

Impact of Educational Program about Foot Care on Knowledge and Self Care Practice for Diabetic Older Adult Patients

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Abstract: Aim: Determine the impact of foot care educational program on knowledge and foot self care practice for diabetic elderly patients. **Material:** Quasi experimental design was be utilized in this study. The sample composed of 160 diabetic older adult patients. 100 in control group selected from El- Khiaria village and 60 in study group selected from El-Badala village, affiliated to Mansoura city. Egypt. **Method:** The study was conducted over a period of 11 months beginning at March2011 till the end of January 2012. **Results:** The age of the studied subjects ranged from 50 up to 70 years. With a mean age of 65 ± 4.95 for the study group, compared to 64.94 ± 4.50 for control. All patients in the study, compared to 99.0% in control group had poor knowledge, no statistically significant difference between both groups before program implementation ($X^2 = 0.604$, $p = 0.437$). While there is improvement of knowledge for patients in study group after program implementation the difference was highly statistically significant ($X^2=99.571$, $p = 0.000^*$). **Conclusion:** In conclusion, this study has shown a marked gap in the knowledge and practices of the diabetic older adult patients regarding foot care. **Recommendation:** the findings suggest that Periodic implementation of a designed educational program about foot care for all diabetic patients in hospital, and in our patients setting during follow up visits.

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1. Introduction

Diabetes mellitus (DM) is a public health problem and the leading cause of morbidity and mortality worldwide. Global diabetes incidence is increasing rapidly; this rise in prevalence of DM is likely to bring a concomitant increase in its complications among diabetic patients. One important complication of DM is the Foot problems; these complications constitute an increasing public health problem and are a leading cause of hospital admission, amputation and mortality in diabetic patients (Desalu et al 2011, Štrajtenbergery et al 2011).

In 2011 there are 366 million people with diabetes and this is expected to rise to 552 million by 2030 worldwide, most people with diabetes live in low – and middle income countries; and these countries will also see the greatest increase over the next 19 years. Diabetes caused 4.6 million deaths in 2011 (IDF, 2011).

Diabetic foot disease is common in the diabetic population; it is one of the most incapacitating chronic Complications resulting from poor disease management. It has a social and economic impact on families, health system, and society as a whole in both developing and developed countries. Diabetic foot complications are common in the older adult, and amputation rates increase with age. Proper foot self care practice is crucial for long-term survival and well being (Pataky, 2007 and Rocha et al 2009).

In Egypt, the prevalence of diabetic foot ulcers has been found to be high. The reasons commonly stated for this prevalence includes inappropriate footwear and the lack of knowledge regarding diabetic foot problems. The latter is very pertinent to Egypt since more than 90% of

the people having diabetes do not receive education on diabetic foot problems (Gawish, 2012).

Education is the key element in successful management of diabetes, as knowledge about diabetes empowers patients to play an active role in effective diabetes self-management. Patient education is an ongoing process, which should be aimed at helping patients to overcome behavioral and psychological barriers, improve self-management skills, and become empowered to make informed Choices. The diabetes educational process is a key aspect of DM management. (Tessier and Vague, 2007 and Strajtenberger et al, 2011).

Daily foot care and inspection can prevent the development of foot ulcers and the subsequent complications that lead to amputation--one of the biggest threats to adults with diabetes. Preventive behavior focus on not going barefoot, Performing/receiving proper foot care, and wearing properly fitting shoes. Foot-specific patient education is an essential element of a health system diabetic foot program (Jeffcoate and Harding, 2003; Gondal, 2007).

Nurses have important roles and responsibilities to improve knowledge of diabetic patients' about foot care. Patient should be taught to care for his feet by washing them daily, drying them carefully particularly between the toes, and inspecting for corns, calluses, redness, swelling, blisters, and breaks in the skin. The patient should be encouraged to report any changes to his/her health care provider as soon as possible (Peimani et al, 2010).

The aim of the study was to:

Determine the impact of foot care educational program on knowledge and foot self care practice for diabetic older adult patients.

Research hypotheses

Patients who receive educational program about foot care exhibit higher knowledge score and good practice of foot self care than patients who do not receive education

2. Materials and method:-

Materials:-

Design:

Quasi experimental research design was utilized in this study.

Setting:

Study was conducted in two villages, El-Badala and El- khairia village. They were selected randomly from 60 villages affiliated to Mansoura city, Dakhella , Egypt .

Subject:

A purposive sample of 160 older adults diabetic patients' selected from previous settings; (100 in control group selected from El- Khiaria village and 60 in study group selected from El-Badala village.

Participant was selected according to the following criteria:

1. Aged 50 years and above.
2. Willing to participate in the study.
3. Able to comprehend and communicate

Tools of the study:

The following tools were used for data collection:

Tool I:

Diabetic older adult Foot Care Assessment structured Interview Schedule:

Diabetic older adult foot care assessment structured interview schedule was designed by the researcher to collect the following data:

Part I:

Sociodemographic characteristics of the sample such as age, sex, level of education, marital status, and income.

Part II: Medical Health Profile

Medical history of the disease, associated disorder and treatment regimen.

Family history of diabetes mellitus and complication of diabetic foot.

Tool II:

Diabetic older adult Knowledge and self care practice Schedule:

This tool was developed by the researcher and composed of two parts to assess knowledge and self care practice of diabetic older adult patients about foot care:

Part I: - Knowledge Assessment Interview Questionnaire:

This tool was developed by the researcher after reviewing the relevant literature to assess the knowledge of diabetic older adult patients' about foot care. It contained knowledge about effects of diabetes on patient's feet, definition of diabetic foot, causes of

diabetic foot, signs and symptoms of diabetic foot, Complications of diabetic foot, prevention of diabetic foot, importance of foot care for diabetic patients, steps of foot care, importance of cutting nails, type of exercise to prevent foot problems, shoes and socks recommended for such patients and effect of smoking on feet of diabetic patients (*Elsayed 1999, Ahmed 2001, Mansour 2001, Rocha et al 2008, Desalu et al 2011*). The total number of questions was 28, consisting of 19 multiple – choice questions, 9 true and false questions. Scoring system of patient's knowledge was done as follows, each question had a group of answer points, each correct answer had one grade, while, no or wrong answer had zero. Total score for all questions reached 71 scores and the total scores for patient's knowledge depended on the numbers of grades the patient obtained regarding all questions. The knowledge scores were classified as:- Poor knowledge was given for a score of less than 50% of the total score , while Fair knowledge was given for score of 50 – <75 % and Good knowledge was given for score of 75% or more .

Part II: Diabetic older adult Foot Self Care practice: observational checklist:

Based on review of relevant literature diabetic foot self care practice observational checklist was developed by the researcher. It was consisted of 5 categories of foot self care practice which examined feet and shoes, foot cleaning, nail care, foot wear, and foot exercise for enhancing blood circulation. likert scale were used and divided into two categories, practice given score one while non practice given score zero (*Sawangaia 2006, Lincoln et al 2007, Rocha et al 2008, Somroo et al 2011*).

Tool III: - Educational Program about Foot Care:

Based on review of related literature educational program about foot care was developed by the researcher; the content of the program include the following: - definition , causes ,clinical manifestation , treatment of diabetes mellitus, complication of diabetic foot, importance of foot care and foot self examination, importance of compliance with medication, and diet, foot care, proper foot wear, importance and type of exercise(*Elsayed 1999, Mansour 2001, Micheal et al 2005, Dewit 2005, Hazavehi et al 2007*)

Procedure:-

The current study was carried out on three phases , involves the preparatory phase,, filed work and evaluation phase.

Preparatory phase:

- After extensive review of relevant literature, tools of data collections, instructional media and booklet were developed.
- Study tools were revised by 9 experts in the field of nursing and medicine at the faculty of medicine and nursing of Mansoura and Alexandria University, as a jury to test its content validity and feasibility and necessary modification were done.

- Tool II part II (diabetic elderly foot self care practice questionnaire) was tested for its reliability test- retest measurement was be used. The reliability was assured by means of Cronbach's alpha; it indicated that the tool has a reliability of 0.90
- A pilot study will be carried out on 16 diabetic elderly patients selected from the El- Redania village, Mansoura, Dakhalla, through home visits to test clarity and feasibility of the tools; and the approximate time needed for the interview. Accordingly the necessary modifications were done.

Filed work:

1. The researcher visits the rural health unit in El-khiaria; and El-Badala village for reviewing health record to identify diabetic patients.
2. Assessment of both groups were done through visits to patients home (control and study group) using study tools (tool I and tool II) pretest.
3. The educational program was implemented in El-Badala rural health unit.
4. Foot care bags were distributed to all subjects in the study group, packs included (towel, nail clipper, emery board, pumice stone, mirror, and emollient cream.
5. The subjects of the study group were divided into small groups; the education group comprised of 5 to 7 patients.
6. The researcher demonstrated the component of the program in the presence of one of the family members of the patient and asked them to act as patient's reminder, support provider and help the patient in performing foot care.
7. The educational program about foot care was composed of 8 sessions (3 educational and 5 practical / training sessions) program was implemented over 4 weeks period, 2 sessions per week; the duration of each session was 30 minutes.
8. The study was conducted over a period of 11 months beginning at March 2011 till the end of January 2012.

Ethical consideration:-

Approval was taken from hospital administrators prior to study. Verbal consent to participate in the study was obtained from each diabetic patients. The researcher explains the research purpose to the participants and they were assured about privacy and confidentiality of the data obtained and it will be used only for research purpose.

Evaluation of the program:

Immediately and after three and six months from implementation of the educational program reassessment of diabetic elderly patients in study and control group, using tool II part I (knowledge assessment interview questionnaire) and part II (diabetic elderly foot self care practice questionnaire).

Statistical Analysis: -

Data was analyzed using SPSS (Statistical Package for Social Sciences) version 15. The p is significant if less than or equal to 0.05

3. Results

Table (1): Show distribution of the diabetic patients in both groups according to their socio-demographic characteristics. The age of the patients in both groups ranged from 50 up to 70 years. Females were more prevalent in the sample than male They constituted 63.3% for the study group and 55% for control groups. Regarding the educational level, the results revealed that the highest percentage of the studied diabetic subjects were illiterate the reported percentage were 48.3 % and 61% of the study and control group respectively. As regards marital status the majority of diabetic elderly subjects in both groups were married (63.3% in study and 55% in control group). No statistically significant difference was observed between both groups.

Table (2) distribution of the diabetic elderly patients in both groups according to their knowledge about foot care pre and post educational program: It was observed from the table that all diabetic patients in the study, compared to 99 % in control group had poor knowledge, no statistically significant difference was observed between both groups before implementation of the program ($X^2 = 0.604$, $p = 0.437$). While there is improvement of knowledge for diabetic patients in the study group after implementation of the program, and the difference was highly statistically significant ($X^2=99.571$, $p = 0.000^*$).

Table (3): distribution of the diabetic elderly patients in both groups according to foot self care practice before program implementation. The majority of patients in both groups didn't dry their feet or between toes after washing, didn't use emery board, didn't use moisture cream to their feet and the rest either in study and control group put the cream between toes and didn't examine the shoes before wearing. Also the majority of diabetic elderly patients in both groups walk barefoot inside the home. 86.7% in study group compared to 99% in control group wearing slipper outside the home which is a negative foot self care behavior. No Statistically significant difference was observed between both groups before program implementation.

Table (4): distribution of the diabetic elderly patients in both groups according to foot self care practice after program implementation. Statistically highly significant difference was observed between both groups after implementation of the program; the total mean score of feet self care practice for study group before program was 12.47 ± 5.68 , compared to 43.17 ± 3.89 , as it was shown from the table that all the studied diabetic subjects in the study group practicing positive foot care behavior.

Table (5) Relation between socio- demographic characteristics of diabetic patients in study group and their knowledge about foot care before and after program

implementation. No statistically significant differences between different age groups of diabetic patients in study group and their knowledge about foot care after program implementation. The results revealed increased knowledge for diabetic males than females after program implementation with highly statistically significant difference. Significant relation was found between marital status, level of education, monthly income and knowledge of diabetic patients about foot care.

Table (6): Relation between total score of feet self care practice and socio demographic characteristics among the study group before and after implementation of the program. It was observed from the table that there is no statically significant relation was observed among the study group in relation to the age of diabetic elder's and total score of feet self care practice before and after program implementation either in post 1, 2 and post 3 (F= 4.185, p= 045, F= 3.437, p= 069, F= 2.609, p =

0.112, F= 2.664, p= 109 respectively). Concerning elders sex; that there is highly statistical significant difference was observed between sex and total score of feet self care practice among the study group before and after program implementation ,as it was shown from the table that diabetic elderly male had a higher total score of feet self care practice than diabetic elderly female before and after program. Regarding level of education; the results revealed that a positive significant association was observed between education and the total score of feet self care practice among the study group before and after program implementation in post 1, 2 and post 3; as it was shown from the table that elder's who could read and write, primary, preparatory, secondary and university education had a higher score of feet self care than illiterate patients (F= 8.770, p= 000*, F= 6.610, p = 0.000*, F= 13.861, p = 0.000* and F= 9.304, p = 0.000* respectively).

Table (1): distribution of the diabetic elderly patients in both groups according to their socio-demographic characteristics

	<i>Study group</i>		<i>Control group</i>		X^2	p
	N= 60	%	N=100	%		
Age (in year)						
50-	56	93.3	96	96.0	1.780	0.411
60-	4	6.7	3	3.0		
70+	0	0	1	1.0		
Mean \pmSD	65 \pm4.95		64.94\pm4.50			
Sex :						
Female	38	63.3	55	55.0	1.070	0.301
Male	22	36.7	45	45.0		
Marital status :						
Married	38	63.3	55	55.0	1.070	0.301
Widowed	22	36.7	45	45.0		
Level of education:						
Illiterate	29	48.3	53	53.0	5.484	0.360
Read and write	14	13.3	24	24.0		
Primary school	2	3.3	3	3.0		
Preparatory school	2	3.3	5	5.0		
Secondary school	10	16.7	15	15.0		
University	3	5.0	0	0		
Monthly income						
< 200	4	6.7	19	19.0	7.412	.060
200-	20	33.3	20	20.0		
400-	21	35.0	41	41.0		
600+	15	25.0	20	20.0		
Mean SD	432.78 \pm 230.96		395.74 \pm 202.56			

Table (2): distribution of the diabetic elderly patients in both groups according to their knowledge about foot care pre and post educational program

<i>Item</i>	<i>Study group</i>		<i>Control group</i>		X^2	p-value
	N=60	%	N=100	%		
Before program :-						
Poor knowledge	60	100	99	99.0	0.604	0.437
Fair knowledge	0	0	1	1.0		
Good knowledge	0	0	0	0		
Mean \pmSD	5.63\pm3.61		4.02\pm2.66			
Post 1 (immediately)						
Poor knowledge	14	23.3	94	98.9	99.571	0.000*
Fair knowledge	28	46.7	1	1.1		

Good knowledge	18	30.0	0	0	23.545	0.000*
Mean ±SD	44.72±12.36		5.87±8.79			
Post 2 (after 3 months)	N= 58	%	N=92	%		
Poor knowledge	31	53.4	89	96.7		
Fair knowledge	17	29.3	3	3.3		
Good knowledge	10	17.2	0	0		
Mean ±SD	36.12±14.98		5.98±8.92			
Post 3 (after 6 months)	N= 54	%	N=91	%	23.545	0.000*
Poor knowledge	33	61.1	85	93.4		
Fair knowledge	20	37.0	6	6.6		
Good knowledge	1	1.9	0	0		
Mean ±SD	32.41±12.13		6.02±8.96			

Table (3): distribution of the diabetic elderly patients in both groups according to foot self care practice before program implementation

	Study group N = 60				Control group N= 100				X ²	p
	practicing		non practicing		Practicing		non practicing			
	n	%	n	%	N	%	N	%		
Examination of feet	22	36.7	38	63.3	30	30.0	70	70.0	0.760	0.383
Test temperature of water before washing	1	1.7	59	98.3	1	1.0	99	99.0	1.677	0.195
Wash feet with soap and water	56	93.3	4	6.7	94	94.0	6	6.0	0.028	0.866
Dry of feet after washing	6	10.0	54	90.0	10	10.0	90	90.0	0.000	1.000
Dry between toes	0	0	60	100	1	1.0	99	99.0	0.604	0.437
Use moisture cream	7	11.7	53	88.3	22	22.0	78	78.0	2.698	0.153
Put cream between toes	7	100	0	0	22	100	0	0		
Trimming toenails straight across or according to the shape of toes	5	8.3	55	91.7	2	2.0	98	98.0	3.595	0.058
Use clipper to cut nails	27	45	33	55	33	33.0	67	67.0	2.304	0.129
Use emery board	1	1.7	59	98.3	2	2.0	98	98.0	3.474	0.324
Examination of shoes before wearing	8	13.3	52	86.7	11	11.0	89	89.0	0.195	0.659
Wear slippers outside the home	52	86.7	8	13.3	95	95.0	5	5.0	3.489	0.062
Put feet beside fire or radiator	34	56.7	26	43.3	54	54.0	46	46.0	0.108	0.743
Walk barefoot inside the home	47	78.3	13	21.7	82	82.0	18	18.0	0.323	0.570
Wear cotton socks	3	5.0	57	95.0	2	2.0	98	98.0	1.115	0.291
Wear wool socks	18	30.0	42	70.0	20	20.0	80	80.0	2.071	0.150
Walking for 15-30 minutes 3 to 4 times /week	39	65.0	21	35.0	67	67.0	33	33.0	0.067	0.796
Feet massage	1	1.7	59	98.3	1	1.0	99	99.0	0.135	0.713
Mean ±SD	12.47±5.68				10.56±3.19					

Table (4) distribution of the diabetic elderly patients in both groups according to foot self care practice after program implementation

	Study group n =60				Control group n= 95				X ²	p
	Practicing		Nonpractice		Practicing		Nonpractice			
	N	%	N	%	N	%	N	%		
Examination of feet	60	100	0	0	30	31.6	65	68.4	70.702	0.000**
Test temperature of water before washing	59	98.3	1	1.7	5	5.3	90	94.7	131.403	0.000**
wash feet with soap and water	60	100	0	0	89	93.7	6	6.3	3.942	0.047**
dry of feet after washing	60	100	0	0	13	13.7	82	86.3	109.964	0.000**
dry between toes	52	86.7	8	13.3	1	1.1	94	98.9	119.790	0.000**
Use moisture cream	39	67.2	19	32.8	21	22.8	71	77.2	29.240	0.000**
Put cream between toes	0	0	60	100	21	100	0	0	81.000	0.000**
Trimming toenails straight across or according to the shape of toes	60	100	0	0	6	6.4	89	93.7	132.010	0.000**
Use clipper to cut nails	60	100	0	0	33	34.7	62	65.3	65.263	0.000**
Use emery board	44	73.3	16	26.7	2	2.1	93	97.9	89.397	0.000*
Examination of shoes before wearing	60	100	0	0	9	9.5	86	90.5	122.014	0.000**
Wear slippers outside the home	43	71.7	17	28.3	89	93.7	6	6.3	14.107	0.000**
Put feet beside fire or radiator	0	0	60	100	51	53.7	44	46.3	45.878	0.000**
Walk barefoot inside the home	2	3.3	58	96.7	80	84.2	15	15.8	96.543	0.000**

Wear cotton socks	6	10.0	54	90.0	4	4.2	91	95.8	2.042	0.153
Wear wool socks	34	56.7	26	43.3	5	5.3	90	94.7	51.602	0.000**
Walking for 15-30 minutes 3 to 4 times /week	50	83.3	10	16.7	67	70.5	28	29.5	3.259	0.071
Feet massage	60	100	0	0	2	2.1	93	97.9	146.842	0.000**
Mean ±SD	43.17 ±3.89				12.69±5.38					

* Significant P < 0.05

4. Discussion:

Foot complications from DM are one of the main causes of amputation and its subsequent physical and emotional problems. This complication is one of the main reasons for admission of diabetic patients to the hospital, and leads to billions of dollars in medical expenses Worldwide Teaching patients proper foot care is a nursing intervention that can prevent costly, painful, and debilitating complications. Preventive foot care begins with careful daily assessment of the feet (Somroo et al 2011).

Since diabetes education is recognized as an essential part of diabetic patients' treatment, therefore; this study was conducted to determine the impact of foot care educational program on knowledge and foot self-care practice for diabetic older adult patients.

As regard to socio-demographic characteristics of the studied patients, this study revealed that; the mean age for the study group was 65 ±4.95, compared to 64.94±4.50 for control group. Females were more prevalent in the sample than males; this finding is consistent with some studies conducted in Egypt by Sobhy (2004), Abd EL- Hamid (2005) and Fouad (2009), reported that more than one half of Egyptian diabetic patients were females . In the present study the majority of diabetic patients in both groups were married, illiterate; this is consistent with Sobhy (2004) and Abd EL- Hamid (2005) who found that more than one half of the diabetic patients were married; while the majority were illiterate.

Concerning diabetic patients' knowledge about foot care, the current study results showed that all diabetic patients in the both groups had poor knowledge before program implementation, and no statistically significant difference was observed between, this finding come in consistence with some studies conducted in Egypt by Kamel et al (1999), Ahmed (2003), Selim (2003), Mansour (2001), Yousri (2004), Bahgat et al (2008), Abdo and Mohamed (2010), and Mersal (2011). Another study conducted in Nigeria by Desalu et al (20110) showed that a greater proportion of diabetic patients had a poor knowledge of diabetic foot care.

After implementation of the educational program significant improvement in knowledge of diabetic patients in the study group, with a highly statistically significant difference was observed between the study and the control. Similar supporting results for this study were reported by **Teleb and Abdel- Latef (2001), Ahmed (2003), Selim (2003), Mansour (2004), Yousri (2004), Bahgat et al (2008), Vatankhah et al (2009), Abdo and Mohamed (2010) Mersal (2011) and Selea et al (2011)** this studies revealed improvement of patients' knowledge and practice about good and proper foot care after educational program about foot care

Table (5): Relation between socio- demographic characteristics of diabetic patients in study group and their knowledge about foot care pre and post program implementation

	Pre-test (N=60)						Post 1 (n= 60)						Post 2 (n= 58)						Post 3 (n= 54)					
	Poor knowled ge (N= 60)		Fair knowled ge (N=0)		Good knowled ge (N=0)		Poor knowled ge (N= 14)		Fair knowled ge (N= 28)		Good knowled ge (N=18)		Poor knowled ge (N= 31)		Fair knowled ge (N= 17)		Good knowled ge (N= 10)		Poor knowled ge (N= 33)		Fair knowled ge (N= 20)		Good knowled ge (N= 1)	
	N	%	N	%	n	%	N	%	N	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Age in vears																								
50-	56	93.3	0	0	0	0	13	92.9	28	100	18	100	27	87.1	17	100	10	100	31	93.9	20	100	1	100
60-	4	6.7	0	0	0	0	1	7.1	0	0	0	0	4	12.9	0	0	0	0	2	6.1	0	0	0	0
70+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Test of significance	-						X ² = 3.341, p= 0.188						X ² = 3.742, p= 0.154						X ² = 1.322, p= 0.516					
Sex :-																								
Male	22	36.7	0	0	0	0	1	7.1	7	25.0	14	77.8	4	12.9	9	52.0	9	90.0	6	18.2	15	75.0	1	100
Female	38	63.3	0	0	0	0	13	92.9	21	75.0	4	22.2	27	87.1	8	47.1	1	10.0	27	81.8	5	25.0	0	0
Test of significance	-						X ² =19.997, p= .000*						X ² =21.390 , p= .000*						X ² = 18.134, p= 0.000*					
Marital status																								
Married	22	36.7	0	0	0	0	2	14.3	19	67.9	17	94.4	13	41.9	15	88.2	9	90.0	18	54.5	18	90.0	1	100
Widow	38	63.3	0	0	0	0	12	85.7	9	32.1	1	5.6	18	58.1	2	11.8	1	10.0	15	45.5	2	10.0	0	0
Test of significance	-						X ² = 22. 252, p= 0.000*						X ² = 13.783, p= 0.001*						X ² = 7. 725, p= 0.021*					

Level of education :-																								
Illiterate	29	48.3	0	0	0	0	12	85.7	17	60.7	0	0	26	83.9	1	5.9	0	0	23	69.7	0	0	0	0
Read and write	14	23.3	0	0	0	0	2	14.3	8	28.6	4	22.2	4	12.9	7	41.2	7	30.0	8	24.2	6	30.0	0	0
Primary school	2	3.3	0	0	0	0	0	0	1	3.6	1	5.6	0	0	2	11.8	0	0	1	3.0	1	5.0	0	0
Preparatory school	2	3.3	0	0	0	0	0	0	1	3.6	1	5.6	1	3.2	1	5.9	0	0	1	3.0	1	5.0	0	0
Secondary school	10	16.7	0	0	0	0	0	0	1	3.6	9	50.0	0	0	4	23.5	6	60.0	0	0	9	45.0	1	100
University	3	5.0	0	0	0	0	0	0	0	0	3	16.7	0	0	2	11.8	1	10.0	0	0	3	15.0	0	0
Test of significance	-						X² = 40.156, p= 0.000*						X² = 49.064, p= 0.000*						X² = 37.766, p= 0.000*					
Monthly income																								
<200	4	6.7	0	0	0	0	3	21.4	1	3.6	0	0	3	9.7	1	5.9	0	0	3	9.1	0	0	0	0
200-400	20	33.3	0	0	0	0	8	57.1	10	35.7	2	11.1	16	51.6	2	11.8	1	10.0	14	42.2	3	15.0	0	0
400-600	21	35.0	0	0	0	0	3	21.4	14	50.0	4	22.2	11	35.5	7	41.2	2	20.0	14	42.2	5	25.0	0	0
600+	15	25.0	0	0	0	0	0	0	3	10.7	12	66.7	1	3.2	7	41.2	7	70.0	2	6.1	12	60.0	1	100
Test of significance	-						X²=32.936, p= 0.000						X²= 24.350, p= 0.000						X²= 21.594, p= 0.001					

Table (6): Relation between total score of feet self care practice and socio demographic characteristics among the study group pre and post implementation of the program

Item	Pre-test n= 60		Post 1 n= 60		Post 2 n=58		Post 3 n= 54	
	No	Mean ±SD	No	Mean ±SD	No	Mean ±SD	No	Mean ±SD
Age in years								
60-75-85+	56	12.857±5.651	56	43.410±3.897	54	36.870±5.050	52	30.173±4.
	4	7.000±2.449	4	39.750±1.707	4	32.750±1.258	2	24.500±707
	0		0		0		0	
Test of significance	F= 4.185, p= 0.055		F= 3.437, p= 0.069		F= 2.609, p= 0.112		F= 2.664, p= 0.109	
Sex :-								
Male	22	15.409±6.207	22	45.318±3.908	22	39.727±4.802	22	33.363±4.077
Female	38	10.763 ±4.629	38	41.921±3.340	36	34.666±4.091	32	27.625±3.989
Test of significance	F= 3.300, p= 0.002*		F= 3.566, p=0.001*		F= 4.277, p= 0.000*		F= 5.147, p=0.000*	
Marital status:								
Married	38	14.710±5.637	38	44.421±3.429	37	38.054±4.612	37	31.000±4.898
Widow	22	8.590±3.126	22	41.000±3.754	21	34.000±4.658	17	27.705±4.194
Test of significance	F= 21.913, p= 0.000*		F= 12.934, p= 0.001*		F= 10.276, p= 0.002 *		F= 5.738, p= 0.020 *	
Level of education								
Illiterate	29	8.965±3.590	29	40.896±3.143	27	32.925±3.161	23	26.130±3.152
Read and write	14	14.071±4.214	14	44.500±2.928	14	37.857±3.301	14	31.857±3.799
Primary school	2	11.000±1.414	2	42.500±.707	2	37.500±.707	2	34.000±1.414
Preparatory school	2	16.000±9.899	2	47.000±7.071	2	43.000±707	2	36.000±8.485
Secondary school	10	18.200±6.051	10	46.700±3.368	10	42.000±3.887	10	33.200±3.392
University	3	18.333±3.785	3	45.000±2.645	3	40.666±3.214	3	33.000±5.567
Test of significance	F= 8.770, p= 0.000*		F= 6.610, p= 0.000*		F= 13.861, p= 0.000*		F= 9.304, p= 0.000*	
Monthly income								
<200	4	12.50±3.42	4	46.25±2.75	4	41.25±1.71	3	34.33±3.51
200-400	20	15.20±4.65	20	50.95±5.09	19	43.84±5.71	17	39.18±5.65
400-600	21	18.86±5.76	21	53.10±3.52	20	46.80±3.94	19	40.95±4.88
600+	15	25.33±5.899	15	56.67±4.06	15	52.40±4.87	15	44.87±4.58
Test of significance	F= 12.376, p= 0.000*		F= 8.746, p= 0.000*		F= 11.184, p= 0.000*		F= 5.479, p= 0.002*	

F = One way ANOVA test

* Significant P < 0.05

Regarding practice of foot care before program implementation; the present study found no statistically significant difference was observed between both groups before program implementation. While after the program implementation, diabetic patients in the study group practicing positive behavior related to foot and nail care. This differences was maintained at the follow-up phases. The same results reported by **Teleb and Abdel- Latef (2001)**, **Ahmed (2003)**, **Selim (2003)**, **Mansour (2001)**, **Sobhy (2004)**, **Youssri (2004)**, **Bahgat et al (2008)**, **Abdo and Mohamed (2010)**, **Ali(2010)**and **Desalu et al (20110)**.

On Studying the effect of different socio demographic factors of the study population on acquiring knowledge and practice of foot care study results reported; that no significant difference was observed between age of the studied diabetic patients in the study group and their knowledge and practice of foot care; the same results reported by **Sobhy (2004)** who revealed no significant difference was found between knowledge and practice of foot care and the age of diabetic patients. A number of studies by **Gunay et al (2006)**, **Murugesan et al (2007)**, **Yun et al (2007)**, and **Desalu et al (20110)** revealed no association between age and practice and knowledge of diabetes.

Sex; had significantly affect knowledge and practice of foot care among diabetic patients; the current study revealed increased knowledge for diabetic males than females after program implementation .This finding was in accordance with **Heggy (2001)**, **Michell et al (2008)**, **Perrin et al (2009)**, **Chaudhary et al (2010)** and **Abdo and Mohamed (2010)**. This result is expected as males are more likely to be better educated and going outside the home than females which may expose them more to information than females.

In addition the present results revealed that a significant difference was observed between knowledge and practice of foot care and marital status of diabetic patients; as it was shown increased knowledge and practice of foot care for married diabetic than widow, as married patients remember, help and encourage each other to perform and be compliant with self care practice to avoid any complications; this was in agreement with **Heggy (2001)**, **Abd EL- Hamid (2005)** who found that married patients had better practice of self care than widows.

As for education, study result reported a significant relationship between the level of knowledge and practice of foot care and the educational level; the patient who had higher level of education reported higher knowledge and practice score of foot care than illiterate patients, and the difference was statistically significant the same results reported by **Hassnain and Sheikh (2009)** and **Desalu et al (20110)** . these results may be attributed to the fact that highly educated are more able to read the printed material. Moreover educational level of the

subjects could enhance their ability to learn about the disease.

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