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EFFECT OF A NURSE-LED INTERVENTION ON KNOWLEDGE OF PMTCT AMONG MOTHERS LIVING WITH HIV ATTENDING TERTIARY HOSPITALS IN ONDO-STATE

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ABSTRACT: *Background: Mother-to-child transmission (MTCT) continues to be the major source of HIV infection and the cause of maternal and fetal/infant mortality in Nigeria and other developing nations of the world. The study assessed the effect of a nurse-led intervention on knowledge of Prevention of MTCT of HIV among mothers living with HIV attending tertiary hospitals in Ondo State. Methods: This study adopted a pretest-posttest quasi-experimental research design. One hundred and sixteen (116) respondents participated in the study; 40 respondents served as the control group and 76 respondents in the experimental group. Descriptive analysis and inferential statistics were utilized to generate findings at 0.05 level of significance. Results: Findings from the study revealed that the participants had fair knowledge generally on the subject matter pre intervention. There was knowledge gain among the experimental group on HIV/AIDS and PMTCT as revealed by mean gain of 2.03 and 3.31 respectively. There were significant differences between the pre and post intervention mean score knowledge of mothers living positively on HIV/AIDS and on PMTCT evidenced by p< 0.000 and p < 0.000 respectively. Conclusion: The nurse-led intervention on knowledge utilized in this study enhanced the knowledge of mothers living positively with HIV. Therefore knowledge-based programmes should be included in various PMTCT packages and periodic evaluation to reveal the effectiveness of health education.*

KEYWORDS: HIV/AIDS, HIV-Positive Mothers, MTCT Knowledge, Nurse-led Knowledge Intervention.

INTRODUCTION

Human Immunodeficiency virus (HIV) infection is one of today's major public health concerns. It leads to a progressive disease that ultimately results in acquired immunodeficiency virus (AIDS). The pandemic of HIV is the most severe health challenge affecting children across the globe (Ramoshaba & Sithole, 2017). It is estimated that more than 90% of all HIV infections in children result from Mother-to-Child Transmission (MTCT) (Nwaiwu, Olatunde, Harrison, Ilomuanya & Oduniyi, 2019).

In 2015, approximately 1.8 million children were living with HIV worldwide and 110 000 HIV-related deaths among children under 15 years of age (UNAIDS, 2017; Agboeze, Onwe, Onoh, Nwali, Ukaegbe, & Adeoye, 2018).About a quarter (26.9%) of all

cases of MTCT of HIV in the world happened in Nigeria in the year 2018 (UNAIDS, 2018). Although a remarkable achievement has been made and new HIV infections among children have declined by 50% since 2010 globally, still, Nigeria has the largest number of new infections among children globally. HIV remains the major cause of child morbidity and mortality in low resource countries Nigeria inclusive *(*Agboeze et al., 2018).

Without intervention, the risk of MTCT ranges from 20% to 45%, but it can be reduced to less than 2% in non–breastfeeding populations and to 5% or less in breastfeeding populations with effective interventions during the periods of pregnancy, labor, delivery and breastfeeding. According to a progress report conducted in 4 years by ACTION plus in 2016 in Ondo and Ekiti state, the total number of pregnant women who tested positive to HIV in Ondo state were 3,418 representing 2.22%, while the number of infants who tested positive to HIV also in Ondo state, were 103 signifying 6.08%. The overall risk of MTCT can be reduced to less than 2% by implementing knowledge-based PMTCT services (ACTION plus, 2016; Tigabu & Dessie, 2018).

To achieve zero prevalence, there's a greater need for an interventional approach towards prevention of Mother-to-child transmission and thus stemming the tide of the menace. It is against this backdrop that this intervention study is conducted to identify the effect of a nurse-led intervention on knowledge of mothers living with HIV on Prevention of Mother to Child Transmission of HIV.

LITERATURE

Mother-to-child transmission (MTCT) of HIV which is transmission of the virus from an infected mother to her child during pregnancy, labour, delivery, or breastfeeding, has been a major global public health burden. Prevention of mother-to-child transmission programmes offer a range of services for women of reproductive age living with or at risk of HIV to maintain their health and stop their infants from acquiring HIV. The risk of MTCT varies from 5-10% during pregnancy, 10-15% during labour/delivery and 5-20% during breastfeeding (World Health Organization [WHO], 2017). Despite the use of antiretroviral prophylaxis by HIV-positive pregnant women, safe obstetric practice and safe infant feeding habits in the prevention of MTCT of HIV, the prevalence of HIV among HIV-exposed infants is still high in developing countries (Fondoh & Mom, 2017).

Women's knowledge of risk factors of MTCT of HIV during pregnancy and breastfeeding is greatly limited, this has significantly contributed to the ineffectiveness of PMTCT strategy (UNAIDS, 2017). Lack of awareness and poor knowledge impact negatively on the up-take of PMTCT and postnatal follow-up services. PMTCT programmes around the world are hugely affected by the level of awareness and knowledge of HIV and AIDS as well as MTCT, which consequently increases HIV prevalence among children (Ramoshaba & Sithole, 2017). Luba (2017), also identified in his study that one of the major problems in the prevention of mother to child transmission of HIV is the poor awareness and knowledge of the people about MTCT and PMTCT in pregnancy, labour and puerperium. HIV transmission from mother to child continues to be the major source of HIV infection among children under the age of fifteen (Ramoshaba & Sithole, 2017).

The resultant effect of poor awareness and knowledge of PMTCT has led to mothers infecting their children either during pregnancy, labour and puerperium. This has also led to more children living with HIV/AIDS and exposed children becoming orphans and vulnerable children with child headed homes on the increase. The society is also grossly affected by sickly infants and productivity is hampered by the sick working population (UNAIDS, 2019). The researcher observed the prevalence of HIV among mothers and the number of children infected with HIV, which is still high despite measures put in place through PMTCT services in stemming the tide of HIV. Some of these children are observed to be orphans with its attendant effect.

According to Tigabu and Dessie, (2018), the implementation of knowledge based PMTCT programmes is one of the most important area of intervention that prevents the spread of HIV and the overall risk of MTCT can be reduced to less than 2% by implementing knowledge based PMTCT services. Several studies have been conducted on PMTCT among women, mothers, pregnant women attending antenatal clinic, mothers in post-natal wards or in their puerperium but there is however a dearth of studies on this important aspect and also limited studies conducted on knowledge-based interventions of PMTCT among HIV positive mothers.

Objectives of the study

The main objective of the study assessed a nurse-led intervention on knowledge of PMTCT of HIV among mothers living with HIV attending tertiary hospitals in Ondo State. The specific objectives are to:

1. Assess the pre and post intervention mean score knowledge of mothers living with HIV on HIV/AIDS in the control and experimental groups.
2. Ascertain the pre and post intervention mean score knowledge of mothers living with HIV on PMTCT in the control and experimental groups.

Hypotheses

$H_0$1: There is no significant difference in the pre and post intervention mean score knowledge of mothers living with HIV on HIV/AIDS in the experimental group.

$H_0$2: There is no significant difference in the pre and post intervention mean score knowledge of mothers living with HIV on PMTCT in the experimental group.

METHODOLOGY

Design: this study adopted a 2- group, quasi experimental research design, used to evaluate the effect of a nurse-led educational intervention on knowledge of PMTCT of HIV among mothers living with HIV attending tertiary hospitals in Ondo State.

Study Area and Sample Size

The populations for the study were pregnant and lactating mothers who are living with HIV and who attend ante-natal clinics (PMTCT clinics) of both University of Medical Sciences

Teaching Hospital (UNIMEDTH) Akure and Ondo Complexes and Federal Medical Centre, (FMC) Owo, in Ondo State. Mothers in UNIMEDTHC Akure and Ondo served as the experimental group because of the size while the group in FMC, Owo served as the control group. Total enumeration was adopted for the study, where all the pregnant mothers living positively and attending ANC in the two selected health facilities were used for the study. A total of 116 respondents, seventy-six (76) and 40 respondents were in the experimental were in the experimental and control groups respectively.

Instrumentation

The instrument for data collection for this study was a self-designed questionnaire. The Questionnaire consists of three sections:

Section A assessed the demographic characteristics of the participants consisting of 6 questions. **Section B** assessed the general knowledge of mothers on HIV/AIDS consisting of 17 questions.

Section C assessed the general knowledge of mothers on PMTCT of HIV and also knowledge of mothers on PMTCT. It consists of 30 questions

Data obtained from the study was analyzed using the Statistical Package for Social Sciences (SPSS), version 22. Descriptive statistics such as frequency counts, percentages and mean scores was used to provide answers for the 2 research objectives, while inferential statistics of student t-test was used to test the 2 hypotheses at $p<0.05$ level of significance.

Ethical clearance and approval for the study was obtained from Babcock University Research Ethical Committee (BUHREC). Letter of introduction was also presented to Ondo State Ministry of Health, Akure/Ondo and Chief Medical Director, Federal Medical centre, Owo respectively and approval was also obtained from Ondo State Health Research Ethics Committee (OSHREC) and FMC ethical review committee. Participants were made to understand the purpose of the study. Participation in the study was made voluntary and participants were informed of their right to withdraw at any stage of the study without losing anything. Informed consent (Written) was obtained from all the participants and the confidentiality of all information provided was assured.

RESULTS

This study made use of self-structured questionnaire in eliciting information from the participants. One hundred and sixteen (116) participants were available for the study and same number of questionnaires were administered to mothers living with HIV, with 40 mothers in the control group and 76 in the experimental group.

Table 1: Socio-Demographic Data as revealed in table 1 shows that about half of the respondents in both groups are within the age range of 30 – 39 years signifying 50% and 61.8% respectively. A larger percentage of the mothers were Christians with 92.5% in the control and 90.8% in the experimental group. Majority of the mothers were married in both groups with 82.5% and 90.8% in the control and experimental group respectively; only 2.5% (Control) and 1% were cohabiting. Majority of the respondents were from Yoruba ethnic group with 70.0% in the control group and 80.3% in the experimental group. The Hausas are

the least with 2.5% in the experimental group and 1.3% in the control group. Only half of the participants had secondary education in the two groups, 52.5% in the control group and 51.3% in the experimental group. Only about two-fifth (36.8%) of the respondents had university education in the experimental group. Majority of the respondents were self-employed with 77.5% and 71.1% in the control and experimental groups respectively.

Table 1: Socio Demographic Characteristics of the Participants

Variable	Characteristics	Control		Experimental	
		F (n = 40)	(%)	F (n = 76)	(%)
Age in years	20 – 29	4	10.0	16	21.1
	30 – 39	20	50.0	47	61.8
	40 – 49	16	40.0	13	17.1
Religion	Christianity	37	92.5	69	90.8
	Islam	3	7.5	7	9.2
Marital status	Single	4	10.0	4	5.3
	Married	33	82.5	69	90.8
	Cohabiting	1	2.5	1	1.3
	Widowed	2	5.0	2	2.6
Ethnic group	Yoruba	28	70.0	61	80.3
	Igbo	3	7.5	7	9.2
	Hausa	2	2.5	1	1.3
	Others	8	20.0	7	9.2
Level of education	No formal education	7	17.5	1	1.3
	Primary	6	15.0	8	10.5
	Secondary	21	52.5	39	51.3
	College/University	6	15.0	28	36.8
Occupation	Students	1	2.5	3	3.9
	Self employed	31	77.5	54	71.1
	Formal employment	4	10.0	12	15.8
	Unemployed	4	10.0	7	9.2

Table 2: Reveals that 20 (50%) of mothers in the control group and 39 mothers (51.32%) in the experimental group have pre-intervention knowledge that is above average on HIV/AIDS. Nineteen (19) respondents had average knowledge in the control group representing 47.5% and 36 respondents in the experimental group representing 47.37%. Only 1 (2.5%) had knowledge below average in the control group and 1 (1.32%) in the experimental group.

Post intervention, 18 (45%) of the control group and 68 (89.47%) of the experimental group had knowledge above average. Twenty respondents (50%) and 8 (10.52) respondents had average knowledge in the control and experimental groups respectively. The pre and post intervention mean score for the control group was 12.75±1.86 and 12.58±1.97. While for the experimental group, the pre and post intervention mean score was 12.58±1.97 and 14.61±1.50. The mean gain for the control group was -0.17 while that of the experimental group was 2.03. The maximum score pre and post intervention for the control group and experimental group were 16 and 17 respectively. While the minimum pre intervention score

for the control group and experimental group were 7.0 and 8.0 respectively; and minimum post intervention score for the control and experimental group were 6 and 11 respectively.

Table 2: Pre and Post Intervention Mean Score Knowledge of Mothers on HIV/AIDS in the Control and Experimental Groups

Mean score Knowledge of mothers on HIV/AIDS	Score range	Control				Experimental			
		Pre-Intervention		Post Intervention		Pre-Intervention		Post-Intervention	
		F	%	F	%	F	%	F	%
Above average Average Below average	13 – 17 9 – 12 0 – 8	20 19 1	50 47.5 2.5	18 20 2	45 50 5	39 36 1	51.32 47.37 1.32	68 8 0	89.47 10.52 0.00
Total		40	100	40	100	76	100	76	100
Mean		12.75 ± 1.86		12.58 ± 1.97		12.58 ± 1.97		14.61 ± 1.50	
Mean Gain		-0.17				2.03			
Maximum Minimum		16 7		16 6		17 8		17 11	
Range		9		10		9		6	

Table 3: Reveals that in the control group, 28 (70%), 10 (25%) and 2 (5%) mothers had knowledge above average, average and below average respectively on PMTCT pre-intervention. Post intervention, 28 (70%) mothers had knowledge above average, 9 (22.5%) mothers had average knowledge and 3 (7.5%) participants had knowledge below average. In the experimental group, 50 mothers had good knowledge signifying 65.9%, 25 mothers had moderate knowledge signifying 32.89% while 1 respondent had low knowledge representing 1.32%. The post intervention score revealed 72 respondents signifying 94.74% had high knowledge while 4 respondent had moderate knowledge and 0 respondents had low knowledge signifying 5.26% and 0% respectively.

The mean score of the control group is 23.08 ± 3.47 and 22.85±3.38, pre and post intervention and 23.22±3.34 and 26.53±1.83, pre and post intervention in the experimental group. The mean gains are -0.23 and 3.31 in the 2 groups respectively. Maximum score was 26 while minimum score was 14 post intervention in the control group. Minimum score pre and post intervention for the experimental group was 13 and 21 respectively. While maximum score pre and post intervention for the experimental group was 28 and 30 respectively. The score range for control group pre and post intervention are 13 and 12; and 15 and 9 for experimental group respectively.

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Table 3: Pre and Post Intervention Mean Score Knowledge of Mothers on PMTCT in the Control and Experimental Groups

Mean score Knowledge of mothers on PMTCT	Score range	Control				Experimental			
		Pre-Intervention		Post Intervention		Pre-Intervention		Post-Intervention	
		F	%	F	%	F	%	F	%
Above average Average Below average	23 – 30 15 – 22 0 – 14	28 10 2	70 25 5	28 9 3	70 22.5 7.5	50 25 1	65.79 32.89 1.32	72 4 0	94.74 5.26 0
Total		40	100	40	100	76	100	76	100
Mean		23.08 ± 3.47		22.85 ± 3.38		23.22 ± 3.34		26.53 ± 1.83	
Mean Gain		-0.23				3.31			
Maximum Minimum		27 14		26 14		28 13		30 21	
Range		13		12		15		9	

The result from table 4 shows that the p-Value is 0.000 which is lesser than 0.05, hence there is a significant difference in the pre and post intervention mean score knowledge of mothers on HIV/AIDS in the experimental group. Therefore, the null hypothesis is rejected and stated as there is a significant difference in the pre and post intervention mean score knowledge of mothers living positively on HIV/AIDS in the experimental group.

Table 4: Comparison of Mean Scores of Pre and Post intervention mean score knowledge of mothers living positively on HIV/AIDS in the experimental group

	Groups	N	Mean	Std. Dev	Std. Error Mean	t value	Df	p	Remark
Knowledge on HIV/AIDS	Pre-Intervention Post Intervention	76 76	12.58 14.60	1.97 1.50	0.23 0.17	-9.14	75	.000	Significant

Level of significance 0.05

The result from table 5 shows that the p-Value is 0.000 which is lesser than 0.05, hence there is a significant difference in the pre and post intervention mean score knowledge of mothers on PMTCT in the experimental group. Therefore, the null hypothesis is rejected and stated as there is a significant difference in the pre and post intervention mean score knowledge of mothers living positively on PMTCT in the experimental group.

Table 5: Comparison of Mean Scores of Pre and Post-Intervention Mean Score Knowledge of Mothers Living Positively on PMTCT in the Experimental Group

		N	Mean	Std. Dev	Std. Error Mean	t value	Df	P	Remark
Knowledge on PMTCT	Pre-Intervention	76	23.22	3.35	.38370				
	Post Intervention	76	26.53	1.83	.20982	-8.74	75	.000	Significant

Level of significance 0.05

DISCUSSION

A total of 116 respondents from the control and experimental groups participated in the study. Socio-demographic data reveals that about half and three-fifth of the respondents in both groups were within the age range of 30 – 39 years. This result was supported by a study conducted by Merger, et al (2016), which stated that older women are likely to utilize PMTCT services than the younger ones. On the contrary, majority were within the ages of 26 to 35 years as reported by Ramoshaba and Sithole (2017). Luba et al (2017), also opined that 60.8% of the respondents were less than 30 years.

Almost all of the mothers were Christians with 92.5% in the control and 90.8% in the experimental group. Christian dominance found out in this study might not be unconnected with the fact that majority of people living in Central Senatorial District of Ondo State are Christians. It may also indicate active involvement of churches and religious organizations which play key roles in HIV/AIDS enlightenment. Majority of the mothers in the two groups were married with 82.5% and 90.8% in the control and experimental respectively. This reveals that the study population consists of mothers who are expected to be married and marriage is valued in the South West, Nigeria. In consonance with this finding is the study from Luba et al., (2017), where 61.8% of the respondents were married. This is however contrary to Ramoshaba and Sithole (2017), where only 27% were married.

Majority of the respondents are Yorubas with 70.0% in the control group and 80.3% in the experimental group. The Hausas are the least with 2.5% in the experimental group and 1.3% in the control group. This predominant ethnic group reveal the fact that Ondo State is a Yoruba speaking State and has predominantly Yoruba tribe. Academic qualification of the mothers had about half of the respondents with secondary education. Only minority do not have formal education. This is in tandem with Ramoshaba and Sithole (2017), where 54% had obtained secondary education. Luba et al. (2017) also supported this and reported that 49.9% of the respondents were literate.

Majority of the respondents were self-employed with 77.5% and 71.1% in the control and experimental groups respectively. Only 10% had formal employment in the control group and 15.8% were also formally employed in the experimental group. This substantiates the academic qualification of most of the respondents. Ramoshaba and Sithole (2017), reported a different finding, they stated that 73% of the respondents were unemployed perhaps due to the fact that more than half of them had secondary school education or perhaps some other parameters were used for this analysis. Luba et al., (2017), also reported that 48.4% of the

respondents had no formal work. Another study carried out in Assosa town, Northwest Ethiopia, reported that more than three-quarters of the respondents attended formal education from elementary to higher level, whereas the rest were not attending any formal education. One hundred and forty-five (37.6%) ANC followers were housewives, 123 (31.9%) were employed by either government or private institutions, and 58 (15%) were farmers.

Results from pre and post intervention mean score knowledge of mothers living with HIV on HIV/AIDS in the control and experimental groups revealed that majority of the respondents have fairly good knowledge about HIV/AIDS both in the control and experimental groups. Despite the general good knowledge, majority of respondents did not have knowledge of salient points about HIV/AIDS. In both groups, almost half of the respondents believe that HIV and AIDS are the same. A sizeable portion also belief there's a vaccine for HIV. Majority of the respondents do not understand the meaning of window period and a good number could not identify the antiretrovirals they use in managing their condition. However, there was knowledge gain (2.03) post intervention among the experimental group.

Results from the pre and post intervention mean score knowledge of mothers living with HIV on PMTCT in the control and experimental groups shows that there is knowledge gain among the experimental group only as revealed by a score of -0.23 and 3.31 in the control and experimental groups respectively. It's noteworthy that majority of the respondents had good knowledge of PMTCT both pre and post the intervention. Despite the good knowledge revealed by respondents in this study, a sizeable number of mothers do not know that HIV can be transmitted during pregnancy, labour and puerperium. Many of the mothers do not know the meaning of ABCs of primary prevention of HIV. The mothers do not know that family planning can affect the rate of MTCT of HIV. Disclosure, to majority does not affect the rate of transmission of HIV. However, post intervention, almost all of the respondents (94.74) had knowledge above average on the subject matter with knowledge gain as 3.31. Some studies are in tandem to these findings and reported that participants failed to mention breastfeeding as a mode of transmission. Close to half of the study participants (41.7%) were not aware of the association between breast milk and HIV transmission. These studies also reveal that the majority of the respondents lacked knowledge and understanding of how a mother can transmit HIV to her child during pregnancy, labour and breastfeeding. Although basic knowledge of HIV and AIDS seems to be increasing in most communities, there is insufficient knowledge of MTCT among mothers enrolled for PMTCT follow-up services (Frizelle, Rau, Kelly, et al, 2009; Ekanem & Gbadegesin, 2004; Department of Health, South Africa, 2010).

However, some studies are in consonance with the findings of the "general good knowledge" identified in this study such as the study by Agboeze et al, (2018*)* where 95.2% of respondents had good knowledge of PMTCT in Ebonyi state, Nigeria. Similarly, in a study by Ekubagewargies, Mekonnen and Siyoum (2019), mothers had good knowledge of MTCT during breastfeeding, labour and pregnancy. This finding is in line with a study that opined that 78.1%, 69.3% and 67.1% knew that MTCT could occur through breast feeding, during delivery and during pregnancy respectively. Although a greater proportion of participants answered correctly to individual questions, only 34.9% correctly responded to all five questions. Majority of mothers in central Ethiopia also had good knowledge of PMTCT while about a third of the population (35.1%) had poor knowledge, according to Hailu, et al (2016). Another study carried out in Assosa town, Northwest Ethiopia, reported that more than half of the respondents (57.5%) had full knowledge about MTCT of HIV, but only 67 (17.4%)

had knowledge on PMTCT of HIV/AIDS. Report on the mode of transmission revealed that 33.5%, 33.6%, and 32.8% of mothers knew that transmission of HIV from mother to child occurred during pregnancy, during delivery, and through breastfeeding, respectively (Abtew, Awoke & Asrat, 2016). A study conducted by Geolu, Tigussie, Kbera et al (2018), revealed that 128 (75.3%) of the total respondents knew that HIV can be transmitted from infected mother to her child. Regarding the time of HIV transmission from infected mother to her offspring, 100 (58.8%), 80 (47.1%), 115 (67.6%), and 51 (30%) of the respondents spontaneously mentioned during pregnancy, labour and delivery, breastfeeding and do not know the time of transmission respectively.

Implication to Research and Practice

Findings from the study revealed that knowledge on MTCT among HIV positive mothers is poor prior to intervention implying that more effort has to be directed on health information during ANC especially among HIV positive mothers in order to reduce spread of this disease. More studies should be carried out focusing on Knowledge based intervention among this same group and their families.

CONCLUSION

The study findings revealed that majority of the respondents had fairly good knowledge of MTCT of HIV/AIDS both in the control and experimental groups. They have general knowledge and most of them knew it can be transmitted during breastfeeding but a lot of them do not know it can be transmitted during pregnancy and delivery. Even though the general knowledge was fairly good, respondents had poor knowledge of some salient points such as window period, vaccine for HIV, difference between HIV and AIDS, mixed feeding, family planning and disclosure. Hence, it could that knowledge of mothers living with HIV on HIV/AIDS and PMTCT in Ondo State is low. There was a significant difference in the knowledge level post intervention among the experimental group. Hence the need for knowledge-based intervention programmes that will be focused on bridging the gap between good knowledge and practice of PMTCT among mothers.

Future Research

Further research should focus on effectiveness of health information on PMTCT among HIV positive mothers.

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