Understanding food selection and dieting patterns: type 2 diabetes mellitus patients and their families

Abstract. Background. The prevalence of type 2 diabetes mellitus (T2DM) is increasing from year to year, especially in Indonesia. The risk of T2DM starts at the dinner table in the family. Meal planning plays an important role in reducing the potential complications associated with poor glycemic, lipid and blood pressure control. Focusing on reducing sugar, fat and sodium intake and incorporating culture-appropriate foods will improve adherence. However, T2DM patients develop conflicting eating disorders in which there is a gap between nutrition and self-fulfillment regarding eating control. The purpose of this research is to explore the understanding of the diabetes patient and their family in determining the selection of food and eating pattern during the disease. Materials and methods. This study explores the understanding of T2DM patients and their families in the Depok and Jakarta. The purposive sampling method used 14 participants and 7 family members. The data obtained from participant observation and in-depth interviews then analyzed using thematic analysis. Using a descriptive phenomenological method with a semi structured in-depth interview. The interviews were conducted face to face from October 2017 — July 2018 and were analyzed by thematic analysis Collaizi’s method. Results. This study found 4 important themes: 1) food is believed to affect high blood sugar; 2) changes in diet after diabetes; 3) the main concern of the family is to keep eating but not make it a burden; and 4) the challenge faced by participants and their families is the lack of information. This study recommends continuing education and partnerships from nurses about the importance of the relationship between diet and blood glucose levels. Conclusions. People are inclined to rely on simple strategies that limit search when making food choices. The ability of patients and families regarding food ingredients to maintain blood sugar stability is the concern of nurses in providing nutritional education. Food labels can (and to some extent do) provide a wide variety of desirable information, ranging from food content to production details, the food’s carbon footprint, and its origins.

Keywords: type 2 diabetes mellitus; diet; family; food; selection

Introduction
Type 2 diabetes is a progressive disease that results from defects in insulin action (insulin resistance) and insulin secretion (insulin deficiency). Dietary adherence and better food acceptability was associated with lower A1c levels [1]. Meal planning plays a critical role in managing diabetes and reducing the potential complications related to poor glycemic, lipid, and blood pressure control [2]. Focusing on reducing sugar, fat and sodium intakes and incorporating culturally appropriate foods would help to improve adherence [3]. However, diabetes patient can occur eating disorders such as a feeling that can not stop eating and can not regulate the type or amount of food eaten [4]. Evidence from several studies suggests that translation of nutrition recommendations into daily routine is considered a challenge by the majority of diabetes patients and their families [4].

The aim of this research is to explore the understanding of the diabetes patient and their family in determining the selection of food and eating pattern during the disease.

Materials and methods
Using a descriptive phenomenological method with a semi structured in-depth interview. We involved 14 diabetes patients and 7 family members in the sub district of Depok Jaya, Depok and Cipto Mangunkusumo Hospital, Jakarta. The interviews were conducted face to face from October 2017 — July 2018 and were analyzed by thematic analysis Collaizi’s method. Inclusion Criteria: Adult patient (> 18 years), diabetic patients, diagnosed with diabetic > 2 years.
Result
The results of this study resulted in 4 themes.

**Theme 1.** Food can be believed to affect the high blood sugar.

This theme is generated from three categories. The first category is free to choose food that it is not sweet to affect the high blood sugar. The category was obtained from the statement «I am free to choose food, but I am limited to eating sweet things. Only 2 spoons of sugar are added to cooking, previously 7 spoons» (P4). The second category is choosing to reduce rice, but the dishes and vegetables remain salty and tasteful according to cultural origin that affects the high blood sugar. This category is obtained from the statement «I cook, I buy vegetables, and I look at the taste of family food too. I don’t eat too much, so I take it if there is something you want to eat that doesn’t increase blood sugar, such as fried chicken and chili eggplant» (P1). While, the third category is not affected by diabetes advertisement and contemporary foods that affect the high blood sugar. This category was obtained from the statement «I don’t drink advertised milk, I’m not affected by advertisements. The important thing is to eat and cook by myself to be healthy» (P10).

**Theme 2.** The eating pattern change after diabetes.

This theme is generated from three categories. The first category is diet modified from the family diet. This category was obtained from the statement «I change my meal, if I don’t eat regularly, now I use boiled potatoes for breakfast, sauteed broccoli, and scrambled eggs» (P2). The second category is eating patterns that are still unclear and confusing. This category is derived from the statement «I don’t know what happens, sometimes I think, how come I don’t have an appetite, steamed potatoes are tasteless. Sometimes confused about eating this afraid is not allowed, but also unclear why not permitted» (P7).

While the third category is eating patterns are made to control hunger but have a taste on the tongue. This category is obtained from the statement «Sometimes I eat rice, I want to be like that. Sometimes I just eat porridge and a piece of bread. It’s all because I thought I ate something that was delicious on my tongue but still healthy» (P9).

**Theme 3.** The family main attention to keep eating but not make it a burden.

This theme is generated from three categories. The first category is act as security guard in selecting food. This category is obtained from the statement «I say sometimes, why do you eat that mama? Mother said it’s okay a little bit rather than hold on. That’s all. I said, «It’s okay but you should just eat more side dishes, mom, it seems like eating pindang tuna and vegetables without frying it» (PF1). The second category is preparing a varied food in each meal and its portions. The category was obtained from the statement «Yes, I have to take care of my mother’s diet. For example, don’t eat too much rice. Don’t eat a lot of sweet foods because, I have prepared a menu for the mother along with the portions» (PF3).

**Theme 4.** The challenges faced by participants and families are the lack of information about foods that can effectively lower blood sugar.

This theme is generated from two categories. The first category is conflicts when preparing food. The category is obtained from the statement «Yes, we had a fight. For example, I got the cake, I saved it. Suddenly it’s half already. I asked, «Sir, remember yesterday when you had heart surgery because of high blood sugar, you know» (PF5).

«Sometimes, you want food that is fried in a lot of oil, but I don’t cook it, I replace it with a little oil» (PF6). The second category is feedback from nurses on diet. This category was obtained from the statement «Yes, I think there is still little information from nurses about diet and about healthy food for DM, even though we need it. The nurse reminded me to stick to taking medication and routine control» (PF7).

Discussion

**Theme 1.** Food can be believed to affect the high blood sugar.

This Research consistently reported that the total amount of carbohydrate consumed at meals, regardless of whether the source is sucrose or starch, is the primary determinant of postprandial glucose levels. Eleven studies, ranging in length from 2 days to 4 months and sucrose in take ranging from 19 to 42 g/day (5 to 35 % of daily energy), showed no effect of sucrose intake on glycemic control compared to a lower sucrose intake when total carbohydrate is similar [5]. Carbohydrate intake and available insulin are the primary determinants of postprandial glucose levels. Managing carbohydrate intake is, therefore, a primary strategy for achieving glycemic control.

**Theme 2.** The eating pattern change after diabetes.

According to a randomized crossover trial in 44 T2DM adult patients, a low-glycemic load breakfast improved postprandial glycemic, insulinemic, and free fatty acid responses compared with a high-glycemic load breakfast (Clark, 2006). However, another 6-months randomized trial in T2DM subjects showed no significant difference in the reduction in glycemic effect of the consumption of high-compared with low-glycemic index breakfast [6]. Similarly, in the current study, the prudent dietary pattern, glycemic load, or cereal fiber intake did not modify the breakfast consumption-T2DM inverse association. These results suggested that breakfast consumption itself has independent metabolic effects over and above the role of dietary quality. Nevertheless, our results suggested that the combination of poor diet quality with a poor meal pattern is particularly detrimental.

**Theme 3.** The family main attention to keep eating but not make it a burden.

The findings indicate that family members have influence on the self-management of adult persons with diabetes. The support from family members plays a crucial role in maintaining lifestyle changes and optimizing diabetes management. Diabetes and its treatment also affect the life of family members in several ways, causing, for example, different types of psychological distress. More attention should be paid to family factors in diabetes management among adult persons [7].

**Theme 4.** The challenges faced by participants and families is the lack of information about foods that can effectively lower blood sugar.

A better health measured physiologically (blood pressure or blood sugar), behaviorally (functional status), or more subjectively (evaluations of overall health status) was consistently related to specific aspects of physician-patient communication [8]. People are inclined to rely on simple strategies that
limit search when making food choices. Food labels can (and to some extent do) provide a wide variety of desirable information, ranging from food content to production details, the food’s carbon footprint, and its origins. Three key tools to avoiding overtaxing the consumer and her tight time budget are prioritization, transparency, and informational shortcuts [9].

Conclusions
People are inclined to rely on simple strategies that limit search when making food choices. The ability of patients and families regarding food ingredients to maintain blood sugar stability is the concern of nurses in providing nutritional education. Food labels can (and to some extent do) provide a wide variety of desirable information, ranging from food content to production details, the food’s carbon footprint, and its origins.

References

Information about authors
Dikha Ayu Kurnia, S. kep. lecturer of University of Indonesia, Medical Surgical Nursing Department Faculty of Nursing, Kampus Baru Universitas Indonesia, Depok, 16424, Indonesia; e-mail: dikha.ayuu@gmail.com; https://orcid.org/0000-0002-3494-0969.
Yulia Yulia, lecturer of University of Indonesia, Medical Surgical Nursing Department Faculty of Nursing, Kampus Baru Universitas Indonesia, Depok, 16424, Indonesia.

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Dikha Ayu Kurnia, Yulia Yulia
Medical Surgical Nursing Department, Faculty of Nursing, Kampus Baru Universitas Indonesia

Выбір дієти та харчових звичок для хворих на цукровий діабет 2-го типу та членів їх родин

Резюме. Актуальность. Поширеність цукрового діабету 2-го типу (ЦД) зростає з року в рік, особливо в Індонезії. Ризик виникнення ЦД розпочинається за обіднім столом у родині. Планування харчування відіграє важливу роль у зменшенні можливих ускладнень, пов’язаних з поганою контролем глюкомії, ліпідограми й артеріального тиску. Акцент на зменшення можливих ускладнень, пов’язаних з поганою контролем глюкомії, ліпідограми й артеріального тиску. Акцент на зменшення

Результати.
1) доведено, що надмірне вживання їжі впливає на високий рівень цукру у крові; 2) необхідно змінювати режим харчування у разі високих показників глюкомії, ліпідограми й артеріального тиску. Результати.

Висновки.
1) доведено, що надмірне вживання їжі впливає на високий рівень цукру у крові; 2) необхідно змінювати режим харчування у разі високих показників глюкомії, ліпідограми й артеріального тиску.

Ключові слова: цукровий діабет 2-го типу; дієта; родина; харчування; вибір

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