

**STUDY ON PREVALENCE OF DIABETES IN HATHRAS DISTRICT****(U.P.)****Pramod Kumar<sup>1</sup>, Brijesh Sharma<sup>2\*</sup> and Deepanshu Sharma<sup>3</sup>**<sup>1</sup>IBMER, Mangalayatan University, Beswan, Aligarh (U.P.) – 202145.<sup>2</sup>Asst. Prof., IBMER, Extended NCR 33rd Milestone, Aligarh-Mathura Highway, Beswan, Aligarh, Uttar Pradesh- 202145.<sup>3</sup>IBMER, Mangalayatan University, Beswan, Aligarh (U.P.) – 202145.Article Received on  
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Pradesh- 202145.**ABSTRACT**

In the last few years there has been a marked increase in incidence of diabetes in India. Repeated epidemiological studies of diabetes in different parts of the country are required in order to control this disease. The present study was designed with the objective to determine age-wise & gender-wise prevalence of diabetes in the population of Hathras district of Uttar Pradesh, India. Adults of both genders in the age groups of 20-30, 30-40, 40-50, 50-60, 60-70 years were included in the study. The blood glucose was determined by GOD-POD method at JRC Pathology laboratory. A total of 111 subjects were examined. The overall prevalence of diabetes in Hathras district population was detected to be 45.9%. Male population of Hathras district was found to have higher incidence (58.7%) of

diabetes than females (36.9%). The results further indicated that within males, the prevalence of diabetes was highest in the age group of 50-60 years (75%) followed by 40-50 years (62.5%), 30-40 years (54.5%), 20-30 years (50%) & 60-70 years (40%), respectively. In case of females the highest cases of diabetes were found out to be in 60-70 years age group (60%) followed by 30-40 years (50%), 50-60 years (35.2%), 20-30 years (33.3%) & 40-50 years (17.6%), respectively. However, it is a preliminary report & further cross-sectional study including more variables & large sample size is required in order to determine the exact prevalence of diabetes in Hathras population.

**KEYWORDS:** Cross-sectional, epidemiological, GOD-POD, prevalence, subjects.

## INTRODUCTION

Diabetes mellitus (DM), one of the most prevalent and serious chronic health conditions, can lead to a multitude of complications such as heart disease, stroke, renal failure, amputation and blindness.<sup>[1,2]</sup> The classic symptoms of untreated diabetes are weight loss, polyuria, polydipsia and polyphagia.<sup>[3]</sup>

Diabetes mellitus is classified into two main categories: type 1 (or insulin independent) or type 2 (insulin dependent). Many influences affect the prevalence of disease throughout a country and identification of those factors is necessary to facilitate change when facing health challenges. The aetiology of diabetes in India is multi factorial and includes genetic factors coupled with environmental influences such as obesity associated with rising living standards, steady urban migration, and lifestyle changes.<sup>[4]</sup> Both rural and urban areas in India are currently experiencing a great spurt in lifestyle diseases such as diabetes mellitus, hypertension and ischaemic heart disease. The shift in epidemiology from communicable diseases to non communicable diseases indicates that the rural population is also at a high-risk for developing diabetes mellitus.<sup>[5]</sup> There are a number of challenges that plague diabetes care in India.

Although the Indian urban population has access to reliable screening methods and anti-diabetic-medications, such health benefits are not often available to the rural patients.<sup>[6]</sup> Determination of glucose concentration is important in the diagnosis and treatment of diabetes. Values higher or lower than the reference are of diagnostic significance. Keeping in view the increasing incidence of Diabetes in India, especially rural areas & lack of published information on its prevalence in Hathras, the present study was performed with the objective of determining age-wise & gender-wise prevalence of Diabetes in Hathras district of Uttar Pradesh.

## MATERIALS AND METHODS

### I. Location of study

The present investigation was conducted in JRC Diagnostic Pathology laboratory, Agra Hospital, Agra Road, Hathras (U.P).

## II. Specimen Collection

Blood of subjects was withdrawn from cephalic vein using sterile 20 no. needle. Blood was collected in sterile vacutainers containing EDTA as anticoagulant & stored at 4 °C till further use.

## III. Reference reagents

Glucose Reagent Kit, Robonik (INDIA) Pvt. Ltd., Navi Mumbai was used for the present study. The Kit was supplied with phosphate buffer (100m mol/l), glucose oxidase (>8 U/ml.), peroxidase (>0.6 U/l), 4-amino antipyrine (0.28 m mol/l).

## IV. Protocol

Blood glucose was estimated by kit based GOD–POD method. Briefly, 10µl each of blank, standard & control were pipetted into three respective test tubes & to each test tubes 1000µl glucose reagent were added. The absorbance was read at 510 nm after 10 minutes of incubation at 37°C.

## V. Calculation

The blood glucose concentration was estimated by following formula:

Glucose (mg./dl) =

$$\frac{\text{Absorbance of Test} \times \text{Conc. of Std. (mg./dl)}}{\text{Absorbance of standard}}$$

## VI. Statistical Analysis

The statistical data of the present study was analysed using statistical software (SPSS version 22). Descriptive statistical analysis has been carried out in the present study and results on categorical measurements are presented in a number (%).

## RESULTS AND DISCUSSION

### Overall prevalence of Diabetes in Hathras district of Uttar Pradesh

The overall prevalence of Diabetes were recorded to be 45.9% (51/111) in Hathras district (U.P.). The highest incidence was observed in age-group of 60-70 years (53.33%) and lowest in age-group of 40-50 years (32%). However, it appears from the observations recorded that the prevalence of disease increased with advancing age (Table-1).

### Gender-wise & age-wise prevalence of Diabetes

The results of the present study indicated 58.7% and 36.9% prevalence of diabetes in males and females of Hathras district population respectively. It clearly reflected that the incidence of Diabetes was higher in case of males than females. Furthermore, within males, highest (75%) Diabetic cases were detected to be in 50-60 years age group followed by 40-50 years (62.5%), 30-40 years (54.5%), 20-30 years (50%) & 60-70 years (40%). Among females highest cases of diabetes were found out to be in 60-70 years age group (60 %) followed by 30-40 years (50%), 50-60 years (35.2%), 20-30 years (33.3%) & 40-50 years (17.6%), respectively (Table 2). The statistical analyses revealed that the different age groups of male and females had highly significant ( $\chi^2_{cal} = 32.7069^{**}$ ) prevalence of diabetes. The higher prevalence in males than females may be attributed to the differences in the nature of work, genetic makeup and lifestyle. However, previous recent reports on prevalence of Diabetes in India are different. From Assam, 18.7% prevalence<sup>[7]</sup> of Diabetes based on population of opd and indoors of a defence hospital whereas 9.1% prevalence of Diabetes mellitus in a rural population of India were reported.<sup>[8]</sup> Similar to our findings, higher prevalence (28.3%) of Diabetes in older age groups (36-40 years) have been reported.<sup>[8]</sup> The high prevalence of diabetes in present study may be due to small sample size, inclusion of more urban & already known diabetic samples in addition to intervention of other factors viz. obesity, diet, stress, less physical activity etc. The results of the present investigation clearly indicated that burden of diabetes is rapidly increasing in Hathras population. The high incidence is attributed to a combination of genetic susceptibility plus adoption of a high-calorie, low-activity lifestyle by India's growing middle class.<sup>[9]</sup>

**TABLE 1: Overall prevalence of Diabetes in Hathras district of Uttar Pradesh.**

S. No.	Age-group (Years)	No. Tested	No. Positive	% Positive
1.	20-30	19	8	42.10
2.	30-40	23	12	52.17
3.	40-50	25	8	32.00
4.	50-60	29	15	51.72
5.	60-70	15	8	53.33
<b>TOTAL</b>		<b>111</b>	<b>51</b>	<b>45.94</b>

**TABLE 2: Gender-wise & age-wise prevalence of Diabetes in Hathras district of Uttar Pradesh.**

S. No.	Age (Years)	Males			Females		
		No. Tested	No. +Ve	% +Ve	No. Tested	No. +Ve	% +Ve
1.	20-30	10	5	50%	9	3	33.3%
2.	30-40	11	6	54.5%	12	6	50 %
3.	40-50	8	5	62.5 %	17	3	17.6%
4.	50-60	12	9	75%	17	6	35.2%
5.	60-70	5	2	40%	10	6	60 %
<b>TOTAL</b>		<b>46</b>	<b>27</b>	<b>58.7 %</b>	<b>65</b>	<b>24</b>	<b>36.9%</b>

**CONCLUSION**

In this study, prevalence of diabetes was determined in population of Hathras, U.P. Kit based GOD –POD method was used for measurement of blood glucose in subjects. The results of the present investigation showed higher prevalence of diabetes in older age-groups. The above results also reflected higher incidence of diabetes in males than females. Determination of prevalence of a disease indicates its severity & also helps to know the status of disease in a particular area. So, periodical epidemiological studies are required for determination of current status of the disease in a particular geographical area. But such epidemiological studies are of limited value unless they include intervention of factors, viz. age, sex, body weight, obesity, hypertension etc. as recommended by W.H.O. Nevertheless, more such studies are warranted to shed light on the prevalence of diabetes in the population of Hathras & nearby regions. Control of diet & change in lifestyle are required in order to eradicate this dangerous disease completely.

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