

Knowledge, attitude and practice of exercise among patients with type 2 diabetes mellitus

Lavanya Devi Palaniswamy^{1,*}

¹Department of General Medicine, Vinayaka Mission's Kirupananda Variyar Medical College and Hospital, Salem, Tamil Nadu-636308, India

Abstract

Introduction: Exercise plays significant role in the health outcomes of patients with diabetes; however, little is known about the knowledge, attitude and practice of exercise in patients with type-2 diabetes (T2D). This study investigated knowledge, attitude and practice of exercise among patients with type 2 diabetes.

Materials and methods: This cross-sectional study recruited 165 patients with T2D (male = 85; female = 80) using convenience sampling technique. Questionnaires were used to assess the knowledge, attitude and practice of exercise among patients. Data were analysed using descriptive and inferential statistics. Alpha level was set at $p < 0.05$.

Results: The mean age of respondents was 51.9 ± 9.8 years. A majority, 139(84.24%) were married individuals and around than half, 76(46.1%) were in the low SES. One hundred and thirty (78.7%) had good knowledge and attitude towards exercise practice. More than half, 95(57.6%) engaged in regular exercise practice. There was significant association between knowledge and practice of exercise ($p < 0.05$). No significant associations were found between knowledge and gender, and socioeconomic status ($p > 0.05$). Low physical activity was associated with poor glycemic control ($p < 0.05$).

Conclusion: Patients demonstrated good knowledge and a positive attitude towards exercise and a relatively poor practice of exercise. Additional methods are needed to encourage regular physical activity among patients.

Keywords: type-2 diabetes mellitus; physical activity; exercise; knowledge; attitude; glycemic control

***Corresponding author:** Dr. Lavanya Devi Palaniswamy, Assistant professor, Department of General Medicine, Vinayaka Mission's Kirupananda Variyar Medical College and Hospital, Salem, Tamil Nadu-636308, India. Mobile: 9944935355; Email: lavans_p@yahoo.com

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Introduction

Chronic non-communicable diseases are the leading cause of morbidity and mortality worldwide [1, 2]. Among all chronic diseases the prevalence of type-2 diabetes mellitus (T2DM) is reaching epidemic proportions and is expected to rise to 366 million by 2030 [3].

The advocacy of exercise therapy in the prevention and management of type-2 diabetes has been well documented [4, 5]. Regular exercise improves patient's quality of life, modifies abnormal lipid, improves plasma glucose and exercise tolerance, reduces cardiovascular related morbidity and mortality among individuals with type-2 diabetes [5]. Despite conclusive evidence there is underutilisation of exercise among patients [6]. Most patients assume lifestyle modifications as healthy eating and do not exercise regularly [7]. There is also a lack of knowledge and negative attitude of patients towards exercise [8, 9]. Physical activity levels are unsatisfactory among patients and there is a need to encourage patients to undertake regular physical activity for optimal health [9-11].

Aim and objectives: This study was aimed to investigate the knowledge, attitude and practice of exercise among patients with type-2 diabetes mellitus and to determine the challenges faced by patients in their practice.

Materials and methods

This cross-sectional study recruited 165 patients with T2DM using convenience sampling technique. They were receiving treatment at the Medical Outpatient Department in Vinayaka Mission's Kirupananda Variyar Medical College Hospital in Salem, Tamil Nadu.

Inclusion criteria: Type-2 diabetes mellitus patients above 30 years.

Exclusion criteria: All who do not meet the inclusion criteria and patients with physical disability or other chronic conditions that influence physical activity like stroke and cancer.

Assessment of physical characteristics and plasma blood glucose

Anthropometric characteristics such as height and weight were measured using a graduated height

metre and a bathroom weighing scale respectively. The body mass index (BMI) was also calculated ($BMI = \text{weight (kg)}/\text{height (m)}^2$). The values of recent FBG and HbA1C were obtained from records.

Assessment of socioeconomic status

Socio economic status was calculated using the modified Kuppaswamy scale Jan 17 [12]. It is calculated using education, present occupation of the head of the family and the family income.

Assessment of knowledge attitude and practice of exercise

All patients were made to answer a questionnaire. The questions for the questionnaire are compiled from IPAQ-short form (IPAQ research committee 2005) [13], SKILLD questionnaire [8, 9, 14].

There were two sections in the questionnaire. Section A sought information on socio-demographic and clinical characteristics of the respondents which includes age, sex, marital status, family setting, cardiovascular parameters and the recent fasting blood sugar and HbA1C. Section B sought questions on knowledge, attitude, and pattern of exercise practice for plasma blood glucose control. Items on knowledge consisted of questions which included importance of exercise in diabetes, type of exercise for diabetic control, and the duration of exercise. Out of the total score of 14 the respondent was considered to have an adequate knowledge regarding exercise if his score was 10 or more. Items on attitude assessed whether the person enjoyed exercising and if it gave him a sense of well-being, and also if he thought that it interfered with personal responsibilities. A score 4 and more out of a total score of 6 was considered a positive attitude towards exercise. Questions on practice were designed to assess their routine physical activity over a period of a week. Based on the information the respondents were categorised into those with adequate or inadequate physical activity. Finally, the patients were questioned regarding the motivating factors and barriers to physical activity.

Data analysis

Descriptive statistics of frequency distribution, percentages, mean and standard deviation were used to summarize the socio-demographic, anthropometric and clinical characteristics of the respondents. Inferential statistics of Chi Square

test of association was used to determine the associations between knowledge of exercise, and gender; socioeconomic status and practice of exercise, practice of exercise and glycaemic control. Alpha level was set at $p < 0.05$.

Results

Among the 165 respondents in the study, 85(51.5%) were men, and 80(48.48%) were woman. About a third, 54(32.7%) of the respondents were unskilled or semiskilled workers and a majority, 139(84.2%) were married individuals. About two thirds, 112(67.9%) were educated beyond primary school whilst about half, 76(46.1%) were in the low socioeconomic status class. The mean age was 51.9 ± 9.7 years, whilst the mean body weight and body mass index (BMI) were 67.5 ± 8.7 kg and 24.5 ± 2.8 kg/m² respectively. The mean random blood glucose RBG as at the time of this survey was 130 ± 45 mg/dl whilst the systolic and diastolic blood pressure were 130 ± 7 and 88 ± 9 mm Hg respectively.

A total of 130(78.8%) had a knowledge score of 10 or more reflecting a good knowledge of the importance of exercise. A total of 133(80.6%) respondents had an attitude score of 4 or more reflecting a positive attitude towards physical activity. A total of 95(57.6%) respondents had adequate physical activity levels.

Table 1 shows the test of association between knowledge of exercise and each of the respondents' sex socioeconomic status and practice of exercise. The results showed that there was no significant association between the knowledge of exercise and the gender ($X^2 = 1.3332$) and socioeconomic status ($X^2 = 4.0436$) and that there is significant association between knowledge and practice of exercise ($X^2 = 29.732$) at $p < 0.05$. Table 2 shows the test of association between practice of exercise and glycaemic control. The result showed that there was significant association between practice of exercise and glycaemic control ($X^2 = 4.7516$) at $p < 0.05$.

Table 1: Test of association between knowledge of exercise and each of the respondents' sex socioeconomic status and practice of exercise.

Variable	Good knowledge	Poor knowledge	Chi-square	P value
Gender			1.3332	0.248232
Male	70	15		
Female	60	20		
SES			4.0436	0.132416
Upper	10	2		
Middle	45	32		
Lower	40	36		
Physical activity			29.732	0.00001
Adequate	89	6		
Inadequate	41	21		

Table 2: Test of association between practice of exercise and glycaemic control.

Glycaemic control	Adequate activity	physical	Inadequate activity	physical	Chi-square	P value
Good (HbA1c < 7)	57		30		4.7518	0.02927
Poor (HbA1C > 7)	38		40			

The factors motivating physical activity and barriers to it were enquired. Among those with adequate physical activity 90(94.7%) of them said they exercised because they wanted to stay healthy and 5(5.3%) said it was part of their daily

routine. Among patients with good knowledge and low physical activity 25(71.4) quoted lack of time, 8(22.9%) quoted lack of energy, 1(0.6%) quoted fear of hypoglycaemic episodes and 1(0.6%) quoted lack of facilities, citing poor road conditions.

Discussion

The overall beneficial effects of exercise in type 2 diabetes are well documented with regard to plasma blood glucose control and multiple cardiovascular risk reduction [15, 16]. This study found that a large number of the respondents demonstrated good knowledge of exercise for plasma blood glucose control. Nevertheless, there is still significant knowledge deficit about the importance of exercise and as well as reduced level of awareness of the benefits of exercise and this may be due to inadequate health education. Other contributing factor is sole reliance on drugs as the main treatment approach for plasma blood glucose control. Some studies have identified the essence of education through health care providers as key to improving knowledge [17, 18].

The finding in this study is similar to that of Awotidebe et al [9], Mukhopadhyay et al [19] and Kumar [20] who reported respondents had average knowledge regarding exercise, diet and foot care. On the other hand, Okolie et al [21] and Odili et al [22] reported that patients with T2D demonstrate low or very poor knowledge of exercise and self-care practices.

This study showed that 80.6% had a positive attitude towards physical activity. This is similar to the findings of Kumar [20] and contrary to the findings of Awotidebe TO et al [9] who found predominantly negative attitude.

Knowledge of exercise was significantly associated with practice of exercise. The association of knowledge with practice lent credence to the growing body of evidence in literature that good knowledge can translate into healthy lifestyle practices including exercise [23]. Exercise as non-pharmacologic approach has been reported to be effective for plasma blood glucose control [15, 24]. Our finding is consistent with findings from previous studies that there is significant association of knowledge with practice [25]. However, our finding is at variance with that of Nikhil et al [26] who reported that there was no significant association between knowledge and practice of exercise.

This study found no significant association between knowledge and gender, and socioeconomic status, which is contrary to the previous studies [9, 27].

This study found significant association between physical activity and glycaemic control. This finding is similar to previous study by Boule et al [28] and contrary to study by Shazwani et al [10] which found association only in older age group.

Conclusion

This study found physical activity levels to be unsatisfactory in about half the respondents. Most of them demonstrated a good knowledge regarding physical activity, but there is significant knowledge deficit, with more than a fifth of them demonstrating poor knowledge. Low physical activity was associated with poor glycaemic control. Thus, there is a need to promote regular physical activity among patients to obtain optimal glycaemic control and to prevent diabetic complications.

Recommendations

Periodic health education and follow up by health care workers trained and educated in diabetes would be necessary to motivate patients to adopt healthy life style changes. Patients should be followed up to find out if they are able to implement life style changes efficiently. Any challenges faced should be addressed and counselled accordingly.

Conflict of interest

The author declares no conflicts of interest.

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