The Open Public Health Journal

Content list available at: https://openpublichealthjournal.com

RESEARCH ARTICLE

Factors Associated with Self-Care Behavior of Elderly Patients with Type 2 Diabetes in Thailand

Prapada Watcharanat[1,*], Kitsarawut Khuancheree[1] and Brian Lee[1]

[1]*Department of Nursing, Princess Maha Chakri Sirindhorn Medical Center , Srinakharinwirot University, Ongkharak, Nakhorn-Nayok, 26120, Thailand*

Abstract:

Introduction:

Diabetes belongs to the chronic disease group with an average high prevalence rate of 463 million worldwide. This research aims to investigate factors associated with self-care behavior among elderly patients with type 2 diabetes.

Methods:

The sample included 441 patients diagnosed with diabetes admitted to the Tambon Health Promoting Hospital in Nakhon Nayok Province. The sample size used in this study was calculated according to the sampling group of Yamane with a 95% confidence level. Data were analyzed by descriptive statistics, correlation coefficients, and multiple regression analysis at the statistical significance level of 0.05.

Results:

The results showed that the average value of knowledge was 9.17 (SD=2.38), and the average values of attitude and social support behavior towards diabetes were 2.72 (SD=0.64) and 1.83 (SD=0.27), respectively. The results indicated that knowledge, attitude, and social support towards diabetes showed an average of a medium level. Moreover, the average value of self-care behavior towards diabetes was 30.52 (SD= 7.19). The results indicated that the knowledge about diabetes, attitude towards diabetes, and social support towards diabetes positively affected self-care behavior towards diabetes with the statistical significance of 0.05.

Conclusion:

Health promotion programs for patients with diabetes should be organized to promote knowledge and awareness on proper health behavior. In order to take care of themselves, diabetic patients must first get awareness regarding diabetes and then build skills for self-care. The results obtained in the study can help diabetic patients stay healthier, reduce the manifestation of both acute and chronic complications, and improve the quality of life of the elderly with diabetes.

Keywords: Self-care behavior, Patients, Elderly, Diabetes, Chronic complications, Chronic disease.

Article History	Received: December 22, 2020	Revised: May 04, 2021	Accepted: May 25, 2021

1. INTRODUCTION

Diabetes belongs to the chronic disease group with an average high prevalence rate of 463 million worldwide. The prevalence of diabetes in urban areas (10.8%) is more significant than in rural communities (7.2%) [1]. In addition, recent studies have shown that most diabetic patients are of age 65 years and above [2, 3]. According to the International Diabetes Federation report, Thailand has an average of 4.28 million people with diabetes, which is in line with the previous study indicating that the prevalence of diabetes increased from 7.7.% in 2004 to 7.8% in 2009, with a 9.9% increase observed in 2014 [4]. Most of the patients with diabetes in Thailand are of age 60-69 years (16.8 -17.2%) [5, 6]. The increase in the prevalence of diabetes in the elderly is higher than that of the working-age range due to age-related changes in the elderly. Furthermore, after fasting for more than 8 hours, the plasma glucose level is also higher in the elderly than in other age ranges, thus causing more disease severity [7]. In other words, people with diabetes are at a 30-40% increased risk of developing the retinal disease [8], its complications, and a higher risk of dying from cardiovascular diseases [9].

Therefore, the severity of the disease can be reduced, and complications can be prevented by taking self-care measures,

* Address correspondence to this author at Nursing department, Princess Maha Chakri Sirindhorn Medical Center, Srinakharinwirot University, Ongkharak, Nakhorn-Nayok, 26120, Thailand; E-mail: prapada_mim@hotmail.com

such as controlling blood sugar levels in the diet, regular exercise, self-monitoring of blood glucose, foot care, and quitting smoking [10]. Changes in self-care behavior of people with diabetes may involve gaining insights into diabetes, positive attitudes towards the disease, and seeking timely help from caregivers and staff [11, 12]. However, according to the literature reported worldwide, it was found that most of the elderly with type 2 diabetes were unable to control their blood sugar. This is because stress is improperly managed, *i.e.*, the elderly are concerned about complications, diet, or a feeling of sadness, discouragement, worry, lack of goals, and social support [13 - 15]. In addition, some elderly patients lack communication skills and have less understanding of health information. Therefore, stress, improperly managed diet, and drug use are the possible factors that prevent older people with diabetes from accessing and understanding correct health information [16, 17].

According to the findings of several recent studies conducted in Thailand, many people are interested in studying factors related to the behavior of diabetic patients. Therefore, the current study was conducted on diabetes at the clinic community hospital in Thailand, especially in Nakhon Nayok Province, a province with relatively high elderly patients with chronic diseases (7,248 cases) [4] compared to neighboring regions. Majorly, the results showed correlations and predictive factors regarding prophylactic and self-care behaviors in adult subjects [12, 18, 19] and elderly patients with type 2 diabetes [17]. However, most of the studies conducted in Thailand focused on the direct correlation of positive and negative perceptions. Health and self-care differences showed an effect on glycemic control in urban and general hospital patients. Therefore, the objective of this work is to study the behaviors and factors related to diabetic self-care among the elderly with type 2 diabetes to maintain a behavioral database and determine health promotion guidelines to help the elderly retain proper blood sugar.

2. MATERIALS AND METHODS

This research included 441 diabetic patients admitted to the Tambon Health Promoting Hospital in Nakhon Nayok Province. The sample size (the number of diabetic patients) used in this study was determined according to the sampling group of Yamane with a 95% confidence level [20]. The actual calculated sample size was 399.98 patients. However, an additional 10% of patients were added to the study sample due to the possibility that participants may withdraw or have inadequate information. Therefore, in this research, a total of 441 cases (diabetic patients) were included.

Inclusion criteria are as follows:

(1) Older adults aged 60 years or above

(2) Elderly with diabetes diagnosed by a doctor

(3) Have typical vital signs

(4) Have good awareness and ability to provide information by themselves

(5) Happy to cooperate in studies and able to provide information.

Exclusion criteria are as follows:

(1) Chronic illness or other diseases

(2) Self-help, not lying in bed

(3) Have a history of depression

Withdrawal or termination criteria were elderly who were sick and died during the study.

Stratified sampling is a sampling method that involves dividing the population into population groups according to the district by simple random sampling.

The tool used in this research was a questionnaire divided into four parts: Part 1 included questions about basic information, such as gender, age, education level, marital status, monthly income, and health condition. Part 2 contained 15 questions regarding knowledge about diabetes; 1 point was given in the case of correct answers, and no or 0 point was given in the case of incorrect or unknown answers. Part 3 contained 12 questions concerning the attitude toward diabetes. Part 4 included questions on social support toward diabetes. Parts 3 and 4 were divided into five levels. Part 5 had questions about self-care behavior towards diabetes, and the answers were classified into grades such as 0 for “never practice,” 1 for “practice seldom,” and 2 for “practice regularly.”

Index of item objective congruence (IOC) was used to measure the reliability of the questionnaire, which had a value greater than 0.50 [21]. According to the recommendations of experts, the revised questionnaire was used to collect the historical data of the elderly with diabetes. Cronbach's Alpha Coefficient analyzed the reliability of the questionnaire. To apply the questionnaire, the validity of the questionnaire needs to be significant than 0.70 [21].

Data analysis included frequency, percentage, mean, and standard deviation. The impact of self-care behavior on type 2 diabetes was calculated by multiple regression analysis with statistical significance at 0.05. This study was approved by the review boards of the Ethical Committee of Srinakharinwirot University (SWUEC-362/2562E).

3. RESULTS

The majority of the elderly were female (261 patients, 59.2percent), married (91.2%), and their average age was 69.78 years (SD = 7.15). Most participants were Buddhist (396 patients), accounting for 89.8 percent of the population, and 343 were elementary graduates (77.8 percent). The average height and weight were 67.88 (SD=15.10) and 159.41 (SD=9.05), respectively. The respondents had an average monthly income of 8234.0 Thai bahts, ranging between 600-50,000 Thai bahts.

Table **1** presents the average values of knowledge, attitude, social support, and self-care behavior of the elderly towards diabetes. The result indicated that the average of knowledge was 9.17 (SD=2.38), and the average values of attitude and social support toward diabetes were 2.72 (SD=0.64) and 1.83 (SD=0.27), respectively. Moreover, the average self-care behavior towards diabetes was 30.52 (SD= 7.19).

Table 1. Mean and standard deviation of the studied variables (n=441).

Factors	Mean	S.D.
Knowledge about diabetes	9.17	2.38
Attitude towards diabetes	2.72	0.64
Social support towards diabetes	1.83	0.27
Self-care behavior towards diabetes	30.52	7.19

Table 2. Correlation coefficients among the studied variables (n=441).

S.No	Factor	1	2	3	4	5	6	7
1	Age	1						
2	Education	-0.091	1					
3	Income	-.096*	.578**	1				
4	Knowledge about diabetes	-0.021	0.065	.115*	1			
5	Attitude towards diabetes	0.066	-0.038	-0.078	-.552**	1		
6	Social support towards diabetes	0.066	-0.044	-.167**	-.546**	.548**	1	
7	Self-care behavior towards diabetes	-0.087	0.061	0.078	.687**	-.656**	.575**	1

*p<0.05, **p<0.01

Table 3. Multiple regression analysis of factors affecting self-care behavior towards diabetes among elderly patients with Type 2 Diabetes (n=441).

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)		40.526	3.377		12.001	0.000	33.889	40.526
1	Age	-0.045	0.031	-0.045	-1.473	0.142	-0.106	-0.045
2	Education	0.341	0.335	0.038	1.017	0.309	-0.318	0.341
3	Income	0.001	0.000	-0.050	-1.324	0.186	0.000	0.001
4	Knowledge about diabetes	1.244	0.117	0.411	10.588**	0.000	1.013	1.244
5	Attitude towards diabetes	3.702	0.438	0.331	8.452**	0.000	1.562	3.702
6	Social support towards diabetes	4.672	1.057	0.173	4.422**	0.000	1.749	4.672

*p<0.05, **p<0.01
R=0.776, r-square = 0.602, Std. Error of the Estimate=4.569, F Change=109.294

According to correlation analysis, knowledge about diabetes, attitude towards diabetes, and social support towards diabetes had a relationship with self-care behavior towards diabetes (r = .687, r = .656, r = .575, p <.001), as shown in Table **2**.

The study model explained the variety of self-care behavior towards diabetes using multiple regression analysis (77.6%). The knowledge about diabetes, attitude towards diabetes, and social support towards diabetes affected self-care behavior towards diabetes. The statistical significance level was 0.05, as shown in Table **3**.

4. DISCUSSION

The contributing factors have a significant effect on the self-care behavior of elderly patients with Type 2 Diabetes. Through awareness and self-care behavior, patients have a chance to behave appropriately. According to Becker's theory [22], inducing self-care practices in health beliefs serves as a catalyst for timely action. The typical person may have relevant symptoms such as discomfort, internal pain, or an external stimulus such as advice from staff, friends, or others. Therefore, each dose of the drug has to be taken after consultation with the doctor and staff.

CONCLUSION

The relevant parameters including, knowledge, attitudes, and practices for health promotion and disease prevention, are all related to each other. According to the researchers [1 - 3], if people have knowledge regarding the disease and self-defense and have a positive attitude to such practices, they will practice healthy behavior at regular intervals. However, the family should encourage and motivate the patients for promising results in diabetes. Furthermore, providing knowledge about diabetes to patients on an ongoing basis is essential [5].

Having good knowledge about the disease leads to desirable health behaviors. Therefore, physicians, nurses, and the related personnel should consider the cognitive aspects of emphasizing the client's awareness by forecasting the risk factors. The behavioral practices promote self-efficacy, including modifying healthy behaviors.

ETHICAL APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by the Review Boards of the Ethical Committee of Srinakharinwirot University, Thailand (SWUEC-362/2562E).

HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All human research procedures followed were in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013.

CONSENT FOR PUBLICATION

Informed consent was obtained from all the participants of this study.

AVAILABILITY OF DATA AND MATERIALS

Not applicable.

FUNDING

None.

CONFLICT OF INTEREST

The authors declared no conflict of interest, financial or otherwise.

ACKNOWLEDGEMENTS

Declared None.

REFERENCES

[1] Saeedi P, Petersohn I, Salpea P, *et al.* Global and regional diabetes prevalence estimates for 2019 and projections for 2030 and 2045: Results from the International Diabetes Federation Diabetes Atlas, 9th edition. Diabetes Res Clin Pract 2019; 157107843 [http://dx.doi.org/10.1016/j.diabres.2019.107843] [PMID: 31518657]

[2] Corriere M, Rooparinesingh N, Kalyani RR. Epidemiology of diabetes and diabetes complications in the elderly: An emerging public health burden. Curr Diab Rep 2013; 13(6): 805-13. [http://dx.doi.org/10.1007/s11892-013-0425-5] [PMID: 24018732]

[3] Mehta R, del-Moral ME, Aguilar-Salinas CA. Epidemiology of diabetes in the elderly. Rev Invest Clín 2010; 62(4): 305-11. [PMID: 21222308]

[4] Aekplakorn W, Chariyalertsak S, Kessomboon P, Assanangkornchai S, Taneepanichskul S, Putwatana P. Prevalence of diabetes and relationship with socioeconomic status in the Thai population: National Health Examination Survey, 2004–2014. J Diabetes Res 2018. [http://dx.doi.org/10.1155/2018/1654530] [PMID: 29687009]

[5] Aekplakorn W, Stolk RP, Neal B, *et al.* The prevalence and management of diabetes in Thai adults: The international collaborative study of cardiovascular disease in Asia. Diabetes Care 2003; 26(10): 2758-63. [http://dx.doi.org/10.2337/diacare.26.10.2758] [PMID: 14514576]

[6] Apidechkul T. Prevalence and factors associated with type 2 diabetes mellitus and hypertension among the hill tribe elderly populations in northern Thailand. BMC Public Health 2018; 18(1): 694. [http://dx.doi.org/10.1186/s12889-018-5607-2] [PMID: 29871598]

[7] Chiu CJ, Wray LA. Physical disability trajectories in older Americans with and without diabetes: The role of age, gender, race or ethnicity, and education. Gerontologist 2011; 51(1): 51-63. [http://dx.doi.org/10.1093/geront/gnq069] [PMID: 20713455]

[8] Salinero-Fort MA, San Andrés-Rebollo FJ, de Burgos-Lunar C, *et al.* Cardiovascular and all-cause mortality in patients with type 2 diabetes mellitus in the MADIABETES Cohort Study: Association with chronic kidney disease. J Diabetes Complications 2016; 30(2): 227-36. [http://dx.doi.org/10.1016/j.jdiacomp.2015.10.007] [PMID: 26627635]

[9] Hirakawa Y, Ninomiya T, Kiyohara Y, *et al.* Age-specific impact of diabetes mellitus on the risk of cardiovascular mortality: An overview from the evidence for Cardiovascular Prevention from Observational Cohorts in the Japan Research Group (EPOCH-JAPAN). J Epidemiol 2017; 27(3): 123-9. [http://dx.doi.org/10.1016/j.je.2016.04.001] [PMID: 28142033]

[10] American Diabetes A. Standards of medical care in diabetes--2011. Diabetes care 2011; 34(Suppl 1): S11-61.

[11] Osborn CY, Rivet Amico K, Fisher WA, Egede LE, Fisher JD. An information-motivation-behavioral skills analysis of diet and exercise behavior in Puerto Ricans with diabetes. J Health Psychol 2010; 15(8): 1201-13. [http://dx.doi.org/10.1177/1359105310364173] [PMID: 20453056]

[12] Budsabong W, Howteerakul N, Suwannapong N, Rawdaree P, Sujirarat D. Role of motivation in the relationship between depression, self-care, and glycemic control of type 2 diabetes in patients attending a tertiary care hospital, bangkok. J Public Health (Bangkok) 2014; 1(44)

[13] Liu MY, Tai YK, Hung WW, Hsieh MC, Wang RH. [Relationships between emotional distress, empowerment perception and self-care behavior and quality of life in patients with type 2 diabetes]. Hu Li Za Zhi 2010; 57(2): 49-60. [PMID: 20401867]

[14] Zulman DM, Rosland AM, Choi H, Langa KM, Heisler M. The influence of diabetes psychosocial attributes and self-management practices on change in diabetes status. Patient Educ Couns 2012; 87(1): 74-80. [http://dx.doi.org/10.1016/j.pec.2011.07.013] [PMID: 21840149]

[15] Pouwer F, Skinner TC, Pibernik-Okanovic M, *et al.* Serious diabetes-specific emotional problems and depression in a Croatian-Dutch-English Survey from the European Depression in Diabetes [EDID] Research Consortium. Diabetes Res Clin Pract 2005; 70(2): 166-73. [http://dx.doi.org/10.1016/j.diabres.2005.03.031] [PMID: 15913827]

[16] Fransen MP, von Wagner C, Essink-Bot ML. Diabetes self-management in patients with low health literacy: Ordering findings from literature in a health literacy framework. Patient Educ Couns 2012; 88(1): 44-53. [http://dx.doi.org/10.1016/j.pec.2011.11.015] [PMID: 22196986]

[17] Boonkaew N. Relationships between emotional distress, health literacy, and glycemic control behaviors of the elderly with type 2 diabetes. Nurs J Minis Public Health 2015; 24(3): 119-31.

[18] Piromchom A, Hansakul A. Factors influenced with self-care behaviors in type II diabetes mellitus patients in Nongbuarawae district, Chaiyaphum province. J Office DPC 2012; 7: 1-10.

[19] Jangwang S, Pittayapinune T, Chutipattana N. Factors related to self-care behavior for prevention of diabetes mellitus and hypertension among population groups at risk. Southern College Network Journal of Nursing and Public Health 2019; 3(1): 111-28.

[20] Yamane T. Statistics: An introductory analysis. 1967.

[21] Vanichbancha K. Statistical analysis: Statistics for administration and research. 10th ed. Bangkok: Chulalongkorn University Press 2007.

[22] Maiman LA, Becker MH. The health beliefs model: Original and correlates in psychological theory.The health beliefs model and personal health behavior. NJ: Charles B. Slack 1974; pp. 9-26. [http://dx.doi.org/10.1177/109019817400200404]