

Prevalence and associations of erectile dysfunction and premature ejaculation among Nigerian men: an online survey

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Abstract

Background: Erectile dysfunction (ED) and premature ejaculation (PE) are standard forms of male sexual dysfunction caused by varied factors, including psychosocial stress. This study assessed the prevalence and associations of erectile dysfunction and premature ejaculation among Nigerian men.

Method: This was a cross-sectional descriptive online survey of sexually active Nigerian men aged 18 years and above between August and December 2020. The International Index of Erectile Function (IIEF-5) and the Premature Ejaculation Diagnostic Tool (PEDT) were used to assess ED and PE. Respondents with IIEF-5 scores between 5-21 had ED, and PEDT scores ≥ 9 had PE. The authors received ethics approval before the survey.

Result: Of the 392 men that completed the online survey, majority were married (297, 71.2%), aged 30-39 years (140, 35.7) and resided in urban areas (329, 83.9). The frequency of hypertension and diabetes mellitus was 17.3% (68) and 5.4% (21), respectively. The overall prevalence of male sexual dysfunction was 60.5%. The prevalence of erectile dysfunction

and premature ejaculation was 45.7% and 36.7%, respectively. Majority (142, 79.3%) of the respondent had mild ED. Sixty-nine (47.9%) respondents had borderline PE. Unlike PE, ED was significantly associated with hypertension ($\chi^2 = 15.146$, $p = 0.001$), Diabetes ($\chi^2 = 8.470$, $p = 0.014$), antihypertensive ($\chi^2 = 9.285$, $p = 0.010$) and antidiabetic ($\chi^2 = 10.542$, $p = 0.005$) medications.

Conclusion: The prevalence of ED and PE were high in this study. Erectile dysfunction but not premature ejaculation was significantly associated with hypertension, diabetes mellitus and antihypertensive and antidiabetic medications in this study.

Keywords: erectile dysfunction, premature ejaculation, male sexual dysfunction, prevalence, Nigeria

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Introduction

Erectile dysfunction and premature ejaculation are the most common forms of sexual dysfunction encountered in men.¹⁻³ The causes of male sexual dysfunction (MSD) are varied and includes psychosocial, biologic and pharmacotherapeutic factors.^{1,4,9} Psychosocial factors can predispose, precipitate, and maintain sexual dysfunction.^{5,6,10,11} As in other climes, stress, frustrations from joblessness and other social insecurities are psychosocial factors that can predispose and precipitate sexual dysfunction among Nigerian men.¹²⁻¹⁶ Cultural, religious, and spiritual beliefs are key factors that promote silence on sexual function and maintain sexual dysfunction, although more among women than men and young than older adults.^{14,17,18} Indeed, the perception that men with sexual dysfunction are impotent is stigmatizing but rife.¹⁶ Premature ejaculation is primarily due to psychological factors. Physical factors such as drugs and cardiovascular diseases (CVDs) account for multiple risks and predictive factors for MSDs.¹⁹⁻²¹ The presence of MSD may also signify underlying medical conditions such as cardiovascular diseases. Indeed,

erectile dysfunction in men is an independent predictor of adverse cardiovascular event.^{20,21} The year 2020 has gone down memory lane as one in which the whole world was locked down to curb the COVID-19 pandemic. Few studies have shown an increased prevalence of erectile dysfunction among men during the pandemic.^{22,23} The SARS-CoV2 virus has been shown to cause direct endothelial injury and erectile dysfunction. Several factors, including pre-existing cardiovascular disease and overall poor health and heightened mental stress, are linked to increased sexual dysfunction caused by the virus.²² The attendant psychosocial effect of the pandemic also adversely impacts sexual wellbeing. Indeed, the virus's biological, socioeconomic, and psychological impact on sexual well-being is far-reaching. The index study aimed to assess the prevalence and correlates of erectile dysfunction and premature ejaculation among Nigerian men using an online survey because of physical restrictions during the COVID-19 lockdown.

Methodology

The online survey was a cross-sectional assessment of Nigerian men resident in Nigeria. Potential study participants were recruited randomly via social media handles commonly used in Nigeria over four months (August – December 2020). Eligible respondents were aged 18 years and above and reported being sexually active (i.e., engaging in heterosexual intercourse) in the

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past 12 months. The survey questionnaire was made available only to consenting respondents as Google forms. Ethics approval was sought and obtained prior to commencement of the survey from the Health Research Ethics Committee of Delta State University Teaching Hospital, Oghara. (Ethics Approval number: HREC/PAN/2020/025/0367).

The study questionnaire was in three sections: 1) sociodemographic profile, 2) risk factor profile such as tobacco smoking, hypertension and diabetes, and 3) sexual dysfunction assessed using the 5-item International Index of Erectile Function (IIEF-5) questionnaire and the 5-item Premature Ejaculation Diagnostic Tool (PEDT).^{16, 17} Total IIEF-5 scores ranged between 5 and 25. Men with scores between 22-25 have no ED. The severity of ED was categorized into four groups based on IIEF-5 score: Mild ED = 17-21, Mild-to-Moderate = 12-16, Moderate ED = 8-11, severe = 5-7. Using the PEDT, a score of at most 8 was suggestive of no premature ejaculation. PEDT scores of 11 and above were suggestive of PE, while scores of 9 and 10 were borderline.

Data obtained were coded and exported to the International Business Machine (IBM) Statistical Package for Scientific Solutions (SPSS) version 22 (IBM SPSS Corp., Armonk NY, USA) for analysis. Continuous variables are presented as mean and mean deviation, median and mode. Categorical variables are presented in tables and charts as frequencies and percentages. The Chi-square test was used to test differences in categorical variables. A two-tailed p-value level less than 0.05 was statistically significant.

Results

Of the 403 men reached, 392 (97.3%) consented and completed the online survey. The mean (\pm mean deviation) age of the study population was 39.7 (\pm 9.009) years. The median and modal age group was 30-39 years.

Table 1. Sociodemographic and clinical profile of respondents

Variable	Category	Frequency N (%)
Age (years)	18 - 29	70 (17.9)
	30 - 39	140 (35.7)
	40 - 49	117 (29.8)
	50 - 59	49 (12.5)
	\geq 60	16 (4.1)
Marital Status	Single	103 (26.3)
	Married	279 (71.2)
	Cohabiting	4 (1.0)
	Divorced	6 (1.5)
	/Separated	

Table 1. Contd.

Variable	Category	Frequency N (%)
Highest level of education	None	1 (0.3)
	Primary	3 (0.8)
	Secondary	25 (6.4)
	Tertiary	167 (42.6)
	Postgraduate	196 (50.0)
Occupational status	Student	20 (5.1)
	Unskilled	5 (1.3)
	Skilled	67 (17.1)
	Professional	272 (69.4)
	Unemployed	19 (4.8)
Religion	Retired	9 (2.3)
	Christianity	362 (92.3)
	Islam	22 (5.6)
Geopolitical zone of residence	Others*	8 (2.0)
	SS	254 (64.8)
	SE	21 (5.4)
	SW	81 (20.7)
	NC	19 (4.8)
Residence	NE	8 (2.0)
	NW	9 (2.3)
	Urban	329 (83.9)
	Rural	63 (16.1)
	Hypertension	Yes
No		311 (79.3)
Don't know		13 (3.3)
Diabetes mellitus	Yes	21 (5.4)
	No	363 (92.6)
	Don't know	8(2.0)
Current Tobacco Smokers	Yes	27 (6.9)
	No	365 (93.1)
Alcohol use	Yes	247 (63.0)
	No	145 (37.0)
Anti-hypertensive medications	Yes	65 (16.6)
	No	322 (82.1)
	Don't know	5 (1.3)
Anti-diabetic medications	Yes	22 (5.6)
	No	365 (93.1)
	Don't know	5 (1.3)
Use of Other Medications	Yes	45 (11.5)
	No	347 (88.5)

SS: South-South, SE: South East, SW: South West, NC: North Central, NE: North East, NW: North West

Majority of the respondents were married (279,71.2%), had postgraduate education (167,42.6%), professionals (272,69.4%), Christians (362,92.3%) and resided in urban settings (329, 83.9%). Most of the respondents were domiciled in the South-South geopolitical zone

(254, 64.8%). (Table 1)

Table 1 shows the self-reported frequency of cardiovascular risk factors and medication use as follows: hypertension (68, 17.3%), diabetes mellitus (21, 5.4%), tobacco smoking (27,6.9%), consumption of alcoholic

Table 2. Association between male sexual dysfunction and respondents' sociodemographic profile

Variable	Category	No ED	ED	No PE	PE
Age (years)	18 - 29	35 (50.0)	35 (50.0)	36 (51.4)	34 (48.6)
	30 - 39	78 (55.7)	62 (44.3)	99 (70.7)	41 (29.3)
	40 - 49	69 (59.0)	48 (41.0)	72 (61.5)	45 (38.5)
	50 - 59	27 (55.1)	22 (44.9)	32 (65.3)	17 (34.7)
	≥60	4 (25.0)	12 (75.0)	9 (56.3)	7 (43.8)
		$\chi^2 = 7.213, p = 0.125$		$\chi^2 = 8.139, p = 0.087$	
Marital Status	Single	51 (49.5)	52 (50.5)	60 (58.3)	43 (41.7)
	Married	159 (57.0)	120 (43.0)	181 (64.9)	98 (35.1)
	Cohabiting	1 (25.0)	3 (75.0)	3 (75.0)	1 (25.0)
	Divorced	2 (33.3)	4 (66.7)	4 (66.7)	2 (33.3)
	/Separated				
		$\chi^2 = 4.211, p = 0.240$		$\chi^2 = 1.691, p = 0.639$	
Highest level of education	None	0 (0.0)	1 (100.0)	0 (0.0)	1 (100.0)
	Primary	0 (0.0)	3 (100.0)	2 (66.7)	1 (33.3)
	Secondary	13 (52.0)	12 (48.0)	18 (72.0)	7 (28.0)
	Tertiary	95 (56.9)	72 (43.1)	107 (64.1)	60 (35.9)
	Postgraduate	105 (53.6)	91 (46.4)	121 (61.7)	75 (35.9)
		$\chi^2 = 5.299, p = 0.258$		$\chi^2 = 2.802, p = 0.591$	
Occupational status	Student	11 (55.0)	9 (45.0)	11 (55.0)	9 (45.0)
	Unskilled	1 (20.0)	4 (80.0)	2 (40.0)	3 (60.0)
	Skilled	29 (43.3)	38 (56.7)	43 (64.2)	24 (35.8)
	Professional	159 (58.5)	113 (41.5)	177 (65.1)	95 (34.9)
	Unemployed	10 (52.6)	9 (47.4)	10 (52.6)	9 (47.4)
	Retired	3 (33.3)	6 (66.7)	5 (55.6)	4 (44.4)
		$\chi^2 = 9.161, p = 0.103$		$\chi^2 = 3.314, p = 0.652$	
Religion	Christianity	202 (55.8)	160 (44.2)	228 (63.0)	134 (37.0)
	Islam	6 (27.3)	16 (72.7)	12 (54.5)	10 (45.5)
	Others*	5 (66.7)	3 (33.3)	8 (100.0)	0 (0.0)
		$\chi^2 = 7.190, p = 0.066$		$\chi^2 = 5.377, p = 0.146$	
Geopolitical zone of residence	SS	140 (55.1)	114 (44.9)	161 (63.4)	93 (36.6)
	SE	10 (47.6)	11 (52.40)	14 (66.7)	7 (33.3)
	SW	47 (58.0)	34 (42.0)	51 (63.0)	30 (37.0)
	NC	10 (52.6)	9 (47.4)	11 (57.9)	8 (42.1)
	NE	3 (37.5)	5 (62.5)	4 (50.0)	4 (50.0)
	NW	3 (33.3)	6 (66.7)	7 (77.8)	2 (22.2)
		$\chi^2 = 3.425, p = 0.635$		$\chi^2 = 1.766, p = 0.880$	
Residence	Urban	188 (57.1)	141 (42.9)	220 (66.9)	109 (33.1)
	Rural	25 (39.7)	38 (60.3)	28 (44.4)	35 (55.6)
		$\chi^2 = 6.497, p = 0.011$		$\chi^2 = 11.441, p = 0.001$	

ED: Erectile Dysfunction, PE: Premature Ejaculation, SS: South South, SE: South East, SW: South West, NC: North Central, NE: North East, NW: North west, *African traditional religion, Grail messenger, Atheist

beverage in the past 12 months (247,63.0%), antihypertensives (65,16.6%), anti-diabetics (21,5.4%), other medications including analgesics, antidepressants, anti-psychotics, anti-ulcer drugs, antibiotics, anti-malarials, COVID-19 prophylaxis, and multivitamins (26, 6.6%). (Table 1)

The IIEF-5 score ranged between 5 and 25. Two hundred and thirteen respondents had a minimum score of 22, while 179 had scores of 21 and less. The prevalence of erectile dysfunction among respondents is 45.7% (179/392). Among respondents with ED, 142 (79.3%) were mild, 26 (14.5%) mild-to-moderate, 9 (5.0%) moderate, while 2 (1.1%) persons had severe ED. The severity of ED by age group is shown in figure 1. All the respondents with severe ED were aged 50 years and above. The association between age and severity of ED was statistically significant ($\chi^2 = 37.449, p=0.002$).

Using the PEDT score, 144 (36.7%) respondents had premature ejaculation. Of the 144 respondents with PE, the PEDT scores of 75 (52.1%) respondents was highly suggestive of premature ejaculation while it was borderline in 69 (47.9%) respondents.

Two hundred and thirty-seven respondents had either ED and/or PE. The overall prevalence of male sexual dysfunction is 60.5% (237/392). Eighty-six respondents (21.9%) had both ED and PE while 155 (39.5%) had neither. (Figure 2). The association between ED and PE was statistically significant ($\chi^2 = 18.132, p<0.001$)

The prevalence of male sexual dysfunction (erectile dysfunction and premature ejaculation) did not differ by age group, marital status, the highest educational status attained, occupational status, religion, and geopolitical zone of residence. (Table 2) However, a significantly higher proportion of rural than urban dwellers had erectile dysfunction (60.3% vs 42.9%) and premature ejaculation (55.6% vs 33.1%). (Table 2)

Table 3 shows the association between male sexual dysfunction (ED and PE) and its risk factors. Among respondents with hypertension and diabetes mellitus, 61.8% ($p=0.001$) and 76.2% ($p=0.014$) had ED, respectively. Similarly, a significantly higher proportion of respondents who were on antihypertensive (60.0%, $p=0.010$) and antidiabetic medications (77.3%, $p=0.005$) had ED.

Table 3. Association between male sexual dysfunction and its risk factors

Variable	Category	No ED (n=213)	ED (n=179)	No PE (n=248)	PE (n=144)
Hypertension	Yes	26 (38.2)	42 (61.8)	40 (58.5)	28 (41.2)
	No	184 (59.2)	127 (40.8)	200 (64.3)	111 (35.7)
	Don't know	3 (23.1)	10 (76.9)	8 (61.5)	5 (38.5)
		$\chi^2 = 15.146, p = 0.001$		$\chi^2 = 0.704, p = 0.691$	
Diabetes mellitus	Yes	5 (23.8)	16 (76.2)	10 (47.6)	11 (52.4)
	No	203 (55.9)	160 (44.1)	234 (64.5)	129 (35.5)
	Don't know	5 (62.5)	3 (37.5)	4 (50.0)	4 (50.0)
		$\chi^2 = 8.470, p = 0.014$		$\chi^2 = 3.042, p = 0.219$	
Tobacco Smoking	Yes	16 (59.3)	11 (40.7)	18 (66.7)	9 (33.3)
	No	197 (54.0)	168 (46.0)	230 (63.0)	135 (37.0)
		$\chi^2 = 0.283, p = 0.595$		$\chi^2 = 0.144, p = 0.704$	
Alcohol use	Yes	138 (55.9)	109 (44.1)	158 (64.0)	89 (36.0)
	No	75 (51.7)	70 (48.3)	90 (62.1)	55 (37.9)
		$\chi^2 = 0.633, p = 0.426$		$\chi^2 = 0.142, p = 0.707$	
Anti-hypertensive medications	Yes	26 (40.0)	39 (60.0)	40 (61.5)	25 (38.5)
	No	186 (57.8)	136 (42.2)	204 (63.4)	118 (36.6)
	Don't know	1 (20.0)	4 (80.0)	4 (80.0)	1 (20.0)
		$\chi^2 = 9.285, p = 0.010$		$\chi^2 = 0.687, p = 0.709$	
Anti-diabetic medications	Yes	5 (22.7)	17 (77.3)	11 (50.0)	11 (50.0)
	No	204 (55.9)	161 (44.1)	234 (64.1)	131 (35.9)
	Don't know	4 (80.0)	1 (20.0)	3 (60.0)	2 (40.0)
		$\chi^2 = 10.542, p = 0.005$		$\chi^2 = 1.801, p = 0.406$	
Use of Other Medications	Yes	28 (13.1)	17 (9.5)	29 (11.7)	16 (11.1)
	No	185 (86.9)	162 (90.5)	219 (88.3)	128 (88.9)

The proportion of respondents with ED who consumed alcohol, smoked tobacco or used medications other than antihypertensives and antidiabetics did not differ significantly from respondents who did not have ED. (Table 3)

The proportion of respondents with PE did not differ significantly from those without based on the

presence of hypertension, diabetes mellitus, alcohol consumption or use of medications (antihypertensives, antidiabetics, and others). The proportion of respondents with PE who smoked tobacco was significantly higher than those who did not smoke (48.8% vs 33.5%, $p=0.011$). (Table 3)

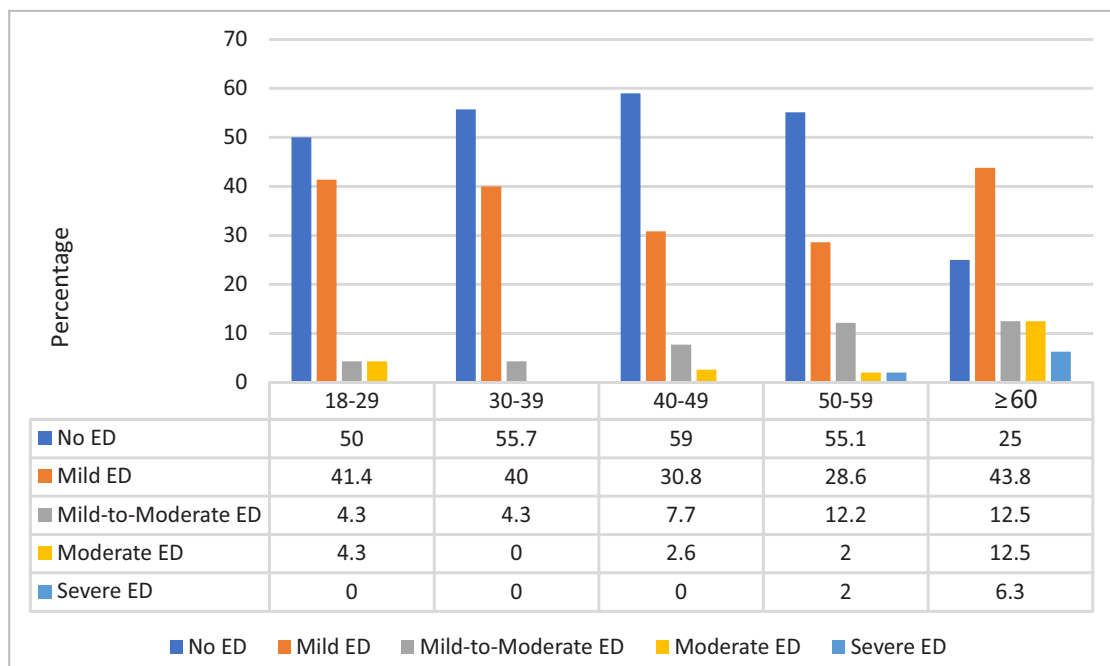


Figure 1. Frequency distribution of erectile dysfunction by severity and age

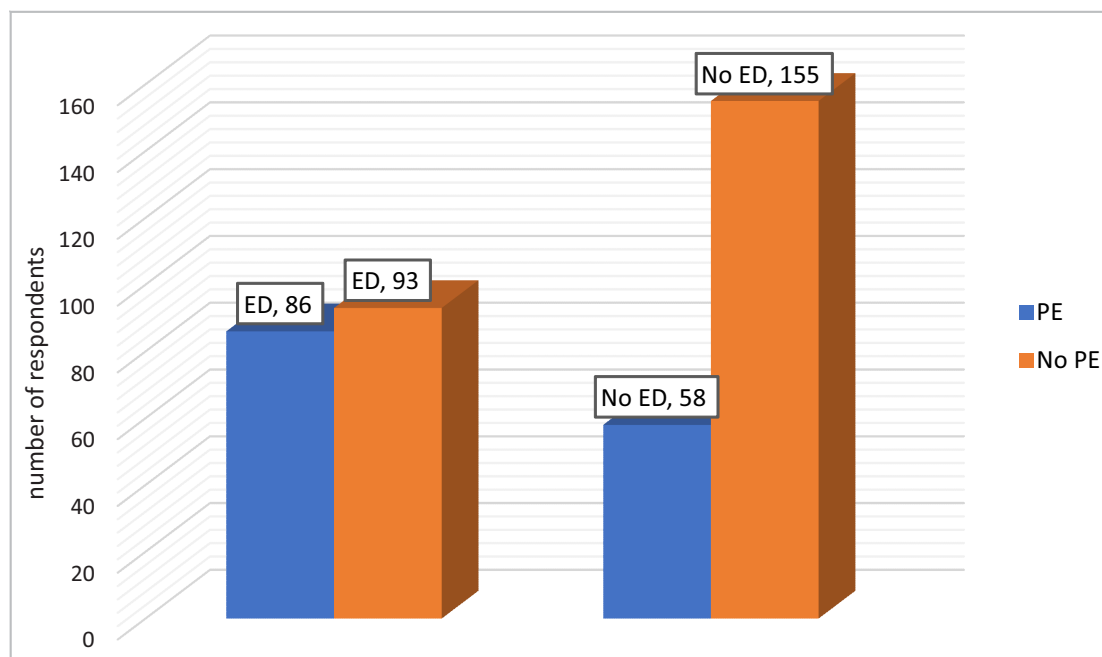


Figure 2. Frequency of respondents with erectile dysfunction (ED) and premature ejaculation (PE)

Discussion

This study reveals a high prevalence of male sexual dysfunction among Nigerians. Previous studies have shown a varied but similarly high prevalence of erectile dysfunction (ED) among Nigerian men.^{4,7} The 45.7% prevalence of ED obtained in this study is similar to the 43.8% from a community-based survey in Southwest Nigeria.⁴ A similar prevalence of 41.5% was also obtained in another study among General Outpatient attendees in the Niger-Delta region of Nigeria.⁵ However, other studies have reported a higher prevalence of ED. Oyelade et al. reported a prevalence of 58.9% in a Southwestern community in Nigeria.⁶ The higher prevalence reported by Oyelade et al. may be attributed to the relatively older population studied; mean age was 46.7 (± 13.7) years versus 39.7 (± 9.01) years in the index study. Indeed, advancing age is a recognised risk factor for ED.^{4,7} As with previous studies,^{5,7} most of the men had mild ED.

Compared to ED, the prevalence of premature ejaculation (PE) in our study was lower.

The observed pattern is consistent with findings from other studies.^{18,19} However, unlike the prevalence of ED, the 37.6% prevalence of PE in this study is higher than previous reports.^{18,21}

The prevalence of ED varies with sociodemographic factors, including age, race, and ethnicity. Previous studies from Nigeria show that the prevalence of ED increases with age.^{4,7} Their observations were statistically significant, unlike in the index study. In the index study, the proportion of young men between 18-29 years with ED was high, second only to men aged 60 years and above. This finding buttresses the fact that ED in young men is common but often overlooked.²² However, the plausible reasons, including frequency of sexual exposures for the high prevalence of ED among young men in this study, is not immediately apparent (as it was beyond the scope of this study). Factors such as heightened mental stress from general anxiety, peer pressure, and the need to impress partner with sexual prowess may drive the mechanisms leading to sexual dysfunction among young men.²² The use of recreational drugs and abuse of medications such as tramadol contribute to poor sexual performance.⁹ These high-risk practices are more prevalent among young than older adults. However, it is noteworthy that while most of the cases of ED are mild, older men tend to have severe forms compared to young men, as was the case in this study.

Like age, marital status, level of education, occupation, religion, and the geopolitical zone where respondents were resident were not significantly associated with neither ED nor PE in this study. The lack of association between these sociodemographic characteristics and male sexual dysfunction may be due to selection bias as the study was an online survey, however unintended.

Hypertension, diabetes mellitus and the use of anti-hypertensive and antidiabetic medications were found to be significantly associated with erectile dysfunction in this study. Other Nigerian studies have reported similar findings.^{4,7} In a meta-analysis of 145 studies, the prevalence of ED was high among men with diabetes and approximately 3.5 times higher than healthy controls.²³ Similar findings were found in the Massachusetts Male Aging Study.²⁴ Men with diabetes showed a threefold probability of erectile dysfunction compared with men without diabetes.²⁴ The age-adjusted risk of erectile dysfunction was doubled in men with diabetes compared with non-diabetics.²⁴ Independent of cardiovascular risk factors such as hypertension and diabetes mellitus, ED is associated with adverse cardiovascular events.^{25, 26} Indeed, erectile dysfunction may be considered a symptom of vascular endothelial damage and a coronary artery disease risk equivalent.¹⁸ Although tobacco smoking, a well-established cause of vascular endothelial damage, is also linked with ED, no significant association was observed in this study.

On the other hand, PE was not associated with hypertension, diabetes, alcohol consumption or medication, including antihypertensives and antidiabetics in the index study. Tobacco smoking was also not significantly associated with PE. These findings may also corroborate the hypothesis that, unlike ED, PE is often due to psychosocial rather than physical factors such as hypertension and diabetes mellitus.

This study is, however, limited in its lack of assessment of psychosocial risk factors such as lack of social support, anxiety disorders and work-related stress for male sexual dysfunction, and frequency sexual activity. Another limitation is the possibility of recall bias by some respondents.

Conclusion

A high prevalence of male sexual dysfunction was observed in this study: erectile dysfunction (45.7%) and premature ejaculation (37.6%). Compared to other Nigerian studies, the prevalence of ED in this study was within the reported range. On the other hand, a higher prevalence of PE was observed compared to previous reports. Unlike PE, erectile dysfunction was significantly associated with hypertension, diabetes mellitus, anti-hypertensive and antidiabetic medications.

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