IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e- ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 7, Issue 4 Ver. IV (Jul.-Aug. 2018), PP 59-66
www.iosrjournals.org

Comparison of socio-demographic and nutritional status between male and female diabeticsattending to District level diabetic center: Assessment by anthropometric measurement with special reference to socioeconomic status.

HasanMahfuz Reza [1]*, Md. RezaulKarim[2], Md. AbdusSamad[2] and Tanvir Ahmad [3]

[1](Department of Applied Nutrition and Food Technology, Islamic University, Kushtia, Bangladesh.)
[2] (Professor, Department of Applied Nutrition and Food Technology, Islamic University, Kushtia, Bangladesh.)
[3] (Assistant professor, Department of Nutrition and Food Technology, Jessore University of Science and Technology, Jessore, Bangladesh.)
Corresponding author: HasanMahfuz Reza

Abstract: *Diabetes mellitus is a major health problem which in people of all ages and gender reaching epidemic proportions in Bangladesh. In some sectors of society, more than 10% of people have diabetes. The main objective of this study was to compare the socio-demographic and nutritional status between male and female diabetic patients which were assessed by anthropometric measurement with special reference to socio-economic status. This cross-sectional study was conducted in diabetes mellitus patients who presented to the OPD in three referral diabetic centers in Kushtia district, Bangladesh from August 2016 to July 2017. A total of 282 (male were 144 and female were 138) patients were included in the study. Direct method of nutritional assessment including anthropometric and biochemical measurement was carried out. Socio economic data were also collected. The result shows that among the respondents who had no formal education; more were female 39.9% (n=55). In respect to male most of the female patients (89.9%) were unemployed. As more as of the studied male patients (29.9%) were from upper socio-economic status. The females had higher BMI than the males. The mean BMI of female was 25.83±4.46 and male was 23.32±3.47. Out of 37.6% (n=106) overweight (BMI 25.0-29.9) diabetic patients more were female 56.6% (n=60) and among them 58 (96.7%) were unemployed.The mean blood hemoglobin level was 12.85±1.48g/dl in male and in female was 12.11±1.36g/dl. Study shows that male diabetic patients had more (36.8%) high systolic blood pressure than that of female (21.0%). So, female with lower educational status and unemployment are associated with malnutrition. Unemployed housewives represented to have both extremes of nutritional status- under nutrition and over nutrition.*

Keywords: *Diabetes, Malnutrition, Anthropometric measurement, Body Mass Index, Socio-economic status.*

Date of Submission: 16-07-2018 Date of acceptance: 30-07-2018

I. Introduction

Diabetes mellitus is a chronic condition that arises when the pancreas fails to produce enough insulin or when the body cannot use the insulin produced effectively[1]. It is an increasing threat to the world's health service. Formerly described as a "disease of affluence", it has now become evident that, owing to demographic changes, cultural transition and population ageing, diabetes is now also a "developing countries problem"[2]. The number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014. Diabetes prevalence has been rising more rapidly in middle and low-income countries. In 2015, an estimated 1.6 million deaths were directly caused by diabetes. WHO projects that diabetes will be the seventh leading cause of death in 2030[3].In the past, diabetes was considered a single condition. However, it is now clear that diabetes is a heterogeneous metabolic condition caused by many different mechanisms. Diabetes is now categorized based on differences in cause, natural history and clinical characteristics[4]. Malnutrition is still a devastating problem in certain parts of the world although proportion and absolute number of chronically under-nourished people have declined. Under-nutrition remains as a serious problem among poor families and of under-developed nations, resulting from consumption of poor diet over a long period of time[5].Protein energy malnutrition has been a common health problem of the third world[6].Malnutrition has many adverse consequences. It is oftenargued that a malnourished is mentally and physically fatigued. He or she lacks in curiosity and is irresponsive to environmental situation. He is also frequently attacked by illness leading to higher absenteeism which is

considered as another cause for poor performance[7].A survey of nutritional status should show the relationship between food and nutrients, their use in the body and general health. It may be good, fair or poor, depending on the body ability to utilize these[8]. Nutritional assessment is the process whereby the state of nutritional health of an individual or group of individuals is determined. Nutritional status is commonly assessed by anthropometric measurement, clinical examinations for ascertaining nutritional deficiencies and also biochemical assessment[9].In the present context, it is more important to assess the nutritional status of diabetes patients. As such the present study was undertaken to compare the socio-demographic and nutritional status between male and female diabetic patients which were assessed by anthropometric measurement with special reference to socio-economic status on selected Diabetic centers in Kushtia district, Bangladesh.

II. Material and Methods

his cross-sectional study was carried out on patients of out-patient department of three referral diabetic centers, Kushtia, Bangladesh from August 2016 to July 2017. A total 282 diabetic subject (both male and female) were for in this study.

Study Design: Comparative cross-sectional study.

Study Location: The out-patient department based study was carried out at three referral diabetic centers named Kushtia Diabetic Shomity, Bheramara Diabetic Shomity and Diabetic ShomityKumarkhali, Kushtia, Bangladesh.

Study Duration: August 2016 to July 2017.

Sample size: 282 diabetic patients.

Subjects and selection method: This observational study was carried out to compare the socio-demographic and nutritional status between male and female diabetic patients which were assessed by anthropometric measurement with special reference to socio-economic status from three diabetic centers, Kushtia during the period from August 2016 to July 2017. Total 282 patients from both sexes were selected for the study by using Simple Random Sampling Technique.

Inclusion criteria: All diabetic patients from out-patient departments of the three diabetic centers with the following criteria participated in the study.

1. Having fasting blood sugar of (7.0mml/L) 126mg/dl and above.
2. Require insulin or oral hypoglycemic agents or both for the control of blood sugar.

Procedure methodology:

After written informed consent was obtained, a well-designed questionnaire was used to collect the data of the recruited patients. The questionnaire included socio-demographic characteristics such as age, gender, education, occupation, height, weight, marriage,physical activity and lifestyle habits like smoking, clinical and biochemistry laboratory investigations such as blood hemoglobin level, fasting bloodglucose, blood glucose two hours after breakfast, serum creatnin, total cholesterol, HDL and LDL cholesterol levels, and TGs.

Anthropometric assessment:

Anthropometrics measurements for height, weight, hip and waist circumference were taken. Weight was taken with light cloths and without shoes by a modern digital bathroom scales placed on a flat surface. The weight was recorded to the nearest 0.1kg. Height of the patient was measured using a height measure calibrated in centimeter (cm). The subjects were measured without shoes, with standing fully erect on a flat surface. The height was taken to the nearest 0.1cm.Waist girth was measured by placing a plastic dressmaker's tape horizontally midway between the lower border of the ribs and iliac crest on the mid –axillary's line. The measurement was recorded at the nearest 0.1cm. Waist circumference greater than 102 cm in men and 88 cm in women are associated with an increased risk of metabolic complications[10].Hip circumference was measured at the greatest protrusion of the buttocks and at the level of greater trochanter and symphysis pubis horizontally. The measurement was recorded at the nearest 0.1cm. The waist hip ratio was derived by dividing waist circumference by the hip circumference. Men with a ratio of 0.95 or greater and women with a ratio of 0.8 or greater were regarded as a high risk of obesity-related health problems[11].

Body Mass Index (B.M.I)

BMI was calculated by measuring the weight of the patients and divided by the height.

$$BMI = \frac{\text{Weight in kg}}{\text{Height in m}^2}$$

BMI as an indicator of nutritional status

BMI <18.5	Under weight
BMI 18.5 – 24.9	Normal weight
BMI 25.0 – 29.9	Over weight
BMI ≥30.0	Obesity

Source: WHO, (2000).

Biochemical assessment: Blood samples were taken from each patient for the estimation of blood glucose, hemoglobin, and serumcreatinin and lipid profile. The estimation was performed following the new WHO diagnostic criteria[12].

Statistical Analysis: Data were checked, entered and analyzed using the computer program Statistical Package for Social Sciences (SPSS) version 22. The statistical analyses include frequencies and mean ± SD. For all analyses, *p* value <0.05 was considered statistically significant.

III. Result and Discussion

Table no 1shows the percentage distribution of demographic characteristics of male and female diabetic patients in Kushtia district.About 4.2% male and 12.3% female were within the age range of 30 years and below. About 32.6% male and 23.9% female subjects were within the age range of 51 to 60 years. So, it is found that the prevalence of diabetes of female subjects was more within the age range of 50 years or below and that of male was above 50 years of age. Study shows that more male subjects (52.1%) were from rural area whereas more female subjects (52.9%) were from urban area. About 24.3% of male and 31.9% of female had primary education. Again about 19.4% and 22.9% male subject had secondary and graduate education whereas 8.7% and 9.4% female had secondary and graduate education respectively. About 95.8% of male subject and 93.5% of female subject were married. About 87.5% of male and 88.4% of female subject were Muslim. About 52.1% of male and 49.3% female subject had 4 to 6 family members.

Table no 1: Shows distribution of demographic characteristics of male and female diabetic patients

Characteristics : Age range (years)	Male	Female	Total
< 31	6 (4.2%)	17 (12.3%)	23 (8.2%)
31 – 40	17 (11.8%)	37 (26.8%)	54 (19.1%)
41 – 50	34 (23.6%)	40 (29.0%)	74 (26.2%)
51 – 60	47 (32.6%)	33 (23.9%)	80 (28.4%)
> 60	40 (27.8%)	11 (8.0%)	51 (18.1%)
Total	144 (100%)	138 (100%)	282 (100%)
Mean age	52.61±11.82	44.26±11.93	48.52±12.57
Place of residence			
Urban	69 (47.9%)	73 (52.9%)	142 (50.4%)
Rural	75 (52.1%)	65 (47.1%)	140 (49.6%)
Total	144 (100%)	138 (100%)	282 (100%)
Educational background			
No formal education	29 (20.1%)	55 (39.9%)	84 (29.8%)
Primary school	35 (24.3%)	44 (31.9%)	79 (28.0%)
Secondary school	28 (19.4%)	12 (8.7%)	40 (14.2%)
Intermediate school	19 (13.2%)	14 (10.1%)	33 (11.7%)
Graduate and above	33 (22.9%)	13 (9.4%)	46 (16.3%)
Total	144 (100%)	138 (100%)	282 (100%)
Marital status			
Unmarried	2 (1.4%)	1 (0.7%)	3 (1.1%)
Married	138 (95.8%)	129 (93.5%)	267 (94.7%)
Widow	4 (2.8%)	6 (4.3%)	10 (3.5%)
Divorced	0 (0.0%)	2 (1.4%)	2 (0.7%)
Total	144 (100%)	138 (100%)	282 (100%)

Religion			
Islam	126 (87.5%)	122 (88.4%)	248 (87.9%)
Hinduism	16 (11.1%)	16 (11.6%)	32 (11.3%)
Christianity	2 (1.4%)	0 (0.0%)	2 (0.7%)
Total	144 (100%)	138 (100%)	282 (100%)
No of household members			
≤ 3	58 (40.3%)	65 (47.1%)	123 (43.6%)
4 – 6	75 (52.1%)	68 (49.3%)	143 (50.7%)
> 6	11 (7.6%)	5 (3.6%)	16 (5.7%)
Total	144 (100%)	138 (100%)	282 (100%)

Table no2 presents the percentage distribution of socio-economic characteristics of male and female diabetic patients. Only 1.4% of male patients were unemployed and most of the female patients 89.9% were unemployed or house wife. About 11.8% of male and 0.7% of female patients were retired or pensioner. About 29.2% of male and 18.1% of female families' monthly income were more than 19000 BDT. Again 51.4% of male and 47.8% of female families' monthly expenditure was more than 12000 BDT. About 29.9% of male and 18.1% of female participants were upper socio-economic status whereas 11.1% of male and 2.9% of female participants were lower socio-economic status.

Tableno 2: Shows distribution of socio-economic profile of male and female diabetic patients

Characteristics	Male	Female	Total
Occupation			
Unemployed	2 (1.4%)	124 (89.9%)	126 (44.7%)
Student	1 (0.7%)	0 (0.0%)	1 (0.4%)
Farmer	34 (23.6%)	0 (0.0%)	34 (12.1%)
Trader	55 (38.2%)	1 (0.7%)	56 (19.9%)
Junior civil servant	14 (9.7%)	7 (5.1%)	21 (7.4%)
Senior civil servant	18 (12.5%)	5 (3.6%)	23 (8.2%)
Retire/ Pensioner	17 (11.8%)	1 (0.7%)	18 (6.4%)
Others	3 (2.1%)	0 (0.0)	3 (1.1%)
Total	144 (100%)	138 (100%)	282 (100%)
Monthly household income in Taka (BDT)			
< 4000	15 (10.4%)	4 (2.9%)	19 (6.7%)
4000 – 9000	38 (26.4%)	36 (26.1%)	74 (26.2%)
9001 – 14000	20 (13.9%)	44 (31.9%)	64 (22.7%)
14001 – 19000	29 (20.1%)	29 (21.0%)	58 (20.6%)
> 19000	42 (29.2%)	25 (18.1%)	67 (23.8%)
Total	144 (100%)	138 (100%)	282 (100%)
Monthly household expenditure in Taka (BDT)			
< 3000	0 (0.0%)	1 (0.7%)	1 (0.4%)
3000 – 6000	16 (11.1%)	3 (2.2%)	19 (6.7%)
6001 – 9000	37 (25.7%)	39 (28.3%)	76 (27.0%)
9001 – 12000	17 (11.8%)	29 (21.0%)	46 (16.3%)
> 12000	74 (51.4%)	66 (47.8%)	140 (49.6%)
Total	144 (100%)	138 (100%)	282 (100%)
Socio-economic status			
Upper	43 (29.9%)	25 (18.1%)	68 (24.1%)
Upper – middle	28 (19.4%)	29 (21.0%)	57 (20.2%)
Middle	21 (14.6%)	43 (31.2%)	64 (22.7%)
Upper – lower	36 (25.0%)	37 (26.8%)	73 (25.9%)
Lower	16 (11.1%)	4 (2.9%)	20 (7.1%)
Total	144 (100%)	138 (100%)	282 (100%)

Table no 3 presents the percentage distribution of biophysical characteristics of male and female diabetic patients in Kushtia district. About 36.8% and 38.9% of the diabetic male had high systolic and diastolic blood pressure, whereas 21.0% and 31.9% of the diabetic female had high systolic and diastolic blood pressure. So the result shows that male diabetic patients were more prevalent for high systolic and diastolic blood pressure than that of female. About 63.9% of the male subjects and 59.4% of the female subjects had experience of regular physical exercise.

Table no 3: Shows percentage distribution of biophysical characteristics of male and female diabetic patients

Characteristics	Male	Female
Systolic blood pressure		
= 140 normal	91 (63.2%)	109 (79.0%)
> 140 high	53 (36.8%)	29 (21.0%)
Total	144 (100%)	138 (100%)
Diastolic blood pressure		
= 90 normal	88 (61.1%)	94 (68.1%)
> 90 high	56 (38.9%)	44 (31.9%)
Total	144 (100%)	138 (100%)
Exercise		
Yes	92 (63.9%)	82 (59.4%)
No	52 (36.1%)	56 (40.6%)
Total	144 (100%)	138 (100%)

Table no 4 shows anthropometric characteristics of the patients. The mean BMI of the males was 23.32±3.47kg/m2 and that of the females was 25.83±4.46 kg/m2. The BMI value for the females was significantly (p‹0.05) higher than that of males. A total of 37.6% (n=106) of the patients were overweight, 8.9% (n=25) were obese, 4.6% (n=13) were underweight and 48.9% (n=138) were normal.

Table no 4: Shows distribution of mean body mass index (BMI) of male and female diabetic patients

BMI ranges (kg/m^2)	Variables					
…..…….. Sex……..…….…..….....				.....Total….	p-value	
	N	Male	N	Female	N	(%) Mean
‹18.5 (underweight)	9	16.30 ± 1.98	4	18.05 ± 0.38	13	4.6%
18.5-24.9 (Normal)	86	21.92 ± 1.67	52	22.02 ± 1.93	138	48.9%
25-29.9 (Overweight)	46	26.71 ± 1.24	60	27.00 ± 1.46	106	37.6%
>30 (Obesity)	3	32.37 ± 1.17	22	33.07 ± 2.92	25	8.9%
Mean	144	23.32 ± 3.47	138	25.83 ± 4.46	282	100.0%
24.55 ± 4.18 .000						

Table no 5 presents the cross tabulation of BMI of subjects with sex. Among 13 diabetics who were underweight, 69.2% were males and 30.8% were females. Among those who were of normal weight 62.3% were males and 37.7% were females. So, more male diabetic patients had normal weight than female. Among the 25 diabetics who were obese 12.0% were males while 88.0% were females. As more as 56.6% of female were overweight, among the overweight category while 43.4% male were overweight.

Table no 5: Shows cross tabulation of BMI with sex of the respondents (Diabetic Patients)

Variables: Sex	< 18.5	18.5 – 24.9	25.0 – 29.9	> 30.0	Total
Males	9 (69.2%)	86 (62.3%)	46 (43.4%)	3 (12.0%)	144 (51.1%)
Female	4 (30.8%)	52 (37.7%)	60 (56.6%)	22 (88.0%)	138 (48.9%)
Total	13 (100%)	138 (100%)	106 (100%)	25 (100%)	282 (100%)

Table no 6 shows the distribution of mean waist circumference and waist/hip ratio of males and females. There were no differences (p>0.05) in the waist circumference between the males (91.09±9.08cm) and females

(88.11±8.34cm). The mean waist/hip ratio for males and females were 0.93±0.03 and 0.88±0.05 respectively. 45.8% of the male diabetic patients had waist/hip ratio above 0.95 and 68.1% of female diabetic patients had value above 0.88.

Table no 6: Shows distribution of mean waist circumference (cm) and waist/hip ratio of male and female diabetic patients

Variables	Male	Female	P. value
Waist circumference			
Normal (cm)	90.46 ± 8.72	80.37 ± 6.06	
Percentage (%)	95.8	43.5	
Obese (cm)	105.50 ± 3.73	94.06 ± 3.61	
Percentage (%)	4.2	56.5	
Mean	91.09 ± 9.08	88.11 ± 8.34	
Percentage (%)	100.0	100.0	.000
Waist/hip ratio			
Normal (cm)	.91 ± .03	.83 ± .02	
Percentage (%)	54.2	31.9	
Obese (cm)	.95 ± .03	.91 ± .03	
Percentage (%)	45.8	68.1	
Mean	.93 ± .03	.88 ± .05	
Percentage (%)	100.0	100.0	.000

Table no 7 presents the effect of occupation of diabetic patients on their nutritional status. Unemployed respondents showed overweight more. About 96.7% unemployed femalerespondents were overweight and 81.8% were obese.

Table no7: Shows effect of occupational status of male and female diabetic patients on their nutritional status

Variables	< 18.5	18.5 – 24.9	25.0 – 29.9	> 30.0	Total
Male					
Unemployed	0 (0.0%)	1 (1.2%)	1 (2.2%)	0 (0.0%)	2 (1.4%)
Student	0 (0.0%)	1 (1.2%)	0 (0.0%)	0 (0.0%)	1 (0.7%)
Farmer	6 (66.7%)	22 (25.6%)	5 (10.9%)	1 (33.3%)	34 (23.6%)
Trader	3 (33.3%)	28 (32.6%)	22 (47.8%)	2 (66.7%)	55 (38.2%)
Junior civil servant	0 (0.0%)	8 (9.3%)	6 (13.0%)	0 (0.0%)	14 (9.7%)
Senior civil servant	0 (0.0%)	12 (14.0%)	6 (13.0%)	0 (0.0%)	18 (12.5%)
Retire/ Pensioner	0 (0.0%)	12 (14.0%)	5 (10.9%)	0 (0.0%)	17 (11.8%)
Others	0 (0.0%)	2 (2.3%)	1 (2.2%)	0 (0.0%)	3 (2.1%)
Total	9 (100%)	86 (100%)	46 (100%)	3 (100%)	144 (100%)
Female					
Unemployed	4 (100%)	44 (84.6%)	58 (96.7%)	18 (81.8%)	124 (89.9%)
Student	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Farmer	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Trader	0 (0.0%)	1 (1.9%)	0 (0.0%)	0 (0.0%)	1 (0.7%)
Junior civil servant	0 (0.0%)	4 (7.7%)	0 (0.0%)	3 (13.7%)	7 (5.1%)
Senior civil servant	0 (0.0%)	3 (5.8%)	2 (3.3%)	0 (0.0%)	5 (3.6%)
Retire/ Pensioner	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (4.5%)	1 (0.7%)
Others	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Total	4 (100%)	52 (100%)	60 (100%)	22 (100%)	138 (100%)

Table no 8 presents the effect of socio-economic status of diabetic patients on their nutritional status. But no underweight of male and female diabetics with high family income could be detected. Percentage of overweight male diabetics (30.4%) was doubled than that of female (15.0%) in upper socio-economic status. About 33.3% obese male and 40.9% obese female patients were from upper socio-economic status.

Table no8: Shows effect of socio-economic status of male and female diabetic patients on their nutritional status

Variable	< 18.5	18.5 – 24.9	25.0-29.9	> 30.0	Total
Male					
Upper	(0.0%)	28 (32.6%)	14 (30.4%)	1 (33.3%)	43 (29.9%)
Upper-middle	0 (0.0%)	18 (20.9%)	10 (21.7%)	0 (0.0%)	28 (19.4%)

Middle	3 (33.3%)	7 (8.1%)	10 (21.7%)	1 (33.3%)	21 (14.6%)
Upper-lower	5 (55.6%)	22 (25.6%)	8 (17.4%)	1 (33.3%)	36 (25.0%)
Lower	1 (11.1%)	11 (12.8%)	4 (8.7%)	0 (0.0%)	16 (11.1%)
Total	9 (100%)	86 (100%)	46 (100%)	3 (100%)	144 (100%)
Female					
Upper	0 (0.0%)	7 (13.5%)	9 (15.0%)	9 (40.9%)	25 (18.1%)
Upper-middle	2 (50.0%)	10(19.2%)	13 (21.7%)	4 (18.2%)	29 (21.0%)
Middle	1 (25.0%)	17 (32.7%)	21 (35.0%)	4 (18.2%)	43 (31.2%)
Upper-lower	1 (25.0%)	15 (28.8%)	16 (26.7%)	5 (22.7%)	37 (26.8%)
Lower	0 (0.0%)	3 (5.8%)	1 (1.7%)	0 (0.0%)	4 (2.9%)
Total	4 (100%)	52 (100%)	60 (100%)	22 (100%)	138 (100%)

Table no 9 depicts biochemical indices of the diabetic patients. The mean blood hemoglobin level was 12.49±1.47g/dl, in which male hemoglobin level was 12.85±1.48g/dl and of female was 12.11±1.36g/dl. The mean fasting blood glucose level of male was 8.69 ± 1.48 mmol/L and of female was 9.04 ± 1.84 mmol/L. Blood glucose level two hours after breakfast of male was 13.86 ± 2.92 mmol/L and of female was 14.01 ± 2.84. The mean serum creatinine level of the male patient was 1.17±1.05mg/dl and of female was 1.26±1.05mg/dl. The mean serum total cholesterol level of male patients was 198.49 ± 51.87mg/dl and of female was 195.92 ± 45.96mg/dl.

Tableno 9: Mean biochemical indices of the respondents (Diabetic Patients)

Biochemical indices	Male	Female	Male & female Combined	P. value	Normal range
Blood hemoglobin level (g/dl)	12.85 ± 1.48	12.11 ± 1.36	12.49 ± 1.47	.000	M: 14-18, F: 11.5-16.5
Fasting blood glucose (mmol/L)	8.69 ± 1.48	9.04 ± 1.84	8.86 ± 1.67	.080	< 7.0
Bl. Glucose 2 hours after breakfast	13.86 ± 2.92	14.01 ± 2.84	13.94 ± 2.88	.673	< 11.1
Serum creatinin (mg/dl)	1.17 ± 1.05	1.26 ± 1.05	1.22 ± 1.05	.480	0.70 – 1.20
Total cholesterol (mg/dl)	198.49 ± 51.87	195.92 ± 45.96	197.23 ± 48.99	.660	Up to 200
LDL (mg/dl)	119.66 ± 48.34	114.65 ± 40.45	117.21 ± 44.65	.347	< 150
HDL (mg/dl)	35.31 ± 5.53	34.59 ± 5.21	34.96 ± 5.38	.263	M: >45, F: >35
Triglycerides (mg/dl)	217.57 ± 70.95	233.37 ± 76.63	225.30 ± 74.08	.073	50 - 150

HDL = High density lipoprotein
LDL = Low density lipoprotein

IV. Conclusion

Based on the findings of the study, it could be concluded thatthe prevalence of diabetes of female subjects was more within the age range of 50 years or below and that of male was above 50 years of age. More female subjects had no formal education or had primary education whereas more male subjects had secondary, intermediate and graduate education. Male diabetic patients were more prevalent for high systolic and diastolic blood pressure than that of female. The BMI value for the females was significantly ($p<0.05$) higher than that of males. Female patients were more overweight and obese than male patients.Unemployed respondents showed overweight more. About 96.7% unemployed female respondents were overweight and 81.8% were obese.Percentage of overweight male diabetics (30.4%) was doubled than that of female (15.0%) in upper socio-economic status.

References

[1]. Alva M. 2000. "Diabetes and lifestyle in the New Millennium.World Diabetes day presentation."
[2]. King H, Rewers M. Diabetes in adults is now a third world problem, Bulletin of the World Health Organization, 1991, 69(6): 643-648.
[3]. Projections of global mortality and burden of disease from 2002 to 2030. Mathers CD, Loncar D, PLoS Med, 2006, 3(11):e442.
[4]. Alberti KG NM, Zimmet P.Z, (1998). Definition, diagnosis and classification of diabetes mellitus and its complications part 1: diagnosis and classification of diabetes mellitus provisional report of a WHO consultation. Diabetes Med. 15: 539 – 553.
[5]. Awan JA: Food and Nutrition. Published by Moon Plaza.Cheniot Bazar, pp 5-7, 1997.
[6]. Khan AZ, Singh NL, Hassan SB, Sinta SN, Zaheer M: Anthropometric measurements in rural school children. J R Soc Health, 11:184-186, 1990
[7]. Berg A. The nutrition Factor. 7th ed. The Brookings institute; Massachusettes:1969.p45

[8]. Overt JC. Community Nutrition. 5th ed. John Wiley Sons Inc; Canada: 1980. p15-24.
[9]. Committee on Goals of Education for Dietetics. Goals of the Lifetime Education of the Dietitian. J. Am. Diet. Assoc. 1969;54: 92.
[10]. Gibney M., Macdonald IA., Roche HM., (2004). Nutrition and Metabolism.Blackwell Publishing Company 332.
[11]. Gordon Edin, Eric Golanty, (2009). Health and wellness.p 140.
[12]. The Expert Committee on the diagnosis and classification of diabetes mellitus (1997) Report of the Expert Committee on the diagnosis and classification of diabetes mellitus. Diabetes Care 20:1183 – 1197.

"A Study to Assess the Effectiveness of Progressive Muscle Relaxation Therapy on Stress among Staff Nurses Working in Critical Care Unit In Selected Hospital sat Varanasi city" HasanMahfuz Reza"." IOSR Journal of Nursing and Health Science (IOSR-JNHS) , vol. 7, no.4 , 2018, pp. 59-66.