

# Diabetes Self-Management Based on the Health Belief Model

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**Abstract:** *Diabetes is very important burden disease that need to be change awareness of the individuals of management illness process wholly of life. Health behaviors, which are an important determinant in management of diabetes. It is very important to determine the behaviors of people in disease management and the variables affecting the diabetes self-management. In order for individuals to take their own responsibility, it is necessary to define the variables affecting the self-management behaviors.*

**Keywords:** self-management, diabetes, health belief model

## 1. Introduction

Diabetes which is very important disease that requires lifestyle changes and awareness of the individuals, families and caregivers, cause socially and economically burden and increase the rates day to day in recently of developing and developed countries [1,2]. The estimations of TURDEP-II [3] and Diabetes Atlas [4] shows that the prevalence of diabetes in adults (age of 20-79 years) which is 14.6%, the impaired glucose ratio (7.6%) and the number of prediabetic individuals (about 3.5 million) is increasing more rapidly than expected and that they have already reached the predicted numbers [3,4]. Therefore, determination of the affective factors for health related behavior in diabetic individuals, and their perceptions, beliefs and behaviors can be ensured with the health belief model (HBM). Today, the common vision of health protection, development and management of chronic diseases is that the health personnel of the disease should gain their own responsibility in disease management as well as their duties. The basic approach to bring self-management behaviors to individuals is to develop adaptation to the treatment and to lead to the behavioral change rather than giving education [1]. For this, the role of nurses is great in making individual acquire self-care behaviors, ensuring cooperation with the patient, using technology correctly in order to improve the quality of care and supporting treatment compliance in cases requiring long-term treatment such as chronic diseases [5]. Health perceptions, attitudes and existing health behaviors should be identified for the improvement of self-management behaviors in individuals. HBM is used to reveal the reasons for showing or not showing health related behaviors, the behaviors to be protected from the disease, the motivating factors, and the behaviors of individuals related to care and treatment [6-8]. This review paper aimed to explain of diabetes self-management based on health belief model.

When the research findings are examined of the patients with diabetes, it is reported that thoughts about the importance of attitude, intent and health in the management of diabetes are important determinants. the presence of more obstacles can prevent the realization of the target / desired behavior and that the attitude and perceptions of the individual should be strengthened in order to realize the behavior [7,9]. Studies in

the literature indicate that having a negative attitude prevents diabetes care and reduces care; those with positive attitudes are reported to be able to better manage diabetes self-management [7, 10].

## 2. Health Belief Model

The Health Belief Model (HBM), which explains the reasons of the problems experienced by the patients and the relationship between the beliefs and behaviors of the individual, is widely used in health protection, development and health education [6,7]. This model explains how the behavior of the individual to prevent disease and failure is shaped [8,11]. The model shows why some people take responsibility while others are not taking responsibility. This model is effectively used to plan experimental research to improve behavior in explaining, maintaining and improving health behavior [6-8,11,12].

The beliefs, attitudes and behaviors of people with diabetes constitute the basis of diabetes treatment. Health perceptions, attitudes and existing health behaviors should be defined in order to strengthen self-management behaviors of individuals [9,12]. In order to explain health behaviors, it is possible to determine the relationship between individuals' beliefs and behaviors by using the HBM and the reasons for possible noncompliance. The use of HBM is used to elucidate the behavior of health-related behaviors, its behavior for protection from disease, motivating factors, and behaviors of individuals regarding care and treatment. [6-9,11].

The evaluation of health beliefs and behaviors of individuals is a prerequisite to improve self-management of diabetes, to provide a change in lifestyle behaviors of individuals, to improve health and to lead individuals to attain positive health behaviors. In this review, the adaptation of the factors affecting the treatment of diabetic individuals to the conceptual structure of HBM is shown in **Figure 1**.

### 2.1 Individual characteristics

The demographic, psycho-social, and structural variables affect the possibility of individuals to attain the desired behavior [8]. Since the demographic variables such as

gender, age, education, social security, and income [6,13] and variables of disease (such as type and duration of disease) affect the seriousness perception related to disease, they may also affect the compliance to the treatment and recommendations [7,13]. According to the TURDEP-II findings supporting the research results obtained in Turkey, the prevalence of diabetes was found to be higher in women compared to men (17.2% among women, 16.0% among men). This finding may be associated to the factors such as low educational levels of women, lack of awareness about the benefits of healthcare services, and limited freedom in decision-making. The high ratio (40.2%) of primary school graduates is consistent with the values indicating the level of education in Turkish society (43.7%) [14]. Health believed and perceived sensitivity related to disease, seriousness, benefits, and health-related activity scores were found to decrease in women and those with low levels of education [15]. The participation in activities such meeting is effective on psycho-social variables such as personal characteristics, on tendency of the individual towards the health behavior (intention, wish), on change of attitudes and beliefs and on tendency towards the desired health behavior [6-8].

A well-adjusted individual takes medication completely, continuously at the right time and tries to attain recommended lifestyle changes [1,16]. Accordingly, due to the changes in absorption, spread, metabolism and excretion of medicines, the use of insulin and oral antidiabetic medicines requires an attentive care in the patients [16].

The knowledge of individual about the disease, previous experiences, beliefs, culture, traditional characteristics, attitudes, and behaviors of protection from the disease are also effective on participation of patient to the treatment and maintenance of self-care [6,13,17]. The fact that the spiritual and religious practices such as prayer or praying improve the coping mechanism related to the disease, affect the participation to the treatment positively and have influence on maintenance of self-care. However, it was noticed that it was not enough for individuals to search for a hope from this aspect and that individuals were more aware about their diseases.

## 2.2 Perception of seriousness and perceived sensitivity

In the studies conducted [18-21], that health beliefs could affect perceived seriousness and perceived sensitivity. The bad perception of health perception is associated with increasing age-related complications, a life passing with chronic diseases and increased old age problems [22]. According to the study conducted by a Kartal and Özsoy [23], relationship was determined between the level compliance to the diet, measurement of blood glucose and status of exercising of patients and the average health belief score [23].

According to the study findings [15,19,22], it can be said that the duration of diabetes leads to a decrease in the general health perception as the age increases. There may be a certain amount of decrease in the general health perception, depending on the complications of the disease that occur in a long-term.

The seriousness faced about the disease, the results obtained based on experiences gained and possibility of a familiar person to suffer from that disease may lead the individual to be more sensitive to the disease. Even if some people do not suffer from the disease, they are more sensitive about the potential risks of the disease and they need to get information [21]. In studies, it was seen that education is an important factor in increasing awareness of sensitivity perception [23,24]. Genetic structure and negative life changes such as incorrect nutritional behaviors and stress increase blood glucose by increasing the release of cortisone and epinephrine [7, 26]. One dramatic finding of the TURDEP-II study was that 68.7% of the population is obese and overweight [3]. Activators and readiness is important for perceived sensitivity and perceived benefit [10].

## 2.3 Benefit and Barrier perception

Perceived benefit is the belief indicating that individual can be protected from the complications of the disease and adverse effects by preventing the risks, in case of changing behavior [6,13]. Perceived barriers affect the management disease such as treatment-based factors (e.g. participating own treatment, problems with blood collection process), individual factors (e.g. lack of information and consulting, mental dexterity, behaviors) or institutional factors (e.g. waiting time, problems due to health system) [6,8,13,17,24-27] and other complications could change perceived susceptibility (e.g. foot, kidney examinations) [21]. In the studies conducted [24,25,27], that the obstacle perception affected the quality of life and daily life activities. In addition, patients are more inclined to development of acute metabolic complications which require emergency treatment [2,26]. The findings of the study [16,19,23,27,28], the most common complications related to diabetes were determined to be heart disease, problems in the eye, kidney disease and diabetic foot infection. Likewise, as the age increases, it has been shown in the researches that the perceived barriers in compliance to treatment and diabetes disease decreased and the disease was perceived more seriously due to the increased complication risks [17,18,20,21]. Taskaya and Bayram [27] showed that diabetes-related complications developed, the complications experienced by the individuals affected the perception of seriousness of the disease, and as the level of education increased, the perception of seriousness increased in 19.7% of the individuals [27]. In the study conducted by Şermet Kaya and Kitiş [24], it was shown that 28% of the patients developed diabetes, and in the study of Galveia et al. [25] found the complication rate of Portuguese to be 63.9%

## 3. Conclusion

Health belief model is shown that affective variables of diabetes self-management of the patients to the nurses in counseling and education programmes to be carried out. The nurses and other health care professionals need to be consider in order to treatment process to the training programs of the diabetes management.

## References

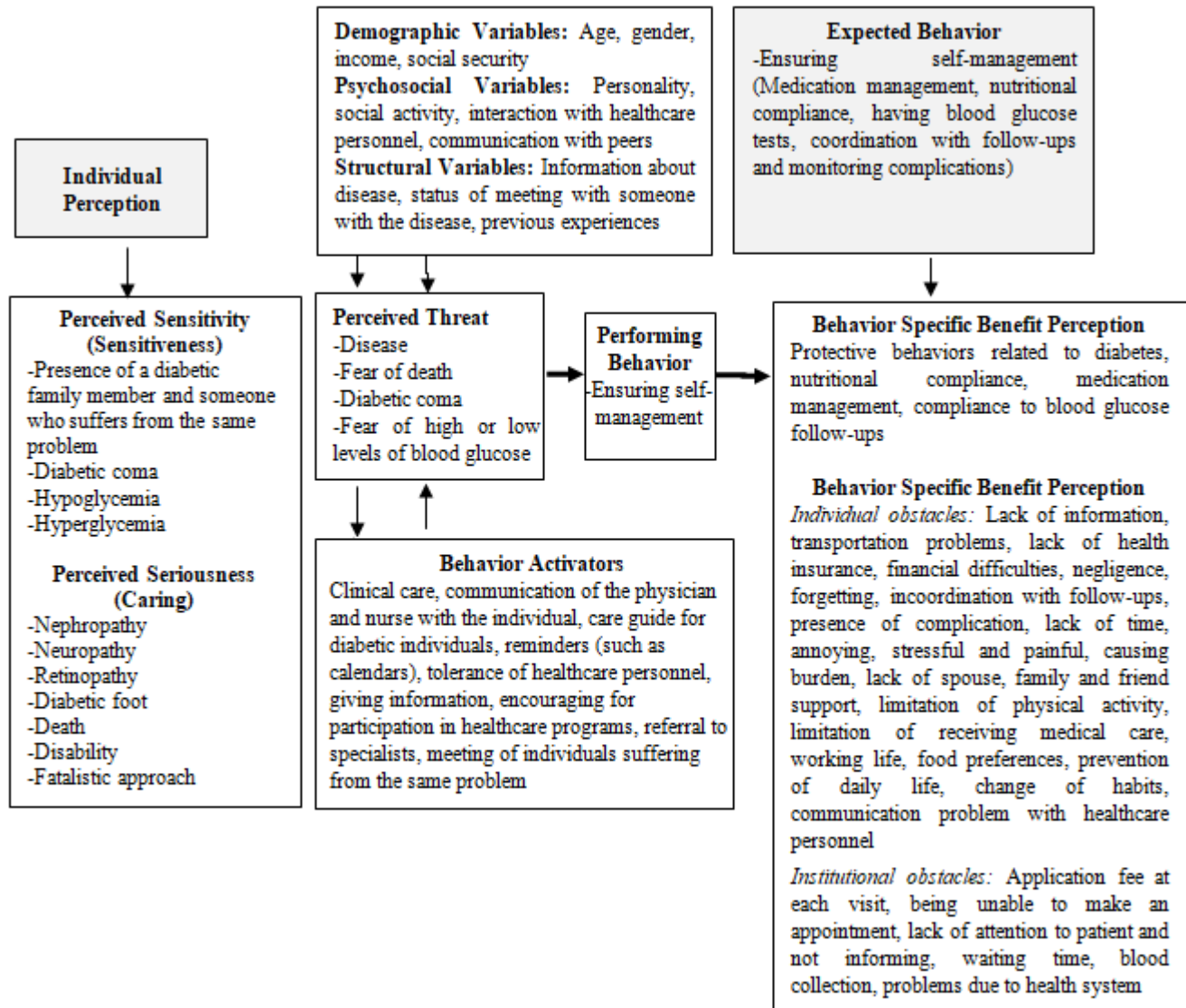
- [1] Yıldırım JG. Medication self-management for individuals with a chronic disease: personal application book. Izmir: Ege University Press; 2017. p. 1-25.
- [2] American Diabetes Association (ADA). Standards of Medical Care in Diabetes: Older Adults, Diabetes Care 2017; 40 (Suppl. 1): S99–S104. <https://doi.org/10.2337/dc17-S014>
- [3] Satman I, Omer B, Tutuncu Y, Kalaca S, Gedik S, Dincag N, et al. TURDEP-II Study Group. Twelve-year trends in the prevalence and risk factors of diabetes and prediabetes in Turkish adults. *Eur J Epidemiol.* 2013;28(2):169-180. <https://10.1007/s10654-013-9771-5>
- [4] IDF, 2013. International Diabetes Federation. Diabetes Atlas. 6th edition, 2013. <http://www.idf.org/diabetesatlas>
- [5] International Council of Nurses (ICN) (2010). Delivering Quality, Serving Communities: Nurses Leading Chronic Care, 1-69, <http://www.icn.ch/images/stories/documents/publications/ind/indkit2010.pdf> (Accessed on 15.09.2017).
- [6] Hayden J. Introduction to health behavior theory. 2nd ed. New Jersey: Jones & Barlett Publishers; 2009. p. 63-105.
- [7] Harvey JN, Lawson L. The importance of health belief models in determining self-care behaviour in diabetes. *Diabetic Medicine,* 2009; 26(1): 5-13. <https://doi.org/10.1111/j.1464-5491.2008.02628.x>
- [8] Heiss GL. Health promotion and risk reduction in the community. In: Maurer FA, Smith CM, editors. *Community/Public Health Nursing Practice: Health for Families and Populations*, 5th ed. USA: Elsevier Inc.; 2013. p. 466-477.
- [9] Muslu L, Ardahan M, Günbayı M. Tip 2 Diabetes Mellituslu Hastaların Psikososyal Uyum Sürecine İlişkin Görüşleri: Fenomenolojik bir Araştırma. *Psikiyatride Güncel Yaklaşımlar* 2017;9(1):75-100.
- [10] Champion VL, Skinner CS. The health belief model. In: Glanz K, Rimer BK, Viswanath KV, editors. *Health Behavior and Health Education: Theory, Research and Practice*, New York: 2008. p. 45-62.
- [11] Onega LC, Jensen AA. Community Health Education. Theories, models and principles. *Community & public health nursing*. Stanhope M, Lancaster J. eds 8 th ed. USA: Mosby; 2013. p. 295-315.
- [12] Tan MY. The Relationship of Health Beliefs and Complication Prevention Behaviors of Chinese Individuals with Type 2 Diabetes Mellitus. *Diabetes Res Clin Pract* 2004;66(1):71-7.
- [13] Pender N, Murdaugh CL, Parsons MA. *Health promotion in nursing practice*, 5th ed. New Jersey: Pearson Education; 2006. p. 50-66.
- [14] TSI (Turkey Statistic Institute), 2018. Elderly with statistics, 2017. Number: 27595. March 15, 2018. <http://www.tuik.gov.tr/PreHaberBultenleri.do?id=27595> Accessed on 27.03.2018.
- [15] Ağralı H, Akyar I. Older diabetic patients' attitudes and beliefs about health and illness. *J Clin Nurs.* 2014;23(21-22):3077-86. <https://doi.org/10.1111/jocn.12540>
- [16] Chin YR, Lee IS, Lee HY. Effects of hypertension, diabetes, and/or cardiovascular disease on health-related quality of life in elderly Korean individuals: a population-based cross-sectional survey. *Asian Nurs Res (Korean Soc Nurs Sci).* 2014;8(4):267-273. <https://10.1016/j.anr.2014.10.002>
- [17] Nagelkerk J, Reick K, Meengs L. Perceived barriers and effective strategies to diabetes self-management. *2006;54(2):151-158.* <https://doi.org/10.1111/j.1365-2648.2006.03799.x>
- [18] Gokdogan F, Akinci F. Practices and perceptions about their health and diseases of patients with diabetes mellitus in Bolu. *Cumhuriyet University Journal of Nursing School.* 2001; 5(1): 10-17. <http://eskidergi.cumhuriyet.edu.tr/makale/580.pdf>
- [19] Kir E. An investigation on the effects of health beliefs of diabetic patients on care. Abant İzzet Baysal University, Institute of Health Sciences, Bolu, 2003.
- [20] Akar Z, Bebis H, Ozdemir S. The relationship between health beliefs and some of the socio-demographic characteristics of the patients with diabetes. *Ege University Journal of Nursing Faculty.* 2014;30 (3):32-46. <http://dergipark.gov.tr/download/issue-file/8523>
- [21] Hsieh YL, Lee FH, Chen CL, Chang MF, Han PH. Factors Influencing Intention to Receive Examination of Diabetes Complications. *Asian Nurs Res (Korean Soc Nurs Sci).* 2016;10(4):289-294. <https://10.1016/j.anr.2016.10.004>
- [22] Ozcan S. Analysis of the Factors Influencing Illness Perception in Patients with Diabetes. İstanbul University Institute of Health Sciences, İstanbul, 1999.
- [23] Kartal A, Ozsoy S. Effect of planned diabetes education on health beliefs and metabolic control in type 2 diabetes patients. *Journal of Hacettepe University Faculty of Nursing* 2014; 1(2); 1–15. <http://dergipark.ulakbim.gov.tr/hunhemsire/article/view/5000154740/5000139945>
- [24] Şermet Kaya Ş, Kitis Y. Elderly diabetes patients' health beliefs about care and treatment for diabetes. *J Human Sciences.* 2018; 15(1): 51-61. <https://doi.org/10.14687/jhs.v15i1.4903>
- [25] Galveia A, Cruz S, Deep C. Impact of social demographic variables on adherence to diabetes treatment and in the prevalence of stress, anxiety and depression. *ARSA,* 2012;1(1):2145-2152. <http://arsa-conf.com/archive/?vid=1&aid=2&kid=60101-116>
- [26] Gumus E, Celik H, Ozkan S, Keskinilic B, Çakır B, Satman I, et al. Ministry of Health Turkey Diabetes Program. (2015-2020). Turkish Institution of Public Health. Ankara, 2014. <http://beslenme.gov.tr/content/files/diyabet/turkiyedyabetprogrami.pdf> (Accessed on 15.09.2017).
- [27] Taskaya S, Bayram Ş. Factors Affecting Adherence to Treatment and Health Care Utilization and Quality of Life of Patients with Diabetes. Hacettepe University Graduate School of Social Sciences, PHD Thesis in Health Institutions Administration. Ankara, 2014. <http://www.openaccess.hacettepe.edu.tr:8080/xmlui/handle/11655/2481>
- [28] Centers for Disease Control and Prevention. Diabetes Public Health Resource. Available from [www.cdc.gov/diabetes](http://www.cdc.gov/diabetes). Accessed 27 March 2018.

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**Figure 1:** Adaptation of factors affecting treatment of diabetic individuals to the conceptual structure of the Health Belief Model.