ORIGINAL ARTICLE

Lifestyle of type 2 diabetes mellitus patients with peripheral neuropathy: Phenomenological study

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Abstract

Objective: To explore the lifestyle-related characteristics of people having type 2 diabetes mellitus with peripheral neuropathy.

Method: The phenomenological study was conducted from July 5 to September 18, 2021, at Sadabuan Health Centre, Batunadua Health Centre and Wek 3 Health Centre, Padangsidimpuan, Indonesia, and comprised diabetic neuropathy patients who had cognitive impairment, anxiety and depression. Data was collected using in-depth interviews. Data was analysed using Collaizi's method.

Results: There were 8 subjects with mean age 48.38±13,606 years (range: 27-65 years), and mean duration of diabetes was 6±3.207 years. The majority of participants in this study were women 6 (75%). There were 7 themes that emerged from the collected data: level of physical activity, diet, sleep pattern, habit of consuming sweet drinks, smoking habit, social interaction, and self-care.

Conclusion: Diabetes mellitus patient with peripheral neuropathy had not been able to completely switch to a healthier lifestyle.

Keywords: Neuropathies, Diabetes, Depression, Dysfunction, Smoking, Anxiety, Habits, Sleep, Diet, Social Interaction, Exercise, Life Style. (JPMA 74: S-13 [Suppl. 5]; 2024) **DOI: https://doi.org/10.47391/JPMA.Ind-RINC-04**

Introduction

Type 2 diabetes mellitus (T2DM) has become a major public health problem because it is one of the 4 priority non-communicable diseases (NCDs) and the number is increasing with every passing year.[1] In 2019, the global prevalence of diabetes mellitus (DM) was 9.3%, with 463 million people worldwide suffering from the condition, and 90% of these diabetics were people with T2DM.[2,3] In Indonesia in 2019, 10.7 million people had T2DM, and the country was ranked 7th on the list of countries with the highest number of T2DM patients.[3]

There are various complications that occur due to T2DM, such as macrovascular disorders, like heart disease, and microvascular disorders, like neuropathy, retinopathy and nephropathy.[4] The most common complication of T2DM is the occurrence of diabetic neuropathy (DN), which is an early condition before the appearance of diabetic foot problems. Various studies have described DN prevalence. According to the International Diabetes Federation (IDF), the global DN prevalence ranges 16-87% among T2DM patients. In Indonesia, DN prevalence is 58% among T2DM patients.[3,5]

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DN is a condition in which there is loss of sensory functions owing to motor and autonomic nerve disorders caused by hyperglycaemia in the edges of the body, such as the tips of the feet or hands.[6] The main clinical manifestations of DN are pain, numbness, burning and cramping.[7,8] DN is often also called painful DN because the pain is the most common and the biggest problem experienced by the sufferers.

DN is a complication of T2DM which results in the worst kind of reduction in quality of life (QOL) compared to other complications, such as impaired heart and kidney functions. The decrease in QOL can also increase the risk of death in T2DM patients with DN.[9]

Lifestyle is a collection of behavioural patterns that a person chooses according to the opportunities one has.[10-12] Lifestyle consists of a person's behaviour and functioning in work, choice of entertainment and diet, and other activities. The lifestyle is shaped by geographical conditions, economic status, politics, culture and religion.[13]

According to the Indonesian Society of Endocrinology, lifestyle is one of the main causes of T2DM and its complications as well as being one of the main modifiable factors in the management of DM.[14] Lifestyle as an intervention for various health problems, such as T2DM, and their complications has often been done to slow down the progression of DM.

But the fact is that changing old lifestyles is not an easy

matter, and changes do not last long because of several factors, such as lack of health awareness and intensive support from health workers.[15]

The current study was planned to explore the lifestyle-related characteristics of T2DM patients with DN.

Patients and Methods

The phenomenological study was conducted from July 5 to September 18, 2021, at Sadabuan Health Centre, Batunadua Health Centre and Wek 3 Health Centre, Padangsidimpuan, Indonesia. After approval from ethics review committee of the Faculty of Medicine, Andalas University, Padang, West Sumatra, Indonesia, the sample was raised using purposive sampling technique. Those included were T2DM patients with DN who had no cognitive impairment, anxiety and depression, and were able to read and write. Informed consent was taken from all the participants, and those not willing to participate were excluded. DN was assessed using a DN score. DN Score is an instrument used to determine diabetic neuropathy. The DN score consists of 4 assessment points, namely, instability in walking; painful or burning sensation in the feet; prickling sensation in the feet; and tingling sensation in the feet. If the above symptoms are felt, they are given a score of 1 and if they are not present, they are given a score of 0.[8] Blood glucose levels were noted just before qualitative data was collected using in-depth interviews that were conducted with the help of a structured interview guide. Data was analysed using the Collaizi method[16] with the help of open code 4.03 application.

Results

There were 8 subjects with mean age 48.38±13,606 years (range: 27-65 years), and mean duration of T2DM was 6±3.207 years. Mean blood glucose level was 236.88±30.624 mg/dl (Table 1). The DN score ranged 2-4. The majority of participants in this study were women (75%) (Table 2).

There were 7 themes that emerged from the collected data: level of physical activity, diet, sleep pattern, habit of consuming sweet drinks, smoking habit, social interaction, and self-care. All the themes, had sub-themes and categories (Table 3). The first theme was the level of physical activity, which had 2 sub-themes; physical activity and sports activities. The sub-theme of physical activity had 2 categories; the intensity of physical activity, and the duration of physical activity. The category of physical activity intensity was based on the interpretation of the participants' statements, like:

"*I used to work, my job was construction work, now there are no more activities, just sitting around.*" (Participant 1).

The category of duration of physical activity was obtained from the interpretation of statements, like:

"*I go gardening every day except Friday. Yes, clear the*

Table-1: Patient characteristics.

Characteristics	Median	Mean±SD	Minimum	Maximun	95% CI
Age (years)	47.50	48.38±13.606	27	65	37.00–59.75
Length of suffering from DM (years)	6	6±3.207	3	12	3.32–8.68
Blood glucose level (mg/dl)	230.0	236.88±30.624	203	301	211.27–262.48

SD: Standard Deviation.

Table-2: Participant Characteristics.

Characteristics	n (%)
Diabetic neuropathy score	
0	0 (0)
1	0 (0)
2	2 (25.0)
3	5 (62.5)
4	1 (12.5)
Gender	
Male	2 (25.0)
Female	6 (75.0)
Total	8 (100)

Table-3: Thematic analysis.

Theme	Sub-theme	Category
Physical activity level	Physical activity	Intensity of physical activity
		Physical activity duration
	Sports activities	Exercise intensity
		Sports regularity
Diet	Number of meals	Meal portion
		Frequency of eating
	Eating habits	Eating late at night
		Regularity
	Type of food	Fiber type foods
		Carbohydrate foods
Sleep pattern	Sleep cycle	Napping habit
		Sleepy in the morning
	Depth of sleep	Sleep duration
		Sleep latency
Habit of drinking sweet drinks	Drink portion	Sugar content in drinks
		Drinking frequency
	Drink type	Soft drinks
		Sugar substitute
Smoking habits	Current smoking habits	Smoking frequency
		Number of cigarettes
	Adherence to smoking advice	Changes in smoking habits
		Obedience
Social interaction	Interaction with family and friends	Interaction duration
		Interaction intensity
	Interaction with the community	Participation
		Type of activity
Self-care	Implementation of therapy	Medication
		Complications treatment
	Medical examination	Inspection
		Utilization of health programsme

grass, clean the garden, cutting wood. I am in the garden, two hours and three hours." (Participant 3)

The sub-theme of sports activities had 2 categories; exercise intensity and exercise regularity. The intensity category was based on statements, like:

"*Try to do it, in the morning I take a walk along this road. Even in Simangambat, there is a field that I go to, I jog there."* (Participant 7).

The regularity category was based on statements, like:

"*Before I got diabetes, I never do exercise. But now, I still tried to do exercise, but I often get tired, so I stop it."* (Participant 5).

The second theme obtained was diet, which had 3 sub-themes; the amount of food, eating habits, and types of food. The first sub-theme had 2 categories; the portion of food, and the frequency of eating. The category of meal portions was obtained through the interpretation of the participants' statements, like:

"*I eat less now because the doctor recommends it.*" (Participant 3).

The category of eating frequency was based on statements, like:

"*The eating patterns have changed. In the past they ate three times more, but now, I don't dare add another portion*" (Participant 8).

The sub-theme of eating regularity had 2 categories; eating late at night, and regularity. The first category was based on statements, like:

"*After I got diabetes, it's not there anymore, I don't dare anymore. If you want to have dinner tonight, just eat bread, you don't want to eat rice anymore. It feels like he's hungry, because he's used to it, it is possible.*" (Participant 2).

The regularity category was based on the interpretation of statements, like:

"*It's hard to control my appetite. it's hard to change. so sometimes I eat a lot more. After that, I regret it."* (Participant 5).

The food type sub-theme had 2 categories; fibre-type foods, and carbohydrate-type foods. The first category was based on the interpretation of the statements, like:

"*I really eat a lot, especially vegetables.*" (Participant 4).

Carbohydrate food category was based on statements, like:

"*I don't eat much anymore, especially rice. Now I add lots of vegetables. That's what I make until now. Eat just a small amount of rice and double the portion of vegetables.*" (Participant 7).

The third theme obtained was sleep patterns, which had 2 sub-themes; sleep cycles and sleep depth. The first sub-theme had 2 categories; the habit of napping, and sleepiness in the morning. The first category was based on the interpretation of the participants' statements, like:

"*This is what it is now, if this is followed, I will just sleep, this is my habit. Some people say, don't sleep at 10 (in the morning), this is the prohibition. If I leave it like that, continue sleep, it can take up to 4pm to wake up.*" (Participant 1).

The category of sleepiness in the morning was based on statements, like:

"*It is not good for me to just sit and watch, it's really not good, it's easy for these eyes to fall asleep. It's good when it feels like sleeping, don't obey it. When I want to sleep, I divert my thoughts, I make it my job, so I don't sleep. I pick chilies in the garden. Can't say, 12 noon and earlier, sleepy that time. But afternoon, I don't feel sleepy anymore.*" (Participant 4).

The sub-theme of sleep depth had 2 categories; sleep duration and sleep latency. The sleep duration category was based on statements, like:

"*At night, it is hard to sleep, at night you only want 3 hours of sleep. This leg is numb, it hurts. Sometimes the feet are hot too.*" (Participant 2).

The sleep latency category was based on the participants' statements, like:

"*Sleep is not good (sleep quality) because the legs are numb, get into bed at 10 O'clock, at 1 O'clock you have not fallen asleep yet.*" (Participant 6).

The fourth theme was the habit of drinking sweet drinks, which had 2 sub-themes; the portion of drinks, and the types of drinks. The first sub-theme had 2 categories; the sugar content in the drink, and the frequency of drinking. The first category was based on the interpretation of the participants' statements, like:

"*In other words, if you want to make sweet tea now, I will make it one glass, but not too sweet, just sweet guava. It doesn't stop right away, it's still important.*" (Participant 1).

The drinking frequency category was based statements, like:

"*Nothing, after I got diabetes, I never drink sweet tea again.*" (Participant 2).

The sub-theme of the type of drink had 2 categories; soft drinks and sugar substitutes. The soft drink category was based on statements, like:

"*I used to drink 'kuku bima'; which is said to be the cause of diabetes.*" (Participant 1).

The sugar substitute category was based on statements, like:

"*I no longer drink sweet tea, but sometimes, if I want it, I made sweet tea, but I use brown sugar.*" (Participant 7).

The fifth theme was smoking habits, which had 2 sub-themes; current smoking habits, and adherence to smoking advice. The first sub-theme had 2 categories; the frequency of smoking, and the number of cigarettes. The frequency category was based on participants' statements, like:

"*Smoking can't be stopped yet.*" (Participant 1).

The category of the number of cigarettes was based on statements, like:

"*I used to run out of a pack. Now at least three sticks.*" (Participant 8).

The sub-theme of adherence to smoking advice had 2 categories; changes in smoking habits, and compliance. The first category was based on statements, like:

"*I used to smoke, starting with my daughter, I've been smoking, after one pack a day. After I got diabetes, I still smoked. It's only been about 3 months since I really stopped.*" (Participant 2).

The compliance category was based on statements, like:

"*I have reduced smoking, the doctor told me to limit it.*" (Participant 1).

The sixth theme was social interaction which had 2 sub-themes; interaction with family and friends, and interaction with the community. The first sub-theme had 2 categories; the duration of the interaction, and the intensity of the interaction. The first category was based on the interpretation of participants' statements, like:

"*There's no more socialising, it's lazy, right. Usually, I can stand it for hours in the coffee shop.*" (Participant 1).

The second category was based on statements, like:

"*Tell the story to our friends, our neighbours. So, you forget that you are sick when you tell the story.*" (Participant 5).

The sub-theme of interaction with the community had 2 categories 'participation, and types of activities. The participation category was based on statements, like:

"*Keep going, the spirit is still there. But I don't come with me anymore to cook. I just follow the slices of onions. Sometimes I want to join, but I can't.*" (Participant 2).

The category of activity type was based on statements, like:

"*Now then, I can no longer go to the event of misfortune or party. There has to be someone to accompany me, so that I can walk. That's the celebration event does not come again. There are many who can't. They don't even hang out anymore.*" (Participant 6).

The seventh theme was self-care, which had 2 sub-themes; the implementation of therapy, and medical examination. The first sub-theme had 2 categories; medications, and complications. The first category was based on the interpretation of participants' statements, like:

"*I use insulin regularly, but if I get dizzy, I think I'll reduce the number, for example, from 14, I make it 10.*" (Participant 4).

The category of treatment for complications was based on statements, like:

"*This leg has been injured several times. Two times a week the wound is treated.*" (Participant 3).

The sub-theme of medical examination had 2 categories; examination, and utilisation of health programmes. The examination category was based on statements, like:

"*It's not routine for me to take treatment. When I get sick, I go for treatment.*" (Participant 2).

The other category was based on statements, like:

"*I was diligent about going to the health centre, to the hospital. Routine check-up once a week, if I am not mistaken. I also participate in events at the puskesmas (public health centre).*" (Participant 8).

Discussion

The current study identified 30 categories of lifestyle that feel under 15 sub-themes, and 7 themes.

According to the World Health Organisation (WHO), there are 4 dimensions of lifestyle that have a relationship with health. The lifestyle is the level of physical activity, diet, smoking and drinking alcohol.[16]

A study identified 9 dimensions of lifestyle that have an influence on health, but only 4 of those dimensions match the ones identified in the current study; exercise, diet (body mass index [BMI]), sleep, and substance abuse or smoking.[13]

Another study identified 10 dimensions, and 5 of them matched the results of the current study; activity, nutrition, sleep, smoking and toxic substances, as well as friends and family.[17] Another study stated that the habit of consuming sugary drinks can cause obesity and also increase the risk of DM. To reduce this habit of consuming sweet drinks, it can be done by replacing sugary drinks with water or unsweetened tea and coffee.[18,19]

Self-care is one of the routines carried out by T2DM patients with DN. This self-care consists of the implementation of therapy and health checks. Health practice is one of the components of a healthy lifestyle, and includes establishing relationships with health professionals with the aim of preventing illness or routine check-ups.[12]

Unhealthy diet, lack of physical activity and smoking habits are risk factors for DM. Taking a healthy diet, increasing physical activity, and quitting smoking are part of self-care.[20-22]

In the current study, the majority of the participants'

lifestyles could still be classified as unhealthy. Although there had been lifestyle changes, the lifestyle was not consistent. This is in accordance with earlier observations that lifestyle changes in T2DM patients only last for some time, and this happens because the lack of knowledge and motivation.[15]

The scope of the current study is quite limited, because a person's lifestyle is strongly influenced by social and cultural factors. As such, the findings are not generalisable.

Conclusion

There were 7 lifestyle themes related to the lifestyle of T2DM patients with DN. It was clear that even after DN, the patients had not been able to completely move to a healthier lifestyle.

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