Prevalence and Pattern of Erectile Dysfunction among People Living with HIV/AIDS in a Tertiary Hospital in North-central Nigeria

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Authors' contributions

Article Information

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ABSTRACT

Background: The incidence of erectile dysfunction among men with HIV/AIDS is twice compared with the general population and this remains a major concern because of its negative impact on the quality of life of sufferers. While researchers have documented varying prevalence rates of ED among diverse population of men, there is paucity of data on this subject among PLWHA in Nigeria

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and most especially in the North central part of the country. This study aimed to determine the prevalence and pattern of erectile dysfunction as well as its association with certain socio-demographic factors among HIV/AIDS subjects attending a tertiary hospital in North-central Nigeria.
Methods: This was a hospital-based cross-sectional study conducted among 300 adult HIV-positive male patients. A semi-structured questionnaire was adapted to obtain information on socio-demographic data of the study subjects. The erectile dysfunction was assessed using the International Index for Erectile Function-5 which was interviewer-administered. The systematic sampling method was used to recruit study participants following informed consent. Data obtained were analyzed using SPSS version 21. Confidence interval of 95% was used and p-value of less than .05 was considered statistically significant.
Results: The prevalence of erectile dysfunction among the respondents was 57%; of which 64.9% of them had mild form and 2.9% had severe form. There was a significant association between higher prevalence of ED and low educational status of the study subjects (p-value=.01).
Conclusion: There is a high prevalence of erectile dysfunction among men living with HIV/AIDS in North-central Nigeria and those with lower educational qualifications are particularly vulnerable. We recommend routine screening at HIV clinics for early detection, management as well as timely referral.

1. INTRODUCTION

Erectile dysfunction (ED) is defined as the persistent inability to achieve and maintain an erection sufficiently to permit satisfactory sexual intercourse [1]. It is currently one of the most common sexual dysfunctions in men worldwide [2]. In developing countries like Nigeria, it is commonly underestimated, presumably because it is perceived not to be a life threatening condition. Also, the affected men rarely seek help from their health care providers because of the associated stigma [3].

The advent of highly active antiretroviral therapy (HAART) has improved the lives of people living with HIV/AIDS (PLWHA) thus necessitating the need to pay attention to the general quality of life they live [4]. Sexual health is a major aspect of the general quality of life and proper consideration must be given to it, especially in patients with chronic medical diseases such as HIV/AIDS [5]. There is evidence that erectile dysfunction may be more common among HIV positive men than their HIV negative counterparts and several theories have been postulated to explain this finding. Hypogonadism is one of most frequent endocrine dysfunctions in HIV-infected men. Usually, low levels of testosterone leads to decreased sexual desire and ED. In addition, psychological (especially depression) or neurological (infection, dementia) problems often cause ED [6]. Apart from the above listed theories, there is evidence that HIV itself and its treatment could contribute to erectile dysfunction [6].

According to Zona et al., the prevalence of ED among PLWHA is 1.2-2 times that of the general population [7]. In a Swiss cohort, Wang et al reported an ED prevalence of 34% among a sample of HIV positive men [8]. Romero-Velez et al in Mexico did a cross sectional study among 109 patients in an HIV clinic using the standardized tool of IIEF and reported a prevalence of 65.1% with mild, moderate, and severe ED found in 48 (67.6%), 9 (12.67%) and 14 (19.71%) patients, respectively [9]. In a Spanish observational study, the prevalence of ED was 58.5%. ED was mild in 30.1%, mild to moderate in 19.5%, moderate in 6.1%, and severe in 2.5% [10]. In Brazil however, 21.6% of the sample had ED and out of this, 86% reported the severe form [11]. In Benin, West Africa, Albert et al reported a prevalence of 52.4% among which 41% had the severe form of erectile dysfunction [12]. A study done in Tanzania among PLWHA put the prevalence of ED at 89%,[13] however Adebimpe et al found a prevalence of 47% while conducting a similar study in South-west Nigeria [14].

Local and international studies have reported varying findings regarding association between socio-demographic factors and erectile dysfunction among men living with HIV/AIDS. The prevalence of ED has been shown to be more in the aged and HIV has been shown to cause a rapid aging process [14,15]. It is also worth noting that there is earlier onset of ED among HIV positive men when compared to un-infected men. Indeed, ED is extremely common in middle-aged HIV-infected men, while it is

uncommon in uninfected HIV-men before the age of 50 years [16]. In another sample of HIV positive men in Brazil, older age and unemployment status of participants were associated with ED [17]. In Mexico, however, respondents' age, educational attainment, alcohol use and cigarette smoking did not show statistical significant association with erectile dysfunction among the sampled HIV positive male subjects [9].

In spite of the high prevalence of ED among HIV-positive men, it is still underdiagnosed. Moreover, those diagnosed with ED are under-treated. In Nigeria, there is a paucity of reports on sexual dysfunction and even fewer on erectile dysfunction among PLWHA, particularly in primary care settings. The findings in this study will go a long way in sensitizing physicians on the importance of assessing for ED among PLWHA.

2. METHODOLOGY

2.1 Study Area

The study was conducted in the antiretroviral therapy (ART) clinic of university of Ilorin Teaching Hospital (UITH), Ilorin, North-central Nigeria. UITH is a 600-bed hospital with 16 clinical departments that provides primary, secondary and tertiary healthcare services to people of Ilorin and its environs. The adult ART-clinic sees patients of ages 18 years and above. As of the time of this study, the clinic was attending to more than 6000 patients of which about 20% were men.

2.2 Study Design

This was a hospital-based cross-sectional study design.

2.3 Study Population

The study population consisted of HIV-positive male patients 18 years and above who accessed care at the HIV clinic of the University of Ilorin Teaching Hospital.

2.4 Sample Size Determination

The required sample size was determined using Leslie Kish's statistical formula for estimating the minimum sample size in health studies [18]. Using a prevalence of 47% reported for ED among HIV-infected men in a similar study [14], a sample size of 300 was obtained.

2.5 Study Instruments

A semi-structured questionnaire was adapted to obtain information on socio-demographic data of study subjects. The erectile dysfunction of the patients was assessed using the International Index for Erectile Function-5 (IIEF-5) which was interviewer-administered. It is a validated tool that has been used among the general population and PLWHA in several studies [9,19]. It assesses five items in the character of their erection and how they rate each item. The scores range from very low which carries 1 to very high which carries 5, the score is the sum of the responses to the five items so the overall score ranges from 1-25. A score ≥22 indicates a normal degree of erectile functioning; 17-21= mild ED, 12-16 = mild-moderate ED, 8-11= moderate ED, while 1-7= severe ED.

2.6 Study Procedure

Systematic sampling method was used in recruiting subjects into the study. The weekly average attendance of male adult patients at HIV clinic, UITH, was 72. This was about 18 patients per day because there are 4 clinic days in a week. About 25 patients were interviewed per week at an average of 6 subjects per clinic day making a total of 300 subjects in 12 weeks.

Therefore, the sampling frame was 72 × 12 weeks = 864

Sampling fraction was 300/864 ≈ 0.347.

Sampling interval was thus 1/0.347 which is approximately equals to 3.

On every clinic day, each adult male folder was assigned a number from 01 to the last. The first subject was selected by balloting and thereafter every 3rd patient was chosen for the study until the required sample size for the day was obtained. The folder of each patient selected was labeled and the hospital number written in a research register to avoid the pitfall of double sampling of the subject. Efforts were made to ensure that patient that had been previously interviewed did not fall into sample of another day by removing labeled folder before sampling for the clinic day. This procedure was repeated every clinic day until the total sample size was obtained

2.7 Data Analysis

The collected data were sorted, coded and analyzed using the version 21 software packages

of the Statistical Package for Social Sciences (SPSS 21). Table and chart were used to illustrate the frequency of variables. The significance of association between ED prevalence and socio-demographic variables were determined using Chi-square. A confidence interval of 95% was used and p-value of less than .05 was considered statistically significant.

3. RESULTS

A total of 300 subjects participated in the study. The mean age of the respondents was 46.69 years ±10.29. Most were from Yoruba ethnic group (72.7%). There were slightly more Muslims than Christians (50.3%, 49.4%). The majority of the respondents were married (89%) while 7.7% were single. Most of the respondents were from monogamous family settings (82%). The majority of the respondents were civil servants (29.3%) and had secondary education and below (61%) (Table 1).

From Fig. 1: One hundred and twenty nine (43%) respondents whose international index of erectile function scale (IIEF) was ≥22 have no ED. Those whose IIEF scale was ≤21 have ED and were 171 (57%).

Fig. 2 shows the pattern of erectile dysfunction of the respondents. Of the 171 subjects with ED, 111(64.9%) were mild ED and only 5(2.9%) had severe ED.

Table 1. Socio-Demographic Information of Respondents N=300

Variables	Frequency(n)	Percentage (%)
Age Groups(years)		
<30	13	4.3
30 – 39	60	20.0
40 – 49	106	35.3
50 – 59	84	28.0
≥ 60	37	12.4
Mean ± SD	46.69 ± 10.29	
Religion		
Islam	151	50.3
Christianity	148	49.4
Others	1	0.3
Level of education		
Secondary and below	183	61.0
Tertiary	117	39.0
Marital Status		
Married	267	89.0
Not currently married	33	11.0
Occupation		
Civil Servant	88	29.3
Professional	46	15.3
Artisan	36	12.0
Trader	77	25.7
Unemployed	28	9.4
Farmers	25	8.3
Tribe		
Yoruba	218	72.7
Igbo	35	11.7
Hausa	16	5.3
Others	31	10.3
Family type		
Monogamous	246	82.0
Polygamous	54	18.0
Income		
≤ #20,000	133	44.3
> #20,000	167	55.7

Table 2. Association between erectile dysfunction and socio-demographic characteristics

Variables	Dysfunction		χ^2	Df	P
	ED (%) n=171	NO ED (%) n=129			
Age					
≤ 29	9 (69.2)	4 (30.8)			
30 – 39	32 (53.3)	28 (46.7)			
40 – 49	61 (57.5)	45 (42.5)			
50 – 59	43 (51.2)	41 (48.8)			
≥ 60	26 (70.3)	11 (29.7)	4.951	4	.29
Level of education					
Secondary and below	94 (51.4)	89 (48.6)			
Tertiary	77 (65.8)	40 (34.2)	6.077	1	.01
Marital Status					
Married	160 (57.8)	117 (42.2)			
Not currently married	11 (47.8)	12 (52.2)	0.855	1	.36
Occupation					
Civil Servant	51 (58.0)	37 (42.0)			
Professional	26 (56.5)	20 (43.5)			
Artisan	15 (41.7)	21 (58.3)			
Trader	44 (57.1)	33 (42.9)			
Unemployed	19 (67.9)	9 (32.1)			
Farmers	16 (64.0)	9 (36.0)	5.337	5	.38
Tribe					
Yoruba	128 (58.7)	90 (41.3)	1.520	3	.68
Igbo	20 (57.1)	15 (42.9)			
Hausa	8 (50.0)	8 (50.0)			
Others	15 (48.4)	16 (51.6)			
Family type					
Monogamous	135 (54.9)	111 (45.1)			
Polygamous	36 (66.7)	18 (33.3)	2.511	1	.11
Income					
≤ #20,000	77 (57.9)	56 (42.1)			
> #20,000	94 (56.3)	73 (43.7)	0.078	1	.78

*χ2: Chi square test, Df: Degree of freedom, *: p value < 0.05 (statistically significant)*

Level of Education as Predictor of Erectile Dysfunction

Variables	B	p-value	COR	95 % C I
Level of Education				
Below tertiary	RC			
Tertiary	0.600	**0.014**	1.823	1.128 – 2.944

B=regression coefficient, CI=confidence interval, RC=Reference category, COR- crude odd ratio
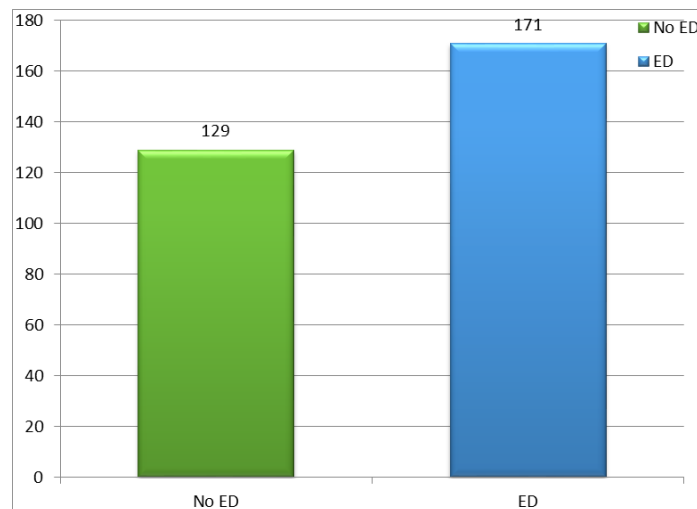

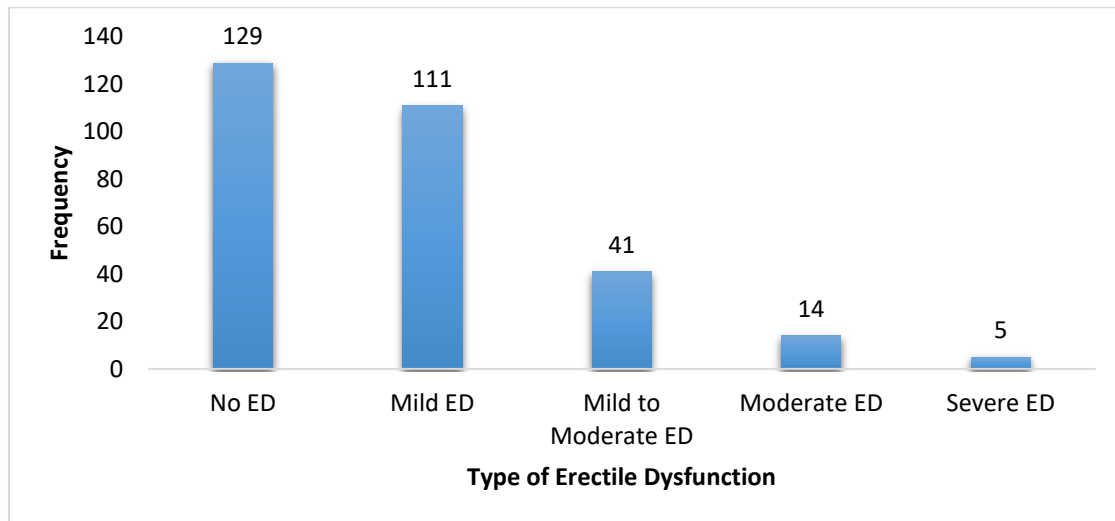**Fig. 1. A pie chart showing prevalence of Erectile Dysfunction**

Fig. 2. Pattern of Erectile dysfunction among Respondents

4. DISCUSSION

The prevalence of erectile dysfunction in our study was 57%. This finding is similar to the prevalence rate of 53.4% earlier reported by Moreno-Perez et al in Spain [15]. Similarly, a prevalence rate of 61.4% was reported by Crum-cianflone et al in the US [6]. On the other hand, our finding was higher than 47% rate reported by Adebimpe et al in Ogbomoso, South west Nigeria [14] The differences in these rates could be attributed to different research instruments used. While Adebimpe et al used a semi-structured questionnaire to asses ED in their study, structured and validated IIEF was used in the index study. Our finding is also significantly higher than the 21.6% rate earlier reported by Tacila Veras Gomes and Carlos Brites in Brazil [11] despite the similarity in the operational definition of ED in both studies. This could be related to sociocultural, geographical differences and perhaps the relatively smaller sample size compared with the index study. However, Enoma and colleagues in a study done earlier in Malaysia, using the same screening tool, reported a prevalence rate of 82.3% among HIV positive male subjects in a tertiary health facility [20] The reason for this disparity in prevalence may be due to differences in composition of the study population and difference in geographical location. This high prevalence is corroborating several other studies that showed that ED is prevalent in chronic diseases.

Regarding severity grading of ED among respondents, of the 171 subjects with ED in our study, 111(64.9%) were mild ED, 41 (24%) were mild to moderate ED, 14 (8.2%) were moderate ED and 5(2.9%) had severe ED. This pattern was similarly reported by Gustavo Romero-Velez et al in Mexico where mild, moderate, and severe ED were found in 48 (67.6%), 9 (12.67%) and 14 (19.71%) patients, respectively [9] In Brazil however, Tacila Veras Gomes and Carlos Brites found that only 13.7% of participants had a mild presentation of ED, while the remaining 86.3% of the study subjects presented with severe ED [11]. Also, in a study done by Enoma and colleagues in Malaysia, ED was almost evenly distributed across all severity grades with severe (24.1%), moderate (19.1%), mild to moderate (20.9%), and mild (18.3%) [20]. The use of different patient group, with distinct epidemiological, social and clinical characteristics may explain this variation but this requires further research.

The pattern of the result in this study showed that ED was more prevalent among respondents with lower educational qualifications (secondary level and below) when compared with those having higher qualifications (tertiary education). The result was statistically significant with P value of .01. It is believed that a well-educated person is more likely to be well paid, having better access to health care centers, and subsequently living a more positive lifestyle with resultant reduced tendency to suffer from ED. This may also be because,S educated men may have a better understanding of the disease and worry less about being HIV positive than those who are less educated who may even ascribe the disease to witchcraft or magical spells on them and then present late with complications like ED. In

addition, educated men are also more likely to be confident to discuss issues relating to sex and sexuality and this may lead to greater reporting and early treatment than the less educated ones. Access to information through the internet, electronic or print media, high socioeconomic status, also constitute an advantage for the educated men. Similar finding was reported by Enoma and colleagues in Malaysia where patients with lower educational background were more likely to suffer from ED (odds ratio [OR] 2.62, 95% confidence interval [CI] 1.02-6.72; p-value =.046) when compared with the educated ones [20]. In Brazil, however, educational status of the HIV positive study subjects did not show statistical significant relationship with presence or absence of ED [11].

5. CONCLUSION

Erectile dysfunction is quite common among HIV-positive males attending the HIV clinic in Ilorin, North-central Nigeria and majority of sufferers reported the mild form. We also found a significant association between higher prevalence ED and lower educational status of the study participants (secondary level and below). Therefore, bearing in mind the impact of ED on the quality of life of patients, ART clinicians should routinely ask questions about ED with a view to identifying possible risk factors that may be amendable to treatment during regular consultation.

6. STUDY LIMITATION

This study being a cross sectional hospital-based study means that the various significant associations between the variables tested were not necessarily causal. Only a prospective or randomized controlled study can confirm the causal relationship between these variables. The hospital-based design of this study may not permit generalization of the findings compared to the community-based study. However, this was an observational study and more studies are needed to confirm and extend the findings. Such studies should be designed to ameliorate or overcome the limitations of the present study.

CONSENT AND ETHICAL APPROVAL

Participants were adequately informed about the study and a written consent was obtained from the participants by using the consent form attached to the questionnaire. Clearance to conduct the study was obtained from Ethical Review Committee of UITH. Confidentiality in respect to the participants' information was thoroughly observed. All the financial implications of the study were borne by the researchers.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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