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A study on gender disparity in nutritional status among diabetes and non-diabetes in a rural community of Muzaffarpur city of Bihar

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Abstract

Diabetes mellitus is a chronic metabolic condition caused by the tissues' reduced or complete inability to use glucose. In India, it has afflicted over 50 million individuals, and its incidence is growing in both urban and rural areas men and women. As a result, this study is being carried out to report the gender disparity in nutritional status with the objectives of comparing the gender disparity in nutritional status in the middle age group of 30-50 years in rural areas and evaluating the various socio-demographic factors influencing the gender disparity.

A community based cross-sectional study was conducted in Muzaffarpur city area of Bihar. A total of 112 middle age group adult (diabetic and non diabetic) were examined and were interviewed. Female adult were more obese than male. Although the frequency of falling ill is the same between both the genders, the treatment was given more importance to female than male. The overall prevalence of disease was low in our study area. The majority of the adult suffered with blood pressure, diabetes, thyroid. Significant differentiation was observed between the male and female adults. 59.82 percent of respondents are nuclear family and 40.17 percent belong to joint family. Out of 112 respondents, 52.67 percent are graduate or above and 10.71 percent have middle class education level. Only 3.57 percent are illiterate. The majority of respondents were within the WHO reference data's normal range. Male respondents were thought to be better and more well-nourished than female respondents. 22.72 percent female and 62.5 percent male were having normal BMI, but a higher percentage of female respondents were severely obese grade 1.

Keywords: Diabetes mellitus, BMI, gender disparity, nutritional status

Introduction

India has the highest number of diabetics in the world, with 409 million people, and this figure is expected to increase to 699 million by 2025. Although genetic factors and physical inactivity have been found to play a role in Asian Indians' people are more susceptible to type 2 diabetes mellitus diabetes, little is known regarding the role of specific dietary components in this ethnic group's type 2 diabetes risk.

Asian Indians are at a significantly higher risk of diabetes and early coronary artery disease. They also eat a high-carbohydrate diet on a regular basis. This study is the first to investigate the association between total carbohydrate intake (amount) and type 2 diabetes in a Chennai-based community (Reddy and Yusuf, 1998) [5]. According to a recent study, approximately one-third of the rural population was at risk of acquiring diabetes mellitus, according to the Indian Diabetes Risk Score (IDRS) (Poornima *et al.*, 2016) [4].

Various studies have been conducted over the last few decades in an attempt to assess the prevalence of diabetes in India. The majority of these studies were modest and focused on a single hamlet, village, or city. Because of the extent and diversity of India's geography, as well as the heterogeneity of the Asian Indian population, disease burden estimates based on regional research do not accurately reflect the illness burden in the country as a whole. Furthermore, because these earlier studies were conducted at different times and with varied methodology and sampling designs, calculating a nationwide estimate of diabetes prevalence is nearly difficult. Even the few multicenter studies that have been carried out cannot be considered representative of India as a whole. (Sadikot *et al.*, 2004) [6].

Aims and Objectives

1. To compare the nutritional status between diabetes and non diabetes respondent.
2. To assess the different socio-demographic factors influencing the gender disparity.

Research Methodology

Study Design: Community based cross-sectional study.

Study Area: The present study has been carried out in Musahri block of Muzaffarpur district.

Study Population: middle age group 30-50 years.

Inclusion criteria: Middle age group (30-50 years) with Type -2 moderate Diabetes Mellitus patients and non diabetic were included in study.

Exclusion criteria: Those who are taking long term drugs were excluded from the study. Pregnant and lactating women will also be excluded from the study.

Sample Size: 112 respondents were selected using purposive random sampling.

Data Collection Tools: Pre-designed and pre-tested schedule, weighing scale and measuring tape.

Data Collection Technique: House to house visit, examination and interview method.

Anthropometric assessment

This technique will be concerned with the variations of physical dimensions, the gross composition and degree of nutrition. Hence, anthropometric measurements were useful criteria for assessing nutritional status. Measurements technique used are: - height, weight and BMI (Joshi, 2010) [1].

Height

Height was measured in centimeter with the help of a measuring tape. The participants were asked to remove their footwear (shoes, slippers, sandals, etc.), the participants were told to stand with feet together, heels against the wall, knees

straight, to look straight ahead and not tilt their head up. It was made sure eyes were the same level as the ears (Frankfurt plane). Three consecutive readings were taken and the mean value were recorded (Srilakshmi, 2010) [7].

Weight

The weighing scale with maximum capacity of 120 kg and the minimum division of 0.5kg were to weight all the subjects. The scale was adjusted to zero .The respondents were make to stand erect on the weighing scale, with minimum clothes, without foot wear, not leaning against or holding anything and the weight were record in kilograms (kg). The measurement were making to the nearest 0.1 kilogram. Three consecutive reading were taken for all the subjects and the mean value will be recorded the scale were adjust to zero after each measurement (Srilakshmi, 2010) [7].

The WHO Growth Charts (2004) were used to classify the respondent as underweight, normal, overweight, pre-obese, obese. The following range of BMI indicates the health status of an individual;

The following range of BMI indicates the health status of an individual

BMI (kg/m ²)	Indicator
<18.5	Underweight
18.5-24.9	Normal
≥25.01	Overweight
25.0- 29.9	Pre-obese
≥30	Obese
30.0-34.9	Obese class 1
35-39.9	Obese class 2
≥40	Obese class 3

Findings

Out of 112 respondents 39.2 percent of male and 60.71 percent of female respondents. 59.82 percent of respondents were nuclear family and 40.17 percent of respondents were belongs to joint family.

Table 1: Distribution of selected respondents according to the demographic factor.

Factors	Total (n=112)	
	N	Percentage
Gender		
MALE	44	39.2
FEMALE	68	60.71
Types of family		
Joint family	45	40.17
Nuclear family	67	59.82
Education		
Graduate or above	59	52.67
Intermediate or diploma	32	28.57
higher secondary	6	5.38
Middle	12	10.71
Primary	-	-
Illiterate	4	3.57
Types of Occupation		
Professionals/ business	31	27.67
Clerks	17	15.17
Skilled Workers	25	22.32
Unemployed	39	34.8
Monthly family income		
≥52,734	14	12.5
26,355-52,733	19	16.96
19,759-26,354	34	30.35
13,161-19,758	24	21.4
7,887-13,160	18	16.07
2,641-7,886	3	2.67

Education Level: Out of 112 respondents 52.67 percent respondent were graduate or above, 28.57 percent of respondents were done intermediate or diploma. 10.71 percent of respondent were have middle class education level. 5.38 respondents were upto 10.71 percent and only 3.57 percent of respondents were illiterate.

Occupation level: Out of total respondents 30.35 percent of respondents were monthly family income is Rs.19,759-Rs.26,354. 21.4 percent of respondents were earn Rs. 13,161-19,758 in a month. 12.5 percent respondents were family monthly incomes were above 52,734 Rs. and only 2.67 percent were monthly income below Rs. 7,886.

Table 2: Distribution of the respondents according to their BMI

Particulars	Category	Males= 44		Female= 68		Total (%)
		N=44	%	N=68	%	
BMI (wt(kg)/ht ² (m)						
<18.5	Underweight	0	0	2	9.09	1.7
18.6 -24.9	Normal	28	62.5	34	22.72	55.35
25.0-29.9	Obese grade 1	18	37.5	19	54.54	33.0
>30	Obese grade 2	4	3.57	13	13.63	15.17

Table 2 shows that out of the 112 respondents, 1.7 percent females were underweight, 15.17 percent female and 3.57 percent male were having grade 2 obesity, 37.5 percent male and 54.54 percent female were having grade 1 obesity. However, a higher percentage of female respondents were severely obese grade 1 than male respondents. 22.72 percent female and 62.5 percent male were having normal BMI. The majority of respondents were within the WHO reference data's normal range. Male respondents were thought to be better and well-nourished than female respondents. This is similar to other research conducted by many researchers in various locations of India, including as Olatona *et al.*, There was a statistically significant association between nutritional status and sex; women had lower prevalence of normal weight and higher prevalence of obesity than men.

Conclusion

According to the findings of the current study diabetes is a significant and complex ailment, even in rural populations. There is a dearth of awareness of the situation, particularly among rural residents. Due to a lack of information and funds, many of them are not checked for diabetes. IDRS is the most successful and cost-efficient screening approach for early detection of diabetes risk and disease prevention. Female were more obese than male. 59.82 percent of respondents are nuclear family and 40.17 percent belong to joint family. Out of 112 respondents, 52.67 percent are graduate or above and 10.71 percent have middle class education level. Only 3.57 percent are illiterate. The majority of respondents were within the WHO reference data's normal range. Male respondents were thought to be better and more well-nourished than female respondents. 22.72 percent female and 62.5 percent male were having normal BMI, but a higher percentage of female respondents were severely obese grade 1. The significant differences were found between the diabetic and non-diabetic selected male and female respondents.

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