the outcomes, there is still vertical transmission of HIV through breastfeeding. The study sought to explore knowledge, attitudes, and practices of breastfeeding mothers living with HIV regarding post-natal PMTCT interventions and services. The study sample size was 90 and included conveniently selected breastfeeding mothers living with HIV who attended the King Sobhuza II public health unit for post-natal healthcare services in the Manzini region of Eswatini (formally known as Swaziland). Data were collected by administering a questionnaire to selected participants. The Statistical Package for the Social Science (SPSS version 20) was utilized for capturing raw data and then analyzed using tabulation and frequencies (descriptive statistics). The overall study results revealed that a majority of breastfeeding mothers living with HIV (77.8%) presented with high levels of knowledge on PMTCT, 90% demonstrated a positive attitude and 90% demonstrated a positive behaviour towards PMTCT. However, stigma and discrimination among family members, non-disclosure of HIV status to sexual partners; as well as poverty and fear of future drug-resistance were reported as risk factors of non-adherence to ARV prophylaxis. Furthermore, inconsistent condom use, mixed-feeding methods, and wet-nursing also emerged as other contributing factors to the increase of post-natal transmission of HIV among breastfeeding mothers living with HIV. Low knowledge of less than 50% regardless of educational background was noted on specific questions which will invariably influence the respondents' attitudes and practices, increasing their babies' risks of acquiring HIV during breastfeeding.

1. Introduction

An estimation of 1.4 million pregnant women are living with Human Immunodeficiency Virus (HIV) in low-and middle-income countries globally and only 26% of those women received an HIV test (UNICEF, 2012). According to the (UNAIDS, 2015), the risk of Mother to Child Transmission (MTCT) of HIV in newly infected women, not yet on treatment is much higher and it may occur at any period of pregnancy and lactation. By 2015, more than 1 million of pregnant women living with HIV received antiretroviral therapy (ART) for Prevention of Mother to Child Transmission (PMTCT), with nearly 79% in sub-Saharan Africa (UNICEF, 2017).

Approximately 3.2 million children were living with HIV in sub-Saharan Africa by the end of 2013, contributing to more than three-

quarters (90%) of HIV burden. Without interventions, the risk of vertical transmission ranges from 10% to 15% through the breastfeeding period (Abtey, Awoke, & Asrat, 2016; WHO, 2018). By 2016, children below the age of 15 years living with HIV account for approximately 2.1 million, with nearly 160 000 new HIV infections globally (UNAIDS, 2017).

The HIV prevalence among reproductive-age adults in Swaziland is 26% which is recorded as the highest rate in sub-Saharan Africa, with an HIV prevalence of 41.1% among pregnant women and an estimation of 34.571 deliveries in 2015 (Katirayi et al., 2016; Luba et al., 2017). With this high prevalence among pregnant women, an estimated 13.536 of HIV exposed infants in a year. This suggests a state of affairs that ensuring all HIV positive pregnant women receive PMTCT services as a critical measure to reduce transmitting the HI virus to their chil-

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dren and make progress towards an HIV free generation (“Media Brief on prevention of mother to child transmission of HIV in Swaziland,” 2017).

Prior to any interventions, approximately 1600 children aged 0–14 years of age were newly infected with HIV in Swaziland and MTCT contributes to approximately 11% of the yearly national incidence rate in Swaziland (“Global information and education on HIV and AIDS in Swaziland,” 2016; “Media Brief on prevention of mother to child transmission of HIV in Swaziland,” 2017). These new infections could be the result of mixed infant feeding practices which increases the risk of MTCT of HIV. In some cultures, it is a challenge to practice exclusive breastfeeding for an HIV positive women as there are cultural norms that support early introduction of fluids (Hazemba, Ncama, & Sithole, 2016).

The introduction of PMTCT services; antiretroviral treatment for the mother and a short course of antiretroviral drugs for the baby can reduce HIV transmission to below 5% during the periods of pregnancy, labour, delivery and breastfeeding (“Mother-to-child transmission,” 2018).

A significant increase of pregnant women diagnosed and initiated on ART was noted from 50% in 2009 to 70% by 2013 and 95% by 2016 (Government, 2011–2015; UNAIDS, 2017). An expected decrease in MTCT will be expected with such an increase in ART update globally and in sub-Saharan Africa. On the contrary, HIV global statistics for 2015 had noted approximately 150 000 children aged from 0 to 14 years of age newly infected with HIV and close to 85% occurring in sub-Saharan Africa. In Swaziland, mother to child transmission postnatally at 6 weeks is as low as 2–3% which showed a significant decrease for new HIV infections from 13,000 in 2010 to 8800 in 2016 (UNAIDS, 2017). However, the rate of transmission by 18 months of age remains high at 12–15%. Some of the reasons for paediatric HIV infection during breastfeeding is adherence to ART and poor retention in care. A new urgency due to the shift in the timing of HIV transmission from mother to child had been created, focusing on adherence to ART and retaining mother and infants in care until caseation of the breastfeeding period (Parker et al., 2015).

The above-mentioned report is in line with a study conducted in Swaziland by (Katirayi et al., 2016), on challenges accepting lifelong ART where the researchers concluded that fear of developing resistance, disclosing one’s status or dealing with lifelong hiding of medications are the main challenges.

According to Haffeejee, Ports, & Mosave (2016), in a study on knowledge and attitudes about HIV infection and prevention of mother to child transmission of HIV, motivation and ART uptake is largely influenced by the knowledge of HIV/AIDS and PMTCT. This is evidenced by the current study where 91% of respondents indicated that a mother could transmit HIV to her child, however, when asked on how MTCT occur, only 55% stated that the virus could be transmitted during pregnancy and only 19% indicated that it could be transmitted through delivery.

In a study conducted in Nigeria by (Umeobika, Ezebialu, Ezenyeaku, & Ikeako, 2013), where they concluded that a rise in children living

with HIV could be due to poor knowledge, attitude and negative perception about HIV and PMTCT among pregnant women.

Several studies had identified a relationship between knowledge of HIV, MTCT and PMTCT and uptake of PMTCT services. In a study of more than 10 000 women, conducted in Tanzania, only 46% of the women had adequate knowledge on MTCT and PMTCT. Those with adequate knowledge were either had experienced at least one pregnancy, higher education levels, being exposed to HIV education and having taken an HIV test. In another study conducted in southwest Nigeria where 99.8% of pregnant women had scored a 92% on MTCT and a 91% on PMTCT, 71% had negative views towards PMTCT and this was related to stigma and discrimination (“Prevention of mother to child transmission of HIV,” 2018).

Available literature when the study was conducted in 2014, showed that at six weeks of age, 2–4% of infants tested for HIV were found to be positive. However, the total number of infants who tested HIV positive after birth in 2011 was 17%, suggesting significant rates of transmission during breastfeeding (Sibbald, 2013). One of the global targets between 2009 and 2015 was to reduce MTCT among breastfeeding women to 5% or less where Swaziland had achieved that milestone at 3.3%. However, globally, the rate of mother-to-child transmission at six weeks was 4.7% among the 21 sub-Saharan countries but rose to 8.9% at the end of breastfeeding. This raises a need for vigorous systematic efforts to retain women in care and to enable good adherence to HIV treatment until the risk of HIV vertical transmission to the baby comes to an end. (UNAIDS, 2016). Furthermore, the global plan, also states that, yearly, approximately 110 000 children are still being newly infected with HIV in Sub-Saharan Africa and more than half of these new infections occur during the breastfeeding period.

In 2014, when the study was conducted, the researchers observed that at King Sobhuza II Public Health Unit, there was an increase in the number of children testing HIV positive during their follow-up HIV testing, between six weeks and twelve months; despite the fact that they still continued, or were supplied with their antiretroviral prophylaxis (Government, 2013). The study was therefore undertaken with the hope that its findings would reveal whether the breastfeeding mothers in question had adequate knowledge about PMTCT. If indeed they did, what was their attitude towards it, and how did it impact on their practices. The information derived would assist and add value in the review of health education strategies on PMTCT and how they are packaged, including follow-up care for the benefit of all breastfeeding mothers and their babies.

2. Research questions

The articulation of the research questions in this study was intended to highlight the inter-relatedness between the research problem and the research design and methods applied in order to resolve the problem. Accordingly, the most significant research questions in this study have been articulated as follows:

- To what extent are HIV positive breastfeeding mothers knowledgeable on the prevention of mother-to-child HIV transmission?

- What kind of attitudes do HIV positive breastfeeding mothers display towards PMTCT interventions and services? and
- What kind of practices do HIV positive mothers embrace during their breastfeeding period which may negatively affect PMTCT interventions and services?

3. Methodology

3.1. Method

Cross-sectional study design was used for this study. A cross-sectional study is an observational study that can compare different population groups at a single point of time and it measures a relationship between two or more variables, giving an indication of how one variable may predict another (Grove, Gray, & Burns, 2013), where, knowledge, attitude and practices associated with breastfeeding mothers living with HIV were explored. For this study, a convenient sampling method was utilized. A convenient sampling method is a non-probability technique where the selection of subjects is based on their availability and proximity to the researcher (Grove et al., 2013).

The researchers described the relationship between breastfeeding HIV positive mothers' knowledge, attitudes, and practices concerning PMTCT of HIV (including adherence to HIV prophylaxis), and HIV seroconversion of children by twelve months.

3.2. Sample size

The sample size was estimated assuming a 0.15 effect size, a type 1 error alpha of 0.05 with a statistical power of 0.8 using G-Power 3.15 (Polit & Sherman, 1990) and sample size of 90 participants participated in the study which was a 98% response rate. The sample is a representative of the limited numbers of HIV positive mothers who were breastfeeding presenting to the health facility at the time of the study. The intention was to obtain as many respondents as possible, as this was a difficult group of respondents to select because most HIV positive mothers opt for bottle feeding (Government, 2010, 2011–2015). Respondents were conveniently selected from a sample frame of women attending the Maternal Neonatal Child Health (MNCH) unit and assigned codes to ensure confidentiality and anonymity. A child welfare card was utilized to screen all HIV exposed children less or equal to 18 months of age. In Swaziland, a unique sticker is used at 6 weeks when an HIV test is done to all exposed infant. Furthermore, the same child welfare card documents if the child is breastfeeding or formula feeding.

3.3. Data collection

3.3.1. Pilot study

The data collection tool was first piloted, refined and given to experts in the field for face validity. This was done to test the accuracy of the measuring tool (instrument) in order to examine its appropriateness and improve the quality of the questionnaire prior to the study

The researchers developed their own questionnaire to address the study questions basing it on current literature on MTCT and PMTCT. When the instrument was tested for reliability, the Cronbach alpha was 0.545.

Data were collected by the researchers from the King Sobhuza II public health unit during the period of April and May 2014 using self-report questionnaires. The questionnaires were in both English and SiSwati for better clarity and understanding. For face validity, the tool was first piloted, refined and given to experts in the field. During completion of the questionnaire, one researcher was at hand to constantly supervise and assist the respondents while answering the questionnaire, clarifying any misunderstanding and explaining any medical terms which the respondents did not understand (e.g. 'prophylaxis'). For none- or least-literate mothers, which encompasses only 3.3% of the total population, the questionnaire was administered by the researcher.

Involvement of facility senior nurses in the introduction, purpose, and importance of the study to participants during the facility morning health education sessions had led to no participants refusing to answer the questionnaire. An informed consent was also shared.

For privacy and confidentiality, a designated corner within the unit was utilized by the researcher for an informed consent and sharing of the questionnaires to participants. All of the study's participants were females.

3.4. Data analysis

Data were input into Statistical Package for the Social Science (SPSS version 20). Data-checking for accuracy was carefully done before data analysis. Tabulation and frequency tables were used to present the data, followed by interpretation of the tables and percentages.

3.5. Ethical issues

Prior to the commencement of the study, ethical clearance was sought and obtained from the University of South Africa's Research Ethics Committee and the Department of Health Studies. Similarly, the Swaziland Scientific and Ethics Committee granted permission for the study to be undertaken at the King Sobhuza II Public Health Unit in Swaziland. Furthermore, the Public Health Unit (of Swaziland) authorized the study to be conducted at the public health institution under its jurisdiction. Written informed consent was sought from the research respondents, and they were assured that they were at liberty to participate un-coerced, to ask questions, to refuse to give information, and to withdraw from the study at any stage. Respondents were also reassured that they were still entitled to receive treatment despite their refusal to participate in the study; (in the event that they did) their decision will not affect the provision of facility's services. The purpose for which the results of the study would be used, with no prejudice to the respondents, was further explained to them. Furthermore, the information they provided would not be divulged to any unauthorised parties or be used against them, but would only be strictly used for the benefit of the improvement of health care outcomes.

4. Results

The study results are displayed in two sections: First, the demographic data of respondents were presented. In the second section, knowledge regarding PMTCT of HIV, attitudes towards PMTCT of HIV, as well as practices related to PMTCT of HIV is presented.

4.1. Section 1: demographic data

The mean age was 30 years. The majority of the respondents (77.8%) were aged 20–30 years of age and they were also the most literate group, with 97.1%. Those who had never been to school at 27.1%, 38.6% had secondary level education, 20% had high school level and 11.4% had tertiary level education (Table 1).

for low knowledge, and 9–16 for high knowledge.

The findings revealed that (70) 77.8% of the respondents showed high levels of knowledge on PMTCT, compared to (20) 22.2% who showed low levels of knowledge on PMTCT of HIV. The majority of the respondents (95.6%) knew the importance of knowing their HIV status during pregnancy. When respondents were asked whether HIV could be transmitted during utero, delivery and through breast-feeding, the results showed knowledge levels of 61.1%, 90%, and 87.8%, respectively.

Table 1
Baseline Characteristics of respondents attending King Sobhuza II PHU, Swaziland, 2014 (N = 90).

		Age group (year)			Total N (%)
		Under 20	Between 20 and 30	Between 31 and 45	
Marital status	Single	0	40	13	53 (58.9)
	Married	0	25	6	31(34.4)
	Cohabiting	1	5	0	6 (6.7)
	Total	1	70	19	90 (1 0 0)
Educational Status	Never been to school	0	2	1	3 (3.3)
	Primary	0	19	8	27 (30)
	Secondary	0	27	5	32 (35.6)
	High	1	14	4	19 (21.1)
	Tertiary	0	8	1	9 (10)
Total	1	70	19	90 (1 0 0)	
Employment Status	Unemployed	0	48	15	63 (70)
	Scholar	0	6	0	6 (6.7)
	Employed	1	15	4	20 (22.2)
Total	1	69	19	89 (98.9)	

4.2. Marital status

Marital status was classified as single, married, and cohabitating. More than half of the respondents (58.9%) were single, while 34.4% were married, and 6.7% were cohabiting. From those who were single, 75.5% belong to the age group 20–30 years of age, while 24.5% belong to the 31–45 years age group. 80.6% of women in category 20–30 years were married, while 19.4% belong to the 31–45 years age category.

These results confirmed the findings of a survey by the (Government, 2006–2007) which states that many women in Swaziland bear children before entering a stable marital union. An assessment of DHIS data over eastern and southern African region from across the continents is showing that the percentage of adult men and women who had never been married is several times higher in Swaziland (Ruark et al., 2016).

4.3. Section 2: knowledge, attitudes, and practices

4.3.1. Knowledge regarding PMTCT of HIV

Study respondents were asked to answer sixteen questions on prevention of mother-to-child transmission in a self-administered questionnaire, where a total score of 0 was allocated for no knowledge, 1–8

High knowledge was also observed when the participants were asked whether they knew about children’s ARV (Nevirapine) prophylaxis, and how it should be administered; 88.9% knew about it, and 66.7% knew about its frequency (Fig. 1 and Table 2).

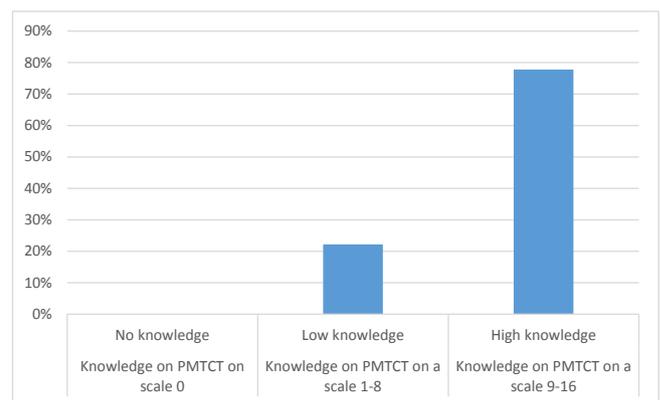


Fig. 1. Percentage of Respondents’ Knowledge on PMTCT of HIV.

Table 2
 Knowledge Regarding PMTCT of HIV among women attending King Sobhuza II PHU, Swaziland, 2014 (N = 90).

KQ1		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
Did you receive any health education about PMTCT?	No	6	6.7	6.7	6.7	0.93	0.25
	Yes	84	93.3	93.3	100		
	Total	90	100	100			
KQ2		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
If yes, where?	ANC /PHU	59	65.6	70.2	70.2	1.43	0.716
	Maternity Department	14	15.6	16.7	86.9		
	Media and Friends	11	12.2	13.1	100		
	Total	84	93.3	100			
KQ3		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
Did you need to know your HIV status when pregnant?	No	3	3.3	3.4	3.4	0.97	3.4
	Yes	85	94.4	96.6	100		
	Total	88	97.8	100			
KQ4		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
When is the right time to start attending ANC clinic?	Any month you choose	26	28.9	29.5	29.5	1.73	0.497
	Immediately you missed a period	60	66.7	68.2	97.7		
	The last month of pregnancy	2	2.2	2.3	100		
	Total	88	97.8	100			
KQ5		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
Can HIV be transmitted in utero?	Not sure	16	17.8	18	18	1.44	0.783
	No	18	20	20.2	38.2		
	Yes	55	61.1	61.8	100		
	Total	89	98.9	100			
KQ6		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
Can HIV be transmitted during delivery?	Not sure	4	4.4	4.4	4.4	1.86	0.464
	No	5	5.6	5.6	10		
	Yes	81	90	90	100		
	Total	90	100	100			
KQ7		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
Can HIV be transmitted through breastfeeding?	Not sure	3	3.3	3.3	3.3	1.84	0.447
	No	8	8.9	8.9	12.2		
	Yes	79	87.8	87.8	100		
	Total	90	100	100			
KQ8		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
Exclusive breastfeeding for the first 6 months means	Giving breast milk only	39	43.3	43.3	43.3	1.58	0.519
	Giving breast milk and medicines only	50	55.6	55.6	98.9		
	Giving breast milk, medicines and water	1	1.1	1.1	100		
	Total	90	100	100			
KQ9		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
Which of the following breast problems can put your baby at risk of acquiring HIV?	Cracked nipples	73	81.1	83.9	83.9	1.36	0.976
	Breast engorgement	5	5.6	5.7	89.7		
	Mastitis/ swollen breast	5	5.6	5.7	95.4		
	None mentioned	2	2.2	2.3	97.7		
	6	2	2.2	2.3	100		
	Total	87	96.7	100			
KQ10		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation

(continued on next page)

Table 2 (continued)

KQ1		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
Which of the following can expose your baby to HIV after delivery?	Mixed feeding	29	32.2	34.1	34.1	3.13	1.863
	Non adherence to HIV prophylaxis	11	12.2	12.9	47.1		
	Re-infection of HIV	4	4.4	4.7	51.8		
	2 and 3	6	6.7	7.1	58.8		
	All of the mentioned	31	34.4	36.5	95.3		
	6	4	4.4	4.7	100		
Total		85	94.4	100			
KQ11		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
Babies born of HIV + mothers have a smaller chance of becoming HIV + if mothers take Anti-retroviral therapy	Not sure	24	26.7	27.3	27.3	1.41	0.892
	No	4	4.4	4.5	31.8		
	Yes	60	66.7	68.2	100		
	Total	88	97.8	100			
KQ12		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
Do you know about baby's ARV (Nevarapine/NVP) prophylaxis?	No	6	6.7	6.7	6.7	0.98	0.334
	Yes	80	88.9	88.9	95.6		
	2	4	4.4	4.4	100		
	Total	90	100	100			
KQ13		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
How should nevarapine (NVP) prophylaxis be given?	Not sure	6	6.7	6.7	6.7	1.78	0.7
	Immediately after birth	16	17.8	17.8	24.4		
	At birth then daily	60	66.7	66.7	91.1		
	Twice a day	8	8.9	8.9	100		
	Total	90	100	100			
KQ14		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
For how long should NVP prophylaxis be given?	Not sure	38	42.2	42.7	42.7	1.08	1.12
	Until 6 weeks of age if mother is on ART	20	22.2	22.5	65.2		
	Until 1 week after stopping breastfeeding, if mother is on AZT prophylaxis	17	18.9	19.1	84.3		
	Until 2 years of breastfeeding	14	15.6	15.7	100		
	Total	89	98.9	100			
KQ15		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
When should the mother start ARV (AZT) prophylaxis?	Not sure	13	14.4	14.6	14.6	1.43	0.796
	At first ANC visit	29	32.2	32.6	47.2		
	When CD4 cells > 350	43	47.8	48.3	95.5		
	At 14 weeks gestation	4	4.4	4.5	100		
	Total	89	98.9	100			
KQ16		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
How often do you take AZT prophylaxis?	Not sure	20	22.2	22.7	22.7	1.01	0.686
	Once a day	47	52.2	53.4	76.1		
	Twice a day	21	23.3	23.9	100		
	Total	88	97.8	100			
KQ17		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
For how long should she take AZT prophylaxis?	Not sure	43	47.8	48.9	48.9	0.77	0.84
	7 days post delivery	22	24.4	25	73.9		
	Until cessation of breastfeeding	23	25.6	26.1	100		
	Total	88	97.8	100			
KQ18		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
Breastfeeding prevents conception; therefore there is no need for condom use	Not sure	4	4.4	4.5	4.5	1.08	0.405
	No	74	82.2	83.1	87.6		
	Yes	11	12.2	12.4	100		
	Total	89	98.9	100			

4.3.2. Attitude towards PMTCT of HIV

In the questionnaire, respondents were asked to indicate whether they agreed or disagreed with the statements provided. Two marks were allocated to each preferred answer chosen. A total of 16 marks was allocated.

Generally, the study results showed that all the respondents showed a positive attitude towards the prevention of mother-to-child transmission as they all scored more than half the marks allocated.

All the study respondents preferred to deliver their children at the hospital, rather than at home, and 83.3% believed that HIV prophylaxis could prevent mother-to-child transmission.

On the other hand, from the remaining 16.7%, 4.4% stopped giving

HIV prophylaxis to their children as they believed will cause future drug resistance, while 2.2% stopped treatment as they believed it caused their children to be ill.

Eighty percent of the respondents believed in exclusive breast-feeding, while 11.1% of respondents believed that there was nothing wrong in giving a child breast milk and formula milk simultaneously (mixed-feed), especially when the mother is working.

The environment surrounding individuals can positively or negatively influence their attitude towards adhering to PMTCT instructions and, this is evidenced by the study results showing that 53.3% believe that giving a child formula milk indicates the mother's HIV positive status (Table 3).

Table 3
Attitude towards PMTCT of HIV among women attending King Sobhuza II PHU, Swaziland, 2014 (N = 90).

AQ1		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
Where do you prefer to deliver your baby?	Hospital delivery	90	100	100	100	2	0
AQ2		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
I believe that HIV prophylaxis can prevent MTCT of HIV	Neither agree nor Disagree	5	5.6	5.7	5.7	1.06	0.414
	Disagree	72	80.0	82.8	88.5		
	Agree	10	11.1	11.5	100.0		
	Total	87	96.7	100.0			
AQ3		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
I believe that there is nothing wrong giving my baby breastmilk and formula milk especially when mother is working	Neither agree nor Disagree	5	5.6	5.7	5.7	1.06	0.414
	Disagree	72	80	82.8	88.5		
	Agree	10	11.1	11.5	100		
	Total	87	96.7	100			
AQ4		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
My in-laws or relatives believe that formula feeding indicates mother is HIV +	Disagree	42	46.7	46.7	46.7	1.53	0.502
	Agree	48	53.3	53.3	100		
	Total	90	100	100			
AQ5		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
I hide my HIV status and baby status from my partner	Disagree	64	71.1	71.1	71.1	1.29	0.456
	Agree	26	28.9	28.9	100.0		
	Total	90	100.0	100.0			
AQ6		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
I stopped my baby's HIV prophylaxis and my HIV prophylaxis to prevent future drug resistance	Disagree	85	94.4	95.5	95.5	1.04	0.208
	Agree	4	4.4	4.5	100		
	Total	89	98.9	100			
AQ7		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
My baby became ill and then I stopped his/her HIV prophylaxis (NVP)	Disagree	88	97.8	97.8	97.8	1.02	0.148
	Agree	2	2.2	2.2	100.0		
	Total	90	100	100			
AQ8		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Std. Deviation
I took the HIV prophylaxis from clinic, but I do not give it to my baby as I never got consent to test my baby from my partner	Disagree	83	92.2	93.3	93.3	1.07	0.252
	Agree	6	6.7	6.7	100		
	Total	89	98.9	100			
Missing	System	1	1.1				
Total		90	100				

4.3.3. Practices related to PMTCT

In this study, behaviour or practices was assessed by the researchers and was categorized as either negative or positive, where, practices index was built from the responses to 9 questions on practices which can lead to mother to child transmission of HIV. Negative behaviour was one where the respondent disagreed with more than half of the statements concerning the PMTCT of HIV. Positive behaviour was one where the respondent agreed with more than half of the statements made about PMTCT of HIV.

The overall results showed that 90% of breastfeeding mothers displayed a positive behaviour on practices related to PMTCT of HIV, while 10% showed a negative behaviour.

88.9% of the mothers always breast-fed their infants, while 4.4%

practiced mixed feeding (gave breast milk and bottle milk). Less than a quarter of the mothers (16.7%) were feeding their children soft porridge before 6 months of age as they believed that their children were not satisfied with only breast milk. 20% of the respondents agreed to the statement that children also needed water irrespective of breastfeeding. 3.3% of the respondents asked their lactating relatives to breast-feed their infant when they were away.

48.9% of the breastfeeding mothers kept their HIV prophylaxis secret from their relatives. 14.4% failed to use a condom during sexual intercourse, while 47.8% reported that their partners refused or complained about condom use. Lastly, 31.1% of the respondents experience financial difficulties and were unable to take their children to the clinic for immunization and HIV prophylaxis refill (Table 4).

Table 4
Practices related to PMTCT of HIV among women attending King Sobhuza II PHU, Swaziland, 2014 (N = 90).

PQ1		Frequency	Percent	Valid Percent	Mean	Std. Deviation
My culture promotes breastfeeding	Disagree	2	2.2	2.2	0.98	0.148
	Agree	88	97.8	97.8		
	Total	90	100	100		
PQ2		Frequency	Percent	Valid Percent	Mean	Std. Deviation
I always breastfeed	Disagree	13	14.4	14.4	0.86	0.354
	Agree	77	85.6	85.6		
	Total	90	100	100		
PQ3		Frequency	Percent	Valid Percent	Mean	Std. Deviation
I breastfeed and bottle-feed	Disagree	86	95.6	95.6	0.04	0.207
	Agree	4	4.4	4.4		
	Total	90	100	100		
PQ4		Frequency	Percent	Valid Percent	Mean	Std. Deviation
I give my baby soft porridge as she always wants to feed	Disagree	75	83.3	83.3	0.17	0.375
	Agree	15	16.7	16.7		
	Total	90	100	100		
PQ5		Frequency	Percent	Valid Percent	Mean	Std. Deviation
Babies need water even if they are breastfeeding	Disagree	69	76.7	78.4	0.22	0.414
	Agree	19	21.1	21.6		
	Total	88	97.8	100		
PQ6		Frequency	Percent	Valid Percent	Mean	Std. Deviation
I'm facing difficulties when using the syringe for measuring my baby's medication	Disagree	79	87.8	88.8	0.11	0.318
	Agree	10	11.1	11.2		
	Total	89	98.9	100		
PQ7		Frequency	Percent	Valid Percent	Mean	Std. Deviation
When I am away I ask my relative to breastfeed for me	Disagree	86	95.6	95.6	0.04	0.207
	Agree	4	4.4	4.4		
	Total	90	100	100		
PQ8		Frequency	Percent	Valid Percent	Mean	Std. Deviation
I always take my prophylaxis, though I hide it from my relatives	Disagree	48	53.3	53.9	0.46	0.501
	Agree	41	45.6	46.1		
	Total	89	98.9	100		
Missing Total	System	1	1.1			
		90	100			
PQ9		Frequency	Percent	Valid Percent	Mean	Std. Deviation
I always give my baby his /her HIV prophylaxis, though I hide if from my relatives	Disagree	45	50	50.6	0.49	0.503
	Agree	44	48.9	49.4		
	Total	89	98.9	100		
PQ10		Frequency	Percent	Valid Percent	Mean	Std. Deviation

(continued on next page)

Table 4 (continued)

PQ1		Frequency	Percent	Valid Percent	Mean	Std. Deviation
Sometimes I have problems with money to take my baby for immunization and HIV prophylaxis refills	Disagree	60	66.7	68.2	0.32	0.468
	Agree	28	31.1	31.8		
	Total	88	97.8	100		
PQ11		Frequency	Percent	Valid Percent	Mean	Std. Deviation
I always use a condom	Disagree	13	14.4	14.4	0.86	0.354
	Agree	77	85.6	85.6		
	Total	90	100	100		
PQ12		Frequency	Percent	Valid Percent	Mean	Std. Deviation
My partner refuses or complains about condom use	Disagree	46	51.1	51.7	0.48	0.503
	Agree	43	47.8	48.3		
	Total	89	98.9	100		

5. Discussion

5.1. PMTCT and knowledge

Due to the expansive nature of PMTCT, knowledge questions were increased from 10 to 16. This was done in order to maximise insight into the problem statement. The first two questions were premised on health and behaviour, but entailed leading questions to knowledge levels.

More than 90% of the respondents who participated in this study stated they had received PMTCT health education from a variety of sources, including ANC, maternity department, mass media (television, newspapers and radio), and from their friends. Majority of the respondents showed high levels of knowledge on PMTCT. The high levels of knowledge were observed even within different age groups as most of the respondents scored more than 70%, and only the one respondent from under-20 age group demonstrated significantly low knowledge on PMTCT. This study is in line with (Abteu et al., 2016) on knowledge of pregnant women on MTCT of HIV, its prevention, and associated factors in Ethiopia, where they concluded that approximately 60% of women participants had full knowledge on critical modes of HIV transmission from mother to child.

Variations in PMTCT knowledge among respondents with regard to educational status were also observed in the study. Respondents who had never been to school scored higher points (100%) than those with primary school education (92.3%) or tertiary education (88.9%). Therefore, educational status was not regarded as a cogent factor for determining knowledge on PMTCT of HIV among breastfeeding mothers living with HIV. This study is in contrary with a study on knowledge about mother-to-child transmission of HIV, its prevention and associated factors among Ethiopian women, conducted by (Luba et al., 2017), where the study revealed that the higher the education of respondents, the higher knowledge they have on MTCT and PMTCT of HIV.

Though the study's respondents showed significantly high levels of knowledge on their overall scoring (90%), the remaining percentage remains critical too, as their lack of sufficient knowledge could be the leading cause of mother-to-child transmission in breastfeeding children after 6 weeks of testing HIV negative.

The study's results demonstrated very low knowledge on other questions which included practices which could expose children to HIV post-delivery, with a recorded score of 34.4%. This study results differ from a study conducted by Luba et al. (2017), where 78% of respondents knew that MTCT could occur through breastfeeding. The results from the study could greatly increase the chances of vertical transmission of HIV, thus exposing their breastfeeding children in danger of acquiring the HI virus. Among other questions asked on knowledge, 66.7% of the respondents knew how often to administer

ARV (NVP) prophylaxis to their children, and the remaining percentage (33%) could significantly expose their children to HIV during the breastfeeding period if they did not correctly administer ARV (NVP) prophylaxis. All the selected respondents were breastfeeding during the data collection period.

5.2. PMTCT and attitudes

The knowledge an individual has on certain practices could greatly affect their attitude towards those practices. Respondents generally showed a positive attitude towards PMTCT of HIV (100%), since the overall study results showed that the respondents scored more than half of the allocated marks. On the other hand, there were instances where respondents stopped giving HIV prophylaxis to their children as they believed that it will cause future drug resistance, while 2.2% stopped treatment as they believed it caused their children to be ill. In addition, 11.1% believed that there was nothing wrong in giving a child breast milk and formula milk simultaneously, especially when the mother is working. This could be an added reason why children sero-converted after 6 weeks following an HIV negative result.

These study results concur with (Abajobir & Zeleke, 2013) in a study conducted at Hawassa Referral Hospital, Ethiopia, on knowledge, attitude, practice and factors associated with PMTCT of HIV/AIDS among pregnant mothers attending ante-natal clinic, where 97.4% had a positive attitude towards PMTCT of HIV, and only 2.6% had a negative attitude. Furthermore, a positive attitude was also seen in a study conducted by (Tesfaye et al., 2014), on knowledge, attitude and practices towards PMTCT of HIV among women attending Ambo hospital ANC clinic, west Ethiopia, where 93.6% of respondents had a good attitude towards PMTCT of HIV, while 6.4% had poor attitude.

5.3. PMTCT and practices

In every community, clinic, and hospital, the benefits of exclusive breastfeeding for the first six months of life should be emphasized during follow-up visits. These could be done in individualized breastfeeding counseling sessions and should be on-going for the first six months following delivery. This is supported by the WHO Guidelines on HIV and infant feeding (2010) cited in (Greeson, Preble, Jimenez, & Blaze, 2011), where breastfeeding is the recommended infant feeding practice, countries should emphasize exclusive breastfeeding (EBF) for the first six months of life, because mixed feeding during this period has been proved to increase MTCT. The above-mentioned guidelines also recommend that mothers living with HIV should still receive counseling on EBF for the greater chance of HIV-free survival for their infant.

Based on the study results, it could be concluded that in Swaziland, some women still believed that exclusive breastfeeding (EBF) is insufficient for nutrition; hence mothers introduce complementary foods

early (before 6 months) as a way of supplementing breast milk. This is evidenced by the 16.7% of respondents who gave their children soft porridge as a way of supplementing breast milk, and 21.1% of respondents who gave their children water as they believed that children needed water to complement breastfeeding. A further 4.4% of respondents gave their children breast milk and formula milk (mixed-feed). These results are further corroborated by 44.4% of the respondents who didn't know the meaning of exclusive breastfeeding. This is in line with a study conducted in Togo, where 39% of women did not know that the risk of vertical transmission of HIV was higher for mixed breastfeeding than exclusive breastfeeding (*"Prevention of mother to child transmission of HIV,"* 2018).

These findings are in line with a study conducted by the Swaziland ministry of health (2013), on a report on evaluation of the effectiveness of the national prevention of mother to child transmission of HIV programme at 6–8 weeks postpartum in Swaziland, where findings showed that 88.9% of mothers exclusively breastfeed at least up to 6 weeks and 1.4% practice mixed feeding.

Although respondents received health education on the prevention of vertical transmission of HIV, 4.4% of them still practiced wet nursing or cross nursing (when another woman other than the biological mother breast-feed a someone's baby (*"Mother-to-child transmission,"* 2018), which has a negative impact on the prevention of HIV infection during the breastfeeding period.

On-going counselling by health care workers on the importance of exclusive breastfeeding and avoidance of wet nursing on subsequent clinic visits should be emphasised. In the community, the utilization of Rural Health Motivators (RHMs) and community health nurses should put emphasis on exclusive breastfeeding during their home visits.

The importance of partner involvement during ante-natal care, and post-natal care is important as this could be the forum for discussing issues, including the importance of disclosure of an individual's HIV status and consistent condom use by partners. It is noted in the study that 28.9% of the breastfeeding mothers conceal their HIV status from their partners, and 46.7% reported that their partners refuse or complain about condom use. As a result, 14.4% fail to use a condom during sexual intercourse. The 31–45 age-group is the category most affected by partners refusing to, or complaining about the use of a condom, with a score of 43.5%. Lack of female decision-making power, poor economic resources are the major barriers in condom usage. A study conducted by (Haddad et al., 2015), on pregnancy prevention and condom use practices among HIV-infected women on antiretroviral therapy seeking family planning in Malawi, revealed that 62% of women did not use a condom at last sexual intercourse and a further more than half of the women (64.5%) reported inconsistent condom use, this was because of partner refusal to use condom (77.2%).

Another factor perpetuating the condom use problem is the cultural belief that breastfeeding women cannot conceive, as most of them are not having their periods (lactation amenorrhoea). This is evidenced by the study results which revealed that 12.2% of the respondents still believe that breastfeeding prevents conception and therefore, there is no need to use a condom.

Some respondents (11.1%) are facing difficulties when using the syringe for measuring their child's medication. Although the percentage is relatively small, it could still result in under-dosing of children. As a result, the child will not receive the correct amount of the HIV prophylaxis and may expose her/him to HIV during the breastfeeding period. Close monitoring, re-demonstration, and follow-up on the use of the syringes should always be undertaken by nurses at every visit to the clinic.

The study's findings also revealed that some women within the different sampled age groups, conceive children outside of marriage and are un-employed, causing them to be solely dependent on their partners for financial support. Dominant and skewed power relations then prevail, making it difficult for them to initiate use of condom in the family, especially when the partner does not support it. In such a

situation, the chances of passing the HIV to their children while breastfeeding become greatly increased.

In Swaziland, the researcher has observed and concluded that partner involvement during ANC and post-partum period is vital. After the birth of an infant, partners are counselled in the maternity department, on the appropriate family planning method to be used as a means of prevention of re-infection during the breastfeeding period (e.g. condom use), and thus preventing vertical transmission of HIV. HIV care and family support are other issues of importance that are discussed. During these sessions, condom use appears to be the best family planning option to be used by the couple.

In many countries, fear of stigma keeps women living with HIV from disclosing their HIV status to their partners or to community members (Greeson et al., 2011). Furthermore, men often do not attend PMTCT services as they are either very busy, have no interest, fear HIV test results, or encounter negative provider attitudes. However, evidence shows that some men understand the importance of PMTCT services and are eager to participate, but often feel they lack skills and information.

In this study, breastfeeding mothers living with HIV opted to hide their ARV and children's ARV prophylaxis from their relatives due to the fear of stigmatization, which could lead to a serious failure to adhere to the drugs, especially when the mother is away or ill. According to Dlamini-Simelane and Moyer (2016), for us to understand why HIV positive people are not retained in HIV care, we must recognize that other than women's HIV status, women remain social as well as medical beings. Being HIV positive has the potential to disrupt marital and family relations which makes it difficult to disclose HIV status to her partner and extended family. This may result in poor adherent to treatment regime for economically vulnerable women due to travelling costs.

6. Limitations of the study

To enhance generalizability of the research findings, as well as deepen understanding of knowledge, attitudes, and practices of the respondents, the scope of the study could have been broadened to include other hospitals and/or clinics in and around Manzini. This was, however, not possible given the time and resource constraints of the study.

Due to the limited numbers of HIV positive mothers who were breastfeeding, participants were conveniently and consecutively selected.

Low knowledge scores regardless of respondent's literacy levels were recorded when respondents were asked about the period during which they took their ARV prophylaxis. The low scores were a reflection of the mothers not recalling the period of taking the medication, as it was several weeks prior to their participation in the study.

7. Conclusion

New evidence regarding the most effective highly beneficial methods for reducing the risk of vertical transmission of HIV rare emerging. Likewise, countries need to adapt to existing systems and approaches as new evidence becomes available (UNAIDS, 2012).

Swaziland is currently implementing WHO recommendations implementing Option B+ where all HIV+ pregnant and lactating women are enrolled in life-long ART regardless of CD4 count and clinical staging. This exercise might help eliminate the other ways of exposure during breastfeeding such as failure to use a condom during sexual intercourse. However, factors including poverty and adherence to ARV drugs will still be a problem if not addressed properly. This is evidenced by the current study's results showing that breastfeeding mothers living with HIV fail to disclose their HIV status to their partners and family.

Declaration of Competing Interest

The author(s) declare(s) that there is no conflict of interest'.

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