

This article was downloaded by:

Publisher: KKG Publications

Registered office: 18, Jalan Kenanga SD 9/7 Bandar Sri Damansara, 52200 Malaysia

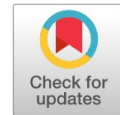


## Key Knowledge Generation

Publication details, including instructions for author and subscription information:

<http://kkgpublications.com/medical-sciences/>

### Relationships of Health Literacy Diabetes Knowledge and Social Support to Self-Care Behavior among Type 2 Diabetic Patients



KANTAPONG PRABSANGOB

College of Allied Health Science, Suan Sunandha Rajabhat University, Thailand

Published online: 09 November 2016

**To cite this article:** K. Prabsangob, "Relationships of health literacy diabetes knowledge and social support to self-care behavior among type 2 diabetic patients," *International Journal of Health and Medical Sciences*, vol. 2, no. 3, pp. 68-72, 2016.

DOI: <https://dx.doi.org/10.20469/ijhms.2.30005-3>

**To link to this article:** <http://kkgpublications.com/wp-content/uploads/2016/2/Volume2/IJHMS-30005-3.pdf>

PLEASE SCROLL DOWN FOR ARTICLE

KKG Publications makes every effort to ascertain the precision of all the information (the "Content") contained in the publications on our platform. However, KKG Publications, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the content. All opinions and views stated in this publication are not endorsed by KKG Publications. These are purely the opinions and views of authors. The accuracy of the content should not be relied upon and primary sources of information should be considered for any verification. KKG Publications shall not be liable for any costs, expenses, proceedings, loss, actions, demands, damages, expenses and other liabilities directly or indirectly caused in connection with given content.

This article may be utilized for research, edifying, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly verboten.

# RELATIONSHIPS OF HEALTH LITERACY DIABETES KNOWLEDGE AND SOCIAL SUPPORT TO SELF-CARE BEHAVIOR AMONG TYPE 2 DIABETIC PATIENTS

KANTAPONG PRABSANGOB \*

College of Allied Health Science, Suan Sunandha Rajabhat University, Thailand

**Keywords:**Health Literacy  
Social Support  
Self-Care Behavior**Received:** 03 June 2016**Accepted:** 27 August 2016**Published:** 09 November 2016

**Abstract.** Diabetes Mellitus (DM) is one major problem in Thailand. Diabetic patients with limited health literacy tend to have worse outcome. The study aimed to determine relationships between age, income, education, diabetes knowledge, social support, communication with a doctor, reading health information documents, as well as health literacy and self-care behavior in patients with diabetes. A sample of 512 diabetes patients aged 18-80 years old were purposively selected from 13 community hospitals in Samut Songkram province, Thailand. Data were collected by using questionnaires. The 3-level Health Literacy Scale developed by Ishikawa was used to assess health literacy level. Data were analyzed using descriptive statistics and Pearsons correlation. It was revealed that the samples had moderate overall health literacy ( $\bar{X} = 2.62$ , S.D. = 0.50), good diabetes knowledge ( $\bar{X} = 7.26$ , S.D. = 1.76), moderate social support ( $\bar{X} = 2.98$ , S.D. = 0.63) and moderate self-care behavior ( $\bar{X} = 2.68$ , S.D. = 0.33). It was found that education ( $r = 0.113$ ,  $p = 0.010$ ), income ( $r = 0.183$ ,  $p = 0.000$ ), diabetes knowledge ( $r = 0.106$ ,  $p = 0.023$ ), social support ( $r = 0.170$ ,  $p = 0.000$ ), communication with a doctor ( $r = 0.094$ ,  $p = 0.034$ ), reading health information document ( $r = 0.231$ ,  $p = 0.000$ ), and health literacy ( $r = 0.101$ ,  $p = 0.023$ ) had significant relationship with self-care behavior, while age did not have significant relationship. The results encourage health care providers to make more efforts to monitor factors affecting self-care behavior in the Thai diabetic patient population. They are also useful in guiding the development of appropriate methods to enhance self-care behavior.

©2016 KKG Publications. All rights reserved.

## INTRODUCTION

Diabetes mellitus or diabetes is one of chronic diseases and causes death to numbers of patients around the world. In 2013, approximately 382 million people were estimated to have diabetes and 316 million people were living with impaired glucose tolerance [1]. The number of people with diabetes is increasing in every country. For Thailand, according to Ministry of Public Health (Thailand), Chronic Disease Surveillance Report of 2010, there were 888,580 diabetic patients in Thailand. The ratio of diabetic illness from the report was 1,395 patients per 100,000 populations. This made it rank as the second top of non-communicable diseases, of which the first top belonged to high blood pressure. Diabetes is due to abnormal insulin production or the effect of insulin that has an impact on high blood sugar or glucose level. According to pathology, diabetes can be classified into four types; type I, type II, gestational diabetes (found during pregnancy), and other types [2]. Type II diabetes mellitus is caused by the combination of abnormal insulin secretion of beta cells and the effect of insulin resistance. A person with diabetes may have either result from those mentioned causes greater than one another. Despite diabetes is a chronic disease, it is treatable through dietary control, physical exercises, and oral medicine. The patients who have

long term diabetes, their beta cells may gradually be destructed and fail to control the blood sugar or glucose level. Insulin medication, such as insulin injection, is needed to help control the glucose level instead of the cells' production itself. Type II diabetes is mostly found in people aged over 40 years. Risk factors of this type are older age, overweight, lack of physical exercises, and genetics. The patients with long term diabetes and poor blood sugar control will easily develop complications that cause illness and death. Complications in diabetic patients may be found when the persons are first diagnosed of diabetes. Those people may have diabetes without any symptoms. The goal of treatment in diabetes is to control blood sugar to normal or close to normal level as much as possible. So fasting blood glucose level after 8-12 hours must be 90-130 mg/dl, or the level of hemoglobin A1c (HbA1c) is less than 7% [2].

Diabetes is a chronic disease. The patients must see their doctors regularly for health check-up, picking up some medicine, and taking doctors' advice. While examining, the patients must inform symptoms and health problems related to their diabetic illness. The doctor will provide recommendation of how to take better care of themselves, and how to control blood sugar to normal level; prescribe medicine; and explain

\*Corresponding author: Kantapong Prabsangob

†Email: [kantapong.pr@sru.ac.th](mailto:kantapong.pr@sru.ac.th)

how to take medicine correctly. In order to make patients understand and follow doctors' advice correctly, communication between patients and doctors must be effective. The important components to improve mutual and better understanding are language usage in communication and point of views on the topic being discussed. Both patients and doctors must understand what the other is trying to communicate and what the other perceives on the subject they are discussing. When the patients do not understand health information or have low health literacy, they will not follow doctors' direction. Low health literacy and abandoning doctors' advice or direction are obstacles that prevent them from good health.

## LITERATURE REVIEW

Health Literacy or skills in health was first recognized in the United States of America where people from different ethnicities with different languages and cultures live together. Some patients have problem with using English as a second language to communicate with health providers. They seldom understand health information or how to take better health care. According to the study in the patients with diabetes, the patients with low health literacy were likely to have less care for their health. They had high blood sugar level, were often admitted in a hospital, and had more complications in diabetes [3], [4], [5], [6].

It was costly to get diabetic treatment. Health literacy; therefore, drew more interest in the United States. In 1998, World Health Organization defined health literacy as "cognitive and social skills that determine an individual's motivation and ability to access, understand, and use the health information to promote and always maintain good health for oneself" [7]. Later on Health organizations and researchers defined health literacy that can be summarized as the ability of a person to obtain health information from different media channels, and to understand and recognize the obtained health information until utilizing the information as to promote and always maintain one's good health.

[8], [9] has classified health literacy into 3 categories: (1) functional health literacy is the ability to understand basic health information; (2) interactive or communicative health literacy is the ability to understand basic health information and to communicate for information exchange with others; (3) critical health literacy refers to the ability to analyze the obtained health information for decision making in health care. According to previous studies, the patients with diabetes who had low functional health literacy are likely to fail to control blood glucose level [5]. This may result from lack of understanding in health information recommended by health care providers. Increasing high health literacy level in the patients

may help them understand what doctors recommend, and be able to control their blood sugar level better.

Measuring health literacy level in the patients can be done through different methods—each of them has different ways of usage and objectives. The previous researches of measurement in health literacy were related to blood sugar level (HbA<sub>1c</sub>) of the patients, the researches commonly used TOFHLA, s-TOFHLA, REALM or REALM-M [10].

These methods have the same goals of measuring ability in reading, pronunciation, vocabularies related to health care and treatment, filling words in the blank, and calculating the given numbers related to health information. These can measure only the level of functional health literacy. The intervention to increase health literacy among the patients is thus formed as health education or media development models. For instance, using pictures for wordings, and using special marks for medicines will help patients to understand health information better. It is a top-down approach in which the intervention is done by researcher team and experts from different fields.

The weakness of conducting an intervention to this approach is less participation of patients. It also somehow drops the content of health literacy which makes it far to reach Nutbeam's definition. According to Nutbeam, health literacy is to focus on patients' understanding in health information; patients' ability to access sources of information and knowledge; and patients' ability to analyze the obtained information for proper utilization. This will occur when all stakeholders, who involve in patients' care and treatment, cooperate and brainstorm their ideas flowing freely by viewing patients as the centers.

Nutbeam's idea influenced [11], who pays much interest in communication between doctors and patients and health information obtained from various sources of patients, to develop a new instrument to measure the level of health literacy. That is Communicative Health Literacy. It is designed into questionnaire that comprises of 14 questions. Those questions are categorized into 3 areas which can determine the level of understanding in the content of health information; the capacity of utilizing in communicative channels to obtain information; and the utilization of obtained information for decision making. Patients will score 1-4 throughout 14 questions.

This questionnaire was used to find the relationships between communicative health literacy and HbA<sub>1c</sub> level in the patients with diabetes. In addition, [12], [13] applied that questionnaire to the research on the people living with HIV in northern and northeastern Thailand with about 400 sample population. From examining this wide use in patients, it is possible to apply that instrument or questionnaire to diabetic patients in Thailand. It can also be used as a guideline to

conduct the intervention to rise higher health literacy of Thai diabetic patients. As the result, this can help the patients keep blood sugar level close to normal ( $HbA_{1c} < 7\%$ ).

## METHODOLOGY

In the study, a cross-sectional study was used to determine relationships between age, income, education, diabetes knowledge, social support, communication with a doctor, reading health information documents, as well as health literacy and self-care behavior in patients with Type 2 diabetes. The sample of 512 diabetic patients aged between 18–80 years, living in Bang Khonthi district was retrieved from approximately 1,000 diabetic patients in 13 sub-districts as population by satisfied sampling. The sample size was calculated by using Yamane's formula [14]. Patients who did not speak Thai were excluded. Written consent was obtained, and the institutional review board approved this study.

The data were collected in face-to-face interviews from the respondents by a questionnaire which was organized in three parts. The first section had questions regarding socio-economic characteristics, duration of diabetes, diabetes knowledge, social support, communication with a doctor, and reading health information documents. The second section had Health Literacy assessment. The third section had self-care behavior assessment. Diabetes knowledge was measured with a questionnaire adapted from Diabetes Knowledge Questionnaire [15]. Social support was assessed using Likert scale questions adapted from a questionnaire of [16]. Health literacy was assessed with the 3-level Health Literacy Scale developed by [11], a 14-item self-report

measure. Self-care behaviors were assessed using four-point Likert scale questions adapted from a self-care management questionnaire [17], a 16-item self-report measure that assesses how often self-care activities are performed from never to always in a given week.

Descriptive statistics including mean, standard deviation, frequency, and percentage will be used to describe the characteristics of the samples including age, income, education, duration of diabetes, diabetes knowledge, social support, communication with a doctor, reading health information documents, health literacy and self-care behavior. To determine the degree of association between age, income, education, diabetes knowledge, social support, communication with a doctor, reading health information documents, as well as health literacy and self-care behavior, Pearson's correlation coefficient was used [18].

## RESULTS

### Result of the Statistical Description Analysis

It was revealed that the respondents had the average age of 61.77 years. The majority of them had income less than 5,000 Baht (37.50%) and education at elementary school level (67.60%). Their average duration of diabetes was 8.29 years as shown in Table 1. The respondents had good diabetes knowledge ( $\bar{X} = 7.26$ , S.D. = 1.76), moderate social support ( $\bar{X} = 2.98$ , S.D. = 0.63), frequent communication with a doctor ( $\bar{X} = 3.04$ , S.D. = 0.99), sometime reading health information document ( $\bar{X} = 2.74$ , S.D. = 0.99), moderate overall health literacy ( $\bar{X} = 2.62$ , S.D. = 0.50), and moderate self-care behavior ( $\bar{X} = 2.68$ , S.D. = 0.33) as shown in Table 2.

TABLE 1  
THE DEMOGRAPHIC INFORMATION OF 512 SAMPLES

Demographic Information	Mean %
Age (mean years)	61.77
Income <5,000 Baht (%)	37.50
Education (% element school level)	67.60
Duration of diabetes (mean years)	8.29

TABLE 2  
CHARACTERISTICS OF 512 SAMPLES

Characteristics	Mean	S.D	Interpretation
Diabetes knowledge	7.26	1.767	Good
Social support	2.98	0.639	Moderate
Communication with a doctor	3.04	0.993	Often
Reading health information document	2.74	0.999	Sometime
Health Literacy	2.62	0.503	Moderate
Self-care behavior	2.68	0.336	Moderate

### The Result of Pearson's Correlation Coefficient Analysis

An analysis result had indicated that education ( $r = 0.113$ ,  $p = 0.010$ ), income ( $r = 0.183$ ,  $p = 0.000$ ), diabetes knowledge ( $r = 0.106$ ,  $p = 0.023$ ), social support ( $r = 0.170$ ,  $p = 0.000$ ), communication with a doctor ( $r = 0.094$ ,  $p = 0.034$ ), reading

health information document ( $r = 0.231$ ,  $p = 0.000$ ), and health literacy ( $r = 0.101$ ,  $p = 0.023$ ) had significant relationship with self-care behavior, while age and duration of diabetes did not have significant relationship as shown in Table 3.

TABLE 3  
THE CORRELATION BETWEEN VARIABLES AND SELF-CARE BEHAVIOR

Variables	The correlation to self-care behavior		Interpretation
	Coefficient (r)	Sig.	
Age	0.041	0.357	No relationship
Education	0.113	0.010**	Little relationship
Income	0.183	0.000**	Little relationship
Duration of diabetes	0.740	0.940	No relationship
Diabetes knowledge	0.106	0.023*	Little relationship
Social support	0.170	0.000**	Little relationship
Communication with a doctor	0.094	0.034*	Little relationship
Reading health information document	0.231	0.000**	Little relationship
Health Literacy	0.101	0.023*	Little relationship

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

### DISCUSSION AND CONCLUSION

The result that diabetic patients in Bang Khonthi district, Samut Songkram province, Thailand had moderate health literacy may be because of their old age, low education and low income. This was in accordance with [5] and [9] which had proven that limited health literacy is common in low income and less educated elderly patients with diabetes and has been associated with worse diabetes outcome. However, this study found that the diabetic patients had good diabetes knowledge. This may be because of their long duration of diabetes. Like other chronic diseases, diabetic patients have learned their diseases, treatment, and care from their own experiences for years.

The study found that education, income, diabetes knowledge, social support, communication with a doctor, reading health information document, and health literacy had significant

relationship with self-care behavior. These variables determine the self-efficacy. When a patient believes that he or she has ability to be healthy, he or she will practice healthy behaviors. This was in accordance with [19] who had proven that self-efficacy was contributed to health behavior.

The results encourage health care providers to make more efforts to monitor factors affecting self-care behavior in the Thai diabetic patient population. They are also useful in guiding the development of appropriate methods to enhance self-care behavior.

### Acknowledgements

The researcher would like to thank the Research and Development Institute, Suan Sunandha Rajabhat University, Bangkok, Thailand for its financial support.

### REFERENCES

- [1] International Diabetes Federation. (2012). *Diabetes: Facts and figures* [Online]. Available: <https://goo.gl/jD7uOl>
- [2] American Diabetes Association. "Nutrition recommendations and interventions for diabetes 2006 A position statement of the American diabetes association," *Diabetes Care*, vol. 29, no. 9, pp. 2140-2157, 2006.
- [3] Medical Association. "Health Literacy: Report of the council on scientific affairs," *JAMA*, vol. 281, no. 6, pp. 552-557, 1999.
- [4] J. A. Gazmararian, D. W. Baker, M. V. Williams, R. M. Parker, T. L. Scott, D. C. Green, ... and J. P. Koplan, "Health literacy among Medicare enrollees in a managed care organization," *Jama*, vol. 281, no. 6, pp. 545-551, 1999.



- [5] D. Schillinger, K. Grumbach, J. Piette, F. Wang, D. Osmond, C. Daher, ... and A. B. Bindman, "Association of health literacy with diabetes outcomes," *Jama*, vol. 288, no. 4, pp. 475-482, 2002.
- [6] M. V. Williams, D. W. Baker, R. M. Parker and J. R. Nurss, "Relationship of functional health literacy to patients' knowledge of their chronic disease: A study of patients with hypertension and diabetes," *Archives of Internal Medicine*, vol. 158, no. 2, pp. 166-172, 1998.
- [7] S. Kim, F. Love, A. D. Quistberg and A. J. Shea, "Association of health literacy with self-management behavior in patients with diabetes," *Diabetes Care*, vol. 21, no. 12, pp. 2980-2982, 2004.
- [8] J. A. Manganello, "Health literacy and adolescents: A framework and agenda for future research," *Health Education Research*, vol. 23, no. 5, pp. 840-847, 2008.
- [9] D. Nutbeam, "The evolving concept of health literacy," *Social Science & Medicine*, vol. 67, no. 12, pp. 2072-2078, 2008.
- [10] F. Al Sayah, B. Williams and J. A. Johnson, "Measuring health literacy in individuals with diabetes: A systematic review and evaluation of available measures," *Health Education & Behavior*, vol. 40, no. 1, pp. 42-55, 2012.
- [11] H. Ishikawa, T. Takeuchi and E. Yano, "Measuring functional, communicative, and critical health literacy among diabetic patients," *Diabetes Care*, vol. 31, no. 5, pp. 874-879, 2008.
- [12] K. Chananya, M. Wantana and J. Poolsuk, "Relationships of Health Literacy and Knowledge about antiretroviral therapy to medication adherence among people living with HIV," *Kuakarun Journal of Nursing*, vol. 21, no. 2, pp. 211-227, 2014.
- [13] D. W. Baker, J. A. Gazmararian, M. V. Williams, T. Scott, R. M. Parker, D. Green, ... and J. Peel, "Functional health literacy and the risk of hospital admission among Medicare managed care enrollees," *American Journal of Public Health*, vol. 92, no. 8, pp. 1278-1283, 2002.
- [14] T. Yamane, (1973). Taro Yamane's formula.
- [15] C. A. Eigenmann, T. Skinner and R. Colagiuri, "Development and validation of a diabetes knowledge questionnaire," *Practical Diabetes International*, vol. 28, no. 4, pp. 166-170 2011.
- [16] Michigan Diabetes Research and Training Center (MDRTC). (2011). *Survey instruments for health professionals: Diabetes care profile* [Online]. 2011. Available: <https://goo.gl/ykmEF6>
- [17] U. Sarkar, L. Fisher and D. Schillinger, "Is self-efficacy associated with diabetes self-management across race/ethnicity and health literacy?" *Diabetes Care*, vol. 29, no. 4, pp. 823-829, 2006.
- [18] B. H. Munro, *Statistical methods for health care research*, vol. 1, New York, NY: Lippincott Williams & Wilkins, 2005.
- [19] K. A. Wallston, R. L. Rothman and A. Cherrington, "Psychometric properties of the perceived diabetes self-management scale (PDSMS)," *Journal of Behavioral Medicine*, vol. 30, no. 5, pp. 395-401, 2007.

— This article does not have any appendix. —