

Predictors of HIV Positive Women's Use of Hospital Delivery Services in Taraba State: A Mixed Method Approach

Rhoda Pheela Saminaka Onyekwena ^{1*}, Efiong S. Samuel ²

¹Department of Nursing Sciences, Faculty of Health Sciences Taraba State University, Nigeria

²Department of Human Kinetics, University of Nigeria Nsukka, Enugu State, Nigeria

*Corresponding Author: onyekwena.rhoda@tsuniversity.edu.ng

Abstract

Background: Access to hospital-based services is important for optimal prevention of mother-to-child transmission of HIV outcomes. Women who deliver outside health facilities are less likely to receive ARVs and quality obstetric care, and may suffer complications leading to vertical HIV transmission and maternal and infant mortality. These services may be available but certain factors interfere with their access and utilization by HIV positive pregnant women. This study assessed factors that predict the utilization of hospital delivery services among HIV positive pregnant women in Taraba State.

Methods: The study adopted a concurrent mixed method research design employing an institutional based cross sectional and phenomenology design. The population for the study consisted of 3,315 HIV positive women attending post natal and infant welfare Clinic. Multi-stage sampling technique was used to select hospitals for the study. Convenience random sampling technique was used to select 605 HIV positive women who were present during post natal clinic days and gave their consent. The key informant participants for the study were selected using purposive sampling technique. The POHPWUOHDS questionnaire and key informant interview guide were used for data collection. Frequencies, percentages, chi-square and logistic regression analyses were used to analyze the quantitative data while the qualitative data were thematically analyzed using Nvivo software.

Results: The results showed hospital delivery rate of 56.1%, counseling services of 57.8%, utilization of caesarean section 35.3%, utilization of single dose nevirapine services 60.1% and utilization of co-trimoxazole syrup 64.0%. Chi-square test of association revealed that age, level of education and marital status were associated with hospital delivery. The results for logistic regression for hospital delivery show that women (15-29 years) (OR=1.66 ; CI= 1.089- 2.53 p= 0.02) were more likely to deliver in the hospital.

Conclusion: The study concluded that utilization of hospital delivery is high among HIV positive women. However, with proper public enlightenments the rate of utilization of hospital delivery especially among the older women will increase since every woman wants to have healthy children. Therefore the government should endeavour to increase public awareness especially among the older clients.

Keywords: Human Immune-deficiency virus/Acquired immune-deficiency syndrome, Prevention of mother-to-child transmission of HIV, Predictor, Hospital delivery, Utilization

Introduction

HIV has become a global issue especially in sub-Saharan African countries where access to hospital delivery is a great challenge to pregnant women. Studies have shown that 90% of HIV transmission among children is from mother to child (vertical transmission). This could occur during pregnancy, labor, childbirth or during breast feeding. This hazard could be averted if every pregnant woman accessed antenatal care during pregnancy and then deliver in the hospital with the aid of skilled birth attendants.

Globally, the low-middle-income countries altogether account for nearly all pregnancy and childbirth related deaths (99%) with sub-Saharan Africa alone making up 66% of the global total. The burden is unacceptably high given the increasing availability of low-cost prevention measures provisioned through the basic maternal health care services that are provided by skilled childbirth attendants, and postnatal services (Yaya, *et al.* 2020). The high rate of maternal mortality is a major public health concern in Nigeria. Several studies have shown that pregnant women in rural areas of the country are at greater risk of dying during pregnancy or childbirth as compared to those that live in urban areas (Azuh *et al.*, 2017 as cited by Kasede, 2021).

According to UNAIDS (2022), every week, around 4900 young women aged 15–24 years became infected with HIV globally in 2021. Around 4000 of these infections occurred in sub-Saharan Africa. They further reported that in sub-Saharan Africa, six in seven new HIV infections among adolescents aged 15-19 years are among girls. Girls and young women aged 15–24 years are three times more likely to be living with HIV than young men of the same age. In sub-Saharan Africa, women and girls accounted for 63% of all new HIV infections in 2021 (UNAIDS, 2022). Of the 1.8 million new HIV acquisitions in 2016, 16000 were in children. In Human immune-deficiency virus (HIV) appears to be one of the leading causes of maternal and foetal morbidity and mortality in Nigeria (UNAIDS, 1998). In the absence of preventive intervention, the probability that an HIV- positive woman's baby will become infected ranges from around 15%-25% in industrialized countries and 25% to 35% in developing countries (WHO & UN, 1998).

HIV virus may be transmitted during pregnancy, labour, delivery or after the child's birth, during breast feeding (UNAIDS, 1998). Exposure of the foetus to the virus in cervico-vaginal secretions is thought to play a role, although the same phenomenon is observed for twins delivered by caesarean section. In addition, reports by WHO and UN, (1998) have indicated that mode of delivery may affect the rate of transmission of HIV. Caesarean section whether elective or emergency has been shown to decrease transmission of HIV from mother –to-child in some studies while prolonged rupture of membranes [more than four hours] has been shown to increase the risk of mother-to-child transmission of HIV.

Nigeria, an estimated 37000 infants acquired HIV infection vertically in the same year, one of the highest globally (Iliyasu *et al.*, 2019). Zegeye *et al.* (2021) reported that eighty-six percent of global maternal deaths occur in sub –Saharan Africa and southern Asia. However, there is evidence that in most countries where over 80% of deliveries are attended by health professionals, the maternal mortality rate (MMR) is below 200 per 100,000 live births (Jacobs *et al.*, 2017).

According to Itiola *et al.* (2018), by 2015, Nigeria had the highest number of children living with HIV globally, estimated at 260 000. Almost a fifth of these children (41 000) were newly infected with HIV in 2015, representing 27% of the global new pediatric HIV infections for the year. Approximately 2.2 million children in Nigeria have been orphaned by HIV/AIDS (Itiola, *et al.*, 2018). HIV infection has two effects on the foetus: vertical transmission and an increased risk of adverse pregnancy outcomes, both of which have a significant impact on a new-born's life (Worku *et al.*, 2022). Facility delivery is recommended in the context of HIV to reduce on the risk of mother –to- child transmission of HIV (MTCT) (WHO, 2016 cited by Kasede *et al.*, 2021). Women who deliver outside health facilities are less likely to receive antiretroviral therapy and quality obstetric care, and may suffer complications leading to vertical HIV transmission and maternal and infant mortality (Sam-Agudu *et al.*, 2017). These risks are

especially high in rural areas, where health service utilization is low. Only 47% of women in rural Nigeria access skilled antenatal care (ANC), compared to 86% of urban women, and only 22% of rural women deliver at health facilities, compared to 62% of urban women. Furthermore, hospital delivery data is available for less than 25% of HIV-positive pregnant Nigerian women (Sam-Agudu, et al., 2017; Kasede, et al., 2021).

Increasing skilled delivery attendance is one evidence-based strategy for improving maternal and infant health for all women (Treacy & Sagbakken, 2015). Also, skilled delivery attendance can enhance the effectiveness of interventions for the prevention of mother-to-child transmission of HIV (PMTCT) as women who give birth with the assistance of a health professional are more likely to receive information about and adhere to antiretroviral drugs.

Low rates of maternal health care service utilization, including hospital delivery, may impede progress in the prevention of mother-to-child transmission of HIV (PMTCT) and in reducing maternal and infant mortality. Safe delivery practices are adopted by health care providers to ensure that a woman receives proper care during labour and delivery to prevent her from passing on the HIV virus and other infectious diseases to her unborn baby. Safe delivery/childbirth practices reduce infant exposure to HIV in maternal blood and genital secretions during labour and delivery (Nigeria National AIDS and STI Control Programme, 2014).

Hospital delivery practice is the process adapted by the mothers for the healthy outcome of both mother and baby from the beginning of conception to delivery. Hospital delivery practices include;- health education to mothers on cleanliness, balanced diet, use of ART for mother and infant duo, use of co-trimoxazole syrup for infant after birth and caesarean section.

While Skilled birth attendance (SBA) is defined as the process by which a woman is provided with adequate care during labour, delivery, and the early postpartum period by a skilled health worker such as a doctor, nurse, or midwife (Jacobs, et al.,2017; Workagegn et al., 2015). The health care worker ensures minimal vaginal examination (not earlier than 4 hours apart), avoidance of invasive procedure (e.g. amniocentesis, forceps delivery, vacuum extraction), proper use of infection prevention and control measures (IPAC), avoidance of premature rupture of membranes, avoidance of prolonged labour, caesarean section (WHO & UN, 1998; Adewole et al., 2005) (which have 50-81 % reduced risk of HIV transmission), minimize the risk of postpartum haemorrhage (PPH) and the use of safe blood transfusion.

Skilled birth attendant (SBA) is important for the early identification of signs of complications in order to institute timely management, including referrals to higher levels of care where necessary. In addition, utilization of postnatal care (PNC) within 48 hours of delivery is known to improve health outcomes for both the mother and the neonate by reducing morbidity and mortality. However, despite these essential services being available in health facilities and being made affordable in most developing countries, utilization of SBA, and PNC remain limited, particularly in developing countries (Jacobs et al., 2017).

Many factors could determine the utilization of hospital delivery by HIV positive pregnant women in Nigeria, despite effort of the government to provide them at grass root level. These factors which are referred to as predictors in this study range from maternal age, education level, distance, marital status and occupation. It is therefore pertinent to study the perceived predictors carefully to inform policy makers and health care providers to enable them make policy that will improve the utilization of these services. For the purpose of this study, predictors were studied under, demographic factors, of age, marital status, education level, occupation and distance to find out if they predicted the HIV pregnant women's use of these services. Studies have linked

socio-demographic factors and HIV positive pregnant women's utilization of hospital delivery services. The younger a woman is, the easier for her to move about, has less house chores, she has so much to leave for and is strong enough to walk long distance to access health services. Also, a young woman has a small family to carter for so she has time to access health facilities (Miraguri, 2013). However, Mekonen (2009) noted that the more advanced the age of the woman, the more likely she will utilize more of PMTCT services because then she will be more self-reliant, economically settled and will not be influenced by traditional and cultural beliefs at that age. Past studies by (Pathfinder International, 2013) indicated that, distance to health facilities, inadequate transportation and socio-cultural beliefs have hampered women's ability to access these services in many less developed countries and northern Nigeria in particular.

Evidence shows that illiteracy is one of the reasons why mothers choose to deliver at home in preference for hospital. Shidhaye (2014) reported that there is a positive relationship between educational attainment of a mother and health services utilization. The occupational status of women was found to be important factor of their readiness for HIV counseling and testing. Government and private employed pregnant women were eight and four times more likely to be ready when compared with the housewives respectively. This may be due to employed women had more exposure to information about voluntary counseling and testing (VCT) at their work site while house- wives stay most of their time at home (Zinash & Amberbir, 2011).

Marital status is conceived as a possible predictor to PMTCT services utilization especially for the unmarried pregnant women (Sasaki, et al., 2010). The researcher observed that in spite of the availability of hospitals that offer prevention of mother-to-child transmission of HIV in the state and the availability of skilled birth attendants, HIV mothers prefer home delivery thereby exposing their unborn babies to maternal HIV virus during delivery. This trend is particularly worrisome to the researchers and therefore forms the basis for conducting this study among HIV positive women in Taraba State. This study therefore was to assess association between these predictors and the use of hospital delivery services among HIV positive women in Taraba State.

Methods

Study Area, Design, and Sampling Techniques

The study adopted a concurrent mixed method research employing an institutional based cross-sectional and phenomenology design. Six hundred and five HIV positive women were randomly selected from the post natal clinics using convenience sampling technique, while the health facilities were selected through a multi-stage sampling technique. Five respondents from each of the three geographical zones were selected using purposive sampling technique (total of 15 key informants) for the key informant interview.

Data Collection Procedure, Processing, and Analysis

The POHIVPWUOHD questionnaire and key informant interview guide were used to collect data. The utilization of maternity delivery services was measured using two sections of a questionnaire. Section A of the questionnaire elicited information about the respondent's demographic variables of age, marital status, occupation, education level and distance. Section B elicited information on the utilization of hospital delivery services which include; health education to mothers on cleanliness, adherence to ART and balanced diet, the use of ART for mother and infant duo, co-trimoxazole syrup for infant after birth and caesarian section, chi-square statistic and logistic regression were used to test their association at .05 level of significance.

The main outcome variables (hospital delivery services) were measured dichotomously. Respondents were asked to indicate 'yes' if they have used the services, otherwise 'no'.

Explanatory variables include demographic variables of age, education level, marital status and distance to health facility,

Results

Table 1 shows the demographic characteristics of the respondents. Six hundred and five HIV positive pregnant women between the ages of 15 to 49 with a mean age of 33.8 years responded to the questionnaire. More than half (50.3%) of the respondents were between 15-29 years, slightly more than a quarter of them (28.0%) had no formal education, majority of them (67.7%) were married, slightly more than a quarter (32.2%) were civil servants, less than a quarter were business women. Table 2 shows (55.6%) of overall utilization of hospital delivery services with more than half (56.1%) of the respondents reported utilizing hospital delivery services, more than half (57.8%) reported utilizing counseling on balanced diet, cleanliness and infant care services, more than a quarter (35.3%) reported to have utilized caesarean section services, more than a half (60.1%) receiving Nevirapine with their babies after delivery and more than half (60.4%) received co-trimoxazole syrup also for their babies. Table 3 showed that there is a significant relationship between age and hospital delivery ($p = 0.001$), counseling (.02), C/S (.04) and cotrimoxazole (.023). while marital status ($p = 0.048$) and education level ($p = 0.043$) were significantly associated with hospital delivery services, utilization of counseling services, caesarean section and the co-trimoxazole syrup for babies. However, only age was not significantly associated with the use of ART services. The Table further shows that occupation ($p = 0.37$), distance ($p = 0.848$). Results of the logistic regression analysis showed that age was significantly associated with the utilization of hospital delivery among HIV positive women. Compared to women 30 years and above, those who were 15 -29 years were more likely to utilized hospital delivery services (OR =1.66; CI - 1.089 -2.53; P = 0.04).

Table 1: Demographic Characteristics of HIV Positive women that Responded to the Questionnaire on Utilization of Hospital Delivery Services (n= 605)

<i>characteristic</i>	<i>f</i>	<i>%</i>
Age		
15-29	305	50.3
30-39	174	28.8
40-49	126	20.9
Total	605	100.0
Education level		
No Formal Education	103	17.0
First School Leaving Certificate	169	28.0
Diploma	152	25.0
First Degree and above	50	8.4
TOTAL	605	100.0
Marital Status		
Married	409	67.7

Divorced	60	9.9
Widowed	76	12.6
Single	60	9.8
TOTAL	605	100.0
Occupation		
Civil Servant	195	32.2
Business	122	20.1
Farming	82	13.6
House wife	183	30.2
Others	23	3.9
TOTAL	605	100.0

Table 2. Percentage Response on the Utilization of Hospital delivery Services for HIV Positive Women in Taraba State (n=605)

Items	f	%
Hospital delivery Services		
Delivered in a Health Facility	339	56.1
Counseling on ART Adherence/Diet/Infant care	350	57.8
Caesarean Section	213	35.3
Single Dose Nevirapine for mother /Baby	364	60.1
Co-trimoxazole syrup for Baby	387	64.0
Cluster % Total		55.6

Table 3 Factors Associated with Utilization of Hospital delivery Services by HIV Positive Women (n=605)

Factors	HD		Counseling		C/S		ART		CO-TRIM			
	%	χ^2	p	%	χ^2	p	%	χ^2	p	%		
Age												
15-29	54.3	(4.143)	.001	55.0	(7.444)	.02	35.0	(2.636)	.04	32.0	(10.240)	.249
	38.7	(9.238)	.023									
30-39	52.9			62.1			34.3			32.6		
	35.5											
40-49	59.2			60.6			34.4					36.0
	47.2											
Education Level												
No F. Ed.	58.1	(16.347)	.043	59.9	(14.970)	.000	30.5	(12.690)	.001	60.5	(20.949)	.000
	59.5	(12.666)	.000									
Primary School	55.2			63.1			34.3			60.2		59.2
Secondary School	52.8			54.3		35.0			55.0			54.0
Diploma				51.0		53.7			45.6			55.7
	53.5											
Degree & Above			61.2		63.3				60.9			63.5
	62.6											
Marital Status												
Single	57.6	(26.861)	0.43	54.3	(29.077)	.023	32.7	(29.640)	.000	57.7	(26.473)	.048
	57.6	(25.471)	.000									
Married	60.4			61.6					61.2			61.4
	60.4											
Divorced	53.5			52.4					30.9			53.2
	53.5											
Separated	36.5			33.3			30.1			38.1		36.5

Occupation

Civil Servant	50.0 (17.126)	.378	54.7(17.662)	.344	45.3(16.422)	.424	55.8 (15.531)	.486
	53.5 (12.141)	.784						
Self Employed	56.7		55.0		40.2		55.8	
	55.7							
Farming	58.5		58.0		32.2		60.1	
	58.0							
House Wife	57.6		61.3		32.0		60.2	
	59.7							
Distance								
1-2km	57.7 (4.138)	.848	56.1(3.826)	.872	38.6 (9.678)	.282	33.8 (2.145)	.926
	41.4 (10.740)	.217						
3-5km	51.8	54.4	29.9		32.4		40.3	
5km and above	54.2	52.7	33.6		32.0		34.3	

Table 4 Predictors of Hospital delivery Services Utilization (n=605)

Variables	OR	p-value	(95% confidence interval)
Age (15-29)	1.66	0.02	1.089- 2.53
Education level	0.63	0.20	.089 – 3.31
Marital Status	0.61	0.28	46 – 3.55
Occupation	0.83	0.86	414-2.857
Distance	1.49	0.06	981 - 2.267

Qualitative Data

Results generated from interviewing key informants (health care providers), using key informant interview guide revealed that HIV positive women use hospital delivery services (50-85%). However, only about 35.3% of HIV positive women opted for caesarean section. The services with the highest rate of utilization were ART (single dose Nevirapine for mother and infant duo) (60.1%) and co-trimoxazole syrup for infants

(64.0%). In the words of one of the key informants ‘ in fact the women that use to come and deliver here, most of them are the booked cases but sometimes we use to have the un-booked cases too. The un-booked cases are the women that we used to record positive cases among them and we use to have problem with them because one, they have not been booked and they have not been educated on many things. So when they come in labor It is then that we start treatment for them. Most of the booked cases deliver in the hospital, I will say about 50% of women in our catchment area deliver in the hospital’ (KII 005, NORTHERN ZONE).

Also, data revealed that more of the younger women utilized hospital delivery services than the older ones. One of the KII participant opined that a woman that is up to 40 years and above and is still delivering finds it difficult to access the health facility because she is very weak but people that are may be 35 and below; they are still young, they can trek, they know that it is very important for them to come and take their drug’ (KII, 001, CENTRAL ZONE). Another key informant in the Southern zone revealed thus: most of the HIV positive pregnant women who know their status normally attend up to 4 antenatal clinics before birth and they also deliver in the hospital because they have been properly educated on the importance. She further stated that some of them actually opt for caesarean section (KII, 001 SOUTHERN ZONE).

Another key informant revealed that, since the PMTCT programme started, women have been counseled on the importance of hospital delivery, this has reduced the rate of mother –to –child transmission in their facility considerably as fewer children are born positive (KII, 002 Northern zone). Also data revealed that distance, education level, marital status, occupation, did not determine the utilization of hospital delivery services”.

Discussion

The utilization of hospital delivery services by HIV positive women is essential for the prevention of pediatric HIV in sub Saharan Africa (Treacy & Sagbakken, 2015; Mekonen, 2009). Determining the factors that make HIV positive women use or not to use these services is very crucial in designing interventions to promote the utilization of these programmes.

The utilization of hospital delivery services among HIV positive women was slightly more than half (55.6%), however, Nevirapine and cotrimoxazole syrup for babies were the only hospital delivery service utilized by almost three quarter of the respondents. This finding is expected as it may be because these services offer direct protection against the transmission of HIV from mother to child and also protect the infants from any other infection which may impact on their health.

Previous studies in other countries, however, reported, low utilization rates of hospital delivery services among HIV positive women. However, a study in Zambia agrees with our findings, it reported that, 56% of women are assisted by a skilled birth attendant, and only 54% attend PNC visits (UNAIDS, 1998).

Findings revealed that higher level of education increases the likelihood of women utilizing hospital delivery services, counseling services, caesarean section services, ART for mother

and infant services and cotrimoxazole syrup for infants. This study is expected and therefore not surprising as educated women are always exposed to resources that help them know what to do. This study is consistent with that of (Shidhaye et al., 2014) who found that the higher the educational status of a woman the higher the rate of utilization of these services. Findings also revealed that younger women are more likely to utilize hospital delivery services more than the older respondents. This, according to information from qualitative data might not be unconnected to the fact that they have more to live for than their older respondents. The finding is consistent with that of Worku and Fanta, who reported that age (27 year) or younger is significantly associated with PMTCT services utilization but the study differed from that of Muraguri, who reported that maternal age is often presented as a proxy for accumulated experience, including the use of health services. Older women are possibly more confident and influential in household's decision-making than younger women and adolescents in particular. Contrary to expectation, occupation and distance is not significantly associated with the likelihood of hospital delivery services utilization. The study utilized the cross sectional design, therefore it cannot assume cause and effect association.

Implication of the Study to Public Health

The findings of this study revealed that only age is a predictor of hospital delivery services utilization among HIV positive women. It implies that older women are more liable to deliver HIV positive babies than the younger ones with its attendant burden. These findings will help the health care providers to focus more on the older women who come to the hospital pregnant. They should try to find out reasons for their lack of utilization of these services so that solutions will be proffered

On the policy level, this study will enable policy maker's focus more on the older age group in their public enlightenment programmes and other hospital based programmes that will increase services utilization of hospital services. On the level of education. More resources will be designed by public health educators that will target the older women. The programme will expose them on the benefits of antenatal, hospital delivery and post natal care. While other studies focus on determinants of hospital services utilization, this study focuses on demographic predictors which will largely add on existing body of knowledge.

Conclusion

The study concluded that HIV positive women in Taraba State utilize hospital delivery services. However the younger women utilize these services more than their older counterparts. Also education level, marital status was associated with the utilization of hospital delivery services utilization. However, caesarean section was not adequately utilized by HIV positive pregnant women. Therefore there is need to for further studies to find out why these groups of women do not adequately utilize these services so that solution can be proffered.

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