CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.1291149

Available online at: http://www.iajps.com Research Article

NUTRITION EDUCATION INTERVENTION AMONG DIABETIC NEPHROPATHIC PATIENTS

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Abstract:
Background: *Diabetes Mellitus (DM) is increasing on a universal level. It is an auto immune syndrome in which levels of blood glucose are elevated blood than standard. In this type of diabetes there are two factors;either the cells are not accepting the insulin or enough insulin is not produced. Pancreas secrete the insulin hormone from its beta cells and it is necessary for the usage and storage of fuels. Pakistan is ranked number 7 among the countries with the highest number of diabetic patients. According to international Diabetic foundation the number of diabetic patients is expected to increase to 11.5 million by year 2025 (Khan,2012).*
Statement of the problem: *The research is focused on developing an educational plan for the management of diabetic nephropathic patients.*
Objectives: *To assess the educational needs of the diabetic nephropathic population, To find out the important component of nutrition education plan,To determine the most effective method of intervention would be more effective in the management of diabetic nephropathic patients.*
Methodology
Universe: *The study was carried out on the patients of diabetic nephropathy at the Diabetic Centre of Jinnah Hospital.*
Sample Size: *For need assessment the sample will be consisting of 50 patients from diabetic ward, Jinnah Hospital.*
Result: *Paired samples t- test was conducted to find the difference between the pre test score and post test score. .There was a significant difference pre test scores and post test scores of dietary practices t (49)=4.01, <.001. The mean score (Mean= 13.17 ,SD=3.55) of post test of dietary practices is higher than the mean 7.57±2.27 score of pre test. There was a significant difference pre test scores and post test scores of physical activity t (49)=3.28, .002. The mean score 23.72 ±2.11 of post test of physical activity is higher than the mean 1.82±1.25 score of pre test. There was a significant difference pre test scores and post test scores of medication t (49)=3.31, .002. The mean score21.71±5.59 of post test of medication is higher than the mean 18.48±4.44 score of pre test. There was a significant difference pre test scores and post test scores of SMBG t (49)=5.15, <.001. The mean score 14.36±1.86 of post test of SMBG is higher than the mean 1.1±0.931 score of pre test .*
Conclusion: *Nutrition education intervention was an essential tool in the management of diabetic nephropathy. All five variables of the study that are dietary practices physical activity, medication, SMBG and smoking/alcohol, showed vast improvement after nutrition intervention. The education was given through different tools which included lesson plans, brochures , posters and one to one counseling. Out of these tools the most effective tool was one to one counseling out because it gave direct interaction with the patients. It helped in increasing their nutritional knowledge and modifying their dietary practices for the diabetic nephropathic patients, this intervention proved to be helpful in improving the health status and the quality of life of these patients.*
Keywords: *Nutrition Education, Intervention, Diabetic Nephropathic Patients*

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Please Cite This Article In Press Maha Javed et al., ***Nutrition Education Intervention among Diabetic Nephropathic Patients,*** *Indo Am. J. P. Sci, 2018; 05(06).*

INTRODUCTION:

Diabetes Mellitus (DM) is increasing on a universal level. It is an auto immune syndrome in which levels of blood glucose are elevated blood than standard. In this type of diabetes there are two factors;either the cells are not accepting the insulin or enough insulin is not produced. Pancreas secrete the insulin hormone from its beta cells and it is necessary for the usage and storage of fuels. Pakistan is ranked number 7 among the countries with the highest number of diabetic patients. According to international Diabetic foundation the number of diabetic patients is expected to increase to 11.5 million by year 2025 (*Khan,2012*). DM has extended its incidence over the globe because of ethnicities, escalating obesity, lack of awareness about the dietary practices and physical activity and many others. Diabetic nephropathy (DN) is one of the most vital DM complications, in which the capillaries in kidney glomeruli start damaging. DN is typically defined by the presence of proteins(albumin) in the urine.

According to recent researches, there is an improvement in the life expectancy of the diabetic patients because of the reduction of coronary diseases. The prevalence of end stage renal disease is in now under controlled because of their increased knowledge about the importance of treatment of chronic kidney disease by the medical staff ,in which the patients are taught about the dealing situations of blood glucose level when it is altered, hypertension and the knowledge of fluid intake.The execution of protocols and clinical performance recommendations about the exposure, prevention and management of CKD in a synchronized and multidisciplinary supervision of the DM patient.When CKD and DM are diagnosed on early stages the chances of mortality and morbidity will get reduced along with the economic and social impact in the DM population.The self management of diabetic nephropathy of adults showed that nutrition education program causes a decrease in the GHb by 0.76%.

Elevated sugar levels, increased blood pressure, smoking , alcohol consumption and high lipid levels in the blood are the significant risk factors. Diabetic nephropathy resulted in 40% of the patients due to the high glucose rates and elevated blood pressure for a longer period . The study proposed that diabetic nephropathy was only present in inclined subset of individuals. (*Krolewski AS et al.,1985*). Numerous factors can increase the risk of proteinuria as well as loss of glomerular filtrate rate. Genetic plays a role in type 1 and type 2 diabetes mellitus patients to develop diabetic nephropathy. (*Quinn et ., 1996*).

It is also seen that Pakistan subjects has little information about diabetic nephropathy and they also do not understand the seriousness and the complications of the disease (*Baradaran et al.2006*). So it is need of an hour to educate patients about diabetic nephropathy. Patient education should be an essential part of the nephropathy care plan. Education combined with lifestyle modification will significantly help in reducing the prevalence and incidence of diabetic nephropathy.(*Gagliardin,2001*). A nutrition education for diabetic nephropathic patients is formed as it is evident nutrition therapy has a significant effect on treatment of diabetic nephropathy.

1.1Statement of the problem

The research is focused on developing an educational plan for the management of diabetic nephropathic patients.

1.2. Research Questions

Q1- What are the educational needs of the diabetic nephropathic population?
Q2-What would be the important component for development of nutrition education plan?
Q3- Which method of intervention will be more effective in the management of diabetic nephropathic patients?

1.3 Delimitations

- The study was delimited to the intervention of nutrition education material for diabetic nephropathy only.
- Anthropometric measurements were not included.
- Biochemical analysis was not included

REVIEW OF LITERATURE

The topic of the research is nutrition education intervention among diabetic nephropathic patients through different mediums. The prevalence of diabetes has enlarged in the past few decades. The significance of nutrition therapy in treating diabetes cannot be denied. One or two hours are required to provide nutritional education to diabetic nephropathic patients to get better their entire living position. The plan of the research was to boost the nutritional knowledge of diabetic nephropathic patients. It was also believed that nutrition education plan would inspire the patients with diabetic nephropathy to implement healthy eating habits with some physical activity and thus will recover overall health status and worth of life. The program will create the diabetics self-contained and improve their dietary practices. Individuals suffering from chronic renal

disease have diabetic nephropathy marking it as the most important causative factor. Cardiovascular diseases are also augmented in patients having diabetic nephropathy (*Bruno RM,2000*). If there is an increased excretion of protein in the urine, diabetic nephropathy results. The preliminary stage is different in a minor increase in the levels of micro-albuminuria and urinary albumin excretion (UAE) rate. If there is any increased level of macro-albuminuria (proteinuria), complexity in the disease occurs which is accompanied by decreased level of glomerular filtration rate (GFR). In another study, it was evident that there are some cases having diabetic nephropathy without any increase in urinary albumin. (*George Jerums et al.* , 2009). In a similar study carried out on patients with diabetes melitus type 2, 10% had no or little GFR having no presence of macro-albuminuria. Similar observation was seen in patients having type 1 diabetes melitus suffering from microalbuminuria. (*Bruce A. Perkins*, *2009*)

Risk Factors

Elevated sugar levels, increased blood pressure, smoking , alcohol consumption and high lipid levels in the blood are the significant risk factors. Diabetic nephropathy resulted in 40% of the patients due to the high glucose rates and elevated blood pressure for a longer period . The study proposed that diabetic nephropathy was only present in inclined subset of individuals. (*Krolewski AS et al.,1985*). Numerous factors can increase the risk of proteinuria as well as loss of glomerular filtrate rate. Genetic plays a role in type 1 and type 2 diabetes mellitus patients to develop diabetic nephropathy. (*Quinn et ., 1996*).

Hyperglycemia in relation with Diabetic Nephropathy.

Increased glucose levels are the most common risk factors listed for the micro-albuminuria production mostly seen in type 2 and type 1 diabetes mellitus. 37% decline in micro-vascular endpoints causes 1 % reduction in HbA1c(glyco-sylated hemoglobin) (*Irene M Stratton et al*., *2000*). A course of action occurs that forms waste materials after the digestion of protein. Capillaries acts as tiny holes and are an integral part of the kidney which causes the filtration. These waste materials squeeze through the tiny holes when the blood is flowing in between the blood vessels, and eventually these small particles (waste) is converted into urine. Protein and red blood cells are larger in size and thus are not removed from the blood. Workload on the filtration rate increases due to the elevated blood glucose or sugar levels which in turn causes the kidneys to filter extra amount of blood. Protein is lost in the urine after several years due to the leakage in the filters. Microalbuminuria results due to minute quantity of protein present in the excreted urine. During conditions of low protein amounts, if the renal disease is diagnosed earlier, cures can be carried out to protect the kidney from adverse situations. In contrast to microalbuminuria, increased levels of protein causes macro-albuminuria. End stage renal disease occurs if kidney disease is not diagnosed before time. Excessive amount of workload causes kidneys to lose its efficiency for cleaning. Renal failure is caused due to build up of excreted waste materials in the blood vessels. An individual suffering from end stage renal disease (ESRD) needs to get a kidney transplant done or get the blood cleansed by the dialysis procedure.

Hypertension in relation with Diabetic Nephropathy

The major reason for the progression of DN is because of the increase arterial pressure and most likely the finest recognized applicable factor correlated to its advancement. Particularly after the production of microalbuminuria, the metabolic control is the only factor in prevention for the expansion of renal disease. High blood pressure, at this stage envisages a further quick downward progression of the renal damage. Blood pressure control is extremely important once the renal failure is indicated and as renal damage advances. Investigation showed that there is a reduction of 13 percent of microvascular to get more difficult when systolic blood pressure is reduced by 10mmHg, with the slightest risk amongst those patients with systolic blood pressure less than 120 mm Hg (*Timothy et al ., 2000*).

Dyslipidemia in relation with Diabetic Nephropathy

In DN, the chances of coronary disease are getting high because of the increased level of lipids in blood. The diabetic nephroapthic patients are more prone to heart diseases, so that the management of lipid profile should not be ignored.. Moreover, bad lipids in the blood are responsible for the development of DN into its worst stage or last stage. In DN patients it is observed that there is an alteration of good lipids that is high density lipoproteins and bad lipids that is low density lipoproteins. The metabolism of lipoproteins gets reversed and the level of bad lipids are elevated and vice versa. The cholesterol, which is the prominent serum is the major risk factor for the development of DN in type 2 diabetes patients (*Adler AI et al., 2003*). In type 1 DM patients increased serum triglycerides, whole and LDL-cholesterol were related with micro- and macroalbuminuria.In type 1 diabetic patients, high

cholesterol serum is a risk factor and it is responsible for GFR loss in macroalbuminuria (*Hirano, 2014*).

OBJECTIVES

1- To assess the educational needs of the diabetic nephropathic population.

2- To find out the important component of nutrition education plan.

3- To determine the most effective method of intervention would be more effective in the management of diabetic nephropathic patients.

METHODOLOGY:

Universe

The study was carried out on the patients of diabetic nephropathy at the diabetic centre of Jinnah hospital.

Sampling

Sample Size

For need assessment the sample will be consisting of 50 patients from diabetic ward, Jinnah Hospital.

Sampling Technique

Purposive sampling is going to be done as study requires education material for diabetic nephropathic patients only.

Study design

The study employed experimental design. Pre testing and post testing without a control group.

Tools for data Collection

Data was collected through questionnaire that is filled by the researcher herself.

Development of questionnaire

- Demographics
- Family history
- Dietray practices
- Physical activity
- Medications
- SMBG
- Smoking and alcohol

Procedure

First of all a questionnaire was devised to assess education needs,diatery habits,physical activity routine, existing knowledge and practices about diabetic nephropathy.The assessment is going to be done in Jinnah Hospital.Firstly,the permission was taken from the respective authorities. Then a consent form was created in both English and Urdu language that ensures the sample size that their information will remain confidential. Also the purpose of questionnaire would be described to the respective sample size. The questionnaire was filled out by the researcher herself after asking questions to each of the respective respondents. The whole data of pre test was collected in seven days. After collecting the data the lectures were delivered through the lesson plans and the brochures. There were different lesson plans about the risk factors which included to give brief education regarding diabetes mellitus, hypertension, dyslipidemia and fluid intake etc. Based on this knowledge educational plan was devised. The educational focused on the learning and understanding of dietary intake habits.

Data Analysis

Data was analyzed using the SPSS,version 16 software.Simple statistics such as frequencies, percentages,means and standard deviation (SD) were used. Comparison between pre and post assessment values was done using paired sample t-test.

RESULTS:

Table 4.1: Demographics

	Frequency	Percent %
1. Gender		
Male	24	48
Female	26	52
2. Age		
15-31	12	24.0
31-45	14	28.0
46-60	13	26.0
61-80	11	22.0
3. Marital status		
Single	8	16.0
Married	37	74.0
Widow	5	10.0
4. Education		
No education	13	26.0
Primary education	14	28.0
Secondary education		
University	15	30.0
	6	16.0
5. Employment status		
Employed	19	38.0
Self employed	3	6.0
Housewife	13	26.0
Others	15	30.0

Interpretation

Table 4.1 shows that there was 48% of males and 52% of females.28% of people were of age between 31-45.74% of patients were married.30% of patients had secondary education.30% of patients had employment status i-e others (students,retired people etc)

Table 4.2: Family History

	Responses	Frequency	Percent %
1.Marriage within the family	Yes	27	54
	No	23	46
2. Diabetes early childhood	Yes	25	50
	No	25	50
3.Diabetes late onset	Yes	25	50
	No	25	50
4. Kidney failure in family.	Yes	10	20
	No	40	80
5. History of heart disease.	Yes	20	40
	No	30	60
6. Cardiac death in family.	Yes	9	18
	No	41	82
7.Hypertension in family.	Yes	24	48
	No	26	52

Interpretation

Table 4.2 shows that 54% of patients had family history of marriage inside the family.50% of patients had diabetes in early childhood while 50% of patients had diabetes in late onset.80% of patients had not family history of kidney failure.60% of patients had not history of heart disease.82% of patients had not family history of cardiac death same as 52% of patients had not family history of hypertension.

Table 4.3 : Dietary Practices

	Responses	Pre-test		Post- test	
		Frequency	Percent %	Frequency	Percent %
1. I follow heating cooking method	Agree	50	96.2	50	96.2
2. I eat 2-3 fruits daily.	Disagree	33	63.5	13	25.0
	Strongly Agree	15	28.8	18	34.7
	Agree	2	3.8	19	36.5
3. I eat 2-3 vegetables daily	Disagree	18	34.6	12	23.1
	Strongly Agree	31	59.6	6	9.5
	Agree	1	1.9	32	61.5
4. I eat very less amount of sweets.	Disagree	34	65.4	14	26.9
	Strongly Agree	14	26.9	2	3.8
	Agree	2	3.8	20	38.5
5. I consume low biological value proteins (LBV).	Disagree	1	1.9		
	Strongly Agree	9	17.3	40	76.9
	Agree	40	76.9	10	17.3
6. I consume high biological value proteins (HBV).	Disagree	37	71.2	43	82.7
	Strongly Agree	13	25.0	7	13.5
	Agree				
7. I consume High potassium foods.	Disagree	38	73.1	48	92.3
	Strongly Agree	12	23.1		
	Agree			2	3.8
8. I consume sodium foods.	Disagree	47	90.4	47	90.4
	Strongly Agree	3	5.8	3	6
	Agree				
9. I consume uric acid foods.	Disagree	28	53.8	28	53.8
	Strongly Agree	15	28.8	15	28.8
	Agree	7	13.5	7	13.5
10. I consume High energy foods.	Disagree	6	11.5	6	11.5
	Strongly Agree	16	30.8	16	30.8
	Agree	28	53.8	28	53.8
11. I consume sugary foods.	Disagree	45	86.5	45	86.5
	Strongly Agree	4	7.7	4	7.7
	Agree	1	1.9	1	1.9
12. I consume more than 5 glasses of water every day.	Disagree	47	90.4	47	90.4
	Strongly Agree	3	5.8	3	5.8
	Agree	50	96.2		

Interpretation

Table shows the difference of dietary practices of pre test and the post test. The sample size was 50.Before giving the nutrition education.From the table it is shown that there is a difference in the consumption of proteins before and after giving the education.Protein restricted diet is very important in the management of diabetic nephropthy.The consumption of high biological value proteins reduces from 25% to 13.5%.Similarly the impact of education increases the knowledge from 73% to 92.3% in potassium consumption. There was no significant change in the other variables before and after the intervention of nutrition knowledge.

Table 4.4: Physical Activity

	Responses	Pre-test		Post-test	
		Frequency	Percent %	Frequency	Percent %
1. I walk daily	Disagree	41	78.8	28	53.8
	Strongly Agree	8	15.4	1	1.9
	Agree	1	1.9	8	15.4
	Neutral			13	25.0
2. I also workout for 20 minutes thrice a week.	Disagree	49	94.2	39	75.0
	Strongly Agree	1	1.9	1	1.9
	Agree			10	19.2
	Neutral				
3. I do light exercise. e.g. Slow walking	Disagree	31	59.6	18	34.6
	Strongly Agree	19	36.5	19	38.0
	Neutral			13	26.0
4. I do moderate exercise. e.g. weight lifting.	Disagree	50	96.2	32	61.5
	Strongly disgree			12	23.1
	Neutral			6	11.5
5. I do vigorous exercise e.g. running, bicycling	Disagree	29	55.8	13	25.0
	Strongly Agree	18	34.6	3	5.8
	Agree	3	5.8	18	34.6
	Neutral			13	25.0
6. I am following my exercise plan.	Disagree	47	90.4	43	82.7
	Strongly Agree	3	5.8		
	Agree			3	5.8
	Neutral			4	7.7
7. I have been given advice about exercise.	Disagree	22	42.3	7	13.5
	Strongly Agree	22	42.3	6	11.5
	Agree	6	11.5	22	42.3
	Neutral			15	28.8

Interpretation:
The table 4.2 shows that there was a significant change in the exercise pattern of the given sample as 25% of them reported that they included walk as a part of their daily routine after giving the education about the physical activity in the management of diabetic nephropathy.Similarly the given advice about the exercise was increased by 28.8 %.

Table 4.5: Medication

	Responses	Pre-test		Post-test	
		Frequency	Percent %	Frequency	Percent %
1. I take oral medication.	Strongly agree	15	28.8	15	28.8
	Agree	18	34.6	18	34.6
	Neutral	6	11.5	6	11.5
	Disagree	11	21.2	11	21.2
	Strongly disagree				
2. I take insulin.	Strongly agree	14	26.9	14	26.9
	Agree	21	40.4	21	40.4
	Neutral	4	7.7	4	7.7
	Disagree	8	15.4	8	15.4
	Strongly disagree	3	5.8	3	5.8
3. I take both insulin and oral.	Strongly agree	7	13.5	7	13.5
	Agree	12	23.1	12	23.1
	Neutral	10	19.2	10	19.2
	Disagree	15	28.8	15	28.8
	Strongly disagree	6	11.5	6	11.5
4. I follow prescription strictly.	Strongly agree	24	46.2	24	46.2
	Agree	22	42.3	22	42.3
	Neutral				
	Disagree	4	7.7	4	7.7
	Strongly disagree				
5. I change the prescription on my own.	Strongly agree				
	Agree	6	11.5	3	9.5
	Neutral	8	15.4	8	15.4
	Disagree	21	40.4	21	40.4
	Strongly disagree	15	28.8	18	30.2
6. I check my B.P. on regular basis.	Strongly agree	18	34.6	27	51.9
	Agree	5	9.6	5	9.6
	Neutral				
	Disagree	27	51.9	18	34.6
	Strongly disagree				
7. I check my B.P. on my own.	Strongly agree				
	Agree	7	13.5	7	13.5
	Neutral	9	17.3	9	17.3
	Disagree	19	36.5	19	36.5
	Strongly disagree	15	28.8	15	28.8
8. B.P. is checked by the medical staff.	Strongly agree	19	36.5	19	36.5
	Agree	28	53.8	28	53.8
	Neutral	3	5.8	3	5.8
	Disagree				
	Strongly disagree				
9. I know the dealing situation when my B.P. alters.	Strongly agree	11	21.2	37	71.2
	Agree	2	3.8	2	3.8
	Neutral				
	Disagree	37	71.2	11	21.2
	Strongly disagree				
10. I know the normal ranges of my B.P.	Strongly agree			13	25
	Agree			10	19.2
	Neutral				
	Disagree	50	96.2	27	51.9
	Strongly disagree				

Interpretation:
Table 4.3 shows that there was a significant change between the pre test and post test about the education of blood pressure ranges.There was increase of 23% of knowledge about blood pressure values.Out of 50 patients 23% of dealing situations in blood pressure alteration was increased.

Table 4.6:SMBG

	Responses	Pre-Test		Post-Test	
		Frequency	Percent %	Frequency	Percent %
1. I test my blood glucose using a blood drop from my finger.	Disagree	35	67.3	18	17.3
	Strongly Agree	13	25.0	2	3.8
	Agree	2	3.8	13	25.0
	Neutral			9	17.3
	Strongly disagree			8	15.4
2. I test my urine for checking glucose.	Disagree	48	92.3	28	53.8
	Strongly Agree	1	1.9	1	1.9
	Agree	1	1.9	1	1.9
	Neutral				
	Strongly disagree			20	38.5
3. I test my micro-albumin through urine sample.	Disagree	47	90.4	31	59.6
	Strongly Agree	3	5.8		
	Agree			3	5.8
	Neutral			1	1.9
	Strongly Disagree			15	28.8
4. I know what to do when my glucose level alters.	Disagree	23	44.2		
	Strongly Agree	22	42.3	5	9.6
	Agree	5	9.6	22	42.3
	Neutral			13	25.0
	Strongly disagree			10	19.2

Interpretation
Table 4.4 shows there was an impact of education in self control blood glucose(SMBG).There was an increase of 21.2% in the dealing situations of blood glucose alteration. Similarly 16% of the sample population gained knowledge about getting their microalbumin evaluated through urine sample in addition to this 17% of them were enlightened about importance of using the glucometre.

Table 4. 7: Smoking/Alcohol

	Responses	Pre-test		Post-test	
		Frequency	Percent %	Frequency	Percent %
1. I have been smoking for more than one year.	Strongly agree	2	3.8	2	3.8
	Agree	13	25.0	13	25.0
	Neutral	7	13.5	7	13.5
	Disagree	19	36.5	19	36.5
	Strongly disagree	9	17.3	9	17.3
2. I do not smoke.	Strongly agree	10	19.2	10	19.2
	Agree	19	36.5	19	36.5
	Neutral	7	13.5	7	13.5
	Disagree	10	19.2	10	19.2
	Strongly disagree	4	7.7	4	7.7
3. I take 5 packs daily of smoke.	Strongly agree	3	5.8	3	5.8
	Agree	8	15.4	8	15.4
	Neutral	10	19.2	10	19.2
	Disagree	18	24.6	18	24.6
	Strongly disagree	11	21.2	11	21.2

Interpretation

Table 4.5 shows that there was no significant change between the pre test and the post test results in the smoking/alcohol variable.

Table 4.8: Comparison between the Pre test and Post test results.

Interpretation

Paired samples t- test was conducted to find the difference between the pre test score and post test score. .There was a significant difference pre test scores and post test scores of dietary practices t (49)=4.01, <.001. The mean score (Mean= 13.17 ,SD=3.55) of post test of dietary practices is higher than the mean 7.57±2.27 score of pre test. There was a significant difference pre test scores and post test scores of physical activity t (49)=3.28, .002. The mean score 23.72 ±2.11 of post test of physical activity is higher than the mean 1.82±1.25 score of pre test. There was a significant difference pre test scores and post test scores of medication t (49)=3.31, .002. The mean score21.71±5.59 of post test of medication is higher than the mean 18.48±4.44 score of pre test. There was a significant difference pre test scores and post test scores of SMBG t (49)=5.15, <.001. The mean score 14.36±1.86 of post test of SMBG is higher than the mean 1.1±0.931 score of pre test .

	Pre-test		Post-test		Paired samples t-test		
	M	SD	M	SD	T	df	P
Dietary Practices	7.57	2.27	13.17	3.55	4.01	49	<.001
Physical Activity	1.82	1.25	23.72	2.11	3.28	49	.002
Medication	18.48	4.44	21.71	5.59	3.31	49	.002
SMBG	1.1	0.931	14.36	1.86	5.15	49	<.001
Smoking/Alcohol	9.50	1.18	9.50	1.18	0.00	49	1.000

DISCUSSION:

The most important complication of diabetes mellitus is diabetic nephropathy (DN) , in which the capillaries in kidney glomeruli start damaging. DN is typically defined by the presence of proteins (albumin) in the urine. First of all a questionnaire was devised to assess education needs, diatery habits, physical activity routine, medication, SMBG, smoking and alcohol, existing knowledge and practices about diabetic nephropathy. The survey was done in Jinnah Hospital. Initially, permission was taken from the respective authorities, then a consent form was created in both English and Urdu language that ensures the sample size that their information would remain confidential. Also the purpose of questionnaire was described to the respective sample size. The questionnaire was filled out by the researcher herself after asking questions to each of the respective respondents. The pre testing was done in 4 days with a sample size of 50, the nutrition knowledge was given in the form of lesson plans, posters and brochures. After the duration of three weeks post testing was done. There questionnaire was developed under the six headings and each section had different questions. The main four parts of the questionnaire were dietary practices, physical activity, medication, SMBG and smoking/alcohol.

Patients from diabetic ward of Jinnah hospital were selected for the study. As all the demographic factors also play important role in patient's disease state in this study about 48% of patients were males and 52% of females. 28% of people were of age between 31-45.74% of patients were married. 30% of patients had secondary education. 30% of patients had employment status i-e others (students, retired people etc).

The main focus of study was to assess the impact of nutrition education on diabetic nephropathic patients. The comparison was done before and after education of dietary practices. There were few questions under the heading of dietary practices for example the consumption of fruits ,vegetables, sugary foods, low and high biological value proteins,sodium, potassium, uric acid foods, high energy foods and fluid intake. Methods of cooking were also asked from the patients. After the nutrition education intervention the result of dietary practices shows the mean score (Mean= 13.17 , SD=3.55) of post test of dietary practices that is higher than the mean 7.57±2.27 score of pre test (p value of <.001). Previous research revealed that there was a significant impact of nutrition education on patients of microalbuminuria with a p value of <.001 (*Franz et al.,2002).*

The second variable was physical activity.The purpose of education of physical activity was to give awareness about the management of diabetic nephropathy.Before giving the education the data was collected from the patients about their physical

activity routine and data was collected after giving the education the results are as follows. There was a significant difference between pre test scores and post test scores of physical activity t (49)=3.28. The mean score 23.72 ±2.11 of post test of physical activity is higher than the mean 1.82±1.25 score of pre test.The p value is .002 Some previous studies show the significant result of physical activity in the management of diabetic nephropathy(*Tate et al., 2015*)

The medication is also very important for the management of diabetic nephropathy.This variable tells how the patient is regularly taking the medication whether insulin or oral medicines.Giving education about the medication is also necessary tool. The mean score 21.71±5.59 of post test of medication is higher than the mean 18.48±4.44 score of pre test. There was a significant difference between pre test scores and post test scores of SMBG <.001. Previous research revealed p value=<0.005 that there was a significant impact of medication education (*Richard M. Hoffman et al.,* 2002).

Smoking and alcohol cessation reduce the prevalence of diabetic nephropathy.There was no change before anf after the education but previous reseach revealed that there was a significant imapct of smoking and alcohol cesstaio (*Christina Voulgari et al., 2010*)

Summarizing, patients' nutritional knowledge and practice got improved by providing one to one counseling and improvement of their compliance with dietary guidelines for the diabetic nephropathic patients , which in turn could be linked to significantly upgrading in their health status and performance in actions and behaviours of every day life.

CONCLUSION:

Nutrition education intervention was an essential tool in the management of diabetic nephropathy. All five variables of the study that are dietary practices physical activity, medication, SMBG and smoking/alcohol, showed vast improvement after nutrition intervention. The education was given through different tools which included lesson plans, brochures , posters and one to one counseling. Out of these tools the most effective tool was one to one counseling out because it gave direct interaction with the patients. It helped in increasing their nutritional knowledge and modifying their dietary practices for the diabetic nephropathic patients, this intervention proved to be helpful in improving the health status and the quality of life of these patients.

RECOMMENDATIONS

In the light of the research done on the diabetic nephropathic patients of Jinnah hospital, following are the recommendations

- Counseling session should be arranged for patients to promote healthy lifestyle.
- One to one counseling as well as focus group should be given by the counselor.
- Nutrition education regarding consumption of sugary foods, high energy foods and fluid intake should be given to the patient using well developed intervention program.
- Campaigns about the cessation of smoking and alcohol in the management of diabetic nephropathy should be arranged.

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