Dietary knowledge and practices of diabetes mellitus patients at the Polokwane municipality clinics, Limpopo province, South Africa

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Abstract

Dietary management is considered to be the cornerstone of glycaemic control in diabetes mellitus patients. A qualitative study applying the exploratory, descriptive and contextual design was conducted at two clinics in the Polokwane municipality in Limpopo province. The purpose of the study was to explore and describe the dietary knowledge and practices of diabetic mellitus patients. Purposive and convenience sampling was used to select diabetic patients who have been receiving insulin treatment at the clinic for a year. Face-to-face interviews were conducted using a semi-structured interview guide to collect data. Data saturation was reached after interviewing fifteen patients. Data were analysed using Tech's open coding methods. The following theme and sub-themes emerged: Relevant food for diabetics, challenges experienced by diabetic patients regarding compliance with diet and preparation of meals by family members. It is recommended that educational programmes for the patient and family members regarding diet be intensified, giving reasons why certain foods should be consumed, advising on alternative cheaper fruits and vegetables during different seasons, the emphasis of not skipping meals and the involvement of family members as they care for the diabetic patients.

Keywords: Diabetes mellitus, patient, diet, food.

Introduction

The estimated global prevalence of people with diabetes mellitus (DM) in 2000 was 171 million (Al-Sarihin et al., 2012; Phillips, Mashige & Clarke-Farr, 2012). This figure which is 6.5% of the world's population is estimated to rise to 366 million in 2030 (Al-Sarihin, et al., 2012; Hossain et al., 2007; Wild et al., 2004). Furthermore, about 81.4% of these people live in the developing countries (Wild et al., 2004). The prevalence rate of diabetics in all the nine provinces of the Republic of South Africa was estimated to be 2.4% and this figure continues to grow (Republic of South Africa, 2002).

Diabetes mellitus is a chronic disease resulting from insulin insufficiency or ineffectiveness (International Diabetes Foundation: IDF, 2009; Malathy et al.,

2011; Phillips, Mashige & Clarke-Farr, 2012). This disease is one of the most common non-communicable diseases worldwide (Al-Sarihin et al., 2012; Hossain et al. 2007; Wild et al., 2004). Diabetes mellitus is associated with abnormalities in carbohydrate, fat and protein metabolism (Malathy et al., 2011). The clinical signs and symptoms include excessive thirst (polydipsia), excessive urine production (polyuria), loss of weight, increased appetite (polyphagia), genital itching and visual disturbances (Weinberger et al., 1995)

For diabetics, healthy eating is not simply a matter of "What one eats" but also when one eats, how much one eats and what food to avoid (Walley, Blackmore, Froguel, 2006; Kristensen, 2003; Pereira, Jacobs & Pims, 2002). As a result there has been a long history of dietary treatment of this disease. For example, dietary treatment of DM was used in Egypt as long as 3500 B.C. and in India more than 2000 years ago (Pereira et al., 2002).

Studies conducted by Badruddin et al. (2002), Al-Maskari et al. (2013), Abioye-Kuteyi et al. (2005), Gul (2010), Malathy et al. (2011), Saleh et al., (2012) and Al-Sarihin et al. (2012) assessing the knowledge, attitude and practices of DM patients found that the respondents had a poor knowledge of this disease including its dietary requirements. Furthermore, the lack of information about diet, which is suitable for diabetic patients, leads to poor control of the glucose levels. This poor management of glucose levels may lead to complications such as retinopathy, blindness and diabetic foot leading to poor quality of life and increased expenditure by hospital to treat these complications.

Most studies which focused on the knowledge attitude and practices of diabetics were quantitative in nature (Badruddin, et al., 2002; Abioye-Kuteyi et al., 2005; Gul, 2010; Malathy, 2011; Phillips et al., 2012; Saleh et al., 2012). A qualitative study conducted in South Africa by Mash et al. (2012), focused on the views of diabetic patients regarding the group diabetic education programme they received. The aim of the present study was to explore and describe the dietary knowledge and practices of DM patients.

Methodology

Design

A qualitative exploratory, descriptive and contextual design was chosen as the most suitable for this study. This design allowed the researcher to explore and describe the knowledge and practices of the diabetic patients based on the participants' context regarding diet (Morse & Field, 1995; Burns & Grove, 1993).

Population and sampling

Two clinics in the Mankweng area of Polokwane municipality were purposively selected. The population for this study included all males and females with diabetics who were receiving home-based insulin treatment. Purposive and convenience sampling method were used to select the participants at the two clinics. The inclusion criteria were: Patients who were on insulin treatment and have been collecting their medication at the clinics for at least a year and were aged 60-75 years.

Data collection

Face-to-face interviews, using a semi-structured interview guide, were used to collect data from the participants at the two clinics. A central question, *"Please tell me about your diet regarding diabetes mellitus"* was asked to all the participants. Subsequent follow-up questions were also asked to encourage the participants to elaborate on their responses. Data saturation was reached after interviewing fifteen participants and no new information was forthcoming (Brink, 2006). The interviews were tape recorded and field notes taken to capture non-verbal communication.

Data analysis

Transcribed data and field notes were analysed using Tech's open coding method as described in Cresswell (2009). The researchers read through all the transcribed interview transcripts and became immersed in the data. The thoughts were written in margins and similar thoughts were clustered together. Data belonging to the same category were assembled as themes and sub-themes.

Trustworthiness

Prolonged engagement in the field ensured that the researcher built rapport and trust with the participants, thus making it more likely that rich and useful data were collected. To ensure that the interpretations were a good representation of the participants' reality, feedback was provided regarding the categories recorded. Furthermore, purposive sampling and a thick description of the research process were also provided in an attempt to give the reader a sense of the purpose and processes involved in the study (Brysiewitz & Uys, 2005).

Ethical considerations

Ethical clearance to conduct the study was granted by the Medunsa Research Ethics Committee and permission was obtained from the Limpopo Department of Health and Social Development as well as the supervisors of the clinics. All

the participants were informed about the purpose of the research. They were also informed that participation is voluntary and refusal to participate carries no penalty. Those who agreed to participate signed a written consent. The participants were also informed that they had the right to withdraw from the study at any time if they felt uncomfortable.

Results and Discussion

Fifteen diabetic patients participated in the study. Thirteen of the participants were females and 2 were males whose ages ranged between 50 and 70 years. Their weight ranged between 55 and 75kg. The themes and sub-themes which emerged during data analysis are shown in Table 1 and are backed by verbatim quotations from the participants' responses which will appear in italic. Literature control was used to support the findings.

Table1: Themes and sub-themes on knowledge and practices of diabetes mellitus patients with regard to diet.

Themes	Sub-themes
1. Relevant food for diabetics	• Names of food which is rich with fibre • Consumption of different vegetables and fruits every day • Food with no sugar and fats.
2. Challenges experienced by diabetic patients regarding compliance with diet.	• Lack of money to buy food • Poor compliance with regard to number of meals eaten • Having other diseases.
3. Preparation of meals by family members	• Request of family on how to they should prepare meals • Forgetfulness versus refusal to carry out request by some family members

Theme 1: Relevant food for diabetics

There is no disease which provokes greater thought on diet than diabetes (Weinberger, et al., 1995). Furthermore, Weinberger et al. (1995) assert that dietary management alone or in combination with oral drugs and insulin is central to the success of treatment. Exploring the knowledge of diabetics regarding the food they are supposed to eat is very important. It emerged that the participants knew about food recommended for diabetes, and those restricted although they didn't know what the food does in the body and why certain foods are restricted.

Sub-Theme 1.1: Names of food rich in fibre

The study revealed that the participants had knowledge in terms of food which is reach in fibre as evidenced by a participant who indicated that: *"I was told by the*

nurses to eat brown bread and mabele (sorghum) soft porridge for breakfast". It is worrying that the clients could only name brown bread and mabele as fibre-rich food. However, they were unable to explain why such such foods were recommended by health professionals.

The role of high fibre diet in improving glycemic control and the fact that high fibre diet also decreases the risk of diabetes is well established (Schneider & Sobel, 1997). Patients who have participated in diabetic education programmes had improved dietary behaviour and nutritional knowledge (Lim et al., 2009). Education of diabetic patients about diet is an essential component of diabetic management (Jiang et al., 1999) because it improves compliance with diet which leads to lower blood glucose levels (Christensen et al., 2000; Lim et al., 2009).

Sub-Theme 1.2: Consumption of different vegetables and fruits

One participant indicated that he knew about the importance of including different vegetables and fruits. *"Vegetables such as "morogo" and pumpkin (spinach in English) and fruits such as apples and bananas should be included in the meals"*. These were the only vegetables and fruits mentioned despite the fact that there are many vegetables and fruits that are recommended for diabetics.

A study by Liu et al. (2004) reported that the high intake of fruits and vegetables reduces the risk of the incidence of type 2 diabetes. Furthermore, the intake of green leafy vegetables and dark yellow vegetables was beneficial in reducing HbA_{1c} levels. The exact names of the vegetables referred to are not stated. It is of concern that pumpkin was mentioned in the present study because Evo (2013) reported that pumpkin has an extremely high glycemic index and should be avoided or be consumed in very small amounts.

Sub-Theme 1.3: Food with no sugar and fats

All the participants appeared to be knowledgeable regarding the food they were not supposed eat, which is evidenced by the following excerpts: *"I do not eat food with sugar or fats because my sugar levels will be very high"*. *"I am not supposed to eat sweets"*
"No sugar in the tea or coffee". "No Coke, I mean cool-drinks such as Sprite, Fanta, Stoney and Lemon Twist. "I don't eat fatty foods and I don't use oil when I cook cabbage".

Theme 2: Challenges experienced by diabetic patients regarding compliance with diet

Although the clients knew what they could eat like vegetables and fruits it emerged that they couldn't afford to buy them. It was noted that though some knew the food which they were supposed to eat they had challenges.

Sub-Theme 2.1: Lack of money to buy food

It was indicated in the study that the participants lacked knowledge of relevant nutritionts due to their low socio-economic status, which is evidenced by a participant who indicated that:

"I cannot afford to buy all the necessary foods that I need and therefore I just eat meat the day I get paid".

It is not surprising that the participants lacked money to buy food because the diabetic patients interviewed were between 60 and 75 years, therefore most of them are likely to be unemployed. In South Africa, primary health care services are utilised by poor people because they are free of charge. The rich and middle class have medical insurance and will therefore receive their treatment from private doctors.

A population-based study on the prevalence of type 2 DM conducted in the United Kingdom by Connolly et al. (2000) reported that low socioeconomic status was associated with type 2 DM. In the United States of America, low income was associated with a higher prevalence of diabetes whereas in Israel, the incidence of diabetes was inversely related to educational attainment, a proxy for socioeconomic status (des Bordes, 2009).

Sub-Theme 2.2: Poor compliance with regard to the number of meals

The inability of the participants to meet the demands of having to eat six times a day and inability to eat snacks inbetween meals leads to participant's poor compliance with diabetic diet. During the interviews the participants persistently stated that:

"I know that I should eat six meals a day but I cannot eat six meals a day because it cannot be the same porridge throughout the day".
"Sometimes there is hardly ever bread or meat to eat the porridge with".
"I can at the most eat 3 meals that is: Breakfast, lunch and supper".

Sub-Theme 2.3: Having other diseases

In this study most of the participants were hypertensive and that it is a challenge for them because they cannot eat salt because of hypertension. This is evidenced by a participant who said:

"I do not eat food with salt because I have high blood pressure and it is difficult for me to enjoy food without salt nor sugar".

Theme 3: Preparation of meals by family members

The participants live with other family members and those family members who prepare meals for the whole family. Therefore, it is very difficult to dictate how the meals should be cooked because not all the family members are sick.

Sub-Theme 3.1: Request of family on how they should prepare meals

The participants indicated that they know how to prepare diabetic food and they always inform their families not to serve them food with sugar and fat. This was indicated in the interviews by participants who stated that:

"When they cook at home I told them not to add sugar in the pumpkin".
"Do not add sugar when you bake bread or when they make tea for me because this will make my sugar level to be too high".
"Remove chicken skin before cooking it".
"All the vegetables must be boiled".

Sub-Theme 3.2: Forgetfulness versus refusal to carry out request by some family members

It is not clear whether family members refused to carry out the participants' request or they forgot. This is confirmed by the participants who said:

"The pumpkin is always sweet'.
"The chicken is always cooked with the skin and I only remove it when I eat".

Recommendations

More information should be given on the reduction of carbohydrates which is found in food such porridge and potatoes. The patients should be educated on the importance of having a scale to measure the amount of starch in the diet. For those who can read a full menu of the food which they should eat at different intervals this should be drawn with the assistance of a dietician. Family members

and community awareness campaigns should be carried out to ensure that the families accommodate the diabetics when they prepare meals for the family.

Conclusion

The participants in this study are knowledgeble about which food is not suitable for diabetics however, they have challenges regarding lack of funds to buy the right food and difficulty in taking the correct number of meals per day. The age group of diabetics who participated in the study was between 60 to 75 years so if they live among extended families, their meals will be prepared by their children or grandchildren and that becomes a challenge because they do not have control on how family meals should be prepared and similarly, it would not be economically viable for family members to prepare separate meals.

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