FOOT CARE KNOWLEDGE AND PRACTICE AMONG VIETNAMESE PATIENTS WITH TYPE 2 DIABETES: IMPLICATIONS FOR HEALTH CARE ADMINISTRATION

Pranee C. Lundberg
Department of Public Health and Caring Sciences, Uppsala University
Box 564, SE-751 22 Uppsala, Sweden
pranee.lundberg@pubcare.uu.se

Lan Thi Phuong Nguyen
Department of Nursing, Faculty of Nursing and Medical Technology, University of Medicine and Pharmacy, Ho Chi Minh City, Vietnam
nguyenthiphuonglan84@gmail.com

Piyasiri Ruangsrimun
School of Economics, Sukhothai Thammathirat Open University, Bangpood, Pakkred, Nonthaburi, Thailand
piyasiri.rua@stou.ac.th

ABSTRACT

Diabetes is a major chronic disease with predicted incidence of more than 80% in developing countries by 2030. A descriptive study using quantitative method was undertaken with the aim to investigate the knowledge and practice of foot care among patients with type 2 diabetes in Ho Chi Minh City and also if there was any difference between genders. One hundred patients participated voluntarily by answering a questionnaire. Data collected at the out-patient clinic of the University Medical Center, Ho Chi Minh City, were analysed by use of statistics. The result showed that more than 70% of the patients had good knowledge of foot care and that there was no significant difference between the genders. The patients' foot care practice varied. Women more commonly than men used a hot water bottle or a heating pad on their feet while men more commonly than women wore broad, round toes and shoes made of leather or canvas. In conclusion, the patients' foot care knowledge was mostly good but the quality of their practice varied. Health care administration should provide diabetes education including complications and foot care practice to patients and to those of their relatives who act as caregivers. The education should be implemented through culturally appropriate training/intervention programs. Support groups should also be developed and implemented.

Keyword: Type 2 Diabetes, Knowledge, Practice, Foot Care, Health Care Administration

INTRODUCTION

Diabetes mellitus is a major chronic disease. Lifestyle-related diseases like diabetes mellitus have emerged as major public health problems (Khamsch et al., 2007). The World Health organization has predicted that by 2030 the global burden of diabetes will be 366 million of which more than 80% will be in developing countries (Wild et al., 2004). Diabetic foot is a common complication as a result of poor diabetic control measures (Rocha et al., 2009). Foot complications in diabetes are one of the main reasons for leg amputation. Peripheral and nerve vessel disorders lead to foot ulcers and superadded infections which cause foot gangrene and other complications. This is one of the main reasons for hospital admission of diabetic patients (Al-Wahbi, 2010). Diabetic foot problems have increased because of a number of sociocultural practices such as walking barefoot, poor socioeconomic conditions, low level of education, health system and society as a whole in both developing and developed countries (Rerkasem, 2011; Bijoy et al., 2012).

Foot ulceration and amputations cause an extensive burden on individuals with diabetes, the health care system, and society (Boulton, 2015). Foot care is only one topic in basic diabetes education, and patients may not always realize its importance at the onset of the disease. Knowledge about diabetes mellitus can assist in early detection of the disease and reduce the incidence of complications. The levels of knowledge about diabetes among the at-risk population and among those who suffer from the disease are unknown, but more knowledge is associated with better outcomes (Li et al., 2014).

The primary treatment of type 2 diabetes is self-care because it improves the patients' health and prevents complications. The education of diabetes patients by the health care provider is important for their self-care. If the information to the patient is not clear, the patient can forget it or may not understand it. The patient can also miss important facts. This may result in lack of self-care or ignorance of healthy lifestyle for the patient (Tham et al., 2004). Increased participation in decision-making is associated with increased understanding of diabetes self-care (Quinn et al., 2011). The competence of carrying out self-care may decrease among elderly (Marques et al., 2013). Type 2 diabetes is increasing in Vietnam. Diabetes results from new urban lifestyle, lack of exercise, migration from countryside to big cities and work in factories instead of fields. However, the normal patient in Vietnam is not obese. The symptoms of diabetes emerge gradually. Therefore it is common to have the disease without knowing it for many years, especially where health care systems are rudimentary. In 2012 experts believed that approximately two million people had diabetes in Vietnam. About 60 % of them were undiagnosed and unaware of their condition. Almost seven percent of adults of age 30 – 69 years in 2008 had diabetes in Ho Chi Minh City (WHO, 2016). Mull et al. (2001) found that three-quarters of Vietnamese patients did not have good control of

their diabetes. One reason is that they did not have knowledge about the effect of insulin works and about their disease.

In Ho Chi Minh City, type 2 diabetes has become increasingly common and the disease is expanding fast. Important determinants of the increased prevalence are industrialization, change to sedentary lifestyles and shift to dietary habits with much carbohydrate (Duc Son et al., 2004). Foot ulcers are a major cause of morbidity in people with diabetes. To avoid serious complications such as foot ulcer and amputations, special emphasis should be placed on preventive care and counselling. Foot care interventions need to start at an early stage, and both high and low risk patients should receive enhanced foot care education. Therefore, it is important to improve the knowledge and practice of foot care in people with type 2 diabetes, particularly in developing countries such as Vietnam.

The aim of this study was to investigate the knowledge and practice of foot care among Vietnamese patients with type 2 diabetes and also to investigate if there was any difference between genders. The results will increase the understanding and knowledge of health care professionals in the area of foot care. Also, the outcomes can be used in health care administration to develop intervention strategies, to address foot care and to improve self-management.

METHODS

A descriptive cross-sectional study with quantitative method was used. The data for the project were collected at the outpatient department of the University Medical Center, in Ho Chi Minh City, Vietnam. Ho Chi Minh City, located in the southern part of Vietnam, is the largest city in the country.

Participants

The participants were patients with type 2 diabetes, both male and female, who came for treatment and follow up at the outpatient clinic. Purposive convenience sampling was used to select participants. The inclusion criteria were: patient, male or female, (1) with type 2 diabetes and age over 18 years, (2) able to read and or write or getting help to fill in the questionnaire, (3) living in Ho Chi Minh City, (4) not having any mental disease or dementia, and (5) willing to participate

The total number of participants out of 120 patients asked was 100; 32 (32%) men and 68 (68%) women. The age of the participants was 32 – 86 years and their mean age was 57.3 years (SD 9.2). The most common education was primary school (35.3%) for the women and secondary school (28.1%) for the men. For the men the most common work was merchant (25.0%) and for the women it was house duty (32.4%). About 19 (63.3%) of the men and 19 (28.4%) of the women reported that their income was sufficient.

Data collection

A questionnaire was developed to investigate the knowledge and practice of foot care in people with type 2 diabetes. The questionnaire was divided into 2 parts: (1) demographic information consisting of 24 questions such as gender, age, religion, etc. and (2) knowledge and practice of foot care developed by using the literature (Bijoy et al., 2012; Pollock et al., 2004). The part "knowledge of foot care" consisted of 15 items with answers "true" or "false", while the part "practice of foot care" consisted of 18 questions with answers "yes" or "no" of most of the questions. The questionnaire was written in English, translated into Vietnamese and translated back into English in order to ensure the validity of the Vietnamese version (Pilot & Beck, 2011). The Vietnamese version was tested and adjusted before its use.

Procedure

The Director of the University Medical Centre was contacted for permission to conduct the study. The nurses at the outpatient clinic were informed about the study and helped to inform outpatients with type 2 diabetes. The patients were informed both orally and in writing about the study and their rights as participants. Those who were interested to participate were given a questionnaire to answer at the clinic and to return. If there were some patients who had problems to fill in the questionnaire they could get help from research assistants. It took 15 to 20 minutes to answer the questionnaire.

Data analysis

The answers were coded and analyzed by use of the statistics program, SPSS (StatisticalPackage of Social Science). Demographic data were analyzed by use of descriptive statistics. Fifteen questions concerned knowledge about foot care. More than 70% (11-15), 50-70% (10-8) and less than 50% (<8) correct answers of these questions were taken as indications of good, satisfactory and poor knowledge, respectively (Bijoy et al., 2012). The practice of foot care was analyzed by use of descriptive statistics. Differences between genders regarding knowledge of foot care and its practice were analyzed by use of the Chi-squared test. A p-value ≤ 0.05 was taken as indication of significant difference.

Ethical considerations

The study was approved by the Ethical Committee of the University of Medicine and Pharmacy in Ho Chi Minh City. It was also approved by the Director of the University Medical Center. The participants were informed about the study and its aims and about their rights as participants. They were also informed that they would be coded, and they were asked if they were willing to participate. Those who agreed were asked to give their consent verbally and in writing.

RESULTS

About 85% of the participants answered that they had never had a foot ulcer, and 87%

had never had a sore or cut on the leg or foot that had taken more than two weeks to heal. Only 1% had amputated a leg or a foot. About 96% of the patients reported that they did not have an ulcer, sore or blister on the feet at this moment. 58% answered that they had numbness, tingling, pins, needles or itching on their feet.

Knowledge of foot care

Of the participants, 74% had good knowledge about foot care, and there was no significant difference between men and women in this respect ($p>0.05$). See Table 1.

Table 1. Knowledge of foot care among patients with type 2 diabetes (score test).

Knowledge of foot care	Total (n=100) %	Male (n=32) %	Female (=68) %
Good (>70 %)	74	68.8	76.5
Satisfactory (50 – 70)	18	21.9	16.2
Poor (< 50 %)	8	9.4	7.4

P-value = 0.712, $X^2 = 0.679$, Note: $p \leq 0.05$ = significant difference.

For each item of the knowledge of foot care, the majority of the patients (>90%) reported that it was important to take anti-diabetes medication, to wash their feet every day, and to consult when warning signs had occurred. About 71% reported that they should use warm water when they washed their feet. Most of the patients (>80%) also reported that it was important to dry their feet, to keep the skin soft to prevent dryness, and to inspect their feet every day. Half of the participants reported that they should not apply lotion in the interdigital spaces. There were no significant differences between genders concerning knowledge of foot care. See Table 2.

Table 2. Knowledge of foot care among patients with type 2 diabetes.

Knowledge of foot care	Total (n=100)		Male (n=32)		Female (n=68)		X^2	p-value
	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)		
Taking anti-diabetes treatment to prevent complication	5	95	6.2	93.8	6.2	95.6	0.155	0.694
Daily washing the feet	4	96	6.2	93.8	2.9	97.1	0.620	0.431
Using warm water for	30	70	37.5	62.5	25	75	0.651	0.199

washing/bathing								
Drying the feet after washing	15	85	18.8	81.2	13.2	86.8	0.519	0.471
Using talcum powder to keep interdigital spaces dry	54	46	65.6	34.4	48.5	51.5	2.560	0.110
Keeping skin of the feet soft to prevent dryness	16	84	16	84	16.2	83.8	0.005	0.944
Lotion not to be applied to interdigital spaces	50	50	46.9	53.1	51.5	48.5	0.184	0.668
Inspecting feet once a day oneself	17	83	14.6	84.4	17.6	82.4	0.063	0.802
Checking shoes inside before use	15	85	15.6	84.4	14.7	85.3	0.014	0.901
Not walking bare foot	13	87	6.2	93.8	16.2	83.8	1.896	0.169
Warning signs for which consultation is required	5	95	9.4	90.6	2.9	97.1	1.896	0.168

Note: $p \leq 0.05$ = significant difference.

Practice of foot care

Of the participants 20.2% reported that they tested the water before washing their feet and 33% reported that they walked barefoot. Only 9% used moisturizing cream on their feet, and 69% used to sit with their legs crossed. There was a significant difference between men and women concerning the use of hot water or heating pads on their feet (p=0.002). 14.7% women used hot water or heating pads but no men did. 90%, all of them women, examined their feet, and 72% thought that they took care of their feet in a correct way. Only 7.1 % used moisturizing cream on their feet. There were 43.8% women and 15.6% men who thought that they did not take care of their feet in correct way. In this respect there was no significant difference between genders. See Table 3.

Table 3. Foot care practice among patients with type 2 diabetes.

Foot care practices	Total (n=100)		Male (n=32)		Female (n=68)		X^2	p-value
	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)		
I can reach and see the bottom of my feet (M=1 woman)	8.1	91.9	9.4	90.6	5.4	61.6	0.107	0.744
I examine my feet (M=0)	10	90	9.4	90.6	10.3	89.7	2.114	0.715
I wash my feet every day	6	94	6.2	93.8	5.9	94.1	0.005	0.942

(M=0)								
I dry my toes (M=0)	35	65	37.5	62.5	33.8	66.2	0.129	0.719
I use a moisturizing cream on my feet (M=1 man)	90.9	9.1	93.5	6.5	89.7	10.3	0.380	0.537
I always test water temperature before use with my feet (M=1 woman)	78.8	20.2	87.1	12.9	76.5	23.4	1.491	0.222
I put moisturizing creams or lotions between my toes (M=1 man)	92.9	7.1	93.5	6.5	92.6	7.2	0.026	0.871
I always walk around in my bare feet (M=1woman)	63.6	36.4	65.6	34.4	62.7	37.3	0.081	0.776
I always wear shoes without wearing any socks (M=0)	67	33	62.5	37.5	69.1	30.9	0.431	0.511
I use a hot water bottle or heating pad on my feet (M=0)	90	10	100	0	85.3	14.7	5.229	0.002*
I sit with my legs crossed (M=0)	31	69	28.1	71.9	32.4	67.6	0.182	0.670
I think I have taken care of my feet correctly (M=0)	28	72	15.6	84.4	43.8	66.2	3.575	0.059

Note: p≤0.05 = significant difference., M= Missing, * = significant difference

Of the participants 92% used sandals and 37% used cotton socks. There was a significant difference between men and women concerning the use of shoes with round toes (p=0.002). 28.1% men used round-toe shoes, but only 4.4% women did. There was a significant difference between genders also in using shoes of leather or canvas (p=0.000). 34.4% men and 2.9% women used leather or canvas shoes. See Tables 4 and 5.

Table 4. Types of shoes worn by patients with type 2 diabetes.

Types of shoes	Total (n=100)		Male (n=32)		Female (n=68)		X^2	p-value
	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)		
Pointed toes	95	5	90.6	9.4	95	5	1.896	0.168
Broad, round toes	88	12	71.9	28.1	95.6	4.4	11.587	0.001*

Sandals	8	92	6.2	93.8	8.8	91.2	0,196	0.658
Flip flops/thongs	12	88	18.8	81.2	8.8	91.2	2.030	0.154
Athletic/sneakers/runners	94	6	87.5	12.5	97.1	2.9	3.525	0.060
Shoes made of leather or canvas	87	13	65.6	34.4	97.1	2.9	19.010	0.000*

Note: p≤0.05 = significant difference, * = significant difference.

Table 5. Types of socks worn by patients with type 2 diabetes.

Types of socks	Total (n=100)		Male (n=32)		Female (n=68)		X^2	p-value
	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)		
Cotton	63	37	53.1	46.9	67.6	32.4	1.969	0.161
Wool	99	1	32	0	98.5	1.5	0.475	0.491
Acrylic/synthetic	93	7	32	0	87.7	10.3	3.452	0.060
Prescription/compression	97	3	32	0	95.6	4.4	1.455	0.228

Note: p≤0.05 = significant difference, * = significant difference.

DISCUSSION

The knowledge about foot care was found to be high in the type 2 diabetes patients of this study. There were 74 % who had good knowledge and only 8% who had poor knowledge. There was no significant difference between genders concerning knowledge. The result of foot care practice was more varied and had some significant differences between men and women. The level of knowledge about foot care was found to be high but there was a lack of practice of this knowledge.

Foot care knowledge and practices

Out of the type 2 diabetes patients who participated in the study, 74% had good knowledge about foot care. This is a large fraction compared to those in several other studies where type 2 diabetes patients had poor knowledge about foot care (Khamseh et al., 2007; Boulton, 2015). Patients who had received information or advice had better knowledge than those who had not (Pollock et al., 2004). In this study, the patients had good knowledge even though the majority of them had not attended a class in foot care or read handouts about diabetes. One possible reason for good knowledge about foot care may be that patients can get information by themselves through media such as TV and radio. About 54% of the patients gave wrong answers concerning the use of talcum powder for keeping interdigital spaces dry. Also, 50% answered that it was not right to apply lotion to the interdigital spaces on their feet. This shows that still half of the patients of this study did not know about correct foot care. Many patients had low

education (primary school or secondary school), and this may have affected their understanding. Quinn et al. (2011) found that patients with low education needed more information about their diagnosis and also about diabetes (Tham et al., 2004).

The results for foot care practice among patients varied similarly as in several other studies (Pollock et al., 2004; Khamseh et al., 2007; Bhupendra et al., 2008; Li et al., 2014) which showed that the level of foot care practice in type 2 diabetes patients was low. In this study, 90% of the patients examined their feet. This is contrary to the results of Pollock et al. (2004) showing that 83% of the patients failed to inspect their feet.

It is important to test the water before washing the feet. However, only 20.2% reported that they did so even though 60% answered that they knew. About 33% reported that they walked barefoot although 87% answered that this was not a good thing to do. Only 9% used moisturizing cream on their feet, and 69% used to sit with their legs crossed even though this is not good for the circulation (Edwards & Stapley, 2001, Yazdanpanak et al., 2015). This may be explained by the patients' lack of motivation to change their lifestyles and by lack of support and feedback to the patients about self-care from health care professionals. Another reason may be that the patients did not have relatives and friends who supported their foot care (Kneckt et al., 2000). In addition, Rätsep et al. (2007) showed that economy can have importance for lack of self-care.

The majority of the patients used sandals and flip-flops. Only 13% used leather shoes. Edwards and Stapley (2001) recommend that patients shall avoid open-toe and open-heel shoes and use leather shoes. Hot weather in Vietnam is perhaps a factor that makes it more convenient to us flip-flops and sandals than leather shoes. Another factor may be that leather shoes are more expensive. Health care professionals should be aware of these factors when providing education to the patients.

Difference between genders in knowledge and practice of foot care

In the study of Pollock et al. (2004), women had better knowledge about foot care than men. This is in contrast to the result of this study that there was no significant difference between genders in knowledge of foot care. One reason for the absence of gender difference in this study may be that both male and female participants had received information about foot-care when they visited doctors at the hospital. Another reason may be that the group of participants was too small in this study to show differences between genders.

More women than men reported that they used hot water bottles or heating pads on their feet. This makes it seem as if women had lower awareness of diabetes and its complications than men as found by Rätsep et al. (2007). It is important that knowledge of diabetes and practice of foot care should be given to patients (Tham et al., 2004) like

also individual information about their diagnoses (Quinn et al., 2011). To improve the practice of foot care, Pollock et al. (2004) describe that there is a need to motivate health care professionals to educate type 2 diabetes patients in self-care and also to let the patients practice by themselves. Also, a countrywide network of diabetes centers with implementation of primary prevention programs has to be developed to prevent complications. In addition, more men than women used shoes with round toes and leather/canvas shoes. We believe that one possible reason may be that there were more men who worked as government officers and merchants and they used this kind of shoes in their work.

Many patients in this study had a low income and generally the women had lower income than the men. Financing problems for the women can be a reason for their lack of foot care practice (Rätsep et al., 2007). People of higher social classes more easily adapt and change their habits and lifestyles which may be a reason for the difference between genders (Chan et al., 2001). Another reason may be that the wome lacked motivation to change their life styles (Rätsep et al., 2007). In this study more participating women than men visited the clinic during the data collection. Goodridge et al. (2005) found that women are more active in their self-care and that men searched health care more for acute problems. This may explain why more women visited the clinic these days.

Limitations

Limitations of the study are the small number of participants and the use of a purposive convenience sample. Although the questionnaire was developed for this study, its validity is high. It was based upon several previous studies (Bijoy et al., 2012; Pollock et al., 2004), it was translated from English to Vietnamese and back by an expert in both languages, and it was tested in a pilot study before it was used. The reliability of the data was verified, and the questionnaires were reviewed twice before they were used as input to the SPSS.

Implementation by health care administration

Most patients in the study had good knowledge about foot care, but some did not practice it correctly. When the patients already have knowledge about foot care, it is important that health care professionals motivate them to practice their foot care (Rätsep et al., 2007). Self-care depends on health, wellbeing, interest of maintaining life, function and age (Kalda et al., 2008; Quinn et al., 2011). Type 2 diabetes often affects elder people and many patients mentioned that economy played an important role for their self-care. It is important that health care professionals be aware of this when guiding and teaching patients. The results of this study can be used to support

health care professionals/administrators by increasing their understanding for example when they need to develop and implement self-care management intervention programs for type 2 diabetes patients. Also, health care policy is needed to provide diabetes education that includes complications and foot care practice to patients and relatives acting as care-givers. The diabetes education should be implemented through culturally appropriate training/intervention programs. Support groups should also be developed and implemented. Further research should be carried out to investigate why patients with type 2 diabetes do not always practice their foot care and how health care administration related to diabetes foot care should be improved with respect to service and access of information.

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