Burden of Diabetes Mellitus from rural population of Jaipur attended at a secondary health care hospital: A hospital based Cross sectional study

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Abstract—*Diabetes Mellitus (DM) is a public health disease. In India, thirty five million people have diabetes—a number expected to more than double by 2025, disproportionately affecting working-age people. The economic impact of this increase could be devastating to India's emerging economy. The present hospital based cross sectional study was conducted with the aim to estimate the burden of DM from rural population of Jaipur (Rajasthan) attended at a tertiary care hospital. This study was conducted on patients attending the OPD of CHC, Manoharpur, Jaipur for any illness. Among them, patient showing even slightest evidence towards the presence of DM, were screened from July 2018 to December 2018.Total numbers of 277 individuals of age group of 20 years and above were screened in this study period. Out of these 277 patients screened, 207 (74.73%) were males and 70 (15.27%) were females. Out of these males were 30(10.83%) with confirmed DM and females were 18(6.49%) with confirmed DM. The proportion of DM in age 20-45 age group was 1.80% and in age group of 46-65 years it was 11.91% while in > 65 years it was 3.60%. It can be concluded from study that 17.32% of screened patients were found to have confirmed DM. In India there are very scanty data on the level of prevalence of this disease to plan and execute public health programme. There is need of good public health policies towards preventing and controlling diabetes at national and state levels. Thus the current study recorded alarmingly high prevalence of DM among rural population which should be a cause of concern for health care providers.***

Keywords: Diabetes Mellitus, Burden, Rural Population.

I. INTRODUCTION

Diabetes Mellitus (DM) is increasing in epidemic proportion globally. According to W.H.O.[1] the prevalence of DM in adults worldwide was estimated to be 4% in 1995 and predicted to rise to 5.4% by the year 2025, such that the number of adults with DM in the world would rise from 135 million in 1995 to 300 million in the year 2025. The major part of this numerical increase will occur in the developing countries. There will be 42 % increase from 51 to 72 million in the developed countries and 70% increase from 84 to 228 million in the developing countries.[1] Thus, by the year 2025 more than 75 % of the people with diabetes will reside in developing countries as compared to 62% in 1995. The countries with the largest no. of people with diabetes are and will be in the year 2025, India, China and the United States.[1] In 2000, According to WHO, the prevalence of DM among the 11 countries of South-East Asian region was 4.69 million.[2]

In India, thirty five million people have diabetes—a number expected to more than double by the year 2025, disproportionately affecting working-age people. The economic impact of this increase could be devastating to India's emerging economy.[3]

The NFHS3 Data which studied urban and rural residents in 29 States of India during the period 2005-2006, the number of women who had DM range from 282 per one lac women in Rajasthan to 2549 per one lac women in Kerala. In five other states (Tamil Nadu, Goa,Tripura, West Bengal & Delhi), the number of women with DM were relatively high (above 1500 per one lac women).Only five states had DM prevalence levels below 500per one lac men (Jammu & Kashmir, Mizoram, Himachal Pradesh, Rajasthan & U.P.[4]

Studies in India estimate that for a low-income Indian family with an adult with diabetes, as much as 25% of family income may be devoted to diabetes care.[5] Intangible costs (pain, anxiety, inconvenience and generally lower quality of life etc.) also have great impact on the lives of patients and their families and are the most difficult to quantify.[5]

It is believed that patient's knowledge of self-care is the key to achieving therapeutic goals in ambulatory care.[6]

Anjana et al. have expressed their concern on inadequate coverage of Indian rural population in various national studies.[7] Major population of India resides in rural area. Data suggest that approximately 742 million people in India (70 % of Indian population) lives in rural area.[8,9] In India there are very scanty data on prevalence of this disease to plan and execute public health programme. With this view in mind this study has been conducted. So this present study was conducted to estimate the burden of DM from rural population of Jaipur (Rajasthan) attended at a tertiary care hospital.

II. METHODOLOGY

A hospital based cross sectional study was conducted to estimate the burden of DM from Manoharpura Village of Jaipur (Rajasthan) attended at hospital attached to National Institute of Medical Science and Research medical College, Jaipur (Rajasthan) India.

Out of all the patients attending the medicine OPD (CHC i.e. Community health Centre, Manoharpur) for any illness, those patients showing even slightest evidence towards the presence of DM, either because of their presenting signs & symptoms or because of positive family history were screened for DM. Fasting plasma glucose > 110 mg% and random plasma glucose > 200 mg% were taken as the diagnostic criteria for diagnosis of DM.

Approval of the institutional ethical committee was obtained prior to study commencement. Persons in the age group of 20 years and above attending the Medical OPD were included in this study. The modality of study was briefly explained to all participants during the study period from July 2018 to December 2018. Only those participants who agreed to participate were included

Total 277 patents were enrolled during the study period. The capillary blood screening was done in all persons to find out diabetic cases among them. The questionnaire projected to participate contained the series of questions regarding their demographic characteristics. The data were collected and analysed with the help of MS Excel 2010.

III. RESULTS

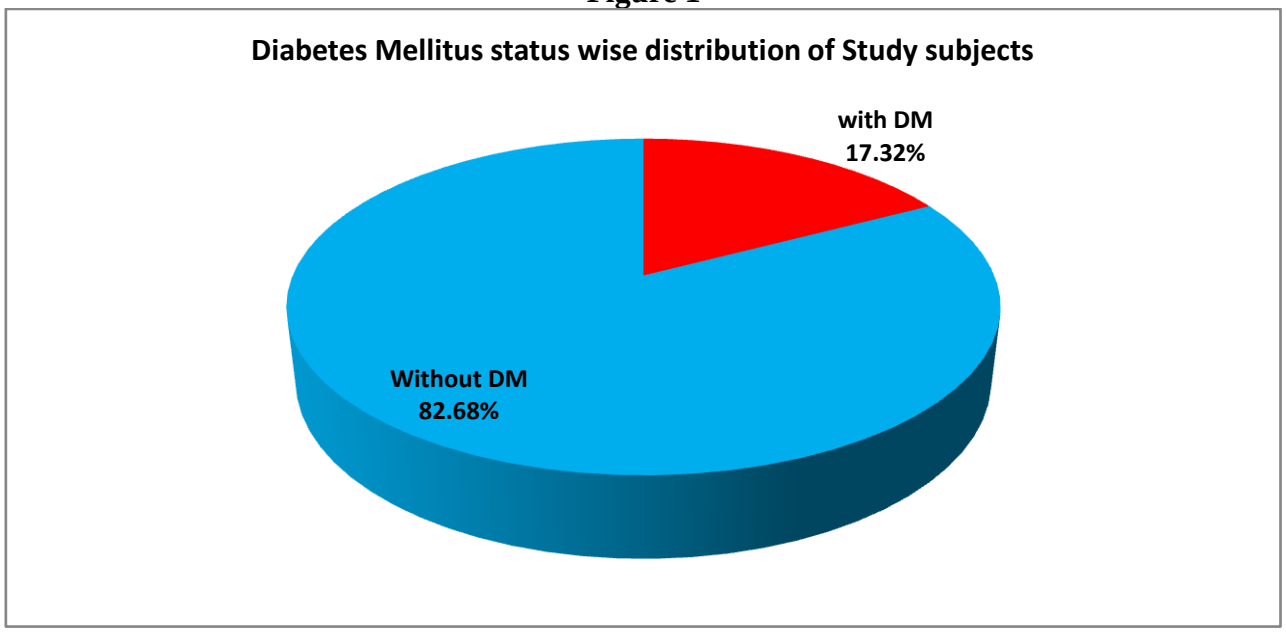
The present study was conducted from July 2018 to December 2018 in Manoharpur Hospital. Socio-demographic data of participants is shown in Table-1.Total 277 patients were screened for DM out of that 207 (74.73%) were males and 70 (15.27%) were females. Out of 277 study subjects, majority (60.40%) were illiterate. Majority of participants were farmers. Out of 277 participants majority (44.76%) were in 45-65 years age group followed by >65 years age group were (32.50%) and 20-45 age group were (22.74%). (Table 1)

Table 1
Socio-demographic profile of study Population

S. No.	Variable		Number	Percentage
1	Age	20-45 Yrs	63	22.74
		46-65yrs	124	**44.76**
		>66yrs	90	32.50
2	Sex	Male	207	**74.73**
		Female	70	25.27
3	Occupation	House Wife	50	18.05
		Unemployed	10	3.61
		Employed	30	10.83
		Self Employed	20	7.22
		Retired	16	5.78
		Farmers	124	**44.76**
		Others	27	9.75
4	Education	Illiterate	167	**60.40**
		Primary	34	12.36
		High school	50	18.13
		University	26	9.21

Out of total 277 participants, 48 (17.32%) were confirmed with DM. Male with confirmed DM were 30(10.83%) and female with confirmed DM were 18(6.49%) (Figure 1)

Figure 1



Regarding sex wise distribution of proportion of subjects with Diabetes Mellitus it was observed that although it was more common in females (14.49% v/s 25.71%) but this difference was not found significant (P=0.05). (Table 2)

Table 2
Association of sex with Diabetes Mellitus

S. No.	Sex	With DM	Without DM	Total
1	Male	30	177	207
2	Female	**18**	52	70

Chi-square = 3.848 with 1 degree of freedom; P = 0.050 LS=NS

Regarding sex wise distribution of proportion of subjects with Diabetes Mellitus it was observed that maximum proportion of subjects with Diabetes Mellitus were found in 46-65 years of age group i.e. 26.62% followed by more than 65 years age group (11.11%) and 20-45 years of age group (7.94%). This difference in proportion of subjects with Diabetes Mellitus was found significant (P=0.001). (Table 3)

Table 3
Association of age with Diabetes Mellitus

S. No.	Age Groups	With DM	Without DM	Total
1	20-45 years	5	58	63
2	46-65 years	33	91	124
3	>65 years	10	80	90

Chi-square = 13.769 with 2 degrees of freedom; P = 0.001 LS=S

IV. DISCUSSION

This study has used hospital records based data for assessing the burden of diabetes mellitus of a rural population of Manoharpura in a tertiary care hospital NIMS Jaipur (Rajasthan) India. In this study 277 subjects were screened for DM, out of which 207 were males and 70 were females. Out of these screened subjects, 17.32%) were confirmed with DM. Wander et al. DM prevalence study in rural Punjab (Pohir), the prevalence of DM was found to be 4.6%.[10] In present study proportion of sunjects with DM were higher may be because this present study participants were from OPD.

In present study, male with confirmed DM were 30(10.83%) and female with confirmed DM were 18(6.49%). Present study also revealed that although there was no association of proportion of subjects with DM with sex (Males v/s Females =14.49% v/s 25.71%) but it was found significantly more in 46-65 years of age i.e. 26.62% followed by more than 65 years age group (11.11%) and 20-45 years of age group (7.94%).

In a study conducted by Kulbir Singh, Sanjeev Kumar[11] in rural population of Jammu in 2015 reported that prevalence of DM in females was slightly higher than males i.e. 4.9 % in females and 4.6% in males. Nayakk et al.[12] study done in urban population of Ahmedabad in Gujarat Prevalence of Type II DM found as 16.9 % in males and 11.1% in females. In study conducted by Himanshu Madaan et al[13] in 2013, reported prevalence of DM in rural population of Distt, Sonepat, 19.36% for males and 16.98% for females.[13] Shah et al in their study High prevalence of Type II DM in urban population in North-eastern India have revealed DM as 8.7% and 7.8% in males and females respectively.[14]

However in another study conducted by Ahmad, J. et al.[15] in 2011 in Kashmir, there is almost three times increase in prevalence of DM after the age of 60 years (5.8% Vs. 16.6% for 40-60 years Vs. > 60

years). But in a study conducted by Kulbir Singh, Sanjeev Kumar[11] in rural population of Jammu in 2015, reported prevalence of DM was maximum in age groups of 41 to 50 years i.e. 5.89%. In study conducted by Himanshu Madaan et al[13] in 2013 reported the highest prevalence of DM in 46-60 years which is in accordance with present study.

V. CONCLUSION

The present study concluded that proportion of cases with DM were 17.33%. It was found to be associated with age but not with sex. It was found significantly more in age group of 46-65 years. These cases were identified from screening of study subject came hospital for any other illness. This concludes that there is lack of awareness regarding DM in people of rural population. So IEC activities should be carried out in that area. This proportion of subjects with DM may be higher than actual as data were collected from OPD. For actual more community based studies are required.

CONFLICT OF INTEREST

None declared till now.

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