Indian Research Journal
Vol -2 , ISSUE –III, April- 2012
ISSN No - 2230 - 7850
Available online at www.lbp.world

ORIGINAL ARTICLE

"ASSESSMENT OF NUTRITIONAL STATUS AMONG TYPE 2 DIABETICS IN BANGALORE RURAL AND URBAN AREAS"

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ABSTRACT

Type 2 diabetes is one of the major public health challenges of the 21st century, both in rural and urban population. According to WHO the occurring epidemic of diabetes is strongly related to lifestyle and economic changes. IFG and IGT are associated with obesity. Structured lifestyle intervention, aimed at increasing physical activity and producing 5–10% loss of body weight, have been demonstrated to prevent or delay the development of diabetes in people with IGT (ADA guidelines 2010). Hence, an attempt was made to compare the nutritional status among Type 2 Diabetics from Bangalore rural and urban areas. A cross sectional study was conducted with sample comprising of 200 Type 2 diabetic individuals both from rural and urban area. General information like age, gender, contact details, family income, education qualification and family medical history etc., along with physical activity was recorded using a structured questionnaire. Nutritional status was assessed by recording Anthropometry as per the standard procedures. Prevalence of over nutrition according to BMI in the Urban and Rural respondents was found to be 46 and 37 percent respectively. The inference of the statistical analysis did not have any significance and hence The BMI between Bangalore Rural and Urban Type 2 Diabetics was similar with t value 0.267.

Thus the study highlighted that the change in lifestyle has extended to rural areas, leading to the cause of obesity and related complication such as Diabetes, hence it's an alarming call and there is an urgent need for improving nutritional status by extending the awareness and diabetes education intervention programmes even among rural population.

INTRODUCTION

"Let food be your medicine and medicine your food" said Hippocrates about 2500 years ago. This aptly holds good for the present generation where mankind is ravished with diseases related to dietary irregularities and sedentary lifestyle that are taking a toll on the human race. Hence effective management of degenerative diseases which is a cause for increased mortality and morbidity is more crucial for the present.

Type 2 diabetes is one of the major public health challenges of the 21st century. According to WHO, diabetes which is proved to be a pandemic, is strongly related to very prominently prevalent sedentary lifestyle and sudden increase of upper middle class families both in urban and rural areas. WHO estimates that by 2025, there will be as many as 200–300 million type 2 diabetes cases worldwide.

A Nutrition plan for diabetes is a balanced diet structured according to the person's age, sex, physical activity, anthropometric measurements, physical condition, current diet pattern, occupation and Cultural background. This forms the core of Medical Nutritional Therapy for Diabetes Mellitus.
MNT in diabetes helps to cater to the demands of:

- Adequate nutrition.
- Maintaining normal body weight.
- To maintain and controls blood sugar levels.
- To maintain optimal blood lipid levels.
- Prevent complications without compromising on the quality of life.

When food based intervention is combined with physical activity and diabetes education, it helps in developing and maintaining a healthy weight and promoting physiological well-being .In turn, reducing the prevalence of diabetes and other degenerative diseases both from rural and urban areas. IFG and IGT are associated with obesity. Structured lifestyle intervention, aimed at increasing physical activity and producing 5–10% loss of body weight, have been demonstrated to prevent or delay the development of diabetes in people with IGT from ADA guidelines (1).
The present study is an attempt in this direction, with the following objectives:

- Selecting Type 2 Diabetic patients with and without complications and elicit information on their socio-economic status, Family history, lifestyle patterns and Dietary intake.
- Elicit their Anthropometric data.
- Comparing, Nutritional Status from the recorded data between the rural and urban Diabetic samples.

Scope of the Study: The Study progresses further by helping the investigator to implement intervention programme accordingly, to draw effective conclusion.

Limitation of the Study: Size of the sample is comparative less, for comparing the Nutritional Status among total Bangalore rural and urban diabetic population.

METHODOLOGY

A cross sectional study was conducted with sample comprising of 200 Type 2 diabetic individuals both from Bangalore rural and urban area.

Eliciting general information from the selected Type 2 Diabetics.

General information like age, gender, contact details, family income, education qualification and family medical history along with physical activity was recorded using a structured questionnaire.

Nutritional status was assessed by recording Anthropometry, Biochemical and Dietary recall as per the standard procedures, through direct personal interview.

Anthropometry measurements including height, weight waist circumference were measured and recorded as per guidelines suggested by Jellifee (2).Body Mass Index was used for the classification of samples into various grades of nutritional status.

Quantification of Mean Daily Food and Nutrient Intake:

The food consumption pattern and amount consumed by the patients were studied by 24-hour Dietary Recall Method (3). Food consumption was measured using standard measuring cups and spoons. Nutrient composition of the diet was calculated in reference to Food comparison table and recommended dietary allowance was used (4).

Suitable statistical test (Student't' test) was used to find the significance of Nutritional status among Type 2 diabetics between Bangalore rural and urban area.

RESULTS AND DISCUSSION

Selected Type 2 Diabetics belonged to the age group of 35 to 65 years with a mean of 54.72 years for urban and 53.89 years for rural.

Table 1- Socio-economic Status for the selected Type 2 Diabetics:

	Urban (n=107)	Rural (n=104)
Gender		
• Male	67(62.6%)	64(61.5%)
• Female	40(37.4%)	40(38.5%)
Marital Status		
• Married	106(99.1%)	104(100%)
• UnMarried	1(0.9%)	0(0%)
Education level		
None	5(4.7%)	20(18.7%)
Primary	22(20.6%)	27(25.2%)
High School	15(14%)	28(26.9%)
Upto 12th	15(14%)	17(16.3%)
Graduate	39(36.4%)	11(10.3%)
PG	8(7.5%)	0(0%)
Professional	3(2.8%)	1(0.9%)
Total household Income		
• <800	0(0%)	13(12.5%)
• 801-5000	1(0.9%)	51(49%)
• 5001-10000	11(10.3%)	28(26.9%)
• 10001-15000	36(33.6%)	6(5.8%)
• 15001-25000	27(25.2%)	5(4.8%)
• 25001-35000	20(18.7%)	1(1%)
• >35000	12(11.2%)	0(0%)

Table 1 shows the distribution of patients according to their Gender, Marital Status, Total household income, Educational level and Occupational level.

Perusal of Table 1 show that there were equal number of female respondents from both urban and rural areas where as male respondents were 62.6 and 61.5 percentage from urban and rural respectively. There was a vast difference in the education level wherein 96.3 percentage of the urban respondents where educated but about 18.7 percentage of the rural respondents were not educated. About 33.6 percentage of the urban respondent's total household income per month was between 10001-15000 rupees and majority (49 percent) of rural respondent's total income was between 801-5000 rupees.

Fig 1 Occupational level between Urban and rural respondents

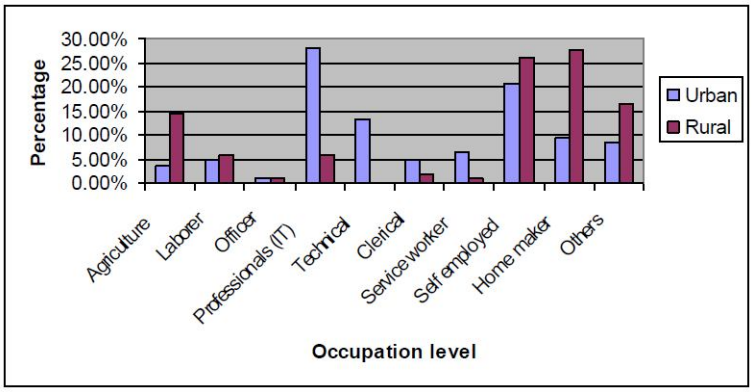


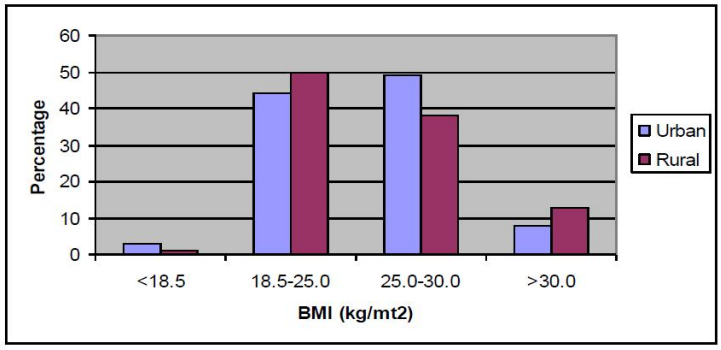
Fig 1 depicts the Occupational level between Urban and rural respondents, where majority of urban respondents were IT professions and Self-employed inturn rural respondents were self-employed and Homemakers.

Table 2 - Family History of the selected Diabetes Patients

Family history	Urban (n=107)	Rural (n=104)
Yes	71(66.4%)	31(29.8%)
No	32(29.9%)	71(68.3%)
Don't know	4(3.7%)	3(2.9%)

Family history (Table 2) was the chief contributory factor of Type 2 Diabetes in Urban respondents, with 66.4 percent having either or both parents or second degree relative as diabetics, while 29.8 percent of the rural respondents had either their parents or second degree relative as diabetic. These findings are in accordance with Ramachandra et al (5) who stated that familial aggregation is an important independent risk factor for Type 2 Diabetes Mellitus .

Fig 2- BMI of the Urban and Rural Respondent's



Anthropometric indices based on weight and height is presented in Fig 2, Mean BMI of urban respondents was found to be 25.22±6.55 for Urban Diabetics and 25.20±4.78 for Rural Diabetics. A major Percentage of (41.1) Urban and (48.1) Rural respondents belong to normal category. Prevalence of over nutrition according to BMI in the Urban and Rural respondents was found to be 46 and 37 percent respectively. Minimal percentages of Urban and Rural respondents (7.5 and 12.5) were in the category of Obese Grade II and III respectively. The inference of the statistical analysis did not have any

significance and hence The BMI between Bangalore Rural and Urban Type 2 Diabetics was similar with t value 0.267.

CONCLUSION & RECOMENDATION

Thus the study highlighted that the change in lifestyle has extended to rural areas, leading to the cause of obesity inturn to Diabetes, which may further lead to complication such as Cardiovascular Disorder. Hence it's an alarming call that there is an urgent need for improving nutritional status of rural and urban population by undertaking programmes of community awareness and providing diabetes education intervention to improve their food and nutrient intake. Thus by maintaining normal body weight, Maintaining optimal plasma glucose, Maintaining optimal blood lipid levels which may Prevents complications without compromising on the quality of life.

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