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Self-care Guideline for Diabetic Patient for Improving Knowledge and Practice toward Preventing Development of Diabetic Foot

Mona Mohamed Mayhob
Adult Health Nursing–Faculty of Nursing – British University in Egypt

Abstract

Background: Children Diabetic foot is one of the serious health problems for patients with diabetes. In order to reduce the risk of developing diabetic foot, patients are encouraged to follow specific self-care and preventive guideline to control the occurrence of diabetic foot. **This study aimed** to evaluate the effect of the recommended self-care guideline on knowledge and practice of diabetic patient toward preventing development of diabetic foot. **Method:** Quasi experimental design was used to conduct this study in medical wards in El Salam Hospital. A purposeful sample technique was used according to the inclusion and exclusion criteria, fifty diabetic patients were agreed to participate in the study. **Data Collection Tools** two tools were used in the current study as follow: first tool was patient's demographic data assessment tool; second tool was interview questionnaire for assessing knowledge and practice of diabetic patients about self-care and foot care. **Results:** revealed that, there is statistical significant difference in the patients' knowledge and practice toward self-care guideline and foot care before and after implementing self-care guideline and foot care. **Conclusion**: implementation of self-care guideline for diabetic patients had statistically significant effect on their knowledge and practice toward preventing development of diabetic foot. **Recommendation:** Finally, it is recommended to establish a system to increase the awareness of patients with a follow up policy on how to improve knowledge and practice to prevent development of diabetic foot.

Key words: diabetic - foot knowledge - practice - self-care

Introduction

Diabetes is the most common long term disease that develops either when the pancreas does not produce adequate insulin, or when the human body cannot use the insulin it produces effectively. Elevated sugar level in serum blood, and effect of uncontrolled diabetes, may be over the time lead to significant harmful effect to the cardiovascular system, blood vessels, eyes, kidneys and nerves. More than 400 million people all over the world live with diabetes***(Ekrog et al, 2010 & Abu Obaid and Eljed, 2015).***According to World Health Organization2015 the number of diabetic patients in 2014 was 422 million adult patients worldwide. In Egypt, incidence of diabetes is 7.8 million in 2015

Diabetes is considered as a third leading cause of death. When diabetes is not treated appropriately, some complications might be developed that could threat people health. Acute diabetes complications result in significant increase in mortality rate, costs and poor quality of life. Over time diabetes may lead to damage into different body organs and such damage can reduce blood flow into different body organs, for instance occurrence of nerve damage in the feet,

increases the chance of developing diabetic foot, as well as infection that might end by the need for limb amputation ***(Li et al, 2014 & Seid and Tsige 2015).***

Diabetic foot is the most common complication of diabetes with prevalence of 4-10%. Diabetic foot becomes infected frequently, it could be managed expensively and sometimes occurrence of infection could bethe first step towards amputation of a lower limb if there is no proper treatment. About 10% -15% of diabetic patients develop diabetic foot at some stage in their lives. Occurrence of diabetic foot complications are a multiple factorial condition. It results from microvascular and macro vascular diseases that expose the patients into possibility for injury and serious infection that may lead to foot damage which result in amputation of the lower limbs. Diabetic foot complications are responsible for nearly 50% of all diabetes related hospital admission ***(Dixit, & Kumar, 2014& Chiwanga and Njelela, 2015).***

Diabetic foot complications as stated by ***Al-Rubeaan et al, (2015)& El-Khawaga and Abdel-Wahab (2015)***are preventable condition, where interventions by health team specially nurses can reduce complications by up to 70%, identifying the leading factors will enable nurses to establish nursing guideline that could result in improving patients' knowledge, practice about preventing the development of diabetic foot and to improve patient's quality of life.

Diabetic foot is challenging problem for health team members to be treated, even with intensive and appropriate treatment involving costly and time consuming during provision of care for patients with diabetic foot, as many diabetic foot does not heal, or return back to normal appearance/structure, and /or progress to amputation. It has been shown that from 49 - 85% of all diabetic foot related problems could be prevented if the correct actions are taken. This could be achieved through a mixture of proper foot care and self-care education to diabetic patients and this education could be provided by health team members included nurses. All patients with diabetes are liable to develop diabetic foot which can only be avoided by enhancing patients' awareness about the necessity of performing proper foot and self-care ***(Hasnain, and Sheikh, 2009& Aalaaet al, 2012).***

According to ***Mclnnes et al,(2011)& Muhammadi et al, (2014)*** there are several primary preventive measures could be done by the patients themselves to control progression of diabetic foot as maintaining normal blood sugar level, regular foot screening, and inspecting of it for detecting any changes in skin color, skin lesions, and involvement in daily foot self-care practices. All these measures are self-care guideline that areimportant for diabetic patients.As well as adequate glycemic control that may delay the onset and progression of risk factors (i.e.Peripheral vascular disease, peripheral neuropathy and infection).

Prevention better than cure, as reported by ***Saleh et al, (2012) & Kafaie et al, (2012)& Yi Zou et al, (2016)*** diabetic patient' seducation about foot care and self-care practice could prevent complications and it is certainly important because the patient is the only person who is available all the time to perform it for him/her. Patient should have a good idea about how to do foot care and self-care practice for himself/herself. Well oriented patient by diabetic foot complications and self-care practice will leadhim self/herself to cooperate toward prevention of diabetes complications**.**

Self –care education and provision of information to the patient about diabetes and its complications will enhance patients' awareness about foot care and self-care practice. Therefore, the nurses have curial role in empowering diabetic patients to manage their disease on daily basis to control any possible complications, and this could be done through implementing self-care guideline that will improve the quality of life through providing the patients and their families with the required information and

consultation ***(Peimani et al, 2010&Pietrangelo, 2016)***

Self –care in diabetes has been defined as a process of development and enhancement of knowledge and practice of diabetic patients to enable them to survive with the complex nature of diabetes. Self-care plays an important role in diabetes management. Day – to –day self - care in diabetes is done by patients and/or their families; there is an urgent need effective, reliable and valid measures for self-care of diabetes. There are essential self-care practices for patients with diabetes. These practices include healthy diet, physical activities, monitoring of blood sugar level, and adherence to prescribed medications, healthy coping skills and risk-reduction behaviors. In addition, practice self-care includes performing these practices as well as maintaining inter relationships between them. As well as it requires the patients to make lifestyle modifications ***(Al-Asmary et al, 2013 &George et al, 2013)***.

In addition, one of the significant patient's self-care is foot care, which includes inspecting foot daily, keeping foot clean, and protecting foot from extreme temperature, and wearing appropriate foot wear and doing appropriate nail care. All these practices could reduce the risk of developing foot complications. Foot care and self -care practices are strongly recommended by Diabetes Health Authorities. Although such recommendations for foot self-care practices are neglected as several research studies revealed that, a low percentage of people diagnosed with diabetes engage in preventive foot care and self-care practices, while a high percentage undertake potentially harmful practices, such as walking barefoot. So encouraging patients with diabetes to carry out foot care and self-care practice is very critical issue to prevent or/and decrease possibility of occurrence of diabetes complications **(*Peimani et al, 2010&Mclnnes et al, 2011).***

Significant of the Study

Several researches stated that, every 30 seconds a lower limb is lost due to diabetes in the world and 70% of all lower limbs amputations were done on people with diabetes somewhere in the world according to the International Diabetic Federation (IDF) among people with diabetes. Diabetic foot results in increasing mortality and morbidity in population with diabetes. It hasgreat chances of recurrence in an individual's lifetime leading to a poor quality of life in individuals suffering from diabetic foot. As well as it is not only lead to massive psychological stress on the person but also causes decline or loss of mobility and body function. As well as diabetic foot has a significant socioeconomic problems; as it has a financial burden on the patients and their families, and community as well, as it leads to long period of hospitalization. Therefore, this study will identify the needed knowledge and practice that have crucial effect in preventing development of diabetic foot as well as highlight the importance of self-care and foot care. All these will lead to minimize incidence of developing diabetic footamong patient with diabetes ***(Eljedi, & Abu Obaid, 2015).***

Aim of the study

To evaluate the effect of self-care guideline on knowledge and practice of diabetic patients towards preventing development of diabetic foot through:

1. Assessing knowledge and practice toward self-care and foot care for preventing development of diabetic foot among patients with diabetes.

2. Designing and implementing self-care guideline for preventing development of diabetic foot among patient with diabetes.

3. Evaluating the effect of self-care guideline on improving knowledge and practice toward preventing development of diabetic foot patient with diabetes.

Research Hypothesis:

The self-care guideline will improve patients' knowledge and practice toward prevention of development of diabetic foot.

Methods:

Study Design, and Setting

A Quasi experimental study design was utilized in this study conducted in the medical wards in El Salam hospital. The study started at November 2015 to July 2016.

Subjects, Sample Type, and Size:

Type of sample utilized in this study was purposeful sample. The selection of participants was done according to inclusion and exclusion criteria as follows; inclusion criteria are; adult patients, have type 1 or 2 diabetes, patients who have diabetes at least 6 months before conducting the study, patients who never developed diabetic foot complications, while the exclusion criteria patients with cognitive impairment and noticeable is ability that could affect the function of nervous system that might affect independent self - care practices, and those who had amputation of the lower extremities. With regard to the study sample, the researcher recruited all the diabetic patients admitted to medical wards during the period of conducted the study which were reached into 50 patients.

Data Collection Tools:

Data in this study were collected by using the following tools;

1. Patient's Demographic Data Assessment Tool:

This tool assessed the patients' demographic data and medical history, which consisted of 13 items as age, gender, marital status, education, occupation, smoking status, type of diabetes mellitus, duration of diabetes, fasting blood sugar level, history of any other chronic diseases, presence of complications related to diabetes, family history of diabetes, and patients' source of information about diabetes.

2. Patient's Interview Questionnaire Knowledge Assessment Tool:

This tool was guided by ***Lincoln, et al (2007),*** it consisted of two parts; Part (1) used to assess the patient's knowledge level as a prerequisite to proper foot care practice, as well as it used to assess to what extent the patient's compliant to self-care guideline. This part developed by the researcher based on review knowledge about self-control measures for provision of foot care. Part (2); used to assess foot care practice by using "Nottingham Assessment of Functional Foot Care Questionnaire". As it is validated tool to assess foot care practice***(Lincoln, et al 2007).***This tool was modified and adapted by the researcher according to socio cultural context of the patients participated in this study.

The scoring system was done as follows; in relation to items related to knowledge; it consisted of 15 items, and if the answer of each item is correct the participant got 1grade, and if the answer is incorrect or there is no answer the participant got zero grade. Level of knowledge was categorized into 3 levels according to the total score of each participant as follows; if the participant got 75% and above this means that, the participant has satisfactory level of knowledge, if the participant got 60% to 74%, this means the participant has average level of knowledge, finally, if the participants got less than 60%, this means the participant got unsatisfactory level of knowledge.

With regard to the scoring of the practice; it consisted of 20 items, and it was done as follows, if the patient practices each item in foot care completely correct got 2 grades, and when the patient did each practice partially correct the patient will 1 grade, and if the patient did incorrect or not did not compliance to do it then got zero grade. Level of practice was categorized into 3 levels according to the total score of each participant as follows; if the participant got 75% and above this means that, the participant has satisfactory level of practice, if the participant got 60% to 74%, this means that the participant has average level of practice, finally, if the participants got less than 60%, this means the participant got unsatisfactory level of practice.

Phases of Implementing the Study

Preparatory Phase; in this phase the researcher started by reviewing the related national and international literatures, then developing data collection tools in English. Then, translated it into Arabic language and after that those tools were assessed and revised for its content and reliability.

Validity and Reliability of Data Collection Tools

Validity and reliability are the main components to assess the quality of data collection tools. Validity is done to assess accuracy of the data collection tools, to which degree the tool will measure what proposed to measure. Meanwhile, the reliability refers to the accuracy of the obtained data in research study. With regard to this research, validity of the tools tested by 3 professors from medical surgical nursing. The Jury tested the English version of the tools as well as the translated version before conduction the pilot study.

The pilot study was done on 10% from the total number of patients, pilot study was done to test the applicability and feasibility of data collection tools, and the sample included in the pilot of study was excluded from the current study, and the results of it revealed that, the data collection tools needed some modifications and it will be ready to be used for data collection. As well as pilot study was done to estimate time needed to answer the data collection tools.

Data Collection Phase:

In this stage the researcher obtained the approval for conducting this study from the research committee in the University and the director of the hospital after explaining the aim of the study, data collection tools, and plan of collecting data from the patients. Data collection was done 2 days per week during the period of the study. As it was done as follows; the researcher went to the hospital 2 days per week, and met the patients, and in each visit the researcher explained to each patient the aim of the study and data collection tools after obtaining his/her approval to participate in the study, the first data collection tool was used followed by the second tool. The researcher started by assessing demographic data of the patients, and then asked each patient about his/her knowledge related to diabetes and foot care practice, as well as the researcher asked the patients about foot care that they did for themselves and self –care practice related to diabetes. The researcher met each patient from 20 to25 minutes, after finishing the patient interview, the researcher asked each patient about his/her contact number to call him/her if needed.

A total 50 patients with diabetes were recruited in this study. The level of their knowledge, and practice about foot care and self-care were assessed by interviewing them through using questionnaire, this assessment was done as initial assessment for patients' knowledge, and practice of foot care and self-care.

Based on the findings that revealed from the initial assessment in current study, the researcher planned for awareness session for the patients that covered all patients' needs based on the analysis of their relevant knowledge about diabetes foot care and self-care practices.

The awareness session prepared and developed by the researcher as follows; first part was related the theoretical part; power point presentation was done briefly about definition of diabetes mellitus, causes, signs and symptoms, treatment, and the full detailed part was about self-care guideline and foot care, all these parts were written by simple understandable Arabic language in order to be easily understood by the patients. The researcher arranged with the hospital administration and the patients to deliver five awareness sessions that were conducted to small groups of patients (5 groups each group 10 patients), each session took 40 to 50 minutes each session included power point presentation, group discussion, asking questions and answers by the patients and the researcher to each other. In addition, the researcher provided the patients with leaflets, and images related to self-care practices and foot care.

Second part from the awareness session about practical skills, in this part the researcher explained to the patients how to practice foot care as; showing them how self-inspection of foot could be done, and which parts should be assessed in the feet as presence of any lesions, problems in nails, discoloration, presence of infection, as well as assessing foot wear condition. Moreover, the researcher taught the patients the proper hygienic measures, as proper washing and dryness of the foot, dryness between toes, and the proper techniques for cutting nails.

After finishing this awareness session with the target patients, the researcher informed them that after 6 months from delivering and implementing self-care guideline and foot care for the patients. There will be another visit by the researcher to reassess them to what extent they were compliance to knowledge and practice that have been delivered in this awareness session. After 6 months the researcher called the patients that have been interviewed at the beginning of this study and arranged to meet them to check if they are still compliance toward what have been delivered to them or not, and based on their responses the researcher recorded it as a post assessment after implementing self-care guideline.

Ethical Consideration

Permission was obtained from the hospital authorities to conduct the study. Every patient in the current study received a complete explanation and description about the aim of the study, data collection tools and assurance about the confidentiality of the collected data. All patients have agreed to participate in the study and signed a consent form after read it carefully. To maintain confidentiality all questionnaires were coded and did not bear patients names. The researcher informed the patients there is no any harmful effect could result from participating in this study, as well as any patient has the right to withdraw from the study at any time.

Statistical analysis

Statistical analysis was done using computer software, by using SPSS version (20) that was used for this purpose. Descriptive correlation statistics were applied (Mean, Standard Deviation, Frequency and Percentages) test of significant (chi-square) was used to test significant between variables. A statistically significant difference was considered at P- value $P \leq 0.05$, and a highly statistically significant difference was considered at P-value $P \leq 0.01$

Results:

As presented in table (1) a total of 50 patients participated in this study and their age ranged from 35to 57years, with mean and SD± age being 46.5 ± 5.99. Meanwhile, 54% of the patients were males, and 92% of them were married, with regard to their educational level, it was found that, 36%, 42% and 22% of them, their educational level were as follows; can read and write, intermediate education, and University degree respectively. In relation to occupation, 36%, 26%, and 24%, of women are house wife, worker, and employee respectively.

With regard to medical history of the studied sample, as indicated in table (2) among 50 of patients who participated in the current study,56% of them are smoking, meanwhile, 46% and 54% of them have type 1 diabetes and type 2 diabetes respectively. In relation to, duration of having diabetes 38%, 12%, and 50% of them having diabetes from 1 year to less than 5 years, from 5 years to less than 10 years, and from 10 years to less than 15 years respectively.

The current study reported that, mean and SD± of fasting blood sugar of the patients participated in the present study was 189.6 mg/dl SD ± 26.338 mg/dl. In relation to presence of other associated chronic diseases, it was found that, 54% of the studied sample has other chronic disease. As regards to controlling of blood sugar level, this study stated that, 76% of the studied sample their fasting blood sugar was ranged between 150 -200 mg/dl before and after implementing self-care guideline it remains the same and mean of fasting blood sugar was 181 mg/dl. Meanwhile, 46% of them have complications related to diabetes. In relation to patients' source of information about diabetes care, this study showed that, 82% of the patients got their information about diabetes from relatives and friends.

A part from knowledge of the studied sample about diabetes, self-care and foot care before implementing self-care guideline, table (3) revealed that, 22%, 18%, 20%, 18%, 24%, 66%, 6% and 14% of the studied sample take prescribed medications for diabetes regularly, know about foot care practice, know that foot care should be done regularly, know patient with diabetes might develop diabetic foot, and in case of presence of wound they aware that, foot care should be done regularly and carefully, however, they do not know that smoking impair circulation which might have effect on foot circulation. In addition, they do not know that, foot inspection, and washing should be done on a regular base respectively.

With regard to assessment of satisfactory level of knowledge of the studied sample after implementing self-care guideline the current study showed that 70%, 68%, 64%, 88%, 76%, 68%, 66% and 70% of the patients have got satisfactory level of knowledge regarding the previously mentioned items with statistically significant differences at $P < 0.001$.

As stated in table (4) 8% and 66% of the studied sample had gotsatis factory level of knowledge in relation to prevention of diabetic foot pre and post implementing self-care guideline respectively. Moreover, 4%, and 26% of the studied sample had got average level of knowledge about self –care and foot care respectively. These findings indicate that, there is highly statistical significant difference at $P < .0001$

In relation to assessment of patients' level of satisfactory practice before implementing self-care guideline, table (5) showed that, 8%, 2%, 10%, 6%, 10%, 8%, 2%, 6%, and 4% of the studied sample, inspect their feet, check their shoes before putting the foot on it, wash their feet regularly, dry their feet and between toes after washing, cutting nails of the toes by using the right technique, as well as they wear tight slippers with fasten, they do not know the importance of wearing shoes with

socks or they should not walk bare feet at home respectively.

Meanwhile, after implementing self-care guideline, this study revealed that, 70%, 74%, 46%, 68%, 60%, 96%, 50%, and 88% of the studied sample, had got satisfactory level of practice regarding the previously mentioned items with statistically significant difference at P <0.001.

With regard to level of practice among the studied sample, table (6) revealed that, 0% and 30% of the studied sample had got satisfactory level of practice in relation to self-care and foot care that could prevent diabetic foot pre and post implementing self-care guideline respectively. Meanwhile, 2% and 46% of them had got average level of practice pre and post implementing self-care guideline respectively. These findings proved that, there is highly statistical significant difference at P < .0001.

In table (7) the current study showed that, there is highly statistical significant relation between knowledge and practice levels after implementing guideline and foot care among the studied sample at P <0.001.

Table (1): Demographic characteristics of the studied sample (n= 50).

Items	No.	%
Age:		
Minimum 35	35 years	
Maximum 57	57 years	
Median	46.5	
Std. deviation	± 5.99	
Range	22	
Gender		
Male	27	54.0%
Female	23	46.0%
Marital Status:		
Married	46	92.0%
Divorced /Widow	2	4.0%
Single	2	4.0%
Education:		
Can read and write	18	36.0%
Intermediate level	21	42.0%
University level	11	22.0%
Occupation		
House wife (Women)	18	36.0%
worker	13	26.0%
Employee	12	24.0%
Lawyer (Men)	3	6.0%
Accountant	2	4.0%
Teacher	1	2.0%
Retired	1	2.0%

Table (2): Medical history of the studied sample (n= 50)

Items	No	%
Smoking Status:		
Yes	28	56.0%
No	22	44.0%
Type of DM:		
Type 1 DM	23	46.0%
Type 2 DM	27	54.0%
Duration of DM:		
from 1 year less 5	19	38.0%
from 5 less than 10 years	6	12.0%
from 10 less than15 Years	25	50.0%
FBS:		
120:<150 mg/dL	4	8.0%
150: 200 mg/dL	38	76.0%
>200 mg/dL	8	16.0%
Minimum= 150 mg/dL Maximum= 250 mg/dL Mean= 189.6 mg/dL Std. deviation= ±26.338 mg/dL		
Presence of other Chronic Diseases:		
Yes	23	46.0%
No	27	54.0%
Present of complications related toDM		
Yes	23	46.0%
No	27	54.0%
Family History of DM		
Yes	36	72.0%
No	14	28.0%
Source of information about DM:		
TV	1	2.0%
Relatives/friends	41	82.0%
Professional	8	16.0%

Table (3**):** Level of satisfactory knowledge of the studied sample related to self-care guideline and foot care pre / post implementation (n=50).

Knowledge Assessment	**Pre**		**Post**		**Chi-square**	
	No	*%*	*No*	*%*	X^2	*P-value*
1. Take all prescribed medications for DM in regular time	*11*	*22.0*	*35*	*70.0*	*23.1884*	*< 0.0001*
2. Know the foot care process	*9*	*18.0*	*34*	*68.0*	*25.4998*	*< 0.0001*
3. Do foot care regularly	*10*	*20.0*	*32*	*64.0*	*19.8686*	< 0.0001
4. Know DM did not make you feel a minor or major injury inyour feet	*6*	*12.0*	*24*	*48/0*	*15.4286*	< 0.0001
5. Should look after your feet if there is wounds	*9*	*18.0*	*44*	*88.0*	*49.177*	< 0.0001
6. Should do regular wound care if any	*12*	*24.0*	*38*	*76.0*	*27.04*	< 0.0001
7. Know diabetic patient may get a foot ulcer	*33*	*66.0*	*16*	*32.0*	*11.5646*	*0.0007*
8. Know you should not smoke as it cause poor circulation to the feet	*3*	*.6*	*34*	*68.0*	*41.2269*	*< 0.0001*
9. Know that if there is redness/bleeding you should consult	*41*	*82.0*	*47*	*94.0*	*3.4091*	*0.0648*
10. Know foot should be inspected feet regularly	*3*	*6.0*	*33*	*66.0*	*39.0625*	*< 0.0001*
11. Know foot should be washed regularly	*17*	*34.0*	*31*	*62.0*	*7.8526*	*0.0051*
12. Know how often the feet should be washed	*7*	*14.0*	*35*	*70.0*	*32.1839*	*< 0.0001*
13. Know temperature of water should be within room temperature	*45*	*90.0*	*49*	*98.0*	*2.8369*	*0.0921*
14. Know how often feet inspection should be done as well inside footwear for objects or torn lining?	*3*	*6.0*	*31*	*62.0*	*34.9376*	*< 0.0001*
15. Know you should wear shoes and socks	*3*	*6.0*	*31*	*62.0*	*34.9376*	*< 0.0001*

*Not Significant (NS) **Significant (S

Table (4): Category of knowledge level about self -care guideline and foot care as indicated by the studied sample pre / post implementation (N=50).

Level of knowledge	Pre		Post		Chi-square	
	No	*%*	*No*	*%*	X^2	*P-value*
Satisfactory Knowledge > 75%	4	8.0	33	66.0	64.13	<.0001HS
AverageKnowledge 60% to 74%	2	4.0	13	26.0		
Unsatisfactory Knowledge < 60%	44	88.0	4	8.0		

Table (5) Level of satisfactory practice of the studied patients related to self-care guideline and foot care pre / post implementation (n=50).

Practical Assessment	Pre		Post		Chi-square	
	No	%	No	%	X^2	P-value
1. Perform inspecting of the feet	4	8.0	35	70.0	40.3951	< 0.0001***
2. Check the shoes before putting the foot on	1	2.0	37	74.0	55.0085	< 0.0001***
3. Wash your feet	5	10.0	23	46.0	16.0714	< 0.0001***
4. Check your feet and dry it after washing	3	6.0	34	68.0	41.2269	< 0.0001***
5. Dry between the toes	5	10.0	30	60.0	27.4725	< 0.0001***
6. Use moisturizing cream on the feet	6	12.0	10	20.0	1.1905	0.2752*
7. Put moisturizing cream between the toes	0	0.0	7	14.0	7.5269	0.0061**
8. Follow the right technique way while cutting the toe nails?	4	8.0	48	96.0	77.5641	< 0.000***
9. Wear of slippers with no fastening?	29	58.0	37	74.0	2.852	0.0913*
10. Avoid of tight slipper fastening	1	2.0	48	96.0	88.3954	< 0.0001***
11. Wear pointed toed shoes	6	12.0	37	74.0	39.2085	< 0.0001***
12. Wear artificial fiber (e.g. nylon) socks	34	68.0	34	68.0	0	> 0.9999*
13. Wear shoes without socks/stockings/tights	3	6.0	25	50.0	24.0079	< 0.0001***
14. Walk in the house with bare feet	2	4.0	44	88.0	71.0145	< 0.0001***
15. Walk outside in bare feet	47	94.0	48	96.0	0.2105	0.6464*
16. Use of a hot water bottle in bed in winter time	39	78.0	46	92.0	3.8431	0.0499*
17. Put the feet near the fire	36	72.0	50	100.0	16.2791	< 0.0001***
18. Usecorn remedies /corn blaster?	2	4.0	14	28.0	10.7143	0.0011**
19. Apply a dry dressing on a blister when having one	1	2.0	15	30.0	14.5833	0.0001**
20. Put a dry dressing on a lesion cut or burn when occurs.	4	8.0	16	32.0	9.0	0.0027**

*Not Significant (NS) **Significant (S) ***highly significant (HS)

Table (6): Category of practice level about self -care guideline and foot care as indicated by the studied sample pre / post implementation(N=50).

Level of Practice	Pre		Post		Chi-square	
	No	*%*	*No*	*%*	X^2	*P-value*
Satisfactory Practices > 75%	0	00.0%	15	30.0%	57.609	<.0001HS
Average Practices 60% to 74%	1	2.0%	23	46.0%		
Unsatisfactory Practices < 60%	49	98.0%	12	24.0%		

Table (7): Relation between knowledge and practice levels after implementing self -care guideline and foot care among the studied sample (N=50).

Levels of knowledge post implementing self-care guideline	Levels of practice post implementing self-care guideline									
	Good		Average		Poor		Total		Chi-square	
									X^2	P-value
	No.	%	No.	%	No.	%	No.	%		
GoodKnowledge	13	26%	16	32%	4	8%	33	66%	71.62	<.0001 HS
Average Knowledge	2	4%	5	10%	6	12%	13	26%		
Poor Knowledge	0	0.00%	2	4%	2	4%	4	8%		
Total	15	30%	23	46%	12	24%	50	100%		

Discussion

Diabetic foot is one of the most serious late complications could result from diabetes, diabetic foot in particular has great important due to risk of amputations, impaired functioning, increasing economic burdens, and the apparent serious affection of diabetic patients' quality of life due to liability to develop diabetic foot. As mentioned in several literatures, diabetes more than any other chronic disease, requires daily self -care ***(Desalu et al, 2011 &Kafaie et al, 2012).***This study was done to evaluate the effect of self-guideline for diabetic patient for improving knowledge and practice of diabetic patients toward preventing development of diabetic foot.

According to the findings of this study, mean age of the studied sample was 46.5 years, while more than fifty percent of them were males. With regards to educational level, the current study reported that, more than one third of the studied sample has intermediate level of education.

In relation to medical history of the studied sample this study showed that, more than fifty percent of them have type 2 diabetes, and more than one third of the studied sample has diabetes less than 5 years. As regards to presence of other chronic diseases and presence of diabetes complications, it was reported by the present study that, more than fifty percent of the studied sample has neither chronic diseases nor diabetes complications, in addition, this study reported that, the majority of the studied sample got their information about diabetes from relatives/or friends.

Further findings of the current study indicated that, the minority of the studied sample has satisfactory level of knowledge related to diabetes and self-care in the initial assessment before implementing self-care guideline. Regarding to assessing knowledge level of the studied sample after implementing self-care guideline, it was reported by the present study that, the majority of the studied sample developed satisfactory level of knowledge about self-care and foot care. This could be explained by; poor level of knowledge that revealed from initial assessment result from lack of patients' awareness regarding self-care and foot care, as well as lack of supported materials that might help patients to practice more self-care, lack of access to health services. Meanwhile, significant improvement of knowledge level that occurred after implementing self-care guideline was due to the provision of supportive and illustrated materials to the patient as well as motivating patients to gain and retain knowledge to improve their wellbeing and avoid complications that could result.

These findings are in the same line with ***Jinadasa and Jeewantha, (2011) &Saurabh et al, (2014)*** who stated that, the patients with inadequate knowledge level and lack of awareness about diabetes as well as foot care will be liable to develop more complications rather than others. In addition, in contrast with these findings, ***Lamchahab et al, (2011)& and AlQdhayani (2015)*** who stated that, better knowledge of foot care was noted among patients with higher educational level/or high socioeconomic status as well as higher educational level affect on patients compliance to all instructions and guideline provided to the patients with diabetes.

Moreover, this study showed that, the entire of studied sample has neither satisfactory level of practice nor average level of practice related to self-care and foot care in the initial assessment before implementing self-care guideline. With regard to assessing practice level of the studied sample after implementing self-care guideline, the finding of the present study showed that, almost one third of the studied sample developed satisfactory level of practice about self-care and foot care, while, more than one third of them developed average practice level. In relation to unsatisfactory level of practice, the result of this study reported that, the majority of the studied sample had unsatisfactory level of practice about self-care and foot care before implementing self-care guideline. Meanwhile, after implementing the above mentioned guideline, this study showed that, only less than one third of the studied sample had unsatisfactory level of practice.

These findings could be explained by the following, the patients included in the study might need more time to perform this practice regularly, because practical skills need more time to be mastered, as well as the patients might need awareness and when they acquire knowledge, and do foot care practice by themselves, this might reflect positively on outcomes that could result from this practice. This finding is in agreement with ***Dizar et al, (2016) & Lamchahab et al, (2011)***, who reported that it takes time to make patients proactive patients in relation to foot care practices. Also, in agreement with these findings, ***Gholap, and Mohite, (2013) &Martin, (2012)*** who mentioned that this is a reflection of good compliance; as patients who are provided with adequate knowledge and practice will be more compliance and will carry out all self-care practice completely.

In addition, this study proved that, there is statistical significant relation between knowledge and practice levels after implementing self-care guideline and foot care among the studied sample. This is explained by, the patients gained adequate knowledge and practice in very simple and easy way that made them more compliance and able to perform such skills that related to self-care and foot care. In consistent with this finding***, Al-Asmary et al, (2013)***who reported that, increasing the amount of advice and

health education would lead to improved self-care.

Limitations of the Study

This study faced some limitations as follows; the small sizeof the studied sample in comparison with large number of patients who have diabetes.

Conclusion

This study concluded that, self-care guideline implementation for diabetic patients had statistically significant effect on their knowledge and practice toward preventing development of diabetic foot.

Recommendations:

Based on the findings from this study the researcher made the following recommendations; in order to emphasize foot care education. Moreover, the hospital administration should establish a specialized diabetic clinic for follow –up. In addition, diabetic patients should receive health education sessions and supportive materials, which cover all instructions related to control of diabetes and diabetic foot care. Finally, publication of this study should conduct on larger number of diabetic patients to be able generalized the results.

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