EXPLORATION OF LOCAL CULTURAL TO CHANGING BEHAVIOR PATIENT WITH DIABETES MELLITUS: A QUALITATIVE STUDY

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ABSTRACT

The tense conditions and language barriers in health education are the main obstacles for people with type 2 diabetes mellitus (T2DM). The patient difficulty understanding the material delivered by the doctor. This study aimed to explore the preferences of DM patients towards the environment based on local cultural during health education. This study was conducted qualitatively with a case study design. The characteristics of the respondents were T2DM patients, doctors and the head of the Prolanis Program group in Sleman Yogyakarta, Indonesia. Qualitative analysis used in-depth interview data and Focus Group Discussion Session (FGD). Most of the participants were Javanese. The number of respondents in this study were twenty-four DM patients, two doctor and two people in charge of the prolanis program. Most of the people with T2DM are unemployed women aged 45-60 years with secondary education. Respondent was divided into two groups equally (one group from public primary care and one private primary care). The research process with an FGD of patients with DM and continued with interviews with doctors and leaders of the prolanis group. The length of this study was three months, starting from data collection to data analysis. The researcher guarantees the validity of the research results using the dependability, confirmability, transferability criteria. The researcher also guarantees that the results of the research data analysis are reliable by member checking and peer debriefing. Qualitative data analysis from the results of the FGD, interviews and observations used guidelines from Hubermen and Miles. The stages in conducting data analysis are coding, categori and thema. Peer group discussion through performing arts was one form of intervention chosen by patients to deliver health material. The patient's active role during the discussion increased other patients’ motivation to take an active role. Peer education effectively changed T2DM patients’ behavior for physical activity and eating control. This condition was influenced by social nerve activation (cranial nerves, V, VII, IX, X, and XI). The social nerve activation could be done by singing and dancing with people with T2DM. Education accompanied by singing and dancing could create a relaxed and pleasant environment so that patients with DM could understand the material delivered by the educator.

Keywords: T2DM, singing and dancing, social nerves, behavior

I. INTRODUCTION

The World Health Organization (WHO) reported that around 150 million people worldwide suffered from DM[1]. In general, the most common diabetes mellitus and its prevalence that continued to increase was Type 2 diabetes [2], [3]. The majority DM patients aged 20-79 years were in the low and middle income countries[4]. Besides, the prolonged increase in blood glucose resulted in various complications. This complication was one of the leading causes of premature death in several countries[5], especially in low- and middle-income countries[6]. Through the BPJS Health Prolanis Program, the Sleman Regency Government has continued to strive to control
T2DM by increasing the number of patient visits to first-level health facilities[7]. However, in 2018, the BPJS Health in Sleman Regency reported that T2DM patients’ visits in 2017 at primary health facilities were less than 60%. Moreover, the Ministry of Health reported that the prevalence of DM continued to increase from 6.9% in 2013 to 8.5% in 2018[8].

One of the strategies that must be carried out is to design interventions to improve healthy living behavior effectively and efficiently[9], [10]. One of the obstacles to healthy behavior is the lack of understanding in society that their diet is wrong [11]. Physical activity and dietary control are part of the healthy behavior recommended by WHO and PERKENI (Indonesian Endocrinology Association) for T2DM patients. This behavior has been shown to be effective in controlling blood glucose and HbA1c[12].

The community-based education programs effectively increase physical activity behavior [13]. One form of intervention that can change behavior is Diabetes Self-Management Education and Support (DSME/S) [14]. The American association of clinical endocrinologists recommends such a program to control complications due to DM [14], [15]. The DSME/S program teaches to exchange knowledge and skills between patients so that other patients are motivated to exercise self-control [16]. The preliminary studies showed that the obstacle often felt by T2DM patients to visit first-level health facilities was the low knowledge of the importance of controlling DM. Besides, the material presented by the educator was difficult to understand. This low knowledge caused the behavior in controlling low blood glucose. Language barriers (other than Javanese) and effective communication made the atmosphere tense so that patients were afraid and lazy to attend education. The previous study showed that theater arts performances (TAP) based on local culture were used as a medium of education. In various countries, TAP was utilized to change physical activity behavior and control eating patterns [17]. In several countries, TAP was utilized to change physical activity behavior and control eating patterns [17]. The TPA is a health promotion medium to change behavior [18], [19]. Patients felt confident about the various possible outcomes arising from the behavior chosen to perform and the perceived value of these results [19]. This study aimed to explore the preferences of DM patients towards the environment based on local cultural during health education.

II. METHODS

This study was conducted qualitatively with a case study design. The characteristics of the respondents were T2DM patients, doctors and the head of the Prolanis Program group in Sleman Yogyakarta, Indonesia. The collecting data using in-depth interview data and Focus Group Discussion Session (FGD). The most of the participants were Javanese. In-depth interviews and FGD were conducted to obtain answers to questions related to forms of local culture-based education for people with T2DM. The number of respondents in this study were twenty-four DM patients, two doctors and two people in charge of the “prolanis program”. Most of the people with T2DM are unemployed women aged 45-60 years with secondary education.

Respondent was divided into two groups equally (one group from public primary care and one private primary care). The research process starts with an FGD of patients with DM and continued with interviews with doctors and leaders of the prolanis group. The duration of this study was three months.

The investigator ensures the validity of the research results using the dependability criteria which is carried out by recording the course of the research in detail. Furthermore, confirmability was carried out by means of method triangulation and source triangulation. Method triangulation between FGD and in-depth interviews with patients aims to compare the answers given during FGD and in-depth interviews, while source triangulation will compare opinions between patients with T2DM and doctors. Transferability criteria, to ensure external validity, investigator report the research process in a detailed, clear, systematic and reliable manner in accordance with the context and focus of the study, so that readers can easily understand and can apply similar research elsewhere.

The investigator also ensures that the results of the research data analysis are reliable by member checking and peer debriefing. Member checking is done by asking questions to one or more patients with T2DM to ensure that the results of data analysis are the same as those intended by the patient. The peer debriefing session was carried out by asking the supervisor to check the results of the research data analysis[20]. In addition, to achieve credible research results, researchers did not only analyze FGD transcripts, interviews and observations, but were equipped with secondary data sourced from the medical record documents (RM) of T2DM patients (with the patient’s permission).
Audit trail is also carried out by explaining the decision points (both the method used and the data analysis process) that the researcher has used during the research process [21]. Qualitative data analysis was performed using opencode software. The data were processed through a transcription process, then analyzed qualitatively through a process of coding, categorization and finally determining the theme. Qualitative data analysis used guidelines from Hubermen and Miles [22]. The stages in conducting data analysis are coding, categori and thema. The report of study was adjusted to the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines.

III. RESULT

Most of the participants were women aged 46-65 years who were mostly unemployed. (Table 1).

<table>
<thead>
<tr>
<th>No</th>
<th>Characteristics</th>
<th>N= 26</th>
<th>Percentage (%)</th>
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<tbody>
<tr>
<td>1.</td>
<td>Gender</td>
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<tr>
<td></td>
<td>Male</td>
<td>5</td>
<td>19.23</td>
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<tr>
<td></td>
<td>b. Woman</td>
<td>21</td>
<td>80.77</td>
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<td></td>
<td>Total</td>
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<td>2.</td>
<td>Age</td>
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<td>a.26-45</td>
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<td>b.46-65</td>
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<td>Occupation</td>
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<td></td>
<td>Wage earner</td>
<td>9</td>
<td>34.61</td>
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<tr>
<td></td>
<td>Not a wageearner</td>
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<td>11.54</td>
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<td></td>
<td>Does not work</td>
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<td>53.85</td>
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<td></td>
<td>Total</td>
<td>26</td>
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Based on the qualitative analysis results, it was uncovered that several necessary codes were thought to be the cause of the increasing prevalence of DM. The various essential codes were identified and then grouped into five domains: a) barriers to controlling DM, b) barriers to education in the Prolanis Program, c) arts preferred by T2DM patients, d) visual aspects of the arts preferred, e) Material required (table 2). The five domains’ descriptions are as follows:

A. Barriers to physical activity and diet control

The difficulty in controlling the desire to eat fried foods was the inhibiting factor in lowering blood glucose in most T2DM patients, including the psychological impact felt by patients. The following is an excerpt from the informant's statement:

“I find it hard to hold all fried food. Especially in the cold weather, it is delicious to eat fried snacks and sweet tea.” (Woman, 46 years old, patient)

Apart from the difficulty in controlling the desire to eat, being lazy to exercise, pain during exercise, difficulty managing time, and not knowing the right exercise were also inhibiting factors in controlling blood glucose. The following is an excerpt from the statement conveyed by the informant:

"Exercise is important, but I am lazy ..." (Woman, 44 years old, patient)

"If I exercise for a long time, my knee hurts ..." (Woman, 45 years old, patient)

"What is the right exercise ..., what is a good diet like ..." (Woman, 50 years old, patient)

B. The “Prolanis Program” Barriers
Two obstacles often felt by T2DM patients were difficulty understanding the material and transportation constraints. Patients felt that the education delivered often used medical (formal) language, so they were bored and sleepy. Shyness and fear of asking questions were also factors inhibiting the difficulty of accepting the material delivered during education. The following is an excerpt from the statement conveyed by the informant:

"... Usually, patients are sleepy because they only listen ..." (Woman, 30 years old, head of the Prolanis Program)

"... if we want to ask, sometimes we are embarrassed ... (Woman, 49 years old, patient)

C. Arts preferred by T2DM patients

Most of the patients preferred simple, relaxed, humorous forms of art accompanied by dangdut music, as the statement made by the following informant:

"Simple art performances; the important thing is to make us happy ... Like in gymnastics, there are dangdut, drums ..." (Woman, 40 years old, patient)

“Performing arts is like ketoprak, so it feels humorous. Like the jokes.” (Woman, 57 years old, patient)

The language used was simple and was the language used every day by T2DM patients, so that it was easier to understand which was the preferred value for DM patients. The following is an excerpt from the statement conveyed by the informant:

"Yes, not the difficult words to understand, those that are simple, easy to accept, and do not make such a burden ..." (Woman, 55 years old, patient)

"Spontaneous but funny speech. What we experience every day, there is a joke.” (Woman, 54 years old, patient)

Furthermore, the scenario created jointly between the patient and the educator could produce easy-to-understand sentences so that the message to be conveyed could be more easily understood during education through performing arts. The following is an excerpt from the statement that the informant conveyed

"The composition of the words to be used for the stage is determined by the patient so that it is easy to understand, maybe, that is one of the things that makes this interesting ..." (Woman, 53 years old, doctor)

"... the language is also a language that is easier for the patient to understand because it is probably a fellow patient” (Woman, 53 years old, doctor)

D. Visual aspects of the arts preferred

1. Genre: Most of the performing arts’ genre preferred was art containing humor elements, simple, relaxed, and easy to do. The following is an excerpt from the informant's statement conveyed in the FGD:

"Yes, especially the humorous ones ..." (Woman, 55 years old, patient)

2. Duration: Most patients wanted theater arts to be performed for a maximum of 30 minutes, with details of 15 minutes of education and the rest were opening, discussion, and closing. The following is a quote from the informant:

"30 minutes is also a long time. We also take it slow because they are not medical people, yes, they are common people, as the term" (Woman, 49 years old, doctor)

"Educational performance in 15 minutes, discussion in 5 minutes, and closing in 5 minutes" (Woman, 55 years old, patient)

3. Audio: Patients preferred practical and funny types of musical instruments, such as cassettes filled with music and singing. The following is an excerpt from the informant's statement in the FGD:

“… A simple musical instrument, then a funny one, just to liven up the atmosphere” (Woman, 53 years old, doctor)

"Using a cassette is easier ..." (Woman, 50 years old, patient)
E. Material required

The material delivered during education included definitions, psychological factors, medication, complications, and diet. Besides, the material was not always about DM. The following is an excerpt from the statement conveyed by the informant:

"The first is the definition of diabetes, risk factors, symptoms, foot care, diet, and allowed exercise." (Woman, 49 years old, doctor)

The patient expected that when receiving the material, it was in a relaxed condition, full of humor, and not boring so that the material message could be received well. The following is a quote from the informant:

"... the hope is that with education through singing and dancing, the atmosphere will be relaxed so that patients receive the material in a happy state." (Woman, 49 years old, doctor).

"If counseling is boring if there is a story staged, it is more fun ..." (Woman, 32 years old, Prolanis program manager)

<table>
<thead>
<tr>
<th>Table 2. Results of coding in domain</th>
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<tr>
<td><strong>Domain</strong></td>
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<td>Barriers to controlling DM</td>
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<td>Preferred arts</td>
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<td>Visual aspects</td>
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<td>Materials</td>
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IV. DISCUSSION

Performing arts can be used as a medium for health education. Good cooperation between players is needed to create effective communication [23],[24]. This communication is a planned process by showing empathy to increase self-awareness and patient recovery[25].

A relaxed and pleasant atmosphere during the performing arts was one of the factors that influenced changes in patient behavior in controlling blood glucose[26]. Physiologically, these behavioral changes were influenced by the biological substrate played by the social nerves. Through performing arts, these nerves were activated, creating a safe atmosphere. The safe atmosphere proved that the patient's social nerves were stimulated by activating SC V, VII, IX, X, and XI in the form of singing and dancing together.

Previous studies have reported that a free atmosphere could activate social nerves through singing (vocalization SC IX, X), music (facial expressions or face to face SC VII, V), and turning or head movements (dancing SK XI) among T2DM patients[27], [28]. Safe conditions in an environment can be detected by the autonomic nervous system, which is played out by neuroception. The atmosphere built at the time of performing the arts was static,
meaning that when the patients were entertained (players and spectators), they would enter a pleasant condition and free from threats. This condition could be awakened when the players interacted with effective communication[11].

Effective communication during the performing arts could improve material understanding conveyed through peers[29]. This communication appeared through facial expressions, intonation, gestures, and language selection that was easy to understand so that patients were more relaxed in dealing with situations. Physiologically, the face fusiform area (FFA) is one of the receptors that play a role in shifting one's reptile nature towards the neo-cortex, so dynamic neuroception helps create a safe and pleasant condition. This safe and comfortable environment will signal to neuroception that conditions are safe. Neuroception is a nervous system that plays a role in detecting threats to humans[27], [28], [30].

Effective therapeutic communication will stimulate social nerves in the form of a social engagement system response. This response focuses on regulating the striated muscle nerves of the face and head and the autonomic functions performed by the myelinated vagus, which has generally been considered part of the social nervous system. The social engagement system has a controlling component in the motor neuron cortex that regulates the brainstem nucleus (to control the eyelid opening (seeing), facial muscles (emotional expression), middle ear muscles (extracting human voice from background noise), muscles chewing (swallowing), laryngeal and pharyngeal muscles (vocalization and language), and muscles turning the head around (social movement and orientation). Together, these muscles regulate the social engagement system and change the sensory faces of the environment to communicate with one another. The neural control of these muscles contributes to social expression and social experience, directly regulated by the ambiguous nucleus[27].

In physiological conditions, the myelinated vagus nerve suppresses sympathetic nerve activity. When the myelinated vagus nerve is disturbed, the sympathetic nerve activity will increase[27]. Various evidence has suggested that autonomic imbalance was associated with various pathological conditions [31]. A sudden increase in blood glucose is an example of body homeostasis disorder. In order for the body to return to its original state, the body responds by increasing the parasympathetic nerves’ activities, and at the same time, the sympathetic nerves are inhibited so that blood glucose will decrease[32].

Therapeutic communication is not only applied between health workers and patients but can be employed in the peers’ context (peer educators). Peer educators are non-professionals who provide various functions, including social and emotional support, disease management assistance and clinical care, and community resources [33].

V. CONCLUSION

Based on the research results, there were three main functions of performing arts: an entertainment function, an educational function, and a social function. These three functions could be one of the educational media that could create a relaxed and pleasant atmosphere. This atmosphere was activated by social nerves. This nerve was expected to activate FFA so that effective communication could be created on diabetes performing arts.

VI. ACKNOWLEDGMENT

The authors would like to thank Universitas Muhammadiyah Yogyakarta, all patients with DM, Local Government, and the Health Office of Sleman. Thank you for your time, place, availability, and resources so that this research can be well conducted.

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