

Korean Society of
Nursing Science

Contents lists available at ScienceDirect

Asian Nursing Research

journal homepage: www.asian-nursingresearch.com

Research Article

Factors Influencing Intention to Receive Examination of Diabetes Complications

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ARTICLE INFO

Article history:

Received 21 May 2016

Received in revised form

16 September 2016

Accepted 9 October 2016

Keywords:

diabetes complications

diabetes mellitus

health

SUMMARY

Purpose: The purpose of this study was to understand the situation of diabetes patients receiving examinations for diabetes complications and to explore the factors influencing their intention to receive examinations for diabetes complications.

Methods: A cross-sectional study was performed that included 251 diabetes patients who visited outpatient clinics in Southern Taiwan. A survey using a self-administered questionnaire was conducted from October 2015 to January 2016. The questionnaire included items on demographic characteristics, perceived susceptibility to diabetes complications, perceived seriousness of diabetes complications, perceived benefits of taking action to receive diabetes complication examinations, perceived barriers to taking action to receive diabetes complication examinations, and the intention to receive diabetes complication examinations. The data were analyzed using regression analysis.

Results: The percentage of participants who received fundus, foot, and kidney examinations was 67.7%, 61.4%, and 73.3%, respectively. Every point increase on the perceived barriers to taking action to receive diabetes complication examinations scale increased the intention to receive a foot examination in the following year by 0.91 times ($p = .002$), and every point increase on the perceived susceptibility to diabetes complications scale increased the intention to receive a kidney examination in the following year by 1.19 times ($p = .045$).

Conclusions: Nurses should shoulder the responsibility to increase patients' intention to receive examination of diabetes complications. The results of this study can be used to promote nurses' care efficacy in preventing diabetes complications. They can also provide medical institutions with information to establish prevention and control policies for diabetes complications.

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Introduction

It has been estimated that, by 2025, the total number of diabetes patients will have increased to 380 million [1]. The Taiwanese Association of Diabetes Educators [2] has pointed out that the number of diabetes patients in Taiwan has been increasing annually, and diabetes mellitus has become the fifth most common cause of

death. Diabetes-related complications are major causes of morbidity and mortality, and they have a serious impact on the quality of life of patients [3]. Therefore, diabetes complication examination plays an important role in diabetes management [4].

Diabetic retinopathy is the most common small vasculopathy amongst diabetes complications [1]. Diabetic retinopathy is asymptomatic in its early stages, and regular screening and prevention can reduce blindness rates in diabetes patients [5]. Another study indicated that, for diabetes patients with retinopathy, medical expenses, time for outpatient visits, and hospitalization days were greater than for diabetes patients without retinopathy, and the differences increased with the severity of the retinopathy,

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which also increased the consumption of medical resources [6]. Foot lesion is also a common chronic complication of diabetes; about 15.0%–25.0% of diabetes patients develop foot ulcers, and the odds that a diabetes patient will face amputation due to foot complications is 25 times greater than for nondiabetic patients [7]. Additionally, diabetic nephropathy has become the most common cause of morbidity and a key determinant of mortality in diabetes patients [8]. Around 30.0% of diabetes patients develop nephropathy, which is also a major cause of end-stage renal diseases [9,10]. A study in Taiwan found that the nephropathy incidence rate in diabetes patients had increased from 12.3% in 2000 to 15.4% in 2009, while the subsequent dialysis rate also increased from 1.5% in 2000 to 2.5% in 2009. Between 2000 and 2009, the incidence of retinopathy was 6.2%–8.9%, while the incidence of poor vision/blindness was 0.5%–0.6%. Furthermore, 94.0% of diabetic foot patients have had foot infections treated in hospitals, although the morbidity related to diabetic foot decreased from 1.7% in 2000 to 1.0% in 2009. However, there were still approximately 13,000 diabetes patients who had diabetic foot treated in hospitals, and the amputation rate was as high as 28.4% in 2009 [11]. According to these statistics, a major part of diabetes medical care costs has been expended on caring for complications caused by diabetes [3]. Hence, conducting complication examinations before diabetes patients develop such complications has become a crucial process.

The theoretical framework for this study was drawn from the health belief model (HBM) [12]. The HBM is one of the most widely used models for explaining health-related behavior [13]. The essential elements of the HBM are perceived susceptibility to illness, perceived severity of illness, perceived benefits to taking action, and perceived barriers to taking action [14]. In addition, many studies have used the HBM for explaining and predicting diabetes patients' preventive behaviors against complications [3,14].

Lou et al [15] demonstrated that individuals who were living with family members, had longer disease duration, and had family support had better self-care behaviors. Koo et al [16] found that those who had drinking and smoking habits in the past 6 months and were religious had poorer diabetes self-care behaviors, while Bohanny et al [17] found that those who were married had better diabetes self-care behaviors. Gillibrand and Stevenson [18] showed that diabetes patients who had lower perceived severity of the disease were more adherent to self-care. Another study found that individuals with lower perceived barriers to taking action were more likely to engage in self-care behaviors [3].

The situation of diabetes patients' behaviors in terms of receiving complication examinations, as well as factors affecting behavioral intention toward complication examinations, are closely associated with diabetes management. However, in Taiwan, few studies have used a theoretical framework to explain or predict complication examinations in diabetes patients. Hence, in this study, a quantitative method was used to examine the situation of diabetes patients receiving examinations for diabetes complications and to explore the factors influencing their intention to receive examinations for diabetes complications.

Methods

Study design and participants

This study adopted a cross-sectional research design and used the HBM as the framework. The concept of the HBM used in this study included perceived susceptibility, perceived seriousness, perceived benefits of taking action, and perceived barriers to taking action.

The study included diabetes patients who visited the outpatient clinics of metabolism departments in Southern Taiwan as participants. The inclusion criteria for participants were (a) a diabetes diagnosis, (b) participation in National Health Insurance, and (c) the ability to communicate verbally. Participants were excluded if (a) they were unable to provide an informed consent statement and (b) they had underlying diseases that may cause cognitive impairment, such as mental illness. The required sample size was calculated as 228 using the G*Power 3.1 sample calculation program with a two-tailed significance level of .05, effect size of .3, and power of 80.0% [19]. Considering a failure rate of 10.0%, the survey was distributed to 255 participants; 251 (98.4%) of the participants who met the inclusion criteria completed the questionnaires.

Ethical considerations

The institutional review board of the hospital approved the study (Jianan Psychiatric Center, Ministry of Health and Welfare, 15-010). The participants' agreement and consent to participate in the study were also secured prior to the survey. Participants were informed that they could withdraw from the study at any time.

Measurements

The instrument included items on demographic characteristics and disease conditions, and a Perceived Susceptibility to Diabetes Complications Scale (PSuDCS), Perceived Seriousness of Diabetes Complications Scale (PSeDCS), Perceived Benefits of Taking Action to Receive Diabetes Complication Examinations Scale (PBeDCES), Perceived Barriers to Taking Action to Receive Diabetes Complication Examinations Scale (PBaDCES), and an Intention to Receive Diabetes Complication Examinations Scale (IDCES). This study used the PSuDCS and PSeDCS developed by Wu and Huang [20]. The PBeDCES, PBaDCES, and IDCES were developed based on a review of the literature [20–22]. The content validity of the instruments was verified by three experts who were diabetes specialists and case managers. The content validity index for the PBeDCES, PBaDCES, and IDCES was 1.0, 1.0, and .90, respectively. Thirty participants were invited to examine the reliability and the 2-week test-retest reliability of the scales. The Cronbach α for the PBeDCES, PBaDCES, and IDCES was .84, .83, and .74, respectively. The 2-week test-retest reliability for the PBeDCES, PBaDCES, and IDCES was .86, .80, and .72, respectively.

Demographic characteristics and disease conditions

The demographic characteristics and disease conditions included gender, age, marital status, cohabitants, smoking, history of diabetes, caregiver, regular medication, and the percentage of participants who received diabetes complication examinations.

The PSuDCS consisted of five items that were measured using a 4-point Likert type scale (1 = *strongly agree*, 4 = *strongly disagree*). Higher scores indicate a higher perceived susceptibility to diabetes complications. The Cronbach α for this scale was .81 in previous studies [20] and .85 in the current study.

The PSeDCS comprised four items that were measured using a 4-point Likert type scale (1 = *strongly agree*, 4 = *strongly disagree*). Higher scores indicate a higher perceived seriousness of diabetes complications. The Cronbach α for this scale was .87 in previous studies [20] and .91 in the current study.

The PBeDCES consisted of four items that were measured using a 4-point Likert type scale (1 = *strongly agree*, 4 = *strongly disagree*). Higher scores indicate higher perceived benefits of taking action to receive diabetes complication examinations.

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