Effectiveness of Foot Self-Care Preventive Educational Program on the Behavior of the Diabetic Patient in AL-Hilla City

Hadi Jawad Kadhim[1], Sahar Adham Ali[2]
[1]University of Babylon, College of Nursing, Iraq
Email: hadinus75@gmail.com
[2]University of Babylon, College of Nursing, Adult nursing department, Iraq

Abstract
Diabetic patient is highly risk for foot amputation, which is a serious problem. Diabetic foot self-care education which includes assessment, planning, implementation and evaluations are essential and effective protocol to prevent complications.
Keywords: Foot Self-Care, Diabetic Patient, AL-Hilla City, Educational Program

1. Introduction

A Diabetic foot is described as infections, ulcerations, or destruction of foot tissues in patients who have neuropathy and/or peripheral vascular disease (2). A foot ulcer precedes around (80%) of non-traumatic lower limb amputations in diabetes individuals. Around half of diabetics die within five years of getting a foot ulcer, and up to (70%) die in five years after having their limb amputated (16). It also accounts for a significant amount of health-care funding. As a result, it is a significant burden on the patient, their careers, and the healthcare system. In 2014, diabetes affects (8.5 %)of persons over the age of 18 worldwide, up from (4.7 %)(108 million) in 1980. (3) Foot ulcers and the problems that lead to amputation one of the largest hazards to persons with diabetes can be avoided with daily foot care and examination. Not going barefoot, performing/receiving regular foot care, and wearing correctly fitted shoes are all examples of preventive behavior. A health system's diabetic foot strategy must include foot-specific patient education (4, 5).
Nurses have critical roles and duties in improving diabetic patients' foot care knowledge. The patient must be taught how to properly care for his feet by washing them regularly, drying them well, especially between the toes, and checking them for corns, calluses, redness, swelling, blisters, and skin breaks. Any changes in the patient's condition should be recorded to his or her healthcare practitioner as soon as feasible. (6).
Diabetes education is a critical component of successful diabetes care because it allows patients to take an active part in optimal diabetes self-management. Patient education should be a continuous process aimed at assisting patients in overcoming behavioral and psychological challenges, improving self-management abilities, and gaining the ability to make informed decisions. Education is an important part of DM treatment. (7, 8).

Objectives

The aims of the present study are:
1-to determine the Effectiveness of Foot Self-Care Preventive Educational Program on the Behavior of the Diabetic Patient with diabetes mellitus after construction and administration of the instructional sessions.
2-to find out the relationship between self –care behavior and demographical variables of the study sample such as (age, gender, educational status).

2. Methodology

The Study Design

A quantitative study quasi-experimental design is selected to study the evaluate the Effectiveness of Foot Self-Care Preventive Educational Program on the Behavior of the Diabetic Patient with diabetes mellitus after construction and administration of the instructional sessions from the period between: (20.sep.2020 to 8. june .2022) at diabetic center in AL-Hilla city.

The Study Sampling

Non-probability purposive sample drawn from the target population who satisfied particular requirements over a set period of time. (20) patients were chosen to evaluate the patient's requirements for this program me, and another ten individuals were chosen to participate in the pilot study, while (80) patients with Diabetic millets(DM) having the same inclusion criteria are divided into two groups: (40) patients act as experimental group (20) females and (20) males, and the other (40) patients are treated as control group (20) females and (20) males, who scheduled for frequent visits to the center for treatment and consultation.

Setting of the Study

Diabetic Center which establishes to receive patients in (2014), was the unique rich specialist selected as a setting in order to carry out this prospective study.
The study form:
In order to determine the Effectiveness of Foot Self-Care Preventive Educational Program on the Behavior of the Diabetic Patient a comprehensive

doi.org/10.31838/hiv22.02.820 Received: 03.07.21, Revised: 24.08.21, Accepted: 25.09.21

review of related literature was performed to prepare the proper form to determine the effectiveness of the program content of the patient's knowledge.
Divided to three parts:

Part 1: Demographical characteristic of the patients

This part consists of (6) items state (age, gender, marital status, residence, working status and level educational).

Part 2: Clinical Data

The second part's contents involve (3) items regarding the patients' clinical data Comorbidity chronic diseases (Hypertension , Cardiac disease, Urological disease, Respiratory disease), Have tips on foot care from (Health provider ,Family and friends, Social media, Books), *Body mass index* (BMI).
Part 3: this part adapted from diabetic foot self-care behavior scale (DFSBS) from (17) this scale content (7) items.

Scoring- Rating System

the first part of the questionnaire which consist the (6) items related to demographical characteristics of the sample and used Scoring- rating according to infiltration existing information and using individual interview to complete to collect all the questionnaire items, the second part of the questionnaire to evaluated the Clinical Data related to Diabetic Patients Foot which content (3) Yes/No questions prepared. The following patterns have been used to rank and score the items as: Yes=2 No=1
and also Five-point Likert scale is used for rating and scoring of the (Section Three) Diabetic Foot self-care behavior scale (DFSBS):that contents (7) items.
Never = (1) Ever= (2) Sometime= (3) Often= (4) Always =(5)

The Validity

Contents validity of the education program and the prepared form two version Arabic and English distributed among (19) experts who specialized in the field, their experience not less than (5) years.
They were asked to assess the validity of the content of the educational program and the adequacy of the form of the study. They expert views and feedback have been taken into account and changes have been made to the final draft of the form.

Reliability

For obtaining the reliability of the prepared form internal consistency which shows how closely related to the set of items with distributed as a group, the Patients behavior scale recorded r = 0.74 which is statistically acceptable.

Ethical Considerations

For obtaining administrative and formal permission the following steps take place:

1- A study proposal, title, objectives and importance, were presented in special seminar which carried out by the Scientific Postgraduate Committee - University of Babylon - College of Nursing in 20/9/2020 in order to obtain formal agreement to start the study.
2- Special protocol paper was filled as a first step to obtain formal approval of the study by the Scientific Committee of adult nursing department (22-9-2021).
3- After confirming the educational program's quality and preparing a questionnaire for collection of data, three forms completed for the ethics committee to achieve formal agreement.
4- After obtaining agreement from the Presidency of the Health of Babylon-Training and Development Division Department- An official permission is obtaining from Marjan teaching hospital to utilise the / Dr. Wissam Abdel Hamid Al Salami Diabetes Center as a proper setting to facilitic data collection.
5- Oral permission obtained to start data collection from the director of the center after explaining the study purpose and objectives to secure the cooperation of the healthcare provider to facilitate data collection and presentation of the instructional program sessions.

Data Collection

To achieve the main objective of the study which directed to evaluate the Effectiveness of Foot Self-Care Preventive Educational Program on the Behavior of the Diabetic Patient. the steps of the data collection and presentation of the program performed as the following:

1. Patient who participate select related to special criteria.
2. The total sample number divided to two groups (40) for the experimental group and the remain (40) patients assigned as a control group.
3. All the study sample (experimental and control group) full special foam as pre-test which consider as baseline test.
4. The control group complete the first post-test after two weeks of the pre-test, which the second post-test collected after two weeks later from the first post-test. No interventional activities received by the control group members they only receive their routine follow-up services and treatment.
5. The experimental group members (20) patients exposed to the pre-test at the same period of the control group, educational session presented by them as a small group to maintain physical distance between person to person which should be not less than (2) meters and wearing masks, maintain the classroom ventilation and cleanliness. The participant receives three sessions which

structured to cover all the information related to domains of self- care management. The patient attends the sessions according to them planed scheduled to the center, all sessions started in the early morning, usually begin at (8.30 am) and it takes about (45) minutes, because of the follow-up and treatment after take rest and patients complete all needs from center repack to study room to take other sessions that started from (10.30) and finished (11.15). When all sessions finished, they exposed to the first post-test, after (15) day they exposed to the second post-test.

6- All the facilities which needed by the patients during the educational session pen, paper notebooks, masks detergents drinking water were prepared previously to facilitate ongoing sessions.

The presentation of the educational program sessions takes about (30) days, which the total period for data collection takes about (63) days. It started from (3 January 2022 to 6 march 2022).

3. Results

In current chapter that results of analyzing data were done by statistical package for social science (SPSS). A total of (80) participants were enrolled in this study divided into two groups: intervention group (40) and control group (40).

Table 1: Distribution of the Study Sample Regarding to Their Demographical Characteristics

Variables		Groups				*P- Value*
		Intervention group (N=40)		Control (N=40)		
		F	%	F	%	
Age groups	20-30 years	7	17.5	7	17.5	0.99
	31-40 years	5	12.5	5	12.5	
	41-50 years	8	20	6	15	
	51-60 years	20	50	22	55	
Gender	male	20	50	20	50	1.00
	female	20	50	20	50	
Marital Status	Single	8	20	6	15	0.418
	married	28	70	30	75	
	Widowed	4	10	4	10	
Residency	Urban	18	45	23	57.5	**0.99**
	Rural	22	55	17	42.5	
Job	Student	1	2.5	2	5.0	0.99
	Employment	7	17.5	6	15.0	
	house wife	19	47.5	20	50.0	
	Free Job	10	25	11	27.5	
	retired	3	7.5	1	2.5	
Level of Education	Primary school graduated	10	25	11	27.5	0.859
	Intermediate School	14	35	11	27.5	
	preparatory school graduated	8	20	11	27.5	
	College or Institution	8	20	7	17.5	

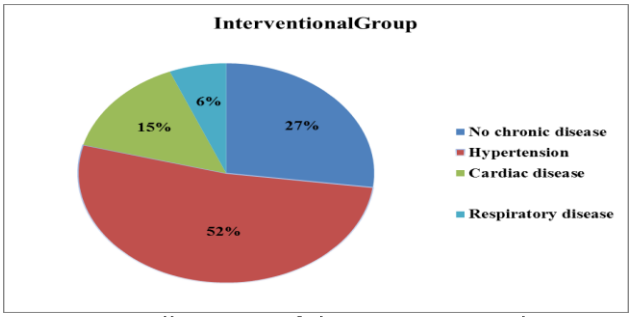

Figure 1: Allocation of the interventional group related to chronic diseases.

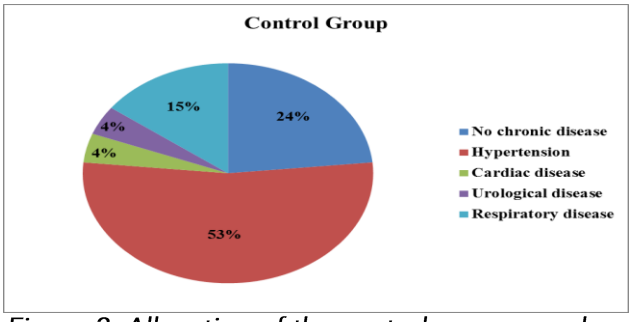

Figure 2: Allocation of the control group member related to chronic diseases.

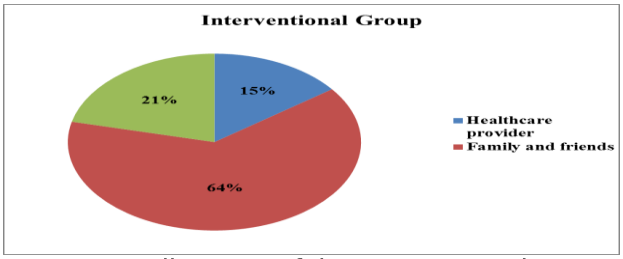

Figure 3: Allocation of the interventional group related to the source of information.

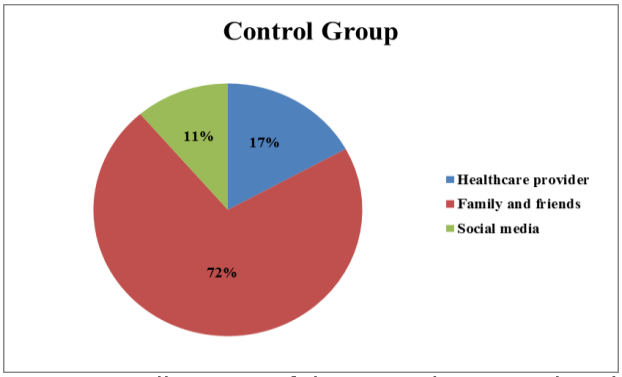

Figure 4: Allocation of the control group related to the source of information.

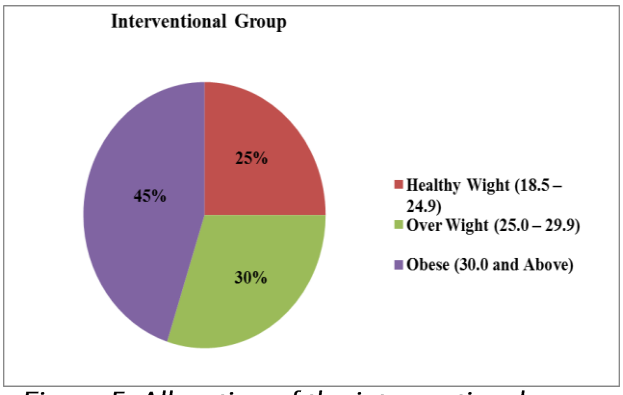

Figure 5: Allocation of the interventional group related to body mass index (BMI)

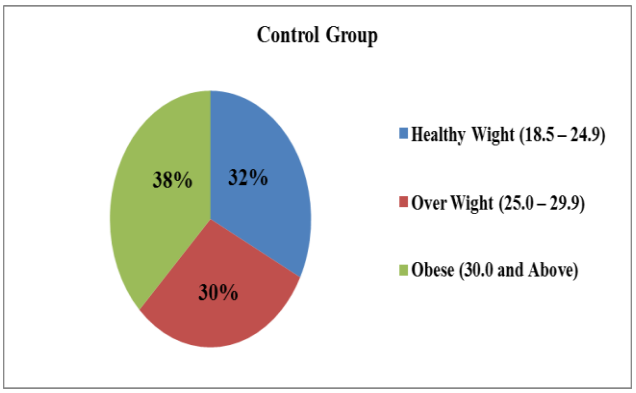

Figure 6: Allocation of the control group related to their body mass index (BMI)

Table 2: Behavioral Responses of the Study Group (Interventional and control) Related to Diabetic Foot Self-Care

No	Items	Interventional Group			P	Control Group			P
		Pre-test	Post-test (1)	Post-test (2)		Pre-test	Post-test (1)	Post-test (2)	
		Mean± SD	Mean± SD	Mean± SD		Mean± SD	Mean± SD	Mean± SD	
1	I check the soles of my feet daily.	2.80± 0.464	2.82± 0.463	3.78± 0.480	0.59	2.85± 0.427	2.83± 0.425	2.83± 0.425	0.996
2	Check between my toes daily.	2.80± 0.464	2.85± 0.470	3.77± 0.480		2.88± 0.404	2.89± 0.405	2.89± 0.405	
3	I wash between my toes daily.	3.18± 0.501	3.11± 0.521	3.90± 0.441		3.10± 0.441	3.12± 0.445	3.12± 0.445	
4	Dry between my toes after washing.	3.18± 0.675	3.20± 0.679	4.03± 0.423		3.18± 0.446	3.10± 0.440	3.10± 0.440	
5	If my toes are dry, I moisturize them with a moisturizer.	3.57± 0.501	3.59± 0.511	2.70± 0.564		3.30± 0.516	3.31± 0.518	3.31± 0.518	
6	Before I put on my shoes, I search inside the shoes.	2.60± 0.496	2.68± 0.493	3.82± 0.549		2.65± 0.483	2.60± 0.487	2.60± 0.487	
7	I gradually fold the new shoe.	1.93± 0.267	1.97± 0.270	2.65± 0.580		1.83± 0.385	1.80± 0.381	1.80± 0.381	
General means		**2.86± 0.524**	**2.88± 0.505**	**3.52± 0.585**		**2.82± 0.491**	**2.80± 0.500**	**2.80± 0.500**	

P= 0.05 (*P*= probability, SD= Standard Deviation)

Table 3: Association between Behaviors of Participants and demographical characteristics by using X^2 (n=40)

Demographical characteristics		Levels of symptoms			Chi	Sig.	df
		Low behavior = ≤1.6	Natural behavior= 1.7-3.3	Positive behavior = 3.4-5			
20-30 years	F	0	7	1	281.020[a]	0.000 High Sig.	6
	%	0	17.5	2.5			
31-40 years	F	0	4	0			
	%	0	10	0			
41-50 years	F	0	7	1			
	%	0	17.5	2.5			
51-60 years	F	0	20	0			
	%	0	50	0			
Male	F	0	17	3	102.000[a]	0.000	2
	%	0	42.5	7.5			
Female	F	0	19	1			
	%	0	47.5	2.5			
Primary school graduated	F	0	10	0	300.000[a]	0.000 High Sig.	6
	%	0	25	0			
Intermediate School	F	0	14	0			
	%	0	35	0			
preparatory school graduated	F	0	8	0			
	%	0	20	0			
College or Institution	F	0	6	2			
	%	0	15	5			

NS: not Significant at (P ≤ 0.05) (1-1.6= low knowledge, 1.7-2.3= fair knowledge, 2.4-3= high knowledge)
(Negative attitude= ≤1.6, Natural attitude= 1.7-3.3, Positive attitude = 3.4-5)

4. Discussion

The Finding in table (1) this presented the study sample members distributed related to their demographical characteristics as, the higher percentage (50,0 %) and (55.0 %) in both group were with (51-60) years old, (70.0 %), (75.0 %) married, most of them were male in both group, with respect to their residency (57.5%) of the control group were lived in urban area and (55.0 %) of the interventional group were rural resident . This finding go a line with a study entitled as Tang et al.,2021, (Sex Differences in Osteomyelitis of the Foot in Persons With

Diabetes Mellitus: A Meta-Analysis) which revealed that, the average age of the diabetic patients who participate in the study were (65.2) years, (32.03 %) were male and (30.0 %) were female, (9)who carried out descriptive study to assess diabetic patients knowledge find that most of the participant were married .

Table (1) revealed that most of the study sample in (both group) were house wife (50.0%) , (47,5%) respectively within the control and interventional group , regarding to the educational status most of the interventional group members 14 (35.0%) were with intermediate degree, while the control group members distributed equally between primary ,intermediate and preparatory degree 11 (27.5%) for every each other these finding not agree with study done by (10) that present the high percent of study sample were at primary school level. In respect to the figure (1) and (2), which presented that allocation of the interventional and control group related to chronic diseases shows the majority of participant with hypertension this agree with (11) that present statistically significant increase in self-efficacy was observed in diabetic patients were with hypertension. Figure (3) and (4) allocated the study sample (both group) related to the source of information that most of the interventional group members account (63.9%) and control group members (71.7%) were gaining their information related to the disease and its management from their social surrounding family members and friends. These findings go a line with study done by(12), which revealed that in relation to source of information, (36.66%) of respondents got information from T.V. and books, (16.66%) from other sources, and (10%) from newspaper. With regard to the past illness (80%) of respondents has no past illness, and (20%) having past illness. In relation to (70%) were not previously hospitalized, and (30%) were previously hospitalized.

The point of view People with chronic disease likely to ask question related to their disease symptoms caring from their close person who experience the same condition, exchanging information and sharing ideas explaining feelings pisleasly shared with close people. Related to the patient's body mass index (BMI) the findings in Figure (5) and (6), revealed that most of the participants in both group (control and intervention) were categorized as obese (30 and above), these findings agree with study carried out on diabetic patients by (13), which find that most of the participants were overweight. Finding of table (2) according to behavioral responses related to diabetic foot self-care among patients, in their pre-posttest recorded to significant differences, while post-test between both periods recorded improvement in the general mean of post -test for interventional group members after their attendance in the educational sessions (3.52±), on the other hand no change recorded on the control group member responses in their first and second post -test (2.80±) and (2.80±). This finding supported with (14) revealed that the self -care educational program content play un effective factor to change patients' behavioral responses. (Among interventional group patients).

Table (3) shows that all age groups are strongly related with patient behaviors when the significance level (P 0.05) is high. Results show that participants' behavior is strongly associated with gender when the P-value (P 0.05) is less than 0.05, which is consistent with previous research. The findings also show a very significant link between participants' educational attainment and their conduct when (P 0.05) The vast majority of people are not provided with knowledge on foot care.In addition, the majority of the participants' pretest knowledge and behavior regarding foot care was inadequate, but both of these aspects were significantly enhanced following the execution of the program (post-test), Thses finding supported by .(15)The research suggested conducting a new survey for diabetics in the city of Samawah, issuing a booklet on patient behaviors related to foot care and distributing it to patients during their visit to health institutions, and providing the Center for Diabetes and Endocrinology in the city of Samawah with professional nurses from nursing colleges to provide periodic lectures to patients on diabetic foot care. In addition, the study suggested issuing a booklet on patient behaviors related to foot care and distributing it to patients during their visit to health institutions.

5. Conclusion

According to the tabulated results, the researcher has been able to make the following conclusions:

6.1. Most of the participants (both group) were within (51-60) years old, married, equally distributed related to gender, most of there were housewives, The interventional group members intermediate education level with rural residency.

6.3. Most of the participants gain their information for caring from their family members and friends, and most of them were obese (over 30 and a above).

6.7. Diabetic patients behavior pretest related to foot self-care recorded no statistical differences between the control and interventional group , while no significant changes recorded in the results of the interventional group member behavior related to foot self-care .The control group recorded change in their last posttest .

6.9. Significant relationship founded between the participants behavior related to self-care concept and their demographical variables such as age and educational status only .

6. Recommendation

Use video tape in the waiting room which present foot self-care content to facilitating thinking and problem solving to assist patients to engage effectively in the learning process.

References

Neeva Dangol. NURSE'S ROLE in the PREVENTION of DIABETIC. FOOT ULCER. 2011; p25.
Bakker, K., Apelqvist, J., Lipsky, B. A., Van Netten, J. J., Schaper, N. C., & International Working Group on the Diabetic Foot (IWGDF). (2016). The 2015 IWGDF guidance documents on prevention and management of foot problems in diabetes: development of an evidence-based global consensus. Diabetes/metabolism research and reviews, 32, 2-6.
World Health Organization. Global report on diabetes. Geneva: World Health Organization; 2016
Jeffcoate W J and Harding KG (2003): Diabetic foot ulcer. Lancet; 361: 1545-1551
Gondal M, Bano U, Moin S, et al (2007): Evaluation of knowledge and practices of foot care in patients with chronic type 2 Diabetes Mellitus. J Post Grad Med Inst; 21: 104-8.
Perrin BM, Gardner MJ, Suhaimi A, Murphy D (2010) Charcot osteoarthropathyof the foot. Aust Fam Physician 39: 117-119.
Strajtenberger M, Trbović1 V and Sekerija1 M (2011): standardized educational program in persons with type 2 diabetes on oral hypoglycemic therapy: effects on glycemic control and body mass index. 30
Tessier DM and Vague L (2007): Diabetes an Education in the elderly. Diabetes and Metabolism; 33:
Rasheed, M. B. R., & Al-Abedi, H. M. (2018). ASSESSMENT of DIABETIC PATIENTS, KNOWLEDGE TOWARD FOOT CARE AT AL-NAJAF CENTER FOR DIABETES AND ENDOCRINE. *Global of Scientific Journal*, *6*(7), 587–611.
Noaman, A. (2017). Assessment of Preventive Foot Care Practices among Patients with Diabetes Mellitus Type II. *Journal of the Faculty of Medicine-Baghdad*, *59*(3), 244–248.
Allam, M. M., El-Zawawy, H. T., Ibrahim Ismail, I., & Ghazy, R. M. (2020). Cross-Cultural Reliability of an Arabic Version of the Self-Efficacy for Managing Chronic Disease 6-Item Scale in Arab Patients with Diabetes mellitus. *Primary Care Diabetes*, *14*(4), 305–310. https://doi.org/10.1016/j.pcd.2019.11.001
Gaikar, M. P. (2017). Assess the Knowledge Regarding Self-Care Management among Newly Diagnosed Type 2 Diabetic Clients Attended Out Patient Department at Parshuram Hospital, Ghanekhunt-Lote, Ratnagiri Dist. Maharashtra State. *Journal of Medical Science And Clinical Research*, *5*(12). https://doi.org/10.18535/jmscr/v5i12.53
Ali, N. S. M., Allela, O. Q. B., Salih, H. M., & Ahmed, I. H. (2019). Prevalence of Type 2 Diabetes Associated Complications ion Kurdistan Region Iraq Overall results. *Journal of Basic and Clinical Pharmacy*, *10*(3), 1–6. https://www.cabdirect.org/cabdirect/abstract/19501100562
Sharoni, S. K. A., Rahman, H. A., Minhat, H. S., Shariff-Ghazali, S., & Ong, M. H. A. (2018). The effects of self-efficacy enhancing program on foot self-care behaviour of older adults with diabetes: A randomised controlled trial in elderly care facility, Peninsular Malaysia. *PLoS ONE*, *13*(3). https://doi.org/10.1371/JOURNAL.PONE.0192417
Meohammed K. Mezher*, R. I. A. (2020). Knowledge and Behavior of Patients with Diabetes Mellitus Type II toward of Diabetic Foot Care at Endocrinology and Diabetes Center in AL-Samawa City, Iraq. International Journal of Psychosocial Rehabilitation, 24(6), 12187–12194. https://doi.org/10.37200/IJPR/V24I7/PR271065
National Institute for Health and Care Excellence. Diabetic Foot Problems: Prevention and Management. London: NICE; 2015.
Chin, Y.-F., & Huang, T.-T. (2013). Development and Validation of a Diabetes Foot Self-Care Behavior Scale. The Journal of Nursing Research, 21(1), 19–25.