

Research Article

Prevalence of Sexual Dysfunction Among Patient with Diabetic Mellitus Attending Follow up at Shishicho General Hospital, Ethiopia

Amanuel Fanta¹; Tamrat Legesse²; Selamawit Kebede¹

¹Department of Nursing Sciences, Hawassa College of Health Sciences, Ethiopia

²Dilla University College of Health Sciences, Ethiopia

*Corresponding author: Amanuel Fanta

Department of Nursing Sciences, Hawassa College of Health Sciences, PO Box 84, Ethiopia.

Tel: +251961457900

Email: amanuefanta@gmail.com

Received: January 12, 2024

Accepted: February 15, 2024

Published: February 22, 2024

Abstract

Background: Sexual dysfunction is common among people with diabetes, particularly in older men who have had diabetes for years. Sexual dysfunction is one of the major and serious complications of diabetes. Male Sexual dysfunction is the major psychological problem in the world wide that can lead depression, isolation, loss of confidence and loss of self-esteem. The importance of this study is because the diabetes mellitus is a risk factor to developing Male sexual dysfunction.

Objective: The aim of this study is to assess the prevalence of Male sexual dysfunction among patient with diabetes mellitus attending follow up at Shishicho General Hospital.

Methodology: A retrospective cross-sectional study will be conducted by reviewing medical cards of 159 and structured IIEF questionnaires among diabetic patients' who are attending follow up at schishicho General Hospital from January 2019 to January 2020. Data is going to be collected by using structured data collection format, entered into Epi Info version 3.5.3 and analyzed by SPSS version 21 software for windows for descriptive statistics. The study will be presented with Tables and Figure.

Result: From this study marital status, religion, occupation and educational status has no significant risk for sexual dysfunction but deferent age classification has significant risk factor for developing sexual dysfunction and in descending order includes, 41-50 age 29(17.0%), 31-40 age 25(15.7%) >50 age 19(11.9) and 18-30 age 12(7.5%) respectively. Dysfunction found in descending order are erectile dysfunction 138(86.8%), intercourse satisfaction 135(84.9%), orgasmic dysfunction 109(68.6%), sexual desire 105(66.0%) and Overall Satisfaction 87(54.7%) and study indicate that DM patients with cardiovascular disease like hypertensive patient 58(36.4) were more at risk for sexual dysfunction than no cardiac case patient 43(27.0%).

Conclusion: Status of glycemic control, body mass index of the patient and cardiac co morbidity such as hypertension, dyslipidemia, was the well-known factors for sexual dysfunction in diabetic patient in the current study.

Keywords: Prevalence; Sexual dysfunction; Diabetic mellitus; Shishicho; Kembata; Ethiopia

Abbreviation: BMI: Body Mass Index; CHD: Coronary Heart Disease; CVD: Cardiovascular Disease; DM: Diabetes Mellitus; DSM: Diagnostic and Statistical of Mental Disorder; ED: Erectile Dysfunction; AGH: Aira General Hospital; LDL: Low density Lipoprotein; PE: Premature Ejaculation; IIEF: International Index of Erectile Function; SD: Sexual Dysfunction; WHO: World Health Organization

Introduction

Sexual dysfunction is common among people with diabetes, particularly in older men who have had diabetes for years. Sexual dysfunction is one of the major and serious complications of diabetes. This common metabolic disorder not only affects sexuality through micro vascular and nerve damage but also has psychological aspects. Sexual dysfunction is common in diabetic mellitus [1]. Male Sexual dysfunction is any physical or psychological problem that prevents male from getting sexual satisfaction. Male sexual dysfunction is a common health problem affecting men of all ages, but is more common with increasing age. Sexual dysfunction in men with diabetes includes orgasmic and ejaculatory problems, decreased libido, ED, and problems related to low testosterone and hypogonadism [1].

Erectile dysfunction is the inability to get or maintain an erection firm enough for sex. Sexual dysfunction in men with diabetes includes orgasmic and ejaculatory problems, decreased libido, ED, and problems related to low testosterone and hypogonadism is common in men who have diabetes, especially those with type2diabetes. It can stem from damage to nerves and blood vessels caused by poor long-term blood sugar control is common in the general population and bears a strong relationship to age, estimates suggesting a prevalence in the region of 2% at 40 years rising to 25% to 30% by 65 years. 'Impotence appears to be more common amongst diabetic men, with a reported prevalence of 50% in the 55-59-year age range and a 50% overall prevalence. Erectile dysfunction can also be linked to other conditions common in men with diabetes, such as high blood pressure and heart disease. Erectile dysfunction might occur earlier in men with diabetes than in men without the disease [2,3].

Problems with ejaculation are ejaculation that occurs before or too soon after penetration. ejaculation does not happen or takes a very long time at orgasm, the ejaculate is forced back into the bladder rather than through the end of the penis. The exact cause of Premature Ejaculation (PE) is not known. While in many cases PE is due to performance anxiety during sex, other factors may be: Stress, Temporary depression, History of sexual repression, Low self-confidence, Lack of communication or unresolved conflict with partner. Physical causes for inhibited or delayed ejaculation may include chronic (long-term) health problems, medication side effects, alcohol abuse, or surgeries. The problem can also be caused by psychological factors such as depression, anxiety, stress, or relationship problems.

Male Sexual dysfunction is the major psychological problem in the world wide that can lead depression, isolation, loss of confidence and loss of self-esteem. Many Male experience sexual problems and statistics suggest it affect 30% of 40 to70 age of male patient. Male Sexual dysfunction is seriously impact the quality of life, partner relationship as well as their health in life time. Diabetes and Hypertension have been associated with sexual dysfunction and an estimated 40% to 80% of diabetic hypertensive have reported sexual dysfunction in several investigations [6].

Sexual dysfunction has significant negative impact on quality of life. Many men with ED have low self-esteem and feel isolated and fair to discuss the issue with his friends as well as the health professions about the problem which is public problems. Chronic disease like diabetes with their complications may affects marital adjustment and healthy of couple leading to dissatisfaction with the marriage and marital relationship [7].

This study aims to describe the prevalence of Male sexual dysfunction in diabetic patient on follow up at Aira General Hospital, types of sexual dysfunction and factor associated with sexual dysfunction Therefore, sex therapy, psychotherapy and couple therapy would be vital components of treatment in these patients.

Significance of the Study

The importance of this study is because the diabetes mellitus is a risk factor to developing Male sexual dysfunction, Prevalence in western countries is fairly well known, and with few studies done in Africa and in Ethiopia, where few related studies done but there is no related study was done in shishicho General Hospital on sexual dysfunction mostly related to diabetes mellitus. With the increase in diabetes mellitus, it is important to know the variability of sexual dysfunction among patient with diabetes in the population.

The study will help to increase the awareness and attitude toward male sexual dysfunction and its management. It is also enable and allow for state planning and allocation of resource through policy making as noted in a study done on sexual dysfunction. Prevalence and predictor, indicate that sexual dysfunction is an important public health concern, and that emotional problem likely contributes to the experience of these problems. The management of Male sexual dysfunction not only include the psychologists, but it include the team coworkers like urologist, mental health specialist and the sexual health medicine will be included for the benefit of patient.

Objective

General Objective

❖ To establish the prevalence of male sexual dysfunction among patients with diabetes mellitus attending outpatient clinic at Shishicho General Hospital, Ethiopia

Specific Objectives

- To assess the prevalence of male sexual dysfunction among patient with diabetes mellitus.
- To assess the types of male sexual dysfunction among patients with diabetes mellitus.
- To identify the factors associated with male sexual dysfunction among patients with diabetes mellitus

Methods and Participants

Study area

The study was conducted in kembata Zone, shishicho General Hospital, shishicho Town, and south Ethiopia Region. shishicho town is one of the administrative towns of the kembata zone and it is found around 500km away from the capital city Addis Ababa. It provides services for approximately 1.5 million people. Shishicho town has one General hospital known as shishicho General Hospital. The Hospital gives different in-patient and outpatient service for the community. And it has four major wards, namely medical, surgical, pediatrics and Gynecology/Obstetric, and other minor wards. Additionally, the AGH chronic care unit in which the present study conducted is one of the care units in outpatient service. The care unit gives regular follow up for diabetes, hypertension, epilepsy and cardiac care.

Study Design and Period

A cross sectional retrospective study was conducted to interview using IIEF and review medical record of the male sexual dysfunction among diabetes patients. The study period is from September 2019 to June 2020.

Population

Source population

All diabetic patient information cards of male that have been getting follow up service in AGH.

Study population

All patient information cards of male sexual dysfunction among diabetes patients that have been getting service in AGH from January 2019 to January 2020 and fulfill the eligibility criteria.

Inclusion and Exclusion criteria

Inclusion Criteria

The study participants included diabetic male patients attending diabetic clinic at AGH, with the following criteria:

- ✓ Age \geq 18 years
- ✓ Duration of diabetic \geq 1 year
- ✓ Both type 1 and 2 diabetic mellitus
- ✓ Consenting to participate in the study

Exclusion criteria:

- ✓ Incomplete medical records: records that have no full required information.
- ✓ The very sick patients for purpose of this study were defined as: Patients with unstable vital signs/mental status e.g.

Table 1: Socio demographic characteristics of male diabetic patients attending Diabetic clinic at AGH.

| Variables | | Frequency | Percentage (%) |
|--------------------|-----------------|-----------|----------------|
| Marital status | Single | 27 | 17.0 |
| | Married | 119 | 74.8 |
| | Divorced | 6 | 3.8 |
| | Cohabiting | 7 | 4.4 |
| Educational status | None | 23 | 14.5 |
| | Primary | 62 | 39.0 |
| | Secondary | 28 | 17.6 |
| | Post-secondary | 2 | 1.3 |
| | University | 44 | 27.7 |
| Occupation | Farmer /Peasant | 63 | 39.6 |
| | Government | 47 | 29.6 |
| | Private | 2 | 1.3 |
| | Self-employment | 47 | 29.6 |
| Religion | Protestant | 89 | 56.0 |
| | Muslim | 34 | 22.4 |
| | Orthodox | 36 | 22.4 |
| Age | 18-30 | 37 | 23.3 |
| | 31-40 | 59 | 37.1 |
| | 41-50 | 36 | 22.6 |
| | >50 | 27 | 17.0 |
| Total | | 159 | 100 |

Table 2: Risk factors and clinical history.

| Variables | | Frequency | Percentage (%) |
|------------------------------|-----------------|-----------|----------------|
| Duration of diabetes in year | 1-5 | 57 | 35.8 |
| | 6-10 | 44 | 27.7 |
| | 11-15 | 42 | 26.4 |
| | >15 | 16 | 10.1 |
| Treatment for diabetes | Oral medication | 84 | 52.8 |
| | Injection | 75 | 47.2 |
| Types of DM | Type 1 | 77 | 48.1 |
| | Type 2 | 82 | 51.6 |
| Treatment for sexual problem | Yes | 67 | 42.1 |
| | No | 88 | 55.3 |
| Family history of DM | Yes | 49 | 30.8 |
| | No | 110 | 69.2 |
| Family history of HTN | Yes | 57 | 35.8 |
| | No | 102 | 64.2 |
| Known hypertensive | Yes | 77 | 48.4 |
| | No | 82 | 51.6 |
| Taking anti-hypertensive | Yes | 82 | 51.6 |
| | No | 77 | 48.4 |
| History of smoking | Yes | 55 | 34.6 |
| | No | 104 | 65.4 |
| Alcohol consumption | Yes | 53 | 33.3 |
| | No | 106 | 66.7 |
| Status of glycemic control | Poor | 99 | 62.3 |
| | Good | 60 | 37.7 |
| BMI | Under weight | 5 | 3.1 |
| | Normal | 104 | 65.4 |
| | Over weight | 47 | 29.6 |
| | Obese | 3 | 1.9 |

in diabetic ketoacidosis or hyperosmolar hyperglycemic state, confused, or in septicemia as in infected diabetic foot.

Sample Size Determination

All male medical cards of sexual dysfunction and diabetic patients from January 2019 to January 2020 and fulfilled eligibility criteria were included in the study. Accordingly, only 159 medical cards fulfilled the eligibility criteria (no of adult men diabetic patient on follow up) which can be included and considered for analysis.

Data Collection and Quality Control

A semi structured data collection format was used to include socio demographic characteristics, clinical characteristics on diabetes mellitus and sexual problems. The data will be collected by principal investigator. To maintain the good quality of data, the data collection instrument was properly being designed in English language, and Oromic language then, the data will be appropriately collected and checked for consistency and completeness.

Data Analysis and Presentation

The collected data was entered into in Epilnfo and descriptive statistics done using SPSS version 20 for windows for frequency distributions and the result of the study will be presented by tables and figures.

Study Variables

Dependent variables

Socio demographic factor

- Age
- sex
- BMI
- co morbid disease

Independent variable

- Treatment for diabetic
- Reported sexual problems

Ethical Consideration

A formal letter of cooperation was written from department of pharmacy in order to get permission to conduct the study. Cooperation letter was submitted to hospital clinical director and data collection can be done after approval. Confidentiality of the patient medical history records was maintained throughout the study period.

Dissemination Plan

A result of the study was presented to the school of pharmacy. And also, the copy of the research paper was submitted to Mizan Tepi University, college of health science, department of pharmacy. The findings will be available in the library and will be used by others for future studies. Attempts was made to present the finding on scientific conferences and to publish it in local or national journal.

Operational Definitions of Terms

Co Morbidities: Occurrence of two or more diseases together in an individual patient.

Table 3: Socio demographic and clinical factors associated with ED among male diabetic patients attending diabetic clinic at AGH.

| Variables | | erectile sexual function | |
|--------------------|-------------------------|---------------------------|-----------------------------|
| | | Dysfunction 138(86.8%) | No dysfunction 21(13.2%) |
| Marital status | Single | 12(7.5%) | 15(9.4%) |
| | Married | 22(13.3%) | 97(61.0%) |
| | Divorced | 4(2.5%) | 2(1.3%) |
| | Cohabiting | 3(1.9%) | 4(2.5%) |
| Educational status | None | 12(7.5%) | 11(6.9%) |
| | Primary | 27(17.0%) | 35(22.0%) |
| | Secondary | 11(6.9%) | 17(10.7%) |
| | Post /Secondary | 2(1.3%) | - |
| | University | 28(17.6%) | 16(10.1%) |
| Occupation | Peasant/ Farmer | 26(16.4%) | 37(23.3) |
| | Government employee | 18(11.3%) | 29(18.2%) |
| | Private Sector employee | - | 2(1.3%) |
| | Self-employee | 20(12.5%) | 27(17.0%) |
| Religion | Protestant | 18(17.6%) | 61(38.4%) |
| | Muslim | 13(8.2%) | 21(13.2%) |
| | Orthodox | 12(7.5%) | 24(15.1%) |
| Age | 18-30 | 12(7.5%) | 25(15.7%) |
| | 31-40 | 25(15.7%) | 29(18.2%) |
| | 41-50 | 27(17.0%) | 9(5.7%) |
| | >50 | 19(11.9%) | 8(5.3%) |
| | Total | 159 | 100.0 |

Table 4: Clinical variables with presence of erectile dysfunction in diabetic patient attending diabetic clinic in AGH.

| Clinical variables | Dysfunction N=138 | No dysfunction N=21 | |
|-----------------------------------|----------------------|------------------------|----------|
| Types of DM | | | |
| Type 1 | 35(22.0%) | 42(26.4%) | |
| Type 2 | 57(35.8%) | 25(15.7%) | |
| Status of glycemic control | | | |
| poor controlled | 63(39.6%) | 36(22.6%) | |
| Good Controlled | 26(16.4%) | 34(21.3%) | |
| Alcohol consumption | | | |
| Yes | 29(18.4%) | 24(15.0%) | |
| No | 13(8.2%) | 93(58.5%) | |
| Smoking | | | |
| Yes | 34(22.0%) | 20(12.6%) | |
| No | 25(15.7%) | 79(49.7%) | |
| Known hypertensive | | | |
| Yes | 58(36.4%) | 24(15.0%) | |
| No | 43(27.0%) | 34(21.3) | |
| BMI | | | |
| Underweight | 2(1.20%) | 3(3.1%) | |
| Normal | 40(25.2%) | 64(40.3%) | |
| Overweight | 31(19.5%) | 16(10.1%) | |
| Obese | 3(3.1%) | - | |
| Duration of diabetes in year | 1-5 | 23(14.5%) | 34(21.4) |
| | 6-10 | 36(22.6%) | 10(6.3%) |
| | 11-15 | 29(18.2%) | 13(8.2%) |
| | >15 | 12(7.5%) | 4(2.5%) |

Table 5: Level of dysfunction by type of sexual function domains among male patients attending the diabetic clinic at AGH.

| Types/Severity of Dysfunction | Severe Dysfunction | Moderate | Mild | no dysfunction |
|-------------------------------|--------------------|-----------|-----------|----------------|
| Erectile function | 30(18.9) | 49(30.8%) | 59(37.1%) | 21(13.2%) |
| Orgasmic function | 44(27.7%) | 51(32.1%) | 14(8.8%) | 50(31.4%) |
| Sexual desire | 38(23.9%) | 55(34.6%) | 12(7.5%) | 54(34.0%) |
| Intercourse satisfaction | 36(27.6%) | 56(35.2%) | 43(27.0%) | 24(15.1%) |
| Overall satisfaction | 45(28.3%) | 30(18.9%) | 12(7.5%) | 72(45.3%) |

Contraindicated: Any factor in a patient’s condition that makes it unwise to pursue a certain line of treatment.

Diabetes: Metabolic disorder causes excessive thirst and large volume of urine production and which is characterized by an increase in blood glucose level.

Incomplete medical record: a medical record which lacks pertinent information like age, sex, sexual dysfunction.

Results

In the present study, a total of 159 male patient with diabetic and age greater than 18 were included.

As indicated above table, the majority of patient were married 119(74.8%) and their level of education were in descending order primary 62(39.0%), University 44(27.7%), post-secondary 28(17.6%), None 23(14.5%). From total of 159 patients 63(39.6%) were Peasant/farmers, followed by Government employee and Self employment 47 (29.6) and 2(1.3%) were private sector employer. The most religious were present study conducted was protestant 89(56.0%) followed by orthodox 36(22.6%) and 34 (22.6) were Muslim.

In this study the duration of diabetic treatment in descend-

Table 6: Prevalence of sexual dysfunction among participants.

| Category | Erectile Dysfunction | Orgasmic Function | Sexual Desire | Intercourse Satisfaction | Overall Satisfaction |
|----------------|----------------------|-------------------|---------------|--------------------------|----------------------|
| Dysfunction | 138(86.8%) | 109(68.6%) | 105(66.0%) | 135(84.9%) | 87(54.7%) |
| No dysfunction | 21(13.2%) | 50(31.4%) | 54(34.0%) | 24(15.1%) | 72(45.3%) |

Table 7: Onset of ED and use of medications for ED among male diabetic patients attending diabetic clinic at AGH.

| Variable | Frequency | Percentage (%) |
|---|-----------|----------------|
| Onset of ED (months) | | |
| Within 3 | 12 | 7.5 |
| 3-12 | 67 | 42.1 |
| More than 12 | 63 | 39.6 |
| Problematic since first sexually active | 17 | 10.7 |
| Ever tried medication | | |
| Yes | 67 | 42.2 |
| No | 92 | 57.9 |
| Satisfied with medication | | |
| Yes | 37 | 23.3 |
| No | 122 | 76.7 |

ing order includes 57(35.8%) 1-5 years, 44(27.7%) 6-10 years, 42(26.4%) 11-15years and 16(10.1%)>15 years. Treatment of diabetic mellitus shows that 84(52.8%) oral medication, 75 (47.2%) were on insulin injection.

82(51.6%) were type 2DM and 77(48.1%) were type 1. From treatment for sexual problem 88(55.3%) were not taking treatment and 67(42.1%) were on taking treatment. In addition to this 110(69.2%) had family history DM, 49(30.8%) had no family history of DM. And 102(64.2%) had no family history of HTN, 57 (35.8%) had family history of HTN. From hypertensive status 82(52.6%) were non hypertensive, 77(48.4%) were hypertensive and taking antihypertensive medication and smoking status shows 104(65.4%) were nonsmoker, 55(34.6%) were smokers

Status of glycemic indicate that 99(62.3%) were poorly controlled, 60(37.7%) were Good controlled and 106(66.7%) were not alcohol consumer, 53(33.3%) were alcohol consumer. Study indicates that 104(65.4%) were BMI normal range 47(29.6%) were overweight, 5(3.1%) underweight and 3 (1.9%) were obese.

From this study marital status, religion, occupation and educational status has no significant risk for sexual dysfunction but deferent age classification has significant risk factor for developing sexual dysfunction and in descending order includes, 41-50 age 29(17.0%), 31-40 age 25(15.7%) >50 age 19(11.9) and 18-30 age 12(7.5%) respectively.

Long duration of diabetes increases the chance of patient experiencing sexual dysfunction. There was high risk of sexual dysfunction among patient whose duration of illness was over 10 years. From types of DM type2 DM patients 57(35.8) had high risk for sexual dysfunction as compared to type1 DM patients 35(22.0%). Glycemic control status of the patients indicates that poorly controlled 63(39.6) patients reports more erectile dysfunction than good controlled 26(16.4). and also, alcohol user patients 29(18.4%) were two times more at risk for developing sexual dysfunction than non-user 13(8.2%) and smoker 31(19.5%) are more at risk of reporting sexual dysfunction than nonsmoker 25(15.7%). Patients with comorbid condition like hypertensive 58(36.4%) were more at risk for sexual dysfunction than non-hypertensive 43(27.0%) and on body mass index, over weight patients 31(19.5%) were much more at risk than others.

From patients that have sexual dysfunction, majority of them has moderate dysfunction, severe dysfunction was for all five types of sexual dysfunction and mild dysfunction was higher in erectile function than others.

Types of Sexual Function

In the study participants were assessed using five domains of measuring sexual function which includes erection, experience of orgasm, sexual desire, intercourse satisfaction and overall satisfaction to determine the prevalence of sexual dysfunction and of the type as well.

Dysfunction found in descending order are erectile dysfunction 138(86.8%), intercourse satisfaction 135(84.9%), orgasmic dysfunction 109(68.6%), sexual desire 105(66.0%) and Overall Satisfaction 87(54.7%).

From this study the onset of erectile dysfunction are higher within range of 3-12 months 67(42.2%) and more than 12 months 63(39.6) than others range. Medication use for treating erectile dysfunction out lines that 67(42.2%) were tried using the medication and 92(57.9%) were not tried the medication and satisfaction with the medication includes 37(23.3%) and 122(76.7%) were satisfied and not satisfied respectively.

Discussion

This study tried to find the prevalence, types and factor associated with sexual dysfunction in diabetic patient. From the present study finds prevalence rate of sexual dysfunction were high in diabetic patient. As study done in Iran on sexual dysfunction in patient with diabetes by marziehzaei - rad et al. 2010 show that high prevalence in diabetic patient.

The finding of current study show that age was significantly associated with sexual dysfunction. Diabetic patient was in age group of 41-50 years 27(17.0%) and those age 31-40 years 25(15.7%) and greater than 50 were more likely experienced sexual dysfunction. Study conducted in Tanzania erectile dysfunction was significantly predicted by old age [19]. Other similar study conducted in Jamaica disclosed that the prevalence of ED increased from 36% in 50-59 years age group to 90% in 70-75 years age groups [18].

In the current study Duration with diabetes mellitus had significant associated for erectile functions this indicate the long duration of the diabetes over 10 years 36(22.6%) were the more damage the organ that result from diabetes than those who presented with duration of less than 10 years 23(14.5%) similar to previous studies [40]. Most study has similar result demonstrating age and duration of diabetes is significantly associated with erectile dysfunction. Past history of sexual problem increase the risk of erectile dysfunction. If life affected due to sexual problem it was greatly associated with erectile dysfunction [39]. As the current study indicates clinical variable such as, status of glycemic control, body mass index, cardio vascular co morbidity are significantly associated with erectile dysfunction. Study conducted in Italian and Israel men on erectile dysfunction type 1 and type 2 demonstrate similar finding on independent predictor variable [12,13]. The study further confirms that duration of diabetes age and monthly income is the independent predictor for erectile dysfunction and it is severity.

This study indicate that DM patients with cardiovascular disease like hypertensive patient 58(36.4) were more at risk than no cardiac case patient 43(27.0%). Various medications, including several antihypertensive agents such as beta blockers [13] and thiazide diuretics [13] have been shown to have an additive deleterious effect on diabetic ED. Centrally to the present study, Balde et al [41] and Ngalyuka et al [42] showed that patients who presented with ED often took drugs for associated cardiovascular diseases and also the study showed that other risk factors which was highly statistically significant associated with high prevalence of ED included history of cigarette smoking 58(36.4%), history of drinking alcohol 29(18.4%). Similarly, previous studies showed that risk factors such as smoking [31] and excessive alcohol intake have been shown to have an additive deleterious effect on diabetic ED [35].

DM patient with good glycemic control 26(16.4%) were less at risk for sexual dysfunction than poor glycemic control 63(39.6%) in the current study.

In the present study, the prevalence of erectile dysfunction was significantly higher in T2DM (35.8%) than in T1DM (22.0%), Similarly, Fedele et al [35] showed that ED was more in T2DM than T1DM patients.

In this study, only (42.2%) of patients with ED ever tried medications for ED and 23.2% of them got satisfied with the medications and the study revealed very low percentage of divorce despite high prevalence of erectile dysfunction, probable explanations for this observation could be: most of diabetic patients are educated on the possibilities of chronic complications of diabetes such as ED later in life and they therefore adapt to live as couple even if ED arise or in most cultural systems women are not allowed to leave their husband at all.

Conclusion

Prevalence of sexual dysfunction high in diabetic patient, comparing to type 1 DM the prevalence of sexual dysfunction was relatively high in type 2 DM. erectile dysfunction was the most common sexual problems that patient complains in this study. Status of glycemic control, body mass index of the patient and cardiac co morbidity such as hypertension, dyslipidemia, was the well-known factors for sexual dysfunction in diabetic patient in the current study.

Recommendations

These findings are similar to those found in other studies done in different countries reinforcing the need to screen for ED in diabetic patients as it is done for other chronic complications of diabetes in routine clinical practices for early detection, treatment and possibly prevention.

The screening for presence or absence of ED can be best done by the use of IIEF questionnaire. Interventions aimed at prevention of DM especially type 2; early diagnosis of DM and detection of its complications e.g ED, and adherence to treatment to prevent these complication should be implemented. ED is a neglected medical problem that warranty screening at each visit and deliver appropriate treatment. Further studies should emphasize on temporal variation to show true causality especially in low-income settings.

Study Strength

In study, the interview on the IIEF questionnaire was done by the author among all participants; this increased the internal

validity of the study. Due to stigma attached to ED there was a potential that study participant could either shy away from participating or hide information related to ED. We minimized this by providing adequate information to the potential study participants on the importance of study and we also ensured confidentiality.

Study Limitations

One of potential limitations is about generalizability. Aira General Hospital might not be a true representative of the general population but probably relevant to the population of diabetics.

Other causes of ED such as depression were not explored in this study. Causality cannot be drawn from cross-sectional studies; because both exposure and outcome are assessed at the same point in time i.e this study cannot establish a temporal cause-effect relationship. However, it can confirm the association between cormorbidity and ED in patients with diabetes.

Author Statements

Availability of Data and Materials

For those who are interested the datasets analyzed during the current study are available from the corresponding author on reasonable request.

Acknowledgements

We want to give our heart full gratitude to the Almighty God. Then, we would like to express our sincere gratitude to our advisor Mr. Habtamu Acho (Asst.proff.) For his unreserved comments and advice. We are also thankful for the hospitals involved in this study for their cooperation. Finally, the authors are deeply thankful to the supervisors and data collectors.

Authors Contributions

AF, conceived and designed the study and developed the data collection instruments. TL and AF performed the statistical analysis and wrote all versions of the manuscript. All authors critically revised and approved the final manuscript.

Competing Interests

The authors declare that they have no competing interests.

References

1. Journal of the American Medical Association.
2. Lewis RW, Fugl-Meyer KS, Corona G. Definitions/epidemiology/risk factors for sexual dysfunction. *J Sex Med.* 2010; 7: 1598–607.
3. Laumann EO, Paik A, Rosen RC. Sexual Dysfunction in United States: Prevalence and Predictors. *JAMA.* 1999; 281: 537–44.
4. Journal of the American Medical Association.
5. Association AU. Erectile Dysfunction (brochure).
6. MM D, MV. Hypertension and Sexual Dysfunction. *European Society of Hypertension Scientific Newsletter: Update on Hypertension management.* 2007; 8.
7. Fedele D. Therapy Insight: Sexual and Bladder Dysfunction Associated with Diabetes Mellitus. *Nature Clinical Practice Urology.* 2005; 2: 282–90.
8. Manolis A, Doumas M. Sexual dysfunction, the ‘prima ballerina’ of hypertension-related quality-of-life complications. *Journal of Hypertension.* 2008; 26: 2074-2084.

9. DeBusk R, Drory T, Goldstein I, Jackson G, Kaul S, Kimmel SE, et al. Management of sexual dysfunctions in patients with cardiovascular Disease: Recommendations of the Princeton consensus panel. *The American Journal of Cardiology*. 2000; 86: 175–81.
10. Ahmadi K, Ranjekar-Shayan H, Raiisi F. Sexual dysfunction and marital satisfaction among the chemically injured veterans. *Indian Journal of Urology*. 2007; 23: 377–82.
11. Zemishlany Z, Weizman A. The Impact of Mental Illness on Sexual Dysfunction. BalonR, editor. 2008; 29: 89-106.
12. Harland R, Huws R. Sexual problems in diabetes and the role of psychological intervention. *Sexual and Relationship Therapy*. 1997; 2: 147–57.
13. Leedom L, Feldman M, Procci W, Zeidler A. Symptoms of sexual dysfunction and depression in diabetic women. *Journal of Diabetic complications*. 1991; 5: 38–41.
14. Impact of diabetes on the sexuality of Peruvian postmenopausal. *Gynecol Endocrinol*. 2008; 2: 470–4.
15. Shaer KZM, Osegbe DN, Siddiqui SH, Razzaque A, Glasser DB, Jaguste V. Prevalence of erectile and its correlates among men attending primary care clinics in three countries: Pakistan, Egypt, and Nigeria. *International Journal of Impotence*. 2003; 15: 18–14.
16. Unadike BC, Eregie A, Ohwovoriolo AE. Prevalence and types of sexual dysfunction amongst female with diabetes mellitus. *Pak J Med Sci*. 2009; 25: 257–60.
17. Olarinoye J, Olarinoye A. Determinants of Sexual Function among Women with Type 2 Diabetes in a Nigerian Population. *Journal of sexual medicine*. 2008; 5: 878–86.
18. Berrada S, Kadri N, Mechakra-Tahri S, Nejari C. Prevalence of erectile dysfunction and its correlates: a population based study in Morocco. 2003; 15: S3-7.
19. Monda B, A M, M D, M V. Sexual Dysfunction in women. *European Society of Hypertension Scientific Newsletter: Update on Hypertension management*. 2009; 8.
20. Giuliano FA, Leriche A, Jaudinot EO, Gendre AS. Prevalence of erectile dysfunction among 7689 patients with diabetes or hypertension, or both. *Urology*. 2004; 64: 1196–201.
21. Thorve VS, Kshirsagar AD, Vyawahare NS, Joshi VS, Ingale KG, Mohite RJ. Diabetes-induced erectile dysfunction: epidemiology, pathophysiology and management. *J Diabetes Complications*. 2011; 25: 129–36.
22. Johannes CB, Araujo AB, Feldman HA, Derby CA, Kleinman KP, McKinlay JB. Incidence of erectile dysfunction in men 40 to 69 years old: longitudinal results from the Massachusetts male aging study. *J Urol*. 2000; 163: 460–3.
23. Bacon CG, Hu FB, Giovannucci E, Glasser DB, Mittleman MA, Rimm EB. Association of htype and duration of diabetes with erectile dysfunction in a large cohort of men. *Diabetes Care*. 2002; 25: 1458–63.
24. Kalter-Leibovici O, Wainstein J, Ziv A, Harman-Bohem I, Murad H, Raz I. Israel Diabetes Research Group (IDRG) Investigators. Clinical, socioeconomic, and lifestyle parameters associated with erectile dysfunction among diabetic men. *Diabetes Care*. 2005; 28: 1739–44.
25. Fedele D, Coscelli C, Santeusano F. Erectile dysfunction in diabetic subjects in Italy. *Gruppo Italiano Studio Deficit Erettile nei Diabetici*. *Diabetes Care*. 1998; 21: 1973–7.
26. Goldstein I, Lue TF, Padma-Nathan H, Rosen RC, Steers WD, Wicker PA. Oral sildenafil in the treatment of erectile dysfunction. *Sildenafil Study Group N Engl J Med*. 1998; 338: 1397-404.
27. Corona G, Giorda CB, Cucinotta D, Guida P, Nada E, Subito-de G. The SUBITO-DE study: sexual dysfunction in newly diagnosed type 2 diabetes male patients. *J Endocrinol Invest*. 2013; 36: 864–8.
28. Giugliano F, Maiorino M, Bellastella G, Gicchino M, Giugliano D, Esposito K. Determinants of erectile dysfunction in type 2 diabetes. *Int J Impot Res*. 2010; 22: 204–9.
29. Kloner R. Erectile dysfunction and hypertension. *Int J Impot Res*. 2007; 19: 296–302.
30. Gb B, Tf L. Drug-induced sexual dysfunction: an update. *Drug Safety*. 1993; 8: 414–26.
31. Nicolosi A. Epidemiology of erectile dysfunction in four countries: Cross- national study of the prevalence and correlates of erectile dysfunction. *Urology*. 2003; 61: 201–6.
32. Ahn TY, Park JK, Lee SW, Hong JH, Park NC, Kim JJ, et al. Prevalence and risk factors for erectile dysfunction in Korean men: Results of an epidemiological study. *J Sex Med*. 2007; 4: 1269–76.
33. Cho NH, Ahn CW, Park JY, Ahn TY, Lee HW, et al. Prevalence of erectile dysfunction in Korean men with Type 2 diabetes mellitus. *Diabet Med*. 2006; 23: 198–203.
34. Malavige LS, Jayaratne SD, Kathriarachchi ST, Sivayogan S, Fernando DJ, et al. Erectile dysfunction among men with diabetes is strongly associated with premature ejaculation and reduced libido. *J Sex Med*. 2008; 5: 2125–34.
35. Derby CA. Modifiable risk factors and erectile dysfunction: Can lifestyle changes modify risk? *Urology*. 2000; 56: 302–6.
36. McVary KT, Carrier S, Wessells H. Subcommittee on Smoking and Erectile dysfunction Socioeconomic Committee, Sexual Medicine Society of North America. Smoking and erectile dysfunction: evidence based analysis *J urol*. 2001; 166: 1624–32.
37. Ledda A. Cigarette smoking, hypertension and erectile dysfunction. *Curr Med Res Opin*. 2000; 16: 13–6.
38. Martin-Morales A, Sanchez-Cruz JJ, de Tejada IS, Rodriguez-Vela L, Jimenez-Cruzz JF, Burgos-Rodriguez R. Prevalence and independent risk factors for erectile dysfunction in Spain: results from the epidemiologia de la disfuncion erectil masculina study. *J Urol*. 2001; 166: 569–74.
39. Cho NH, Ahn CW, Park JY, Ahn TY, Lee HW, Park TS, et al. Prevalence of erectile dysfunction in Korean men with Type 2 diabetes mellitus. *Diabet Med*. 2006; 23: 198–203.
40. Siu SC. Prevalence of and risk factors for erectile dysfunction in Hong Kong diabetic patients. *Diabet Med*. 2001; 18: 732–8.
41. Balde NM. Erectile dysfunction and diabetes in Conakry (Guinea): frequency and clinical characteristics from 187 diabetic patients. *Ann Endocrinol (Paris)*. 2006; 67: 338–42.
42. PK Ngalyuka EOA, CF Otieno J. The prevalence of erectile dysfunction and the associated risk factors in Kenyan men with type II diabetes at the Kenyatta national outpatient clinic. Master of Medicine dissertation. University of Nairobi. 2008.