



DIETARY PATTERN OBSERVED IN TYPE 2 DIABETICS

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Abstract:- Prevalence of Type 2 diabetes is majorly rooted to irregular eating pattern and physical inactivity. Dietary modification is one of the corner stone in the management of Type 2 diabetes. We studied nine hundred type 2 diabetics whose age varied between 40 and 70 years and for whom socio-economic background, biochemical parameters and anthropometric measurements were captured through interview schedule. The details of dietary pattern of the subjects were assessed through food frequency questionnaire and through 24 hour recall method. Vegetarians formed the majority of the selected population with rice and wheat consumed in large proportions. Cereals like Jowar, ragi, oats, Broken-wheat were never consumed. Majority had pasteurized milk, coconut, ghee, and sunflower oil as the medium for cooking. Twenty four hour recall method showed that most of the respondents had consumed way above therecommended allowances in terms of carbohydrate intake. The dietary pattern followed by type 2 diabetics was unbalanced and not within the recommended guidelines. So a need for a food based approach will serve as an effective strategy to improve the nutritional status and promote well-being of type 2 diabetics.

INTRODUCTION

India leads the world with largest number of diabetic subjects earning the dubious distinction of being termed the “diabetes capital of the world”. According to the Diabetes Atlas 2006 published by the International Diabetes Federation, the number of people with diabetes in India currently around 40.9 million is expected to rise to 69.9 million by 2025 unless urgent preventive steps are taken (Mohan and etal, 2007). Data on Indian diabetes prevalence has been reported by many studies (Shashank, 2012 and ICMR-INDIAB, 2011). The role of diet in the development of type 2 diabetes remains unsettled (Rob, 2002). Researchers have discovered that western dietary pattern is associated with a substantially increased risk for type 2 diabetes (Prakash S. Shetty, 2001).

Dietary pattern followed is considered as the corner stone in the treatment of diabetes, since it is shown to improve glycemic control and to delay the complications (Ulf Riserlls and etal, 2009). The primary determinants of the epidemic are the rapid epidemiological transition associated with changes in the dietary patterns and decreased physical activity (Ramachandran and etal, 2010). Many diabetes prevention studies have conclusively proved that lifestyle modification including weight loss, increased physical activity and dietary changes can prevent or delay the onset of diabetes (Rajiv Gupta, 2008).

The present study is an attempt to find out the dietary pattern followed by type 2 diabetic subjects which can serve as a basis to form appropriate strategy to improve the control and the status of type 2 diabetics.

MATERIALS AND METHODS

The study was conducted in the selected three diabetic clinics of South Bangalore. A total of about 900 type 2 diabetic subjects aged between 30 – 70 years from both the genders were selected through purposive random sampling method from whom an informed consent from was signed. The period of the study was between June, 2013 to September, 2013.

Pre tested Interview Schedule was used to elicit information on socio-economic background, anthropometric details and biochemical parameters.

Twenty hour recall method and food frequency questionnaire were used to assess the dietary pattern followed by the subjects. Information on food allergy, hunger time food intake, artificial sweetener usage and fasting habits were also captured. The information was obtained personally from the diabetic subjects.

RESULTS AND DISCUSSION

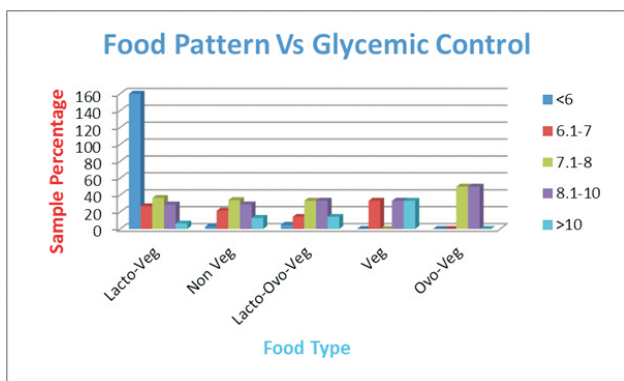
Percent distribution of the subjects according to the food pattern is given in Table 1. Under food pattern, the subjects were classified into five types namely Non-vegetarian, lacto vegetarian, lacto-ovo vegetarian, ovo-vegetarian and vegetarian. Majority (61 per cent) of the subjects were lacto-vegetarian. Out of 36 per cent of the non-vegetarian diabetics, chicken was found to be the most predominant (51 per cent) and consumed once a week. The food pattern followed by the selected respondents was correlated statistically for the glycemic control and it was found that lacto vegetarian (27 per cent) had good glycemic control

between 6.1 percent to 7 per cent.

Vegetarian diets will produce very significant metabolic advantages for the prevention of treatment of diabetes and its complications (Jenkins and et.al, 2003).

Table 1

Food Pattern	n	%
Lactoveg	549	61.00
Nonveg	324	36.00
Lactoovoveg	21	2.33
veg	3	0.33
ovo-veg	2	0.22
Total	900	100



It was observed from the study, that all the subjects consumed cereals daily, while dal and pulse consumption was noted among 69 per cent only. It was interesting to note that the study found out no sprout consumption among 27 per cent due to gastric issues or difficulty in preparation. Contrary to the myth that fruits should not be consumed by diabetics, data showed 33 per cent taking either fruit or fruit juices daily (Table 2).

Greater consumption of specific whole fruits is significantly associated with a lower risk of type 2 diabetes, whereas greater consumption of fruit juices is associated with a higher risk (IsaoMuraki and et.al, 2013).

Table 2

Freq	Dal		Sprout		Green veg		GLV		Roots/Tub		Fruits		Bakery		Sweet		Eat Out	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Never	9	1.00	243	27.00	6	0.67	30	3.33	99	11.00	85	9.44	98	10.89	99	11.00	133	14.78
Daily	622	69.11	22	2.44	709	78.78	36	4.00	34	3.78	296	32.89	35	3.89	21	2.33	64	7.11
Twice Week	123	13.67	86	9.56	123	13.67	252	28.00	173	19.22	78	8.67	73	8.11	11	1.22	7	0.78
Three Week	129	14.33	90	10.00	28	3.11	168	18.67	139	15.44	109	12.11	54	6.00	11	1.22	13	1.44
Weekly	16	1.78	201	22.33	23	2.56	300	33.33	227	25.22	149	16.56	221	24.56	58	6.44	103	11.44
Fortnight	1	0.11	45	5.00	4	0.44	75	8.33	68	7.56	58	6.44	106	11.78	28	3.11	62	6.89
Occasionally	0	0.00	110	12.22	2	0.22	6	0.67	32	3.56	33	3.67	92	10.22	563	62.56	107	11.89
Monthly	0	0.00	31	3.44	3	0.33	18	2.00	34	3.78	42	4.67	114	12.67	45	5.00	142	15.78
Rarely	0	0.00	72	8.00	2	0.22	15	1.67	94	10.44	50	5.56	107	11.89	64	7.11	209	23.89

On the basis of cereal consumption, the frequency distribution (Table 3) revealed majority consumed rice

(97per cent) with wheat and ragi ranking second and third choice. Higher consumption of white rice is associated with a significantly increased risk of type 2 diabetes especially in Asian population (Emily A Hu and et.al,2012). Cereal pattern consumption depicted that more than 70 per cent of the selected type 2 diabetics never used jowar or maida or bread or oats and broken wheat as a part of their food pattern even rarely also.

Table 3

Type	Rice		Wheat		Mugi		Maida		Jowar		Rice Flakes		Puff Rice		Bread		Oats		Bt Wheat	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Never	2	0.22	23	2.56	238	26.44	623	69.22	662	73.56	278	30.89	341	37.89	415	46.11	694	77.11	809	89.89
Daily	872	96.89	482	53.56	215	23.89	7	0.78	18	2.00	5	0.56	30	3.33	22	2.44	25	2.78	30	3.33
Twice Week	9	1.00	138	15.33	104	11.56	10	1.11	30	3.33	136	15.11	61	6.78	51	5.67	46	5.11	14	1.56
Three Week	7	0.78	171	19.00	93	10.33	15	1.67	20	2.22	27	3.00	30	3.33	44	4.89	27	3.00	9	1.00
Weekly	8	0.89	47	5.22	123	13.67	39	4.33	59	6.56	295	32.78	210	23.33	150	16.67	40	4.44	19	2.11
Fortnight	2	0.22	24	2.67	53	5.89	26	2.89	19	2.11	78	8.67	69	7.67	67	7.44	13	1.44	5	0.56
Occasionally	0	0.00	1	0.11	14	1.56	148	16.44	20	2.22	15	1.67	43	4.78	32	3.56	17	1.89	4	0.44
Monthly	0	0.00	13	1.44	39	4.33	16	1.78	23	2.56	46	5.11	34	3.78	54	6.00	8	0.89	1	0.11
Rarely	0	0.00	1	0.11	21	2.33	16	1.78	49	5.44	20	2.22	32	3.56	65	7.22	30	3.33	9	1.00

Sunflower oil or any other single type of refined oil was used as the cooking medium by most (84 per cent) of the diabetics. Similarly, only ghee consumption was found in 17 per cent who consumed daily. Other types of saturated fats like butter, dalda, panner and cheese was not at all consumed by most of the selected population. Pasteurized toned milk was preferred mostly where a significant 68 per cent subjects were unaware about the quantity of milk in the either form of coffee or tea consumed daily.

The association between dairy intake and incident of type 2 diabetes relates that a dietary pattern that incorporates higher low – fat dairy products may lower the risk of type 2 diabetes (Simin Liu and et.al, 2006)

The nuts and oil seed consumption pattern revealed, coconut being a staple ingredient in most (97per cent) of the south Karnataka dishes. Groundnut and Til consumption were also observed.

The data from several epidemiologic studies suggest that frequent nut and peanut butter consumption is associated with a significantly lower Cardio Vascular Disease (CVD) risk in women with type 2 diabetes. (Li Ty and et.al,2009).

It was seen that a very few subjects reported food allergy like indigestion or acidity, cold and cough with headache and nausea out of consuming certain foods like wheat, ragi, sprouts, groundnuts and with water laden fruits like grapes, oranges and guavas.

Nutritional profile through 24 hour recall method of all the subjects consisted higher carbohydrate intake than the recommended allowances, with good inclusion of protein with thoor dal, moong dal and no- vegetarian sources and with a very poor intake of vitamins and minerals.

CONCLUSION

In summary, the dietary pattern followed by the type 2 diabetics seems to be nutritionally unbalanced and inadequate to control blood sugars and to improve the overall well-being of the diabetic patients. Most impressive was that diabetics should be made aware of the variations to be included in the meal pattern. So some food based approach in the form of nutritional intervention will serve as an effective

strategy to improve the dietary habits and thereby controlling the disease.

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