Self-Care Practice of Community Dwelling Diabetic Elders

Somaya El-Shazly*, Nahed Mohamed Saied Ayoub**, Hanaa Shafic*

Abstract: Diabetes is common chronic disease encountered by individuals in late life. Diabetes and its complications can impaire well being and quality of life of elders. Patient's compliance and self-care practices are critical facors in appropriate management of diabetes mellitus. So, this study aimed at identifying self-care practice of community dwelling elders. The study sample comprises 105 diabetic elderly who attending the outpatient diabetic clinic at Farouk Hospital, which is affiliated to Ministry of Health and Population. The study revealed that the majority, of the studied diabetic elders had a poor adherence to self-care practice. It was found that self-care practices are affected by sex, marital status, and income of the elders. Also, self-care practice had a significant relation with fasting blood level, body mass index, and the number of foot problems. Knowledge of diabetic elders is essential for self-care practice which is affected by elders' educational level. The study recommended that encouraging elders' independency, and providing financial and social supports are an essential part for self-care practices

INTRODUCTION

Diabetes Mellitus (DM) is a common clinical and public health problem affecting individuals in late life. In USA, 20% of individuals aged 65 years or more have either diagnosed or undiagnosed diabetes mellitus. [1] In Europe, the prevalence rate of DM was 3-10%. Higher rate 14-20% is reported in Indian, Chinese, and Hispanic American population. [2] In Egypt, the total prevalence of diagnosed diabetes is 4.3% with district geographic differences, 5.7% in urban areas, 4.1% in rural agricultural parts, and 1.5% in rural desert areas. [3] In Alexandria, it was estimated that the prevalence is as high as 5% of the total population. [4]

Diabetes mellitus is defined as a disorder characterized by chronic hyperglycemia resulting from defects in insulin secretion, insulin action or both. [5] There are several

* Gerontological Nursing, Faculty of Nursing Alexandria University
** Gerontological Nursing, Faculty of Nursing El-Mansoura University

types of Diabetes Mellitus: Adult-onset diabetes or non-insulin dependent diabetes mellitus (NIDDM) which occurs with increased frequency in elderly persons. Type II diabetes may go undiagnosed for elders. This may be due to age related changes and the atypical manifestations of the disease. Age-related changes include decrease in the function of beta cells of the pancreas which leads to less insulin secreted, and the presence of insulinopenia resulting from insulin resistance in the number of insulin receptors sites. Also to changes in the urinary system which include reduction in filtration rate, blood supply to the kidneys, and increase the renal threshold up to 180 mg/dl.[6]

Another factor that contributes to undiagnosed diabetes mellitus is the absence of typical manifestations of the disease. Elderly patients may not report the classical signs and symptoms of diabetes

mellitus as polyuria, polydepsia, and polyphagia, but manifest the disease atypically in the form of incontinence, dehydration, confusion, blurred vision, chronic infection, poor wound healing, and heart disease which are considered complications of the disease. These factors combined with obesity, lack of activity and loss of muscle mass, which are common among elders, put them at risk to develop hyperglycemia slowly and may not be severe enough to cause noticeable symptoms.[5,6]

Diabetes with long term duration may cause short or long term complications. Short term involves diabetic ketosis, hypo and hyperglycemia, Infection, and hyperosmolar non-ketotic state. While, long term complications include micro and macro vascular complications, such as retinopathy, nephropathy, cardiovascular, peripheral, and cerebral diseases.[7]   Most of

these complications result from high blood sugar level. These complications may affect the ability of elderly persons to perform activities of daily living, instrumental activities of daily living and self-care and may accelerate dependency and increase the need for multiple services with its associated economic consequences.[8,9] Controlling blood sugar level, short, and long term complications can be minimized leading to high quality of life. In Philadelphia, there is evidence from large studies that improved glucose control in type II diabetes mellitus reduces the risk of development and progression of complications especially micro and macro complications.[10]

The success of diabetes management depends on the patient's compliance with the prescribed management plan.[3] In Alexandria, a study conducted in elderly homes reported that the majority of elders were non-complying with their medications regardless of the diagnosis.[11] Another study carried out in the out patient diabetic clinic for elders stated that most of elders were non- complying with their atment regimen[12]

Therapy for diabetes mellitus focuses on diet, exercise, hygiene, and insulin or oral blood glucose lowering agents. Also, bathing, personal hygiene, oral care, skin care, frequent foot examination, and preventive foot care are important.[13]

Enhancing self-care capacity can help in achieving the optimal level of compliance with diabetes mellitus therapy.

Self-care is the ability of a person to meet his demands. Diabetes self-care comprises either strict adherence to the prescribed regimen or active self–care. Strict adherence is the level to which the patient daily follows the diabetes self-care regimen. While active self-care means self

monitoring, dietary adjustment, insulin dosage, and regular exercise.[14]

Gerontological nurse has an important role in assessing the self-care practice of diabetic home bound elders, as an essential aspect of holistic care provided to the elders for healthy aging.

Aim of the study:

The aim of this study was to identify self-care practice of community dwelling diabetic elders.

MATERIAL AND METHODS

Design:

Descriptive study.

Setting:

The study was conducted in outpatient diabetic clinic at Farouk Hospital, which is affiliated to Ministry of Health and Population.

Subjects:

The sample comprised all elders attending the diabetic out patient clinic at Farouk Hospital for a period of three months and fulfilled the following criteria:

- age 60 years and above, diagnosed with diabetes for not less than one year and willing to participate in the study. Their number amounted to 105 elders.

Tools of data collection:

In order to collect the necessary information, the following tools were used:

Tool I:

A structured interview schedule: It was developed based on review of recent literatures. It included the following information related to:

1- Socio-demographic characteristics of the elderly such as age, sex, marital status, level of education, income, and its source.

2- Medical history: type of other chronic diseases and the type of medication used.

3- History of diabetes: duration of diabetes and medications used.

4- Family history.

5- Self-care activities which included information related to drug intake, diabetic diet, exercise, blood glucose analysis, and periodic check up.

Tool II:

An assessment sheet: This sheet was developed by the researchers and **included** items related to:

a- Mouth condition

b- Skin condition

c- Foot condition

d- Measuring fasting blood sugar

e- Measurement of body weight and height

Method:

1- Tool I and tool II were developed by the researchers after thorough reviewing of literature.

2- A Pilot study was performed on 10 elderly in the same setting, and not included in the sample. It was done to assess clarity and applicability of the tools. Result of this study revealed that all tools were clear, applicable and no changes or exclusion of item were done.

3- A verbal consent of elderly person to participate in the study was obtained after explanation of the study purpose.

4- Every patient was interviewed individually to collect the necessary information. The interview took about 30-45 minutes.

5- Each patient was examined to assess mouth, skin, and foot condition for any abnormalities. Also, the height and weight of patient were measured.

6- Data were collected over a period of three months starting from August till the end of September 2006.

Statistical Analysis

Data were analyzed using SPSS software version 13.0. Descriptive statistics as proportion, mean, and standard deviation were used. Categorical variables were contrasted by Pearson chi-square or chi-square for trend. In case of small cell

frequency, the p value for chi-square is replaced by Fisher's exact p or Monte Carlo exact p. Ordinal variables were tested for correlation by Spearman correlation coefficient or Kendall's tau-b. All reported *p* values are two-tailed. The level of significance was set at 0.05.

To determine the body mass index (BMI) the following formula was used

BMI= weight in kg.$\div$ (height in meters)^2

The calculated BMI were compared with reference to identify underweight and overweight elderly patients

- ≤ 22.0 kg/cm^2 (underweight)
- 22.0-27.0 kg/cm^2 (normal weight)
- ≥ 27.0 kg/cm^2 (over weight)
- ≥ 30.0 kg/cm^2 (obesity)[15]

-The diabetic elderly knowledge and self-care practice were calculated for all areas of diabetic regimen as follows:

Correct answer was scored one and incorrect was zero. The total self-care practice score was 34 and the total knowledge score was 13. They were divided into the following levels:

Good = >75% of the correct answers

Fair = 50-75% of the correct answers

Poor = < 50% of the correct answers

RESULTS

Table 1 shows the socio- demographic characteristics of the diabetic elderly patients. The sample aged 60-84 years with a mean age of   (72.1 $\pm$4.54 years). Most of the sample was females (61%), 37.1% were illiterate, and those with basic education or secondary school education were represented by 20.9% and 19%, respectively, those who completed their university education were 12.4%. As regards the marital status of the sample, it was observed that 40.0% were married, 39.0% were widowed, 18.1% and 2.9% were either single or divorced, respectively. More than one-third of the elders were either employee or manual worker (44.8% and 43.8%, respectively). Regarding the

income of the elderly, it ranges from 70-350 LE/month with a mean 220.48± 120.83 LE. Nearly half of elders (43.8%) had limited income <200 LE/month and the main source of income reported by the majority of elders (85.8%) was pension.

Table 2 demonstrates the medical history and medication used by the diabetic elderly. Regarding the medicalhistory, cardiovascular diseases and gastrointestinal diseases were the most frequent diseases reported by the diabetic elderly patients (60.9% and 49.4%, respectively), while 42.9% of the sample had positive family history of diabetes mellitus. Concerning the duration of diseases, the table shows that the majority of the sample (82.8%) had diabetes for a period of five years and more and nearly two-thirds of them use oral hypoglycemic drug (66.7%). While only 4.8% use a combination of oral hypoglycemic drugs and insulin.

Table 3 illustrates the distribution of the diabetic elders according to their mouth, and foot problems. Concerning mouth condition it was observed that teeth problems as missing teeth, teeth decay, lose teeth, and wearing denture are observed in 84% of the patients, followed by gum problems as gum sores, bleeding, and swelling which was observed in 42% of elders, and fissure of lips was observed in 16.2% of the elders. Regarding the feet problems in the diabetic elders, it was observed that 90.5% of the sample had dry skin, while feet edema was observed at 44.8% of the elders followed by abnormal color of the feet (27.7%) such as redness, pale, and cyanosis. 19.1% of the elders had impaired skin integrity, and 1.9% had absent pulse. Nail problems (ingrowing nails, cyanosis, and corns) were found in 13.4% of the elders.

Table 4 illustrates the fasting blood glucose (FBG) level, and body mass index (BMI) of the diabetic elders in relation to the

age, sex, and duration of disease. The table demonstrates that fasting blood sugar and body mass index were not affected significantly by age, sex, and duration of the disease.

Table 5 shows the level of knowledge and self-care practices of diabetic elders in relation to their socio-demographic characteristics and health condition. Regarding the knowledge of diabetic elders, the table shows that 81% of the sample had fair knowledge and only 1.9% had good knowledge. There is no statistical significant difference in relation of socio-demographic characteristics and health condition and level of knowledge. While the educational level had significant effect on level of knowledge (p= 0.028). Concerning self-care practices of diabetic elders in relation to their socio-demographic characteristics and health condition the table shows that 39% of the elders had poor practice, while fair practice was represented by 41%, and 20%

had good practice. There is a statistical significant difference between sex, marital status, educational level, monthly income, and type of hypoglycemic drug used and practices.

Table 6 shows the relation between level of knowledge, self-care practices and blood sugar level, caloric intake, and fluid intake. Regarding fair knowledge 50% of the patients had high blood sugar level, and 39.5% of fair knowledge are overweight, 12.8% of them received more than daily caloric requirement, and 90.7% received <2000 ml/day. Concerning the practices level, 66.7% of elderly who had good practice had a normal blood sugar, while 71.4% of good practice were overweight, and 81% of them received less than the daily caloric requirement, and 95.2% received inadequate fluid intake. The table denoted that there is no significant statistical relation between level of knowledge, self-care practice and blood sugar level, body

mass index, daily caloric requirement, and amount of fluid intake/day.

Table 7 shows the number of mouth, skin, and foot problems in relation to elderly diabetic patient's level of knowledge and self-care practices. There is a significant relation between level of knowledge, self-care practices, and number of feet problem (p=0.002 and 0.046, respectively). While, this relation was not noted in relation to number of mouth problems (p=0.914 and 0.443, respectively.)

DISCUSSION

Diabetes Mellitus is a chronic illness that requires continuing medical care and education. Elders' compliance and self-care are critical factors in appropriate management of diabetes mellitus.[16] Nursing care for diabetic elders achieves its objectives when it enables the elders to reach an optimal level of independence based on elders' needs. Accordingly, gerontological nurse can not successfully plan self-care interventions until identifying diabetic patients' self- care practices, needs, and investigate barriers to these practices. So, this study aimed at determining self-care practices of community dwelling diabetic elders.

Active self-care refers to self monitoring, dietary adjustments, insulin dosage for daily purposes and regular exercise.[14] The present study revealed that the majority of elders had either poor or fair self-care practice. This is in accordance with other study about self-care practice among home based diabetic elders in Dakahlia Governorate.[2]

Effective self–care practice is affected by many factors as physical, mental and socio-economic abilities of elders. Also, knowledge of elders and the ability to take decision are two factors that should be considered in assessing self-care practice of elders.[17] This supports the results of the present study which revealed that marital

condition, sex, education, and income of the elders had a significant effect on elders' self-care practices (Table 5).

Chronic morbidities may induce dependency in activities of daily living (ADL) and increase the risk for complications. Cardiovascular diseases are the most chronic diseases affecting diabetic elders (table 2). This is supported by other studies conducted in elderly homes in Alexandria.[18-20]

Concerning health condition of diabetic elders, the present findings stated that the majority of elders had poor mouth condition (table 3). This result was supported by Amer *et al.*, and Heggy who reported an association between diabetes mellitus and pathologic changes.[21,22]

In relation to foot problems, most of diabetic elders had dry skin which is considered a risk factor for foot ulcer followed by presence of edema which was reported by more than one-third of elders (table 3). These problems may be considered by diabetic elders as normal part of aging process. So, elders may be less adherent to skin and foot care. Abdel-Rehim and Eweda *et al.*, added that complications in diabetes mellitus usually result from a triad of peripheral neuropathy, peripheral vascular insufficiency, and infection.[23,24].

Body mass index (BMI) appears to be a widely accepted index for classifying adiposity in elders, where BMI above $27kg/m^2$ is used as a scoring index for overweight and above $30\ kg/m^2$ as an index of excess obesity.[15] The results of the present study revealed that more than one-third of elders were overweight and approximately one-third are obese. Obesity and overweight had no significant relation with age, sex, or duration of disease. While, body mass index had a significant relation with self-care practice (table 6). This is in accordance with two studies conducted in Kwait and India.

Glucose level is vital sign to individual with

diabetes mellitus. It is important to maintain blood sugar levels within a normal range to avoid short and long term complications. More than half of the elders had high fasting blood sugar (table 6). This clearly reflects the non-compliance of elders with the prescribed diabetic regimen. The results of the present study are supported by another study conducted in diabetic out patient clinics for elders which stated that the majority of elders were non complying with their prescribed drugs.[12]

Knowledge about diabetic care is essential. Learning much about diabetes and its management can improve self-care practice.[10] In the present study, it was reported that the majority of diabetic elders (81.9%) had fair knowledge about diabetes. Knowledge had a significant relation with the occurrence of foot problems which is considered as part of self-care practice. This result is in accordance with other study conducted in Finland which stated that lack

of knowledge affected the adherence to self-care practice.[14] Improving elders' knowledge of diabetic self-care practices will allow them to be able to manage diabetes effectively.

Self–care practice had a significant relation with the occurrence of foot problems, body mass index and blood glucose level. Poor self-care causing poor long term metabolic control, which may lead to the development of diabetic complications. Patient's self-care practices are a very crucial part of maintaining a good diabetes status.

CONCLUSION

It can be concluded from the study that the majority of the community dwelling diabetic elders had a poor adherence to self-care practice.

Self-care practices are affected by sex, marital status, and income of the elders. Also, self-care practice had a significant relation with fasting blood level, body mass

index, and the number of foot problems. Knowledge of diabetic elders is affected by elders' educational level.

RECOMMENDATION

The following recommendations are suggested:

1. Encourage elders' independency is an essential part for self-care practices.

1- Financial and social supports are essential for improving self-care practices.

2- Mass Media can assist in providing the diabetic elders with essential information about the diseases process, complications, and its management which help to increase self-care practice of diabetic elders.

Table1: Socio-demographic characteristics of diabetic elderly

Socio - demographic Data	n = 105	
	No.	**%**
Age in years:		
60 –	85	80.9
75 –	20	19.1
85+	0	0
Mean $\pm$ SD	72.10$\pm$4.54	
Sex: Male	41	39.0
Female	64	61.0
Marital Status: Married	42	40.0
Widowed	41	39.0
Single	19	18.1
Divorced	3	2.9
Educational Level: Illiterate	39	37.1
Basic education	22	20.9
Secondary school	20	19.0
University	13	12.4
Read and write	11	10.5
Occupation before retirement:		
Employee	47	44.8
Manual work	46	43.8
House wife	8	7.6
Seller	4	3.8
Income: < 200 L.E	46	43.8
200 –	19	18.1
300 +	40	38.1
Mean $\pm$ SD	220.48$\pm$120.83	
Source of income:		
Pension	90	85.8
Son/daughter	9	8.6
Friends/relatives	4	3.8
Social assistance	2	1.8

Table 2: Medical history and medication used by the diabetic elderly

Health status	n = 105	
	No.	**%**
Medical History#		
Cardiovascular diseases	58	60.9
Gastrointestinal diseases	47	49.4
Musculoskeletal diseases	16	15.2
Others	5	4.9
None	23	21.9
Family history of Diabetes		
yes	45	42.9
No	70	57.1
Onset of diabetes by years		
1-	5	4.8
3-	13	12.4
5+	87	82.8
Mean $\pm$ SD	5.56±1.04	
Hypoglycemic drugs used Oral Hypoglycemic drugs	70	66.7
Insulin	30	28.6
Oral Hypoglycemic drugs & insulin	5	4.8

More than one answer were given

Table 3: Distribution of the diabetic elders according to their mouth,

and foot problems

problems	n = 105	
	No.	**%**
Mouth problems: #		
Teeth	88	84
gum	44	42
Fissure of lips	17	16.2
Feet problems#		
Dryness of the skin	99	90.5
Edema	47	44.8
Abnormal color	28	27.7
Impaired skin integrity	19	19.1
Coldness of feet	6	5.7
Nail problems (Ingrowing nails, corns, cyanosed nails	12	13.4
Absent pulse	2	1.9

#more than one answer

Table 4: Fasting blood glucose (FBG) level, and body mass index (BMI) of the diabetic elders in relation to the age, sex, and duration of disease

Characteristics	FBG Low No	FBG Low %	FBG Normal No	FBG Normal %	FBG High No	FBG High %	FBG X^2	FBG P	BMI Underweight No	BMI Underweight %	BMI Normal weight No	BMI Normal weight %	BMI Over weight No	BMI Over weight %	BMI Obesity No	BMI Obesity %	BMI X^2	BMI P
Age in years:																		
60 – (n=88)	7	8.2	31	36.5	47	55.3	4.496	0.106	2	2.4	23	27.1	33	38.8	27	31.8	3.029	.834
75 + (n=17)	5	25	6	30	9	45			0	0.0	6	30	6	30	8	40		
Sex:																		
Male (n=41)	5	12.2	18	43.9	18	43.9	2.59	0.274	0	0	12	29.2	18	44	11	26.8	2.577	.387
Female (n=64)	7	10.9	19	29.7	38	59.4			2	3.1	17	26.6	21	32.8	24	37.5		
Duration of DM (years)																		
1- (n=5)	0	0	1	20.0	4	80.0		0.611	0	0.0	2	40	2	40	1	20		.860
3- (n=13)	2	15.4	3	23.1	8	61.5			0	0.0	5	38.5	3	23	5	38.5		
5+ (n=87)	10	11.5	33	37.9	44	50.6			2	2.3	22	25.3	34	39.1	29	33.3		

* Significant at P<0.05

Table 5: Relation between socio-demographic characteristics and health condition of diabetic elders' and their level of knowledge and self-care practices.

Characteristics		Knowledge							Practices							
		Poor		Fair		Good		P	Poor		Fair		Good		P
		No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	
Age in years:	60 – (n=88)	15	17.6	68	80	2	2.4	.680	36	42.4	31	36.54	18	21.2	.154
	75 + (n=17)	2	10	18	90	0	0		5	25	12	60	3	15	
Sex:	Male (n=41)	4	9.8	35	85.4	2	4.9	.075	12	29.3	23	56.1	6	14.6	.041*
	Female (n=64)	13	20.3	51	79.7	0	0.0		29	45.3	20	31.3	15	23.4	
Marital Status:	Married (n=42)	9	21.4	32	76.2	1	2.4	.754	22	52.4	16	38.1	4	9.5	.003*
	Widow (n=41)	4	9.8	36	87.8	1	2.4		13	31.7	20	48.8	8	19.5	
	Single (n=19)	3	15.8	16	84.2	0	0.0		6	31.6	4	21.1	9	47.4	
	Divorced (n=3)	1	33.3	2	66.7	0	0.0		0	0.0	3	100.0	0	0.0	
Educational Level:	Illiterate (n=39)	6	15.4	33	84.6	0	0.0	.028*	21	53.8	15	38.5	3	7.7	.000*
	Read and write (n=11)	5	45.5	6	54.5	0	0.0		8	72.7	3	27.3	0	0.0	
	Basic education (n=22)	4	18.2	18	81.8	0	0.0		5	22.7	9	40.9	8	36.4	
	Secondary school (n=20)	1	5.0	17	85.0	2	10.0		4	20.0	7	35.0	9	45.0	
	University (n=13)	1	7.7	12	92.3	0	0.0		3	23.1	9	69.2	1	7.7	
Occupation before retirement:	Manual work (n=47)	8	17.4	37	80.4	1	2.2	.952	19	41.3	18	39.1	9	19.6	.705
	Employee (n=46)	8	17.0	38	80.9	1	2.1		15	31.9	21	44.7	11	23.4	
	House wife (n=8)	1	12.5	7	87.5	0	0.0		5	62.5	2	25.0	1	12.5	
	Seller (n=4)	0	0.0	4	100.0	0	0.0		2	50.0	2	50.0	0	0.0	
Monthly income: (LE)	<100 (n=46)	9	19.6	37	80.4	0	0.0	.255	24	52.2	19	41.3	3	6.5	.003*
	200 – (n=19)	4	21.1	15	78.9	0	0.0		7	36.8	4	21.1	8	42.1	
	300 + (n=40)	4	10.0	34	85.0	2	5.0		10	25.0	20	50.0	10	25.0	
Duration of disease years	1- (n=5)	0	0	5	100.0	0	0	.358	3	60	2	40	0	0	.336
	3- (n=13)	4	30.8	9	69.2	0	0		4	30.8	08	61.5	1	7.7	
	5+ (n=87)	13	14.9	72	82.8	2	2.3		34	39.1	33	37.9	20	23	
Type of hypoglycemic drugs	Oral (n=70)	11	15.7	58	82.9	1	1.4	.755	18	25.7	32	45.7	20	28.6	.000*
	Insulin (n=30)	6	20	23	76.7	1	3.3		22	73.4	7	23.3	1	3.3	
	Oral &insulin (n=5)	0	0	5	100.0	0	0		1	20	4	80	0	0	
total		17	81.9	86	81.9	2	1.9		39	39	43	41	21	20	

* Significant at P<0.05

Table 6: Relation between blood sugar level, caloric intake, and fluid intake and elder level of knowledge and self-care practices

Variables		Knowledge							Practices						
		Poor (n=17)		Fair (n=86)		Good (n=2)		P	Poor (n=41)		Fair (n=43)		Good (n=21)		P
		No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	
Blood sugar level	Low	1	5.9	11	12.8	0	0	0.655	7	17.1	4	9.3	1	4.8	0.007*
	Normal	4	23.5	32	37.2	1	50		13	31.7	10	23.3	14	66.7	
	High	12	70.6	43	50	1	50		21	51.2	29	67.4	6	28.6	
BMI	Underweight	1	5.9	1	1.2	0	0.0	0.553	2	4.9	0	0	0	0	0.005*
	Normal weight	6	35.3	22	25.6	1	50		12	29.3	14	32.6	3	14.3	
	Overweight	4	23.5	34	39.5	1	50		9	22.0	15	34.9	15	71.4	
	Obesity	6	35.3	29	33.7	0	0		18	43.9	14	32.6	3	14.3	
Daily caloric requirement	Less than required	15	88.2	68	79.1	2	100	0.810	37	90.2	31	72.1	17	81.0	0.296
	Adequate	1	5.9	7	8.1	0	0		2	4.9	5	11.6	1	4.8	
	More than required	1	5.9	11	12.8	0	0		2	4.9	7	16.3	3	14.3	
Fluid intake/day	<2000ml/day	14	82.4	78	90.7	2	100	0.514	37	90.2	37	86.0	20	95.2	0.556
	2000-25000ml/day	3	17.6	8	9.3	0	0		4	9.8	6	14.0	1	4.8	

* Significant at P<0.05

Table 7: Relation between number of problems in the mouth, and foot problems of diabetic elderly patient's and their level of knowledge and self-care practices

Variables	Knowledge							Practices						
	Poor (n=17)		Fair (n=86)		Good (n=2)		Monte Carlo	Poor (n=41)		Fair (n=43)		Good (n=21)		Monte Carlo
	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	
Number of mouth problems							0.914							0.443
<3	14	82.4	67	77.9	2	100		32	78.0	32	74.4	19	90.5	
3+	3	17.6	19	22.1	0	0		9	22.0	11	25.6	2	9.5	
Number of feet problems							0.002*							0.046*
<3	8	47.1	72	83.7	1	50		29	70.7	32	74.4	20	95.2	
3+	9	52.9	14	14	1	50		12	29.3	11	25.6	1	4.8	

* Significant at p<0.05

REFERENCEES

1- Landefeld C, Palmer R, Johnson M, Johnstn B, Lyons W. Current Geriatric Diagnosis and Treatment Intervention .1st ed., Boston: M C Graw-Hill Co; 2004. 338-347

2- Hassan S. Self-care Practice Among Home Based Diabetic Elderly In Dakahlia Governorate. Thesis, Master Degree .Alexandria: University of Alexandria, Faculty of Nursing, 2005.

3- Kamel NM, Badawy YA, El-Zeiny NA, MerdanI. A. Socio-demographic determinants of management behavior of diabetic patients Part II. Diabetes Knowledge of the disease and their management behavior. Eastern Mediterranean Health Journal. 1999; 5(5): 974-83.

4- El-Sayed E. Development of Visual Educational Materials For Low-Literate Adult Diabetics. Thesis, Master Degree .Alexandria: University of Alexandria, Faculty of Nursing, 1999.

5- Rice R. Home Care Nursing Practice.3rd ed., St. Louis: Mosby Col 2001. 265-277.

6- Ebersole, HL. Toward Healthy Aging: Human Needs and Nursing Response. 6th ed., Mosby Co; 2004. 220-223.

7- Guideline for the Management and care of Diabetes Mellitus, 2008; www. Emro. Who. Int/dsaf/dsa698.

8- Moordian A., Melaughlin S., Boyer C. Diabetes **c**are for older adults. Diabetes Spectrum. 1999; 12(2):70-6.

9- Sdeman W, Sdeman T. Instructions for Geriatric Patients. 3rd ed. Philadelphia: ElSevier Saunders Co; 2005.333-3335

10- Living with diabetes. 3 June, 2001 © Diabetes Insight - webmaster@diabetes-insight.info

11- Shafic H. Medication Compliance Among Institutionalized Elderly. Thesis, Master Degree .Alexandria: University of Alexandria, Faculty of Nursing, 2000.

12- Bedier N. An Instructional scheme for non-hospitalized elderly patients, Based on Identification Patterns of Compliance to Their Prescribed Medications. Thesis, MD. Alexandria: University of Alexandria, Higher Institute of Nursing, 1987.

13- .Pardya N. Diabetes Management in Long Care. Caring For the Ages. 2003; 4 (2) 222-5.

14- Thompson J. Psychological Features characterizing Oral health Behavior, Diabetes Self-Care Health Status Among IDDM Patients. www.diabetes self-care.com

15- Cotter V, Strumpf N. Advanced Practice Nursing with Older Adults: clinical guidelines. New York: MC Graw-Hill Co; 2002. 103-24

16- Anastasi M. Management of Diabetes Mellitus in Adults www.humana.com/providers/guidelines/intro.asp.

17- Eliopoulos C. Gerontological Nursing. 5th ed. Philadelphia: Lippncott Co; 2001. 75-78.

18- Hallaj F. Activity Patterns of Residents in Elderly homes. Thesis, Master Degree .Alexandria: University of Alexandria, Faculty of Nursing, 2007.

19- EL-Gameel M. Study of Fall Among Institutionalized Elderly in Alexandria.Thesis, Master Degree. Alexandria: University of Alexandria, Faculty of Nursing. 2001

20- Mahfouz M. Quality of life for institutionalized elders. Thesis, Master Degree. Alexandria: University of Alexandria, Faculty of Nursing, 2005.

21- Amer W, Moussa E, Hashem E. Calcium and Phosphorus Concentration in Gingival Tissue and Sera in Insulin Dependent Diabetic Patients. The Egyptian Journal of Diabetes. 1996; 1(2): 78-85.

22- Heggy E. Assessment of Self-Care Practices Among Adult Diabetic Patients. Thesis, MD. University of Alexandria, Faculty of Nursing, 2001.

23- Abd El-Rehim A. Education for Foot Care. The Egyptian Journal Of Diabetes. 1996; 1(1): 44-6.

24- Eweda S, Ahmed N, Abd El-Wahab T. Comparative Study to Determine The Effectiveness of Utilization of Different Dressing Techniques and Solution in Dressing of Septic Diabetic foot Ulcers. Journal of the Medical Research Institute. 1994; 15(1): 44-52.

25- Thomas, Al-Kendan F. Health Promoting Life Style and Body Mass Index Among College Of Nursing Students In Kuweat: A Correlational Study. Nursing and Health Science 2008;10(1): 43-50.

26- Duff EM, O'connor A, Anderson M, Wint YB, Bailay EY, Pascoe W. Self-Care, Compliance and Glycemic Control In India Adults With Diabetes Mellitus. West India Medical Journal. 2006; 55(4).