



Psychosocial stress and treatment compliance among HIV/AIDS patients in a Nigerian Teaching Hospital

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Article History

Received: 20 May 2023
Received in revised form: 7 June 2023
Accepted: 20 June 2023
Published online: 30 July 2023
DOI: 10.29252/JGBFNM.20.1.52

Keywords

Antiretroviral therapy
Compliance
Stress
Psychology
Treatment
Adherence

Article Type: Original Article



Abstract

Background: Antiretroviral therapy (ART) has played a crucial role in minimizing the worldwide impact of HIV infection. Numerous HIV patients face challenges in adhering to their treatment due to various physical, social, and psychological factors. This study aimed to explore the correlation between psychosocial stress and treatment adherence among HIV/AIDS patients at a hospital in Nigeria.

Methods: In this study, a descriptive analytical design was utilized to select (n=171) HIV-infected clients attending the virology clinic at Uniosun Teaching Hospital (UTH). Convenient sampling was employed to choose participants from a total monthly population of 271 patients who visit the clinic. Data collection was performed using a questionnaire consisting of four sections and 57 items. Descriptive and inferential statistics, such as the Chi-square test and correlation analysis, were employed to present and analyze the data.

Results: A significant proportion (61.4%) of the patients experienced a moderate level of stress. The most notable sources of stress reported by patients were the need for HIV status disclosure (71.9%) and rejection from family and friends (66.7%). Rejections by friends and family, stigma and discrimination, social and economic challenges, as well as antiretroviral therapy showed a significant association with HIV-related stress ($p < 0.001$). Furthermore, a significant inverse correlation was found between psychosocial stress and treatment adherence ($r = -0.705, p < 0.001$).

Conclusion: Individuals living with HIV/AIDS (PLWHA) face significant levels of stress and often encounter rejection and stigma. It is crucial for healthcare professionals to establish comprehensive support services aimed at alleviating the stress experienced by these patients and reducing the obstacles they face. Such measures will ultimately enhance treatment compliance and overall well-being.

Highlights

What is current knowledge?

PLWHA face significant levels of stress and frequently encounter rejection and stigma, which can have adverse effects on their treatment. Regrettably, this issue has received minimal or no attention in terms of addressing it.

What is new here?

Examining the influence of different stress factors on treatment compliance is crucial for enhancing health outcomes. Furthermore, comprehending strategies to alleviate stress and mitigate the challenges faced by these patients is essential for promoting improved treatment compliance.

Introduction

The Human Immunodeficiency Virus (HIV) remains a prominent global public health issue. According to the World Health Organization (WHO), approximately 33.9 - 43.8 million individuals are currently living with HIV, with nearly 40.1 million lives lost to date (1). Sub-Saharan Africa accounts for over two-thirds of the global HIV/AIDS population (2). In Nigeria, the prevalence of HIV has reached a relatively stable level, thanks to various treatment interventions implemented to improve the well-being and longevity of people living with HIV/AIDS (PLWHA) (3). Approximately 15.3 million lives have been saved as a result of Antiretroviral therapy (ART) interventions. However, despite its significant contribution to reducing the global impact of HIV infection and improving prognosis, ART adherence rates have remained relatively low (2). It is concerning that around 40% of individuals living with HIV fail to adequately adhere to their treatment, which negatively impacts their health outcomes (4).

Non-adherence to the HIV treatment regimen is frequently influenced by a combination of physical, social, and psychological factors. Xu and Munir (5) highlighted the significant impact of psychosocial factors such as stigma, discrimination, social support, substance abuse, subjective norms, and diverse

cultural aspects on ART adherence and treatment compliance. These psychosocial stressors undoubtedly play a significant role in affecting adherence to ART and other treatment protocols.

Multiple studies have established a connection between HIV/AIDS treatment compliance and various psychosocial stressors. For example, an Ethiopian study involving 422 adults living with HIV reported a mental distress prevalence of 7.8%, largely attributed to social stigma and discrimination (6). These two factors frequently inflict harm upon PLWHA, instilling fear that hinders their ability to engage with others and participate in social events. Consequently, limited social interactions restrict their access to the social support necessary for optimal treatment compliance.

Numerous studies have investigated factors influencing adherence to ART worldwide, with limited research conducted within the Nigerian context. For instance, a Nigerian study examined physical and psychological factors associated with significant non-compliance to HIV/AIDS treatment, such as forgetfulness, unwillingness to adhere, avoiding clinic visits, and depression (7). However, social barriers to treatment compliance have received little attention. Considering the substantial psychosocial stress experienced by HIV patients and its impact on health outcomes, exploring psychological and social factors (both individual and environmental) that may negatively affect treatment compliance among HIV/AIDS patients can provide valuable insights. To address this research gap, this study aims to assess the relationship between psychosocial stress and treatment compliance among HIV/AIDS patients at Osun State University Teaching Hospital in Osogbo. The specific objectives are as follows: determining the stress levels of HIV/AIDS patients attending the virology clinic, identifying the primary sources of stress among the patients, assessing the level of treatment compliance, and evaluating the influence of stress on treatment compliance.

Methods

Study design and setting

For this study, a descriptive cross-sectional design was implemented at the Institute of Human Virology of Nigeria (IHVN) clinic located within Uniosun Teaching Hospital (UTH), formerly known as LAUTECH Teaching Hospital

(LTH), Osogbo. The clinic operates three days a week (Monday, Tuesday, and Friday) and serves an average of 300 patients monthly. The target population consisted of HIV/AIDS patients who attended the clinic. The inclusion criteria encompassed patients who had received a diagnosis and treatment for HIV/AIDS and demonstrated a willingness to participate. Additionally, individuals above 18 years of age were included due to their increased likelihood of encountering life stressors compared to younger populations. Clients under the age of 18 and those who occasionally received treatment from other clinics were excluded from the study. Data collection involved the use of questionnaires, and information was gathered during clinic sessions over a one-month period. Prior to data collection, the approval from the ethical committee of Osun State University Teaching Hospital was presented to the attending staff nurses, and informed consent was obtained from the patients. Each patient who visited the clinic on those designated days was provided with a questionnaire to complete, which was then collected immediately upon completion.

Sample and sampling technique

Given that the study population consists of less than 10,000 individuals, a finite population correction was applied using the Taro Yamane formula. The average population of 271 HIV patients attending the Virology clinic, as obtained from the recording unit, was utilized. From this total population, a sample size of 155 was determined at a 95% confidence level. Considering a 10% non-response rate, the final sample size of 171 participants was recruited for the study using a convenient sampling technique.

Instrumentation

The data collection instrument consisted of a combination of self-structured questionnaires and standardized, validated questions adapted from existing literature. The questionnaire was divided into four sections, as outlined below.

Socio-demographic datasheet: This section collected socio-demographic information, including age, gender, ethnicity, religion, educational attainment, marital status, and occupation.

HIV/AIDS stress scale: This section included a total of 23 items, which were rated on a 5-point Likert scale ranging from 0 (not at all) to 4 (extremely). Higher scores on the scale indicated higher levels of stress. The scale, developed by Pakenham and Rinaldis (2002), was specifically designed to measure stress related to HIV/AIDS. It consisted of three subscales: social stress, instrumental stress, and emotional/existential stress, with Cronbach's alpha values of 0.85, 0.76, and 0.79, respectively (8). In this study, the overall Cronbach's alpha value for the scale was 0.91.

Sources of stress: The scale used in this study was a self-developed questionnaire consisting of eight items designed to gather information about the sources of stress among the participants. The development of the questionnaire was informed by an extensive literature review, and respondents provided "yes" or "no" responses. The scale demonstrated good internal consistency, with a Cronbach's alpha reliability coefficient of 0.81.

HIV/AIDS treatment compliance: Treatment compliance was assessed using a single-item questionnaire that was self-developed. Participants rated their level of compliance on a 7-point Likert scale, ranging from 0 (never) to 6 (always).

Reasons for noncompliance: The assessment of reasons for noncompliance to HIV treatment utilized an 18-item questionnaire developed from publicly available literature on this topic (9, 10). The questionnaire consisted of questions measured on a 4-point Likert scale, ranging from "never" (1) to "often" (4). The scale exhibited strong psychometric properties, as evidenced by a Cronbach's alpha reliability coefficient of 0.87.

The face and content validity of the questionnaire were assessed by two research experts who reviewed the questions and made necessary corrections before its utilization in the main study. The items in each questionnaire were aligned with the predetermined objectives, thoroughly scrutinized, and appropriately corrected.

Ethical consideration: Approval for the study was granted by the ethical review board of the hospital with protocol. The study obtained approval from the ethical review board of the hospital under protocol number LTH/EC/2020/11/486. Participation in the study was entirely voluntary, and participants provided their consent without any coercion. Throughout the study, the anonymity and confidentiality of the respondents were diligently maintained. The principles of beneficence and nonmaleficence were consistently upheld throughout the entire research process.

Data management

The data obtained were analyzed using SPSS version 25. Descriptive statistics were utilized to present and summarize the data. The associations between the variables of interest were examined using the chi-square test and correlation analysis.

Results

The majority of the respondents (73.7%) fell within the age range of 31-50. Among the participants, 57.3% were male, and 56.1% belonged to the Yoruba tribe. Additionally, 53.8% identified as Christians, 43.9% had attained tertiary

education, and only 30.4% were married. Table 1 further reveals that 59.6% of the respondents were employed and received a salary.

Table 1. Sociodemographic characteristics (n=171)

Variables	Categories	Frequency (n)	Percentage (%)
Age	< 30	22	12.9
	31-50	126	73.7
	51-70	23	13.5
Sex	Male	98	57.3
	Female	73	42.7
Tribe	Yoruba	96	56.1
	Igbo	66	38.6
	Hausa	9	5.3
Religion	Muslim	72	42.1
	Christian	92	53.8
	Traditional	7	4.1
Educational level	Primary education	36	21.1
	Secondary education	60	35.1
	Tertiary education	75	43.9
Marital status	Single	51	29.8
	Engaged	53	31.0
	Married	52	30.4
	Divorced	15	8.8
Occupation	Self-employed	65	38.0
	Salary earner	102	59.6
	Others	4	2.3

In terms of the respondents' stress levels, Figure 1 illustrates that 25.1% experienced mild stress, while a majority (61.4%) reported a moderate level of stress. Additionally, 13.5% of the respondents experienced a high level of stress. As for the sources of stress, the need for disclosure of HIV status accounted for 71.9%, followed by rejection by family and friends at 66.7%. Other significant sources of stress reported by the respondents included socioeconomic challenges (64.3%), stigma and discrimination (63.7%), and emotional problems (69.6%).

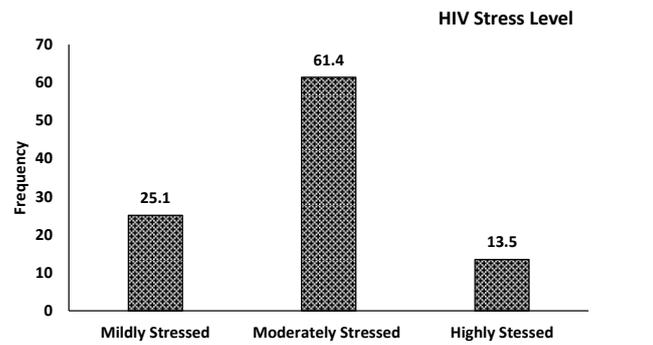


Figure 1. Level of stress (n=171)

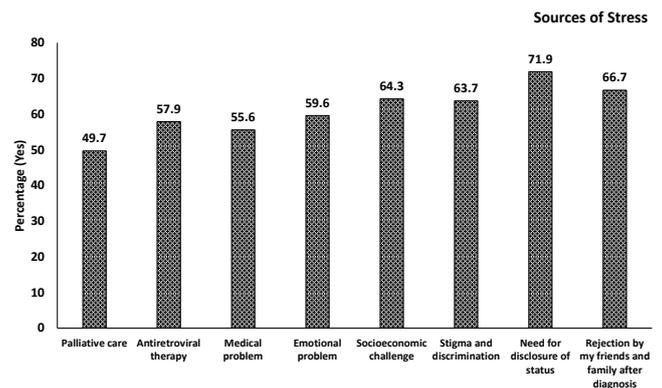


Figure 2. Sources of stress (n=171)

Figure 2 presents the sources of stress, while Table 2 displays the results of the chi-square test, examining the associations between the respondents' sources of stress and their stress levels. The analysis reveals several noteworthy findings. Firstly, a significant association exists between rejection by family and friends and the level of stress. Specifically, more than three-quarters of respondents who faced rejection reported experiencing a high level of stress. Similarly, among those who experienced stigma and discrimination, a larger proportion (87.0%) reported a higher level of stress, which was statistically significant. Additionally, a significant association was observed between socio-economic challenges and stress levels, with approximately three-quarters (73.9%) of respondents facing this challenge reporting a high level of stress. Moreover, more than half of the respondents (56.5%) experiencing challenges with antiretroviral therapy reported a high level of stress, which was statistically significant (p<0.005).

Figure 3 illustrates the treatment compliance of the respondents, indicating that 70.8% had good compliance while 29.2% had poor compliance. The reasons for noncompliance are presented in Table 3. The analysis reveals the most prominent reasons for noncompliance, which include feeling good and healthy (2.63±1.06), tired of taking pills (2.50±0.93), wanting to make a difference in daily life (2.44±0.96), spoilage of pills (2.37±0.98), and feeling depressed (2.36±0.99). On the other hand, forgetfulness was the least reported reason for noncompliance (1.98±1.04).

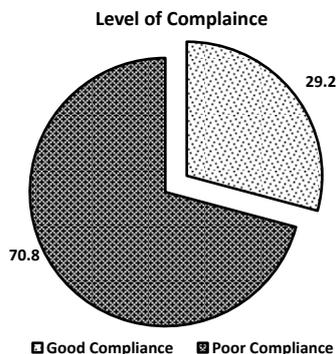


Figure 3. HIV treatment compliance (n=171)

Table 2. Association between sources of stress and patients' stress level (n=171)

Sources of stress	Level of stress			χ^2	P-value
	Mild (%)	Moderate (%)	High (%)		
Rejection by my friends and family after the diagnosis				23.794	0.000
Yes	16(37.2)	78(74.3)	20(87.0)		
No	27(62.8)	27(25.7)	3(13.0)		
Need for disclosure of status				3.159	0.206
Yes	31 (72.1)	72 (68.6)	20 (87.0)		
No	12 (27.9)	33 (31.4)	3 (13.0)		
Stigma and discrimination				17.325	0.000
Yes	17 (39.5)	72 (68.6)	20 (87.0)		
No	26 (60.5)	33 (31.4)	3 (13.0)		
Socioeconomic challenge				15.407	0.000
Yes	17 (39.5)	76 (72.4)	17 (73.9)		
No	26 (60.5)	29 (27.6)	6 (26.1)		
Emotional problem				3.322	0.190
Yes	21 (48.8)	68 (64.8)	13 (56.5)		
No	22 (51.2)	37 (35.2)	10 (43.5)		
Medical problem				1.069	0.586
Yes	21 (48.8)	61 (58.1)	13 (56.5)		
No	22 (51.2)	44 (41.9)	10 (43.5)		
Antiretroviral therapy				16.252	0.000
Yes	14 (32.6)	72 (68.6)	13 (56.5)		
No	29 (67.4)	33 (31.4)	10 (43.5)		
Palliative care				3.666	0.160
Yes	16 (37.2)	56 (53.3)	13 (56.5)		
No	27 (62.8)	49 (46.7)	10 (43.5)		

Table 3. Reasons for non-compliance (n=171)

Reasons	Mean	SD
Being away from home	2.30	1.05
Being very busy	2.08	0.90
Forgetfulness	1.98	1.04
Too many pills to take	2.25	0.93
Lack of understanding of the value of the drugs	2.08	0.91
Problems of side effects of medications	2.32	0.91
Don't want people to know	2.28	1.05
To make a difference in my daily life	2.44	0.96
Feeling that drugs were harmful and toxic	2.22	1.03
Feeling very drowsy	2.27	0.98
Increasing worsening of the condition	2.22	0.83
Problem with transportation	2.19	0.95
Feeling depressed	2.36	0.99
Taking pills with certain meals confused me	2.33	0.89
Loss of medications	2.14	0.94
Spoilage of pills due to weather conditions	2.37	0.98
Tired of taking pills	2.50	0.93
Had a good feeling and thought that I was healthy	2.63	1.06

The association between psychosocial stress and treatment compliance was examined in Table 4, revealing a significant negative correlation ($r = -0.705$, $p = 0.000$). The negative sign of the correlation coefficient indicates an inverse relationship between psychosocial stress and treatment compliance. This implies that as psychosocial stress levels increase among HIV/AIDS patients, their adherence to treatment is likely to decrease. In other words, higher levels of psychosocial stress are associated with lower rates of treatment compliance.

Table 4. Relationship between HIV stress and treatment compliance (n=171)

		Correlations		
			HIV stress	Treatment compliance
Spearman's rho	HIV stress	Correlation coefficient	1.000	-0.705**
		Sig. (2-tailed)	-	0.000
	Treatment compliance	Correlation coefficient	-0.705**	1.000
		Sig. (2-tailed)	0.000	-
		n	171	171

** Correlation is significant at the 0.01 level (2-tailed).

Discussion

Data for this study was obtained from a sample of 171 HIV/AIDS patients attending the IHVN Clinic of UTH (formerly LTH). The study findings revealed that a majority of the respondents had a moderate level of stress, while a significant proportion experienced high levels of stress, suggesting a notable prevalence of psychosocial distress among these patients. These results likely stem from the multitude of stressors inherent in their life situations, combined with the challenges posed by the treatment regimen and the lack of sufficient coping mechanisms to effectively manage the psychosocial stressors associated with HIV/AIDS. Additionally, the study findings highlighted the prominent role of the need for disclosure as the most frequently reported stressor among HIV/AIDS patients. Rejection by family and friends, along with stigma and discrimination, were also identified as significant stressors experienced by the patients. These results align with previous research indicating that individuals living with HIV/AIDS often face the fear of judgment, discrimination, and isolation (11, 12). It is not surprising, given that HIV/AIDS-related stigma continues to prevail in certain areas, leading many individuals to feel uncomfortable disclosing their health status. The presence of discriminatory attitudes within certain population groups may be attributed to inadequate knowledge, misconceptions about HIV/AIDS, as well as fear of moral judgment, and anxiety (13). Furthermore, the study revealed that a significant number of the respondents identified the socio-economic issue as a major stressor, and this stressor was significantly associated with the level of stress experienced. This finding is consistent with a previous study conducted among HIV-infected individuals in South Florida, which reported that 41.1% of participants identified worsening financial status or chronic financial stress as a common stressor (14). Additionally, our findings support the research conducted by Ashaba and Kaida (15), who found that financial constraints affect the accessibility of PLWHA to HIV care, including their ability to travel to the clinic. This result is not surprising, considering the high cost of ART medications, particularly in low- and middle-income countries, which poses a significant barrier to treatment access (16). Furthermore, Chandran and Benning (17) observed that having health insurance is a determining factor for optimal healthcare utilization. Additionally, it is noteworthy that a significant relationship was found between receiving ART and stress levels, as more than half of the respondents experienced stress related to antiretroviral therapy. These factors may help explain the negative correlation between psychosocial stress and treatment adherence.

Regarding the patients' compliance with HIV treatment, our study found that approximately three out of every ten patients reported low treatment compliance. This finding is consistent with the results of the previous study (14). However, our finding is higher compared to the study conducted by Oliveira and Caixeta (18), which reported a low adherence rate of 14%. The main reasons for non-compliance identified by the respondents were 'having a good feeling and thought of being healthy', 'being tired of taking pills', 'feeling depressed', and 'wanting to make a difference in their daily lives.' This finding is not surprising, as it is expected that patients who perceive themselves as healthy may question the necessity of taking ART. For instance, a qualitative study conducted in South Africa found that participants in their study discontinued taking medication and continued socializing with friends when they perceived an improvement in their health (19). Previous research has also reported that having to take multiple doses per day can reduce treatment compliance (20, 21), which may explain why being tired of taking pills emerged as a prominent reason for noncompliance in our study. Although some studies (22, 23) have supported the finding that depression is negatively associated with HIV treatment compliance, Chandran and Benning (17) reported contrary results, suggesting that the presence of depressive symptoms did not significantly impact treatment adherence. Many of the reasons for non-compliance identified in our study may be linked to disease progression and the subsequent steady HIV mortality rate.

Regarding the association between HIV/AIDS-related stress and treatment compliance, we found a significant positive relationship, as expected. This implies that respondents who reported higher levels of stress had more challenges with treatment compliance. These findings align with the findings of Leserman

and Ironson (14), who reported that individuals experiencing three or more stressful life events were 2.5 to more than 3 times more likely to be non-compliant with HIV treatment.

The present study has certain limitations that should be considered when interpreting the findings. The generalizability of the results to a broader demographic may be limited due to the use of a single site, which may not fully represent the diversity and variability found among different locations or groups of HIV/AIDS clients. Furthermore, the exclusion of other HIV/AIDS patients in the community who were not receiving treatment at the ART clinic suggests that the entire at-risk population affected by psychosocial stress may not have been included in the study. Additionally, the use of a relatively small sample size (n=171) may restrict the generalizability of the findings.

Conclusion

This finding highlights the inverse relationship between psychosocial stress and treatment compliance, indicating that higher levels of psychosocial stress are associated with lower adherence to treatment among individuals living with HIV/AIDS. The study provides valuable insights into the complex interplay between psychosocial stress and treatment adherence within this population. These findings have important implications for healthcare professionals, policymakers, and researchers in devising strategies to alleviate the stress experienced by PLWHA. Addressing societal issues such as stigma and discrimination, ensuring equitable access to healthcare resources, and promoting mental health support services can have a positive impact on the psychosocial well-being of PLWHA and ultimately improve treatment compliance. Further research is warranted to delve deeper into these factors and unravel their underlying mechanisms.

Acknowledgement

The researchers extend their sincere gratitude to the patients who willingly participated and shared their valuable information for this study. Special appreciation is also extended to the dedicated staff of the ART clinic at UTH for their invaluable support during the data collection process. Their contribution has been instrumental in the successful completion of this research.

Funding sources

The study was self-funded by the authors.

Ethical statement

Approval for the study was obtained from the hospital's ethical review board with protocol number LTH/EC/2020/11/486.

Conflict of interest

The authors declare no conflicts of interest regarding this work and have no financial or nonfinancial relationships to disclose.

Author contributions

Study conception and design: OOA, OOA; Data collection: OOA, OOA, SOG; Data analysis and interpretation: OOA, OOA; Drafting of the article: All authors critical revision of the article: RAB, SOG, GA.

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How to Cite:

Ajao O.O., Afolalu O.O., Adeniran G, Olawale S.G., Agboola-Bello R. Psychosocial stress and treatment compliance among HIV/AIDS patients in a Nigerian Teaching Hospital. *J Res Dev Nurs Midw*. 2023;20(1):52-5.

