Knowledge, Attitude, And Practice Of Physical Activity Among Diabetic Patients

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Abstract

Introduction: Diabetes mellitus is one of the most common non-communicable diseases and is the fifth leading cause of death in most developing countries. Regular physical activity (PA) is strongly recommended for individuals with diabetes for its beneficial effects in improving blood glucose control and insulin sensitivity, prevention and reduction of morbidities and complications, and its cardiovascular benefits.

Objective: To assess the knowledge, attitude and practices of PA among patients with diabetes in Jeddah, Saudi arabi .

Research design and methods: A cross-sectional study was conducted from march to September 2023 among 2000 patients with diabetes aged 18 years and above receiving care from diabetic clinics in Jeddah, Saudi Arabia, 2023 . Data were analysed using SPSS V.20. Categorical variables were summarised using frequencies and percentages, and continuous variables using means and SDs. The X^2 test was used to compare the proportion of PA across participant characteristics.

Results: The vast majority (90%) of the participants were physically active, and from our findings, most of it was contributed by work and transport-related activities. Participants had high levels of knowledge and positive attitudes towards PA. These were mainly contributed by a healthcare provider or doctors' advice on PA benefits to patients with diabetes. There was a strong statistical association between knowledge and attitude towards PA with PA practice.

Conclusion: The vast majority of the participants were physically active. High levels of PA were associated with a high level of knowledge and positive attitudes towards PA. Healthcare provider or doctors' advice in diabetic clinics is essential in promoting PA practice in this population and in diabetes management.

Keywords: physical activity ; Diabetes ; Jeddah, Saudi Arabia.

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INTRODUCTION:

According to the World Health Organization (WHO) diabetes mellitus (DM) is defined as a group of metabolic disorders with different aetiologies characterized by chronic hyperglycaemia associated with alterations in glucose, lipid and protein metabolisms secondary to defects in insulin secretion, action or both. The prevalence of DM has reached epidemic proportions. Currently, almost 390 million individuals worldwide are affected, and more than 590 million individuals are expected to develop this condition by 2035. At the same time, more than half of the diabetic population remains undiagnosed and therefore untreated [1].

Chronic hyperglycaemia is associated with damage, dysfunction and collapse of different anatomical districts [2]. Therefore, continuous interventions to correct blood glucose levels and cardiovascular risk factors are crucial for preventing acute and chronic complications [3].

The non-pharmacological therapy of DM is mainly focused on lifestyle changes in terms of physical activity (PA), diet and smoking habit [4]. Adequate lifestyle changes have beneficial effects on the reduction of anthropometric parameters such as body weight, body mass index (BMI), waist circumference, and also blood parameters related to fat and glucose profiles [5]. Moreover, in people with diabetes, regular PA potentially reduces the amount and dose of antidiabetic therapy and insulin dosage [6].

PA is defined as a subgroup of activities referred to all repetitive, planned and structured movements specifically designed to improve health and physical fitness [7]. Aerobic exercise consists of rhythmic, repeated and continuous movements of the same large muscle groups for at least 10 min [8]. Exercise against resistance consists of activities that use muscle strength to work against a load that offers resistance [9]. The physical fitness term, refers to a series of attributes that can be achieved by training, such as endurance and strength, abilities that are closely related to PA [5]. However, PA in overweight or obese individuals with diabetes often represents an insurmountable problem since these subjects suffer of several musculoskeletal disorders such as osteoarthritis [10], chronic low back pain due to intervertebral disc degeneration [11], and other musculoskeletal disorders [12,13].

Patients affected by T1D with poor glycaemic control have higher levels of triglycerides than non-diabetic subjects. Glycaemic control is the main factor interfering with lipid concentration in patients with DM. The benefits of PA on the lipid profile in subjects affected by T1D have been demonstrated, suggesting that this non-pharmacological approach represents an additional alternative therapy [14]. Lehmann et al. showed a better lipid profile, independently from the glycaemic control, in adolescents with T1D who have joined a dietary and training program [15]. Further studies have shown an improvement in lipid profile after physical training in subjects with T1D characterized by a reduction in total cholesterol, LDL cholesterol and triglyceride levels and an increase in HDL cholesterol [16]. Austin et al. reported a reduction or maintenance of levels of high-density lipoprotein LP(a), a cardiovascular risk factor, after a period of physical conditioning in T1D patients [17].

T2D affects 90–95% of individuals with diabetes, and it is characterized by insulin resistance and often by a relative insulin deficiency; however, specific aetiology is still unclear. Several T2D subjects are affected by obesity, which is a leading cause of insulin resistance. (18)

PA is a key component of the therapeutically approach for T2D subjects. Indeed, it has positive effects on reduction of body weight and body mass index (BMI), improvement in glucose tolerance and insulin sensitivity, reduction of HbA1c level, improvement of cardiorespiratory system, reduction of cardiovascular disease risk (CVD) and reduction of incidence of new cases of diabetes [19]

Aim:

To improve the knowledge of and attitude about physical activity and exercises and increase the practice among diabetic patients, Jeddah, Saudi Arabia

Objectives:

1-To assess the knowledge of adult diabetic patients regarding physical activity and exercises, at --------, Jeddah, Saudi Arabia, 2023.
To assess the attitude of adult diabetic patients regarding physical activity and exercises, -1 Jeddah, Saudi Arabia, 2023.
To assess the practice of adult diabetic patients regarding physical activity and exercises, -2 Jeddah, Saudi Arabia, 2023.

METHODOLOGY

Study Area :
The study will be conducted in Jeddah city (The bride of the Red Sea) in the western region of Saudi Arabia, which is the second largest city in Kingdom of Saudi Arabia after the capital city, Riyadh.
Study Design
The study will be a cross sectional descriptive study.
Study Population :
Diabetic patients (T1DM, T2DM) attending --------, Jeddah, Saudi Arabia, 2017.
Inclusion criteria:
Adult age above 18 years, (T1DM, T2DM), on oral anti hyperglycemic agents or insulin treatment and attending --------.
Exclusion criteria:
Gestational diabetes mellitus (GDM).
Children.
Sample Size
The Raosoft sample size calculator will be used for calculation according to following assumptions:
Total population 2000 .1
Prevalence of premenstrual syndrome = 50%. .2
Accepted errors= 5% .3
Confidence limits = 95% .4
The calculated sample size = 323 .5
Adding 10% to avoid withdrew, the total sample size=355 .6
Data collection tool (instrument):
Valid structured questionnaire. The questionnaire will be adapted from previous studies (6,17,32,33) and it contains 6 main parts.
Socio demographic characters. (A
Medical information (history of chronic illness, duration of DM, treatment), Behavioral (B characteristics and food-related information (smoking, and diet).
Knowledge of physical activity and exercises. (C
Attitude regarding physical activity and exercises. (D
Practice of physical activity and exercises. (E
Barriers against physical activity and exercises. (F
Data collection technique:
The questionnaire was carried out among diabetic patients (T1DM, T2DM), at ----------. Data collection was conducting in the waiting area, on the specific days for chronic disease clinics, which include the diabetic follow up patients.
Dependent variable:
Level of Knowledge, attitude, and practice of exercises.
Independent variable:

Age, Gender, Educational level, Socioeconomic level, BMI type of treatment, duration of diabetes, provision of health education in PHC type of diabetes, source of information (media, newspaper, mobile, friend, spouse, parents, school, teacher, etc.).

Data entry and analysis:

Data will be entered, processed and analyzed using Statistical Package for the Social Science (SPSS), software version 22.

For data analysis descriptive statistics will be applied for all variables. Proportion and frequency for categorical variables, mean and standard deviation for numeric variables.

Analytic statistics will be applied using the appropriate test.

Statistical significance will be considered at P –value < 0.05 and Confidence interval of (95%).

Ethical consideration:-

Research proposal will be submitted to the research ethical committee for approval. .1

Written consent will be obtained from each participant (at the covering page of the questionnaire). .2

The collected data will be handled confidentially

Results

Table (1): Demographic data

		N	%
	Age in years	47±15	
Gender	Female	109	46.2%
	Male	125	53.0%
Marital status	Widow	2	0.8%
	Single	39	16.5%
	Married	175	74.2%
	Divorced	18	7.6%
Nationality	Saudi	220	93.3%
	Yemeni	14	5.9%
Educational status	Basic education	32	13.7%
	Higher education	202	86.3%
Employment	HCW	41	17.5%
	Not HCW	98	41.9%
	Unemployed	95	40.6%
Income	Less than 9000	117	50.0%
	More than 9000	117	50.0%

Table (2): Medical information

		Count	Column N %
Height in centimeter			163±9
Weight in kilogram			76±18
The duration of diabetes in years		10±8	
In general, how do you rate your health?	Excellent	89	38.0%
	Good	105	44.9%
	Acceptable	40	17.1%
Type of diabetes	I don't know	64	27.4%
	Type I	54	23.1%
	Type II	116	49.6%
Do you use oral blood sugar lowering pills	No	87	37.2%
	Yes	147	62.8%
Do you use insulin?	No	162	69.2%

	Yes	72	30.8%
Do you take your medications regularly?	No	37	15.8%
	Yes	197	84.2%
Complications	I don't know	64	27.4%
	No	142	60.7%
	Yes	28	12.0%
History of chronic diseases	No	188	80.3%
	Yes	46	19.7%
Family history of diabetes	No	58	24.8%
	Yes	176	75.2%
Are you a smoker?	Ex-smoker	29	
	No	152	
	Yes	53	
If you are a current or former smoker, how many years have you been smoking? [median(Q1-Q3)]			20(6-30)

Table (3): Behavioral characteristics, and food-related information

	Count	Column N %
Do you have a glucometer	183	78.2%
Did you meet with a dietitian?	140	59.8%
Eating fast food	153	65.4%
Eating sugars	157	67.1%
Drinking soft drinks	123	52.6%
Appropriate meals prepared for DM	97	41.5%
The difficulty in choosing foods	114	48.7%
Do you follow a special diet to control the level of blood sugar?	66	28.2%
Eating at a restaurant without a good plan in social events	150	64.1%
Add salt when cooking	213	91.0%
Add salt when eating	77	32.9%

The reported frequency is for those who choose yes.

Table (4): Knowledge of physical activities

	Count	Column N %
PA is any form of bodily movement.	207	87.8%
Safe PA increases breathing rate moderately.	211	89.5%
Safe PA will make you sweat mildly.	215	91.1%
PA includes housework and working in the garden.	185	78.4%
PA includes dancing or going up and down the stairs.	192	81.4%
PA includes leisure walking in the neighborhood.	188	79.7%
PA includes riding a mobile or stationary bicycle.	189	80.1%
PA benefits overall health.	210	89.0%
PA does not have to be expensive.	202	85.6%
PA does not have to be hard.	204	86.5%
PA can be incorporated into leisure time.	228	96.7%
PA includes recreational activities.	199	84.4%

The reported frequency is for those who choose yes.

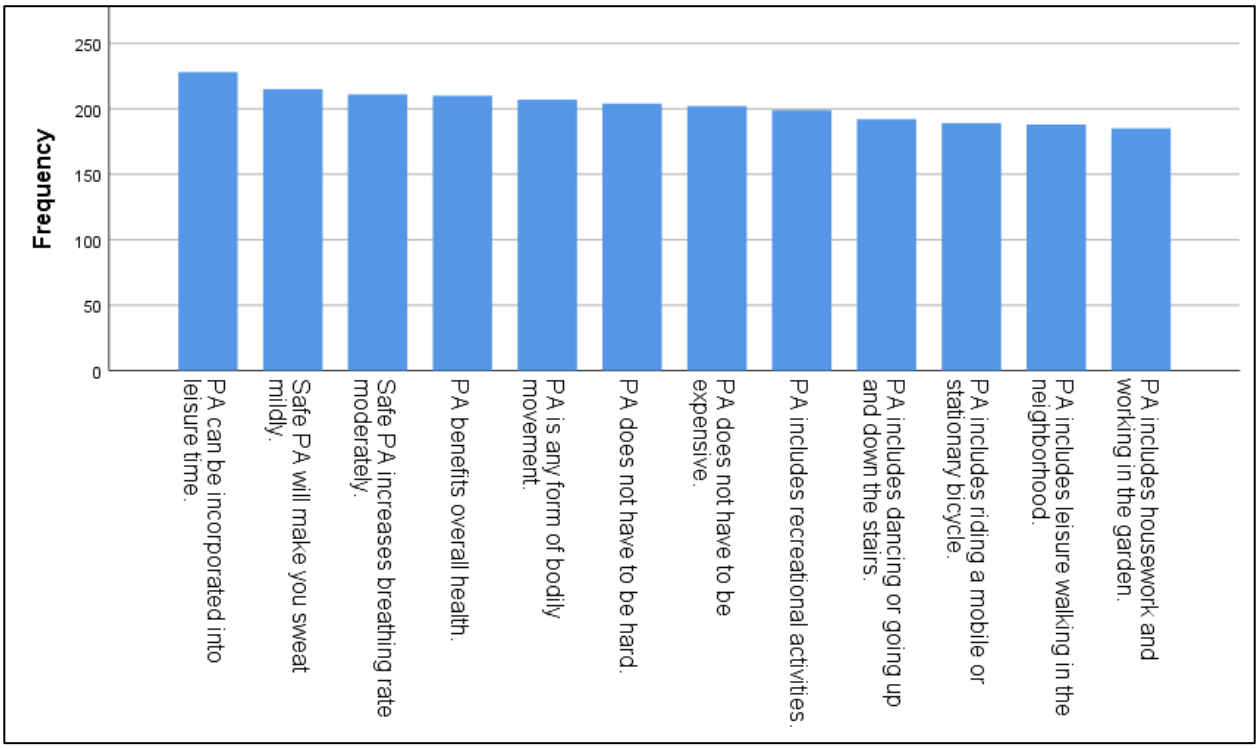

Fig. (1): Knowledge of physical activities

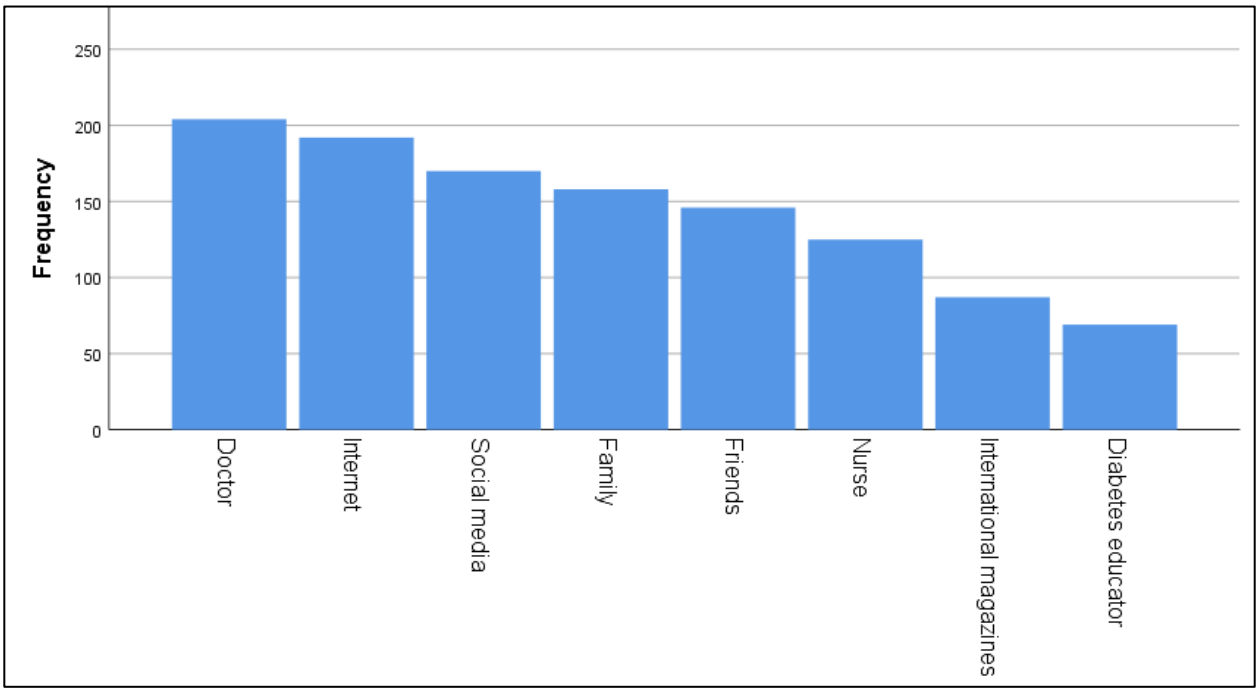

Fig. (1): information sources

Table (5): Attitude towards physical activity

	Count	Column N %
Always concerned about PA level	91	47.9%
Consider engagement in regular PA as being fanatical	43	22.8%
Extra PA outside normal daily activities is unnecessary in diabetes	27	14.4%
Need to be physically active enough to reduce my blood sugar	148	77.7%
PA behavior makes me feel well	158	83.0%
Would encourage regular PA behaviour in individuals with diabetes	167	87.7%
I derive pleasure in PA behaviour as a patient with diabetes	122	64.1%

I believe PA behaviour will be beneficial to me as a patient with diabetes	144	75.6%
PA is risky in diabetes	57	30.1%
Regular PA does not reduce blood sugar	44	23.3%

The reported frequency is for those who agreed.

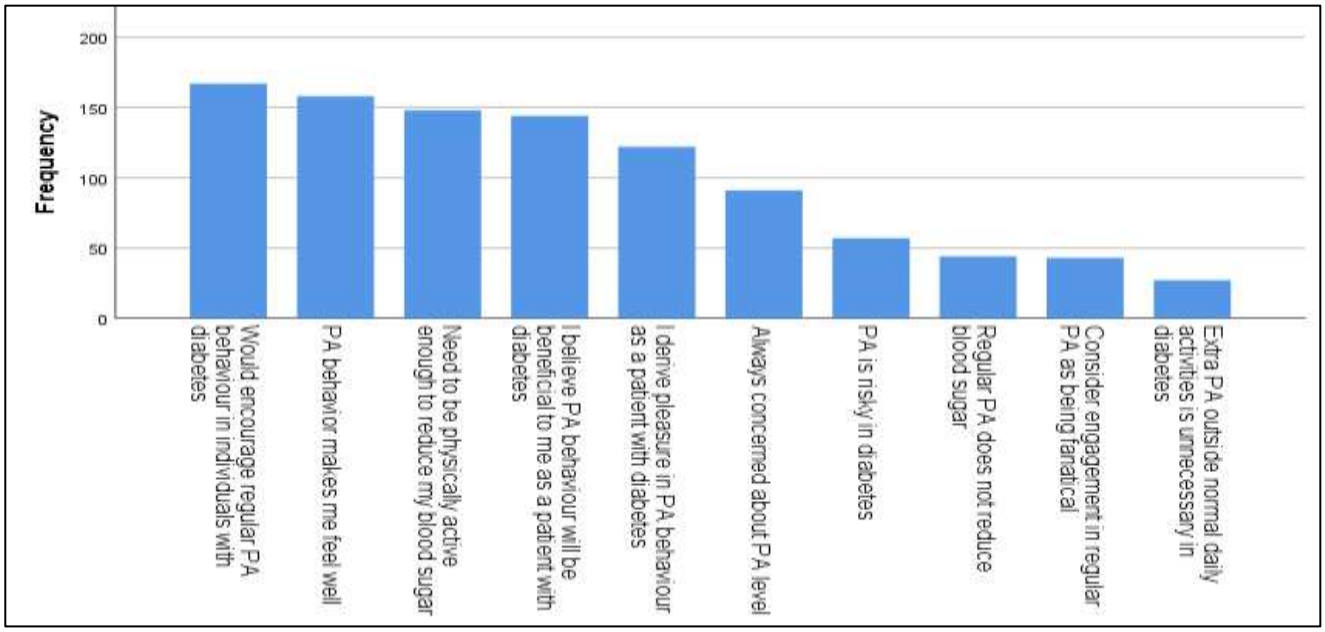

Fig. (3): Attitude towards physical activity

Table (6): Practicing of physical activities

	Count	Column N %
Doing physical exercise	139	75.1%
Aerobic exercise	51	27.6%
Brisk walking	136	73.5%
Running	37	20.0%
Swimming	52	28.1%
Resistance training	44	23.8%
Climbing stairs	99	53.5%

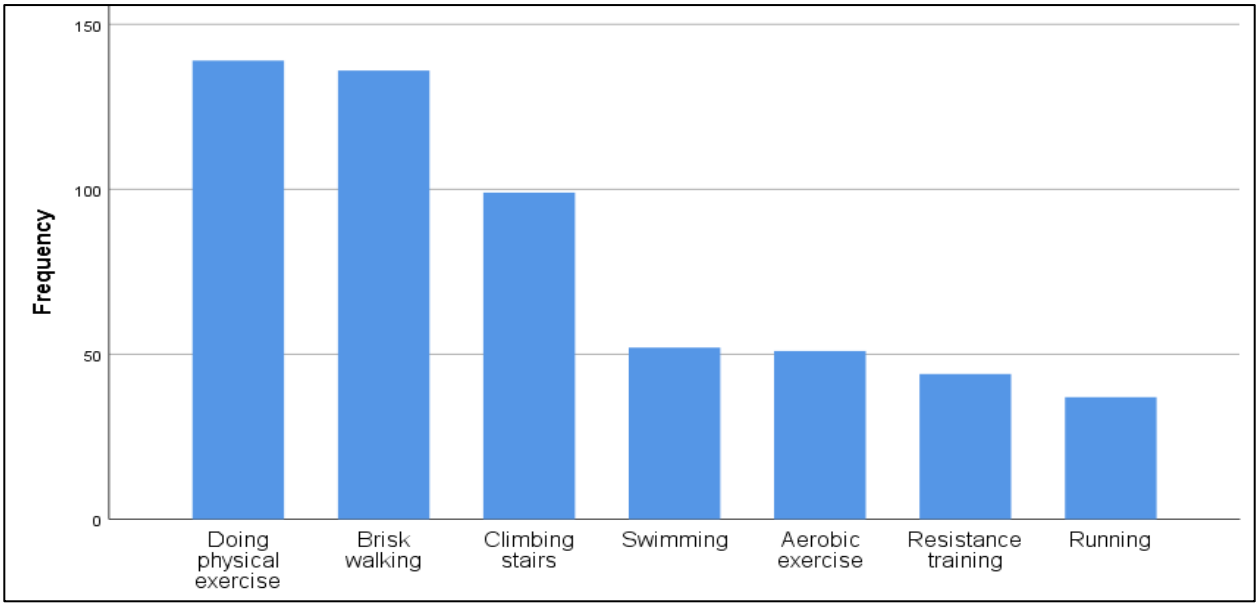

Fig. (4): Practicing of physical activities

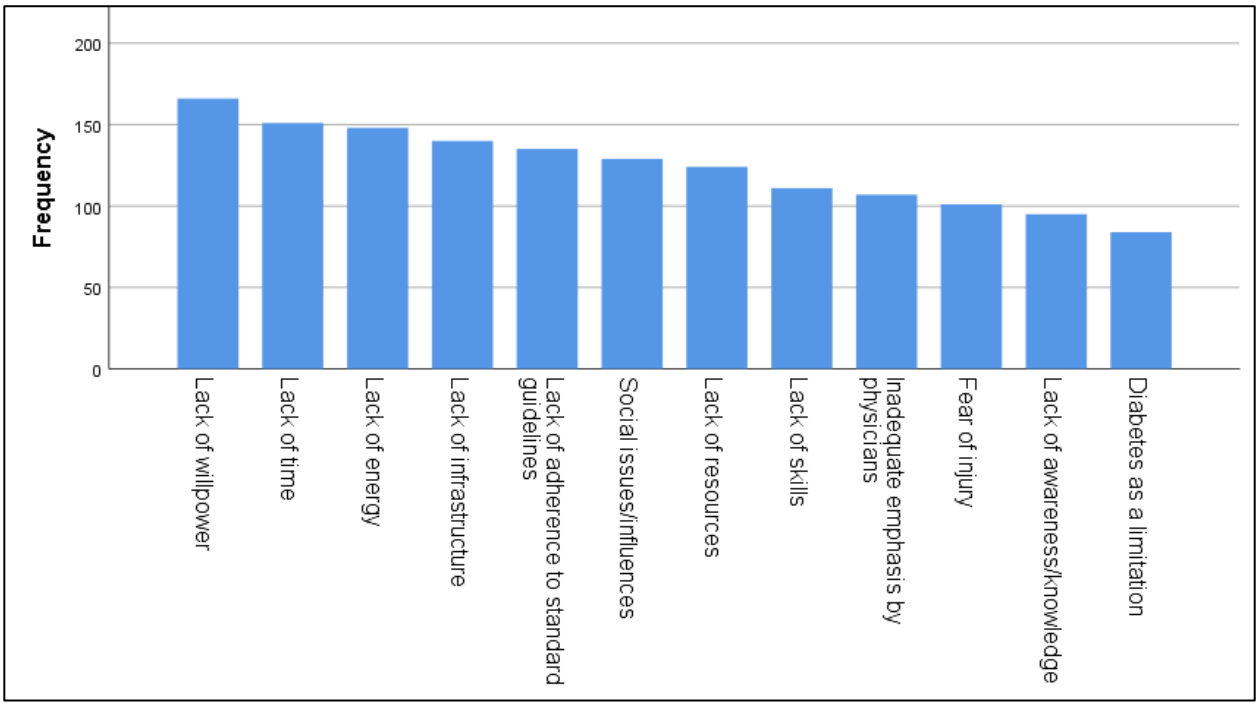

Fig. (5): Barriers against physical activities

RESULTS

Participants' demographic characteristics

A total of 234 patients with diabetes met the inclusion criteria and were invited to participate in the study. Of these, 315 consented to participate in making a response rate of 89% since the rest (11%) were not comfortable completing the questionnaire. The mean age of 315 respondents was 47±15 years, and almost half (47.3%) were >60 years. Women accounted for 46.2% of all study participants, 13.7% had primary education level and three-quarters (74.2%) were married (table1)

Behavioural characteristics

Among all respondents, only 22.6% were current smokers, .and 13% stopped smoking due to health reasons. About 80% of all had chronic diseases , 35.6% when cooking and 30% used regular insulin 23.5% has diabetes type1 and49.6 has diabetes type 2 and 91.0% added salt when cooking ,32.9% added salt when eating 52.5% drink soft drinks and 65.5% eating fast food (table 2).

Knowledge of Pas

The vast majority (95.6%) of participants reported knowing that PA is any form of bodily movement, including dancing and going up and down the stairs (81.4%), safe PA in diabetes increased breath moderately (89.5%) and would make them sweat mildly (91.5%). Also, nearly all (99%) reported that PA included leisure walking in the neighbourhood (79.7%), riding a mobile or stationary bicycle (80.1%), PA could be incorporated into leisure time (96.7%) and PA includes recreational activities (95.2%). Overall, 97.4% of all participants had good knowledge of PA (table 3).

Attitude towards PA

The majority of participants were always concerned about their PA level (47.9%), considered engagement in regular PA as not being fanatical (22.8%) and extra PA outside normal daily activities is necessary for diabetes (14.4). Furthermore, PA behaviour made respondents feel well (83.0%), derive a lot of pleasure in PA practice as patients with diabetes (83.8%) and believed the practice would be beneficial to them (75.6%). The majority (70%) also believed that PA was not risky in diabetes and that regular PA reduced blood sugar (23.3%). Nearly all participants (99%)

would encourage regular PA behaviour in individuals with diabetes. Overall, the vast majority (95.6%) of all study participants in this study had positive attitudes towards PA (table 4).

PA practices among patients with diabetes

Overall, 94.3% of respondents had sufficient levels of PA . Work-related activities were the largest contributor (70%) to the total PA, specifically the moderate-intensity work-related activities, which accounted for 86% of all work-related PAs. Walking for travel was the second major contributor (20%) to the total PA in this study (table 5).

DISCUSSION

The study aimed to assess knowledge, attitude and practices of PAs among patients with diabetes in the Jeddah region Saudi arabia. The findings show that 98.4% of all participants had good knowledge, and 95.6% had positive attitudes towards PA. The vast majority (94.3%) of participants had sufficient PA.(20)

The knowledge and attitudes towards PA were significantly associated with PA practice, as also reported in other studies The knowledge of PA in this study is high (98.4%), as also reported in other studies Our findings are, however, very high compared with those reported elsewhere. The regular counselling might have contributed to the high proportion of knowledge of PA among patients with diabetes in our study on the importance of maintaining healthy body weight or weight loss in managing diabetes and regular attendance to diabetic clinics. Such an intervention is crucial to encouraging patients with diabetes to engage in frequent PA for blood sugar, body weight control and diabetic control. Patients attending routine diabetic clinics should frequently and consistently be advised and reminded about the importance of PA in the management of diabetes.(21)

The vast majority (95.6%) of patients with diabetes in this study had a positive attitude towards PA, consistent with other studies.(22). These results are contrary to a similar study in Nigeria, where 90% of the study participants had a negative attitude towards PA .(23) The positive attitude towards PA is an integral part of diabetes treatment and can potentially translate to participation in PA.[11] A positive attitude towards PA is likely to translate to participation in PA practice. .(24)

In addition, higher proportion of PA knowledge, attitude and practice in this study might reflect limited applicability of the WHO-STEPS tool among patients with diabetes in this setting. As earlier indicated, work-related moderate-intensity activities accounted for nearly 60% of the total PA in this stu(25)dy . All these do not necessarily translate to adequate diabetes care or management. Second, some individuals might have incorrectly reported the information collected in minutes of PA due to the inherent difficulty of recalling the number of minutes spent in 1 week doing any activity (26)

Strengths and limitations of the study

Our findings provided evidence for good knowledge, positive attitudes and sufficient PA practices in this population. Also, the study potentially helps further the research on PA among people with diabetes. However, the study does have some shortcomings. First, self-reported measures could have overestimated the respondents' PA levels, as demonstrated in this study.

In addition, higher proportion of PA knowledge, attitude and practice in this study might reflect limited applicability of the WHO-STEPS tool among patients with diabetes in this setting. As earlier indicated, work-related moderate-intensity activities accounted for nearly 60% of the total PA in this study . All these do not necessarily translate to adequate diabetes care or management. Second, some individuals might have incorrectly reported the information collected in minutes of PA due to the inherent difficulty of recalling the number of minutes spent in 1 week doing any activity

CONCLUSION AND RECOMMENDATIONS

The vast majority of patients with diabetes were physically active. High levels of PA were associated with a high level of knowledge and positive attitudes towards PA. Healthcare provider or doctors' advice in diabetic clinics is essential in promoting PA practice in this population and in diabetes management

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