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Religion and adherence to antiretroviral medication: is there a link?

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ABSTRACT: Background: Data from various studies on religion and health show the usefulness of religious variables on various health outcomes. Previous studies on the relationship between religion and antiretroviral medication adherence in Africa have been inconsistent.

Objectives: Study aimed to determine the relationship between religiosity, religious coping and medication adherence among people living with HIV/AIDS (PLWHA).

Methods: This was a cross-sectional study of 140 HIV clinic attendees of a Nigerian tertiary hospital. Religiosity, religious coping and adherence were assessed with religious orientation scale-revised (ROS-R), Brief RCOPE and Morisky medication adherence scale (MMAS), respectively. Independent t-test was used to test the relationship between religious orientation, religious coping and medication adherence (dichotomized as optimal/sub-optimal). The socio-demographic, clinical and religious predictors of medication adherence were explored using the stepwise multiple regression analysis.

Results: Optimal medication adherence scores were significantly associated with increased extrinsic religiosity personal (ERP) orientation ($t = -2.1$, $df = 138$, $p = 0.04$; effect size 0.4, 95% CI, 0.3-0.6). Sub-optimal medication adherence scores were significantly associated with increased extrinsic religiosity social (ERS) orientation ($t = 3.10$, $df = 138$, $p = 0.002$; effect size = -0.6, 95% CI, -0.9 to -0.3). Level of education (standardized coefficient = -1.16, $p = 0.05$, $R^2 = 0.024$) and ERP (standardized coefficient = -1.16, $p = 0.05$, $R^2 = 0.050$) were the identified predictors of adherence.

Conclusion: ERP orientation emerged a probable predictor of optimum antiretroviral medication adherence. Educational support programmes and counselling sessions should encourage personal religious commitment among PLWHA to improve antiretroviral medication adherence.

Key words: Religion; Antiretroviral treatment; Medication adherence; Link

I. INTRODUCTION

AIDS is viewed globally as a chronic, life-threatening illness with two phases: HIV infection and AIDS (Scandlyn, 2000). Worldwide, HIV mortality has declined from 1.5 million in 2000 to 0.9 million in 2017 (Dzansi, Tornu&Chipps, 2020). Over the years, the illness has changed from a communicable life-threatening epidemic to a chronic debilitating disease with its sufferers advancing into old age (Deeks, Lewin&Havlr, 2013). This transformation has been made possible with the greater access to combined antiretroviral therapy (cART) in most parts of the world, including Africa. Treatment access and coverage have also increased from 2 million in 2000 to 21.7 million with an estimate of 59.0% patients currently receiving treatment (Dzansi, Tornu&Chipps, 2020). In both industrialized and developing countries, the life expectancy of HIV-infected patients who have access to the combined antiretroviral therapy is now measured in decades, and may be similar to that observed in uninfected populations (Deeks, Lewin&Havlr, 2013; Johnsonm, et al. 2013; Pozniak, 2014). However, the chronicity of the illness plus the associated stigma have some psychosocial implications (Siegel & Lekas, 2002), including its heavy disease burden on Africa, close to 53% of all persons living with AIDS are in sub-Saharan Africa (Dzansi, Tornu&Chipps, 2020). The psychosocial distress associated with chronic

disorders requires that some form of coping strategy is necessary to achieve a good outcome. There is increasing data on the usefulness of religion, as a coping strategy, on various health outcomes.

A chronic medical condition like HIV disease also requires strict medication adherence to achieve a favourable outcome. The World Health Organization (W.H.O.) recommends at least a 95% adherence to ART as optimum for HIV/AIDS treatment (Negesa, Demeke&Mekonnin, 2017; Paterson, et al., 2002). Optimal adherence is associated with favourable outcome measures such as maximum and durable suppression of viral replication thus reducing viral load, higher cluster of differentiation-4 (CD4) cells count, and slower disease progression, promotes reconstitution, prevents drug resistance and lowers the risk of transmission (Dalmida, et al. 2017; Chabikuli, et al., 2010; Igbene, et al., 2016). On the other hand, suboptimal adherence (<95% Adherence) is a critical threat to the health of those living with HIV disease. It has been associated with increased ARV drug resistance, increased transmission of the HIV disease, poorer outcome of the disease including more rapid progression to AIDS and death (Dalmida, et al. 2017).

In Africa, certain local sociocultural and economic factors have been identified as determinants to medication adherence in HIV disease. The barriers to ARV medication adherence have been suggested to be female gender, stigma and fear of HIV disclosure, denial of the disease, comorbid mental disorders (depression, suicidal behavior and substance use disorders), poverty, dosage and number of pills and medication side effects, cognitive impairments including forgetfulness (Igbene, et al., 2016; Zou, et al., 2009). The facilitators for adherence include a sense of self-worth (self-esteem), acceptance of the HIV status, higher levels of education, simplicity of the ARV regimen (Dzansi, Tornu&Chippis, 2020; Negesa, Demeke&Mekonnin, 2017).

It has been indicated that religion could be a predictor of ARV medication adherence particularly in communities such as Nigeria with strong religious traditions (Igbene, et al., 2016). But the effect of religion on ARV medication adherence is said to be varied, sometimes conflicting (Igbene, et al., 2016; Zou, et al., 2009; Parsons et al., 2006). First, religiosity/spirituality tends to increase after HIV diagnosis (Cotton, et al., 2006; Ironson, et al., 2006) as the individual reappraises the new reality, trying to make sense of it, and seeking divine intervention/healing. At this period, PLWHA are easily prone to suggestibility and influence of religious leaders. Belief in the supernatural causation of illnesses (physical or mental) is quite common in the general Nigerian population (Amadi, et al., 2016). Most Nigerians including religious leaders (Priests, Pastors, Imams) believe chronic illnesses such as HIV/AIDS are as a result of spiritual attacks and ancestral curses requiring only religious/spiritual treatment in the form of fasting, prayers and deliverance sessions involving exorcism (Dzansi, Tornu&Chippis, 2020; Igbene, et al., 2016; Zou, et al., 2009). Belief in the efficacy of religious/spiritual healing in our society is so strong that it has been suggested that cognitive behavioral therapy (CBT) be used routinely to change this belief system (Igbene, et al., 2016). HIV-associated stigma created and perpetrated by religious leaders and some other religious adherents suggesting that HIV is a "punishment from God and PLWHA have not followed the word of God" (Zou, et al., 2009) could be a strong barrier to ARV medication adherence as such stigmatizing environment may be characterized by discrimination and exclusion.

On the other hand, religious beliefs and practices may provide PLWHA some relief and resilience which may reinforce their personal belief in the efficacy and use of the ARV medication improving adherence (Parsons et al., 2006). Religion may also facilitate the creation of socially supportive environments facilitating ARV medication adherence (Kumarasamy, et al., 2005). Some studies have documented a positive association between positive religious coping and better adaptation to chronic medical illnesses like HIV/AIDS, suggesting that positive religious coping may be associated with improved attendance at scheduled medical appointments, and better compliance with the ARV medications (Koenig, 2009).

Previous studies in our environment have thus suggested that religion could be a predictor of ARV medication adherence among people living with HIV/AIDS. Results from such studies concerning the usefulness or otherwise of religion in determining adherence levels in such patients have been conflicting sometimes ambiguous or out-rightly said to be detrimental to adherence. This study aims to determine the association between religion and ARV medication adherence using HIV-specific criteria for ARV medication adherence among PLWHA.

II. METHODS

Study setting and design

This was a descriptive cross-sectional epidemiological study of 140 patients living with HIV/AIDS. Setting was the outpatient HIV/AIDS clinic of the University of Nigeria Teaching Hospital (UNTH), located at Ituku-Ozalla, about 21 kilometers away from Enugu town, along the Enugu-Port Harcourt expressway. The HIV clinic of UNTH is a very busy one, holds every day of the week except weekends with over 50 patients with HIV/AIDS in attendance. A multidisciplinary team of health workers in the Infectious disease unit of UNTH consisting of Internists, Community Health Physicians, Consultation-Liaison Psychiatrists, Clinical Psychologists, Counsellors, Nurses and Pharmacists. Located in the Southeast geopolitical zone of Nigeria, the inhabitants of Enugu are ethnically Igbo and predominantly Christians.

Approval for this study was sought and received from the Ethics and Research Committee of the University of Nigeria Teaching Hospital, Ituku-Ozalla, Enugu. The research procedure was interview-based and non-invasive. Written informed consent was obtained from the patients. Patients were free to withdraw from the study at any time, even after having consented initially, and that did not in any way affect their medical care in the hospital.

III. PARTICIPANTS

A total of 140 participants were consecutively recruited, a convenient sampling method, from the HIV/AIDS care unit of UNTH, Ituku-Ozalla, Enugu for this study.

According to statistics from the records department from 2015-2019, about 50 PLWHA visit the clinic per day. This translates to 1000 persons per month and 2500 patients in the 10-week duration participants were recruited for the study. Because of the short period of consultation at the clinic, there was a high rate of decline of participation in the study as most patients especially the males were in a hurry to see their doctors and leave the premises as quickly as possible. This accounted for the larger number of female participants than males in the study. The females visiting the clinic were also more in number than males though, and more willing to participate. Only patients who were willing and met the criteria for the study were recruited. Willing participants were interviewed while waiting to be seen by the attending Physicians at the clinic. Inclusion criteria were patient's age range between 18 and 64 years (ready to give informed consent), with established diagnosis of HIV disease with the enzyme-linked immunosorbent assay (ELISA) confirmatory test in UNTH, Enugu, and diagnosis made at least one year prior to the study. Exclusion criteria were patients with significant cognitive impairment that was severe enough to affect ability to participate in the research interview and give informed consent, and those too ill to participate in the study. This included participants with AIDS disease complications that were physically weak and were to be admitted in the in-patient medical ward.

During recruitment adequate measures were taken not to interview a single participant twice over the period by tagging the case note. The socio-demographic and clinical profile questionnaire was the first to be administered to the participants. This was followed with the Religious Orientation Scale-Revised, Brief RCOPE Scale and the MMAS-8 scale in that order to the patients, privately. In each case the interviewer read out the questions and recorded the participants' responses.

IV. STUDY INSTRUMENTS

Socio-demographic and Clinical Profile Questionnaire

This questionnaire is divided into two parts showing the socio-demographic and clinical profiles of the study participants. The socio-demographic part assessed the educational level and employment status of the study group, and provided information on the respondents' age, gender, and marital status, occupation, ethnic background and religious affiliation including denominations.

The clinical profile part of the questionnaire provided a brief summary of the participants' clinical history of their illness. It was used to identify the age at diagnosis, probable route of contact of disease, the duration of diagnosis of HIV disease, current drug regimen, if spouse was also infected (if married), complications of HIV disease (AIDS dementia complex and cancers, opportunistic infections, and major depressive disorder (including suicide attempts & treatment refusal) in the past 6 months.

The Religious Orientation Scale-Revised

The Religious Orientation Scale (ROS) - Revised or Intrinsic/Extrinsic - Revised measures both the intrinsic and extrinsic religious orientation originally posited by Gordon Allport (Allport, 1950). Extrinsic religiosity (ER) is defined as religious activities involving at least 2 people and includes attendance at place of worship, volunteer activities related to religion and church socialization activities. Intrinsic religiosity (IR) involves solitary activities such as praying, Bible reading, personal belief in God and meditation. Allport and Ross, (1967) described the intrinsically religious person as someone who finds his motives in religion, other needs no-matter how strong are of less significance, ultimately. He internalizes his religious creed, following it fully, and therefore "lives" his religion, unlike the extrinsic religious person that "uses" his religion.

This 14-items scale is scored on a 5-point Likert ranging from 'I strongly disagree' (1) to 'I strongly agree' (5). Eight (8) items with 3 reversed scores (scale items 3, 10 and 14) tap the intrinsic orientation whereas six (6) items, 3 items each measure the personal and social categories of extrinsicness. The score of each subscale is determined by summing its items responses resulting in a range of 8-40 for the Intrinsic (IR)-revised, 3-15 for Extrinsic (ER)-revised subscales i.e. Extrinsic personal (ERP) and Extrinsic social (ERS), or 6-30 for Extrinsic (ER)-revised. Reliability estimates for Intrinsic (IR)-revised was 0.83, for Extrinsic religiosity personal (ERP)-revised is 0.57, Extrinsic religiosity social (ERS)-revised is 0.58 and Extrinsic religiosity (ER) - revised is 0.65 (Gorsuch & McPherson, 1989).

The Brief RCOPE (Brief Religious Coping Scale)

This is a 14-item measure of religious coping with life stressors. The items are scored on a 4-point Likert ranging from '0 = not at all', to '3 = a great deal'. The two subscales of Brief RCOPE, positive and negative, were articulated through factor analysis of the full Religious Coping (RCOPE) scale. According to the inventors of this instrument (Pargament, et al., 2011)

, positive coping methods reflect a secure relationship with a transcendent force, a sense of connectedness with others, and a benevolent world view while negative religious coping methods reflect underlying spiritual tensions, conflicts and struggles within oneself, with others, and with the divine. This is manifested by negative reappraisals of God's power (e.g. feeling abandoned or punished by God), demonic reappraisals (i.e. feeling the devil is involved in the stressor), spiritual questioning and doubting, and interpersonal religious discontent. Both positive and negative religious coping subscales have high degrees of internal consistency, Cronbach α level of 0.90 and 0.81 respectively (Pargament, et al., 2011).

Morisky medication adherence scale-8 (MMAS-8)

The MMAS-8 is a self-reported, well validated assessment tool used to measure non-adherence in a variety of patient population (Morisky, 2008). It has a relatively extensive history starting out as a 4-item questionnaire (MMAS-4) to an 8-item survey (MMAS-8). The tool uses a series of short behavioral questions designed in such a way to avoid "yes-saying" bias commonly seen in chronic care setting. More specifically, the wording of the questions is rearranged to prevent answers that tend to follow certain behavioral patterns. This allows the patient to respond to the questions about non-adherence in a spirit of full disclosure to the clinicians. It consists of 8 items, the first 7 of which are yes/no questions, and the last of which is a 5 point Likert-scale rating (scores from 0 to 1, in 0.25 point steps). Item 5 is reverse-scored. Traditionally categorized into three levels of adherence: high adherence (score = 8), medium adherence (score of 6 to <8), and score of <6 for low adherence (Tan, et al., 2016). In this study, the total score was converted into percentage. Therefore, a score of $\geq 95\%$ was considered optimal adherence (Negesa, Demeke&Mekonnin, 2017; Paterson, et al., 2002).

V. STATISTICAL ANALYSES

The Statistical Package for the Social Sciences (IBM-SPSS), version 20 for windows was used for analysis. Normality of data was checked using Shapiro-Wilk test, and the religiosity and religious coping variables were found to be normally distributed. Basic descriptive statistics was used to present the socio-demographic and clinical profiles. The raw scores obtained by each participant on the MMAS-8 scale were converted to percentage scores using the formula $n/z \times 100$ where n is the total MMAS-8 score obtained by the participant and z is the highest total possible score obtainable by any participant on the MMAS-8 scale. The percentage scores were now dichotomized into optimal adherence ($\geq 95\%$) and sub-optimal adherence ($< 95\%$). The relationship between religious orientation variables (IR, ER, ERP& ERS), religious coping (PRC & NRC) and ARV medication adherence (optimal and sub-optimal) among study participants was tested with the independent t-test. Cohen's effect size was used to estimate the magnitude of the mean difference. The socio-demographic, clinical and religious predictors of medication adherence (dependent variable) were explored using the stepwise multiple regression analysis. All tests of significance were two-tailed at the 5% level and confidence interval estimation of 95%.

VI. RESULTS

Socio-demographic characteristics of participants

As shown on table 1, the participants were mostly middle aged (mean age of 42 years), mean age at diagnosis was 33.6 ± 10.5 years, and an average duration of illness is 8.4 ± 3.7 years. Females were more in number (80.7%), majority of the participants (55.7%) were married, though 24.3% of the participants who were formerly married had lost their spouses to the illness. Majority of the participants (47.1%) are secondary school leavers while 28% have tertiary education, and 80% of participants are gainfully employed. All the participants are Christians, majority (56%) of the Christians are Catholics followed by Pentecostals (36.4%) and the Anglican Communion (7.1%).

The probable route of contact for most participants is thought to be unprotected heterosexual sex (54%), though 42% of the participants are either unsure or do not want to disclose the possible route of contact. Blood and blood products (2.1%) plus sharp objects (2.1%) make up the rest of probable route of contact. In the last 6 months prior to the research interview, majority (98.6%) of the participants affirmed that they have not had any complications whether physical (opportunistic infections, AIDS-related cancers, AIDS-dementia complex etc.) or psychological (depressive symptoms, suicidal behavior or treatment refusal).

Relationship between religiosity, religious coping and medication adherence

As shown on table 2, PLWHA with optimal medication adherence scores had significantly higher scores on ERP ($t = -2.1$, $df = 138$, $p = 0.04$; effect size 0.4, 95% CI, 0.3-0.6) than PLWHA with suboptimal adherence scores. On the other hand, PLWHA with suboptimal medication adherence scores had significantly higher scores on ERS ($t = 3.10$, $df = 138$, $p = 0.002$; effect size = - 0.6, 95% CI, - 0.9 to - 0.3) than those with optimal medication adherence scores.

Stepwise multiple regression result of socio-demographic, clinical profile, religiosity and religious coping predictors of medication adherence

The socio-demographic profile, clinical profile, religiosity and religious coping variables were entered separately using the stepwise multiple regression analysis.

Table 3 shows the final regression model. Of the socio-demographic variables (e.g., age, gender, marital status, religious affiliation, employment status and level of education), clinical variables (e.g., age at onset, duration of illness, dosage of medication, medication side effects), religiosity variables (i.e., intrinsic, extrinsic, extrinsic personal and extrinsic social) and religious coping variables (e.g., positive and negative) that were tested, only level of education and extrinsic religiosity personal entered the regression equation. These two accounted for 7.4% of the variance in medication adherence with extrinsic religiosity personal accounting for 5.0% of the variance (standardized coefficient = - 0.18, $p = 0.03$), while, level of education accounted for 2.4% (standardized coefficient = -1.16, $p = 0.05$).

Table 1: Socio-demographic and clinical characteristics of the participants

Variables	Frequency (%)	Mean (SD)
Age (years)		42.80(10.02)
Age at Diagnosis (years)		33.61(10.55)
Duration of Diagnosis (years)		8.43(3.71)
Gender		
Male	27(19.3)	
Female	113(80.7)	
Marital Status		
Married	78(55.7)	
Single	23(16.4)	
Separated	2(1.4)	
Divorced	3(2.1)	
Widowed	34(24.3)	
Level Education		
No formal	4(2.9)	
Primary	31(22.1)	
Secondary	66(47.1)	
Tertiary	39(27.9)	
Employment Status		
Students	3(2.1)	
Unemployed	25(17.9)	
Employed	112(80.0)	
Christian Denomination		
Catholic	79(56.4)	
Anglican	10(7.1)	
Pentecostal	51(36.4)	
Possible Route of Contact		
Sexual Contact	75(53.6)	
Blood/blood Products	3(2.1)	
Sharp objects	3(2.1)	
Not Sure	59(42.1)	
Complications (past 6 months)		
Yes	2(1.4)	
No	138(98.6)	

Table 2: Relationship between religious orientation, religious coping and medication adherence among study participants.

N=140

Variables	Adherence		t-stat	df	p-value	Effect Size (95% CI)
	*Optimal Mean (SD)	**Sub-Optimal Mean (SD)				
IR	33.65(5.80)	31.68(5.73)	-1.83	138	0.06	-
ER	17.89(1.45)	18.43(2.48)	1.60	138	0.11	-
ERP	13.93(1.33)	13.39(1.74)	-2.01	138	0.04	0.4(0.3-0.6)
ERS	3.95(1.67)	5.04(2.34)	3.10	138	0.002	-0.6(-0.9 to -0.3)
PRC	20.40(1.30)	20.14(1.63)	-0.98	138	0.32	-
NRC	2.97(4.67)	1.85(2.74)	-1.44	138	0.15	-

NB: IR = Intrinsic Religiosity, ER = Extrinsic Religiosity, ERP = Extrinsic Religiosity Personal, ERS = Extrinsic Religiosity Social, PRC = Positive Religious Coping, NRC= Negative Religious Coping. *Optimal Adherence is ARV medication Adherence at least 95% and above, while **Sub-optimal adherence is ARV medication adherence <95%.^{7,8}

Table 3: Summary of the stepwise regression result of socio-demographic, clinical profile, and religiosity/religious coping predictors of medication adherence

Dependent variable	Significant predictors	Standardized β coefficient	t-stat	p-value	Variance (%) R^2 (%)
Medication Adherence Total Score	Level of Education	-1.16	-1.90	0.05	2.4%
	Extrinsic Religiosity Personal	0.18	-2.17	0.03	5.0%
	F-stat. = 4.65; df = 2, 137				Prob(F-stat.) = 0.01

VII. DISCUSSION

Highlights of this study

Religiosity tends to be associated with antiretroviral (ARV) medication adherence in a diverse manner.

Extrinsic religiosity personal (personal relationship with God through prayers) appears to be associated with optimal ARV medication adherence.

Extrinsic religiosity social (religious associations & social relationships involvement) seems to be associated with sub-optimal ARV medication adherence.

Level of education and extrinsic religiosity personal were the identified predictors of ARV medication adherence in this study.

Socio-demographic characteristics of participants

The mean age of participants is 42.8±10 years with age range of 18-64 years. This is higher than the mean age obtained in a study in Kano, Northern Nigeria, about a decade and half ago with a mean age of 33.7±8 years and an age range of 18-61 years (Iliyasu, Arotiba&Babashani, 2005), suggestive of improved longevity. The participants are all Igbo Christians, mostly Catholics (56.4%) and are educated, majority (75%) up to the secondary school level. Most of the participants are married and staying married, with low rates of divorce/separation, probably because of the increasing counselling services now available at the hospital and other centers in Enugu. Majority of the study participants (80%) are also gainfully employed, probably a sign of increasing productivity/functionality/or reduction in workplace stigma and discrimination against PLWHA.

Unprotected heterosexual sex (54%) remains the most common route of contact of the HIV disease in Nigeria showing that interventions emphasizing reduction of transmission through unprotected sex is still very relevant in our environment. Almost all (99%) the participants indicated that they have not used the emergency health services in the last 6 months prior to the research interview, suggestive of improved care outcome.

Relationship between religious orientation, religious coping and medication adherence

Research has indicated that the various aspects of religion have varied relationships with ARV medication adherence (Dzansi, Tornu&Chipps, 2020; (Igbene, et al., 2016). This study appears to be in line with this finding. Whereas extrinsic religiosity personal (ERP) orientation tended to be associated with the optimal medication adherence, the extrinsic religiosity social (ERS) orientation appeared to be associated with sub-optimal adherence. Interestingly, ERP and ERS orientations are both subscales of the larger extrinsic religiosity (ER) scale. In essence, it appears individuals with personal relationships with God “praying to God for peace, happiness and relief from their pain, and comfort in times of trouble and sorrow” (Gorsuch&Mcperson, 1989),

appear to be more introspective, less likely to have external influence, and therefore more likely to comply with ARV medications. This is unlike the other group who are more interested in religious associations and social relationships, “going to their places of worship mainly to make friends, see their friends and spend time with them.” (Gorsuch&Mcpherson, 1989) This latter group are more susceptible to suggestibility especially from respected religious leaders and trusted friends. They are more likely to follow the instructions from religious leaders to stop their medications and take up fasting and prayers in prayer camps and deliverance sessions (Dzansi, Tornu&Chipps, 2020). Other religious variables appear not to play any significant role in their association with ARV medication adherence.

Relationship between socio-demographic, clinical profile, religious variables and adherence

In many studies on HIV/AIDS around the world, (Dzansi, Tornu&Chipps, 2020; (Igbene, et al., 2016;Zou, et al., 2009; Segeral, et al., 2010) predictors of ARV medication adherence included a host of local sociocultural and economic factors ranging from female gender to cognitive impairment, religion and poverty. In this study, following a stepwise regression analysis, two factors were identified as possible determinants of ARV adherence: level of education and extrinsic religiosity personal (ERP) orientation. Among the socio-demographic factors, only level of education was identified as a predictor of ARV adherence, gender was not a predictor. A similar study in Benue state, North central, Nigeria had identified female gender as a determinant of ARV medication adherence (Igbene, et al., 2016). With respect to level of education, it may seem that the higher the individual’s level of education, the more likelihood of adherence to ARV medication. This has been reported in other studies (Dzansi, Tornu&Chipps, 2020; Segeral, et al., 2010), Education is said to equip the individual with the right skills and knowledge to follow medication adherence protocols (Dzansi, Tornu&Chipps, 2020). Educational support programs have also been advocated to improve ARV adherence and forestall the emergence of resistance strains of HIV to ARV drugs (Segeral, et al., 2010).

Previous studies (Dzansi, Tornu&Chipps, 2020; (Igbene, et al., 2016; Zou, et al., 2009) have shown that religion may be detrimental to effective ARV medication adherence. They identified the influence of religious leaders (Priests, Pastors, and Imams) on their congregations advocating religious/spiritual healing and deliverance sessions in churches and prayer centers over conventional treatments leading to stoppage of medications and poor outcome, ultimately. This belief in the potency of spiritual healing over and above conventional ARV drug treatment is so ingrained in some communities in Nigeria that routine CBT sessions have been advocated to correct the belief system (Igbene, et al., 2016). Our study, however, appears to differ slightly suggesting that religion may not be totally unhelpful in sustaining long term ARV medication adherence. It has shown that extrinsic religiosity personal (ERP) orientation could be a predictor of ARV medication adherence among all the various religious parameters tested in the study. In other words, it appears that religion has a heterogeneous effect on medication adherence among PLWHA.

VIII. CONCLUSION

While previous studies in Africa on religion have centered on religious leaders and their roles on medication non-adherence; this study evaluated the association of personal religious activities with medication adherence. The finding resonates what have been noted in other chronic illnesses that having a personal relationship with the supernatural and the possession of core moral values tend to promote medication adherence. Therefore, in clinical settings, clinicians can assess the individual’s religiousness and gain insight about the possibility of future medication adherence or non-adherence among PLWHA.

Study Limitations

There are limitations to this study. The cross-sectional nature of the study will limit the demonstration of the impact of religion on ARV medication adherence over time. MMMA-8 is a self-report questionnaire with limited accuracy from recall bias. Antiretroviral (ARV) drug assay and electronic drug monitoring are more objective but they are too expensive and too complex (requires training) to use in a low income resource country like ours. They are not available in our center, and therefore a limitation to this study. The differential acceptance of females to participate in the study when compared to males may contribute to selection bias.

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Declarations of interest

None.

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