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**A comparative study on the knowledge, attitude and risk perception regarding complications of type-2 diabetes mellitus between male and female diabetic patients attending diabetic clinics in selected hospital of West Bengal, India**

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**Abstract**

Diabetes, a major health problem has shaken quite a huge population of India. This present study was conducted to assess the knowledge, attitude and risk perception regarding complications of Type-2 Diabetes mellitus between male and female Diabetic patients attending Diabetic Clinics of Medical College & Hospital, Kolkata, West Bengal. Conceptual framework of the study was based on Health Belief Model. Comparative survey design was adopted for the study. 160 samples selected by non-probability purposive sampling technique. The results revealed that 83.75% male & 82.50% female patients had average knowledge. Majority of respondents (58% male and 61% female ) had favourable attitude. Only 22.50% male and 30% female had good risk perception. There was statistically significant relationship between knowledge and attitude [ $r(158) = 0.202^*$ ], knowledge and risk perception [ $r(158) = 0.317^*$ ] & attitude and risk perception [ $r(158) = 0.23^*$ ] of diabetes complication at 0.05 level of significance. No significant difference was found between male and female diabetic patients regarding knowledge, attitude and risk perception. Significant association found between knowledge with education [ $\chi^2_{df(1)} = 18.44^*$ ], and attitude with education [ $\chi^2_{df(1)} = 12.33^*$ ] and risk perception with duration of disease [ $\chi^2_{df(1)} = 16.682^*$ ]. Hence the result emphasized on necessity of health education for improving the knowledge of diabetes patients so that they can develop favourable attitude and perceive the risk of diabetes complications.

**Keywords:** Attitude, knowledge, risk perception, Type-2 Diabetes mellitus.

**Introduction**

In the last few decades Diabetes Mellitus has emerged as a major public health problem globally. Diabetes being a major health problem has shaken quite a huge population of World as well as in India leading to premature death from

heart attack, stroke, kidney disease, nerve damages & eye problems. Changes in human behaviour and lifestyle over the last century has resulted in a dramatic increase in the incidence of diabetes worldwide.

The prevalence of diabetes for all age-groups worldwide was estimated to be 2.8% in 2007 and 4.4% in 2030. The total number of people with diabetes is projected to rise from 171 million in 2007 to 366 million in 2030. The prevalence of diabetes is higher in men than women. The urban population in developing countries is projected to double between 2007 and 2030. Data regarding diabetes complications and diabetes cost provided in National Diabetes Fact Sheet 2011 are as follows, In 2008 heart disease was noted on 68% of diabetes related death certificates among people aged 65years or older. Adults with diabetes have heart disease death rates about 2-4 times higher than adults without diabetes and stroke was noted on 16% of diabetes related death certificates among people aged 65years or older. The risk is 2-4 times higher among people with diabetes (Diabetes fact sheet). Diabetes was a leading cause of kidney failure, accounting 44% of new cases in 2008 in United States. A total of 2, 02,290 people with end-stage kidney disease due to diabetes were living on chronic dialysis or with a kidney transplantation in United States (Diabetes Statistics-American Diabetes Association). Diabetes increases the risk for many serious health problems. Diabetes mellitus is the leading cause of blindness between ages 20-74 years. The gravity of the problem is that individuals with diabetes are 25times more likely to become blind. End stage renal disease is the leading cause of diabetes mellitus related morbidity (Prevalence of diabetes in the world, 2016).

But the appropriate treatment & recommended lifestyle changes help to prevent or delay the onset of complications. The majority of diabetic patients can significantly reduce the chances of developing long term complications by improving self-care activities. For that, they need adequate knowledge so that they can develop good attitudes to prevent the complications. It is also important for diabetic patients to have good perception of risk for maintaining the healthy life style and reducing the

chances of complications development. Majority of diabetic patients are unaware of diabetic complications. Thus the biggest challenges for health care providers today is addressing the knowledge, attitudes and perception of risk among diabetic patients of getting the complications of diabetes to limit disability. Standing at this threshold of the second decade of 21st century, there has been an immediacy to stop diabetic complications more meticulously. So this was thought to be the high time to explore this situation through a comparative survey among male & female and hence the study is undertaken.

### **Methods and Materials**

In present study Comparative survey design was selected. The objectives of this study was to assess the knowledge, attitude and risk perception of male and female diabetic patients and to explore the relationship between knowledge & attitude, attitude & risk perception and knowledge & risk perception and also compare the knowledge, attitude and risk perception between male and female diabetic patients and also establish association of knowledge, attitude and risk perception with selected demographic variables. 160 male and female type-2 Diabetes mellitus patients who attending diabetic clinics of Medical college & Hospital, Kolkata during the data collection period were selected as per sampling criteria by non-probability purposive sampling technique. Ethical permission was taken from Institutional Ethical Committee. Permission was taken from Principal, College of Nursing, Medical College and Hospital. Formal administrative permission was taken from DME, DHS & Jt. DHS (Nursing) of West Bengal and the Principal, MSVP, HOD of Endocrinology department and Nursing Superintendent of Medical College & Hospital, Kolkata - 700073, West Bengal, India. Informed consent was taken from each participant. Self-introduction was given to the subject and established rapport with some casual talk.

Separate code number was given to each subject. Individually data was collected. First demographic data was collected by interviewing technique. Structured knowledge questionnaire regarding knowledge of Type-2 Diabetes Mellitus complication was applied by using self-reporting technique. Paper & pencil was given to participants and asked them to fill the MCQ according to their choices. Then interviewing was done for collecting data regarding attitude and risk perceptions of Type-2 Diabetes Mellitus complication through Structured interview schedule. Data were statistically analysed using both descriptive (Frequency and percentage distribution) and inferential statistics (correlation coefficient, 't'-test, chi-square test).

## **Results**

Maximum of the patients (45% male and 55% female) were belonged to the age group of 40- 49 years, 14% male and only 4% female belongs to the age group of 60-69 years and only 1% male are 70 years and above (Fig. 1), Similar no of male and female diabetic patients (50%). Maximum of the patients (38% male and 35% female) had secondary level of education (Fig. 2). Most of the patient's (85% male & 84% female) source of information was hospital and health personnel (Fig. 3). 60% male and 56.25% female had been diagnosed with diabetes within 1- 5 years (Fig. 4).

Here most of the respondents had average knowledge and 8.75% male & 3.75% female had poor knowledge and 7.5% male & 13.75% female had good knowledge (Fig. 5). Knowledge was much higher in the area of diagnosis, sign and symptoms and lowest in the area of risk factors & treatment (Fig. 6). Majority of the respondents had favourable attitude & 42% male and 39% female had unfavourable attitude (Fig. 7). Attitude was comparatively higher in the area of dietary habits i.e., for male 83.8% and for female 92.5% that meant maximum patients had strongly positive attitude and lowest in the area of meeting the

need of family support i.e., 58.75% for male & 63% for female (Fig. 8 and Table 1). Majority of the respondents had moderate risk perception that was 57.5% male and 61.25% female. Among male 22.5% and 30% female had good risk perception. 20% male and 8.75% female had poor risk perception (Fig. 9). Risk perception was comparatively much higher in the area of nephropathy i.e., 87.5% for male and 92.81% for female that mean high risk perception regarding nephropathy was more and lowest in depression i. e., 49% for male & 55.31% for female that mean high risk perception regarding depression was less (Fig. 10 and Table 2).

There was significant relationship between knowledge and attitude of type 2 diabetes complication [rdf (158) = 0.202\*] and knowledge and risk perception [rdf (158) = 0.317\*] and attitude and risk perception of type-2 diabetes complication [rdf (158) = 0.23\*] at 0.05 level of significance (Table 3). There was no significant difference between male and female diabetic patients regarding knowledge, attitude and risk perception of type-2 diabetes complication [t-df(158) = 0.74 ; 0.89 ; 1.95, P>0.05] (Table 4). Significant association was found only between knowledge with education [ $\chi^2$ df (1) = 18.44\*] and attitude with education [ $\chi^2$ df (1) =12.33\*] and risk perception with duration of disease [ $\chi^2$ df (2) =16.682\* , P<0.05] (Table 5 & 6).

## **Discussion**

Most of the diabetes patients had average knowledge, majority of respondents had favourable attitude and moderate risk perception regarding complications of type-2 diabetes mellitus. Diabetes patients who have good knowledge level, they have favourable attitude for preventing diabetes complications and diabetes patients who have good knowledge level, they have good risk perception regarding prevention of diabetes complications. Diabetes patients who have favourable attitude, they have also good risk

Table 1. Showing the relationship between knowledge and attitudes, knowledge and risk perception , attitude and risk perception regarding complications of type-2 Diabetes Mellitus among diabetic patients.

Variable	Mean score	r
Knowledge	7.025	0.202*
Attitude	22.75	
Knowledge	7.025	0.317*
Risk perception	34.93	
Attitude	22.75	0.23*
Risk perception	34.93	

df (158) = 0.159 p < 0.05 (\* Significant)

Table 2. Showing comparison of knowledge, attitude and risk perception score regarding type-2 diabetes complications among male & female diabetic patients.

Area	Diabetic patient	Mean	MD	SD	SEMD	t - Value
Knowledge Score	Male	6.93	0.2	1.73	0.27	0.74
	Female	7.13		1.78		
Attitude Score	Male	22.55	0.41	2.87	0.46	0.89
	Female	22.96		2.92		
Risk perception Score	Male	33.94	1.99	6.92	1.02	1.95
	Female	35.93		5.92		

df (158) =1.96 p > (0.05)

Table 3. Association of knowledge, attitude of type 2 Diabetes mellitus complications with selected demographic variables.

Area	Variables	Below median	Above Median	Chi Square( $\chi^2$ )
Knowledge Score with selected demographic variables	<u>Age</u>			
	Below 50 years	47	62	0.054
	50years and above	21	30	
	<u>Education</u>			
	H.S and above	21	60	18.44*
	Primary and secondary	47	32	
	<u>Duration of disease</u>			
	5 years and below	50	72	0.483
Above 5 years	18	20		

<b>Attitude Score with selected demographic variables</b>	<b>Age</b>				
	Below 50 years	39	70		3.328
	50years and above	26	25		
	<b>Education</b>				
	H.S and above	22	59		12.33*
	Primary and secondary	43	36		
<b>Duration of disease</b>					
5 years and below	49	73		0.045	
Above 5 years	16	22			

$\chi^2$  df (1) = 3.84 p < 0.05 (\*significant)

**Table 4. Association of risk perception regarding type 2 Diabetes mellitus complications with selected demographic variables.**

Area	Variables	Good	Moderate	Poor	Chi Square( $\chi^2$ )	
<b>Risk perception Score with selected demographic variables</b>	<b>Age</b>					
	Below 50 years	30	67	12		
	50years and above	12	28	11	3.158	
	<b>Education</b>					
	H.S and above	22	51	8		
	Primary and secondary	20	44	15	2.717	
<b>Duration of disease</b>						
5 years and below	31	75	16			
Above 5 years	11	20	7	16.682*		

$\chi^2$  df(2) = 5.99 p < 0.05 (\*significant)

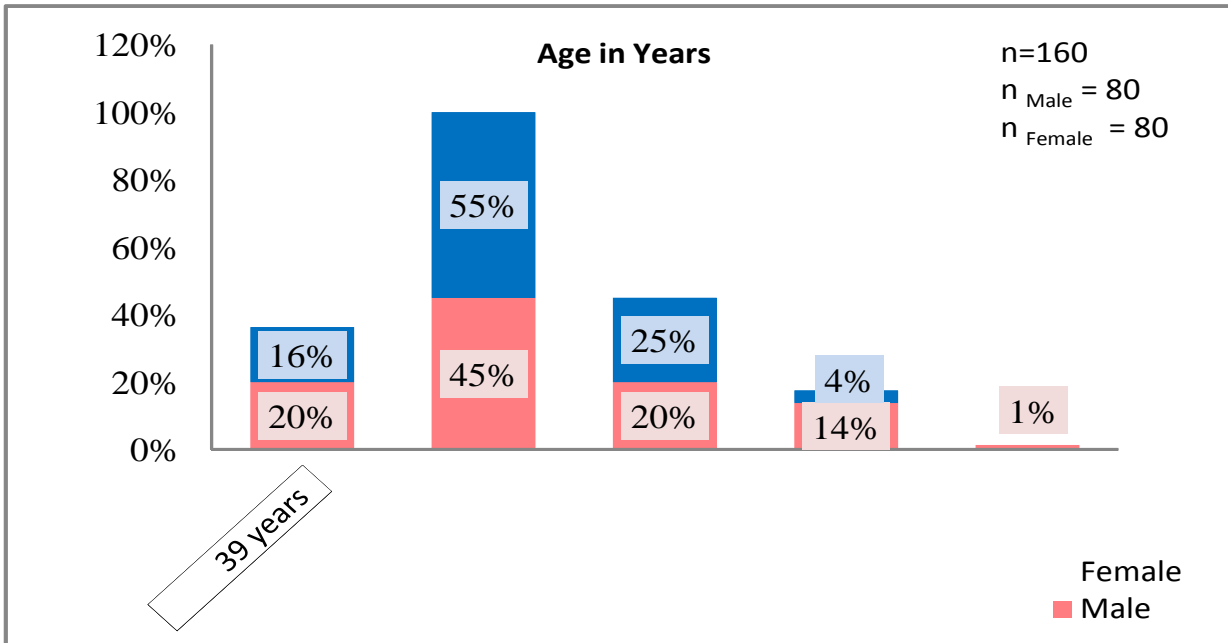


Fig. 1. Stacked column diagram shows percentage distribution of diabetic patients according to age in years.

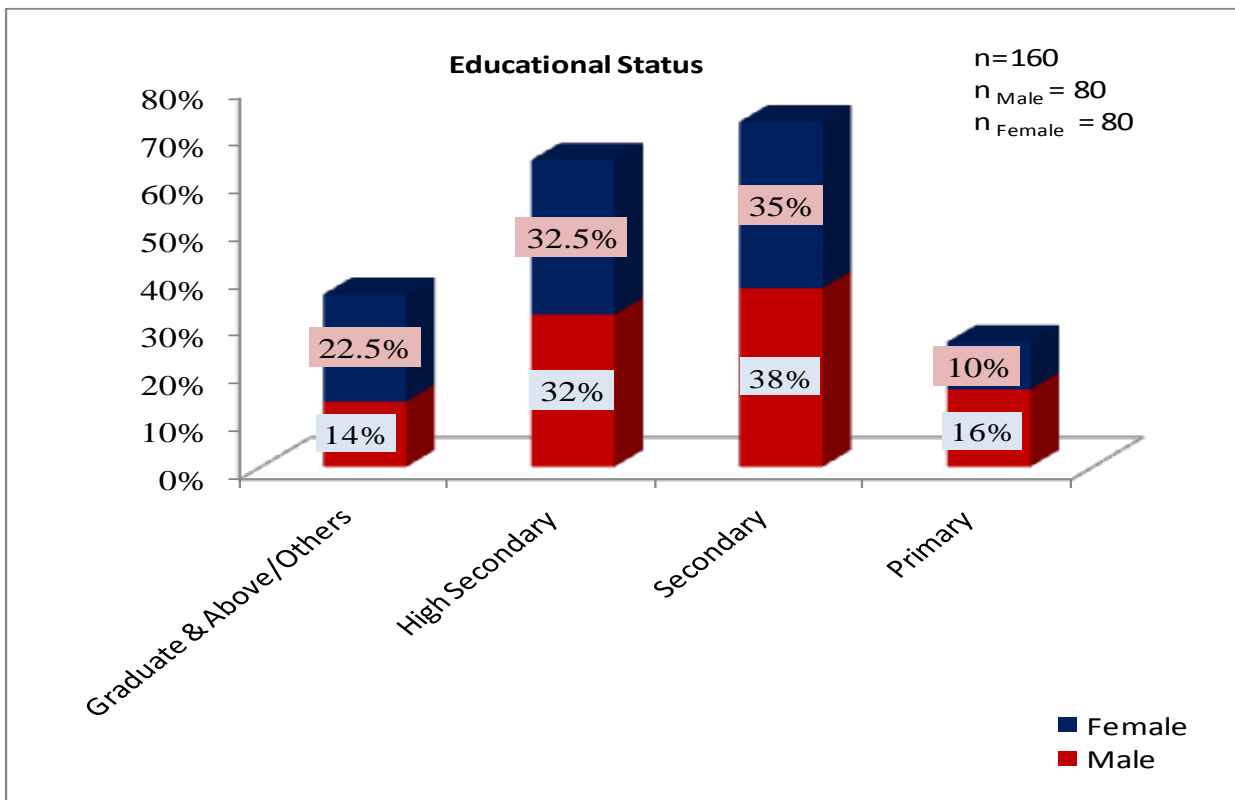


Fig. 2. Stacked column diagram shows percentage distribution of diabetic patients according to educational status.

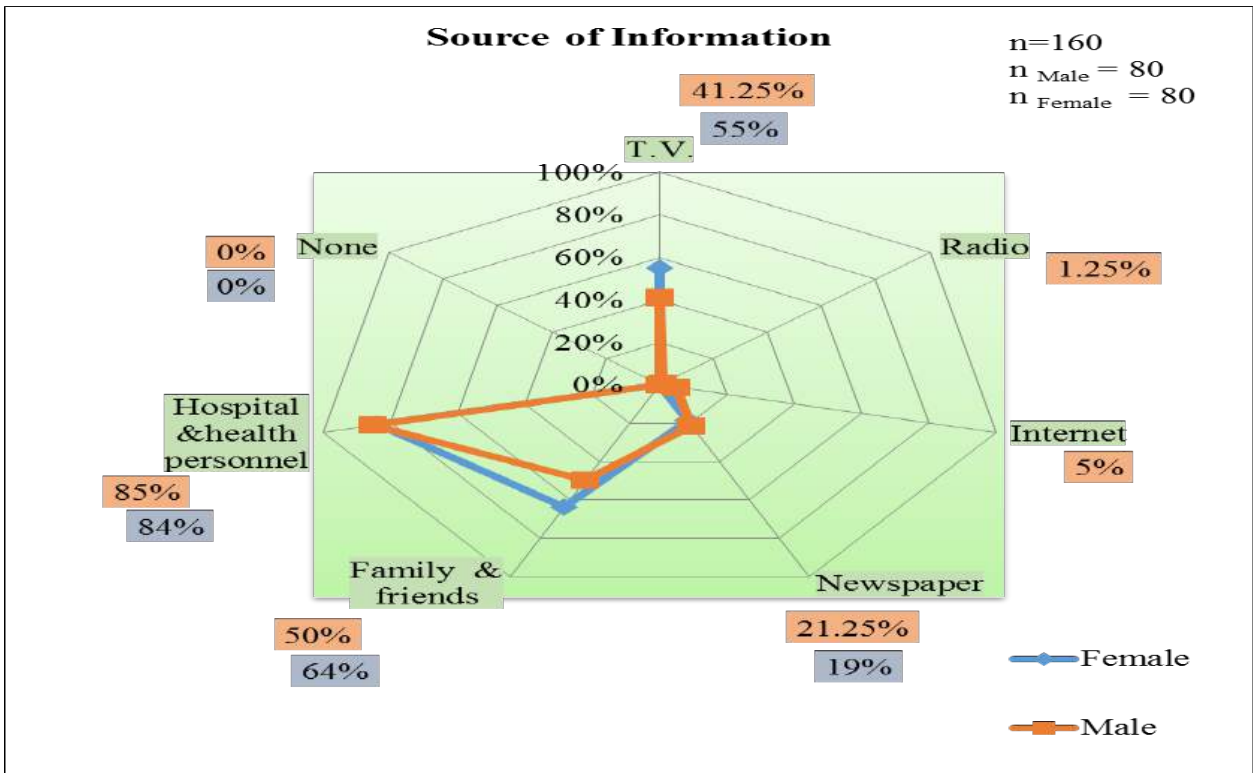


Fig. 3. Radar diagram showing percentage distribution of male & female diabetic patients according to source of information. (Single subject may have multiple source of information)

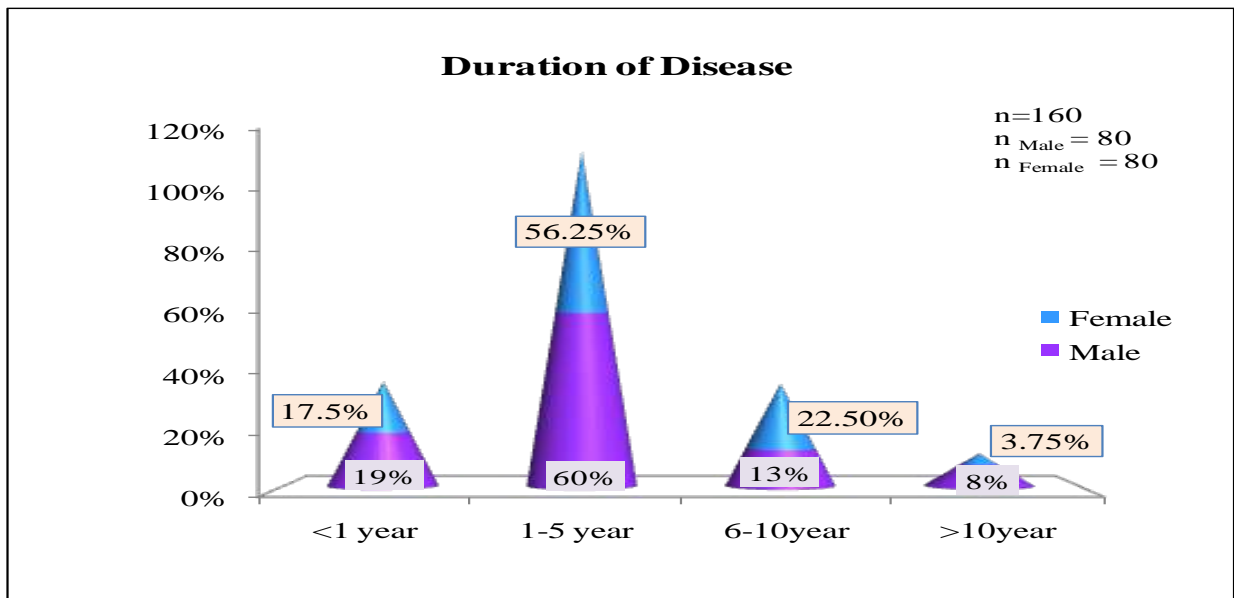


Fig. 4 : Staked cone diagram shows percentage distribution of diabetic patients.

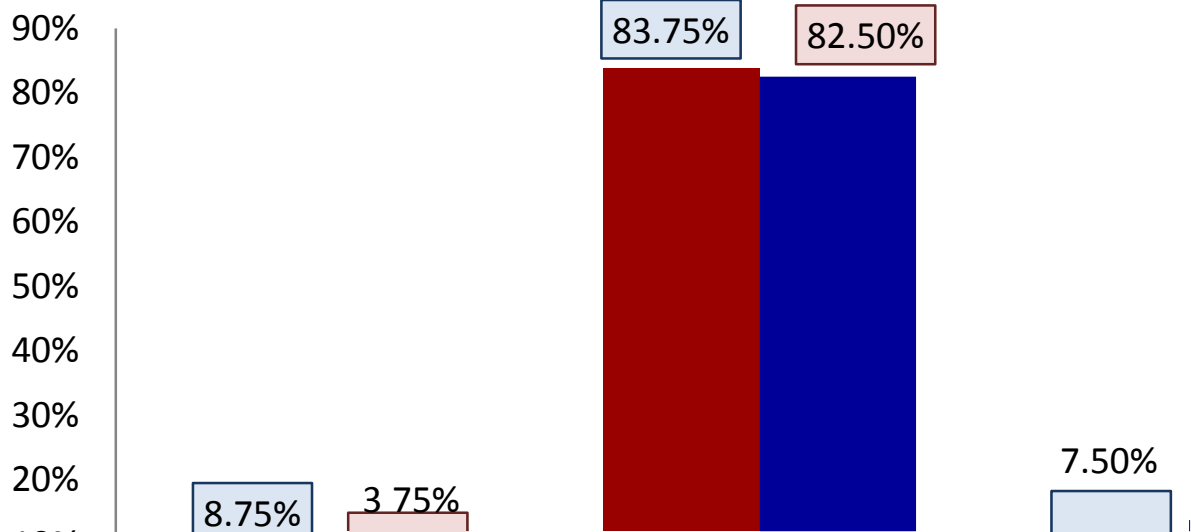


Fig. 5. Column diagram shows percentage distribution of male & female diabetic patients according to knowledge.

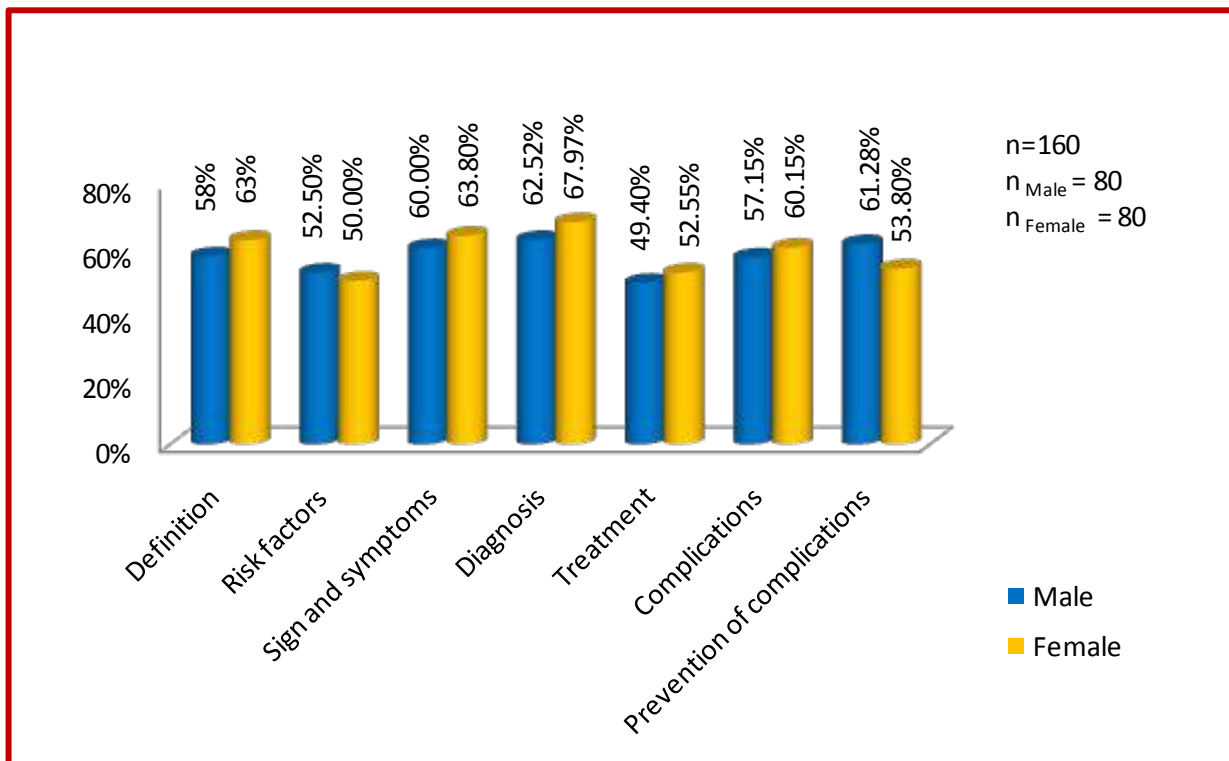


Fig. 6. Cylindrical bar diagram shows area wise mean percentage distribution of knowledge score among male & female diabetic patients.



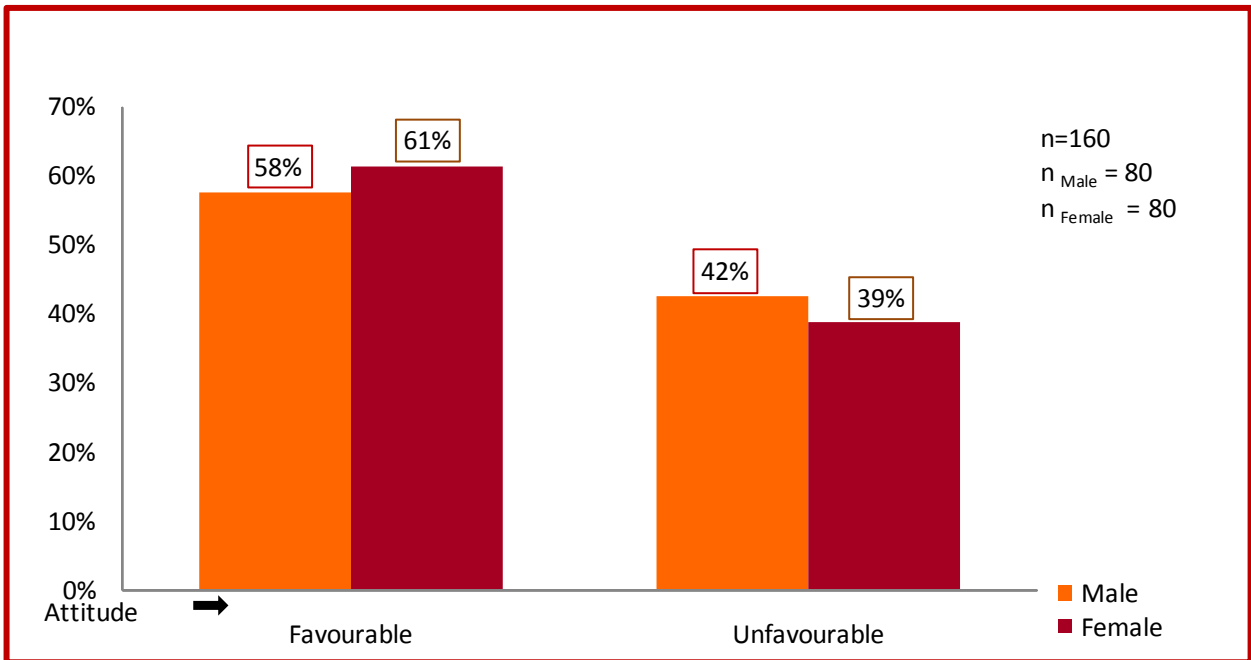


Fig. 7. Column diagram shows percentage distribution of male & female diabetic patients according to attitude.

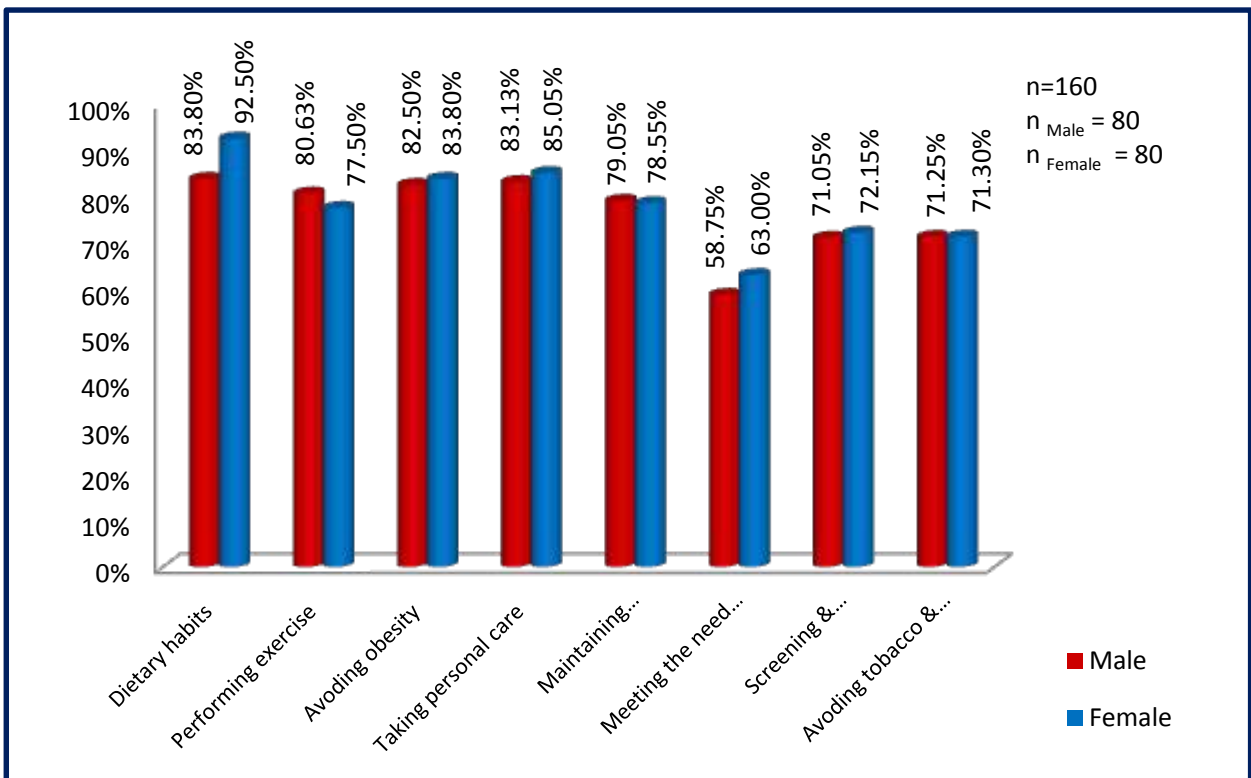


Fig. 8. Cylindrical bar diagram shows area wise mean percentage distribution of attitudes score among diabetic patients.

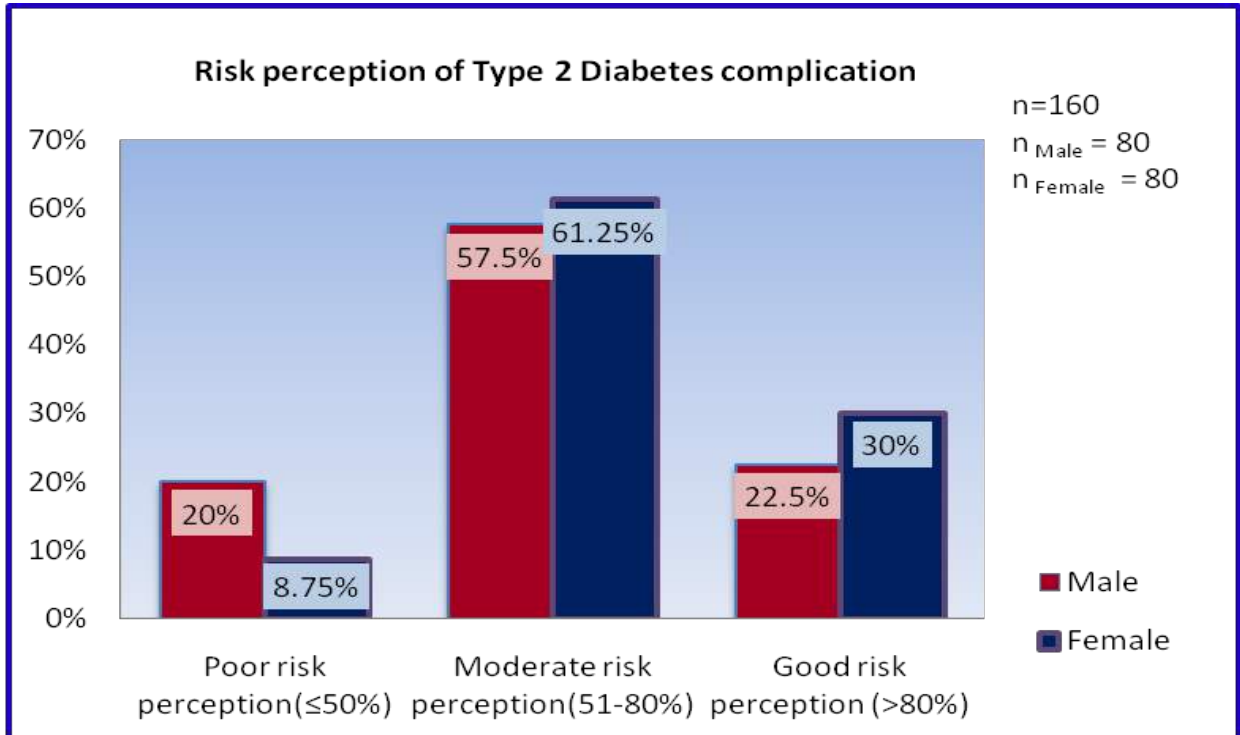


Fig. 9. Column diagram shows percentage distribution of male & female diabetic patients according to risk perception.

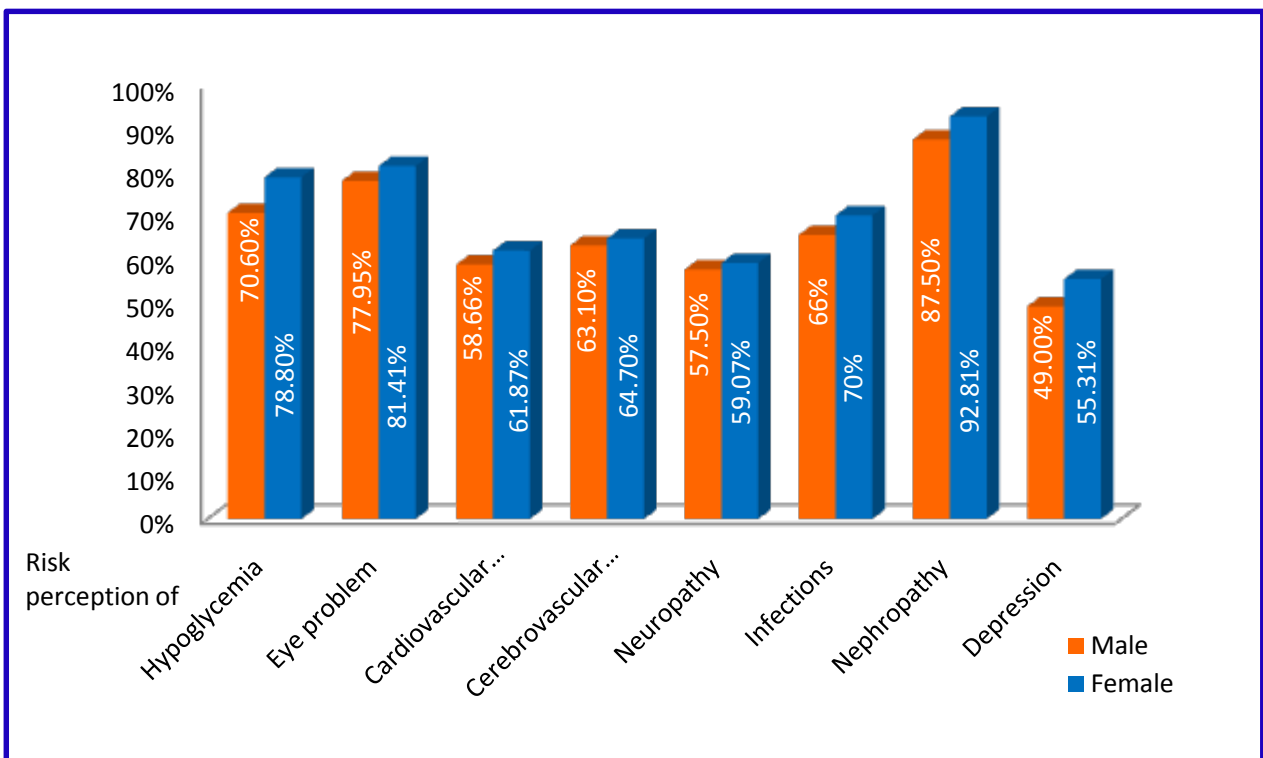


Fig. 10. Bar diagram shows area wise mean percentage distribution of risk perception score among male and female diabetic patients.

perception regarding prevention of diabetes complications. Present study supported by the study on Vision risk perception in older African Americans with diabetes conducted by Collymore et al., (2013). Subjects were grouped according to perceived vision risk low (42%), moderate (33.7%), and high (24%) risk. Vision risk perception was not related with education. In present study also 77.95% male and 81.41% female had risk perception regarding eye problem. Among them 39.4% male & 43.75% female had high, 32.5% male and 37.5% female had moderate, 25.63% male & 17.5% female had slight or low and 2.5% male and 1.25% female had no risk perception regarding eye problem. Here also education was not significantly associated with risk perception but duration of disease was significantly associated with risk perception. Present study is also supported the study awareness and attitude of diabetic patients on diabetic eye complications in port Harcourt, Nigeria conducted by Nathaniel and Adio (2015) where 128 (56.9%) were aware that diabetes could affect the eye while 97 (43.1%) were not aware. There was no gender specific significant difference ( $p = 0.195$ ). Age and educational status significantly affected their attitude ( $p < 0.005$ ). The duration of diabetes did not have significant impact on the level of attitude of the patients ( $p = 0.066$ ) (Nathaniel and Adio (2015). Here is also no gender specific significant difference ( $t < 1.95$ ) regarding knowledge, attitude and risk perception of type-2 diabetes complications. Educational status was significantly associated with attitudes of type-2 diabetes complications but duration of disease was not associated with attitude. Knowledge, attitude and risk perception regarding type-2 diabetes complications were almost same among male and female diabetic patients. Certain demographic factors like education influenced the knowledge & attitude and duration of disease influenced risk perception of diabetes patients regarding complications of type-2 diabetes.

So there is need for improving the knowledge of diabetes patients so that they can develop favourable attitude to prevent the complications of type 2 diabetes and also perceive the risk of diabetes complication.

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