

# Knowledge towards exercise and foot care among individuals with uncontrolled type 2 diabetes mellitus in secondary care settings in northeastern Thailand: a cross-sectional study

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## KEYWORDS

Non-communicable disease; Community healthcare service; Diabetic foot care; Out-patient diabetes knowledge; Physical activity.

## ABSTRACT

Type 2 diabetes mellitus (T2DM) poses a global public health concern due to complications arising from insufficient knowledge of self-care practices. Despite the significant impact on blood glucose control and the prevention of foot amputation, research on the knowledge of exercise and foot care among individuals with uncontrolled T2DM in northeastern Thailand is lacking. Accurate comprehension of foot care and exercise knowledge is essential for these individuals to avoid inefficacy and potential harm. The objective of this study was to investigate knowledge toward exercise and foot care among individuals with uncontrolled T2DM at secondary care setting in northeastern Thailand. Data were gathered through a self-developed questionnaire with high internal consistency (KR-20=0.87) distributed to 170 uncontrolled T2DM patients residing in the Warichaphum district, Sakon Nakhon province. Descriptive statistics were employed for data analysis. Among these respondents, 58.82% demonstrated a 'Good' level of knowledge regarding exercise, while 85.71% showed a 'Good' level of knowledge regarding foot care. Nonetheless, respondents provided incorrect answers to several key items, highlighting the need to correct misconceptions for better comprehension. This study offers valuable insights for designing and implementing initiatives aimed at enhancing knowledge and promoting better exercise habits for blood sugar control among uncontrolled T2DM patients.

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Received: 12 February 2024/ Revised: 23 March 2024/ Accepted: 1 April 2024

## Introduction

Diabetes mellitus (DM) is a chronic non-communicable disease that has a detrimental impact on public health systems worldwide. There are over 422 million people with diabetes globally, and 1.5 million died from it<sup>(1)</sup>. In Thailand, the incidence of type 2 diabetes mellitus (T2DM) was 4.8 million people in 2019 but only 35.6% received a proper diagnosis and treatment<sup>(2)</sup>. According to the mentioned reason, the average number of diabetes deaths reached 200 per day<sup>(2)</sup>. Diabetes is the leading cause of cardiovascular disease, neuropathy, nephropathy, and retinopathy<sup>(3)</sup>. Patients with type 2 diabetes in the northeast region showed lower glycemic control than those in other regions, possibly influenced by health system and personal factors<sup>(4)</sup>. Further, the prevalence of glutinous rice consumption, a high-carbohydrate staple in this region, contributes to the higher risk of hypertriglyceridemia compared to non-glutinous rice in other regions<sup>(5)</sup>. Additionally, the northeast region had the lowest physician-to-population ratio relative to the rest of the country, impacting diabetes care outcomes<sup>(6)</sup>. Hence, depending solely on data from other regions may overlook the complexities and unique characteristics specific to the northeastern population. Factors such as cultural practices, dietary habits, socioeconomic status, and prevalence of certain health conditions may vary between regions, making it essential to gather region-specific data for a comprehensive understanding. Based on the 2019 medical statistics report from Waritchaphum Hospital in Sakon Nakhon province, the prevalence of diabetes was documented as 2,554 cases, with 303 cases classified as uncontrolled T2DM.

Regardless of age, various types of physical activity have the potential to substantially enhance the well-being and glycemic regulation of people with T2DM<sup>(7)</sup>. This consists of flexibility, balance exercises, as well as aerobic and muscle-strengthening exercises<sup>(7)</sup>. Implementing precautions is crucial for ensuring the safe and effective engagement of T2DM patients with

conditions such as diabetic retinopathy, autonomic neuropathy, peripheral neuropathy, or diabetic kidney disease in physical activity<sup>(7)</sup>.

Diabetic patients suffer major lifestyle impact from foot amputation<sup>(8)</sup>. While self-care management positively influences glycemic control and diabetic foot care complications<sup>(9)</sup>, diabetes remains responsible for over 70% of global diabetic foot loss<sup>(10)</sup>. In Thailand, foot ulcers have a prevalence of 1-20%<sup>(11)</sup>, with foot amputations occurring at a rate of 1.5%<sup>(12)</sup>. These statistics emphasize the importance of imparting diabetes knowledge to lower complication rates.

The clinical practice guidelines for diabetes 2017<sup>(13)</sup> were established by the Diabetes Association of Thailand under the patronage of Her Royal Highness Princess Maha Chakri Sirindhorn, the Endocrine Society of Thailand, and the Institute of Medical Research and Technology Assessment, Department of Medical Services, Ministry of Public Health. The guidelines aim to enhance the provision of high-quality diabetes care services for healthcare professionals in Thailand. However, there is a shortage of data regarding the knowledge towards exercise and foot care among individuals with uncontrolled T2DM in secondary care settings in northeastern Thailand, as stipulated by the guidelines. A correct understanding of knowledge on exercise and foot care is essential for individuals with uncontrolled T2DM to prevent complications such as cardiovascular disease, neuropathy, nephropathy, and foot amputation. Hence, the objective of this study was to investigate the knowledge of exercise and foot care in accordance with the clinical practice guidelines for diabetes 2017, among individuals with uncontrolled diabetes (fasting blood sugar [FBS]  $\geq$  183 mg/dL)<sup>(14)</sup>.

## Materials and methods

### *Study population, sample size and sampling*

A cross-sectional study was done among uncontrolled T2DM patients attending diabetic clinic at Waritchaphum Hospital, Sakon Nakhon province, Thailand to assess their knowledge

towards exercise and foot care. We used a single proportion formula<sup>(15)</sup> to estimate the minimum required sample size given as  $n = \frac{[NZ_{\alpha/2}^2 P(1 - P)]}{[e^2(N - 1) + Z_{\alpha/2}^2 P(1 - P)]}$ , where  $n$  is the minimum required sample size,  $N$  is the number of uncontrolled T2DM patients at the hospital (303 cases), and  $P$  is the estimated proportion of knowledge towards exercise among diabetic patients (49.5%) based on the previous study<sup>(16)</sup>. Additionally,  $e$  is the margin of error (5%), and  $Z$  is the standard normal value (1.96) corresponding to a 95% CI with a significance level = 95%,  $p$ -value = 0.44,  $N = 303$ , and  $d = 0.05$ , the estimated number of respondents was 170. The inclusion criteria were people with T2DM who (1) have been diagnosed with T2DM for  $\geq$  one year, (2) were 35 years of age and above, (3) were uncontrolled diabetes FBS  $\geq$  183 mg/dl<sup>(14)</sup>, (4) residing in that locality for more than a year, and (5) could read and answer questionnaire in Thai. Exclusion criteria were individuals who (1) have been diagnosed with type 1 diabetes mellitus or gestational diabetes mellitus and (2) have foot ulcer or foot amputation. The study participants were selected using a systematic random sampling technique until the intended number was obtained. Prior to data collection, ethical approval was obtained from the Khon Kaen University Ethics Committee for Human Research (HE632253). Individuals meeting the study criteria were enrolled after providing informed consent.

#### **Data collection**

Data collection took place at Waritchaphum Hospital in Sakon Nakhon province. The principal investigator sought and obtained permission from the hospital director for data collection. A trained research assistant distributed questionnaires to randomly selected 170 uncontrolled T2DM patients. Participants voluntarily completed the questionnaire, taking approximately 15 minutes, and deposited it in the box at the diabetes clinic in Waritchaphum Hospital. The research assistant subsequently reviewed the questionnaires for completeness.

#### **Instrument and study variables**

The current study employed a self-report questionnaire (Supplementary part) developed in accordance with the clinical practice guidelines for diabetes 2017<sup>(13)</sup>. This questionnaire underwent assessments of both its content validity and reliability through the following procedures. Three certified physiotherapists with over twenty years of experience evaluating the content in terms of its accuracy, appropriateness, and clarity of language and questions. Subsequently, the researchers refined the questionnaire based on the feedback from these experts. The revised questionnaire with an internal consistency reliability of 0.87, as determined by the Kuder-Richardson 20 method<sup>(17)</sup> was applied to 10 patients with uncontrolled T2DM who met the same inclusion and exclusion criteria and resided in a community setting that mirrored the research target area and covered a broad range of ages and educational backgrounds. The study focused on two outcome variables: knowledge of exercise and foot care. Both the exercise knowledge and foot care knowledge sections consisted of ten Yes/No questions. Each question was assigned a point value of one (1) for a correct response and zero (0) for incorrect ones. Patients demonstrate good knowledge when they answer knowledge questions with a total score of seven or higher. On the other hand, patients are considered to have poor knowledge if their mean score for knowledge questions is less than seven<sup>(18,19)</sup>.

#### **Data analysis**

IBM SPSS Statistics version 28.0 software (Khon Kaen University license) was used for all statistical analyses. The normality of the data was assessed using the Kolmogorov-Smirnov test, and descriptive statistics were utilized to elucidate the demographic characteristics of the participants. Categorical variables were presented as frequencies and percentages. Continuous variables were described with means and standard deviations for normally distributed data, or with medians and interquartile ranges for non-normally distributed data.

## Results

### *Participants' characteristics*

This cross-sectional study initially involved 170 patients with uncontrolled T2DM. However, due to various reasons, including incomplete response (23 participants) and failure to return

the questionnaire (28 participants), a total of 51 participants were subsequently excluded from the analysis. Ultimately, the study obtained 119 valid responses, yielding a response rate of 70%. The demographic details are presented in table 1.

**Table 1** Demographic characteristics of the participants

Characteristics	Overall (n = 119)	Male (n = 23)	Female (n = 96)
Age (year)			
Mean±SD	62.04±9.27	62.48±10.04	61.94±9.13
95% CI	60.36–63.72	58.14–66.82	60.09–63.79
Fasting blood sugar (mg/dL)			
Mean±SD	200.03±10.80	198.70±10.68	200.34±10.86
95% CI	198.06–201.99	194.08–203.31	198.14–202.54
Duration of diabetes (year)			
1-10 years [n (%)]	92 (77.31)	23 (100)	69 (71.87)
11-20 years [n (%)]	21 (17.65)	0 (0)	21 (21.88)
21-30 years [n (%)]	6 (5.04)	0 (0)	6 (6.25)
Mean±SD	8.01±6.23	5.59±2.54	8.59±6.71
95% CI	6.88–9.14	4.49–6.69	7.24–9.95
Educational level [n (%)]			
Primary school	103 (86.56)	17 (73.91)	86 (89.58)
High school	13 (10.92)	5 (21.74)	8 (8.34)
Bachelor or advance degree	2 (1.68)	1 (4.35)	1 (1.04)
Other (vocational certificate)	1 (0.84)	0 (0.00)	1 (1.04)
Marital status [n (%)]			
Married	93 (78.15)	21 (91.30)	72 (75.00)
Unmarried	26 (21.85)	2 (8.70)	24 (25.00)
Occupation [n (%)]			
Civil servants	3 (2.52)	1 (4.35)	2 (2.08)
Business	9 (7.57)	1 (4.35)	8 (8.34)
Agriculture	93 (78.15)	15 (65.21)	78 (81.25)
Unemployed (housewife, retired)	14 (11.76)	6 (26.09)	8 (8.33)
Other comorbidities [n (%)]			
No	73 (61.34)	17 (73.91)	56 (58.33)
Yes (HT, HLD, PUD, BA)	46 (38.66)	6 (26.09)	40 (41.67)

**Abbreviation:** SD, standard deviation; CI, confidence interval; HT, hypertension; HLD, hyperlipidemia; PUD, peptic ulcer disease; BA, bronchial asthma.

### Knowledge of exercise among individuals with uncontrolled T2DM

The highest accuracy in responding to items related to physical exercise knowledge among individuals with type 2 diabetes was observed for Item 9, followed by Item 5, Item 1, Item 3, and Item 6. Conversely, Item 8 garnered the highest percentage of incorrect responses within the

sample. Additionally, a balanced distribution of correct and incorrect responses was noted for Item 4 and Item 10, with approximately 50% accuracy. Although a majority of the sample accurately responded to Items 2 and 7, a significant proportion of 33.6% and 37.8%, respectively, provided incorrect answers to these items (Table 2).

**Table 2** Knowledge of exercise among individuals with uncontrolled T2DM (n=119)

Items	Correct responses n (%)	Knowledge tier		Knowledge score median [IQR1-3]
		Good n (%)	Poor n (%)	
1. After eating, taking a 10-minute walk can assist in reducing blood sugar levels (✓)	98 (82.4)	70 (58.82)	49 (41.18)	7 [6-8]
2. Engaging in exercise is not advised for individuals with a blood sugar level exceeding 300 mg/dL (✓)	79 (66.4)			
3. If your blood sugar is under 100 mg/dL, it's advisable to have a snack or hard candies before you start exercising (✓)	95 (79.8)			
4. If you have kidney impairment due to diabetes, it is strictly prohibited to engage in any form of exercise (✗)	71 (51.7)			
5. If you experience left-sided chest pain, palpitations, or unusual fatigue, it is crucial to undergo an exercise stress test before engaging in any exercise (✓)	99 (83.2)			
6. Engaging in a minimum of 150 minutes of moderate intensity exercise each week, where you can talk comfortably and finish sentences without getting breathless, can help reduce blood sugar levels (✓)	94 (79.0)			
7. Engaging in a minimum of 75 minutes of vigorous intensity exercise each week, where you may need to pause for breath every few words, can help reduce blood sugar levels (✓)	74 (62.2)			
8. Checking your blood sugar level before exercising is not necessary (✗)	36 (30.3)			
9. Diabetic patients should include resistance exercise at least two days a week along with aerobic exercise for 3 to 5 days a week (✓)	102 (85.7)			
10. Diabetic patients with retinopathy complications should avoid strenuous exercise (✓)	61 (51.3)			

**Note:** Good knowledge, total score  $\geq 7$ ; Poor knowledge, total score  $< 7$ .

**Abbreviation:** IQR, interquartile range.

**Knowledge of foot care among individuals with uncontrolled T2DM**

The highest accuracy in responding to items related to foot care knowledge among individuals with type 2 diabetes was observed for Item 9, followed by Item 6. Conversely, Item 10 garnered the highest percentage of incorrect responses

within the participants, followed by Item 2, Item 5, and Item 3. While most of the participants correctly answered Item 1, Item 4, Item 7, and Item 8, a substantial percentage of 35.3%, 35.3%, 38.7%, and 41.2%, respectively, exhibited inaccuracies in their answers to these items (Table 3).

**Table 3** Knowledge of foot care among individuals with uncontrolled T2DM (n=119)

Items	Correct response n (%)	Knowledge tier		Knowledge score median [IQR1-3]
		Good n (%)	Poor n (%)	
1. Every diabetic patient should undergo a thorough foot examination by a physician at least once a year (✓)	77 (64.7)	102 (85.71)	17 (14.29)	5 [4-6]
2. You should moisturize your feet, particularly skin bridging the toes (✗)	25 (21.0)			
3. If you experience a decreased sensation in your feet, it is advisable to wear a toe-post sandal (✗)	37 (31.1)			
4. Try not to walk barefoot even in your house (✓)	77 (64.7)			
5. To avoid infections, cut your nails short and round the corners (✗)	28 (23.5)			
6. You should avoid crossing your legs as it may compress the nerves beneath the knee joint (✓)	84 (70.6)			
7. Try not to wear sock, because they might moist your foot until the wound occurs (✗)	73 (61.3)			
8. To get rid of the corns or calluses on your foot, you can scrape, trim, or peel it off by yourself (✗)	70 (58.8)			
9. If you have a small wound on your foot, clean it twice a day with sterile normal saline. Avoid using alcohol, betadine, Dakin solution, or hydrogen peroxide for wound care (✓)	106 (89.1)			
10. If you experience a loss of sensation in your feet, it's advisable to soak them in hot water to stimulate sensory perception (✗)	13 (10.9)			

**Note:** Good knowledge, total score  $\geq 7$ ; Poor knowledge, total score  $< 7$ .

**Abbreviation:** IQR, interquartile range.

## Discussion

Investigating knowledge of exercise and foot care in individuals with uncontrolled T2DM is crucial for promoting optimal self-management practices, preventing complications, addressing healthcare disparities, and ultimately improving the overall quality of life for individuals living with this chronic condition. The objective of this study was to investigate the knowledge of exercise and foot care in accordance with the clinical practice guidelines for diabetes 2017<sup>(13)</sup> among 170 individuals with uncontrolled T2DM in secondary care settings in northeastern Thailand. To improve the study's generalizability to individuals with uncontrolled T2DM in the northeastern, several steps were taken. This included incorporating a representative sample from diverse demographic backgrounds and employing rigorous research methods such as systematic random sampling and standardized data collection. We had 119 valid responses, yielding a response rate of 70%, which exceeds the generally accepted 60% response rate for survey research<sup>(20)</sup>. Our findings revealed that 58.82% had a 'Good' level of knowledge on exercise, and 85.71% showed a 'Good' level of knowledge on foot care. However, incorrect responses to key items suggest a need for addressing misconceptions to improve overall understanding.

The higher number of female participants may be associated with increased insulin resistance post-menopause and with older age<sup>(21)</sup>. In our study 58.82% of individuals with uncontrolled T2DM exhibited a 'Good' level of knowledge regarding exercise, which aligns with the findings reported by Awotidebe et al<sup>(16)</sup>. The researchers found that 49.5% of individuals with T2DM had a good understanding of exercise's impact on controlling plasma blood glucose levels. Nevertheless, 90.0% showed a negative attitude towards physical activity. In contrast, Mwimo et al<sup>(22)</sup> found that diabetes patients had a greater level of knowledge (98.4%) and positive attitudes (95.6%) towards exercise compared to our study. This difference was largely attributed to the main contributing

factor of a healthcare provider's or doctor's recommendation (96%) regarding the advantages of physical activity for individuals with diabetes.

The severe complications associated with diabetes, encompassing both macrovascular issues such as cardiovascular disease, stroke, and peripheral vascular disease, and microvascular problems like nephropathy, retinopathy, and neuropathy, contribute to elevated mortality rates and a general deterioration in the quality of life among individuals with uncontrolled T2DM<sup>(23,24)</sup>. Consequently, a lack of accurate understanding regarding the role of exercise in regulating blood sugar levels could not only be ineffective but also potentially harmful for individuals with uncontrolled T2DM.

According to the exercise knowledge, up to 41.18% of all respondents had a 'Poor' level of knowledge in our study. The respondent provided inaccurate answers to several crucial items (8, 10, and 4). Particularly, inaccurate understanding of Item 8, which states that "Checking your blood sugar level before exercising is not necessary" can have negative consequences for individuals with uncontrolled T2DM. This practice functions as a preventative measure to mitigate the potential complications of hyperglycemia and hypoglycemia. Hence, while the participants may possess knowledge regarding the role of exercise on blood sugar control, any misconceptions must be rectified to promote a more precise comprehension.

Diabetic foot ulceration (DFU) can cause disability, death, and recurrent hospitalizations<sup>(25)</sup>. Lifetime incidence in diabetics is 15%-25%<sup>(26)</sup>, with 65% re-ulceration after five years<sup>(27)</sup>. DFU management can be complicated by peripheral artery disease, infection, and neuropathy, which may need amputation<sup>(27,28)</sup>. People with DFU-related amputations have lower quality of life<sup>(29)</sup> and more psychological distress<sup>(30)</sup>. In our study, 14.29% of respondents demonstrated a 'Poor' level of foot care knowledge. In line with the findings of Mahatthanapradir et al<sup>(31)</sup>, who examined foot care knowledge among 440 patients at Ku Kaew Hospital

in Udon Thani province, it was revealed that over 80.9% possessed a high level of diabetic knowledge. However, 19.1% exhibited misunderstanding regarding peripheral artery intractable lesions and numbness, leading to improper foot care and heightened foot complication risks. The findings suggest a necessity to raise awareness about foot care among diabetic patients in the community, aligning with the clinical practice guidelines for diabetes 2017. Results from the current study on foot care knowledge revealed significant inaccuracies in responses, particularly for Items 2, 3, 5, and 10. Especially Item 10, which states that “If you experience a loss of sensation in your feet, it’s advisable to soak them in hot water to stimulate sensory perception”, it is important to emphasize that individuals with T2DM and diminished foot feeling should avoid bathing their feet in hot water to improve sensory perception. When there is a decrease in the capacity to feel sensations in the feet, immersing the feet in hot water not only fails to stimulate the patient’s sensory receptors, but also increases the risk of unintentionally developing blisters due to the difficulty in detecting excessive heat<sup>(32)</sup>.

The possible explanations for the high rates of incorrect responses to these specific items may include the absence of these topics in the diabetes educational program provided by the physical therapist, as well as their omission from the knowledge pamphlets distributed to all patients diagnosed with T2DM. Public health authorities should play a key role in managing patients with T2DM. There is a pressing need to raise awareness about exercise in diabetes, adhering to the guidelines<sup>(13)</sup>. This should extend to a broader dissemination of information through various channels such as radio, television, community news towers, and social media, considering their significant impact on people’s behavior, including the elderly who have widespread access to these platforms<sup>(33,34)</sup>.

This study is limited in exploring attitudes and practices related to exercise and foot care as outlined in the guidelines<sup>(13)</sup>. A suggestion for further study could be to investigate the attitudes and practices concerning exercise and foot care among individuals with uncontrolled T2DM. This could provide valuable insights into the factors influencing behavior change and adherence to recommended healthcare practices in this population. Nevertheless, this study offers initial data that can be utilized by public health organizations responsible for managing patients with T2DM to gain insights into exercise and foot care, in accordance with the guidelines<sup>(13)</sup>. Furthermore, it can serve as a foundation for subsequent investigations.

## Conclusion

This study investigated the knowledge exercise and foot care based on the clinical practice guidelines for diabetes 2017<sup>(13)</sup> among individuals with uncontrolled diabetes at Waritchaphum Hospital, Sakon Nakhon province. Among these respondents, 58.82% demonstrated a ‘Good’ level of knowledge regarding exercise, while 85.71% showed a ‘Good’ level of knowledge regarding foot care. Nonetheless, respondents provided incorrect answers to several key items, highlighting the need to correct misconceptions for better comprehension.

## Clinical implication

This study offers key insights for enhancing exercise and foot care knowledge in uncontrolled T2DM patients. It underscores the necessity of correcting misconceptions about exercise and foot care for better comprehension among this group. Accurate understanding the knowledge of foot care and exercise is crucial for individuals with uncontrolled T2DM, as it can prevent ineffectiveness and potential harm.

## Conflicts of interest

The authors declare no conflict of interest.

## Acknowledgements

The authors would like to thank all the participants with type 2 diabetes who participated in the study. This research was supported by the Faculty of Associated Medical Sciences, Khon Kean University.

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## Supplementary



### Self-report questionnaire:

#### Knowledge towards exercise and foot care among individuals with uncontrolled type 2 diabetes mellitus in secondary care settings in northeastern Thailand

##### Part 1: General information of respondent

Please answer a few general questions about yourself by circling in the correct answer or by filling in the space provided.

- |  |  |
|--|--|
| 1.1 What is your gender?                                       | 1. Male            2. Female   |
| 1.2 What is your date of birth?                                | ____/____/____   |
| 1.3 What is the duration since your type 2 diabetes diagnosis? | ____ years   |
| 1.4 What is your most recent fasting blood glucose level?      | ____ mg/dL   |
| 1.5 What is the highest education you received?                | 1. Primary school<br>2. High school<br>3. Bachelor's degree or higher<br>4. Vocational certificate |
| 1.6 What is your marital status                                | 1. Married        2. Unmarried   |
| 1.7 What is your current professional occupation?              | 1. Civil servants<br>2. Business<br>3. Agriculture<br>4. Unemployed                                |
| 1.8 Do you have any other underlying medical conditions?       | 1. NO<br>2. Yes, please specify_____   |

**Part 2: Knowledge of exercise in the management of diabetes mellitus**

Please complete the True or False questionnaire consisting of 10 items by indicating your response with a circle around the appropriate choice for each statement.

Items	Answer	
1. After eating, taking a 10-minute walk can assist in reducing blood sugar levels	True	False
2. Engaging in exercise is not advised for individuals with a blood sugar level exceeding 300 mg/dL	True	False
3. If your blood sugar is under 100 mg/dL, it's advisable to have a snack or hard candies before you start exercising	True	False
4. If you have kidney impairment due to diabetes, it is strictly prohibited to engage in any form of exercise	True	False
5. If you experience left-sided chest pain, palpitations, or unusual fatigue, it is crucial to undergo an exercise stress test before engaging in any exercise	True	False
6. Engaging in a minimum of 150 minutes of moderate intensity exercise each week, where you can talk comfortably and finish sentences without getting breathless, can help reduce blood sugar levels	True	False
7. Engaging in a minimum of 75 minutes of vigorous intensity exercise each week, where you may need to pause for breath every few words, can help reduce blood sugar levels	True	False
8. Checking your blood sugar level before exercising is not necessary	True	False
9. Diabetic patients should include resistance exercise at least two days a week along with aerobic exercise for 3 to 5 days a week	True	False
10. Diabetic patients with retinopathy complications should avoid strenuous exercise	True	False

**Part 3: Knowledge of foot care in the management of diabetes mellitus**

Please complete the True or False questionnaire consisting of 10 items by indicating your response with a circle around the appropriate choice for each statement.

Items	Answer	
1. Every diabetic patient should undergo a thorough foot examination by a physician at least once a year	True	False
2. You should moisturize your feet, particularly skin bridging the toes	True	False
3. If you experience a decreased sensation in your feet, it is advisable to wear a toe-post sandal	True	False
4. Try not to walk barefoot even in your house	True	False
5. To avoid infections, cut your nails short and round the corners	True	False
6. You should avoid crossing your legs as it may compress the nerves beneath the knee joint	True	False
7. Try not to wear sock, because they might moist your foot until the wound occurs	True	False
8. To get rid of the corns or calluses on your foot, you can scrape, trim, or peel it off by yourself	True	False
9. If you have a small wound on your foot, clean it twice a day with sterile normal saline. Avoid using alcohol, betadine, Dakin solution, or hydrogen peroxide for wound care	True	False
10. If you experience a loss of sensation in your feet, it's advisable to soak them in hot water to stimulate sensory perception	True	False