Diabetes Mellitus Complications in India

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ABSTRACT

Introduction: The World Health Organization (WHO) has observed an apparent epidemic of diabetes that is strongly related to lifestyle and economic change and all are at risk of the development of complications. So the study was designed to estimate the detection undiagnosed diabetes in the rural and urban areas.

Material and methods: The present study was conducted in the field practice area of rural and urban health centers. Covering a sample of 250 by using pre designed and pre tested protocol to find out the prevalence and the risk of diabetes mellitus in general population by using DM complications.

Results: The results shows that there is no much difference found between urban and rural areas regarding identification of DM complications. More DM complicated cases recorded under the age groups of 40 – 49 years, 60 – 69 years and 70 – 79 years. More DM complications are started after 40 years of age both rural and urban sample respondents. Most of respondents are fall under the category than 1.1 year to 10 years and got DM complications. Under this period (1.1 to 10 years), 70.12 per cent of sample respondents are suffering from DM complications. Male in rural areas are having more DM complications and it is more significant than other categories.

Conclusion: The DM complication is not affected the Neuropathy cases in both areas. Life style and food habitation is play vital role for DM complication in rural and urban areas.

Keyword: Diabetes Mellitus

INTRODUCTION

The International Diabetes Federation (IDF) estimated that there are 100 million people with diabetes worldwide that is about 6 per cent of all adults.[1-3] Correspondingly, in rural areas, prevalence rates had increased from 1 per cent to 4-10 per cent, and in the other study it was reported to be 13.2 per cent.[4–6] Thus, it is clear that both in urban and rural India, prevalence rates of diabetes are increasing rapidly with estimation of 2:1 to 3:1. These prevalence rates are being maintained from the last 2-3 decades but in Kerala where rural prevalence rates are caught up or overtaken urban prevalence rates.[7–10]

T2DM is a diverse group of diseases developing insidiously and portrayed by chromic hyperglycemia, resulting from a assortment of environmental and genetic risk factors. Other correlates are population explosion, increasing geriatric population, cost of industrial growth, urban trend, liking of high fat containing junk foods, inactive living, and obesity.

Prevalence of type 2 DM in rural population is an important public health issue. There is relatively less number of students in rural areas. However, India has 80 per cent of its population in rural area, hence it is important to measure the prevalence in rural areas also.

Study aimed to estimate the detection undiagnosed diabetes in the rural and urban areas and to find out the risk variation of DM complication between rural and urban areas

MATERIAL AND METHODS

The present study was conducted in the field practice area of rural and urban health centers. Covering a sample of 250 cases by using a pre designed and pre tested protocol to find out the prevalence and the risk of diabetes mellitus by using DM complications. The study region was in and around Pondicherry region. Study was done after ethical approval and informed consent from the participants.

STATISTICAL ANALYSIS

To find out the risk variations form rural and urban areas and risk of DM complication, the descriptive analysis made and Chi-Square Tests were employed.

RESULTS

From the table 1, out of 105 sample respondents in urban areas, 102 were having (97.1per cent) DM complications and 3 persons were free from DM complications. In rural areas, there were 147 sample respondents. Out of that 139 were got (94.6 per cent) DM complications and 8 persons (5.4 per cent) were free from DM complications. Both rural and urban areas, there were 252 sample respondents and 241 sample respondents (95.6 per cent) were having DM complications. 11 persons were free from DM complications and it was recorded as 4.4 per cent. It was clear from the above table that there is no much difference found between urban and rural areas regarding identification of DM complications.

For further analysis, chi-squire test have been employed. The likelihood ratio was calculated as 1.04 and 'P' value was recorded as 0.792, which is in significant as 5per cent level. The results clearly show that DM complication cases are found more than years 5 to 10 years and more duration. These two duration category only found more cases and another two categories are not found more cases. Hence, the results shows in table are insignificant value results DM complication of duration.

61 per cent of respondents in urban areas and 63 per cent of respondents in rural areas have got diabetic nephropathy complications, out of 241 sample respondents 124 sample respondents have got such a complications and it is recorded as 51.45 per cent in a overall sample sizes (Table 3).

The chi-square test results shows there is in significant

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variations found in rural and urban packets. The likelihood ratio is calculated here are 4.961 and its P value 0.026. Linear association value is calculated as 4.918 and its P value is recorded as 0.027. The values show that insignificant variations found between rural and urban areas.

Out of 241cases, 02 cases from urban areas and 139 cases are found in rural areas. Regarding Neuropathy complaints due to DM complications 46 cases found in urban areas and it is calculated as 46 percent of urban respondents. 79 cases are found in rural areas and it consists 56.8 percent of total rural sample respondents. In total, 125 respondents are identified as Neuropathy cases due to DM complications in the study area (Table 4). For further analysis, chi-square test has been employed. Hence, the likelihood ratio is calculated as 3.25 and it P value in recorded as 0.071as 3.232 and its P value is found 0.072. The P values are not significant at 5per cent level. Hence, the results shows that there is no significant variation of Neuropathy cases due to DM complications.

45 percent for urban household respondents are having diabetic food ulcer problem due to DM complications. 53 percent of rural household respondents have got diabetic foot ulcer. In total there are 102 urban and 139 rural respondents. Among that 124 sample respondents are having diabetic foot ulcer in the study area (Table 5). Hence, the chi-square analysis employed to find the variation among the rural and urban sample respondents. The

S. No	Categories	No of respondents/ Area		Total No of respondents
		Urban (per cent)	Rural (per cent)	
1	Present	102 (97.1)	139 (94.6)	241 (95.6)
2	Absent	3 (2.9)	8 (5.4)	11 (4.4)
Total		105 (100.0)	147 (100.0)	252 (100.0)
Source: Primary Data				

Table-1: Overall DM Complications-Final (Source: Data) * Area Cross tabulation

Sl. No	Duration of DM (yrs)	DM Complications-Final (Source: Data)		Total No of respondents	Chi-Square Tests		
		Present (per cent)	Absent (per cent)		Value	Df	Asymp. Sig. (2-sided)
1	1 and less than 1 year	15 (93.8)	1 (6.3)	16 (100.0)	1.067	3	.785
2	1.1 - 5 yrs	79 (94.0)	5 (6.0)	84 (100.0)	1.040	3	.792
3	5.1 - 10 yrs	90 (96.8)	3 (3.2)	93 (100.0)	.776	1	.378
4	> 10 yrs	57 (96.6)	2 (3.4)	59 (100.0)			
Total		241 (95.6)	11 (4.4)	252 (100.0)			
Source: Primary Data							

Table-2: Duration of DM (yrs) * DM Complications-Final

Sl. No	Categories / Diabetic Nephropathy	No of respondents /Area		Total No of respon-dents	Chi-Square Tests		
		Urban (per cent)	Rural (per cent)		Value	Df	Asymp. Sig. (2-sided)
1	Present	61 (59.8)	63 (45.3)	124 (51.5)	4.938	1	.026
2	Absent	41 (40.2)	76 (54.7)	117 (48.5)	4.376	1	.036
Total		102 (100.0)	139 (100.0)	241 (100.0)	4.961	1	.027
Source: Primary Data							

Table-3: Diabetic Nephropathy * Area

Sl. No	Categories /DM Neuropathy	No of respondents /Area		Total No of respondents	Chi-Square Tests		
		Present (per cent)	Absent (per cent)		Value	Df	Asymp. Sig. (2-sided)
1	Present	46 (45.1)	79 (56.8)	125 (51.9)	3.246	1	.072
2	Absent	56 (54.9)	60 (43.2)	116 (48.1)	2.793	1	.095
Total		102 (100.0)	139 (100.0)	241 (100.0)	3.251	1	.071
Source: Primary Data							

Table-4: DM Neuropathy * Area

results show that there is a significant variation found among rural and urban sample respondents. Because of more physical work in rural areas, respondents have get less percentage of diabetic foot ulcer cases. In case of urban respondents more respondents are suffering from diabetic foot ulcer due to less physical work.

Hypertension is a significant problem among rural and urban sample respondents. In urban areas, 68 per cent of respondents have got hypertension problems due to DM complications. In rural areas 73per cent of respondents have got hypertension due to DM complications. Because of life style the respondents both in urban and rural areas have hypertension in addition to DM complications (Table 6).

To compare rural and urban DM complications Chi-sequence test is employed. It shows that there is no much difference found between rural and urban areas (urban 97.1% and rural 97.6%). Regarding DM complications among age groups likelihood ratio is calculated as 3.143 and it P value is calculated as 0.678 and it is found significant variations in different age groups in rural and urban areas. Furthermore, the result of DM cases which is found between 5 to 10 years category.

Diabetic Nephropathy cases found both rural and urban areas (61% urban areas 63% in rural areas). DM Neuropathy complications found more on rural areas and it is calculated as 57% further, 45% urban respondents and 53 rural respondents have got foot ulcer due to DM complications. 68% of cases in urban areas and 73% of cases in rural areas have got hypertension. Less than 13% of cases in rural and urban areas are suffering from cardiac problems.

DISCUSSION

It is clear from the above analysis that DM Complications were 97.1 per cent (n=102) in urban group and 94.6 per cent (n=139) in rural group, significantly higher among urban males (74.5 per cent) than rural males (61.9 per cent). No significant differences were observed with respect to age, and duration of diabetes in rural and urban areas. Further, Diabetic Retinopathy, DM Neuropathy, Diabetic Foot Ulcer, Cardiac Problems, and CVA were similar symptoms between rural and urban group but Diabetic Nephropathy is significantly higher among urban (59.8 per cent) than rural (45.3 per cent) areas. The same results also derived from other studies.[13-16]

Among the co morbidities, pretension is higher in urban (66.7 per cent) than rural (52.5 per cent) groups and there is no much difference found between urban and rural areas regarding identification of DM complications. More DM complicated cases recorded under the age groups of 40 – 49 years, 60 – 69 years and 70 – 79 years. DM complications are started after 40 years of age both rural and urban sample respondents. DM Complications, Diabetic Retinopathy, DM Neuropathy, Diabetic Foot Ulcer, Cardiac Problems, and CVA were not significantly associated with Age, Gender, and Duration of Diabetes. However, DM Neuropathy in combination with DM Foot ulcers, one of the health consequences of DM Neuropathy was significantly associated with age.[17]

Further, most of respondents are fall under the category between 1.1 year to 10 years and got DM complications. Under this period, 70.12 per cent of sample respondents are suffering from DM complications. The mean age and duration of DM was not significantly different with respect to no. of DM complications in study population.[18,19] However, in urban group, mean age was significantly higher for those with two or more DM complications (65.4 years) than those with one DM complications (57.1 years).[18] No significant differences were observed between no. of DM complications and i) age, and ii) duration of diabetes among the overall study population (n = 252), and sub populations (urban and rural). Male in rural areas are having more DM complications and it is more significant than other categories. 61 per cent of respondents in urban areas and 63 per cent of respondents in rural areas have got diabetic nephropathy complications.[20]

Sl. No	Diabetic Foot Ulcer	No of respondents /Area		Total No of respondents	Chi-Square Tests		
		Present (per cent)	Absent (per cent)		Value	Df	Asymp. Sig. (2-sided)
1	Present	45 (44.1)	74 (53.2)	119 (49.4)	1.957	1	.162
2	Absent	57 (55.9)	65 (46.8)	122 (50.6)	1.610	1	.205
Total		102 (100.0)	139 (100.0)	241 (100.0)	1.961	1	.161
Source: Primary Data							

Table-5: Diabetic Foot Ulcer * Area

Sl. No	Hypertension	No of respondents /Area		Total No of respondents	Chi-Square Tests		
		Present (per cent)	Absent (per cent)		Value	Df	Asymp. Sig. (2-sided)
1	Present	68 (66.7)	73 (52.5)	141 (58.5)	4.851	1	.028
2	Absent	34 (33.3)	66 (47.5)	100 (41.5)	4.286	1	.038
Total		102 (100.0)	139 (100.0)	241 (100.0)	4.897	1	.027
Source: Primary Data							

Table-6: Hypertension * Area

CONCLUSION

From these analysis findings shown that, most of the diabetic patients were aware of the need for dietary care or medication. The only 50 per cent cases modified their diet. 97 per cent cases were using anti-diabetic agents, some were using them wrongly and only 10.6 per cent of cases tested their urine. Although 71 per cent were aware of the need for urine test, there is no significant difference in DM complication found in rural and urban areas. Male cases have higher DM complication then female cases in both rural and urban areas. The DM complication is not affected the Neuropathy cases in both areas.

Regarding foot ulcer, 50 percent of cases has foot ulcer in rural and urban areas. Another factor of life style of the cases both in urban and rural areas has fallen hypertension in addition to DM complications. From the discussion, it is clear that the life style and food habitation play vital role for DM complication in rural and urban areas.

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