Full Length Research

Influence of Health Information Literacy on Drugs Adherence of HIV/AIDS Patient in Akwa Ibom State, Nigeria

[1]Dr. Ikonne, Chinyere N., [2]Prof. Babalola, Yemisi T. and [3]Peter, Uduak A.

1Department of Information Resource Management, Babcock University, Ilishan Remo, Ogun State, Nigeria
2Department of Information Resource Management, Babcock University, Ilishan Remo, Ogun State, Nigeria
3Department of Information Resource Management, Babcock University, Ilishan Remo, Ogun State, Nigeria

The study evaluated the influence of health information literacy on drugs adherence of HIV/AIDS patient in Akwa Ibom State, Nigeria. The population of the study was 10287. A sample size of 370 was determined using Krejcie and Morgan formula. Stratified proportionate sampling was used to select 370 respondents from a population of 10287 and convenient sampling was used to select individual respondents from the ART centres in Akwa Ibom State, Nigeria. A structured and validated questionnaire was used for data collection. Data analysis was done with frequency counts, percentages, mean and standard deviation. The hypotheses were tested at 0.05 level of significant using regression analysis. The result revealed that the extent of drugs adherence ($\bar{x}$=3.22) and the level of health information literacy abilities ($\bar{x}$=3.21) of HIV/AIDS patients in Akwa Ibom State is moderate. Health information literacy significantly influenced drugs adherence of HIV/AIDS patients (R^2= 0.095, β= 0.309, t = 6.220, p<0.05). Relatively, ability to use health information positively influenced participants' drug adherence (β= 0.168, t =2.813, p< 0.05). The study concluded that the extent of drugs adherence and the level of health information literacy of HIV/AIDS patients in Akwa Ibom state are moderate. Drugs adherence of HIV/AIDS patients in Akwa Ibom State are significantly influenced by health information literacy. The study recommended enhancement in health information literacy of HIV/AIDS patients in Akwa Ibom State, Nigeria in order to improve their drugs adherence.

KEY WORDS: Health Information Literacy, Drugs Adherence, HIV/AIDS patients, Akwa Ibom State, Nigeria.

INTRODUCTION

Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) is a disease that has no cure. It is a pandemic disease that affects every country across the globe. The disease is caused by a virus called HIV. The deadly virus destroys the immune system of the body thereby making it impossible for the body to fight certain infections. The virus is transmitted through unprotected sexual intercourse (Miyada, Garbin, Gato & Garbin, 2017). It can also be transmitted through transfusions of infected blood. Other means of transmission include sharp or blunt injuries with infected sharp objects and Mother to Child Transmission (MTCT). MTCT has been documented as the major route through which children less than fifteen years of age are being infected. It may occur both in pregnancy, labour and at the time of child bearing or during lactation. Moreover, Heterosexual transmission has been reported as one of the routes of HIV transmission in Nigeria (Federal

Ministry of Health, Nigeria 2016).

HIV/AIDS has negative effects on health, welfare, employment sectors, thus affecting all social and ethnic groups throughout the world (Awofola & Ogundele 2016). The negative influence of HIV/AIDS include increased mortality and morbidity, reduced life expectancy, increased poverty due to loss of family income for food, shelter, clothing and education, increased cost of healthcare, increased pressure on health resources, disruption of family and reduced productivity. In Nigeria, the prevalence of HIV has previously been determined by ante- natal studies. Sero-prevalence studies among ante-natal clinic attendees in some Nigeria centres have shown variable prevalence rate over the years ranging from the lowest of 1.8% in 1991 to peak of 5.8% in 2001 (Oleribe, Aliyu & Taylor-Robinson, 2018). Currently, about 1.9 million people are infected with HIV/AIDS in Nigeria with a prevalence rate of 1.4% (United Nations Programmes on HIV/AIDS, 2019).

In response to HIV/AIDS pandemic emerges Antiretroviral Therapy (ART). Antiretroviral therapy is a combination of drugs used in the treatment of HIV/AIDS. According to Akahara, Nwolisa, Odedinaka and Okolo (2017), there is no cure yet for HIV infection; but antiretroviral therapy (ART) is used as a long-life treatment for the management of the infection. Pellowski and Kalichman (2016) asserted that drugs adherence is a strong behaviour component in maintaining the health of people living with HIV/AIDS. HIV/AIDS patient are expected to maintain a high level of drugs (ART) adherence for optimum result because drugs are the primary approach to treating most illnesses (Hutchins et al, 2015). Adherence to drug is considered as the behaviour of patient towards taking drugs correctly. That is, the precised drug, in the prescribed dose, with the correct frequency and at the right time, (FMOH, 2016). This is achieved through a mutual agreement between the patient and the healthcare providers.

Adherence to antiretroviral therapy is absolutely necessary for achieving sustained viral suppression, delaying of onset of drugs resistance, enhancing immune recovery and improving the overall health and quality of life of the individual. Poor or non-adherence to ART results in suboptimal viral suppression. Viral replication in the presence of sub-optimal doses of ART may lead to emergence of drug resistance and loss of future treatment options (Mehari, Kiros, Yemane, Ashedom, Debesay, & Tekeste 2017). Simone, et al (2017) noted that poor ART adherence has consequences such as viral replication or unsuppressed viral load. Poor ART adherence also leads to low Cells Differentiation 4 (CD4) count and disease progression which results in poor clinical stage, poor functional status and low quality of life of life among HIV/AIDS patients (Bikilia, et al 2017).

Viral load is the numbers of HIV RNA copies in a milliliter of plasma. Dalhatu et al, (2016) submitted that viral load measurement is a gold standard for measuring ART adherence in HIV/AIDS management. Viral load measures highlight the number of copies of the HIV virus in the plasma. A viral load measure quantifies the HIV ribonucleic acids (RNA) in the blood plasma. This is achieved using a specialized process called Reverse Transcriptase Polymerase Chain Reaction (RT – PCR). When the viral load of the patient is less than 1000 copies / per millimeters, viral suppression is achieved. In some cases, the viral target may be undetected. The undetectable viral load achieved by HIV/AIDS is the resultant effects of ART adherence (Olowookere, Fatregun, Ladipo, Abioye-kuteyi & Adewole, 2016).

Strict adherence to ART is influenced by so many factors of which the level of health information literacy of the patient is included. Literally, literacy is the ability to read and write; but when it is used in relation to health, the compound word health literacy is derived. The term health information literacy is used inter-changeably with health literacy. Jennifer et al, (2016) documented that health information literacy is an individuals' abilities to access, process and utilize health related information with the end goal of informing and improving health information related decisions, health behaviours and clinical outcomes. It is also referred to as the degree to which individuals can obtain, process, understand and communicate about information related to health which is necessary to make sound medical decisions (Kordovski et al, 2017; CDC, 2015). According to Song, Jang, Lee, Kim, Sohn, and Suh, (2017) health information literacy can be defined as the degree to which individual have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decision. Although medication adherence is a challenge to many people living with HIV/AIDS, Pellowski and Kalichman, (2016) observed that individuals with poor health literacy skills are more vulnerable to HIV treatment non-adherence. In a study conducted by Stonebraker et al, (2018) to determine the level of health information literacy of HIV/AIDS patients, it was reported that health information literacy level of HIV/AIDS patient is low. Lee et al, (2017) also established in the study that health information literacy is strong predictor of medication adherence among adult patient in South Korea. Health information literacy is conceptualized in different ways by different scholars as shown in the literature. However, for this study, health information literacy shall be considered as the ability to obtain, process, understand and use health information to make decisions regarding health condition.

Health information is the basis of information behaviour of patients. It is a general term that encompasses the health literacy skills of recognizing the health information needs, seeking or search for health information and locating or accessing the health information. The efficient treatment and prevention of spread of HIV infection

depends on patient ability to search and acquire (obtain) the health information to meet his or her information needs. For example, the ability of the patient to acknowledge the need, knowing where to get the information and how to get the information to meet the needs is vital (Stonebraker, Befus, Nadal, Halpern, & Larson, 2017). Processing of health information is another measure of health literacy among HIV/AIDS patients. It is one of the skills of health information literacy. Huvila, EK, Enwald, Erickson-backa, Hirvonen and Kansakoski (2016) opined that processing of the information includes evaluation or appraisal of the sources of the information for authenticity, accuracy, relevance, reliability and currency of the information. It is only when the information obtained meet these criteria that the information could be useful to the patients.

Further, understanding of health information is an important concept in health information literacy. Meppelink, et al, (2016) noticed that, understanding of health information has a relationship with healthcare access and utilisation, self-management, and ability to make informed decision. It is only when the information collected is understood by the patient that the patient will be able to use the information in health decision making. Ambiguous information cannot be utilized because it may cause confusion. Therefore, there is the need to ensure that information given to the patient is communicated in a clear and simple manner for easy understanding of the information and application of the information in health-related decisions making. Finally, the use of health information is one of the important aspects of health information literacy. Health information use is the application of information obtained from various sources for health decisions making. Health information use is the ultimate goal of obtaining health information to meet the information needs Wilson, 1999). Once a person is capable to access (obtain) information, the person must be capable to comprehend (understand) and utilize the information for its effectiveness (Stonebraker et al, 2017). Health information use directly influences drugs adherence. The use of information acquired enhances change in behaviour and maintaining a high level of adherence which will in turn result in sustained viral suppression, high CD4 count, improved clinical stage, improved functional status and improved quality of life of people living with HIV/AIDS.

STATEMENT OF PROBLEM

Drugs are the primary approach to treating disease. Adherence to drugs (ART) is a strong behaviour component in maintaining the health of people living with HIV/AIDS. HIV/AIDS patients are thus, expected to adhere to the drugs prescribed and provided in the clinic for at least 95% of the time. Studies have reported high

level of non-adherence among HIV/AIDS Drugs patients (Miyada et al, 2017; Omonaiye et al, 2019). Onwunata et al, (2019) and personal observations by the researcher also indicated that ART drugs adherence of HIV/AIDS patients in Akwa Ibom State is low resulting in low CD4 counts and unsuppressed viral load. This poor ART adherence among people living with HIV/AIDS may have resulted as interplay of so many factors such as health information literacy of the patient. Lee, Yu, You & Son, (2017) observed that health information literacy is a strong predictor of medication adherence among adult patients. Past studies might not have investigated the influence of health information literacy on drugs adherence of HIV/AIDS patient in Akwa Ibom State. Therefore, based on these assertions and observations, this study is investigating the influence of health Information literacy on drugs (ART) adherence of HIV/AIDS patients in Akwa Ibom State, Nigeria.

OBJECTIVES OF THE STUDY

The general objective of this study is to investigate the influence of health information literacy on drug adherence of HIV/AIDS patients in Akwa Ibom State, Nigeria.

The specific objectives are to:

1. Determine the extent of drug adherence of HIV/AIDS patients in Akwa Ibom State, Nigeria.
2. Examine the level of health information literacy abilities of HIV/AIDS patients in Akwa Ibom State, Nigeria.
3. Ascertain the influence of health information literacy on drug adherence of HIV/AIDS patients in Akwa Ibom State, Nigeria.
4. Find out relative influence of health information literacy on drugs adherence of HIV/AIDS patients in Akwa Ibom State.

RESEARCH QUESTIONS

The study was guided by two research questions:

1. What is the extent of drug adherence of HIV/AIDS patients in Akwa Ibom State, Nigeria?
2. What is the level of health information literacy abilities of HIV/AIDS patients in Akwa Ibom State, Nigeria?

RESEARCH HYPOTHESIS

To further investigate the problems, two research hypotheses were proposed and tested by the researcher at 0.05 level of significant.

H_01: Health information literacy has no significant influence on drug adherence of HIV/AIDS patients in Akwa Ibom State, Nigeria.

H_02: There is no relative influence of health information literacy on drugs adherence of HIV/AIDS patients in Akwa Ibom State, Nigeria.

RESEARCH METHODOLOGY

Survey research design was adopted. The total population for this study comprised of 10,287 adult HIV/AIDS patients on ART. A sample size of 370 was determined for this study using Krejcie and Morgan (1970) formula. Stratified proportionate sampling was used to select three hundred and seventy (370) respondents from the three ART centres. Convenient or accidental sampling technique was employed to select individual respondents of ART patients from each of the ART centres for the study. A self-structured questionnaire

was used as data collection instrument. The face and content validity of the instrument were ensured by project supervisors, professionals in the department and the methodologist. Exploratory Factor Analysis (EFA), Kaiser Meyer Olkin (KMO) and Bartlett test were used for construct validity. For reliability test, 40 copies of the instrument were pre-tested for internal consistency using Chronbach's Alpa Reliability test. The questionnaire were administered by the researcher and research assistants on every working (clinic) day over a period of six weeks**.**

Presentation and Analysis of Research Questions

Research Question One: What is the extent of drug adherence of HIV/AIDS patients in Akwa Ibom State, Nigeria?
Tables 1a & 1b indicates that the extent of drugs adherence of HIV/AIDS patients in Akwa Ibom State is moderates for both self-reporting measures and study indicators measures with an average overall mean value of 3.22 and 3.11 respectively.

Table 1a: Extent of Drug Adherence of HIV/AIDS Patients (Self-Reporting Measures)

	HE F (%)	ME F (%)	LE F (%)	VLE F (%)	Mean ($\overline{x}$)	Standard Deviation (SD)
***I missed 3 doses in the last 1 month	161 (43.6)	192 (52)	16 (4.3)	0 (0)	3.39	0.57
***I missed 4 doses in the last 1 month	167 (45.3)	185 (50.1)	9 (2.4)	8 (2.2)	3.38	0.65
***I missed 2 doses in the last 1 month.	149 (40.4)	193 (52.3)	17 (4.6)	10 (2.7)	3.30	0.68
***I missed a dose in the last 1 month.	127 (34.4)	193 (52.3)	38 (10.3)	11 (3.0)	3.18	0.73
I never miss my drug in the last 1 month.	105 (28.5)	152 (41.2)	66 (17.9)	46 (12.5)	2.86	0.97
Average Overall Mean					**3.22**	**0.72**

Source: Field Survey 2020, **KEY:** HE=High Extent, ME=Moderate Extent, LE=Low Extent, VLE=Very Low Extent***Decision Rule if mean is less or equal to 1.49 = Very Low Extent; 1.5 to 2.49 = Low Extent; 2.5 to 3.49 =Moderate Extent; 3.5 to 4= High Extent. ***Note*** *Items were reverse coded*

Table 1a shows that HIV/AIDS patients in Akwa Ibom State generally had moderate extent of drug adherence ($\overline{x}$=3.22). Specifically, the HIV/AIDS patients in Akwa Ibom State had moderate extent of drug adherence in the following ways: by missing 3 doses in the last 1 month ($\overline{x}$=3.39), missing 4 doses in the last 1 month ($\overline{x}$=3.38), missing 2 doses in the last 1 month ($\overline{x}$=3.30), missing a dose in the last 1 month ($\overline{x}$=3.18). This suggests that the HIV/AIDS patients in Akwa Ibom State had moderate extent of drug adherence because they missed doses in the last 1 month.

Table 1b. Drugs Adherence Measured by Study Indicators

Indicators	Mean ($\overline{x}$)	Standard Deviation (SD)
Viral suppression	2.86	0.66

Table 1b indicates that the drug adherence of participants measured by study indicator was favourable. This means that respondents' drug adherence in terms of viral load was favourable because their viral load was less than 400 copies/ml (<400) ($\overline{x}$=2.86).

Research Question Two: What is the level of health information literacy abilities of HIV/AIDS patients in Akwa Ibom State, Nigeria?

The result showed that the level of health information literacy abilities of HIV/AIDS patients in Akwa Ibom State is Moderate as the mean value for each of the components falls between 3.05 and 3.41 with an overall average mean of 3.21 as shown in 3

Table 2. Level of Health Information Literacy Abilities of HIV/AIDS Patients

Variables	H F (%)	M F (%)	L F (%)	VL F (%)	Mean $\overline{x}$	Standard Deviation (SD)
Ability to Use Health Information						
My ability to use the health information obtained for drugs adherence is -----	195 (52.8)	166 (45)	5 (1.4)	3 (0.8)	3.50	0.57
My ability to use the information obtained to prevent HIV transmission is -	200 (54.2)	156 (42.3)	4 (1.1)	9 (2.4)	3.48	0.65
My ability to use the information obtained to do away with discrimination is ----	187 (50.7)	151 (40.9)	20 (5.4)	11 (3.0)	3.39	0.73
My ability to use the information obtained to deal with stigma is -----	180 (48.8)	154 (41.7)	20 (5.4)	15 (4.1)	3.35	0.76
My ability to use the information obtained to have HIV negative children is -----	165 (44.7)	170 (46.1)	21 (5.7)	13 (3.5)	3.32	0.74
Mean = 3.41, SD=0.6						
Ability to Process Health Information						
My ability to process health information to know if the information is useful is ----	189 (51.2)	171 (46.3)	4 (1.1)	5 (1.4)	3.47	0.59
My ability to process health information to know if the information is relevant is -----	161 (43.6)	171 (46.3)	23 (6.2)	14 (3.8)	3.30	0.75
My ability to process health information to know if the information meets my needs is -----	163 (44.2)	160 (43.4)	24 (6.5)	22 (6.0)	3.26	0.83
My ability to process health information to know if the source is reliable is -----	157 (42.5)	164 (44.4)	29 (7.9)	19 (5.1)	3.24	0.81
My ability to process health information to know if the information is current or up-to-date is -----	158 (42.8)	156 (42.3)	37 (10)	18 (4.9)	3.23	0.82
Mean = 3.30, SD =0.76						
Ability to Understand Health Information						
My ability to understand health information from the healthcare providers is -----	205 (55.6)	157 (42.5)	6 (1.6)	1 (0.3)	3.53	0.55
My ability to understand health information from the support (peers) group is -----	158 (42.8)	160 (43.4)	26 (7.0)	25 (6.8)	3.22	0.85
My ability to understand health information from media (televisions and radio) is -----	119 (32.2)	151 (40.9)	80 (21.7)	19 (5.1)	3.00	0.86
My ability understand health information from the internet is -----	118 (32)	129 (35)	74 (20.1)	48 (13)	2.86	1.01
My ability understand health information from the libraries is -----	92 (24.9)	103 (27.9)	117 (31.7)	57 (15.4)	2.62	1.02
Mean = 3.05, SD =0.86						
Ability to obtain Health Information from various sources						
My ability to obtain health information from healthcare providers to meet my information needs is ------	194 (52.6)	170 (46.1)	3 (0.8)	2 (0.5)	3.51	0.55

Table 2. continuation

My ability to obtain health information from HIV support group (peers) to meet my information needs is ------	146 (39.6)	183 (49.6)	25 (6.8)	15 (4.1)	3.25	0.75
My ability to obtain health information from media (radio, television) to meet my information needs -----	116 (31.4)	175 (47.4)	66 (17.9)	12 (3.3)	3.07	0.79
My ability to obtain health information from internet to meet my information needs is -----	127 (34.4)	126 (34.1)	68 (18.4)	48 (13)	2.90	1.02
My ability to obtain health information from libraries to meet my health information needs is -----	86 (23.3)	105 (28.5)	114 (30.9)	64 (17.3)	2.58	1.03
Mean = 3.06, SD=0.83						
Average Overall Mean					**3.21**	**0.79**

Source: Field Survey 2020
KEY: H=High, M=Moderate, L=Low, VL=Very Low ***Decision Rule if mean is less or equal to 1.49 = Very Low; 1.5 to 2.49 = Low; 2.5 to 3.49 =Moderate; 3.5 to 4= High

Table 2 shows that HIV/AIDS patients in Akwa Ibom State generally had moderate level of health information literacy abilities ($\bar{x}$=3.21). They specifically had moderate level of health information literacy abilities in respect of having the: ability to obtain health information from various sources ($\bar{x}$=3.06), ability to process health information ($\bar{x}$=3.30), ability to understand health information ($\bar{x}$=3.05) and ability to use health information ($\bar{x}$=3.41). This suggests that HIV/AIDS patients in Akwa Ibom State had moderate level of health information literacy abilities in terms of having the ability to obtain health information from various sources, process health information, having the ability to understand health information and having the ability to use health information.

Analysis and Presentation of Research hypotheses

Research Hypothesis One:

H$_0$1: Health information literacy has no significant influence on drug adherence of HIV/AIDS patients in Akwa Ibom State, Nigeria.

Table 3. Influence of Health Information Literacy on Drug Adherence of HIV/AIDS Patients

Variables	B	Std. Error	Beta (β)	T	P	R^2
(Constant)	25.036	0.869		28.797	0.000	0.095
Health Information Literacy	0.083	0.013	0.309	6.220	0.000	
Dependent Variable: Drug Adherence						

Note: β= Standardized Coefficient, significant at 0.05

Table 3 shows that health information literacy of HIV/AIDS patients in Akwa Ibom State positively significantly influenced their drug adherence (R^2= 0.095, β= 0.309, t = 6.220, p<0.05). The model shows that health information literacy could explain 9.5% variation (R^2=0.095) in drug adherence of HIV/AIDS patients in Akwa Ibom State. Hence, the null hypothesis which states that health information literacy has no significant influence on drug adherence of HIV/AIDS patients in Akwa Ibom State, Nigeria was rejected. The analysis further showed that health information literacy positively influenced participants' drug adherence which implies that improvement in HIV/AIDS patients' health information literacy would result in better drug adherence by them. This suggests that relevant authorities should ensure that the health information literacy of HIV/AIDS patients is improved in order to facilitate better drug adherence among them.

Research Hypothesis two:

H$_0$2: There is no relative influence of health information literacy on drugs adherence of HIV/AIDS patients in Akwa Ibom State, Nigeria.

Table 4. Relative Influence of Health Information Literacy on Drug Adherence of HIV/AIDS Patients

Variables	B	Std. Error	Beta (β)	T	p	Adj.R^2	F	Df	P
(Constant)	24.320	0.983		24.747	0.000	0.093	10.42	4	**0.000**
Ability to obtain information	0.049	0.071	0.055	0.683	0.495				
Ability to process health Information	0.097	0.059	0.111	1.657	0.098				
Ability to understand health Information	0.045	0.068	0.057	0.671	0.502				
Ability to use health Information	0.177	0.063	0.168	2.813	**0.005**				
Dependent Variable: Drug Adherence									

***Note: β=** Standardized Coefficient, significant at 0.05*

Table 4 depicts that health information literacy of HIV/AIDS patients in Akwa Ibom State significantly influenced their drug adherence (*Adj. R^2*=0.093, *F* (4, 364) = 10.42, *p*<0.05). The model shows that health information literacy could explain 9.3 % variation (*Adj. R^2*=0.093) in drug adherence of HIV/AIDS patients in Akwa Ibom State. Hence, the null hypothesis which states that health information literacy has no significant influence on drug adherence of HIV/AIDS patients in Akwa Ibom State, Nigeria was rejected and re-stated thus: health information literacy has significant influence on drug adherence of HIV/AIDS patients in Akwa Ibom State, Nigeria. From the relative perspective, use of health information positively influenced participants' drug adherence (*β*= 0.168, *t* =2.813, *p*<0.05); while ability to obtain information (*β*= 0.055, *t* =0.683, *p*>0.05), ability to process health information (*β*= 0.111, *t* =1.657, *p*>0.05) and ability to understand health information (*β*= 0.057, *t* =0.671, *p*>0.05) did not significantly influence their drug adherence. This implies that an increase in Akwa Ibom State HIV/AIDS patients' information literacy will result in better drug adherence. In addition, the analysis shows that a standard deviation unit increase in Akwa Ibom State HIV/AIDS patients' ability to use health information will result in 16.8 % increase in their drug adherence. This analysis implies that improvement in Akwa Ibom State HIV/AIDS patients' ability to use health information will result in better drug adherence.

DISCUSSION OF FINDINGS

Drugs are the primary approach to treating most illnesses (Hutchins et al, 2015). Pellowski and Kalichman (2016) asserted that drugs adherence is a strong behaviour component in maintaining the health of people living with HIV/AIDS. This therefore places expectations and demands on the HIV/AIDS patients to maintain a high level of drugs adherence for optimum performance.

Research question one sought to find out the extent of drugs adherence of HIV/AIDS patient in Akwa Ibom State, Nigeria. Worthy of note of the findings of this study is that the drugs adherence of HIV/AIDS patients in Akwa Ibom state is moderate. Thus, the finding of this study agrees with Anyaike et al, (2019); Wambugu et al, (2018) whose study reported suboptimal (moderate) adherence rate for the study participants. This study also disagrees with Olorunsola et al, (2019) who found that the drug adherence of HIV/AIDS patient in selected community pharmacy in Akwa Ibom State in high. The finding of this study is also inconsistent with Ceylan et al, (2019) whose study reported high level of drugs adherence as well as Amirkhanian (2018) who reported greater than 90% ART adherence among the study participants. Further, this study disagrees with Miyada et al, (2019) who examined the drug adherence of HIV/AIDS patients and found that their drugs adherence level is low.

Viral load suppression (<1,000 coples/ml) was used as an indicator to measure drugs adherence of HIV/AIDS patients in Akwa Ibom State. Dalhatu et al, (2016) submitted that viral load measurement is a gold standard for measuring ART adherence in HIV/AIDS management. Moreover, WHO recommends periodic evaluation of viral load for HIV patients on ART and to achieve viral load suppression (<1,000 copies/ml). Findings from the study indicates that drug adherence in terms of viral load suppression (<1,000) was favourable. This is in line with Amirkhanian et al, (2018) who reported undetected viral load among study participants; and Olorunsola et al, (2019) who found that the respondents in the study were virally suppressed.

Furthermore, research question two sought to examine the level of health information literacy abilities of HIV/AIDS in Akwa Ibom State, Nigeria. Jennifer et al, (2016) documented that health information literacy is an individuals' abilities to access, process and utilize health related information with the end goal of informing and improving health information related decisions, health

behaviours and clinical outcomes. Health information literacy abilities of the participants in this study were measured based on these indicators. The level of health information literacy abilities of HIV/AIDS patients in Akwa Ibom State was found to be moderate. This finding is different from the study conducted by Stonebraker et al, (2018) who reported that health information literacy level of HIV/AIDS patient is low. This denotes that HIV/AIDS patients in Akwa Ibom state have moderate level of health information literacy abilities with respect to ability to obtain health information from various sources, process health information, understand health information and use health information. This study also disagrees with Fuzhi et al, (2019) whose study reported low health literacy of digital immigrants.

The research hypothesis which states that Health information literacy has no significant influence on drug adherence of HIV/AIDS patients in Akwa Ibom State, Nigeria was tested to determine the influence of health information literacy on drugs adherence of HIV/AIDS patients in Akwa Ibom state Nigeria. Kodovski et al, (2017) commented that the evidence for association between health literacy and clinical markers of HIV severity (CD4 count, viral load, clinical stage, functional status and quality of life) is weak and conflicting. However, findings from this study signifies that health information literacy of HIV/AIDS patients in Akwa Ibom State significantly influence their drug adherence. This finding supports the study by Lee et al, (2017) who established that health information literacy is strong predictor of medication adherence among adult patient in South Korea. It is also in line with the submission of Kodovski et al, (2017) that HIV/AIDS patients with inadequate health literacy had wrong comprehension of drugs prescription and poor adherence.

CONCLUSIONS

The study investigated the influence of health information literacy on drugs adherence of HIV/AIDS patients in Akwa Ibom State, Nigeria. This study is successful as the objectives have been achieved. The study has established that drugs adherence of HIV/AIDS patients in Akwa Ibom State is moderate because they missed doses in the last one month; the respondents attained viral suppression; had moderate level of health information literacy abilities; the respondent's drugs adherence is influenced by health information literacy.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations are made:

1.   HIV/AIDS patients in Akwa Ibom State should be motivated by donor agencies in order to improve their drug adherence.
2.   Akwa Ibom State Government should improve health information literacy abilities of HIV/AIDS patients through health literacy programmes in order to improve their drugs adherence.

REFERENCES

Akahara, C., Nwolisa, E. Odinaka, K. & Okolo, S. (2017). Assessment of Antiretroviral Treatment Adherence Among Children Attending Care at A Tertiary Hospital In South Eastern Nigeria. *Journal of Tropical Medicines, ID 36038* (4). https://doi.org/10.1155/2017/3666-3850.

Amirkhanian, Y. A., Kelly, J. A., DiFranceisco, W. J., Kuznetsova, A. V., Tarima, S, S., Alexey, Yakovlev, A. A. & Musatov, V. B. (2018). Predictors of HIV care engagement, antiretroviral medication adherence, and viral suppression among people living with HIV infection in St. Petersburg, *Russia. Journal of AIDS Behaviour; 22(3)*: 791–799. doi:10.1007/s10461-016-1638-9.

Anyaike, C., Atoyebi, O. D., Musa, O. I., Bolarinwa, O. A., Durowade, K. A., Ogundiran, A. & Babatunde, O. A. (2019). Adherence to combined antiretroviral therapy (cart) among people living with HIV/AIDS in a tertiary hospital in Ilorin, Nigeria. *Pan African Medical Journal.;32:10*. doi:10.11604/pamj.2019.32.10.7508

Awofaha, A. A. and Ogundele, O. E. (2016). HIV epidemiology in Nigeria. *Saudi journal of biological scienc*e http://dx/doi.org/10.1016/j.sjss.22016.03.006

Bikila, J., Kadir, H; Tuke, G., Mahammed, A. & Marey, H. (2015). Adherence to antiretroviral therapy and associated factors among people living with HIV/AIDS at Gobba hospital, South East Ethiopia: An institutional based study.

Centers for Diseases Control and Prevention (2015). Health literacy. Retrieved from: *http://www.cdc.gov/health literacy/learn*

Ceylan, E., Koç, A., Inkayaa. C. & Üna, S. (2018). Determination of medication adherence and related factors among people living with HIV/AIDS in A Turkish University Hospital. *Turkey Journal of Medical Science (2019) 49:*198-205c TUBİTAK doi:10.3906/sag-1802-137

Dalhatu, I., Onotu, D., Odafe, S., Abiri, O.,Debem, H,. Agolory, S.,…Ellerbrock, T. V. (2016). Outcome of Nigeria's HIV/AIDS treatment programme for patient initiated on Antiretrovial treatment between

2004-2012. Plos 11 (11):e0165528. Doi:10.1371/journal.pone.0165528.

Federal Ministry of Health, {FMOH} Nigeria (2016). *National guidelines for HIV prevention, treatment and care; National AIDS and STIs Control Programme*

Fuzhi, W., Dan, L., Weiwei, S., Tingting, Y., Dehua, H., Wei, P. & Aijing, L. (2019). Health information literacy and barriers of online health information seeking among digital immigrants in Rural China: A preliminary survey. *Health Care Informatics – Original Research.*

Heestermans, T., Browne, J. L., Aitken, S. C., Vervoort, S. C. & Grobusch, K. K. (2016). Determinants of adherence to antiretroviral therapy among HIV positive adults in Sub Saharan Africa. A systematic review. *Biomedical Journal, Global health*

Hutchins, D. S., Zeber, J. E., Roberts, C. S., Williams, A. P., Manias, E. & Peterson, A. M. (2015). Initial medication adherence review and recommendations for good practices in outcomes research. An ISPOR medication adherence and persistence special interest group report. *Value Health; 18:690-699.*

Huvila, I., Ek, S., Enwald, H., Eriksson-Baka, K., Hirvonen, N. & Kansakoski, H. (2016). Taking health information behaviour into account in the design of e-health services. *Finnish Journal of E-Health and E-Welfare;8(4)*

Jennifer, A., Pellowski, M. A., Seth, C., Kalichman, Tamar, & Grebler, B. A. (2016). Optimal treatment adherence counseling outcomes for people living with HIV and limited health literacy. *Journal of behavioural medicine, 4* (1):39-47. Retrieved from: *doi.10.1080/08964289.2014.96 3006.*

Kodovski, V. M., Woods, S. P., Arci, G., Verduzco, M. & Morgan, E. E. (2017). Is the Newest Vital Sign a Useful measure of Health Literacy in HIV Disease? *Journal of the International association of Providers of AIDS Care 16* (6) 595-602.

Lee, Y. M., Yu, H.Y., You, M. A. & Son, Y. J. (2017). Impact of health literacy on medication adherence in older people with chronic diseases. *Journal of Australia College of Nursing;2,4*11-18 httsp://dx.org/10.1016/j.colegn.2015.080003.

Mehari, M, Kiros N; Yemane, A; Asghedom, N; Debesay, S & Tekeste, T. (2017). Factors affecting treatment adherence among HIV positive patients in Eritrea. *International Biology Biomedical Journal Summer; 3(3*) retrieved form ibbj.org.

Meppelink, C. S., Smit, E. G., Diviani, N. & Van Weert, J. C. M. (2016). Health literacy and online health information processing: Unraveling the underlying mechanisms. *Journal of Health Communication, 21: (2)* 109-120, DOI: 10.1080/10810730.2016.1193920

Miller, T.A (2016). Health literacy and adherence to medical treatment in chronic and acute illness: A meta-analysis. *Patient Education and Counseling Journal.*

Suyi 99 (7):1079-1086 *doi.10.101610. Pec, 2016.01.020.*

Miyada, S., Garbin, A. J. I., Gato, R. C. J. & Garbin, C. A. S. (2017).Treatment Adherence in Patients Living with HIV/AIDS Assisted at a Specialized Facility in Brazil. *Rev Bras Med Trap: 607-612 Sept 2017* Doi:10.1590/0037-8682.0266-2017.

Moomba, K. & Van Wyk, B. (2019). Social and economic barriers to adherence among patients at livingstone General hospital in Zambia. *African Journal of Primary Health Care Family Medicine.;11(1)*, a1740. https://doi.org/ 10.4102/phcfm. v11i1.1740

Nigerian HIV/AIDS Indicator and Impact Survey (NAIIS) (2018) press Release

Oleribe, O. O., Aliyu, S. & Taylor-Robinson, S. D. (2018). Is the Prevalence of HIV wrongly estimated in Nigeria? Some insights from 2017 world AIDS day experience from a Nigerian non-governmental organisation. *Pan African Medical Journal 29*:119. *doi:10.11604/pamj.2018.29.119.14864*

Olorunsola, E. O., Eichie, F. E. & Awofisayo, S. O. (2019). Antiretroviral service delivery at selected community pharmacies in Akwa Ibom State, Nigeria. *Journal of Applied Pharmaceutical Science; 9(10), 092-097*

Olowookere, S. A., Fatiregu, A. A., Ladipo, M. M. A; Abioye-Kuteyi, E. A. & Adewole, I. F. (2016). Effects of adherence to anti-retroviral therapy on body mass under immunoligcal and virological status of Nigerians living with HIV/AIDS. *Alexandea journal of Medicine 92016* 52.51-54.

Omonaiyea, O., Kusljicb, S., Nicholsona, P., Mohebbia, M. & Maniasa, E. (2019). Post option B+ implementation programme in Nigeria: Determinants of adherence of antiretroviral therapy among pregnant women with HIV. *International Journal of Infectious Diseases.*

Onwunata, A., Omotayo, O., Ebong, O. E. & Enoh, G. (2019). Factors associated with non- adherence of HIV/AIDS patients to haart regimen in a healthcare facility in Ikot Ekpene, Akwa Ibom State, Nigeria. *Journal of AIDS and HIV Research. 11(3), 16- 24* DOI: 10.5897/JAHR2018.0481.

Pellowski, J. A. & Kalichman, S. C. (2016). Health behaviour predictors of medication adherence among low health literacy people living with HIV/AIDS. *Journal of Health Psychology; 21(9):*1981-1991. Doi.10.1177/1359105315569617.

Song, S., Lee, S. M. Jang, S., Lee Y. J., Kim, N. H., Sohn, H. R. & Suh, D. C. (2017). Mediation effects of medication information processing and adherence on association between health literacy and quality of life. *Biomedical Health Services Research 17:*661 *Doi.10.1186/s12913-017-2598-0.*

Stonbraker, S; Befus, M; Nadal, L. L., Halpern, M. & Larson, E. (2017). Factors associated with health

information seeking, processing and use among HIV positive adults in the Domican Republic. *Journal of AIDS Behaviour; 21(6)*: 1588-1600-doi:10.1007/S 10461-016-1569-5.

Ukpong G. (2018)). Akwa Ibom State Ministry of Health/FHI360 2017 AIDS indicator survey, press release.

United Nations programme on HIV/AIDS (UNAIDS) gap report (2019). Abuja/Geneva www.unaids.org>20190314_nigeria

Wambugu, N., Gatongi, P., Joe, M., Mokaya J. & Taratisio, N. (2018) Determinants of adherence to antiretroviral among HIV positive adolescents at comprehensive care clinic, Gertrude's children hospital, Nairobi, Kenya. *American Journal of Nursing Science*. 1 (7)23-30. Doi: 10.11648/j.ajns.20180701.13

Wilson, T. D. (1999). Models in information behaviour Research. *Journal of Documentation; 55(3) 249-270*