Diet and lifestyle assessment of patients suffering from diabetic nephropathy

■ GAYATRI BISWAL, CHANDRASHREE LENKA **and** SONALI TRIPATHY

■**ABSTRACT :** Diabetes is a disease in which either pancreas does not make enough insulin or there is insulin resistance, so that the glucose is unutilized by the liver, muscle and fat tissue properly. With diabetes for longer period of time the small blood vessels (micro) in the body are injured. When the blood vessels in the kidneys are injured, kidneys can not clean blood properly. Body will retain more water and salt than it should, which results in weight gain and ankle swelling which may have protein in urine. This may lead to diabetic nephropathy. The overall objective of this study was to asses diet and life style of the patients suffering from Diabetic Nephropathy. A cross-sectional study was carried out on 100 Diabetic people with nephritic syndrome. The study carried out by investigating patient's family background, medical past history, physical examination, nutritional and lifestyle assessment, physical activity assessment, medical and nutritional problems associated with the help of interview cum questionnaire method. The results of the study revealed that majority of the respondents had diabetes with Chronic Kidney Disease (CKD) and were suffering from Chronic Energy deficiency BMI. Fatigue and odema were the common symptoms found among most of the respondents. Starchy, spicy and too much sweet food was preferred by the patients. Taking 2-3 litres of soft water per day was observed among the respondents. Cereals, pulses, fats and oil, Milk and salt consumption was found to be less in comparison RDA in both male and female respondents which may be due to their ill health and dietary restriction. A positive trend was found in maintaining active style, taking regular diet and regular medicine and doing regular health check up among majority of the respondents which may be due to the impact of education, urbanization and mass media. Thus it can be suggested that controlling diabetes with high blood pressure, restricting protein and salt in the diet and maintaining active life style may be a solution to this problem.

■ **KEY WORDS:** Chronic kidney disease (CKD), BMI, RDA, Life style odema

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Diabetes mellitus is a metabolic cum vascular syndrome of multiple a etiologies characterized by chronic hyperglycaemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action or both. This disorder is frequently associated with long term disease,

which can lead to failure of organs like eyes, kidneys, nerves, heart and blood vessel.

The number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014. The global prevalence of diabetes among adults over 18 years of age has risen from 4.7 per cent in 1980 to 8.5 per cent in 2014. Diabetes prevalence has been rising more rapidly in middle and low income countries. Diabetes is a major cause of blindness, kidney failure, heart attacks stroke, lower limb amputation. In 2012 an estimated 1.5 million deaths were directly caused by diabetes and 2.2 million deaths[1] were attributable to high blood glucose. Almost half of all deaths attributable to high blood glucose occur before the age of 70 years. WHO projects that diabetes will be the 7th leading cause of death in 2030.[2]

In recent years India has witnessed a rapidly exploding epidemic of diabetes. Indeed, India today leads the world with its largest number of Diabetic people in any given country. WHO estimate there are 32 million people with diabetes in India with Diabetes in 2000, which is projected to rise by 80 million by the year 2030. Increase in prevalence is rapid in urban areas from 2 per cent 1970s to 12 per cent in 2000 and in rural areas also it is now beginning to increase.

Kidney disease (nephropathy) is a very serious complication of diabetes. With this condition, the tiny filters in the kidney (called glomeruli) become damaged and leak protein into the urine. Over time, this can lead to kidney failure. Urine tests showing microalbuminuria (small amounts of protein in the urine) are important markers for kidney damage. Diabetic nephropathy, the leading cause of end-state renal disease (ESRD), occurs in about 20-40 per cent of patients with diabetes. Patients with ESRD have 13 times the risk of death compared to other patients with type -1 diabetes. If the kidneys fail, dialysis is required. Symptoms of kidney failure may include swelling in the feet and ankles, itching, fatigue and pale skin colour. The outlook of end-stage renal disease has greatly improved during the last four decades for patients with type-1 diabetes, and fewer people with type -1 diabetes are developing ESRD (End state renal disease).

Healthy diet, regular physical activity, maintaining a normal body weight and avoiding tobacco use are ways to prevent or delay the onset of type - 2 diabetes. Diabetes can be treated and its consequences avoided or delayed with diet, physical activity medication and regular screening and treatment for complications.

Keeping the above facts in mind this research is designed to focus on diet and life style assessment of patients suffering from diabetes with nephropathy. The objectives of the study were :

- To study socio-economic status of the respondents.
- To asses nutritional status of the respondents with the help of BMI.
- To know the dietary intake and life style of the respondents suffering from diabetic nephropathy.

■ RESEARCH METHODS

The study was undertaken in Cuttack city of Odisha. 100 diabetes patients with nephropathy attending different clinics of Cuttack were selected by random purposive sampling method for the present study. The information on patients family back ground, medical past history, dietary habits and nutritional status was collected with the help of pretested and modified interview schedule and questionnaire method. The height and weight of the respondents was noted down with the help of measuring tape and weighing machine and BMI was calculated. Information on food in take of the respondents was collected with the help of 24 hour dietary recall method. The collected data was processed and analysed with the help of statistical tools and techniques which are reflected in the results and discussion.

■ RESEARCH FINDINGS AND DISCUSSION

The results of the present study are as follows :

Socio-economic condition :

Information of socio-economic conditions of the respondents revealed that majority of the patients were male (71%) and belonged to the age group of 40-60 years. 85 per cent patients were Hindu by religion. 72 per cent respondents were highly educated and were staying in urban areas (83%). 72 per cent of the

1. Global reports on diabetes WHO Geneva - 2016.
2. Projections of global mortality and burden of disease from 2002 to 2030. Mathers CD, Loncar D. Plos Med. 20063(II) e 442.

respondents belonged to middle income group *i.e.* their family income is in between Rs. 20000 - Rs. 30000 and 14 per cent of them had income more than Rs. 30,000. 82 per cent of the respondents were found to be sedentary workers. Padhi and Gayatri (2013) found similar trends in their studies.

Table 1 reveals that 45 per cent respondents were suffering from Chronic Energy of deficiency 23 per cent of the patients were normal weight, 32 per cent of the patient were Obese Grade-I.

Types of diabetes :

Table 2 reveals that 46 per cent of the patients were affected by Type –II diabetes and 38 per cent patient affected by Type-I diabetes and rest 6 per cent of patients are affected by gestational diabetes.

Types and symptoms of kidney problem :

Table 3 indicates that majority of the respondents were suffering from chronic kidney disease and out of

the them 29 per cent of patients are affected by odema, 33 per cent by fatigue, 17 per cent by headache, 9 per cent nausea, 12 per cent by vomiting. Similar finding was also observed by Deo *et al.* (2009)

Secondary complication :

Different types of secondary complications was observed among the respondents such as 12 per cent of patients are affected by neuropathy, 100 per cent by nephropathy, 17 per cent by retinopathy, 7 per cent foot amputation, 12 per cent by, 13 per cent by Osteoporosis (Table 4). Similar observations was also found out by Boddula *et al.* (2008).

Food preference :

Table 5 shows that most of the patients were having preference for spicy food, starchy food, fast food and too much sweets etc. This shows that faulty food habits and irregular diet were the main cause of onset of diabetes with nephropathy. Similar findings was also

Table 1 : BMI of the respondents			
Sr. No.	BMI of the respondents	No. of respondents	Percentage
1.	Chronic energy deficiency	45	45
2.	Normal	23	23
3.	Obese grade-I	32	32
	Total	100	100

Table 2 : Types of diabetes			
Sr. No.	Types of diabetes	No. of respondents	Percentage
1.	Type –I	38	38
2.	Type –II	46	46
3.	Gestational	06	6
	Total	100	100

Table 3 : Types of kidney problem			
Sr. No.	Types of kidney problem	No. of respondents	Percentage
1.	Acute kidney disease	36	36
2.	Chronic kidney disease	64	64
	Total	100	100

Symptoms of kidney problem			
Sr. No.	Symptoms	No. of respondents	Percentage
1.	Oedema	29	29
2.	Fatigue	33	33
3.	Headache	17	17
4.	Nausea	9	9
5.	Vomiting	12	12
	Total	100	100

observed by Padhi and Gayatri (2013).

Table 7 shows that 36 per cent diabetes patients were vegetarian where as 64 per cent were non vegetarian. It was also interesting to note that 98 per cent of the respondents were taking 4 meals per day. similar observation was also found by Padhi and Gayatri (2013).

Type of water and amount of water taken by the patients :

It was observed that majority of the patients were taking soft water. 53 per cent of the respondents were taking 2-3 litres of water per day whereas 27 per cent of

them were taking more than 3 liters of water per day.

Mean food intake of the patients suffering from diabetes with nephropathy :

Data on overall dietary assessment of the respondents revealed that intake of cereal, pulses, fats and oil, milk and salt consumption was found to be less in comparison to RDA in both the male and female respondents whereas vegetable and fruits consumption was found to be more in comparison to RDA in both the cases. However non-vegetarian food consumption was found to be more in case of male respondents and it was nil in case of female respondents. Low intake of food

	Table 4 : Secondary complication the respondents		
Sr. No.	Secondary complication	No. of respondents	Percentage
1.	Neuropathy	12	12
2.	Nephropathy	100	100
3.	Retinopathy	17	17
4.	Foot amputation	7	7
5.	Dementia	12	12
6.	Osteoporosis	13	13
	Total	100	100

	Table 5 : Food preference of the patients		
Sr. No.	Food preference	No. of respondents	Percentage
1.	High carbohydrate diet/sweets	41	41
2.	Deep fried food	24	24
3.	Processed food	08	08
4.	More Salt/oil/High Glycaemic diet	23	23
5.	Soft drink /Ice-cream/Alcohol	04	04
	Total	100	100

	Table 6 : Food habits		
Sr. No.	Food intake	No. of respondents	Percentage
1.	Vegetarian	36	36
2.	Non-vegetarian	64	64
	Total	100	100

	Table 7 : Water intake of the respondents		
Sr. No.	Types of water	No. of respondents	Percentage
1.	Hard water	28	28
2.	Soft water	72	72
	Amount of water/day		
1.	Less than 1 litre	08	08
2.	1 Litres or more	12	12
3.	2 Litres or more	53	53
4.	3 Litres or more	27	27

stuffs by the patients may be due to ill health and dietary restriction.

Other habits of the patients :

Data regarding other habits of the patients showed that 17 per cent of the patients were taking alcohol, 10 per cent of them smoke Cigarrates and 9 per cent of them smoke biddi. Tobacco consumption was found among 11 per cent respondents and betel leave consumption was found among 29 per cent of the respondents. 68 per cent of the respondents had no habits at all.

Life style assessment of the respondents :

It was interesting to note that so 80-90 per cent of the respondents had regular life style. 88 per cent of the respondents get up by 6-8 am in the morning and 71 per cent of them sleep by 11 'O' Clock 96 per cent of the respondents do regular exercise to maintain their health. Regular health checkup (91%) and regular medicine (94%) intake was done by most of the respondents. However irregular diet intake was observed among 22 per cent of the respondents because of their work atmosphere and family condition

Table 8 : Mean food intake of the respondents							
Sr. No.	Food stuff	Actual mean food intake		Recommended daily allowance		Excess (+) or deficiency (-)	
		Male	Female	Male	Female	Male	Female
1.	Cereals	450.29	398.13	460	410	2.1(-)	2.9(-)
2.	Pulses	30.25	25.73	40	40	24.37(-)	35.7(+)
3.	Green leafy vegetable	55.3	110.9	40	100	38.2(+)	10.9(+)
4.	Other vegetable	60.9	63.4	60	40	1.5(+)	58.8(+)
5.	Roots and tuber	73.2	78.7	50	50	46.4(+)	57.4(+)
6.	Fruits	48.2	50.3	30	30	60.6(+)	6.7.7(+)
7.	Milk	145.8	98.6	150	100	2.8(+)	1.4(-)
8.	Fats and oil	30.8	20.9	40	20	23(-)	4.5(+)
9.	Sugar and Jaggery	10.8	9.6	30	20	64(-)	52(-)
10.	Non-vegetarian	53.8	40.2	30	30	69.3(+)	34(+)
11.	Salt	4.5	5 g	5-6	5-6	10 (-)	-

Table 9 : Life style of the respondents				
Sr. No.	Food intake		No. of respondents	Percentage
1.	Time to get up -	5 – 6 am	24	24
		6 – 8 am	64	64
		after -8 am	12	12
2.	Time of Sleep -	9 – 10 pm	33	33
		10 – 11 pm	28	28
		11 pm afterward	39	39
3.	Physical Activity			
	- Yoga and Pranayam		36	36
	- Morning or evening walk		49	49
	- Bicycling		11	11
	- None of the above		04	04
4.	Regular Diet	- Yes	78	78
		- No	22	22
5.	Regular Medicine	- Yes	94	94
		- No	06	06
6.	Regular Health checkup			
		- Yes	91	91
		- No	09	09

Conclusion :

From this study the researcher came to the conclusion that diabetes is a metabolic disorder, which can never be cured but can only under control with the proper maintenance of a balanced and healthy diet and active life style. At the same time the macronutrients like carbohydrate, protein and fat intake should be proper as there was a possibility of secondary complication after 7-10 yrs of diabetes. Basically patients with high sugar and hyper tension for a long time need to check their protein intake per day. There is no other disease which calls for a greater thought on diet than diabetes. Thus the diet needs to be modified by a dietician according to the age, sex, and economic status, social and religious background of the patient.

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