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Research article

The cultural practices of *Bamar* diabetic patients: An ethnographic study

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ABSTRACT

Background: Many qualitative studies on the feelings and lived experiences of diabetic patients have already been conducted in European and Asian countries. However, little is known about the cultural practices of diabetic patients among the Bamar population of Myanmar.

Aim: The aim of this study was to explore the cultural practices of Bamar diabetic patients in Myanmar.

Methods: The conceptual framework of this ethnographic study was based on Spradley's ethnographic theory and Leininger's cultural care theory. Seven participants who met the preset criteria were purposively selected from Anawmar quarter, Tharkayta Township, Yangon. Their cultural practices were studied through participant observations, ethnographic interviews and writing field notes. Collected data were analyzed step-by-step using Creswell's data analysis method.

Findings: The nine main themes that emerged were: reasons for late awareness of diabetes, misconceptions, cultural beliefs and practices, non-adherence, cultural influences on controlling diet, limitations in physical activities, suffering of living with diabetes, emotional reactions and coping by way of religious or spiritual beliefs. Fourty-six subthemes support the main themes.

Discussion: It was found that Bamar diabetics in this study were being strongly influenced by cultural beliefs and practices on treatment choice and controlling diet. They believed that diabetes is a curable disease, and its cause is due to cultural factors such as *karma* from either a previous or their current life. *Bamar* diabetic patients in this study used a variety of medicinal plants and traditional medicines due to availability at affordable prices.

Conclusion: Although some cultural beliefs are not harmful, some have detrimental effects on these patients' health. Hopefully, this study may provide information which can reduce cultural influences on *Bamar* diabetic patients. The results of this study highlight patients' needs for nursing personnel when it comes to providing effective culturally-tailored care.

Summary of relevance

Issue: Little is known about the cultural practices of Bamar diabetics.

What is already known: Diabetics in European and Asian populations have a wide variety of cultural practices in terms of diabetes management including diet, traditional medicine and physical activities.

What this paper adds: Bamar diabetics have some misconceptions about causes and management of diabetes that are influenced by their cultural beliefs and practices. Although some cultural beliefs and practices are beneficial for patients' health, such as use of medicinal plants which have been tested, other practices used are harmful for their health. For example, hot fomentation has harmful effects on patients who are suffering from diabetic neuropathy. It is essential that health care professionals, including nurses, understand diabetics' cultural beliefs and practices. If they can deliver culturally-tailored interventions for diabetics, patients' compliance to diet, drug and exercise regimes may be improved.

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1. Introduction

World Health Organization (2016) estimates that, globally, 422 million adults aged over 18 years were living with diabetes and prevalence of diabetes was 8.5% in 2014. In Myanmar, diabetes is estimated to account for 0.9 % of all morbidity and 1.3 % of all mortality in 2016 (Ministry of Health and Sports, 2018). The prevalence of diabetes in Myanmar is 10.5 % (males - 9.1 % and females - 11.8 %) (Ministry of Health, 2014).

A number of modifiable factors contribute to diabetes risk and act as a barrier to accessing health care services, including lack of access to culturally appropriate care, language barriers and non-compliance with health recommendations due to religious and cultural beliefs (Thow and Waters, 2005). General approaches to providing diabetes care should be followed: patients of all ethnic groups need to be assessed for the impact of cultural and religious practices on diabetes care. Cultural attitudes toward food, obesity and exercise need to be assessed and taken into account (American College of Physicians, 2007). Awareness of the need for cultural sensitivity is the first step toward providing sensitive and competent diabetes education (American Association of Diabetes Educator, 2015).

In a study involving migrant Latino adults, it was revealed that several sociocultural influences impact diabetes self-management practices. Latino culture had both positive and negative consequences on diabetes management (Weiler, 2007). The findings of a previous study on 211 Chinese Americans diagnosed with diabetes indicated that they may benefit from acculturation to mainstream society, because increased acculturation was associated with increased health seeking behaviors (Xu et al., 2011). Another Mexican-American study reported that participants with Type 2 diabetes were satisfied with a culturally-tailored intervention and that it was effective and functional (Vincent, 2008). Renfrew, Taing, Cohen, Betancourt, Pasinski & Green (2013) indicated that certain cultural beliefs strongly affect Cambodian patients' understanding of diabetes and self-management and, patient-centered, cross-cultural care with an emphasis on the needs of Cambodians as well as culturally appropriate diabetes education for patients are recommended.

Kasole et al. (2019) reported that 67.2% of diabetic patients in Northern Tanzania use traditional medicines to manage their diabetes, including 58.6% who reported using both conventional medicines and traditional medicines. A study conducted in Thailand found a high prevalence of herbal medicine use among chronic disease patients and Perennial rosette grass (Centotheca lappacea (L.) Desv) was widely used for diabetes wound (Peltzer and Pengpid, 2019). Sixty-seven (21.6%) of the Jordanian patients with diabetes used herbal therapy and the logistic regression showed that the lower the self-care and the higher the beliefs, the more likelihood the patient uses herbal therapy (Gharaibeh and Tawalbeh, 2018).

The overall prevalence of any TCAM (Traditional Complementary and Alternative Medicine) use in a community population in Myanmar was 95.1% (Peltzer, Win-Myint-Oo & Pengpid, 2016). With the prevalence of more than 10%, diabetes needs a special attention including the psycho-social management and the major challenges in Myanmar are public health seeking behavioral issues, presence of traditional medicine, lifestyle and diet and issues pertaining to religion (Than-Than-Aye, Moe-Wint-Aung & Ei-Sandar-Oo, 2014).

An ethnographic study conducted in Thailand showed that Thai patients manage their diabetes according to their beliefs in both modern and traditional knowledge, including the cause of their illnesses being due to cultural factors such as *karma* (actions from child to adult). Buddhist values regarding the middle path contribute positively to dietary change; on the other hand, the importance of rice in the Thai diet can impede successful self-management strategies (Sowattanangoon et al., 2009). Findings of another Myanmar study highlighted that the majority of its citizens are Buddhists and the theme of Buddhism is sacrifice, patience, sharing and forgiving. As a result of Buddhist teaching, one can understand the nature of disease and how to withstand the consequences of chronic diseases (Than-Than-Aye, Moe-Wint-Aung & Ei-Sandar-Oo, 2014).

Nurses need to deliver holistic nursing care to patients; therefore, nurses must take into consideration not only physical and emotional but also the cultural needs of patients. As every culture is unique and cultural beliefs and practices influence patients' health care seeking behaviors, nurses need to accept such kinds of practices when they are encountered in the community setting. However, some diabetic patients use traditional plants and home remedies without expert guidance or advice. This can create unnecessary complications such as infections, blindness and the need for amputations. For these reasons, nurses need to explore cultural practices of diabetic patients thoroughly. When it comes to providing nursing care, culturally-tailored interventions are more effective for controlling diabetes. Hence, the present ethnographic study may help as a stepping stone for delivering culturally competent nursing care.

2. Methods

2.1. Research approach

This research project was designed as a microethnographic study to elicit the cultural practices of Bamar diabetic patients. The conceptual framework of this study was based on the ethnographic theory purported by Spradley (1980) and cultural care theory founded by Leininger (1985). Spradley (1980) lists the six steps of ethnography as: selecting an ethnographic project, asking ethnographic questions, collecting ethnographic data, making an ethnographic record, analyzing ethnographic data and writing an ethnography. Ethnographic researchers refer to "emic" and "etic" perspectives. An emic perspective refers to the way the insider's view members of the culture regard their world. In contrast, the etic perspective is the outsider's interpretation of the experiences of that culture (Polit and Beck, 2010).

The prevalence of DM in the Yangon Region was high, and significantly higher in urban (12.1 %) than in rural areas (7.1%). One possible explanation for this is an association between urban stress and DM. Urban Myanmar residents eat fast food and drink high caloric soft drinks and alcohol more frequently than rural dwellers (Wai-Phyo-Aung, Aung-Soe-Htet, Bjertness, Stigum, Chongsuvivatwong & Kjollesdal, 2017). Most city residents are more likely to have low level of physical activities due to various reasons: no time and no place for doing exercise and sedentary life-style (Than-Than-Aye, Moe-Wint-Aung & Ei-Sandar-Oo, 2014).

Anawmar quarter, Tharkayta Township, a sub-urban area in Yangon where there are poor health outcomes due to sedentary lifestyles was selected for this ethnographic study. As urbanization is one considerable factor for increasing the prevalence of diabetes, this township is preferable to rural areas for the purposes of this study. Key informants are chosen purposively, guided by the ethnographer's informed judgments (Polit and Beck, 2010). Therefore, purposive sampling was used to select type 2 diabetic patients. A snowball sampling technique was used. With the help of the midwife of Anawmar quarter, a previously identified participant assisted in identifying other potential participants. Twenty patients were met and seven informants were then chosen purposively to get the richer possible information. Hot fomentation by a traditional practitioner who had lived in this quarter for many years was observed by accompanying the patients.

The inclusion criteria for eligible participants were that they are of Bamar ethnicity, speak the Myanmar language, aged between 40 and 60 years, have been diagnosed with diabetes for at least 1 year, that they have type 2 diabetes, and are willing to talk about their illness experiences. Diabetic patients with severe ailments such as loss of vision and amputation were excluded.

2.2. Procedure

The study was conducted from June to December 2011. Data was generated through participant observation, conducting ethnographic interviews, reviewing records, writing field notes and taking photographs. Data collection for this study was carried out until new data was unable to be elicited through the ethnographic practice of using the 'researcher as instrument'. The fieldwork lasted for four weeks (16th June to 13rd July 2011). After that, ethnographic interviews (descriptive, structural and contrast questions) were initiated, ranging from 30 min to 1 h, at least three times per participant. All interviews were audiotape-recorded after getting informed consent.

Personal field notes were also written by the researcher during and after the interview, to record nonverbal behaviors, a description of the environment, summary information and clarification of data. Some photographs of cultural health practices were taken after getting permission. The researcher also held discussions with the Township (Community) Health Nurse for field notes. Moreover, records and documents from the township health center were also reviewed to determine their influence on current behaviors and to verify reliability and validity. In order to assure trustworthiness of findings, several strategies were used such as: member checking of findings from participants through discussions about the interview data, triangulation of data gained from interviews with field notes jotted down, observation of health seeking behaviors during illness, and prolonged and persistent engagement with the community. Figure (1) depicts the overall research process through three distinct but connected ethnographic stages.

2.3. Data analysis

Data analysis is an ongoing process involving continual reflection on the data, asking analytic questions and writing memos throughout the study (Creswell, 2003). The collected data were analyzed using the six specific steps described by Creswell (2003): organize and prepare the data for analysis; read through all the data to obtain a general sense of the information and to reflect on its overall meaning; begin detailed analysis with a coding process; use the coding process to generate a description of the setting or people as well as categories or themes for analysis; advance how the description and themes will be represented in the qualitative narrative and making an interpretation or meaning of the data.

Each participant's responses were tape-recorded and the observed data were noted in field notes. The researcher is culturally immersed with the phenomena and cultures of the ethnic group (cultural transition) because of being native Burmese. A line-by-line analysis of the

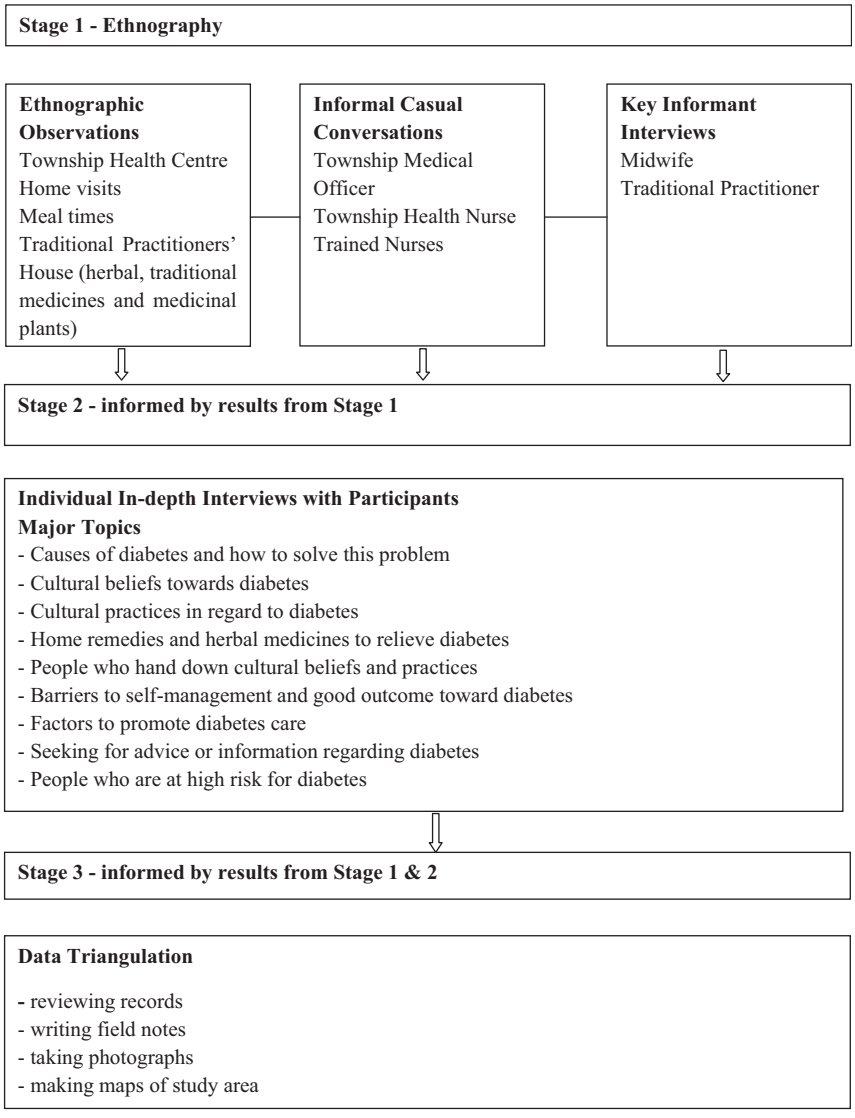

Figure 1. Flow chart showing connections between ethnographic stages.

original Bamar transcripts of the semistructured interview was performed. Additionally, all transcripts were translated into English by two professional bilingual native Burmese translators. All the authors independently reviewed the English transcripts, discussed participants'underlying reasoning, and reached agreement on the themes (linguistic reflexivity). Subsequently, these organized data were read to obtain a general sense of the information and its overall meaning. Data validations were completed by checking of field notes, reflective diaries and listening to the interview records. Moreover, these data were analyzed with a coding process. All the data were organized into major themes. A thematic analysis was developed after the data had been collected. The researcher endeavored to produce a description and themes of the collected data that are advanced and valid. As a critical point, the meaning of the interpretation of the theme was attempted.

2.4. Ethical consideration

Prior to conducting the study, ethical approval was provided by the institutional review board of the University of Nursing, Yangon (IRB number 2011/825) and the date of the approval was June 14, 2011. The researchers explained the participants' rights to withdraw from the study at any time and for any reason and their right to confidentiality. The interviews began after obtaining signed informed consent forms from the participants.

Table 1. Socio-demographic and clinical characteristics of participants.

Characteristics of Participants With Diabetes ($N = 7$)	Percentage or M value
Age	
Mean age (range) in years	57 (53-60)
Gender	
Male (1)	14.3 %
Female (6)	85.7 %
Marital Status	
Married (4)	57.1 %
Divorced (1)	14.3 %
Widowed (2)	28.6 %
Single (0)	
Education Level	
Illiterate (0)	
Completed Primary School (3)	42.9 %
Completed Secondary School (3)	42.9 %
Completed High School (1)	14.3 %
Graduated (0)	
Occupation	
Government Employee (0)	
Own Business (2)	28.6 %
Company Staff (0)	
Manual Laborer (5)	71.4 %
Years diagnosed with Diabetes Mellitus	
Mean years (range) diagnosed with DM	6.29 (2-12)
Treatment of DM	
Oral anti-diabetes agents (7)	100 %
Oral agents and insulin	
Diet only	
Insulin only	
No therapy	
Herbal remedies	
Reported using herbal remedies (7)	100 %
Family History of DM	
1st degree relatives with DM (3)	42.9 %
2nd degree relatives with DM (0)	
No family history of DM (4)	57.1 %
Complications	
Cardiovascular disease (1)	14.3 %
Hypertension (1)	14.3 %
Neuropathy (3)	42.9 %
Nephropathy (0)	
Retinopathy (0)	
Foot Damage (0)	
More than one complication (2)	28.6 %

3. Findings

A total of 7 participants diagnosed with diabetes mellitus were selected for this study (details in Table 1). Nine main themes emerged from participant observation and ethnographic interviews. Table 2 describes the themes and sub-themes.

3.1. Reasons for unawareness of diabetes

Most of the participants in the study realized that they had diabetes only when they suffered from some health problems such as muscle ache, limitations in range of motion, thirstiness, frequent urination and ulcers on the back. These symptoms urged them to seek medical care where their blood glucose level was checked and it was found that they already have diabetes. Although most of the participants were concerned about the symptoms, one participant did not think polyphagia was a problem by saying:

> "I wanted to eat food more than before and felt hungry all the time. I thought that it was because I was healthier than before." (Participant 2)

3.2. Misconceptions

Bamar diabetics classify diabetes as "dry" or "wet"; this is not based on the Western nor traditional medicine, just merely information given to them and some participants reported that the dry or wet classification is based on whether the ulcer is healed or not.

> "I know that there are two types of diabetes, dry and wet. I suffer from dry diabetes. So, the ulcers can be healed. If I were a sufferer of wet diabetes, bruises would appear on my body and they would not be healed easily." (Participant 2)

3.3. Cultural beliefs and practices

Cultural beliefs, values, and customs influence entry into the health care system and personal health practices. Some cultural practices are acceptable; however, some have harmful effects for health. In this study, many diverse cultural practices regarding diabetes are revealed.

3.3.1. Cultural beliefs of diabetes

The understanding, belief and meaning of diabetes mellitus provided the primary information on self care management for the patients, especially understanding and belief in the socio-cultural context.

> "According to Bamar concepts, there are four basic properties of matter. They are pa-hta-wi (solidity), tay-zaw (heat), ar-bor (cohesion or fluidity), war-yaw (volatility or mobility). They must be in balance. If one of them is extreme, we feel ill." (Participant 6)

3.3.2. Cultural influences on treatment regimen

Study participants took both Western and traditional medicines with different attitudes and they thought that diabetes can be completely cured by the traditional medicines. Six participants used both Western and traditional medicines.

> "Taking both Western and traditional medicine is more effective for controlling diabetes. To be safe, there should have a half hour gap between taking them. I have been taking both medicines since I was diagnosed as a diabetic." (Participant 1)

Table 2. Themes and sub-themes of cultural practices of Bamar diabetic patients.

Themes	Sub-themes

Reasons for Unawareness of diabetes	• Unawareness of risk factors
	  • Unawareness of eating too much sweet foods as a risk factor
	  • Unawareness of drinking the sweetened beverages a risk factor
	  • Unawareness of eating too much edible oil as a risk factor
	  • Unawareness of what the risk factor of diabetes is
	• Unawareness of signs and symptoms of diabetes

Misconceptions	• Misconception of dry and wet diabetes • Misconception about giving birth of many children as a risk factor • Misconception as curable disease • Misconception of diabetes being caused by germs • Misconception of physically working hard as a risk factor

Cultural beliefs and practices	• Cultural beliefs of diabetes
	  • Diabetes as imbalance between heat and cold
	  • Diabetes as imbalance between four kinds of dat (Four basic properties of matter)
	  • Diabetes as past misdeeds (*bad karma*)
	  • Diabetes as bad digestive faculty (*wan-mee*)
	• Cultural influences on treatment regimen
	  • Taking combined treatments
	  • Influencing people on treatment choice
	  • More reliance upon traditional medicines
	• Cultural practices to increase blood glucose level
	• Cultural practices used for lowering blood sugar level
	• Cultural practice used for relieving the Muscle Pain (Hot Fomentation)
	• Use of home remedies and medicinal plants for diabetes
	• Use of traditional medicines and practices for diabetes
	• Use of vegetables to reduce blood glucose level
	• Use of traditional medicine and practices to relieve some symptoms of diabetes

Non-adherence	• Do not follow the doctor's instructions • Irregular health care seeking
Cultural influences on controlling diet	• Difficulty in changing the habits of eating too much rice • Difficulty in refraining from eating a variety of local sweet fruits • Difficulty in changing the habits of eating sweet-tasting foods and drinks • Edible oils and fats • Attitude of “food is medicine, medicine is food” • Attitude of “enough is better than too much”
Limitations in Physical Activities	
Sufferings when living with diabetes	• Sufferings of visual disturbance • Sufferings of numbness • Sufferings of ischaemic heart disease • Sufferings of urinary tract infections • Limitations in daily routines
Emotional reactions	• Feeling of despair at the chronic nature of the condition • Frustration with not having control in spite of best efforts
Coping by ways of spiritual or religious beliefs	• Prayer and faith • Meditation • Fortune teller • *Nat* (Divinity) • Helping others

3.3.3. Cultural practices to increase blood glucose level

The majority of participants mentioned their cultural practices to increase blood glucose level such as eating candies, jaggery and drinking sugar juice.

> “It is a Bamar traditional practice that women over 40 years have to eat one tablespoon of sugar every night not to suffer from premenopausal symptoms. I did that traditional practice. The elders advise us to eat jaggery when we feel indigestion. Jaggery is also good for flatulence; therefore, I eat it after meals.”(Participant 2)

3.3.4. Cultural practices used for lowering blood sugar level

Some participants expressed their cultural practices to lower their blood sugar level in different ways.

> “I did not remember who told me. It was a less known kind of home-made solution which could lower blood sugar levels. To prepare the solution, a green coconut fruit, a lime and dried tea leaves are required. Firstly, I had to pour lime juice and hot boiled water with tea leaves into a green coconut. After one day, it was ready to drink.” (Participant 2)

3.3.5. Cultural practice used for relieving muscle pain (hot fomentation)

Hot fomentation is one of the methods widely used by traditional practitioners. Some participants in this study receive hot fomentation for muscle pain and ache at the traditional clinic, despite having diabetes.

> “I went to the traditional medicine clinic for muscle and joint aches. The traditional practitioners treat the pain with hot fomentation. Although it can relieve pain, joint areas are sensitive to heat and sometimes, I felt very hot and it could cause burns.” (Participant 2)

3.3.6. Use of home remedies and medicinal plants for diabetes

Although most study participants were taking oral hypoglycemic agents, they also used a variety of herbal remedies and medicinal plants to control their diabetes.

"I chew pyar-mee-swae (Gynura procumbens (Lour.) Merr) leaves before meals. I eat them as fresh leaves by chewing them before meals. I also eat the leaves of mè-zali (Cassia siamea)." (Participant 3)

3.3.7. Use of traditional medicines and practices for diabetes

Myanmar traditional medicine is truly an inherited profession, the development of which has interrelations with convictions and the socio-cultural system in Myanmar (Ministry of Health, 2011).

"With the hope of my diabetes being cured completely, I take both the drugs prescribed by the doctor and traditional practitioner. Thaw-ma (Myanmar traditional medicine) is prescribed by a traditional practitioner for patients whose urine is a yellowish colour and has a bad smell." (Participant 1)

3.3.8. Use of vegetables to reduce blood glucose level

Vegetables are an important part of a healthy diet and, if sufficient amounts are consumed daily, they can help in treating major diseases such as diabetes. The study participants used not only the plants as a medicine but also vegetables for daily meals as it is suitable food for diabetics.

"As soon as my diabetes was diagnosed, I started eating rice with boiled kan-zun-ywet (water convolvulus), chin-baun (Hibiscus sandariffa or roselle) and tamarind leaves (Tamarindus indica Linn.)." (Participant 3)

3.3.9. Use of traditional medicine and practices to relieve some symptoms of diabetes

Bamar people use traditional medicines to relieve symptoms of diabetes due to their cost effectiveness and being available in their environment.

"Itchiness is relieved by applying tha-nat-kha (Limonia acidissima) on the whole body after bathing. I clean my wounds with cool water which had been boiled with Ta-mar leaves (Azadirachta indica or neem tree leaves)."(Participant 1)

3.4. Non-adherence

Some participants received treatment from their doctor; however, this treatment was adjusted by themselves depending on their conditions, without checking their blood glucose level.

"As my doctor prescribed, I take medicine. Although the doctor asked me to take the medicine before meals, I take it with food. I think it would be more effective." (Participant 6)

3.5. Cultural influences on controlling diet

Rice is the staple food in Myanmar. In this study, all participants reported rice as the most common food consumed.

"Now, I am eating that rice is suitable for diabetics (Basmati). In the past, I ate too much rice. I used to eat a plateful of white rice (a kind of rice which has a fragrant aroma when cooked)." (Participant 3)

Bamar diabetics hold the proverb "food is medicine, medicine is food" among their convictions.

"The doctor advised that diabetics should eat food in accordance with their blood glucose level. If there is no control in eating food, there may be a problem. Food is medicine. Medicine is food. The only thing we need is precaution. Doctors said that we should avoid harmful food for us." (Participant 6)

3.6. Limitations in physical activities

All participants view exercises and physical activities as "being active makes the body healthy". However, they faced some limitations in doing physical exercise because they are physically debilitated to some extent due to diabetes.

"It is true that being active makes the body healthy. After suffering from diabetes, I cannot even do walking exercise because the soles of my feet are painful. I do exercise such as flexion, extension and rotation of my head, hands and legs while standing in one place. I cannot go jogging."(Participant 2)

3.7. Sufferings of living with diabetes

Most of the participants reported their sufferings as being a result of complications such as visual disturbances, numbness, ischemic heart disease and urinary tract infections.

"Now, I cannot see everything clearly. Therefore, I have difficulties in performing my work." (Participant 5)

3.8. Emotional reactions

The majority of participants felt despair at the chronic nature of their condition and frustrated with not having control in spite of their best efforts such as following the treatment regimen, dietary management and moderate levels of physical activity. A chronic health condition brings about numerous harms: loss in social relationships, financial losses, physical impairments and limitations in leisure activities.

"Because of the chronic nature of the disease and long-term treatment, I am disappointed. Sometimes I had a strange thought that death was better than being alive for me. I do not want to be a burden upon my family." (Participant 6)

3.9. Coping by way of spiritual or religious beliefs

In this study, participants said prayers, having faith helped to relieve their psychological symptoms. Likewise, they also practiced meditation: by perceiving that meditation positively affects the health of both body and mind, encouraging peace and calm.

"From the religious point of view, these are the debts of past deeds. I recite religious verses and say prayers to Buddha every morning and at night. I keep Sabbath during the whole lent." (Participant 2)

The majority of Bamar people believe in fortune tellers and they ask them for their advices in terms of health, wealth, education and social affairs.

"According to magical contrivance, if a rich person is ill, they must build a pagoda and monastery. If a poor person is ill, they must make a small donation such as mending streets and bridges; or supporting the bench of a bayan tree with a bamboo pole." (Participant 6)

4. Discussions

In this study, cultural beliefs and practices that are beneficial, and those that are harmful, were identified. Such beliefs are still strongly influencing Bamar diabetics' self-care management, adherence and health care seeking patterns. Screening and early diagnosis for diabetes mellitus is essential in order to start effective management and prevent complications in the long run. As the participants in this study did not know the risk factors and ignored screening for diabetes, their diabetes symptoms were recognized late and unexpectedly. This is consistent with

Mufunda et al. (2012), who stated that some participants thought passing lots of urine, feeling thirsty, losing weight, sweating and tiredness were natural. Diabetes education is the cornerstone of successful diabetes management; therefore, the signs and symptoms of diabetes should be broadcast widely to prevent late awareness of diabetes.

Some participants in this study indicated misconceptions about diabetes: that there are only two types of diabetes and that it is a curable disease. This is consistent with Abdulrehman et al. (2016), who found that the respondents have misconceptions about diabetes and they believed that mosquitoes could transmit diabetes. This misconception may render the general public to be less prudent in taking measures to prevent diabetes. Misconceptions regarding diabetes mellitus have impacts on their lifestyle, dietary intake, physical activity and adherence to medical management. The reason for prevailing misconceptions about diabetes mellitus is multi-factorial. These include lack of knowledge about diabetes, poor education and cultural beliefs. It is very important to identify the prevailing misconceptions in the community to be able to launch proper health education programs for controlling and prevention of diabetes mellitus.

Beliefs regarding disease causality tend to be consistent with cultural values, which consequently shape patients' decisions for action. It is believed that cultural factors influence health-seeking behaviors in chronic diseases. One of the participants expressed their understanding of diabetes as a balance of "hot" and "cold" elements, which is consistent with balancing the four qualities of heat, cold, dryness and dampness with the four bodily fluids: phlegm, blood, yellow, and black bile is a specific way of conceptualizing the body and diet, where illness manifested as imbalance within the fundamental fluids (Cridland, 2017).

The research findings showed that the participants had different cultural beliefs when it comes to diabetes. Some participants reported that diabetes is caused by one of the four basic properties of matter (solidity, heat, fluidity and volatility) being in extreme state. Two out of the seven participants in this study stated that diabetes is due to past deeds (*bad karma*). These findings are consistent with a previous study by Amarasekara et al. (2014) which indicated that key informants believed their diabetes was due to bad *karma* because of bad deeds committed in their past or current life. Therefore, cultural values and beliefs greatly influence how people understand and treat diabetes.

Some Bamar cultural practices are associated with one of the risk factors for hyperglycaemia. Most of the participants had the practice of consuming jaggery as a snack or medicine for relieving menopausal symptoms. They valued the digestive effects of jaggery. Jaggery, made from sugar cane juice or palm sap, reserves a distinct place in Bamar culture and is used in many rituals and customs. Bamar usually eat the jaggery and serve it to visitors as part of their hospitality. It is consistent with Mukherjea et al. (2013) revealed that respondents described their evaluation of food-related behaviors within a unique cultural framework and believed that some Indian sweets are good for digestion (jaggery) and Manisha et al. (2017) reported that prevalence of high glycemic index diet including jaggery are found dominant among diabetes patients in Jaipur and its periphery. If people avoid these faulty dietary habits and sedentary lifestyle, then development of diabetes will be controlled upto some extent.

Some participants received hot fomentation at traditional clinics in order to relieve muscle pain and aches, as they believe that such treatment can remove the blood clots in the vessels. Patients with neuropathy, often apply hot fomentation to get relief from pain. Due to neuropathy, they are unable to feel the temperature and end up burning their feet (Tripathi and Saboo, 2019). Therefore, healthcare professionals should develop strategies to educate the public about diabetes, in the hope of changing behaviors of those who are treating it incorrectly, in order to mitigate complications.

The Bamar diabetics in this study have applied herbal and medicinal plants widely for many years until now. This findings are supported by the majority of the diabetic participants in Northern Tanzania believed that combining conventional and traditional medicines improved the effectiveness of treatment and reasons given for using traditional medicines such as indigenous vegetables included the high cost of conventional treatment and the availability and accessibility of the traditional medicines (Kasole et al., 2019). Likewise, many diabetic patients in Myanmar tire of taking drugs and are willing to switch to herbal drugs, which are relatively cheap compared to western drugs. However, these alternative medicines are not supported by good scientific studies. To fill this gap in Myanmar, research studies have been conducted to evaluate medicinal plants and traditional medicines, and whether they should be clinically applied or not. Therefore, health care professionals including nurses need to know which are the scientifically tested and safe medicinal plants and instruct their patients with the right information regarding traditional medicines.

Golozar et al. (2017) stated that important public health implications especially for countries where white rice is a major staple and diabetes is increasing rapidly incidence is high. White rice, being a staple food of Myanmar people, has raised another issue. In general, Myanmar people eat three meals a day (breakfast, lunch and dinner) and in each meal rice is the main part that takes about 75% of their daily intakes (Than-Than-Aye, Moe-Wint-Aung & Ei-Sandar-Oo, 2014). After being diagnosed with diabetes, all participants realized that it was their responsibility to modify their eating habits as recommended by their doctor or nurse. Initially, patients replaced white rice with wholegrain Basmati rice is consistent with Datz (2010) which stated the researchers from the Harvard School of Public Health (HSPH) have estimated that replacing 50 g of white rice with the same amount of brown rice would lower risk of type 2 diabetes by 16% and Mohan et al. (2014) revealed that consumption of brown rice in place of white rice can help reduce 24-h glucose and fasting insulin responses among overweight Asian Indians. Even though health care professionals deliver health education about diabetic diets, information about rice that has a low glycemic index that is suitable for diabetics should be emphasized.

Most of the participants in the study prayed Buddha and meditated more frequently than before. Moreover, they worshipped *nats* (or spirits) and went to fortune tellers for their advice to avert an impending event of suffering from their diabetes. Although the magical contrivances did not relieve the disease, the participants felt emotional safety by following these practices. This coheres with the results of Jafari et al. (2014) showed that religiosity and spirituality are a major determinant of quality of life, while it assists with coping with a chronic disease and promotes optimism and Medina et al. (2016) reported that mindfulness-based interventions (MBIs) can be seen as preventive and complementary interventions, particularly for the relief of symptoms related to depression and anxiety in diabetic patients and also in the management of other factors, including mindful eating and treatment adherence. Our study supports previous literature and also adds several new insights not previously described. Importantly, health care professionals should understand how Myanmar cultural influences impact self care management of diabetics in order to provide culturally sensitive care that effectively meets the needs of those patients. Finally, it is also important to educate the public about both beneficial and harmful effects of herbal plants that are widely distributed among them.

5. Limitations of the study

The cultural practices of Bamar diabetics in this study were revealed by interviews and participant observation. Therefore, future qualitative studies should be conducted through focus group discussions in order to elicit more data from different perspectives. In addition, as diabetics usually use traditional medicines and medicinal plants handed down from their ancestors and these are cost effective, specific research studies on such practices should be conducted, to reduce harmful effects of misuse. It is suggested that a similar study among different tribes about their cultural beliefs and practices regarding diabetics should also be conducted, because different ethnic groups have unique cultural beliefs and practices. This study revealed cultural practices among the sub-urban

population and further research on diabetics from remote areas should also be conducted.

6. Conclusion

Aspects of Bamar culture influence the perception and management of diabetics, so they should not be taken for granted. After conducting research studies related to medicinal plants and to practices by health care professionals including traditional practitioners, awareness raising regarding safe and harmful traditional medicines, plants and practices should be enhanced because diabetics will continue to use them due to their cost effectiveness and chronic nature of their disease. The results of the study could be very helpful for health care professionals. Hopefully, this could help to reduce the cultural gaps between diabetics and themselves. As cultural perspective is one of the most indispensable components of holistic care, nurses should take into consideration the unique cultural beliefs and practices of diabetics from different ethnicities. All in all, the ultimate goal of this study is to help nurses provide culturally sensitive care for diabetic patients.

Declarations

Author contribution statement

H. S. Wah Oo: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

K. Nau: Conceived and designed the experiments, Analyzed and interpreted the data, Wrote the paper.

K. Mar Kyi: Conceived and designed the experiments, Analyzed and interpreted the data.

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The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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