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Treatment adherence predicts health-related quality of life among people living with HIV/AIDS

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ABSTRACT

Substantial literature exists on psychosocial other variables impacting health-related quality of life (HRQoL) of people living with HIV/AIDS (PLWHA) but less attention has been given to treatment adherence vis-a-vis the patients' wellbeing. This study examined whether treatment adherence predicted HRQoL in a sample of PLWHA in the South-eastern Nigeria. The dimensions of HRQoL considered in this study were physical health, social relationship cognitive component, and treatment impacts. Two hundred (200) patients (43.0% men and 53.0% women) who were managed for HIV/AIDS in Bishop Shanahan Hospital and have been in treatment for at least 12 months participated in the study. Participants were excluded if they were not diagnosed of HIV+/AIDS for at least one year and if they were not receiving anti-retroviral treatment for a minimum period of 6 months. Pearson's correlations and linear regression analyses were used to examine the hypotheses. Result showed that treatment adherence positively predicted physical health, social relationship, and cognitive components of health-related quality of life, but not the treatment impact dimensions of HRQoL. Adherence to treatment regimens had positive influence towards enhancing the physical health functioning, alleviating worries, and enhancing intimate and social relationship of people living with HIV/AIDS. Findings underscore the importance of examining not only the broader context of HIV/AIDS, but also individual differences in adhering to treatment regimen, when seeking to understand factors that influence HRQoL among PLWHA.

Introduction

Acquired immunodeficiency syndrome (AIDS) is a life-long and life-threatening health condition emanating from the Human Immunodeficiency Virus (HIV) (Mayo Clinic, 2018). This health condition has taken a ravaging toll on the global population, with over 78 million and 39 million morbidity and mortality indices respectively. Over two-third of the global total cases of HIV/AIDS have been recorded in Sub-Saharan Africa, and Nigeria had the second largest global incidence of this epidemics (after South Africa) (The Joint United Nations Programme on HIV/ AIDS, UNAIDS, 2016). Compared to the general population, people living with HIV/AIDS (PLWHA) have poorer health-related quality of life (HRQOL) (Lee, Kochman, & Sikkema, 2002).

Health-related quality of life *(*HRQoL) has drawn the attention of researchers, policy makers and health practitioners given its importance in assessment of people with different health conditions with a view to understanding their health needs for improved health outcome planning (Osoba, 2011). Health-related quality of life is the functional effect of a health/ disease condition and/or its consequent therapy upon a patient (Schipper, Clinch, & Olweny, 1996). Nilsson (2012) defined HRQoL as the effects of the disease and its treatment on the patient. Among PLWHA, HRQoL is particularly helpful in monitoring the level of HIV/AIDS progression, and treatment impacts from the patients' subjective experience (Paschoal, 2000). Assessing HRQoL involves determining how health variables such as disease and its treatments are related to certain dimensions of life that have been determined to be important to people in general (generic HRQoL) or to people who have a specific disease (condition specific HRQL). The dimensions include physical health, social relationships/role, psychological/ emotional, cognitive functioning, perceptions of treatment impact, and overall quality of life (American Thoracic Society, ATS, 2008). Comparatively, people living with HIV/AIDS (PLWHA) experience worse HRQoL than patients living with other chronic illnesses resulting, probably, from poor adherence to treatment regimens associated with the disease condition (Lee, Kochman, & Sikkema, 2002). Assessment and improving quality of life (QoL) among patients living with chronic health conditions constitute vital areas of interest in the health care.

Studies have shown that treatment adherence predicts HRQoL. For example, Costa et al. (2019) reported better HRQoL in people receiving anti-retroviral therapy (ART) who adhered to their treatment than their non adhering counterparts. Nyamathi et al. (2018) found that women experienced a high number of opportunistic infections (OIs) and low QOL due to low treatment adherence. Alemu, Yelealem, Feleke, and Meseret (2013) reported that people who had poor drug adherence to their drug regimen were 3.2 times more likely to be risk to poor quality of life than good drug adherence, while Suswani, Arsin, Amiruddin, Syafar, and Palutturi (2018) found that patients who adhere to treatment have quality of life that was 12 times higher than patients who did not adhere to treatment. To the best of the researchers' knowledge, few studies have investigated the relationship between treatment adherence and HRQoL

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among PLWHA in Nigeria. This study seeks to address this gap. We therefore hypothesize that**:** (a) Treatment adherence will significantly predict physical health symptoms domain of health-related quality of life among PLWHA. (b) Treatment adherence will significantly predict relationship symptoms dimensions of health-related quality of life among PLWHA. (c) Treatment adherence will significantly predict cognitive symptoms dimension of health-related quality of life among PLWHA. (1) Treatment adherence will significantly predict treatment impact domain of health-related quality of life among PLWHA.

Method

Participants

. Participants were 200 outpatients (men = 94, 43.0%, women = 106, 53.0%, mean age = 36.27, *SD* = 9.37) managed for HIV/AIDS in Bishop Shanahan Hospital, Nsukka in Enugu state, Nigeria. By educational status, 116(58.5%) participants had Senior School Certificate, while 83(41.5%) attended higher institutions. On ethnicity, majority of the respondents (181, 90.5%) were Igbo, 7 (3.5%) were Yoruba, while 12 (6%) were of other ethnic groups. Their religious affiliations were Christianity (198, 99.5%) and one (.5%) African Traditional religionist. Participants' marital status showed that 110 (55%) were single, 83 (41.5%) were married and still living with their spouse, 4 (2%) were widows, while 3 (1.5%) were divorced. By occupation, 44 (22%) were traders and businesspersons, 42 (21%) were students, 14 (7%) were teachers, 11 (5.5%) were civil servants, and 8 (4%) were bankers. Also 174 (87%) of the participants reported no other sicknesses other than HIV/AIDS while 26 (13%) reported other sicknesses such as diabetes, ulcer and cancer. Participants were diagnosed of HIV/AIDS status for at least one year and were receiving anti-retroviral treatment for a minimum period of 6 months.

Measures

Morisky Medication Adherence Scale (MMAS)

This is an 8-item measure developed by Morisky, Ang, Krousel-Wood and Ward (2008). All questions have dichotomized (yes/no) response format, except the eighth item, which has 5-point Likert scale. Total score ranged from 0 to 8, with more adherence. (Morisky et al., 2008). The developers reported a one-dimensional component with .83 Cronbach's α reliability coefficient. In the present study, we obtained .75 as its Cronbach's α for internal consistency reliability.

Patients Reported Outcome Quality of Life-HIV (PROQOL-HIV)

This is a 38-item questionnaire, developed by Duracinsky et al. (2012) simultaneously across Africa, Europe, North and South America, Asia and Australia, to measure health related quality of life specifically for people living with HIV (Duracinsky et al., 2012). The four factors, which accounted for 60% of the total variance were: Physical health (PHS, 11 items, e.g., "During the last two weeks, because I am HIV positive, I have had difficulty with strenuous physical activities such as carrying heavy objects, running or walking a long distance, climbing several flight of stairs"), relationship to others (10 items, e.g., "During the last two weeks, because I am HIV positive, I have felt restricted in my relationship with my family or friends"), cognitive symptoms (10 items, e.g., "During the last two weeks, because I am HIV positive, I have been sad) and treatment impacts (TI, 10 items, e.g., "During the last two weeks, because I am HIV positive, the number of pills per day has bothered me). Items on the PROQOL-HIV are rated on a 5 – point Likert scale ranging from never = 0 to always = 4. The higher the percentage of the score for each of the domains of PRQOL-HIV, the better the HRQoL in that domain (Duracinsky et al., 2012). PROQOL-HIV has acceptable level of internal consistency with its Cronbach alpha ranging between .77 for treatment impacts (TRT) as the lowest value and .89 for physical health dimension (PHC) as the highest value. Its 52-days test-retest reliability correlation coefficient in a French sample was .86 (Duracinsky et al., 2012). PROQOL-HIV also has inter-item correlation ranging between .30 and .62 (Duracinsky et al., 2012). In the current study, we found alpha reliability coefficients of .90, .86, .87, and .80 in the physical health, social relationship, cognitive functioning, and treatment impacts subscales, respectively

Procedure

With the approval of the ethical research committee of the Bishop Shanahan Hospital to conduct the study, the researchers recruited and trained 3 research assistants (two males and one female, who were undergraduate students of the University of Nigeria, Nsukka) to assist in administration of the questionnaires in the Hospital. Using availability sampling method, we distributed to 212 participants who were available to receive anti-retroviral treatment in the outpatients ward between 29th April 2019 and 1st July 2019. Out of the 212 questionnaires distributed, 200 were returned properly filled. We keyed in the respondents' scores into the Statistical Packages for Social Sciences (SPSS) version 23 (SPSS Inc. Chicago, IL, USA)**.**

Design / Statistics

This is a survey research and cross-sectional design was adopted in the study. Pearson's correlation (*r*) analysis was conducted among the demographic factors (as age, gender, religion, marital status, occupation, and other diseases), predictors and dependent variables in the study. Linerar regression was applied for hypothesis testing.

Results

The correlations of the demographic variables and study variables are shown in Table 1, while findings of the regression analysis are in Table 2.

The bivariate correlations in Table 1 showed that level of CD4 count positively associated with physical health and cognitive symptom dimensions of HRQoL. This means that those with higher CD4 count experienced better social relationship, physical health, and cognitive functioning. Level of education was negatively associated with physical health symptoms. This suggests that those with low level of education experienced poor physical health. Treatment adherence had significant positive relationships with social relationship, cognitive functioning, and physical health domain. This means that the more adherent a patient was, the better the social relationship, cognitive functioning, and physical health. Treatment adherence was not associated with treatment impact dimension of HRQoL.

Regression coefficient table (Table 2) showed that treatment adherence positively predicted physical symptoms, relationship symptoms and cognitive symptoms dimensions of HRQoL. This result showed that HIV/AIDS patients who adhered to their treatment regimen reported better physical health, social relationship and cognitive functioning. However, treatment adherence did not predict treatment impact dimension of HRQoL.

Table 1: Correlations of demographic variables, medication adherence (MMAS) and the four dimensions of HRQoL (social relationship, cognitive functioning, physical health, and treatment impact).

Variables		1	2	3	4	5	6	7	8	9	10	11
1	Last CD4 count	-										
2	Time since diagnosis	-.10	-									
3	Age	.01	-.57***	-								
4	Gender	-.01	-.05	-.10	-							
5	Level of education	.00	-.17*	.25***	-.13	-						
6	Other medical Condition	-.05	.24	-.56**	.18	-.02	-					
7	Treatment adherence	.35***	-.03	-.09	-.00	.04	-.20	-				
8	Relationship	.21**	-.09	.10	-.06	.03	.04	.15*	-			
9	Cognitive dimension	.21**	-.09	.10	-.06	.03	.04	.15*	1.00***	-		
10	Physical health	.40***	-.04	-.03	.09	-.24**	-.35	.34***	.46***	.46***	-	
11	Treatment impact	.07	-.07	-.01	-.01	.02	.32	.07	.55***	.55***	.32***	-

Note. ***p< .001; **p<.01; *p<.05;, Gender: male = 0, female = 1, Level of education: SSCE = 0, OND/Degree = 1, Postgraduate = 2, HIV/AIDS without other medical condition = 0, HIV/AIDS with other medical conditions = 1.

Table 2: ***Simple regression table demonstrating relationship between MMAS and Physical, relationship, cognitive and treatment impact symptoms domains of HRQoL***

Variables	Physical symptoms				Relationship symptoms				Cognitive symptoms				Treatment impact			
	B	**β**	***t***	**95%*CI***	***B***	**β**	***t***	**95%*CI***	***B***	**β**	***t***	**95%*CI***	***B***	**β**	***t***	**95%*CI***
MMAS	2.26	.34	5.10***	1.38, 3.13	1.18	.15	2.15*	.10, .2.27	1.18	.15	2.15*	.10, .2.27	.37	.07	.95	-.40, 1.15

Note: MMAS = Treatment adherence; Relationship symptoms = Intimate/social relationship; Cognitive symptoms = health concern/mental distress; ***p<.001; *p<.05

Discussion

The goal of this study was to examine the role of treatment adherence in HRQoL in a sample of PLWHA in Nigeria. Consistent with previous researches (e.g., Bello, 2017; Damida, Koenig, Holstad, & Thomas, 2015; Liping, Peng, Haijing, Lahong, & Fan 2015; Mosha et al., 2019; Salleh et al., 2018; Weldsilase, Likka, Wakayo, & Gerbaba, 2018) showing treatment adherence predicted HRQoL. The first hypothesis which stated that treatment adherence will significantly predict physical health domain of health-related quality of life among PLWHA was confirmed. This finding concurs with Bello (2017), who found that PLWHA in Nigeria who adhered strictly to their medications guide had highest scores in physical domain of health. Liping, Peng, Haijing, Lahong, and Fan (2015) also found treatment adherence to be positively associated with physical health domain of HRQoL in a Chinese sample. When PLWHA take their anti-retroviral therapy as prescribed to them, such patients will experience better physical health functioning.

Treatment adherence positively predicted relationship domain of health-related quality of life among PLWHA and thus, hypothesis two was confirmed. This finding is consistent with Weldsilase, Likka, Wakayo, and Gerbaba's (2018) study which showed that patients who had been at stage 4 (WHO Clinical Stage at the beginning of ART) were more likely to have better quality of social relationship domain than those in stage 2. WHO clinical stage signifies the adherence level. Liping, Peng, Haijing, Lahong and Fan (2015) also found treatment adherence to be positively related to social domain of quality of life among PLWHA in China. This finding suggests that the more an HIV/AIDS patient adheres to treatment guidelines, the more such a patient will have a better social/intimate relationship with people and the more such a patient may feel less stigmatised. This seems to suggest that adherence to treatment regimen may be associated with social skills. Further studies may investigate this possibility.

Treatment adherence also positively predicted cognitive dimension of HRQoL. Thus, hypothesis three which stated that treatment adherence will predict cognitive dimension of HRQoL was confirmed. This finding is consistent with findings or a study by Damida, Koenig, Holstad, and Thomas (2015) who found treatment adherence to be positively associated with mental health. Higher treatment adherence of a patient may be associated with less mental distress, anxiety and depressive symptomotology that are usually associated with living with HIV/AIDS. The fourth hypothesis which stated that treatment adherence will significantly predict treatment impact domain of HRQoL was not confirmed. The result showed that treatment adherence did not predict treatment impact. Mosha et al. (2019) observed that side effect of treatment was negatively associated with adherence to ART. The difference in sample and measures of these studies may explain the reason for the current finding.

Our study has some notable limitations. These include relatively small sample size (200), which may limit the generalisability of our findings. The cross-sectional design of our study, involving the use of self-report measures does not allow for causal inferences. In conclusion, this study has extended the existing literature on the relationship between treatment adherence and HRQoL among PLWHA in Nigeria. Adherence to treatment regimens had positive influence towards enhancing the physical health functioning, alleviating worries, and enhancing intimate and social relationship of people living with HIV/AIDS. Findings underscore the importance of examining not only the broader context of HIV/AIDS, but also individual differences in adhering to treatment regimen, when seeking to understand factors that influence HRQoL among PLWHA.

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