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Original Research Article

Assessment of the knowledge and uptake of voluntary HIV testing and counselling services among mothers in Yenagoa, Bayelsa State

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ABSTRACT

Background: Voluntary counselling and testing (VCT) for HIV has proven to be an effective way to tackle the problem of HIV/AIDS. Many however do not utilize these services for various reasons which acts as an impediment in the delivery of the services. This study aimed to assess the knowledge, attitude and utilization of VCT-HIV services among pregnant women and mothers in Bayelsa State.
Methods: This was a hospital-based, descriptive analytic study among 301 adult mothers attending the antenatal and immunization clinics of the federal medical centre, Yenagoa, Bayelsa State. An interviewer-administered questionnaire having 6 sections was used to elicit data of the mothers' knowledge, attitude and utilization of VCT-HIV services at the health facility as well as barriers affecting the utilization of the services. Descriptive and inferential analyses were conducted and the level of significance was set at 0.05.
Results: The 59.1% of respondents had heard about VCT-HIV. Most had adequate knowledge 268 (89.0%) and good attitude 270 (89.7%) towards VCT-HIV. About 197 (65.4%) had utilized VCT-HIV services in the past, and 241 (80.1%) were presently willing to use these services. Fear of knowing their HIV status, discrimination, family stigma, among others, were factors hindering utilization of these services. Age, level of education, preferred place for delivery, knowledge and attitude towards VCT-HIV were significantly associated with the uptake of these services.
Conclusions: there is the need for government to tackle issues of discrimination against HIV-infected persons as well as sustain the delivery of maternal healthcare through the primary healthcare initiative.

Keywords: VCT, Knowledge, Attitude, Utilization, Barriers of utilization

INTRODUCTION

Global statistics reveals that as much as 32 million people have died of the acquired immune deficiency syndrome (AIDS) worldwide with nearly 1.3 million pregnant women reported to have become infected with the HIV virus as at 2018.[1] HIV/AIDS currently has no cure nor a reliable vaccine to prevent its occurrence, thus its control lies entirely on preventing the spread of the infection in healthy people or controlling the viral load of already infected persons to enable them live longer, healthier and remain non-infective to other persons.[2] HIV infections are known to be commonly transmitted sexually and perinatally from mother-to-child which in most cases results in the children acquiring the infection and progress steadily to clinical disease if no interventions are applied.[1,3] Mother-to-child transmission of HIV infections is the leading cause of HIV among children in Sub-Saharan Africa, and as much as 61% of new global infections occurring around the world in the last decade.[3]

Research has however shown that having an awareness of preventive measures among pregnant women and lactating mothers plays a beneficial role in preventing the transmission of the virus from mother to child.[4] The prevention of mother to child transmission (PMTCT) of HIV can be achieved through the incorporation of PMTCT into antenatal education programmes designed for pregnant women and delivered during their antenatal sessions.[4] Doing this ensures that HIV tests are routinely offered as part of the antenatal care package or are offered to pregnant women who may be at high risk of exposure to HIV. This move has also shown to successfully result in reported decline in prevalence.[4] One key intervention of the PMTCT strategy is the use of HIV-VCT which involves making available counselling before and after HIV testing. The aim of doing this is to promote risk reduction strategies (e.g. condom use and disclosure of status), to foster support (e.g., peer support groups), as well as to ensure linkage to care (e.g., antiretroviral therapy [ART]).[4-6]

VCT-HIV involves both pre- and post-test counselling. Pre-test counselling comprises briefly describing the benefits of HIV testing, the interpretation of test results, and the possibilities available to the individual in case of an HIV-positive diagnosis.[6,7] Post-test counselling on the other hand (which varies according to the result) involves explaining the results and the window period, teaching about HIV prevention, as well as referral to HIV preventive services for those testing negative. VCT-HIV for HIV-positive cases, however involves the provision of support after a life-changing event by assuring of referral to specialized care, encouraging HIV-testing of sexual partners, as well as the assessment of mental health outcomes.[6,7]

One major challenge in tackling and providing care for people living with HIV and AIDS (PLWHIV) is the lack of knowledge and awareness of issues relating to the prevention and management of the disease in the general population as well as among pregnant women[8-10] Issues of stigma and discrimination among others have also been reported to affect the utilization of these services.[9,11] A study conducted on VCT among pregnant women revealed lack of awareness of VCT of 21%, 48% did not agree to receiving VCT if offered and only 14% had accessed VCT services before. Among those who had heard of VCT, most obtained the information from the mass media (79%).[12] In another study, it was identified that most participants (60%) were not aware of VCT, and 83% did not know of any VCT centre. Most of them (72%) however opined that VCT was important, and 81% were willing to test for HIV if the VCT services were available in schools.[10] Significant determinants of the utilization of VCT uptake among adults in Sub Saharan Africa have also been shown to include poor physical access to services ($p<0.01$], older age ($p<0.01$), higher education level ($p<0.01$), high knowledge of HIV and VCT awareness ($p<0.01$), as well as unprotected sexual practices ($p<0.01$).[13]

There is presently scanty research reporting the current knowledge, attitude and uptake of VCT-HIV services among pregnant women and mothers in Bayelsa State, as well as factors affecting this uptake, which this study has chosen to provide evidence on in Yenagoa, Bayelsa State.

METHODS

This was a hospital-based that utilized a descriptive analytic study design and was conducted at the antenatal care (ANC) and immunization clinics of the federal medical centre, Yenagoa in Bayelsa State, Nigeria, from May 2024 to September 2024.

Selection criteria

This study involved 301 adult mothers who attended the immunization and antenatal care clinics of the federal medical centre, Yenagoa, and were present at the clinics during the course of data collection. All mothers manifesting symptoms of severe illness/mental unwellness were excluded from the study, in order to ensure that all study respondents were able to provide coherent responses to the study instrument. Using the Cochrane's formula:

$$n = \frac{Z\propto^2 pq}{d^2}$$

Sample size was calculated for this study.[14]

In the formula, n signified minimum sample size required for each group, Zα was the value corresponding to the confidence level of 95% which is 1.96, p signified the proportion of the attribute of interest (knowledge of the importance of VCT-HIV) from a previous study. The knowledge of the importance of VCT-HIV of 72% was obtained from a study, q was computed as 100-p, while d was the error margin given, which was 5%.[10] Substituting these values, sample size of 310 was obtained.

Sampling technique

Subsequently, all consenting mothers were proportionately stratified according to the two clinics serving as the study sites (immunization and antenatal care clinics), during the period set aside for data collection. They were then selected by convenience sampling based on their willingness to be part of the research.

An interviewer-administered questionnaire having 6 sections and eliciting data of the mothers' knowledge, attitude and utilization of VCT-HIV services at the health facility was used for collection of data. Section A elicited data on the socio-demographic characteristics of the respondents, section B elicited data on their awareness and knowledge of VCT-HIV, while sections C to E elicited data on their attitude towards VCT-HIV, utilization of VCT-HIV and barriers affecting the use of VCT-HIV services. The instrument was assessed for its content, face and construct validity to ensure that it was able to provide answers to the questions raised by the study objectives. Necessary modifications were made where they were deemed fit in order to ensure the use of a satisfactory instrument.

Procedure

Instrument administration to the mothers was conducted as they waited to be attended to by the healthcare providers, during which the study protocol was explained to them and assurance of voluntary participation given to them. For all who decided to partake in the study, the instrument was interviewer-administered to them with the help of 2 research assistants (trained nurses), and retrieved immediately after completion.

Ethical approval

Ethics approval to conduct this study was obtained from the ethics review committee of the federal medical centre, Yenagoa; while the permission of the authorities at the ANC and immunization clinics were also obtained before data collection. Consent of all respondents was obtained before data collection commenced, and the decision to participate was completely voluntary.

All collected data were entered into the Microsoft excel spreadsheet where appropriate data cleaning was done, and then transferred to the statistical package for social sciences (SPSS) version 23 for data analysis. Categorical data was presented in form of frequencies and percentages and the numerical data was presented as mean and standard deviation. Tables and charts were also used for data presentation. In the assessment of the knowledge of VCT-HIV services, six questions with responses (Yes-2 points, I don't know-1 point and no-point) were asked. The points for each respondent were then summed to arrive at a total score for knowledge. Respondents scoring 6 and below were regarded as having poor knowledge, while those with scores 7 and above, were regarded as having good knowledge. Similarly, in assessing their attitude towards VCT-HIV, six (three positively-directed and three negatively-directed) questions with Likert-style responses [Strongly agree (SA) to strongly disagree (SD)] were asked. Points allocated to responses of the positively-directed questions ranged from 4 (SA) to 0 (SD), and vice versa for the negatively-directed questions. The points for each respondent were then summed to arrive at a total score for attitude. Respondents scoring 12 and below were regarded as having poor attitude, while those with scores 13 and above, were regarded as having good attitude towards VCT-HIV.

Statistical analysis

The Chi-squared test was used to test for the association between the uptake of VCT-HIV (dependent variable) and sociodemographic/clinical factors (independent variables) of the respondents. In addition, the predictors of uptake of VCT-HIV among the women were determined using the logistic regression test, and significance level for all statistics was set at 0.05 (5%) level of significance.

RESULTS

Socio-demographic characteristics of respondents

In this study, altogether 301 respondent mothers were involved and responded to the study instrument. The largest proportion of the mothers were identified to be aged between 30 and 39 years 124 (41.2%), with a mean age of 28.5±7.1 years, while most of the respondents earned between 501 and 2000 naira daily 152 (54.6%) and were married 142 (47.2%). Up to 114 (37.9%) of the mothers were found to be self-employed, 164 (54.5%) had received tertiary education, with the present pregnancy being the second to fourth pregnancy for most of the women 149 (49.5%). In addition to these details, it was also found that most of the mothers 201 (66.8%) regularly attended antenatal clinics, and preferred to deliver their children at a healthcare facility 247 (82.1%). However, it was noted that only 33 (11.0%) of the mothers were receiving treatment for sexually transmitted diseases (Table 1).

Regarding the awareness of the mothers about VCT-HIV, it was found in this study that most of the mothers had heard of HIV/AIDS before 289 (96.0%), had heard of VCT-HIV 178 (59.1%), and were aware that HIV could be spread from a pregnant woman to the unborn child (Table 2). As shown in Figure 1, it was also found that most of the mothers had heard about VCT-HIV from the healthcare facility 99 (55.0%).

Regarding the knowledge and attitude of the mothers towards VCT-HIV, this study identified that most of the mothers had adequate knowledge of 268 (89.0%) and good attitude 270 (89.7%) towards VCT-HIV (Tables 3 and 4).

Table 5 also shows that as much as 197 (65.4%) of the mothers had utilized VCT-HIV services in the past, and up

to 241 (80.1%) were presently willing to use these services.

Concerning the barriers facing the utilization of VCT-HIV among the women, it was identified that the fear of knowing their HIV status, the fear of discrimination, the likelihood of experiencing family stigma as well as having an unsuitable work period for receiving VCT-HIV services, were factors acting as barriers. These factors were identified considering that they had the highest proportions of affirmative options (strongly agree and agree) selected by the respondents (Table 6).

Predictors of VCT-HIV uptake among mothers

Concerning the socio-demographic predictors of the uptake of VCT-HIV services among the mothers, it was identified that their age, marital status, level of education, occupation and parity were significantly associated with the uptake of these services. Older mothers (≥29 years) were found to be 3 times more likely to use these services than the younger mothers (OR=3.076, 95% CI=1.86-5.05; p<0.001), and married mothers were 2 times more likely to use these services than the unmarried mothers (OR=2.344, 95% CI=1.43-3.84; p=0.001). In addition, educated mothers were 3 times more likely to use these services than the uneducated mothers (OR=3.482, 95% CI=0.99-12.18; p=0.039), while unemployed mothers were 2 times more likely to use these services than the employed mothers (OR=1.793, 95% CI=1.05-3.06; p=0.031). Multiparous mothers were 2 times more likely to use these services than primiparous mothers (OR=2.359, 95% CI=1.17-4.77; p=0.015) (Table 7).

Concerning the clinical predictors of the uptake of VCT-HIV services among the mothers, it was identified that their preferred place for delivery, awareness of VCT-HIV, awareness of maternal transmission of HIV, as well as the knowledge and attitude of VCT-HIV were significantly associated with the uptake of these services. Women who preferred to use health facilities to deliver their children were found to be 4 times more likely to use these services than those who preferred to patronize traditional birth attendants (TBAs) (OR=3.588, 95% CI=1.93-6.66; p<0.001). Also, mothers who were aware of VCT-HIV as well as the maternal transmission of the HIV were 6 times and 11 times more likely to use these services respectively than those who were not aware of these (OR=4.599, 95% CI=2.75-7.57; p<0.001) and (OR=11.220, 95% CI=5.30-23.75; p<0.001) respectively. In addition, mothers who had good knowledge and attitude towards VCT-HIV were 4 times and 15 times more likely to use these services than the mothers with poor knowledge and attitude towards VCT-HIV (OR=3.775, 95% CI=3.09-4.61; p<0.001), and (OR=15.039, 95% CI=5.05-44.77; p<0.001) respectively (Table 8).

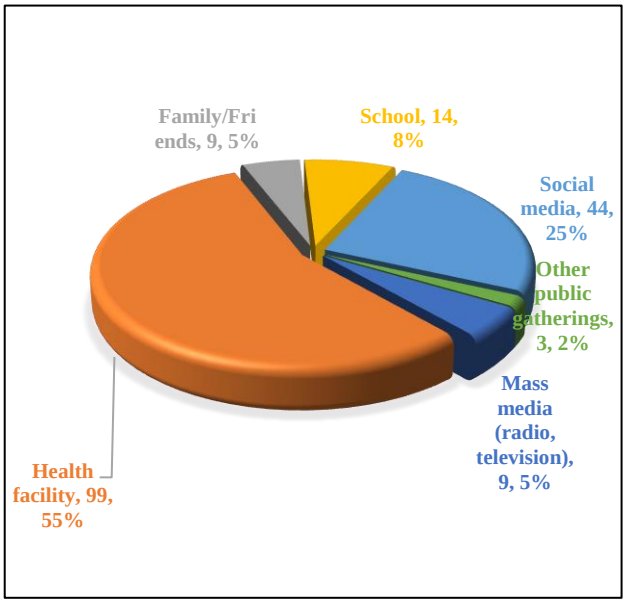

Figure 1: Source of information about VCT-HIV.

Table 1: Socio-demographic details of respondents, (n=301).

Variables	N	Percentages (%)
Age (in years)		
15-19	39	13.0
20-29	121	40.2
30-39	124	41.2
40-49	17	5.6
Mean age: 28.5±7.1 years		
Income (naira)		
<500	26	9.4
501-2000	152	54.6
>2000	100	36.0
Marital status		
Single	67	22.3
Married	142	47.2
Divorced	19	6.3
Cohabiting	68	22.6
Widow	5	1.7

Continued.

Variables	N	Percentages (%)
Employment status		
Unemployed	76	25.2
Self-employed	114	37.9
Employed by others	111	36.9
Educational status		
None	11	3.7
Primary	21	7.0
Secondary	105	34.9
Tertiary	164	54.5
Number of present pregnancy		
First	114	37.9
Two to our	149	49.5
Five and above	38	12.6
Regularly attend ANC clinics		
Yes	201	66.8
No	100	33.2
Preferred place for child delivery		
Health facility	247	82.1
Mama Ijaw/TBA	52	17.3
Prefer not to say	2	0.7
Presently receiving treatment for STDs?		
Yes	33	11.0
No	268	89.0

Table 2: Awareness of HIV VCT among respondents, (n=301).

Variables	N	Percentages (%)
Heard of HIV/AIDS before		
Yes	289	96.0
No	11	3.7
I don't know	1	0.3
Heard of VCT-HIV before		
Yes	178	59.1
No	71	23.6
I don't know	52	17.3
Aware that HIV can be spread from a pregnant woman to the unborn child		
Yes	252	83.7
No	19	6.3
I don't know	30	10.0

Table 3: Knowledge of VCT-HIV among respondents, (n=301).

Variables	N	Percentages (%)
VCT-HIV is an important strategy for preventing the spread of HIV from the mother to her child		
Yes	251	83.4
No	11	3.6
I don't know	39	13.0
VCT-HIV provides good support for persons positive for HIV		
Yes	250	83.1
No	5	1.6
I don't know	46	15.3
VCT-HIV helps to reduce the risk of spreading HIV by helping people to know their HIV status		
Yes	258	85.7
No	6	2.0
I don't know	37	12.3

Continued.

Variables	N	Percentages (%)
VCT-HIV ensures that those that are HIV positive are linked to effective medication and care		
Yes	260	86.4
No	7	2.3
I don't know	34	11.3
VCT-HIV involves receiving counselling before and after testing for HIV		
Yes	252	83.7
No	9	3.0
I don't know	40	13.3
VCT-HIV provides HIV positive persons the assurance of specialized care to treat any disease		
Yes	258	85.7
No	6	2.0
I don't know	37	12.3
Overall knowledge of VCT-HIV		
Adequate	268	89.0
Inadequate	33	11.0

Table 4: Attitude towards VCT-HIV among respondents, (n=301).

Variables	N	Percentage (%)
Voluntary testing for HIV is not necessary for pregnant women		
Strongly agree	12	4.0
Agree	22	7.3
Undecided	24	7.9
Disagree	134	44.5
Strongly disagree	109	36.2
There is no need for a pregnant woman to know her HIV status		
Strongly agree	14	4.7
Agree	17	5.6
Undecided	25	8.3
Disagree	126	41.9
Strongly disagree	119	39.5
Providing HIV-VCT is not in any way beneficial to the mother or the unborn child		
Strongly agree	13	4.3
Agree	19	6.3
Undecided	34	11.3
Disagree	129	42.9
Strongly disagree	106	35.2
I will encourage mothers to test for HIV to protect themselves from getting worse (AIDS)		
Strongly agree	162	53.8
Agree	107	35.5
Undecided	22	7.3
Disagree	8	2.7
Strongly disagree	2	0.7
There is the need to employ and train skilled workers to provide the HIV counselling services		
Strongly agree	167	55.5
Agree	100	33.2
Undecided	22	7.3
Disagree	11	3.7
Strongly disagree	1	0.3
This VCT for HIV is an important way to support persons who test positive for HIV		
Strongly agree	166	55.1
Agree	99	32.9
Undecided	24	7.9
Disagree	11	3.7
Strongly disagree	1	0.3

Continued.

Variables	N	Percentage (%)
Overall attitude towards VCT-HIV		
Good	270	89.7
Poor	31	10.3

Table 5: Utilization of VCT-HIV among respondents, (n=301).

Variables	N	Percentage (%)
Ever used VCT-HIV services before?		
Yes	197	65.4
No	104	34.6
Presently be willing to use the VCT-HIV		
Yes	241	80.1
No	60	19.9

Table 6: Barriers affecting VCT-HIV among respondents.

Variables	SA	A	UN	D	SD
	F (%)	F (%)	F (%)	F (%)	F (%)
I don't know where the services are provided	37 (12.3)	64 (21.3)	19 (6.3)	103 (34.2)	78 (25.9)
My husband will not allow me to test for HIV	17 (5.6)	27 (9.0)	85 (28.2)	130 (43.2)	42 (14.0)
Poor quality of VCT services	13 (4.3)	32 (10.6)	59 (19.6)	144 (47.8)	53 (17.6)
Fear of knowing my HIV status	21 (7.0)	121 (40.2)	22 (7.3)	107 (35.5)	30 (10.0)
Fear of discrimination	29 (9.6)	132 (43.9)	19 (7.3)	107 (35.5)	14 (4.7)
Family stigma	41 (13.6)	112 (37.2)	20 (6.7)	97 (32.2)	31 (10.3)
Poor interpersonal relationship of healthcare providers	4 (1.3)	15 (5.0)	43 (14.3)	106 (35.9)	133 (44.2)
Unsuitable work period for receiving VCT-HIV services	155 (51.5)	65 (21.6)	37 (12.3)	36 (12.2)	8 (2.7)

SA: Strongly agree, A: Agree, UN: Undecided, D: Disagree and SD: Strongly disagree

Table 7: Socio-demographic predictors of the uptake of VCT-HIV among mothers.

Factors	Uptake of VCT-HIV		Total	Chi-squared (p value)	Odds ratio (95% CI)
	No	Yes			
	F (%)	F (%)			
Age (in years)					
<29	67 (47.9)	73 (52.1)	140 (100.0)	20.492	3.076
≥29	37 (23.0)	124 (77.0)	161 (100.0)	(<0.001)*	(1.86-5.05)
Total	104 (34.6)	197 (65.4)	301 (100.0)		
Marital status					
Not married	69 (43.4)	90 (56.6)	159 (100.0)	11.659	2.344
Married	35 (24.6)	107 (75.4)	142 (100.0)	(0.001)*	(1.43-3.84)
Total	104 (34.6)	197 (65.4)	301 (100.0)		
Level of education					
Not educated	7 (63.6)	4 (36.4)	11 (100.0)	4.271	3.482
Educated	97 (33.4)	193 (66.6)	290 (100.0)	(0.039)*	(0.99-12.18)
Total	104 (34.6)	197 (65.4)	301 (100.0)		
Occupation					
Employed	34 (44.7)	42 (55.3)	76 (100.0)	4.664	1.793
Unemployed	70 (31.1)	155 (68.9)	225 (100.0)	(0.031)*	(1.05 – 3.06)
Total	104 (34.6)	197 (65.4)	301 (100.0)		
Parity					
Primiparous	21 (41.2)	30 (58.8)	51 (99.7)	5.861	2.359
Multiparous	27 (22.9)	91 (77.1)	118 (0.3)	(0.015)*	(1.17-4.77)
Total	48 (28.4)	121 (71.6)	169 (100.0)		

*P value significant.

Table 8: Clinical predictors of the uptake of VCT-HIV among the mothers.

Factors	Uptake of VCT-HIV		Total	Chi-squared, (p value)	Odds ratio, (95% CI)
	No	Yes			
	F (%)	F (%)			
Attends ANC regularly					
No	35 (35.0)	65 (65.0)	100 (100.0)	0.000	1.001
Yes	69 (34.3)	132 (65.7)	201 (100.0)	(0.998)	(0.60-1.66)
Total	104 (34.6)	197 (65.4)	301 (100.0)		
Preferred delivery area					
TBA	31 (59.6)	21 (40.4)	52 (100.0)	17.656	3.588
Health facility	72 (29.1)	175 (70.9)	247 (100.0)	(<0.001)*	(1.93-6.66)
Total	103 (34.4)	196 (65.6)	299 (100.0)		
Aware of HIV					
No	5 (45.5)	6 (54.5)	11 (100.0)	0.600	1.608
Yes	99 (34.1)	191 (65.9)	290 (100.0)	(0.439)	(0.48-5.40)
Total	104 (34.6)	197 (65.4)	301 (100.0)		
Aware of VCT-HIV					
No	67 (54.5)	56 (45.5)	123 (100.0)	36.498	4.559
Yes	37 (20.8)	141 (79.2)	178 (100.0)	(<0.001)*	(2.75-7.57)
Total	104 (34.6)	197 (65.4)	301 (100.0)		
Aware of maternal HIV transmission					
No	39 (79.6)	10 (20.4)	49 (100.0)	52.505	11.220
Yes	65 (25.8)	187 (74.2)	252 (100.0)	(<0.001)*	(5.30-23.75)
Total	104 (34.6)	197 (65.4)	301 (100.0)		
Knowledge VCT-HIV					
Inadequate	33 (100.0)	0 (0.0)	33 (100.0)	70.207	3.775
Adequate	71 (26.5)	197 (73.5)	268 (100.0)	(<0.001)*	(3.09-4.61)
Total	104 (34.6)	197 (65.4)	301 (100.0)		
Attitude towards VCT-HIV					
Poor	24 (85.7)	4 (14.3)	28 (100.0)	37.041	15.039
Good	77 (28.5)	193 (71.5)	270 (100.0)	(<0.001)*	(5.05-44.77)
Total	104 (34.6)	197 (65.4)	301 (100.0)		

*P value significant.

DISCUSSION

In this study it was identified that just above half of the respondents had heard of VCT-HIV and about this same proportion were of the opinion that they got to know about VCT-HIV from healthcare facilities. This is similar to the findings of other studies of 56.6% and 46.7%.[5,15] The implication of this finding is the apparent need to continue to improve efforts to enhance the public awareness of VCT considering that it has been recognized around the world as a strategic initiative for the prevention and care of HIV/AIDS.[12] To add to these, other studies have reported the mass media as a major source of awareness of VCT unlike what was found in this present study.[10,12] This disparity could be due to the youthful preponderance of respondents in the studies. This notwithstanding, the mass and social media channels can serve as effective means to promote health education efforts with the target of improving the awareness and uptake of VCT-HIV.[10] These notwithstanding, the PMTCT of HIV has been reported to be successfully achieved through the incorporation of VCT into antenatal education programmes for pregnant women.[4]

Most of the mothers in this study also had adequate knowledge and good attitude towards VCT-HIV services, which is similar to findings made in other studies which reported high levels of good attitude towards VCT as well as another study in which up to 94.9% of the respondents pointed out that VCT among expectant mothers was important.[4,15] It is important that specific healthcare efforts are geared towards improving the knowledge and attitude of mothers towards VCT-HIV service considering that the lack of HIV risk perception as well as the lack of the perceived benefits of VCT have been reported as factors capable of affecting the uptake of these services.[8] Most of the respondents in the present study had also utilized VCT-HIV services in the past, and were presently willing to use these services.[11] This is in agreement with reports from other studies that have shown that up to 64.5%, 81%, and 67%, would be willing to use VCT services.[5,8,10]

This finding of high utilization rates of VCT-HIV services in the present study is one of public health significance, considering that utilization levels of these services in Sub-Saharan Africa have been generally reported to be low even in areas where they are available.[8] It should be noted that low VCT uptake implies that the proportion of people

living with HIV and not knowing their status would increase, with inadvertent increase in transmission and incidence of HIV. Non-uptake of these services can also have a contributory role in late diagnosis of HIV infection and initiation of antiretroviral treatment, with probable advancement to AIDS increased mortality, as well as higher burden on a country's healthcare delivery system.[13] The present study's finding of high utilization rates is thus indicative of the manifestation of the various benefits of the various healthcare-related initiatives targeted at tackling the incidence of HIV infections through improved VCT-HIV programs.

Concerning the barriers facing the utilization of VCT-HIV services among the women, it was identified that the fear of knowing their HIV status, the fear of facing discrimination from the public, the likelihood of experiencing family stigma among others, were factors hindering the utilization of these services. This is backed by the findings of other studies that have made similar reports including the fear of stigma, discrimination and rejection from families and community members, the fear of maintaining confidentiality about test results as factors hindering the utilization of VCT services.[11,13,15] Other reasons that have been reported as being potential barriers to utilizing VCT services include the loss of the love of loved ones, the fear of being seen as sexually promiscuous, religious fanaticism ("it's not my portion syndrome"), ignorance, among other factors.[12,16] It is believed that improving awareness of VCT can be effective in enhancing the uptake of these services by members of the public [10]. In addition, necessary action to ensure improved awareness of VCT should be continuously ensured considering VCT has been identified as a tool that plays a pivotal role in PMTCT of HIV and safeguarding lives, especially among the pregnant women who patronize antenatal care services.[4] In addition, improving VCT awareness and education remains a vital healthcare initiative in Africa considering that VCT uptake rates are still reported to remain low in the region, especially among the youth who are known to engage in risky sexual.[13]

Assessment of the predictors of the uptake of VCT-HIV services among mothers in the present study also revealed that their age, marital status, level of education, occupation, and having good knowledge and attitude of VCT-HIV were significantly associated with the uptake of these services. Older mothers (≥29 years) were found to be 3 times more likely to use these services than the younger mothers, and educated mothers were 3 times more likely to use these services than the uneducated mothers. Other studies have also made similar findings including the study that revealed older age and higher education level, as being significant determinants of the uptake of VCT among adults.[8,13]

In addition, the present study's findings showed that married mothers were 2 times more likely to use these services than the unmarried mothers, while multiparous mothers were 2 times more likely to use these services than primiparous mothers. These findings can be explained by the motherly instinct of the women who have now become aware of the responsibility saddled on them as mothers to protect and safeguard the lives of their unborn or newborn children, which spurs their desire to seek VCT services.[17,18] Adding to this, women who preferred to use health facilities to deliver their children were found to be 4 times more likely to use these services than those who preferred to patronize TBAs. Also, mothers who were aware of VCT-HIV in this study as well as the maternal to child transmission of the HIV were 6- and 11-times more likely to use these services respectively as supported by the findings of other authors.[13] Furthermore, mothers who had good knowledge and attitude towards VCT-HIV were 4 times and 15 times more likely to use these services than those with poor knowledge and attitude. Putting these findings together, underscores the immense benefits inherent in promoting the utilization of conventional healthcare services for all issues that pertain to pregnancy and childbirth.[19–21] Doing this provides an unparalleled avenue where the pregnant mother is able to access vital health information and education that can be useful in preserving and promoting the health maternal and child health, which inadvertently improves the maternal and child health indices of a populace.[8,22,23]

Limitations

This study however had some limitations. First, only mothers who attended the antenatal or immunization clinics of the federal medical centre, Yenagoa, were included in this study, which inadvertently excluded mothers who chose not to utilize conventional healthcare services at this health facility. Inferences from this study may thus not apply to these other group of women, however, it paves the way for further research to identify the awareness, attitudes and utilization of VCT-HIV among them. Secondly, even though the descriptive design utilized in this study used an encompassing approach for the assessment of the research variables, the attitudes of the women may have been more intricately assessed by qualitative design methods. This notwithstanding, it is believed that the analytic component of this study was able to improve the validity of findings made.

CONCLUSION

This study has provided tangible statistics regarding the awareness, knowledge of, attitude towards, and utilization of VCT-HIV services in Yenagoa, Bayelsa State. These statistics were identified to be good but however had room left for improvement. This study has also shown the barriers hindering the utilization of these services as well as the socio-demographic and clinical determinant factors of the utilization of these services among women in Yenagoa, Bayelsa State.

Based on these findings, it is recommended that continuous health education and promotion initiatives to improve public health awareness, knowledge, attitudes and

subsequent utilization of VCT-HIV services be encouraged among healthcare stakeholders in Bayelsa State. Further action should also be taken by the government and other healthcare bodies, to tackle the stigma and discrimination which persons living with HIV and AIDS face from time to time. This is essential as it not only ensures their human rights but it acts as an encouraging factor for others to utilize VCT-HIV services, knowing that rather than been stigmatized for testing positive for HIV, they would be supported by the public to seek treatment and maintain good health. Government at all levels should also continue to promote the attainment and sustenance of the primary health care initiative, which has proven to be especially useful in empowering pregnant women with vital information that ensures their health and wellbeing.

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