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KNOWLEDGE AND PRACTICE OF FOOT CARE AMONG DIABETIC ELDERLY IN UKM MEDICAL CENTRE (UKMMC)

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ABSTRACT

Diabetes Mellitus has become one of the major and rising diseases affecting population all around the world. The most common complication that rises from the Diabetes Mellitus is diabetic foot ulcer. The increasing rate in diabetic foot ulcer among elderly has become a challenge that continues to rise and worsen. This study is conducted to determine the knowledge and practice of foot care and also the relationship between socio demographic data with knowledge of foot care among diabetic elderly in UKM Medical Centre (UKMMC). This is a quantitative cross-sectional descriptive study. A total of 81 respondents are being participated in this study. More than half of the study participants are female and majority of them are 60-74 years old. The result showed a significant relationship between gender and marital status with the knowledge of foot care among elderly diabetic patient in UKMMC. The present study showed that there was no significantly relationship between age, occupation, monthly income, duration of diabetes, body image and level of education with the knowledge and the level of foot care. In conclusion, the result of this study will help the health organization, hospital, nurses and care giver to take more responsibilities of foot care for diabetic elderly individuals.

Keywords: Diabetes Foot Ulcer, Elderly, Foot care

INTRODUCTION

This is a study about knowledge and practice of foot care among diabetic elderly in UKM Medical Centre (UKMMC). This study can help to identify the level of knowledge about foot care in elderly and the gap of knowledge that arise among the diabetic patient between the older one and the younger patient. Diabetes Mellitus rank 4th among the cause of death in the world being directly responsible for 1.5 million deaths in 2012 (WHO 2014). Diabetic foot remains a global issue for individuals suffering from diabetes not only in South Asia but also in European nations (Dixit *et al.*, 2011). The global prevalence of diabetes was estimated to be 9% in 2014 (WHO 2014). About 387 million people in the world living with diabetes with prevalence 8.3% and it was expected to increase up to 205 million in 2035 (IDF 2014). Diabetes mellitus also was a major public health concern in Malaysia. The National Health and Morbidity Survey (NHMS, 2011) had shown that the prevalence of diabetes in Malaysia had increased by 31.0% in the space of just 5 years, from 11.6% in 2006 to 15.2% in 2011. The mean age for Type 2 Diabetes Mellitus patients enrolled in National Diabetes Registry from 2009 to 2012 in Wilayah Kuala Lumpur is 60.5 (60.4-60.7 years old) (NDR 2012). Population ageing was also an important factor, as glucose intolerance increases with age (WHO 2014). In developed countries one in every six people with diabetes will have an ulcer during their lifetime (IDF 2005). Peripheral arterial disease (PAD), ulcer and neuropathy were costly and disabling lower extremity conditions that can lead to amputation (CDC 2014). The statistic from National Diabetes Registry (NDR, 2012), showed an increase in the rate of diabetic foot ulcer from 841 (1.2) in 2011 to 1 527 (1.2) in 2012.

Amputation was one of the complications of diabetic foot ulcer. Around the world including Malaysia, had shown a rise in amputation cases and most of the patients involve was among elderly. People with diabetes are 25 times more likely to lose a leg than people without the condition. Throughout the world, up to 70% of all leg amputations happened to people with diabetes (IDF 2005). From 1988 to 2009, the rates for non-traumatic lower extremity amputation per 1,000 diabetic individuals were greater with increasing age. However,

the rate differences between age groups narrowed in later years (CDC 2014). The statistic from National Diabetes Registry (NDR 2012), showed an increase in the rate of amputation from 2011 from 387 (0.5%) to 2012, 721 (0.9%). Moreover, there was a lot of research done about diabetic foot ulcer among the diabetic patient. But there were only a few studies that stress on knowledge and practice of diabetic elderly (Julia *et al.*, 2005).

The aim of this study is to assess the level of knowledge and practice of foot care and also the relationship between socio demographic data with knowledge of foot care among diabetic elderly in UKMMC. By performing this study, it will help the health organization, hospital, nurses and care giver to take more responsibilities in taking care of foot of the elderly, as diabetic foot ulcer is one of the diabetic complications that may arise. Foot care education was one of the best tools to increase the awareness of patients regarding proper foot care practice (Kafaie *et al.*, 2012). This was in order to reduce the incidence of foot ulcer and its complication. Primary prevention method like education seems to play a key role in the management of individuals suffering from diabetes. Hence it was important to educate and evaluate the population with diabetic and pre-diabetic state to minimize or control diabetes related foot complications (Dixit *et al.*, 2011).

LITERATURE REVIEW

Vidusha *et al.*, state that diabetic foot problems were one of the major problem that cause higher rates of morbidity among the elderly who have diabetes. Qadi & Al Zahrani (2011), found that the median score of the knowledge aspect in foot practice in overall age of studied group was favourable between 7 of 9, but there was weakness in some knowledge aspects of foot care among elderly as the median score for elderly age 60 years old and above is 6 which were the lowest. Saurabh *et al*., (2014) , showed 24 out of 41 patients were aged more 60 years old and above (58.5%) and revealed a poor foot care practices. Aalaa *et al.*, (2012) stated that poor foot care practice may be due to other complications of diabetes such as limited vision and other chronic disease that prevent a good foot care practices among elderly and unable to evaluate their feet.

An article in Brazil by Rezende Neta, da Silva & da Silva (2015) highlighted the importance of family as a motivation component for therapeutic adherence, since the support and family participation had a positive effect for the improvement of self-care behaviours. Dixit *et al*., (2011) stated that, 10.3% of elderly men were more prone for foot ulcers with duration of diabetes greater than 20 years and women (8.3%) were more prone for ulcers between 16 and 20 years from the onset of diabetes. Saurabh *et al.*, (2014), showed that 52.7% of the total patients with poor foot care practices were females whereas only 35.4% is male. 35.4% is male. Hasnain & Sheikh (2009), found that 29.3% respondents had good knowledge, 40% had satisfactory knowledge and 30.7% had poor knowledge about foot care. Whereas only 14% respondents had good practices for foot care, 54% had satisfactory practices and 32% had poor practices. Saurabh *et al*., (2014), showed 24 out of 41 patients were aged more than 60 years old and above (58.5%) with poor foot care practices. Qadi & Al Zahrani (2011) found that there were lower levels of foot care knowledge. The practice score was significantly lower in patients with lower educational level.

According to previous study, it showed that most of diabetic patients still have trouble in foot care. To reduce the gaps of knowledge and practice of foot care, an educational foot care program was needed to decrease the complication such as diabetic foot ulcer. Many studies has proven that by giving an education awareness on proper and excellent diabetic foot care would lead a better results in knowledge and practice of foot care for the diabetic patients (Trief *et al.*, 2003).

METHODOLOGY

This research is a quantitative descriptive study where the study uses a cross-sectional study design. The study was conducted in UKMMC which is a tertiary hospital situated in Cheras, Kuala Lumpur. Convenience sampling technique was used as people in the ward and clinic would be an example of this sampling strategy as they were easy and convenient to be included in this study. The study involved diabetic elderly who were 60 years old or above from Orthopaedic female or male ward, Surgical ward, Medical ward, Orthopaedic Clinic and Medical Clinic.

The sample size was calculated using the formula developed by Krejcie & Morgan (1970). From the population (N=103), 81 respondents voluntarily participated to answer the questionnaires. Data collection has taken place during May and June of 2016. For knowledge variable, the questionnaire was adapted from Qadi & Al Zahrani (2011). Whereas for practice variable the questionnaire was adapted from

Hasnain & Sheikh (2009). Pilot study has been done for about 30% of the sample size prior to real study. The remaining respondent were then been excluded for real study.

The data was entered and analyzed using IBM SPSS Statistic version 21. Descriptive analyses was performed and summarized as frequencies and percentage while for inferential analysis, chi square was being performed to obtain the relation between nominal or ordinal data such as between the demographic data and level of knowledge of foot care (Pallant, 2010). Approval from the Ethics Committee of University Kebangsaan Malaysia Medical Centre (UKMMC) was obtained before conducting this research. Code project was FF-2016-132.

RESULTS

The table 1 showed results of socio-demographic data. Descriptive statistics has been used to summarize the frequencies and percentages of all independent variables in the demographic data. The results showed that the percentage of participants consists of male as 43.2% and female as 56.8%) with majority (77.8%), are in young elderly age 60-74.

Table 1: Analysis for Frequency Distribution of Demographic Data

Characteristic of elderly	Variable	Frequency (n)	Percentage (%)
Categorical age 60-74 75-84 85 above	Young elderly Middle elderly Old elderly	63 17 1	77.8 21.0 1.2
Gender	Male Female	35 46	43.2 56.8
Marital status	Single Married Divorced Widowed	2 59 4 16	2.5 72.8 4.9 19.8
Occupation	Working Not working Retire	5 42 34	6.2 51.9 42.0
Monthly Income	Below RM 1000 RM 1000-RM 2000 Above RM 2000	59 16 6	72.8 19.8 7.4
Duration of Diabetes	Less than 10 years More than 10 years	23 58	28.4 71.6
Body Image	Normal foot Presence of foot ulcer Foot amputation	58 12 11	71.6 14.8 13.6
Level of Education	No formal education Primary Secondary Tertiary	11 31 35 4	13.6 38.3 43.2 4.9

There are a total of 9 questions regarding knowledge of foot care. The scoring of the knowledge of foot care is categorized into low and high level of knowledge. The respondent was categorized into low level of knowledge regarding foot care if the correct number of question answered is 1- 4 out of 9 questions, whereas for high level of knowledge of foot care the score was 5-9 out of 9. Table 2 showed the results of the scoring for knowledge level of foot care for 81 respondents. The frequency of respondent with results of low scoring of knowledge of foot care is 8(9.9%), whereas the frequency of high scoring of knowledge of foot care is 73(90.1%).

Table 2: Scoring for Knowledge Level of Foot Care

Knowledge level of foot care	Frequency (n)	Percentage (%)
Low (1-4)	8	9.9
High (5-9)	73	90.1
Total	81	100.00

There are a total of 15 questions regarding practices of foot care. The scoring of the practices of foot care is categorized into poor, satisfactory and good practice of foot care. The respondent will be categorized into poor practice of foot care if the correct number of question answered is between 0-7 out of 15 questions, satisfactory if 8-10 out of 15 questions and good practice if 11-15 out of 15 questions. Table 3 showed the results of the scoring for practice of foot care for 81 respondents. The frequency of respondent with results of poor practice of foot care is 40 (49.4%), satisfactory practice is 36 (44.4%) and good practice is 5 (6.2%).

Table 3: Scoring for Practice of Foot Care

Practice of foot care	Frequency n	Percentage %
Poor (0-7)	40	49.4
Satisfactory (8-10)	36	44.4
Good (11-15)	5	6.2
Total	81	100.00

To determine the relationship between socio-demographic data and knowledge of foot care, the researcher used Chi-Square test. A Chi-Square test for independence was conducted to determine the relationship between the socio-demographic data like age, gender, marital status, occupation, monthly income, duration of diabetes, body image and level of education with knowledge of foot care categorized into low and high. The table below revealed the results of relationship between socio-demographic data and knowledge of foot care. The results showed that gender and marital status has a significant association with level of knowledge regarding foot care.

Table 4: The Relationship between Socio-demographic data and Knowledge of Foot Care

Socio-demographic data	Knowledge level of foot care n (% of total)		χ^2	p ($p < 0.05$)
	Low (1-4)	High (5-9)		
Categorical Age			0.186	0.911
Young elderly (60-74)	6(7.4%)	57(70.4%)		
Middle elderly (75-84)	2(2.5%)	15(18.5%)		
Old elderly (>85)	0(0.0%)	1(1.2%)		
Gender				
Male	0(0.0%)	35(43.2%)	4.94	0.009 **
Female	8(9.9%)	38(46.9%)		
Marital status				
Single	1(1.2%)	1(1.2%)	9.689	0.021 **
Married	3(3.7%)	56(69.1%)		
Divorced	0(0.0%)	4(4.9%)		
Widowed	4(4.9%)	12(14.8%)		
Occupation				
Working	0(0.0%)	5(6.2%)	0.000	1.000
Not working	8(9.9%)	68(84.0%)		
Monthly income				
Below RM1000	7(8.6%)	52(64.2%)	0.317	0.437
Above RM1000	1(1.2%)	21(25.9%)		
Duration of Diabetes				
Less than 10 years	3(3.7%)	20(24.7%)	0.036	0.682
More than 10 years	5(6.2%)	53(65.4%)		
Body Image				
Normal foot	6(7.4%)	52(64.2%)	0.000	1.000
Abnormal foot	2(2.5%)	21(25.9%)		
Level of Education				
No formal education	2(2.5%)	9(11.1%)	4.590	0.204
Primary education	5(6.2%)	26(32.1%0		
Secondary education	1(1.2%)	34(42.0%)		
Tertiary education	0(0.0%)	4(4.9%)		

DISCUSSION

From the researcher study, the results showed that the scoring for level of knowledge for foot care among 81 respondents, with results of low scoring of knowledge of foot care among 8(9.9%). Whereas, the frequency of high score for knowledge of foot care was 73 (90.1%). These findings showed that majority of the diabetic elderly in UKKMC have a high knowledge level regarding foot care. This results were in contradiction with the results from a cross-sectional study by Hasnain & Sheikh (2009), where the study findings revealed that about 29.3% respondents had good knowledge, 40% had satisfactory knowledge and 30.7% had poor knowledge about foot care. About one third of diabetic patients had poor knowledge about foot care and only very few patients had good practices for foot care. Moreover a study in Nigeria conducted by Desalu *et al.*, (2011)where the results showed that about 30.1% had good knowledge of diabetic foot care, 23.9% had satisfactory score and 46.0% had a poor knowledge of diabetic foot care. The contrast between

the studies is maybe due to difference in comprehensive prevention programs which include proper screening, education and probability of high risk factor associated with foot ulcer in UKMMC in comparison to other countries. According to an article from Michigan, Green-Morris (2014) has shown the effectiveness of providing basic foot care instructions as a method of increasing patient's knowledge of foot care. Pérez-borges, (2015) showed the effect of an educational program using a group-based workshop to improve long-term care adherence among diabetic patients with a risk of foot lesion.

In this study, the results showed that the scoring for practice of foot care for 81 respondent with the frequency of respondent with results of poor practice of foot care is 40(49.4%), satisfactory practice is 36(44.4%) and good practice is 5(6.2%). The results of scoring of good practice is slightly lower compared to a cross-sectional study conducted by Hasnain & Sheikh (2009), where the findings revealed that 14% respondents had good practices for foot care, 54% had satisfactory practices and 32% had poor practices. A study by Qadi & Al Zahrani (2011) showed that the median score of the foot-care practice was low at 14 of 33, which indicated, the great need to improvement especially among elderly aged 60 years and above as the median score of the practice was at the lowest. This study together with the researcher's study showed that foot care practice among elderly was very poor.

Another component to be discussed in this study is the relationship between gender and scoring knowledge level of foot care. The results showed that the significant value p=0.009. This study showed that there was significant difference in the levels of knowledge proportion regarding foot care between the two gender of elderly diabetic patient. There appears to be an association between gender and level of knowledge of foot care. The result showed that male patient has a higher percentage of knowledge compared to female. Moreover, a study conducted in Puducherry, India by Saurabh *et al.*, (2014), showed that 52.7% of the total patients with poor foot care practices was female whereas 35.4% is male. Another study from Desalu *et al.*, (2011) showed that women and those above the age of 50 were less knowledgeable about foot care, although these associations were not statistically significant. This may be due to different limitations towards the access of education based on gender. As according to Lemos dos Santos *et al.,* (2016) the most important factors regarding gender comprise the access to education and income and in many developing countries such as Malaysia and poor countries, female access to education is lower than for males, and women receive lower salaries or allowances than men for the same job. The results of this inequality effect women's health in favourable manner.

An article in Brazil by da Silva *et al.*, (2015), highlighted the importance of family as a motivation component for therapeutic adherence, since the support and family participation had a positive effect for the improvement of self-care behaviours. Family life turns out to influence the decision making for following the recommendations, leading patients to reorganize and achieve metabolic control and for this reason; nurses should consider family members as participants of the process (da Silva *et al.*, 2015). The previous study has supported the results of the researcher's study where there is a significant value (p = 0.021) showing that the proportion between marital status of diabetic elderly and their level of knowledge for foot care is significantly different. There appears to be an association between marital status and knowledge level of foot care diabetic elderly. Although marital status was common component in socio-demographic data, but no previous study with significant statistically results was found to support this.

For this study, level of education was described into 4 categories, which are no formal education, primary education, secondary education and tertiary education. Unexpectedly, the result of the study showed that the significant value of p=0.204 revealed that the proportion between level of education of diabetic elderly and their knowledge level of foot care are not significantly different with each other. There appears to be no association between level of education and knowledge level of foot care. In contrast with a study by Qadi & Al Zahrani (2011) which revealed that the practice score was significantly lower in patients with lower educational level. Another study by Hasnain & Sheikh (2009) showed that education has a strong relationship with knowledge about foot care with p = 0.001, this results might be contradicted with the researcher's study as due to different background of setting and level of education of the respondents. As most of the respondents from the previous study were

illiterate as a result the access for better understanding of foot care is difficult in comparison to Malaysia where according to UNESCO (2015) the literacy rate is very high among elderly, which is 93.1%.

CONCLUSION AND RECOMMENDATIONS

Overall, the discussion was focused on objectives of this research which are; level of knowledge of foot care, practice of foot care, the relationship between demographic data with knowledge of foot care. The present analysis was successful as it was able to identify level of knowledge of foot care, practice of foot care and the relationship between demographic data with knowledge of foot care. In this study, the result findings showed that among 81 respondent, most of the respondent have high knowledge of foot care, 73(90.1%) and respondent who have good practice of foot care is only 5(6.2%). The result of good practice in this study was lower compared to previous study. But it was evident from this study and previous study that practice of foot care is very poor among the diabetic patient especially the elderly. Demographic data which are marital status and gender had a significant relationship with the knowledge level of foot care. While the other demographic data showed no significant relationship with the knowledge level of foot care.

As the study related to patient's issue, the findings help the health organization to do some improvement and take more preventative measure in order to decrease the incidence and prevalence of diabetic foot ulcer and amputation case in healthcare setting. Result found that poor practice of foot care is more obvious than knowledge level, so by improving patient exposure related to proper technique of practicing foot care through education, might help the health organization to decrease the incidence of diabetic foot ulcer and amputation. Our recommendation for future studies is to use a larger population and sample that will help to get the true picture of diabetic elderly who have problem in taking care of their foot, so that bigger program of awareness can be conducted and spread to all of the diabetic patient especially the elderly.

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