Knowledge and management of long-term complications for patients with diabetes mellitus type II(comparative Study)

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الخلاصة

الهدف : تهدف الدراسة الحالية لتقويم أثر التداخل التثقيفي بمعارف وتدابير المرضى المصابين بداء السكري النوع الثاني حول المضاعفات طويلة الأمد (دراسة مقارنه).

المنهجية: اجريت دراسة وصفية على عينة غير احتمالية (غرضيه) شملت (60) مريض مصاب بداء السكري يراجعون المركز الوطني للسكري/ الجامعة المستنصرية . تم تعريض عينة الدراسة لتداخل تثقيفي موجه. جمعت المعلومات من خلال استخدام استبانة مصممة ومكونة من جزئين ، الجزء الأول يتكون من البيانات الديموغرافية ، الجزء الثاني يتكون خمسة فقرات بخصوص معارف وتدابير مرضى داء السكري النوع الثاني حول المضاعفات طويلة الأمد. الفقرة الأولى بخصوص معارف المرضى حول المضاعفات التي تخص القلب والأوعية الدموية تتكون من (7) فقرات ، الفقرة الثانية بخصوص معارف المرضى حول المضاعفات التي تخص الجهاز البولي تتكون من (9) فقرات، الفقرة الثالثة بخصوص معارف المرضى حول المضاعفات التي تخص العين تتكون من (7) فقرات، الفقرة الرابعة بخصوص معارف المرضى حول المضاعفات التي تخص الجهاز العصبي تتكون من (10) فقرات، الفقرة الخامسة بخصوص معارف المرضى حول المضاعفات التي تخص القدم تتكون من (9) فقرات. الفقرة الأولى بخصوص تدابير المرضى حول المضاعفات التي تخص القلب والأوعية الدموية تتكون من (10) فقرات ، الفقرة الثانية بخصوص تدابير المرضى حول المضاعفات التي تخص الجهاز البولي تتكون من (7) فقرات، الفقرة الثالثة بخصوص تدابير المرضى حول المضاعفات التي تخص العين تتكون من (8) فقرات، الفقرة الرابعة بخصوص تدابير المرضى حول المضاعفات التي تخص الجهاز العصبي تتكون من (7) فقرات، الفقرة الخامسة بخصوص تدابير المرضى حول المضاعفات التي تخص القدم تتكون من (15) فقرة.

النتائج: أكدت الدراسة أن هناك قلة ونقص في معارف وتدابير مرضى داء السكري النوع الثاني بخصوص المضاعفات طويلة الأمد قبل تنفيذ التداخل التثقيفي لكن بعد تنفيذ التداخل التثقيفي تحسنت معارف وتدابير المرضى المصابين بداء السكري بصورة كبيرة. فاعلية التداخل التثقيفي لم تتأثر بالعمر، الجنس، المستوى التعليمي، مدة الإصابة بالمرض، للمشاركين هذا يعني أن التداخل ممكن تنفيذه لكل المرضى المصابين بداء السكري وتحقيق أهداف التداخل التثقيفي .

التوصيات: أوصت الدراسة بأن مراكز السكري في العراق يجب ان تتضمن تداخل تثقيفي بخصوص معارف وتدابير المضاعفات طويلة الأمد .

Abstract:

Objective: The objectives of the present study were to evaluate the effectiveness of the instructional intervention about management of long –term complications for type II diabetes mellitus(comparative Study).

Methodology: A descriptive study was carried out at National Center for Diabetes Mellitus/ Almustansria University started . Non-probability (purposive sample) of (60) diabetes mellitus type II, who visit National Center for Diabetes Mellitus/ Almustansria University . The study group received the instructional intervention. The data are collected through the use of constructed questionnaire, which consists of two parts. part 1: consists about demographic characteristics, part 2: consists of (5)items about Knowledge and management on the long-term complications for patients with diabetes mellitus type II**,** first item: consists of (7)items about Knowledge to patient's about the complications involving the cardiovascular system**,** second item**:** consists of (9) items about Knowledge to patient's about the complications involving the urinary system**,** third item: consists of (7)items about Knowledge to patient's about the complications involving the eye disease, fourth item: consists of (10)items about Knowledge to patient's about the complications involving the nervous system**,** fifth item: consists of (9)items about Knowledge to patient's about the complications involving the foot problems **.** first item: consists of (10)items about management to patient's about the complications involving the cardiovascular system**,** second item**:** consists of (7)items about management to patient's about the complications involving the urinary system**,** third item: consists of (8)items about management to patient's about the complications involving the eye disease, fourth item: consists of (7)items about management to patient's about the complications involving the nervous system**,** fifth item: consists of (15)items about management to patient's about the complications involving the foot problems **.**

Results: The findings of the study indicate that the patient's knowledge and management regarding long-term complications is low and poor before the implementation of the instructional intervention but after the implementation of the instructional intervention the knowledge and management of diabetes mellitus type II greatly improved.

Recommendations: The study recommended that that the diabetes centers in Iraq should include instructional intervention about knowledge and management of diabetes mellitus type II for long-term complications to increase awareness of diabetic patients regarding knowledge and management for diabetes mellitus type II for long-term complications.

Key words: long-term complications, diabetes mellitus type II, patients.

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Introduction:

Diabetes Mellitus: Is a group of metabolic diseases characterized by increased levels of glucose in the blood (hyper glycemia) resulting from defects in insulin secretion, insulin action, or both . Normally a certain amount of glucose circulater in the blood. The major sources of in the gastrointestinal tract and formation of glucose by liver from food substances (1).

It occurs in two forms that are most widespread : type I (which generally but not always affects children and adolescents) and type II (which generally develops after the age of 40 years). Type II accounts for around 90% of diabetes cases, although it is becoming more common among north American youth. It's typically treated with diet and exercise, in combination with an anti diabetic; treatment may include insulin therapy. (2).

Diabetes Mellitus has emerged as a significant public health problem in the united states. Rising prevalence of disease externsive potential morbidity, and excess health care costs compared with the patient population without diabetes have created an increasing burden on patients, socity, and the health care system. Recent clinical trial , however, have show that good glycemic control, along with other interventions, can delay or prevent complications.(3).

Diabetes Mellitus is especially prevalent in the elderly ; as many as 50 % of people older than 65 years of age , have some degree of glucose intolerance. People 65 years and older account for almost 40% of people with diabetes. (2).

Type II diabetes mellitus occurs mainly in people over (40) years . The first-line treatment is diet, weight control and physical activity . If the blood glucose level remains high despite these measure, than tablets to reduce the blood glucose level are usually advised .Insulin injections are needed in some cases. Other treatment include reducing blood pressure if it is high, lowering high cholesterol levels and also other measures to reduce the risk of complications(4)

In general, people with type-II diabetes have a lifespan that is five to ten years less than those without diabetes. The most common long-term effect of type-II diabetes is damage to blood vessels. Because of this, diabetics are twice as likely to develop cardiovascular disease, which can result in blocked arteries, and eventually lead to stroke or heart attack. The main cause of death in type-II diabetes sufferers is cardiovascular disease and associated complications. Controlling blood sugar levels can help prevent these complications (5).

Type II diabetes mellitus associated with high morbidity due to complications affect the heart, kidney, and eyes. The disease is associated with high mortality due to large vessel disease (coronary artery disease and cerebro vascular disease) overall mortality is 3-4 times higher than in comparable non-diabetes subjects (6).

Although long-term complications of diabetes develop gradually, they can eventually be disabling or even life-threatening. Some of the potential complications of diabetes include: heart and blood vessels disease, nerve damage, kidney damage, eye damage, foot damage (7).

Methodology:

A quasi-experimental design was carried out throughout the present study on diabetes mellitus type II patients having management of long –term complications with the application of a pre-post tests approach for the study group and control group in assessing their knowledge and the application of the program(instructional intervention) for the study group. The application of program is determine the effectiveness of planned teaching intervention on management of long –term complications.

The present study was carried out at National Center for Diabetes Mellitus/Almustansria University**.** These Centers were the only governmental medical institutions in which diabetes mellitus was performed in Baghdad City.

Anon-probability (purposive), sample of (60) person who were attending the National Center for Diabetes Mellitus/Almustansria University, the study group were exposed to an instructional intervention,. These samples were selected according to the following criteria;

1. Diabetes mellitus type II patients, Both male and femal.
2. Newly diagnosis patients.
3. Adult patients 35-70 years of age.
4. Patients who were agree to participate in the present study.
5.Level of education for these patients at least read and write.

An instrument was constructed through the use of (3)level of likert scale for the assessment of patients knowledge. The rating score of the

A-patient's Knowledge Regarding of long –term complications

instrument was (3) for I know,(2) for uncertain and (1) for I don't know. with cut-off point=2. This instrument was comprised (42) items divided in to five categories which were concerned with knowledge of patients about long –term complications.

1- patient's Knowledge Regarding of complications of cardiovascular system comprised of (7) items.
2- patient's Knowledge Regarding of complications of urinary system comprised of (9) items.
3- patient's Knowledge Regarding of complications of eye diseases comprised of (7)items.
4- patient's Knowledge Regarding of complications of neurve s system comprised of (10) items.
5- patient's Knowledge Regarding of complications of foot problem comprised of (9) items.

B-patient's Management Regarding of long –term complications

An instrument was constructed through the use of (3)level of likert scale for implementation of the instructional intervention. The rating score of the program was (3) for Always,(2) for Sometimes, and (1) for Never. with cut-off point=2.

This instructional intervention was comprised of (47) items divided in to five categories which were concerned with management of patient's about long –term complications.

1- patient's management Regarding of complications of cardiovascular system comprised of (10) items.
2- patient's management Regarding of complications of urinary system comprised of (7) items.
3- patient's management Regarding of complications of eye diseases comprised of (8)items.
4- patient's management Regarding of complications of neurves system comprised of (7) items.
5- patient's management Regarding of complications of foot problem comprised of (15) items.

A pilot study was conducted at National Center for Diabetes Mellitus/Almustansria University, in order to determine the reliability of the study instrument which was used for measuring patient's knowledge regarding management of long –term complications. The study was conducted during the period of 1st August 2011, to 16th August 2011. The sample consists of (10) diabetes mellitus type II patient's . The sample was excluded from original sample of the study.

Reliability of the questionnaire was determined through the use of test and retest approach, with interval period for approximately three weeks, for the determination of interval consistency of patient's knowledge regarding management of long –term complications. The results of the reliability present alpha correlation coefficient which was (r=0.91) .

Data Collection:

Data collection was performed through the use of the study instrument and the application of the instructional intervention about diabetes mellitus type II patient's for management of long–term complications from 18th August 2011, to 29th October 2011. pre-post test approach were utilized as appropriate means of data collection and carried through three methods, booklets, lectures, and postres , pictures.

The data were collected by the following techniques:

1- All participants were interviewed and informed about the study purposes and objectives.

2- All subjects were exposed to the pre-test in order to detect the patient's knowledge about management of long –term complications .

3- The study group were exposed to the instructional intervention as groups in the same class room and environmental circumstances.

4- The study group were exposed to the post-test approximately more than two weeks after implementation of the instructional intervention.

Data are analyzed through the use of SPSS (Statistical Process for Social Sciences) version 10.0 application Statistical analysis system and Excel application.The following statistical data analysis approaches were used in order to analyze and assess the results of the study:

I. Descriptive data analysis:

a- Tables (Frequencies, Percentages, and cumulative percents) with comparison significant.

b- Summary Statistics tables including: Mean of score (M.S.) with their Standard Deviation (SD), Relative Sufficiency (R.S.%), and their assessment by cut off point (0.50% & 0.66) due to scores (1, 2) and (1, 2, 3) respectively.

- Cutt of point= $\frac{3+2+1}{2}$ = 2

- Standard Deviation .

-Relative sufficiency (RS) for the overall knowledge and management $\frac{2}{3} \times 100 =$

RS= 66.6 Low, Interval =100-66.6=33.4÷3=11.1, Moderate=66.7-77.8 , High=77.9-88.9

-According to domain of patient's knowledge cut of point, Interval = 100 – 75 ÷ 2 = 12.5, 75 – 87.5 moderate , 88.5 – 100 high

c- Arithmetic Mean ($\bar{x}$) and Std. Dev. (S.D.).

II. Inferential data analysis:

1- Likelihood-Ratio Chi-Square statistic similar to Pearson's chi-square. For large sample sizes, the two statistics are equivalent.

2- Wilcoxon test: A nonparametric procedure used with two related variables to test the hypothesis that the two variables have the same distribution. It makes no assumptions about the shapes of the distributions of the two variables. This test takes into account

information about the magnitude of differences within pairs and gives more weight to pairs that show large differences than to pairs that show small differences. The test statistic is based on the ranks of the absolute values of the differences between the two variables. It was computed as:

$$Z = \frac{w - \frac{n(n+1)}{4}}{\sqrt{\frac{n(n+1)(2n+1)}{24}}}$$

Results:

Table (1): Observed frequencies and percents of demographical characteristics variables in the study group with comparison significant

Variables	Groups	No=60	
		Freq.	%
Age Groups (Per years)	35 - 40	3	0.0
	41 - 45	8	16.7
	46 - 50	15	26.7
	51 - 55	21	30.0
	56 - 60	11	20.0
	60 >	2	6.7
Gender	Male	31	56.7
	Female	29	43.3
Levels of Education	Read and Write	-	-
	Primary School Graduate	20	30.0
	Intermediate School Graduate	10	16.7
	Preparatory School Graduate	14	23.3
	Institute Graduate	7	10.0
	College Graduate or Above	9	20.0
Occupation	Employee	12	16.7
	Retired	8	16.7
	Self-employed	11	16.7
	Housewife	23	36.7
	Unemployed	6	13.3
Monthly Income	Insufficient	23	50.0
	Somewhat Sufficient	32	40.0
	Sufficient	5	10.0
Duration of having disease (Per years)	1 - 5	38	63.3
	6 - 10	20	33.3
	11 - 15	2	3.3
Smoking	Yes	9	16.7
	No	51	83.3

This table shows that the distribution of the samples, (Study) group, and according to their demographical characteristics variable's age, gender, levels of education, occupation, monthly income, duration of having disease (Per years), and Smoking habit the results had been indicated that. In addition to that, table (1) demonstrates that the highest percentages of age factor are reported at (51 - 55 yrs.) group and the studied sample have reported (30%) and (56.7%) of male in sample respectively. With respect to the studied Levels of Education's individuals have primary school graduate (30.0) . Relative to subjects of Occupation, results indicate that highest percentages of the studied samples are with (Housewife), while Monthly Income has reported Somewhat Sufficient. With respect to the studied Duration of having disease (per years), the sample have indicated of individuals for obtaining the compensate

status and have reported the vast majority at the first period (1 – 5) years. Finally, Smoking habit shows that most of the studied samples have no smoking habit.

Table (2): Observed frequencies and percents of Body Mass Index in the study group with comparison significant

Variables	Groups	No.60	
		Freq.	%
Body Mass Index	Normal weight	18	27
	Over weight	23	43.3
	Obese	19	29.7

This table shows the distribution of the observed frequencies according to the different the body mass index (BMI) group which are corresponding proportionally also, the result has indicated that there has been majority of the study sample at over weight (43.3) and is obese (29.7) . The study are recorded at critical upper bound of an overweight status.

Table (3): Descriptive Statistics and comparison significant between (Pre –Post) of Study group's items for Knowledge and management on the long-term complications for patients with diabetes mellitus type II

First: Knowledge and management	Pre-study :No=60				Post-study :No=60				Z Asymp.	P_{-value}	C.S.
	M.S	S.D.	R.S.	Ass	M.S	S.D.	R.S.	Ass.			
First: Knowledge and management to patient's about the complications involving the cardiovascular system											
Knowledge											
Diabetes mellitus affects macro and micro arteries in the body	1.13	0.35	37.67	F	2.83	0.38	94.33	P	(5.01)	0.000	HS
Diabetes mellitus causes the opportunities for getting cardiovascular diseases	1.33	0.48	44.33	F	2.93	0.25	97.67	P	(4.95)	0.000	HS
Diabetes mellitus causes hypercholesterolemia	1.57	0.50	52.33	F	2.93	0.25	97.67	P	(4.86)	0.000	HS
Diabetics do not feel chest pain that patients with angina pectoris feel	1.03	0.18	34.33	F	2.80	0.41	93.33	P	(5.07)	0.000	HS
The symptoms of angina pectoris are feeling with chest heaviness or numbness of upper extremities or dyspepsia	1.10	0.31	36.67	F	2.93	0.25	97.67	P	(5.15)	0.000	HS
Blood glucose controlling reduce the damage of the blood vessels and the nerves	1.13	0.35	37.67	F	3.00	-	100.00	P	(5.20)	0.000	HS
Diabetics are more susceptible than other people to hypertension	1.23	0.43	41.00	F	2.93	0.25	97.67	P	(4.98)	0.000	HS
Management											
Taking medications prescribed by the physician in time	1.83	0.38	61.00	F	2.93	0.25	97.67	P	(4.96)	0.000	HS
Practicing physical exercises	1.33	0.48	44.33	F	2.67	0.48	89.00	P	(4.68)	0.000	HS
Monitor blood glucose and maintain its normal level	1.70	0.47	56.67	F	2.73	0.45	91.00	P	(4.63)	0.000	HS
Maintain body weight	1.50	0.51	50.00	F	2.67	0.48	89.00	P	(4.64)	0.000	HS
Manage hypertension	1.60	0.67	53.33	F	1.47	0.78	49.00	P	(0.94)	0.346	NS
Follow dietary regimen for diabetes mellitus	1.77	0.43	59.00	F	2.90	0.31	96.67	P	(5.06)	0.000	HS
Made ECG	1.67	0.48	55.67	F	2.37	0.49	79.00	P	(4.19)	0.000	HS
Monitor blood cholesterol	1.70	0.47	56.67	F	2.67	0.48	89.00	P	(4.72)	0.000	HS
Take oral hypoglycemic tablets before meals according to physician's instructions	1.63	0.49	54.33	F	2.90	0.31	96.67	P	(4.70)	0.000	HS
Take insulin	1.20	0.41	40.00	F	1.13	0.35	37.67	P	(1.00)	0.317	NS

This table reveals in term of summary statistics (mean of score, standard deviation, relative sufficiency and assessment according to the (cutoff point = 1.5, i.e. R.S.=75%), as well as comparison significant through testing the statistical hypothesis which says that the same responding should be occurrences at pre / post periods of study sample for each items. The

results show and indicate that high improvement have been reported through applying the suggested program and these outcomes would be more reliable and suitable for the studied design since a highly significant of differences at P<0.01 would be recorded along most items of the cited Part and these ought to underline the effectiveness of the applicable program would be, and as follows . Knowledge and management to patients about the complications involving the cardiovascular system". The results show and indicate that all comparison reported highly significant differences at P<0.01, except with the item of "Manage hypertension" at the management section at P>0.05, and so, these ought to underline the effectiveness of the applicable program would be.

Table (4): Descriptive Statistics and comparison significant between (Pre –Post) of Study group's items for Knowledge and management to patient s about the complications involving the urinary system (diabetic nephropathy)

Second: Knowledge and management	Pre-study: No=60				Post-Study : No=60				Z Asymp.	P_{-value}	C.S.
	M.S	S.D.	R.S.	Ass.	M.S.	S.D.	R.S.	Ass.			
Second: Knowledge and management to patient s about the complications involving the urinary system (diabetic nephropathy)											
Knowledge											
Diabetes mellitus leads to gradual dysfunction of the kidney	1.20	0.41	40.00	F	3.00	-	100	P	(5.11)	0.000	HS
Chronic hyperglycemia leads to damage of the kidney blood vessels	1.13	0.35	37.67	F	3.00	-	100	P	(5.20)	0.000	HS
Increase of the years of getting diabetes mellitus lead to kidney dysfunction	1.17	0.38	39.00	F	2.97	0.18	99	P	(5.11)	0.000	HS
Increase the albuminuria is a symptom of kidney dysfunction	1.17	0.38	39.00	F	2.97	0.18	99	P	(5.11)	0.000	HS
Smoking is an important factor for kidney dysfunction	1.00	-	33.33	F	2.87	0.35	95.67	P	(5.20)	0.000	HS
Leg swelling is a symptom of kidney dysfunction	1.60	0.50	53.33	F	2.93	0.25	97.67	P	(4.88)	0.000	HS
Nocturnal voiding is a sign of kidney dysfunction	1.00	-	33.33	F	2.87	0.35	95.67	P	(5.20)	0.000	HS
Pallor, malaise and anemia are signs of kidney dysfunction	1.10	0.31	36.67	F	2.93	0.25	97.67	P	(5.15)	0.000	HS
Hemodialysis is a treatment for complete kidney dysfunction	1.63	0.49	54.33	F	3.00	-	100	P	(4.96)	0.000	HS
Management											
Controlling blood glucose within normal range	1.73	0.45	57.67	F	2.90	0.31	96.7	P	(5.01)	0.000	HS
Controlling Blood pressure within normal range	2.17	0.75	72.33	P	2.70	0.47	90.0	P	(4.42)	0.000	HS
Avoiding smoking	2.77	0.63	92.33	P	2.80	0.41	93.3	P	(4.46)	0.000	HS
Checking albuminuria	1.17	0.38	39.00	F	2.57	0.50	85.7	P	(4.29)	0.000	HS
Managing urinary tract infections	1.57	0.50	52.33	F	2.47	0.51	82.3	P	(3.79)	0.000	HS
Performing periodical tests for blood urea and Creatinine	1.77	0.43	59.00	F	2.70	0.47	90.0	P	(3.70)	0.000	HS

Reducing foods rich in protein	**1.50**	**0.51**	**50.00**	**F**	**2.83**	**0.38**	**94.3**	**P**	**(2.91)**	**0.004**	**HS**

Knowledge and management to patients about the complications involving the urinary system (diabetic nephropathy)" The results shows and indicating that all comparison reported a highly significant of differences at P<0.01, and so, these ought to underline the effectiveness of the applicable program would be.

Table (5): Descriptive Statistics and comparison significant between (Pre –Post) of Study group's items for knowledge and management to patient s about the complications involving the eye (diabetic retinopathy)

Third: Knowledge and management	**Pre-study : No=60**				**Post-Study : No=60**				**Z**	**P_{-value}**	**C.S.**
	M.S.	**S.D.**	**R.S.**	**Ass.**	**M.S.**	**S.D.**	**R.S.**	**Ass.**	**Asymp.**		
Third: Knowledge and management to patient s about the complications involving the eye (diabetic retinopathy)											
Knowledge											
Diabetics are more susceptible than others to get ophthalmic disease	**1.60**	**0.50**	**53.3**	**F**	**3.00**	**-**	**100**	**P**	**(4.95)**	**0.000**	**HS**
Blood vessels within the eye are very small and hence they weaken	**1.23**	**0.43**	**41.0**	**F**	**2.93**	**0.25**	**97.7**	**P**	**(5.01)**	**0.000**	**HS**
Diabetics get another ophthalmic diseases like cataract and glaucoma	**1.70**	**0.47**	**56.7**	**F**	**3.00**	**-**	**100.0**	**P**	**(5.01)**	**0.000**	**HS**
Retinopathy is a disease affects retina and it is the most dangerous ophthalmic diseases	**1.27**	**0.45**	**42.3**	**F**	**2.90**	**0.31**	**96.7**	**P**	**(4.88)**	**0.000**	**HS**
Retinopathy if not treated, it may lead to vision loss	**1.03**	**0.18**	**34.3**	**F**	**2.97**	**0.18**	**99**	**P**	**(5.32)**	**0.000**	**HS**
Retinopathy could be limited by early detection	**1.27**	**0.45**	**42.3**	**F**	**3.00**	**-**	**100**	**P**	**(5.04)**	**0.000**	**HS**
There are factors that increase retinopathy like hypertension, smoking and others	**1.00**	**-**	**33.3**	**F**	**2.97**	**0.18**	**99**	**P**	**(5.40)**	**0.000**	**HS**
Management											
Controlling blood glucose level	**1.73**	**0.45**	**57.7**	**F**	**2.87**	**0.35**	**95.7**	**P**	**(4.92)**	**0.00**	**HS**
Checking the eyes by the physician regularly	**1.40**	**0.50**	**46.7**	**F**	**2.47**	**0.51**	**82.3**	**P**	**(4.87)**	**0.00**	**HS**
Made laser surgery to limit retinopathy development	**1.00**	**-**	**33.3**	**F**	**1.00**	**-**	**33.3**	**F**	**-**	**1.00**	**NS**
Made laser surgery to limit retina hemorrhage	**1.07**	**0.25**	**35.7**	**F**	**1.03**	**0.18**	**34.3**	**F**	**(1.00)**	**0.32**	**NS**
Made surgery to remove crystal fluid	**1.00**	**-**	**33.3**	**F**	**1.00**	**-**	**33.3**	**F**	**-**	**1.00**	**OC**
Avoiding smoking	**2.70**	**0.70**	**90.0**	**P**	**2.80**	**0.41**	**93.3**	**P**	**(1.00)**	**0.32**	**NS**
Made surgery to remove cataract and/or glaucoma	**1.10**	**0.31**	**36.7**	**F**	**1.10**	**0.31**	**36.7**	**F**	**-**	**1.00**	**NS**
Making complete ophthalmic examinations	**1.53**	**0.51**	**51.0**	**F**	**2.87**	**0.35**	**95.7**	**P**	**(4.63)**	**0.00**	**HS**

annually, including after pupil dilatation											

Knowledge and management to patient s about the complications involving the eye (diabetic retinopathy)" The results show and indicate that all comparison reported highly significant differences at P<0.01, except with the items of management section, such as (Made laser surgery to limit retinopathy development, Made laser surgery to limit retina hemorrhage, Avoiding smoking, and Made surgery to remove cataract and/or glaucoma, and so, these ought to underline the effectiveness of the applicable program would be.

Table (6): Descriptive Statistics and comparison significant between (Pre –Post) of Study group's items for Knowledge and management to patients about the complications involving the nervous system (diabetic neuropathy)

Fourth: Knowledge and management	Pre-study :No=60				Post-Study				Z Asymp.	P_{-value}	C.S.
	M.S.	S.D.	R.S.	Ass.	M.S.	S.D.	R.S.	Ass.			
Fourth: Knowledge and management to patients about the complications involving the nervous system (diabetic neuropathy)											
Knowledge											
Peripheral neuropathy is a dysfunction that affects hands and feet	**1.13**	**0.35**	**37.7**	**F**	**2.90**	**0.31**	**96.7**	**P**	**(5.07)**	**0.000**	**HS**
Diabetics neuropathy are nervous disorders	**1.13**	**0.35**	**37.7**	**F**	**2.93**	**0.25**	**97.7**	**P**	**(5.11)**	**0.000**	**HS**
Neuropathy result from the injury to micro blood vessels	**1.03**	**0.18**	**34.3**	**F**	**2.83**	**0.38**	**94.3**	**P**	**(5.11)**	**0.000**	**HS**
The patient feels numbness or legs and/or feet coldness	**1.67**	**0.48**	**55.7**	**F**	**3.00**	**-**	**100**	**P**	**(4.98)**	**0.000**	**HS**
Diabetics experience sexual problems	**1.50**	**0.51**	**50.0**	**F**	**2.97**	**0.18**	**99.0**	**P**	**(4.85)**	**0.000**	**HS**
Hyperglycemia is one of the leading causes of neuropathy	**1.40**	**0.50**	**46.7**	**F**	**2.97**	**0.18**	**99.0**	**P**	**(4.88)**	**0.000**	**HS**
Diabetics experience pains in the front of fingers and toes	**1.77**	**0.43**	**59.0**	**F**	**2.93**	**0.25**	**97.7**	**P**	**(4.88)**	**0.000**	**HS**
Diabetics experience numbness and tingling of the upper and lower extremities and loss of sensation in the extremities	**1.57**	**0.50**	**52.3**	**F**	**2.97**	**0.18**	**99.0**	**P**	**(4.85)**	**0.000**	**HS**
Diabetics experience nausea, vomiting, diarrhea, distention, and constipation	**1.30**	**0.47**	**43.3**	**F**	**2.93**	**0.25**	**97.7**	**P**	**(4.96)**	**0.000**	**HS**
The causes of neuropathy are smoking, hypertension, and hypercholesterolemia	**1.07**	**0.25**	**35.7**	**F**	**2.97**	**0.18**	**99.0**	**P**	**(5.26)**	**0.000**	**HS**

Management											
Using some medications that help alleviate neuralgia	1.60	0.50	53.3	F	2.57	0.50	85.7	P	(4.87)	0.000	HS
For prevention from diabetic neuropathy is to maintaining blood glucose under control l	1.40	0.50	46.7	F	2.90	0.31	96.7	P	(4.85)	0.000	HS
Follow an appropriate dietary regimen that help you control blood glucose level	1.77	0.43	59.0	F	2.93	0.25	97.7	P	(5.01)	0.000	HS
Monitor blood glucose periodically	1.77	0.43	59.0	F	3.00	-	100	P	(5.07)	0.000	HS
Practicing physical exercises	1.43	0.50	47.7	F	2.70	0.47	90.0	P	(4.70)	0.000	HS
Using energy-photographic therapeutic devices	1.07	0.25	35.7	F	1.13	0.35	37.7	F	(1.00)	0.317	HS
Rest and reducing activities of daily living help you reducing pressure on the nerves	1.57	0.50	52.3	F	2.80	0.41	93.3	P	(4.82)	0.000	HS

Knowledge and management to patients about the complications involving the nervous system (diabetic neuropathy)" The results shows and indicating that all comparison reported a highly significant of differences at P<0.01, and so, these ought to be underline the effectiveness of the applicable program.

Table (7): Descriptive Statistics and comparison significant between (Pre –Post) of Study group's items for Knowledge and management to patients about the complications related to foot (diabetic foot)

Fifth: Knowledge and management	Pre-study				Post-Study				Z Asymp.	P_{-value}	C.S.
	M.S.	S.D.	R.S.	Ass.	M.S.	S.D.	R.S.	Ass.			
Fifth: Knowledge and management to patients about complications related to foot (diabetic foot)											
Knowledge											
The etiology of diabetic foot are the presence of weakness in the nerves of the extremities	1.13	0.35	37.7	F	3.00	-	100	P	(5.20)	0.000	HS
Skin dryness has a great effect in increasing foot cracks	1.63	0.49	54.3	F	3.00	-	100	P	(4.96)	0.000	HS
foot skeletal muscles weakness leads to muscle atrophy	1.07	0.25	35.7	F	2.87	0.35	95.7	P	(5.11)	0.000	HS
Diabetes mellitus results in weakness of blood vessels of the lower extremities	1.13	0.35	37.7	F	2.93	0.25	97.7	P	(5.11)	0.000	HS
Slow wound healing even the wound is minor	1.50	0.51	50.0	F	3.00	-	100	P	(4.93)	0.000	HS
Loss of foot sensation is of the most important factors for getting diabetic foot	1.13	0.35	37.7	F	2.97	0.18	99	P	(5.15)	0.000	HS
Hyperglycemia weakens patient's resistance for infections	1.50	0.51	50.0	F	2.97	0.18	99	P	(4.85)	0.000	HS
Any diabetic is susceptible at any time to get diabetic foot, especially with time	1.27	0.45	42.3	F	2.97	0.18	99	P	(4.98)	0.000	HS

Feet cracks could not cause pain, but they are dangerous and necessitate treatment	**1.13**	**0.35**	**37.7**	**F**	**2.97**	**0.18**	**99**	**P**	**(5.15)**	**0.000**	**HS**
Management											
Checking your feet daily to ascertain that they are free from wounds	**1.63**	**0.49**	**54.3**	**F**	**2.93**	**0.25**	**97.7**	**P**	**(4.79)**	**0.000**	**HS**
Choosing the appropriate and comfortable shoes	**1.60**	**0.50**	**53.3**	**F**	**2.93**	**0.25**	**97.7**	**P**	**(4.88)**	**0.000**	**HS**
Checking your feet size	**1.27**	**0.45**	**42.3**	**F**	**2.87**	**0.35**	**95.7**	**P**	**(4.89)**	**0.000**	**HS**
Avoiding walking without shoes with provision of protection for feet to avoid wounds	**1.80**	**0.41**	**60.0**	**F**	**2.93**	**0.25**	**97.7**	**P**	**(5.06)**	**0.000**	**HS**
Washing your feet daily with warm water and soap	**1.73**	**0.45**	**57.7**	**F**	**2.87**	**0.35**	**95.7**	**P**	**(4.66)**	**0.000**	**HS**
Drying your feet gently, especially between the toes	**1.40**	**0.50**	**46.7**	**F**	**2.83**	**0.38**	**94.3**	**P**	**(4.85)**	**0.000**	**HS**
Lubricate your feet from time to time with smoothing cream to avoid dryness and cracking	**1.53**	**0.51**	**51.0**	**F**	**2.70**	**0.47**	**90.0**	**P**	**(4.88)**	**0.000**	**HS**
Checking your feet daily by using a mirror that is placed under the feet to view its sole	**1.00**	**-**	**33.3**	**F**	**2.77**	**0.43**	**92.3**	**P**	**(5.07)**	**0.000**	**HS**
Cutting toes nails by using nail-clipper straightly after bathing immediately	**1.13**	**0.35**	**37.7**	**F**	**2.90**	**0.31**	**96.7**	**P**	**(5.07)**	**0.000**	**HS**
Checking shoes to ascertain that there is no any sharp part	**1.57**	**0.50**	**52.3**	**F**	**2.83**	**0.38**	**94.3**	**P**	**(4.92)**	**0.000**	**HS**
Abstaining from putting feet nearby anything hot such as stove	**1.50**	**0.51**	**50.0**	**F**	**3.00**	**-**	**100**	**P**	**(4.96)**	**0.000**	**HS**
Using wool socks for warming feet instead of hot water	**1.83**	**0.38**	**61.0**	**F**	**2.93**	**0.25**	**97.7**	**P**	**(5.15)**	**0.000**	**HS**
Covering the wound with a clean, no adhesive dressing	**1.83**	**0.38**	**61.0**	**F**	**3.00**	**-**	**100**	**P**	**(5.32)**	**0.000**	**HS**
Checking the pulse to identify discrepancy in pulse checking sites in the foot	**1.00**	**-**	**33.3**	**F**	**2.93**	**0.25**	**97.7**	**P**	**(5.15)**	**0.000**	**HS**
Monitor any change in the color of toes nails	**1.00**	**-**	**33.3**	**F**	**2.83**	**0.38**	**94.3**	**P**	**(4.79)**	**0.000**	**HS**

Knowledge and measures to patients about complications related to foot (diabetic foot)"

The results show and indicate that all comparison reported highly significant differences at $P<0.01$, and so, these ought to underline the effectiveness of the applicable program.

Discussion:

1. Discussion of the demographic characteristic of the study sample

Through the data analysis distribution of demographic variables table (1) report that most of the diabetes mellitus type II patients are (51-55) years old and this account for 21 (30%) of the study group, the diabetes mellitus type II patients.. This result was in agreement with those of Sasso, et al.,(2000)and Wu, et al., (2000) who had already found that the mean age of the sample was (56.8) years old (8,9). Bosseri and Beshyah (2001) also supported this finding who noted that the mean was (56.5) years (10) . The study stated the incidence of Type II diabetes occurs most often after the age of 40 (although the American Diabetes Association says there is an alarming potentially lifestyle related increase in the number of people under age 40 now developing this kind of diabetes). It's estimated that millions of people have type II diabetes and do not know it (11). Some person relative diabetes mellitus type II first degree spontaneously feeling that he has polyurea and polydipsia visited the doctor, there is positive status but he isn't know the alarming time to happen after 40 year ago (The researcher) . About 0.6 million of diabetic persons was among the (>40- 64) years age group. Age-specific prevalence of diabetes was (14.0%) in men, (19.4%) in women aged (40-

64), respectively. This age-related increase in diabetes prevalence was significantly greater among women than men (p< 0.003 for sex-age interaction). Age-specific prevalence of IFG was (5.4% to 6.9%), in men (7.1% to 7.4%), in women aged (40-64), respectively; the interaction of sex and age on prevalent IFG was significant (P <0.0001) (12). Regarding gender of the studied sample has reported 31 (56.7%) male in sample. This finding is in agreement with Cheng, & Leiter, (2009) who reveals that the incidence of type II DM increases with age. Most patients develop the disease after 40 years of age. Overall, males and females seem to be equally affected (13). The incidence of type II DM differs throughout the world, probably due to environmental, genetic and behavioral factors. People with Indian, Pacific Islander or Australian Aboriginal heritage are at particularly high risk of developing type II diabetes. The incidence is essentially equal in women and men in all populations. This finding in agreement with(Nancy,2008) who reported that the majority (66%) of them were males while (34%) were female in his study of barriers in self care in non insulin diabetes mellitus in elder women.

With respect to the studied levels of education's individuals, the sample has indicated. According to level of education of the sample were primary school graduate 20 (30%) of. This finding is similar to the result obtained from some studies (14**)** . This finding indicates that the diabetes mellitus type II patients have an acceptable level of education to participate in instructional education to improve their knowledge about management of long –term complications (The researcher). Relation to subject of occupation, results indicated that highest percentage of the studied sample are with housewife, 23 (36.7%) of diabetes mellitus type II patients in the study group. This result was supported by Nicholos, et al. (2000) when they studied type II diabetes : incremental medical care cost during the first(8) years after diagnosis and found that in their sample of diabetes mellitus type II patient's, medical costs were more than double those of matched non-diabetic controls (15). The majority of diabetes mellitus type II patients in this study have somewhat sufficient and Insufficient, monthly income in the study group, 32 (50%) , 23(40%). This finding were supported by Nicholos et al,(2000) who was stated that most of sample in his study have economic barriers that prevent them to manage their diabetes mellitus (15).

Gray, et al.(2000) revealed that the intensive blood glucose control in patients with type II diabetes significantly increased treatment cost but substantially reduced the cost of complications and increased the time free of complications, with respect to the studied Duration of having disease (1 – 5), per years is the most diabetes duration 38(63.3%). This finding was supported by Akbar, et al.,(2001) when they noted that the mean of diabetes duration with type II diabetes was (9.8) years (17). Ahmed, et al., (2000) mentioned that the mean of diabetes duration with type II diabetes was (10) years (18).Table (1); indicated the finding of the study which revealed that smoking cigarette, most of the studied samples were not smoking cigarettes were accounted 51(83.3%) . Quite a few determinants are associated with development and progression of albuminuria, and smoking is one of them in diabetic patients. Smoking is related to such variables of renal dysfunction as albuminuria, which may accelerate the progression to loss of renal function. Smokers were at 2.2 times greater risk for albuminuria in diabetic patients compared to non smokers after controlling their glycated hemoglobin (2).

2. Discussion of body mass index (BMI) of the sample

table (2) shows the distribution of the observed frequencies according to the different of the body mass index (BMI) groups which were corresponding proportionally also, the result has indicated that the majority of the body mass index (BMI) were (25-29.9 k/ M2) that mean overweight with 23 (43.3%) , In addition to that, mean values of the two samples were recorded at critical upper bound of an overweight status. This result was in agreement

with that of Aguilar ,et al.,(2002) who had found that BMI between (25-29.9 k/ M2) in an urban adult Mexican population with type II diabetes(19).

3. The comparative differences between the diabetes mellitus type II patients' knowledge in the study group with regard to the pre and post-test.

Tables (3,4) indicates that after implementing the instructional education on the study group, a highly significant difference is found between the study group of diabetes mellitus type II patients' knowledge, related to the pre and post-test at (P< 0.01). This result is consistent with the study done by Norris, et al., (2001) ; Steed,(2005) ; Von Goeler et al.,(2003); Parchman et al.,(2003); Tang, et al., (2005).These studies indicates that the diabetes education increased the frequency of blood glucose self monitoring and can significantly delay the progression of or reduce the risk of long-term complications associated with diabetes mellitus type II patient's(20,21,22,23,24). This means that the instructional education is effective in improving the knowledge of diabetes mellitus type II patients' in the study group (The researcher).

Tables (5,6,7) shows that the study group has a highly significant knowledge at (P< 0.01) after the instructional education when they are compared with the control group in the post-test. This result is in agreement with the study done by Shera, AS, et al**.,** (2002); Noriss, et al., (2001) .These studies indicated that the instructional education, there were some improvements in knowledge, self-reported self-management behaviour and a significant difference in diabetes self efficacy between the intervention and control groups (20,25). This short-term intervention showed that the instructional education which was developed according to patient's needs could improve patient's management of their illness. However patients should be supported to maintain the self management behaviors long-term. It is recommended that long-term studies are designed to ensure long-term maintenance of self management behaviors and to improve self efficacy. This means that the importance of instructional education to improve knowledge of diabetes mellitus type II patients concerning management on the long –term complications is to decrease or prevent complications (The researcher).

Recommendations:

1- All diabetic centers in Iraq should include instructional about management of long-term complications for diabetes mellitus type II patients and instruction intervention program should be implemented in all diabetic centers in Iraq.
2- An education program should be designed to increase people's education about self care regimen.
3- Specialist nurse for diabetics disease in every centers.
4- Manual for diabetes from the centers which give it to patients newly diagnosis with diabetes.

Conclusions:

1- Most of the diabetic patients in pre-test have poor knowledge about management of long-term complications for diabetes mellitus type II.
2- patient's knowledge regarding diabetes mellitus type II in post test increased after implementation of instructional program. This indicates that the amount of information acquired by these patient is sufficient and effective after instructional program.
3- The diabetic patients knowledge has improved after implementation of the instructional program for all participants.
4- All the diabetic patients in this study stated that, the booklet of this instructional program is a good source of information about of the diabetes mellitus type II patients about management of long-term complications . The results indicating that all comparison

reported a highly significant of differences at P<0.01, except with the items of " Manage hypertension , and Take insulin " at the management section at P>0.05, and so, these ought to be underline the effectiveness of the applicable program.

5- The study has found that all patients improved their knowledge about management of long-term complication for patients with D.M. and developed better practices after implementation of the instructional intervention.

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