ปัจจัยทำนายพฤติกรรมการรับประทานอาหารของผู้เป็นเบาหวานชนิดที่ 2 ในโรงพยาบาลมหาวิทยาลัยแคนเทอ ประเทศเวียดนาม

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บทคัดย่อ

การศึกษานี้เป็นการศึกษาเชิงบรรยายมีวัตถุประสงค์เพื่อศึกษาปัจจัยทำนายพฤติกรรมการรับประทานอาหารของผู้เป็นเบาหวานชนิดที่ 2 ในโรงพยาบาลมหาวิทยาลัยแคนเทอ ประเทศเวียดนาม ปัจจัยที่เลือกสรร ประกอบด้วย ความรู้เกี่ยวกับอาหารเบาหวาน ความตระหนักในการควบคุมอาหาร ความรอบรู้ด้านสุขภาพ และรายได้ กลุ่มตัวอย่างเป็นผู้เป็นเบาหวานชนิดที่ 2 ที่มารับการรักษาที่แผนกผู้ป่วยนอก โรงพยาบาลแคนเทอ ประเทศเวียดนาม จำนวน 82 ราย ที่คัดเลือกโดยการสุ่มอย่างง่าย เก็บรวบรวมข้อมูลด้วยแบบสอบถามจำนวน 5 แบบสอบถาม ระหว่างเดือนกรกฎาคม ถึงกันยายน พ.ศ. 2558 วิเคราะห์ข้อมูลใช้สถิติเชิงบรรยาย และสถิติถดถอยพหุคูณ ผลวิจัยพบว่ากลุ่มตัวอย่างมีอายุเฉลี่ย 49.51 ปี (SD = 8.19) ส่วนใหญ่เป็นเพศหญิง (ร้อยละ 64.2) สถานภาพสมรสคู่ (ร้อยละ 82.7) ประกอบอาชีพมีรายได้ (ร้อยละ 77.8%) และสำเร็จการศึกษาระดับมัธยมศึกษา (ร้อยละ 40.7%) เป็นโรคเบาหวานมาได้นานเฉลี่ย 5 ปี (SD= 4.35) มีโรคร่วมส่วนใหญ่เป็นความดันโลหิตสูง (ร้อยละ 42) รับการรักษาโรคเบาหวานด้วยยา (ร้อยละ 98.8) มีระดับน้ำตาลในเลือดเฉลี่ย 137.5 *มก/ดล* (SD= 18.1) *กลุ่มตัวอย่างมีระดับความรู้*เกี่ยวกับอาหารเบาหวาน ความตระหนักในการควบคุมอาหาร ความรอบรู้ด้านสุขภาพ และพฤติกรรมการรับประทานอาหารอยู่ในระดับปานกลาง ผลการวิเคราะห์สถิติถดถอยพหุคูณพบว่า ความตระหนักในการควบคุมอาหาร (β = .46, p < .001) ความรู้เกี่ยวกับอาหารเบาหวาน (β = .30, p < .05) และความรอบรู้ด้านสุขภาพ (β = .18, p < .05) เป็นปัจจัยที่มีอิทธิพลและสามารถร่วมกันทำนายพฤติกรรมการรับประทานอาหารของผู้เป็นเบาหวานชนิดที่ 2 ได้ร้อยละ 65.1 ผลการศึกษานี้เสนอแนะว่าโปรแกรมการพยาบาลสำหรับส่งเสริมพฤติกรรมการรับประทานอาหารของผู้เป็นเบาหวานชนิดที่ 2 ควรประกอบด้วย กิจกรรมที่ส่งเสริมความตระหนักในการควบคุมอาหาร ความรู้เกี่ยวกับอาหารเบาหวานและความรอบรู้ด้านสุขภาพ

คำสำคัญ : เบาหวานชนิดที่ 2 พฤติกรรมการรับประทานอาหาร

Introduction

Type 2 diabetes (T2D) and its associated complications are a global and increasingly prevalent chronic illness, comprising 90% of people with diabetes around the world, and thus create substantial health care burdens for all nations.[1] In 2012, diabetes was the direct cause of 1.5 million deaths, with more than 80% of diabetes deaths occurring in low-and middle-income countries.[2] Direct healthcare costs associated with diabetes are estimated to increase about 35% in less than a quarter century, from USD 286 billion in 2003 to USD 396 billion in 2025.[3] Vietnam is among the countries with the highest diabetes growth rates, with a current estimate of

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one of every 8 people, or over 6% of its total population, diagnosed with diabetes.[4] Ignatavicius and Workman[5] indicated uncontrolled blood glucose level as a major T2D problem, leading to complications as well as higher morbidity and mortality compared with non-diabetic populations. Dietary management also plays an important role in diabetes self-care management, as poor dietary quality leads to poor glucose control and is associated with increased risk of complications, morbidity and mortality.[6] Lifestyle modifications are key actions for controlling and preventing T2D and its complications.[7, 8] The American Diabetes Association[1] indicated that dietary management is one of the primary goals in maintaining normal blood glucose levels among T2D patients.

Eating behavior is an important self-care element related to glycemic control. Good eating behavior can help control blood glucose, blood pressure, cholesterol levels, and weight.[9] Adherence to dietary regimen is a crucial self-care aspect of diabetes management. For example, Kumar and Clark[10] found that diet control was an important factor in blood glucose regulation and prevention of complications associated with T2D. Their research also indicated that combining good diet and exercise reduced risk by 42%, while risk reduction for improved diet alone was 31%. While the literature indicated multiple factors that can affect eating behaviors among T2D patients, the major contributors to uncontrolled diet among patients with T2D are a lack of knowledge of eating behaviors, low awareness regarding dietary management and diabetes meal plans, inadequate health literacy, and low income.

Thus the present study examined factors associated with eating behavior among people with T2D registered with Can Tho University Hospital, Vietnam. Specific factors were knowledge of diabetic diet, patients' awareness for diet control, health literacy, and income. Despite, there are studies about these related factors of eating behavior in Asian countries such as Indonesia, Bhutan, China, and Korea. However, the study about factors associated with eating behavior among T2D patients in Vietnam is still limited and Vietnam socio-cultural is different with other countries. Results from this study can guide the development of nursing interventions appropriate for improving eating behaviors among T2D patients.

Material and methods

The descriptive predictive design was used to investigate the factors predicting eating behavior among persons with T2D in Can Tho University Hospital, Vietnam.

Population: The target population of this study was T2D patients with the age between 20-60 years old who received care at Can Tho University Hospital, Can Tho City, Vietnam.

Sample: Eighty two adult patients with T2D who met the following inclusion criteria were randomly selected to participate in this study: 1) were age between 20 - 60 years old, 2) were diagnosed by the physician as type 2 diabetic patients for at least 6 months, 3) were able to communicate, read and write Vietnamese language, and 4) didn't have severe diabetes complications such as heart failure, glycemic crisis. The sample size was calculated by using Tabachnick and Fidell[12] formula. The total participants were 82 but there was one subject with outlier datum. Therefore, the researcher used only 81 participants for data analysis.

Instruments: The data were collected by using five self-report questionnaires. All original questionnaires were developed in English and in

this study were translated into Vietnamese by back translation process using three bilingual translators who were fluent in English and Vietnamese.

Demographic Questionnaire developed by the researcher which asked about participants' personal information including age, gender, marital status, incomes, education level, occupation, duration of diabetes, diabetic medication, blood glucose level, cooking methods, co-morbidity, and fasting blood glucose.

Knowledge of Diabetic Diet Questionnaire (KDDQ) developed by Primander et.al.[7] was used to assess knowledge of T2D patients about the information that associated with eating behavior. The questionnaire comprises of 13 yes/no items (yes=1; no=0). Content validity was checked by three experts.[7] The reliability of the KDDQ which assessed by the Kuder-Richardson formula (KR-20) was .58.[7] For this study, the reliability was .87. Based on the original questionnaire[7], knowledge was classified into 3 levels as follows: good knowledge (score = 10.5 – 13), moderate knowledge (score = 7.9 - 10.4), and poor knowledge (score = 0 - 7.8).

Diabetic Behavior Questionnaire (DBQ) is a 33-items self-report questionnaire developed by Primander et.al.[7] was used to measure eating behaviors of T2D patients. Content validity was checked by three experts.[7] Internal consistency from the reliability test with Cronbach's alpha coefficient was .73.[7] In this study, the researcher removed 9 items that were not appropriate with Vietnamese food style. The remaining 24 items addressed three components of eating behavior: 1) recognizing the amount of calorie needs (2 items); 2) selecting a healthy diet (16 items); and 3) arranging a meal plan (6 items). There are 20 positive statements and 4 negative statements. The score was a rating scale of 4 point interval scale which ranged from never to routinely with score ranged from never = 1, sometimes = 2, often = 3, and routinely = 4 for positive statement. The total score range from 24 to 96 scores. In this study, Cronbach's alpha coefficient was .85. Based on the original questionnaire,[7] eating behaviors was classified into 3 levels as following: low (score = 24 – 47), moderate (score 48 – 71), and high (score = 72 – 96).

Food Acceptance and Awareness Questionnaire (FAAQ) was used to measure patients' awareness for diet control in T2D. The FAAQ was developed by Juarascio et.al.[13] The FAAQ is a self-report questionnaire made up of ten items each rated on a seven-point Likert scale (1=very seldom true to 6=always true). Higher scores indicate higher levels of diet control awareness. Convergent and divergent validity were obtained.[13] In this study, Cronbach's alpha coefficient was .92. The levels of patients' awareness for diet control score were classified into 3 levels as following: high awareness (score = 43.4 – 60), moderate awareness (score = 26.7 - 43.3), and low awareness (score = 10 - 26.6).

The Newest Vital Sign developed by Weiss et.al.[14] is an instrument designed to measure T2D patients' dietary health literacy. This screening instrument comprises of six questions assessing information derived from reading food labels. The criterion validity of the instrument was assessed and the internal consistency with Cronbach's alpha score was .84.[14] In this study, Cronbach's alpha coefficient was .82. In this study, the Newest Vital Sign score was classified into 3 levels: high likelihood of limited health literacy (score = 0 – 1), possibility of limited health literacy (score = 2 – 3), adequate health literacy (score = 4 – 6).

Ethical considerations: Approval for the research was received from the Ethics Committee

of Graduate Studies of the Faculty of Nursing, Burapha University, Thailand. Permission for data collection was received from the Director of the hospital. Participants were informed of the aims of the study, data collection procedure, as well as their right to withdraw from the study at any time without consequences. Written informed consent was obtained from all participants.

Data collection procedures: The data collection was performed by the researcher. After the researcher got the approval from Faculty of Nursing, Burapha University, and got permission from the Director of Can Tho University Hospital. The researcher explained the purpose, method and data collection process to the head nurse of the outpatient department. Six to ten participants were recruited each day by using a simple random sampling technique from the name lists of T2D patients who came to received care. The data was collected from 6:30 AM to 11:00 AM in the morning on Monday, Wednesday, and Friday to recruit the participants following the inclusion criteria during July 24 to September 7, 2015. The questionnaires were checked for the completion of the questionnaires.

Data analysis: Descriptive statistics was used to describe demographic characteristic of the participants and independent variables. Multiple regression analysis was used to examine the predictive factors. Prior to data analyses, testing the assumptions related to multiple regression also were examined. All of these assumptions were met.

Results

The demographic data for the 81 T2D patients found a mean age of 49.51 (*SD = 8.19*). Most of participants were females (64.2%), were married (82.7%), were employed (77.8%), and completed a secondary school (40.7%). Participants had mean diabetes duration of 5 years (SD= 4.35). Just over half (53.1%) had monthly incomes below US$ 200. The most common co-morbidity was hypertension (42%). Nearly all participants (98.8%) controlled blood glucose by oral medication. The average fasting blood glucose was 137.5 mg/dl (SD= 18.1). Nearly all participants (93.8%) cooked at home.

Table 1 shows that the mean eating behavior score was 70.92 (SD= 9.62) which was considered at a moderate level. Of the three components, the highest mean percentage was for designing a meal plan (78.8%). The lowest mean percentage was recognizing caloric needs (63%). The three lowest item scores were used any oil in cooking, chose foods containing complex carbohydrate, and skipped meal.

Table 2 shows the mean score of knowledge of diabetic diet was 8.43 (SD = 3.20), the mean of patients' awareness for diet control was 34.0 (SD= 14.3) with the lowest score for "my thought and feelings about food must change before I can make changes in my eating" (M =2.91, SD =1.6). The mean score of health literacy was 2.21 (SD = 1.42). All of three variables were considered at a moderate level.

In this study, patients' awareness for diet control, knowledge of diabetic diet, health literacy, and income were positively significant correlated with eating behavior (Table 3). Patients' awareness for diet control (ß= .46, p< .001), knowledge of diabetic diet (ß = .30, p< .05), and health literacy (ß = .18, p< .05) could predict eating behavior. The most influencing factor was patients' awareness for diet control. Income (ß = .05, p> .05) was not a significant predictor of eating behavior (Table 4).

Discussion

Most T2D participants in this study had moderate diabetic diet knowledge (M= 8.43, SD = 3.20). Finding was congruent with a study in an Asian county by Primander et.al.[7] which reported moderate diabetic diet knowledge among Indonesian patients. T2D patients also had moderate level of diet control awareness. This indicates that many participants lacked awareness of the need to change eating behavior when they have T2D, and lacked awareness of the impact of changing their thoughts and feelings about food on changing their eating behavior. That led to uncontrolled among eating behavior and get moderate level in awareness about diet control. Finding was congruent those of Vankudre, Padhyegurjar, & Jennifer[15] who reported moderate awareness level of diabetes being a lifestyle disorder and of self- monitoring. This study's T2D participants had moderate health literacy levels (M= 2.21, SD = 1.42). It might be explained that the information in food label was difficult for participants to read, and understood about it. They might not concern about food label when they chose food. This reason led participants to inadequate health literacy and the result with moderate level. This finding is congruent with the finding of Tang, Pang, Chan, & Yeung[16] who indicated that inadequate health literacy may interact to health outcome.

The results of this study show that patients' awareness for diet control is the strongest predictor of eating behavior (ß = .46, p< .001). Patients' awareness is an essential component of the cognitive orientation that affects patients' ability to perform self-care behaviors[11] T2D persons with high diet control awareness should manifest better eating behavior. Previous studies indicate that T2D patients' awareness of diet control is positive associated with good eating behavior among T2D patients.[15,17]

This study also found that knowledge of diabetic diet may predict eating behavior among persons with T2D (ß= .27, p< .05). It is logical that T2D participants with the ability to understand diabetic dietary guidelines changed their food selection accordingly, as the guidelines provided them the knowledge needed to control their dietary behavior. Similarly, other studies found that knowledge of diabetic diet was positively and significantly related to eating behavior among T2D persons.[7,18,19]

This study also found that health literacy was significant predictor of eating behavior. Health literacy is a power component of self-care agency that can influence self-care behavior[11] people with high health literacy are more likely to engage in appropriate eating behavior. Other studies, have found that health literacy was positively associated with diabetes knowledge, and dietary self-care activities in diabetes patient.[16,20,21]

Income was not a significant predictor of eating behavior in this study. This may mean that the recommended foods for diabetics are neither expensive nor difficult to buy in this geographic and cultural setting. Thus, regardless of income, persons with T2D can access appropriate foods. A previous study had found a negative association between income and dietary intake.[22]

Limitations of the study

Samples were limited only to the adults with T2D who visited the Medical Outpatient Clinic of Can Tho University Hospital; therefore results of the study cannot be generalized to others Vietnamese adults with T2D.

Implications

Based on the study results, it is recommended that nursing interventions should be designed in diabetes clinics to help patients increase their dietary awareness and, consequently, motivate them to make positive eating behavior modifications. Beside, dietary classes can be created to improve diabetic patients' awareness for diet control, knowledge of diabetic diet, and health literacy. Nurses can proactively invite T2D patients and their families to attend such classes, which should encourage them to discuss and share dietary control knowledge and experiences.

Recommendation

Additional factors that might influence eating behavior among T2D persons should be added in future study. Nursing interventions to improve knowledge of diabetic diet, patients' awareness for diet control, and health literacy should be studied.

Acknowledgement

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Table 1 Mean, standard deviation, and mean % of eating behavior (*n =81*)

Variables	Possible score	Actual score	M	SD	Mean %	Level
Eating behavior	24-96	55-88	70.92	9.62		Moderate
Arranging a meal plan	6-24	11-24	18.9	2.86	78.8	
Selecting a healthy diet	16-64	37-57	46.97	5.52	73.4	
Recognizing caloric needs	2-8	2-8	5.04	2.11	63.0	

Table 2 Mean, standard deviation, and level of knowledge of diabetic diet, patients' awareness for diet control, and health literacy (*n = 81*)

Variables	Possible score	Actual score	M	SD	Level
Knowledge of diabetic diet	0-13	2-13	8.43	3.20	Moderate
Patients' awareness for diet control	10-60	12-58	34.0	14.3	Moderate
Health literacy	0-6	0-6	2.21	1.42	Moderate

Table 3 Pearson's coefficient among patients' awareness for diet control, knowledge of diabetic diet, health literacy, and income with eating behavior (*n = 81*)

	Patients' awareness for diet control	Knowledge of diabetic diet	Health literacy	Income
Patients' awareness for diet control				
Knowledge of diabetic diet	.60**			
Health literacy	.44**	.59**		
Income	.28**	.34**	.38**	
Eating behavior	.74**	.71**	.54**	.26*

**= p<.01, *= p<.05

Table 4 Multiple regression analysis among factors predicting eating behavior (*n =81*)

Predictors	B	Beta	
Patients' awareness for diet control	.31***	.46***	Intercept= 50.74
			R2= .651, F(4,76)= 35.44***
Knowledge of diabetic diet	.91*	.30*	
Health literacy	1.23*	.18*	

Factors Predicting Eating Behavior among Persons with Type 2 Diabetes in Can Tho University Hospital, Vietnam

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Abstract

This predictive correlational study aimed to explore factors predicting eating behavior among persons with type 2 diabetes in Can Tho University Hospital, Vietnam. The factors included knowledge of diabetic diet, patients' awareness for diet control, health literacy, and income. A random sample of persons with type 2 diabetes receiving care at Medical Outpatient Clinic, Can Tho University Hospital, Vietnam was recruited in the study. Five self-report questionnaires were used to collect data during July to September 2015. Data were analyzed using descriptive statistics and multiple regression analysis. The results showed that the mean of age of participants was 49.51 years old (SD = 8.19). Most of them were females (64.2), were married (82.7%), were employed (77.8%), and completed a secondary school (40.7%). Participants had mean diabetes duration of 5 years (SD= 4.35) and the most common co-morbidity was hypertension (42%). Nearly all participants (98.8%) controlled blood glucose by oral medication. The average fasting blood glucose was 137.5 mg/dl (SD= 18.1). The mean score of knowledge of diabetic diet, patients' awareness for diet control, health literacy, and eating behavior were at a moderate level. Results of multiple regression analysis showed that patients' awareness for diet control (β = .46, p< .001), knowledge of diabetes diet (β = .30, p< .05), and health literacy (β = .18, p< .05) could predict eating behavior which altogether explained 65.1% of variance of eating behavior among T2D persons. The findings of this study suggest that nursing intervention programs target at awareness of diet control, knowledge of diabetic diet, and health literacy should be recommended for improving eating behavior of people with type 2 diabetes.

Keywords: type 2 diabetes, eating behavior

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