

**ความรู้และการปฏิบัติตัวเพื่อการป้องกันการเกิดแผลที่เท้า
ในผู้ป่วยโรคเบาหวานชนิดที่ 2 ในโรงพยาบาลโฮดอง ประเทศเวียดนาม
Knowledge and Practice Regarding Foot Ulcer Prevention
in Type 2 Diabetic Patients at Hai Duong General Hospital,
Hai Duong Province, Vietnam**

บทความวิจัย

วารสารพยาบาลศาสตร์และสุขภาพ

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บทคัดย่อ

การวิจัยเชิงพรรณานี้มีวัตถุประสงค์เพื่อศึกษาระดับความรู้และการปฏิบัติตัว และหาความสัมพันธ์ระหว่างความรู้และการปฏิบัติตัวเพื่อการป้องกันการเกิดแผลที่เท้าในผู้ป่วยโรคเบาหวานชนิดที่ 2 ในโรงพยาบาลโฮดอง ประเทศเวียดนาม ทำการศึกษาจากกลุ่มตัวอย่างผู้ป่วยโรคเบาหวานชนิดที่ 2 จำนวน 384 รายที่มีอายุ 18 ปีขึ้นไป ที่เข้ารับการรักษาที่คลินิกแผนกต่อมไร้ท่อ โรงพยาบาลโฮดอง ประเทศเวียดนาม ทำการเก็บรวบรวมข้อมูลระหว่างเดือนเมษายนถึงเดือนมิถุนายน 2557 วิเคราะห์ข้อมูลด้วยสถิติเชิงพรรณนาและหาความสัมพันธ์ ผลการศึกษาพบว่า ระดับความรู้ในการป้องกันการเกิดแผลที่เท้าโดยส่วนมากอยู่ในระดับสูง คะแนนเฉลี่ยความรู้เท่ากับ 23.08 จากคะแนนเต็ม 28 (SD = 3.22) ในขณะที่ระดับคะแนนการปฏิบัติเพื่อป้องกันแผลที่เท้าเท่ากับ 68.38 จากคะแนนเต็ม 112 (SD = 11.93) ความรู้และการปฏิบัติตัวเพื่อการป้องกันการเกิดแผลที่เท้า มีความสัมพันธ์เชิงบวก ($r=0.517$) อย่างมีนัยสำคัญทางสถิติ ($p<.01$)

คำสำคัญ: ความรู้ การปฏิบัติตัว แผลที่เท้า โรคเบาหวานชนิดที่ 2 ผู้ป่วยเวียดนาม

Abstract :

This descriptive correlational study aimed to describe the level of knowledge, practice and explore the relationship between knowledge and practice regarding foot ulcer prevention among adults with type 2 diabetes in Vietnam. A sample of 384 patients with type 2 diabetes aged over 18 years at Department of Endocrinology Clinic at Hai Duong General Hospital was randomly selected for this study. The questionnaire was used to collect data during April to June 2014. Descriptive statistics and Pearson Product Moment were used to analyze the data. The result showed that knowledge regarding foot ulcer prevention was at high level, with the average score of 23.08 out of a possible 28 (SD = 3.22). However, practice for foot ulcer prevention was at low level, with the average score of 68.38 out of a possible 112 (SD = 11.93). The study revealed that there was a positive correlation between knowledge and practice ($r=0.517$, $P<0.01$).

keywords: knowledge, practice, foot ulcers, type 2 diabetes, Vietnamese patients

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Background and significance

Diabetes mellitus (DM) is one of the common chronic diseases and a serious health care problem in both developed and developing countries. The prevalence of diabetes around the world was more than 366 million in 2011. It is anticipated that this number will rise to approximately 552 million by the year 2030. The Western Pacific Region is the region that has the highest number of persons with diabetes at 132 million, followed by Southeast Asia (SEA) with a figure of 74.1million¹. Vietnam is one of Southeast Asian countries demonstrating prevalence of diabetes at more than 4.5 million. It is predicted that by 2025 this number will rise to about 8 million².

Foot ulcers are one of the most common complications in people with Type 2 diabetes which lead to lower extremity amputations and a major cause of hospital admissions³⁻⁵. A study showed that there were approximately 4% to 10% of people with diabetes developing foot ulcer annually, and around 25% of those with diabetes would develop at least one foot ulcer during their lifetime⁶. Similarly, in Vietnam, diabetic foot ulcer are becoming serious complications and are a primary cause of morbidity among people with Type 2 diabetes. In Vietnam patients are usually diagnosed late, and worrisome is the fact that 64% of patients did not know that they had diabetes. Thus, when they were hospitalized with serious complications foot ulcers were the most common issue⁷. Currently, the rate of leg amputation among Vietnamese with diabetes due to foot ulcers is rather high accounting for a figure of 50%⁸.

Management of diabetes and prevention of its complications are complicated. Nonetheless, research evidence shows that the effective strategy in the prevention of foot ulcers is glycemic control, regular foot

examination and patient education. This can decrease the rate of ulcers and amputations by 44% to 85%⁹. However, results of a pilot study indicated that the practice of foot care among patients with Type 2 diabetes was still at a low level. Thus, in order to help these Vietnamese patients in preventing foot ulcers, it is necessary to increase their knowledge and motivation in the course of foot care practice. This may require an effective strategy to help and support diabetic patients with the use of self management to prevent any further complications, especially foot ulcer action. Still, before establishing a planned education program, it is necessary to know the current level of knowledge and practice with regards to the general prevention of complications upon foot ulcers in particular.

This study aimed to identify levels of knowledge and practice of patients with Type 2 diabetes and explore the relationship between knowledge and practice regarding foot ulcer prevention.

Method

A descriptive correlation design was carried out in 384 patients with type 2 diabetes who being followed up in the endocrinology department and the outpatient clinic at the Hai Duong General Hospital, Hai Duong Province, Vietnam. Sample size estimation was calculated based on Lwanga and Lemeshow¹⁰ $n = Z^2 p (1-p) / d^2$. In this study p was set up to 50% due to the assumption that half of the study population had knowledge about foot ulcer prevention and the other half did not and at 95% confidence interval with margin of error of 5%. The inclusion criteria included: (1) patient has been diagnosed with type 2 diabetes for 6 months or longer, (2) aged 18 or above and (3) full awareness and willing to participate in the study. Simple random sampling technique was utilized for this

study. The researcher list of Type 2 diabetic patients meeting the criteria of the study was obtained from the Endocrinology department and outpatient clinic. Next, the researcher establishes two codes, one for the even numbers and other for the odd numbers. Then putting the two codes in the box the researcher randomly selected one of the two codes. In the case of the selected code being an even number the researcher selected all patients in the list with an even number and in the case of the selected code being an odd number then the selected patients was those with the odd number.

Data collection

After receiving approval from the ethical committee for Human Research of Hanoi University of Public Health, Vietnam as well as permission of the leader of Hai Duong General Hospital Vietnam, the researcher met the participants to explain the purpose of the study and provided them consent form. When the participant clearly understood the study and agreed to participate in the study, the researcher distributed the questionnaire to all participants. Data was collected during 1 April–15 June, 2014.

Research Instruments

The instrument used in this study was modified from the “Bangladeshi Diabetes Measurement Instrument” developed by Belgum¹¹. The questionnaire consists of 67 questions divided into three parts: (1) background, (2) knowledge related to foot ulcer prevention and (3) practice about preventing foot ulcers.

These modified questionnaires were tested via the content validity index (CVI) by 3 experts who specialized in diabetic patient care (2 physicians and 1 nurse). The result of the I-CVI from the experts was 1.0.

Reliability was tested by using the questionnaire with 30 patients with Type 2 diabetes who had the same characteristics as the study’s participants. The Cronbach’s alpha Coefficient of Knowledge Regarding Prevention of Foot Ulcer Questionnaire was .785 and Practice Regarding Prevention of Foot Ulcer Questionnaire was .885. The questionnaires were also translated into Vietnamese language following the process of instrument translation by World Health Organization.

Data analysis

Descriptive statistics consist of frequency, percentage, mean, and standard deviation; all used to present the description of demographic characteristics and levels of knowledge and practice. Pearson’s Product–Moment Correlation was used to examine the relationship between knowledge and practice related to foot ulceration prevention in patients with Type 2 diabetes.

Findings

Demographic characteristics

In total, 384 adults with Type 2 diabetes who met the study’s inclusion criteria agreed to participate in this study. The average age of participants was 60.5 years (SD= 11.7); ranged from 22 to 85 years. There were more females (58.3%) than males (41.7%). Most of the participants (92.2%) were married. The educational level of participants was mainly junior high school (46.4%). In terms of income, 41.7% had an income per month from 1,000,000 to 3,000,000 VND. More than fifty percent were retired (51.8%) besides that 0.8% were unemployed, the rest had jobs but in various fields. The vast majority of the participants lived with spouse and children (82.3%). The length of time the participants had type 2 diabetes

ranged from 6 months to 22 years, only 4.7% of patients had had diabetes for less than one year. 42.2% were diagnosed with diabetes from one to five years and 38% were diagnosed with diabetes for more than ten years. Some participants had had experience of foot ulcers (15.1%). Some were current smokers (16.7%).

Level of knowledge regarding foot ulcer prevention:

Table 1 Range score, Min score, Max score, Mean and Standard deviation (SD) of knowledge related to foot ulcer prevention in patients with Type 2 diabetes (N=384).

| Knowledge related to foot ulcer prevention | Estimated score | Minimum score | Maximum score | Mean score | Standard deviation | Level |
|--------------------------------------------|-----------------|---------------|---------------|------------|--------------------|-----------|
| Risk factors relating to foot ulcer | 0 - 4 | 1 | 4 | 2.87 | 1.29 | High |
| Diet habit | 0 - 5 | 0 | 5 | 4.47 | 0.96 | Very high |
| Exercise | 0 - 5 | 2 | 5 | 4.49 | 0.74 | Very high |
| Foot care | 0 - 15 | 5 | 15 | 11.25 | 2.16 | High |
| Total knowledge | 0 - 29 | 14 | 29 | 23.08 | 3.22 | High |

Table 2 Level of each dimension and overall knowledge regarding prevention of foot ulcer (N=384)

| Knowledge regarding foot ulcers | n | Percentage | Level |
|--------------------------------------|-----|------------|-----------|
| Risk factors relating to foot ulcers | 194 | 50.5 | Very High |
| Diet | 348 | 64.1 | Very High |
| Exercise | 340 | 62.2 | Very High |
| Foot care | 190 | 34.6 | High |
| Overall knowledge | 185 | 34.9 | High |

Level of practice regarding foot ulcer prevention

Table 3 Range score, Min score, Max score, Mean and Standard deviation (SD) of practice related to foot ulcers prevention of patients with type 2 diabetic (N=384).

| Practice related to foot ulcer prevention | Estimated score | Minimum score | Maximum score | Mean score | Standard deviation | Level |
|-------------------------------------------|-----------------|---------------|---------------|------------|--------------------|----------|
| Risk factors relating to foot ulcers | 4 - 16 | 4 | 15 | 9.62 | 1.15 | Moderate |
| Diet habit | 5 - 20 | 6 | 20 | 13.3 | 2.49 | High |
| Exercise | 2 - 8 | 2 | 8 | 5.96 | 2.06 | High |
| Foot care | 17 - 68 | 21 | 61 | 39.45 | 7.94 | Moderate |
| Total practice | 28 - 112 | 38 | 102 | 68.36 | 11.93 | Moderate |

Table 4 Level of each dimension and overall practice regarding prevention of foot ulcers (N=384)

| Practice regarding foot ulcers | n | Percentage | Level |
|--------------------------------------|-----|------------|-----------|
| Risk factors relating to foot ulcers | 241 | 62.8 | Very Low |
| Diet | 254 | 40.6 | Moderate |
| Exercise | 174 | 37.5 | Very Good |
| Foot care | 217 | 56.5 | Very low |
| Overall practice | 193 | 46.6 | Very low |

The relationship between practice and knowledge and sub-dimension of knowledge

Table 5 Correlation between Total practice and total knowledge and the Sub-dimensions of knowledge (N=384).

| Variables | Sub-dimensions of knowledge | | | | |
|-----------------------------|-----------------------------|---------|----------|-----------|-----------------|
| | Risk factors of foot ulcers | Diet | Exercise | Foot care | Total knowledge |
| Risk factors of foot ulcers | 0.214** | -0.07 | 0.009 | 0.356** | 0.579** |
| Diet habit | 0.424** | 0.241** | 0.107* | 0.424** | 0.494** |
| Exercise | 0.262** | 0.159** | 0.062 | 0.262** | 0.382 |
| Foot care | 0.450** | 0.033 | 0.064 | 0.450** | 0.452** |
| Total practice | 0.370** | 0.108* | 0.075 | 0.479** | 0.517** |

Note: * p< 0.05; ** p<0.01

Discussion

Level of knowledge related to foot ulcer prevention

Research evidence indicates that preventing foot ulcers complications and it seems to be difficult for patients due to a lack of knowledge¹². The reason for insufficient knowledge was patients did not receive adequate foot care instruction from their health care providers¹³. The findings of this study showed that knowledge regarding foot ulcer prevention comprising risk factors of foot ulcers, diet, exercise and foot care among adults with type 2 diabetes was at a high level.

The present findings must be interpreted in the context of previous studies. A study in Bangladesh reported that the majority of patients had good knowledge related to preventing foot ulcers with 84.67% of patients displaying high knowledge levels about risk factors of foot ulcers, 92.66% had very good knowledge regarding diet, 81.94% had good knowledge relating to exercise and 83.2% had good knowledge in term of foot care¹¹. A study which assessed knowledge regarding foot care in Vietnamese diabetic patients also showed that more than 70% of patients had good knowledge relating to foot care¹⁴. The present findings correspond with the above studies which showed that most patients have adequate knowledge in preventing foot ulcers^{11, 14}. High level of knowledge can be explained due to easy access to mass media such as television, radio, newspaper and internet which help patients gain the necessary information about diabetes. Thunberg & Hellenberg¹⁴ also showed that most Vietnamese patients thought that media sources were the most effective way for the increasing of knowledge. Furthermore, the majority of participants had completed high school (46.4%) and 24.7% completed junior high school, and the others had completed higher education. A pre-

vious study showed that the type 2 diabetes patients with higher education had better knowledge level than those with a lower education^{12, 15}. In addition, previous studies in Vietnam indicated that more than ninety percent of participants had been advised about diet, exercise, medication and blood glucose control by health care workers¹⁶.

The study found that diet and exercise were at a high level. Most participants believed that diet and exercise play an important role for people with diabetes. The participants knew that controlling diet and following a book's instructions combined with exercise regularly would maintain blood glucose at normal range as well as preventing complications of diabetes. However, this result contrasts with a study by Bui¹⁷ which stated that knowledge of Vietnamese diabetic patients regarding diet and exercise was low and insufficient. This can be explained whereby that the study was conducted on a small sample size (100 patients) and on new cases who had had with diabetes for less than 6 months. These factors can lead to a lack of knowledge in patients.

In terms of foot care knowledge, foot care knowledge was rank lowest among four domains. The results revealed that 34.6% of patients had good knowledge level. Yet, around 50 % answered that it was not right to apply lotion on the feet (49.7%), with regards to inspecting the feet during or after bath 46.6 % answered wrongly, 28.1% of patients reported that there was no need to inspect footwear or the inside. This shows that many patients in this study still did not know about correct foot care. One possible reason for good knowledge outcome about foot care is that most of the questionnaire content was based on about foot care and personal hygiene. This result corresponded with a study by Thunberg & Hellenberg¹⁴ conducted in Vietnam but

contrast with a study by Kumar J P¹⁸ which revealed that there 62.54% of patients possessed poor knowledge regarding foot care.

Level of practice regarding foot ulcer prevention

The results of this study found that practice regarding foot ulcer prevention among adults with type 2 diabetes amid the study population was limited.

Regarding practice to identify risk factors of foot ulcers, 62.8% were at a very low level. Low level can be due to lacking time, glucometer and weighting scales. Meanwhile Guerci et.al¹⁹ recommended regularly monitoring blood glucose level to be checked at home; before each meal and at bedtime. Following this method found that there was an association with better improvement of metabolic control. Nonetheless, monitoring of blood glucose depends on the availability of resources to individual²⁰. In Vietnam, a physician or health care staffs advise patients to check blood glucose level and body weight daily but most patients lack equipment i.e. glucometer and weighting scales. Moreover, out-patients just follow their appointment schedule once a month or once every two or three months. Few patients have sufficient income to check themselves every day.

With regard to the level of diet habit practice, this study found diet practice among participants was at a moderate level. This result corresponded with a previous study by Bui¹⁷ which mentioned that practice regarding diet of diabetic patients was not optimal; however, it contrasted with the results presented by Sofie and Nylander¹⁶ which showed that most diabetic patients had followed a healthy diet plan. Nevertheless, diet practice at a moderate level can be impacted by culture. In Vietnam, rice and other kind of food which has the original construct from carbohydrate noodle or

bread is main dish of any meal for nearly all Vietnamese people. Therefore, control amount of carbohydrate in Vietnamese diabetic patients is not easy because it is a part their life. Furthermore, it is difficult for diabetic patients have own meals because eating with family members is a custom of Vietnamese.

Exercise practice: The result of exercise practice was at a very good level. The majority of participants exercised for at least 30 minutes per day for 5 days a week or did exercise daily. This result was supported by Sofie and Nylander¹⁶, on the other hand, this finding was the opposite to Bui's¹⁷ study result which said that patients did not completely follow exercise advise as recommend.

Foot care practice: The findings of this study show that practice regarding foot care among adults with type 2diabetes in Vietnam was at the low level (56.5%). The 60.2% stated that they never used moisture lotion or oil in between the toes to prevent cracks in feet and keep the skin soft. 30.5% had never washed their feet with warm water and 40.9 % did not check the inside of footwear with one reason that most patients stated that their feet had no problems, they were still fine so there was no need to take care of their feet every day. The result concurred with a previous study²¹ which indicated that diabetic patients exhibited poor practice. Still, this finding was the opposite to a study by Sofie and Nylander¹⁶ which showed that diabetic patients took good care of the feet. Results of this study showed that most patients had poor practice regarding foot care, therefore, health care givers in Vietnam should improve their foot care recommendations and instruction more often to patients to encourage them to translated knowledge received into action.

The relationship between knowledge and practice regarding foot ulcer prevention

Results found that there was a small but significant positive correlation between total practice and total knowledge score and sub-dimensions of knowledge such as risk factor of foot ulcers, diet, and foot care regarding foot ulcer prevention. However there was no relationship between total practice and exercise knowledge. Even though total knowledge was at the high level and total practice was at the low level there was a positive relationship between them. This meant that diabetic patients who were more knowledgeable were more likely to engage in practice. These finding concur with previous studies which showed that there was a weak significant positive correlation between knowledge and practice amid diabetic patients^{11, 17}. However, not all studies revealed positive result of the relationship between knowledge and practice. Ikombele²² indicated that there was no relationship between knowledge level and practice level of participants in lifestyle modification, meaning that receiving of knowledge did not necessarily translate into healthy lifestyle practices in diabetic patients. This can be explained that even after patients had received the relevant knowledge related to foot ulcer prevention, performing the practice in reality could be affected by other factors such as no free time for exercise, difficult to follow diabetes diet as cultural factor or self monitoring related to low income, therefore only knowledge might not be sufficient to change the behaviors in some cases. Even though there was a different conclusion about the relationship between knowledge and practice of diabetic patients in previous studies, providing knowledge about disease and prevent complications to patients is essential.

Implications and recommendations

The findings of this study can aid nurses as well as health care providers in terms of having additional information and an overview about the levels of knowledge and practice regarding foot ulcer prevention in adults with type 2 diabetes in local areas. Findings from this study suggest future health education should put emphasis on those areas where there are knowledge deficits concerning foot care.

Conclusion

This study indicated that knowledge among adults with type 2 diabetes in Vietnam was high level but practice regarding prevention of foot ulcers in patients was limited; especially foot care. The study also found that there was a significant relationship between knowledge and practice. Besides that, these findings can be implemented to guide a health education program on foot care for people with diabetes.

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