ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 9, Issue, 11, pp.60982-60985, November, 2017

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

PHYSICAL ACTIVITY, LIFE STYLE AND FOOD COMSUMPTION PATTERN OF TYPE 2 DIABETES MELLITUS

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ARTICLE INFO

Article History:
Received 29th August, 2017
Received in revised form
14th September, 2017
Accepted 26th October, 2017
Published online 30th November, 2017

Key words:
Standardized prevalence
Consuming alcohol
Vitamin value,
Carbohydrate.

ABSTRACT

Background: The number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014. Diabetes is a major cause of blindness, kidney failure, heart attacks, stroke and lower limb amputation. The standardized prevalence rate for DM in the total Indian, urban and rural populations was 4.3, 5.9 and 2.7%, respectively.

Objectives: To assess physical Activity of the Diabetic Respondents; To know the lifestyle pattern of the Diabetic Respondents; and To assess the Food Consumption Pattern of the Diabetic Respondents.

Methodology: The study area was Apollo Specialty Hospital, Madurai. A total of 100 samples were selected from diabetic population. The samples were selected by adopting purposive random sampling technique. Questionnaire was used as a tool for data collection.

Result: About 35 percent of the respondents were females and 65 percent of the respondents were males. Around 31 percent, 45 percent and 24 percent of the respondents were sedentary, moderate and heavy workers. About 52 percent of the respondents had the habit of watching television. Around 56 percent of the respondents had the habit of walking. About 52 percent of the respondents had the habit of smoking and 35 percent of the respondents were consuming alcohol. Majority 93 percent of the respondents consumed parboiled rice daily, 64 percent of the respondents consumed coconut daily, 25 percent of the respondents consumed banana daily. About 40 percent of the respondents had consumed groundnut oil daily. Around 74 percent of the respondents had consumed sugar daily. The mean carbohydrate, protein, fat, calcium and vitamin value was higher and energy, Iron and fibre value was lower than the recommended dietary allowance.

Conclusion: Majority (56 %) of the respondents had the habit of walking, 16 percent of the respondents had the habit of cycling, 6 percent of the respondents had the habit of doing yoga and 22 percent of the respondents were not doing any exercise. Majority (52%) of the respondents had the habit of smoking and 35 percent of the respondents were consuming alcohol. Majority (75%) of the respondents were not following the Diabetic diet, 25% of the respondents were following the Diabetic Diet Strictly.

Citation: K. Rajapriya and Dr. S.S. Vijayanchali, 2017. "Physical Activity, Life Style And Food Comsumption Pattern Of Type 2 Diabetes Mellitus", *International Journal of Current Research*, 9, (11), 60982-60985.

INTRODUCTION

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% in 1980 to 8.5% 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 and lower limb amputation.

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In 2012, an estimated 1.5 million deaths were directly caused by diabetes and another 2.2 million deaths 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 (WHO, 2014). The prevalence of diabetes for all age-groups worldwide was estimated to be 2.8% in 2000 and 4.4% in 2030. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030. The prevalence of diabetes is higher in men than women, but there are more women with diabetes than men. The urban population in developing countries is projected to double between 2000 and 2030 (Wild *et al.*, 2004).The standardized prevalence rate

for DM in the total Indian, urban and rural populations was 4.3, 5.9 and 2.7%, respectively. The urban prevalence of DM and IGT was significantly greater than in the rural population ($P < 0.001$ in both instances). The prevalence of DM was significantly, more than that of IGT ($P < 0.001$) within both the rural and urban populations (Sadikot *et al.,* 2004). Patients with diabetes have higher mortality rates than non-diabetes regardless of sex, age can influenced. Heart diseases and stroke are the leading cause of death in these patients. Heart attack accounts it 60 percent and stroke to 25 percent of deaths in all diabetes. Kidney failure (nephropathy) is a very serious complication with occurs in diabetes. Diabetes reduces nervous function causing condition call nephropathy and 85 percent of amputations start with food ulcers, which develop in 12 percent of people with diabetes (Nelson *et al*, 2002). The dieticians plays an very important role in counselling the people about the cause of diabetes and how to control and overcome the counselling by strict diabetic diet, reduction of weight and the important of exercise and yoga. (www.diabetes.org). According to a government survey report of 2003, that people with diabetes who are overweight are at high risk of food ulcers, smokers who have a long history of diabetes for more than two years and were insulin-dependents, are at the highest risk of food ulcers. Related conditions that put people at risk include peripheral neuropathy, peripheral arterial disease, food deformation and a history of ulcers (www.diebetes.org). Worldwide surveillance of diabetes is a first necessary step to prevent and to control which is now the most urgent measures to be taken on priority basis.

Even though diet has a major role in controlling blood sugar level, it is very difficult to find out and specify dietary differences in the diabetic diet in rural and urban diabetic people (Uliyas, 1992). The best diet for diabetes is the Mediterranean diet, which provides a selection of whole and healthy diet and Research had revealed that it mostly controls blood sugar (www.who.org).The goals of diabetic diet are to achieve and maintain normal glucose level and to maintain normal blood fat level, to provide good nutrition's, and to maintain appropriate body weight (Virginia, 1990). A simple-healthy diet that can control weight is sufficient for people with Type-II diabetes. In fact study in the year 2002 revealed that a successful life style changes were more effective than Met formin, a major drug used Type-II diabetes. (Martin, 2003). A regular exercise, even a moderate intensity (such as brisk walking), improve insulin sensitivity and will play a significant role in preventing Type-II diabetes Studies had revealed that yoga helped patients Type-II diabetes to reduce their need for oral medicines (www.Diabetes.org. American Diabetic Association). The present study "Physical Activity, Life Style Pattern and Food Consumption Pattern of Type 2 Diabetes Mellitus" was undertaken with the following specific objectives.

- To assess physical Activity of the Diabetic Respondents;
- To know the lifestyle pattern of the Diabetic Respondents ; and
- To assess the Food Consumption Pattern of the Diabetic Respondents

MATERIALS AND METHODS

To achieve the objectives of the present study Apollo Specialty Hospital, Madurai was selected. A total of 100 samples were selected from indefinite diabetic population especially whoever staying more than 15days as an In-patient. The samples were selected by adopting purposive random sampling technique. They comprised of both working and non-working respondents. Questionnaire was used as a tool for data collection.

RESULTS AND DISCUSSION

Socio-Economic Status of the Respondents

About 35 percent of the respondents were females and 65 percent of the respondents were males. 21 percent of the respondents were in the age of 30-40 years, 16 percent of the respondents were in the age of 40-50 years, 33 percent of the respondents are in the age of 50-60 years, and 30% percent of the respondents were in the age of above 60 years.

Physical Activity of the Respondent

Table 1. Occupational and Leisure activity of the Respondents

Variables	No. of Respondents	Percentage
Occupational Activity		
Sedentary	31	31.0
Moderate	45	45.0
Heavy	24	24.0
Total	100	100.0
Leisure Time Activity		
Watching Television	52	52.0
Sleeping	24	24.0
Nibbling	6	6.0
Books Reading	10	10
Chatting	8	8
Total	100	100.0

Table 1 elucidates that 31 percent of the respondents are sedentary workers, 45 percent of the respondents are moderate workers and 24 percent of the respondents are heavy workers. About 52 percent of the respondents had the habit of watching television, 24 percent of the respondents had the habit of sleeping, 6 percent of the respondents had the habit of nibbling, 10 percent of the respondents had the habit of reading books and, 8 percent of the respondents had the habit of chatting in leisure time.

- According to ICMR Classification of activities based on occupation
- Sedentary (Male) –Teacher, tailor, barber, executive, shoemaker, priest, retired personnel, landlord, peon, postman, computer professional.
- Sedentary (Female) - Teacher, tailor, executive, housewife, computer professional.
- Moderate (Male)-Fisherman, basket maker, potter, goldsmith, agriculture labour, carpenter, mason, rickshawpuller, electrician, fitter, turner, welder, industrial, coolie, weaver, driver, servant.
- Moderate (Female)-Maid, coolie, basket maker, agriculture labour, beedi maker, brick maker.
- Heavy (Male) - Stone cutter, blacksmith, mineworker, wood cutter, gangman
- Heavy (Female)-Stone cutter (Srilakshmi.B, 2014)

Table 2 Portrays that 43 percent of the respondents had worked 6-8 Hrs. 52 percent of the respondents had worked for 8-10Hrs. per day and only 5 percent of the respondents had worked above 10 Hours. About 56 percent of the respondents had the habit of walking, 16 percent of the respondents had the habit of

cycling, 6 percent of the respondents had the habit of doing yoga and 22 percent of the respondents were not doing any exercise.

Table 2. Working hours of the Respondents and Nature of exercise performed by the Respondents

Variables	No. of Respondents	Percentage
Working hours		
6-8 Hours	43	43.0
8-10 Hours	52	52.0
Above 10 Hours	5	5.0
Total	100	100.0
Nature of Exercise		
Walking	56	56.0
Cycling	16	16.0
Yoga	6	6.0
No Exercise	22	22
Total	100	100.0

Lifestyle Pattern of the Respondents

Table-3 indicates that 52 percent of the respondents had the habit of smoking and 48 percent of the respondents did not have the habit of smoking. About 35 percent of the respondents were consuming alcohol and 65 percent of the respondents were not consuming alcohol. Around 73 percent of the respondents were stressed and multitasked personalities and 27 percent of the respondents were cool and calm persons.

Table 3. Habit of Smoking, Alcohol Intake and Personality type of the Respondents

Variables	No. of Respondents	Percentage
Smoking Habit		
Yes	52	52.0
No	48	48.0
Total	100	100.0
Alcohol Consumption		
Yes	35	35.0
No	65	65.0
Total	100	100.0
Personality type		
Stressed and multitasked	73	73.0
Cool and Calm	27	27.0
Total	100	100.0

Food Consumption Pattern of the Respondents

In cereal and cereal products, 93 percent of the respondents consumed parboiled rice daily, I7 percent consumed monthly once, 83 percent of the respondents consumed raw rice 15 days once, 75 percent of the respondents consumed maida weekly once. 65 percent of the responded consumed wheat weekly once. 78 percent of the respondent consumed rava 15 days once. In pulses and lequmes, 54 percent of the respondents consumed Bengal gram dhal weekly once 27 percent of the respondents consumed Bengal gram dhal once in 15 days, 54 percent of the respondents consumed Black gram dhal daily, 35 percent of the respondents consumed Black gram dhal weekly once, 65 percent of the respondents consumed green gram dhal weekly one and 50% of the respondents consumed red gram dhal weekly once. In Green Leafy Vegetables, 55 percent of the respondents consumed amaranth weekly once, 62 percent of the respondents consumed drumstick leaves weekly, 39 percent of the respondents consumed coriander leaves weekly once, 36 percent of the respondents consumed coriander leaves once in 15 days, 69 percent of the respondents consumed curry leaves weekly once, 175 consumed curry leaves daily, 60 percent of the respondents consumed mint weekly once and 72 percent consumed spinach monthly once. In Roots and Tubers, 87 percent of the respondents consumed beetroot weekly once, 76 percent consumed carrot weekly once, 60 percent consumed carrot weekly, 60% consumed potato weekly once and 91 percent of the respondents consumed yam monthly once. In Other Vegetables, 82 percent of the respondents consumed beans weekly once, 80 percent consumed brinjal weekly once, 92 percent of the respondents consumed tomato daily, 56 percent of the respondents consumed plantain weekly once, and 60 of the respondents consumed bitter guard weekly once. In Nuts and Oil seeds, 40 percent of the respondents consumed groundnut once in 15 days, 30 percent of the respondents consumed groundnut weekly once, 64 percent of the respondents consumed coconut daily, 45% of the respondents consumed cashew nut monthly once.

In Fruits, 58 percent of the respondents consumed apple weekly once, 25 percent of the respondents consumed banana daily, 30 percent of the respondents consumed banana weekly once, 66 percent of the respondents consumed citrus fruits once in 15 days and 78 percent of the respondents consumed guava monthly once. In milk and milk products, 100 percent of the respondents consumed milk daily, 55 percent of the respondents consumed curd daily, 51 percent of the respondents consumed butter milk daily, 49 percent of the respondents consumed buttermilk weekly once, 46 percent of the respondents consumed butter once in 15 days, 10 percent of the respondents never consumed skimmed milk, 48 percent of the respondents consumed ghee monthly once, 49 percent of the respondents consumed cheese monthly once. In Edible oils, 54 percent of the respondents had consumed dalda weekly once, 40 percent of the respondents had consumed groundnut oil daily, 56 percent of the respondents consumed gingelly oil weekly once, 60 percent of the respondents had consumed coconut oil weekly once, and 82 percent of the respondents had consumed refined oil daily.

Table 4. Mean value of Nutrient intake

Nutrients	Mean value	Rda	Sufficient or Deficient
Energy[Kcal]	1769.55	2875	-1105.45
Carbohydrates [gm]	315.29	200	+115.29
Protein [gm]	64.28	60	+4.28
Fat [gm]	31.78	20	+11.78
Calcium [mg]	1175.4	40	+775.4
Iron [mg]	20.89	28	-7.11
Vitamin [mg]	266.85	40	+226.85
Fibre [gm]	44.67	60	-15.33

In meat and meat products, 46 percent of the respondents consumed chicken 15 days once, 64 percent of the respondents consumed meat weekly once and 100 percent of the respondents never consumed duck and pork. In sea foods, 63 percent of the respondents had consumed fish weekly once, 47 percent of the respondents had consumed prawns weekly once, and 31 percent of the respondents had consumed crab weekly once. In sugar and sugar products, 74 percent of the respondents had consumed sugar daily and 26 percent of the respondents had never consumed sugar.

Mean Value of Nutrient Intake

In case of adult men and women, the mean energy of the selected respondents was 1769.55 [Kcal], which was lower than the recommended dietary allowance. The mean carbohydrates of selected respondents were 315.29 gm, which

is higher than the recommended dietary allowance. The mean protein of the selected respondents was 64.28 gm, which was higher than the recommended dietary allowance. The mean fat of the selected respondents was 31.75 gm, which was higher than the recommended dietary allowance. The mean calcium of selected respondents was 1175.4 mg, which as higher than the recommended dietary allowance. The mean iron of selected respondents was 20.89 mg, which was lower than the recommended dietary allowance. The mean vitamin-c of selected respondents was 266.85 gm, which was higher than the recommended dietary allowance. The mean fibre of selected respondents was 44.67 gm, which was lower than the recommended dietary allowance

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