International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 7, 2020
ISSN: 1475-7192

# Experience of Glucose Control: A Qualitative Study of Diabetes Mellitus Type 2 Patients

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***Abstract---*** *The identification of various phenomena related t type 2 diabetes mellitus, especially concerning the recognition of the signs, symptoms and blood glucose levels that affect emotional responses, is important for diabetics to use as a basis for determining the action strategy that is to be performed. This was identified in order to maintain blood glucose control during diabetes mellitus. This study aims to explore the efforts to control blood glucose to achieve an improved well-being among people with diabetes mellitus. This research used a qualitative method through a phenomenological approach and a purposive sampling technique. The data analysis used the Interpretative Phenomenology Analysis approach through in-depth interviews, observations and assistance from the patient's note files. The population involved 15 participants with diabetes mellitus type 2. The study produced the theme `maintaining personal well-being'. Three sub-themes were identified: (1) trying to find accurate information, (2) feeling in a traumatic event and (3) managing effective coping strategies. The efforts undertaken present specific challenges related to maintaining and improving personal well-being especially when dealing with situations of increasing blood glucose during diabetes mellitus. These challenges are confronted so as to improve their healthy behavior through efforts to maintain their diet, exercise, stress management and blood glucose. This includes taking their medication regularly and controlling the patient's coping mechanism.*

***Keywords---*** *Self Control; Glucose Level Blood; Diabetes Mellitus*

## I. INTRODUCTION

Controlling their blood glucose levels, for people with diabetes mellitus, is a challenge that must be faced. Related to the stability of their blood glucose, people with diabetes mellitus are faced with an effort [1] because this disease requires a regular pattern of life [2]. People with diabetes mellitus must always regulate themselves through effective coping strategies [3]. Around 425 million people worldwide, or 8.8% of adults aged 20-79 years, are estimated to have diabetes. The prevalence of diabetes in adults aged 18-99 was estimated to be 8.4% in 2017 and it is predicted to increase to 9.9%. If this trend continues, then in 2045 693 million people aged 18-99 years, or 629 million people aged 20 -79 years, will suffer from diabetes[4][5]. The prevalence of DM sufferers in East Java in 2013 was 2.1% and in 2018, this increased to 2.6%. The incidence of DM has tended to increase [6].

Pancreatic gland dysfunction causes a failure in insulin production. This plays an important role in increasing the level of glucose in the blood[7], [2]. This encourages the sufferers to set effective coping strategies through accurate

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diabetes management [8],[9]. In addition to having to take medication regularly[10], people with diabetes mellitus are faced with having to manage their diet[11],[12],[13], manage their stress [14], regularly exercise [15], monitor their blood glucose regularly[7] and also avoid smoking [16],[17],[18]. The identification of various phenomena related to diabetes mellitus, especially the recognition of the signs and symptoms as well as monitoring the blood glucose level, is also important for diabetics[1]. Throughout their lives, people with diabetes mellitus are faced with mental stress that affects their emotional response [19].

Even though people with diabetes mellitus are aware of the conditions and risks [20], many suffer from feelings of hopelessness, depression or anxiety due to their poor quality of life [21]) and due to the comorbidities of other diseases due to complications[22]. This becomes a dominant factor in the occurrence of deviant behavior when seeking health assistance[23]. In line with the previous study, the results of the research on treatment intensification found that almost two-thirds of patients had no evidence of intensification in the anti-hyperglycemic therapy and they showed poor glycemic control[24]. This shows the existence of coping strategies that are less effective at managing diabetes mellitus, which can worsen their condition.

Accurate information about the management of diabetes mellitus is very important to obtain[3], especially when initiating the healing process [25]. In line with these studies, there is a relationship between counseling and the level of understanding of the management of diabetes mellitus management[26]. This is done so then blood glucose control through diabetes mellitus management can be directed and measured [2],[27]. The purpose of this study was to find out how people with type 2 diabetes mellitus control their blood glucose through effective coping strategies so then the patient's blood glucose levels are maintained to prevent complications.

## II. METHODS

- Research Design Method

This study used a qualitative design with a phenomenology approach to explore the meaning of life experiences [28]. This approach was chosen to explore the experience of people with diabetes mellitus seeking to control their blood glucose. This was done through the identification of the results on the reflection of the important themes that describe the phenomena that occur in people with diabetes mellitus before linking between the categories and determining their orientation in relation to the events experienced. We paid attention to the interrelationship between the research themes by looking at each part as a whole [29].

This technique uses purposive sampling that meets the inclusion criteria, namely that the participants with diabetes mellitus were able to communicate in Indonesian and that they were willing to be respondents and provide information with consideration to facilitating the data collection. A total of 15 participants were willing to become participants, and they were interviewed up until data saturation was reached. All of the participants were interviewed and observed in 2 rounds by the researcher directly using field notes and a data recorder for a duration of 30-40 minutes.

This study collected the data through individual semi-structured interviews from June - July 2019. The data collection and data verification stage was carried out for 3 months. The interviews were recorded using a tape recorder that was transcribed verbatim and each nonverbal response was recorded using a note file. It was validated again with the participants by listened to the recording again. The interview questions included the behaviors that describe the problems that occur in people with diabetes mellitus in the event of a traumatic event, attempts to find information and the coping strategies used.

- Analysis

The data analysis used the Interpretative Phenomenology Analysis approach to describe the patient's life experiences [30], namely by following the guidelines for data analysis from the interviews and field notes. The data was read carefully and repeatedly. The themes were interpreted to get a sense of the patient's understanding and involvement, especially after being confronted with the data in the field notes. The validity of this study was evaluated using the concepts of reliability, dependability and transferability.

- Material

The tools used were a tape recorder, field notes and interview guidelines.

## III. RESULTS

- Participant characteristics

A total of 15 participants participated in this study. The age of the participants was between 41 years and 63 years old. The level of education varied from no school through elementary school, junior high school, high school and up to PT. Ten participants worked as farmers, 3 people as entrepreneurs, 1 person as a civil servant and 1 person did not work. All of the participants were Muslim and all of them were from the Javanese tribe.

Those who had been suffering from diabetes mellitus for under 1 year totaled 2 people, while 1-6 years totaled 4 people, 6-10 years totaled 3 people and >10 years totaled 2 people. The drugs used by w people were in the form of an injection and 13 people used oral drugs. There were 9o people who added traditional ingredients.

The results of the information obtained from the informants can be summarized in 1 category as a whole, namely, maintaining personal well-being. This has 3 sub-categories: 1) feeling a traumatic event, 2) trying to find accurate information and 3) managing effective coping strategies.

- Feeling a traumatic event

Upon beginning to experience the changes that occur in the body, all of the participants experienced confusion and doubt about the signs, symptoms and the effects caused by diabetes mellitus. All of the participants experienced stress, and a fear of the impact that is occurring, thus affecting their self-concept. Some of the participants revealed a discrepancy between reality and their experience. Some participants said:

*"I eat a lot of it. How come I don't get fat huh, miss?" (P.4) (P.15)*

*"This is my weight. Why did it drop so much? Why did it become like this?" (P.10) (P.14)*

*"I'm really hungry fast, don't I have diabetes (diabetes mellitus)?" (P2)*

*"I'm sad sir, usually when I cook boiled corn or cassava. I still like glucose, tea too, if given glucose it tastes good, so I don't like it." (P5)*

*"My food is limited, sir, so I can't be like the one who likes to eat sweets" (P.7)*

Other participants felt that they no longer had any power in front of their partners due to suffering from diabetes mellitus. The participants said:

*"Sometimes I am ashamed of my wife, sir, because I am easily sluggish (not powerful)" (P.8)*

*"My body is easily tired sir, so it's not as strong as it used to be" (P.14)*

One participant accepted the fact that he was suffering from diabetes mellitus:

*"Yes what else, sir? As long as I relax, so I don't get heart disease" (P.7)*

- Trying to find accurate information

Because there is a lot of information available, it is sometimes unclear so there is a desire to reinforce this information by asking for information from various sources. One participant said:

*"I was called [by] my nephew. He said my face was pale and rather thin. Then he said that maybe (you) had diabetes (diabetes mellitus). Then I asked the health worker, sir, is it true that i suffer from diabetes as said by my nephew?" (P.3)*

*"Is it possible that i have diabetes mellitus, sir (health worker)?" (P.4)*

Other participants tried to discuss with their partners when there was a problem with their feet. One participant said:

*"Sir, my legs often get stuck [and] I suffer from diabetes (diabetes mellitus)" (P.13)*

One participant tried to find information about the right diet to stabilize his blood glucose level.

*"Usually any food is "yu"(close calls to female peers) that should not be eaten by people who have diabetes." (P7)*

Other participants related to the hereditary history of diabetes mellitus.

*"Is it because my grandmother is suffering from diabetes mellitus that I have diabetes mellitus, isn't it sir (health worker)?" (P.1)*

But another participant suspected that the changes that had occurred in his body were due to diabetes mellitus. The participant said:

*"I have diabetes (diabetes mellitus). How come my body has become thinner? Please pack my glucose (blood glucose)" (P.1)*

- Controlling their effective coping strategies

*"Ehh so th[en] my glucose levels can be stabilized, I regulate [my] diet as much as possible by balancing [it] with regular exercise and taking medication regularly. I have never eaten dinner since I have diabetes. Sweet fruit is also inevitable." (P1)*

*"I can't eat anything that contains glucose, so I use "tropikana" glucose for diabetes. Then the portion of the meal should not be too much. I take medicine and exercise regularly" (P2)*

*"Anyway, you can't eat [later than] 9 pm. You can eat white rice, you don't have to eat corn rice [and] then [you are] only allow[ed] green bananas and papaya, [but] how much [is not] limited." (P4)*

*"You can't eat sweets, you can't eat dinner, you can't eat a lot, but if you are hungry in the fields, [you] eat a lot, usually [the] kid. The important thing is [that it is] not so sweet" (P3)*

## IV. DISCUSSION

This research is based on a two-way communication approach aimed at understanding the experience of the ability to overcome the problems arising from diabetes mellitus. This research emphasizes the search for accurate information to minimize the traumatic experience in order to improve the effective coping strategies used when resolving the various challenges faced by people with diabetes mellitus. Some of the traumatic events that are often experienced by people with diabetes mellitus based on this study include drastic changes in body shape and changes in diet to the problem of fulfilling their sexual needs. In line with the results of this study, several studies have reported that diabetes mellitus often results in stressful body changes for the sufferers [31] and a disruption of self-concept[32]. There were some sufferers who did not feel disturbed by the changes in their bodies due to diabetes mellitus.

Hyperglycemia, as the main indicator of a diagnosis of diabetes mellitus, plays an important role in the occurrence of arterial sclerosis as a result of damage to the vascular endothelium[25],[26],[35]. This contribute to the incidence of neurovascular disorders [36] which have an impact on the incidence of pathological sexual dysfunction[18]. This is in line with the results of the research that found that there is a feeling of losing strength among men due to having diabetes mellitus and being easily tired. There is an attitude of "avoidance" so as not to become a prolonged stress and to avoid heart disease. The same finding was reported in that some people with diabetes mellitus experience a feeling of fear of failure in relation to sexual intercourse[37], although there has been a substitute provided for testosterone to reduce the level insulin resistance[38]. Among partners, people can also still adjust to each other when engaging in intimate sexual activity[39]. This indicates that diabetes mellitus can affect the welfare of the household [40][41] but it will be worsened when the patient's quality of life gets lower [42].

Information is urgently needed when managing stress, thereby increasing the level of effective coping in terms of controlling the blood glucose of people with diabetes mellitus [43],[44]. This has been done by some of the participants by them seeking information from their family, neighbors or health workers on the ways to manage their blood glucose. In line with the results of this study, several studies have found the perceived benefit of informal caregivers solving the problems that occur in people with diabetes mellitus[45][46]. This indicates that accurate information is needed by the people with diabetes mellitus to minimize the risk of psychosocial problems [47]. Similarly, other studies have identified that the provision of information both individually and in groups by health workers about diabetes mellitus can strengthen their resilience to efforts to control their blood glucose. It can also boost the self-efficacy of people with diabetes mellitus[48]. The self-efficacy of people with diabetes mellitus [49]and also their families can increase their involvement [50]and ease the family burden[51]. On the other hand, other studies based on providing information alone indicate that there are some people with diabetes mellitus who still lack understanding [52], although other studies have shown that there was an increase in knowledge when the patient were given guidance on the management of the nursing actions[53][54].

The results of this study indicate that there is a high awareness of the participants when it comes to managing their diet, exercising and taking their medication regularly. Recognizing the importance of following the management of diabetes mellitus therapy and managing their emotional responses is a necessity for every sufferer of diabetes mellitus in relation to maintaining an effective coping strategy and, at the same time, controlling their blood glucose[8], [55], [56]. Previous studies have shown how dietary regulation, regular exercise and taking medication are the key to the stability of their blood glucose in people with diabetes mellitus [12], [57]–[60]. Thus it is very important to determine the clarity of the various problems that exist in diabetes mellitus so then they can be anticipated through an effective coping mechanism to prevent psychological problems due to the complexity of the problems that arise in living with diabetes mellitus.

## V. CONCLUSION

The current study confirms the need to address the problems caused by diabetes mellitus effectively through the comprehensive and simultaneous management of nursing actions between diet compliance, exercise, taking medication regularly, checking blood glucose levels regularly and managing emotions. This is done so then the blood glucose levels can be stabilized through setting up effective coping strategies in the implementation of ideal diabetes management.

## CONFLICTS OF INTEREST

No conflict of interest has been declared by the authors.

## ACKNOWLEDGEMENT

We would like to thank all of the respondents who were cooperative in this research. We would also like to thank the head of the Soegiri Lamongan Hospital who supported this research.

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