

## Original Research Article

# Prevalence of diabetes mellitus in rural population of Mullana, district Ambala, Haryana, India

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## ABSTRACT

**Background:** Diabetes mellitus (DM) is a major cause of avoidable blindness in developing and developed countries. The International Diabetes Federation (IDF)'s Diabetes Atlas reports that India has the highest number of people with diabetes (nearly 25%) in the world, and hence considered to be the "Diabetes Capital of the World".

**Methods:** This is a hospital record based study was planned to estimate the prevalence of Diabetes Mellitus in various age groups in rural population of Mullana, District Ambala(Haryana).

**Results:** Out of 1050 patients screened 50 were found to be having Diabetes mellitus (DM) 1000 were non-diabetic i.e. prevalence of Diabetes mellitus (DM) was found to be 4.76%. Out of 362 males screened 22 were suffering from Diabetes mellitus (DM) i.e. prevalence of 6.07%. Whereas out of 688 females screened 28 were suffering from Diabetes mellitus (DM) i.e. prevalence of 4.06%. Prevalence of Diabetes mellitus (DM) in males was found to be maximum in age group of more than 70 years i.e. 6.97% as compare to female i.e.5.29%.

**Conclusions:** Thus, the current study recorded high prevalence of Diabetes mellitus (DM) among rural population which should be a cause of concern for health care providers.

**Keywords:** Diabetes mellitus (DM), Prevalence Study, Rural Population

## INTRODUCTION

Diabetes mellitus (DM) is a major cause of avoidable blindness in developing and developed countries. Patients with Diabetes mellitus (DM) are 25 times more likely to become blind and other related systemic order than non-diabetics.<sup>1</sup> Diabetes mellitus has emerged as a major public health problem in India. The first authentic data on the prevalence of diabetes in India came from the multi-centric study conducted by Indian Council of Medical Research (ICMR) in the early services.

Currently, 40.9 million Indians are estimated to be suffering from diabetes. By 2025, this number will rocket to 69.9 million, and potentially 85 million by 2030. In addition, 35 million Indians are at risk for diabetes. The

International Diabetes Federation has come up with much higher figures in a recent report estimated that in 2011, 366 million people worldwide had Diabetes mellitus (DM) and if this trend continues, by 2030, 552 million people i.e. one in ten adults will have Diabetes mellitus (DM).<sup>2</sup>

According to WHO, the prevalence of Diabetes mellitus (DM) in adults worldwide was estimated to be 4% in 1995 and predicted to rise to 5.4% by the year 2025. The major part of this numerical increase will occur in the developing countries. Percentage increase from 84 to 228 million in the developing countries. 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.<sup>3</sup> In India the recent data with ICMR-India Diabetes (ICMR-INDIAB) study in 2011 reported the prevalence of DM in 4 regions of country as 10.4% in Tamil Nadu, 8.4 % in Maharashtra, 5.3% in Jharkhand and 13.6% in Chandigarh. The overall no. of people with Diabetes mellitus (DM) in India in 2011 based on this study was estimated to be 62.4 million.<sup>4</sup>

Only five states had Diabetes mellitus (DM) prevalence levels below 500 per one lac men (Jammu and Kashmir, Mizoram, Himachal Pradesh, Rajasthan and UP).<sup>5</sup> It certainly becomes very important to estimate the prevalence of Diabetes mellitus (DM) in rural Indian population to design various strategies to tackle the battle against Diabetes mellitus (DM). The main objective of the present study was to estimate the prevalence of Diabetes mellitus (DM) in rural population of district Mullana (Haryana).

## METHODS

The goal of this study to estimate the prevalence of Diabetes mellitus (DM) in various age groups in the year 2016-17. Out of all the 1050 patients attending the Out-patient-Department of Maharishi Markandeshwar institute of Medical science and Research showing evidence towards the presence of Diabetes mellitus (DM) were screened for Diabetes mellitus (DM).

## Inclusion criteria

- Age above 40 or more than 70 years
- Willing to participate in study.

## Exclusion criteria

- Patient living in urban areas
- In corticosteroid therapy
- In pharma-therapy leading to hyperglycemia.

Fasting plasma glucose more than 126mg% and random plasma glucose more than 200mg% were taken as the diagnostic criteria for diagnosis of Diabetes mellitus (DM).

## RESULTS

The present study was conducted from October 2016 to October 2017 in Maharishi Markandeshwar institute of Medical science and Research. Data wise total number of patients screened for Diabetes mellitus (DM) in terms of their age and gender status is presented in Table 1. Total 1050 patients were screened for Diabetes mellitus (DM) out of which 362 were males and 688 were females. The percentage of patients screened for Diabetes mellitus (DM) based on age, gender distribution is presented in the Table 2, 3 respectively.

**Table 1: Age-wise and gender-wise no. of patients screened for DM.**

Age (yrs)	With DM		Without DM		Total no. of patients Screened with DM	
	M	F	M	F	M	F
40-50	3	5	60	146	63	151
50-60	4	6	76	150	80	156
60-70	6	7	84	186	90	193
>70	9	10	120	178	129	188
Total	22	28	340	660	362	688

**Table 2: Percentage of patients screened for DM based on age distribution.**

Age Group	With DM	Without DM
40-50	8 (16%)	206 (20.6%)
50-60	10 (20%)	226 (22.6%)
60-70	13 (26%)	270 (27%)
>70	19 (38%)	298 (29.8%)
Total	50	1000

Out of 1050 patients screened 50 were found to be having Diabetes mellitus (DM) i.e. prevalence of Diabetes mellitus (DM) was found to be 4.76%. Out of 362 males screened 22 were suffering from Diabetes mellitus (DM)

i.e. prevalence of 6.07%. whereas out of 688 females screened 28 were suffering from Diabetes mellitus (DM) i.e. prevalence of 4.06%.

**Table 3: Percentage of patients screened for DM based on gender distribution.**

Gender	With DM	Without DM
Males	22 (44%)	340 (34%)
Females	28 (56%)	660 (66 %)
Total	50	1000

Prevalence of Diabetes mellitus (DM) was maximum in age groups of more than 70 years i.e. 5.99% Table 4 and

Figure 1 shows the prevalence of Diabetes mellitus (DM) in different age groups. Prevalence of Diabetes mellitus (DM) in males was found to be maximum in age group of more than 70 years i.e. 6.97% as compare to female i.e.5.29% Table 5, 6 and Figure 2, 3 shows the gender-wise prevalence of Diabetes mellitus (DM) in different age groups.

**Table 4: prevalence of diabetes mellitus indifferent age-groups in rural population.**

Age-group (years)	No. of people with DM	No. of people without DM	Total no. of Patients Screened	Prevalence of DM
40-50	8	206	214	3.73%
50-60	10	226	236	4.23%
60-70	13	270	283	4.59%
>70	19	298	317	5.99%
Total	50	1000	1050	4.76%

**Table 5: Prevalence of diabetes mellitus in different age-groups in male population.**

Age-group (years)	No. of males with DM	No. of males without DM	Total no. of male screened	Prevalence of DM in males
40-50	3	60	63	4.76%
50-60	4	76	80	5.0%
60-70	6	84	90	6.66%
>70	9	120	129	6.97%
Total	22	340	362	6.07%

**Table 6: Prevalence of diabetes mellitus in different age-groups in female population.**

Age-group (years)	No. of females with DM	No. of females without DM	Total no. of Female screened	Prevalence of DM in females
40-50	5	146	151	3.31%
50-60	6	150	156	3.84%
60-70	7	186	193	3.62%
>70	10	178	189	5.29%
Total	28	660	688	4.06%

## DISCUSSION

In this study, the prevalence of Diabetes mellitus (DM) was found to be 4.76%. In study conducted by Himanshu Madaan et al, in 2013 on prevalence of Diabetes mellitus (DM) in rural population of Distt, Sonapat, the prevalence of Diabetes mellitus (DM) was found to be 18.43%.<sup>6</sup> Almost two decades earlier Wander et al, studied that the prevalence of Diabetes mellitus (DM) study in rural Punjab (Pohir), was found to be 4.6%.<sup>7</sup> In

study conducted by Ahmad J et al, in 2011 in Kashmir, there is almost three times increase in prevalence of Diabetes mellitus (DM) after the age of 60 years (5.8% Vs. 16.6% for 40-60 years.<sup>8</sup> In recent National Family Health Survey (NFHS3) data, which studied urban and rural residents (all women aged 15-49 years and all men 15-54 years) in 29 states of India during the year 2005-2006 states that the prevalence level below 500 per one lac men in J and K.<sup>5</sup>

Thus, our study shows that the prevalence of Diabetes mellitus (DM) was maximum in the age group of more than 70 years i.e. 5.99%. In this study, gender specific prevalence for diabetes was 6.07% and 4.06% for male and female respectively. This higher prevalence of diabetes among male participants in this study is in line to various other studies. Nayak et al, in their study have shown the prevalence of 16.9% and 11.1% in male and female respectively in urban population of Gujarat.<sup>9</sup> Shah et al, have shown the gender distribution of diabetes mellitus as 8.7% and 7.8% respectively in male and female.<sup>10</sup>

## CONCLUSION

Thus, the current study recorded high prevalence of Diabetes mellitus (DM) among rural population which should be a cause of concern for health care providers. Rural population remains exposed to high level of blood sugar for long time due to lack of screening facility of diabetes at Primary Health Care level, and this increases the chance of developing various complication of diabetes mellitus. This in turn increases the morbidity and mortality of the population which should be viewed very seriously. More and more studies are needed to find out the prevalence of Diabetes mellitus in rural area which in turn will reflect the true overall picture of the prevalence of diabetes mellitus in Indian population. Early diagnosis and effective management of diabetes mellitus at primary health care level in developing countries like India is the need of hour as this will certainly reduce the burden of this disease.

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