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### The Association Between ABO Blood Group and Diabetes Mellitus

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#### ABSTRACT

The objective of the study was to determine the relationship between ABO blood groups and diabetes mellitus in the population of Pune, Maharashtra [India]. The present study included analysis of ABO blood group. The data of blood group obtained among 500 subjects of every age taken randomly from the local population of Pune city in the duration of Sept 2014 to February 2015. Out of that 359 were male and 141 were female patients suffering Diabetes Mellitus. From present study it is concluded that there is relativity in between blood groups & diabetes mellitus. The association exists between blood group B + ve and Diabetic Mellitus. The result of study shows that 50 % of diabetic patient having B +ve blood group. In this study, frequency of ABO blood groups observed was in an order of B +ve > A +ve > O +ve > AB +ve > B -ve. > A -ve

**Keywords:** ABO Blood group, Diabetes mellitus, population, B +ve, A +ve.

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## INTRODUCTION

Diabetes Mellitus (DM) describes a metabolic disorder of multiple etiology characterized by chronic hyperglycemia with disturbances of carbohydrate, protein and fat metabolism resulting from defects in insulin secretion or insulin action or both (WHO consultation 1999)<sup>1</sup>. Many researchers have made attempts to determine the significance of particular ABO phenotypes for susceptibility to disease. The relationship between the ABO/rhesus (Rh) blood groups and various diseases has generated a great deal of interest.<sup>2</sup> Certain diseases show a strong association with the ABO/Rh blood groups, notably peptic ulcer and gastric cancer.<sup>3</sup> Several studies have investigated the possible relationship between type 2 diabetes mellitus and the ABO/ Rh blood groups. The number of people with diabetes in India currently around 40.9 million is expected to rise to 69.9 million by 2025<sup>4</sup>. Many reports have appeared in recent years suggesting an association between blood groups and DM. McConnell *et al.* studied 1333 diabetic patients and concluded increased frequency of A blood group among these diabetic patients<sup>5</sup>. Tedeschi and Cavazzuti from Italy showed an increased frequency of blood group B among diabetics<sup>6</sup>. Sidhu *et al.* and Shyamal Koley suggested that there is no association between the distribution of the ABO blood types and diabetes mellitus.<sup>7, 8</sup> Investigations in different countries showed varying findings regarding the susceptibility of blood group as risk factor for DM in different population. Since DM is a serious complication of various organs such as kidney, neuron, eye, heart etc., the current study was carried out to find the association between different ABO blood groups and DM in local population of Pune city

## MATERIALS AND METHOD

This cross sectional study was carried out on total **500** diabetic patients attending treatment of Diabetes at Diabetic center. Objectives of present study were to determine the distribution of ABO blood groups in the population of Pune City who are suffering from Diabetes Mellitus (DM). The investigator has prepared some questionnaires such as Name of Patient, Age, Blood Group, Are you alcohol dependent or not? , Are you smoker? Which type of Diabetes? Is Diabetes genetically or not? Are you suffering from any cardiac disorders? Are you suffering from any kidney diseases or other diseases? The investigators asked to such questions to the patient. The data was arranged according to Sex, Age , Blood group .

## RESULTS AND DISCUSSION

There were total 500 patients studied. Out of that 359 were male and 141 were female patients suffering DM. Total 111 are patients having A +ve blood group suffered from DM out of that 85

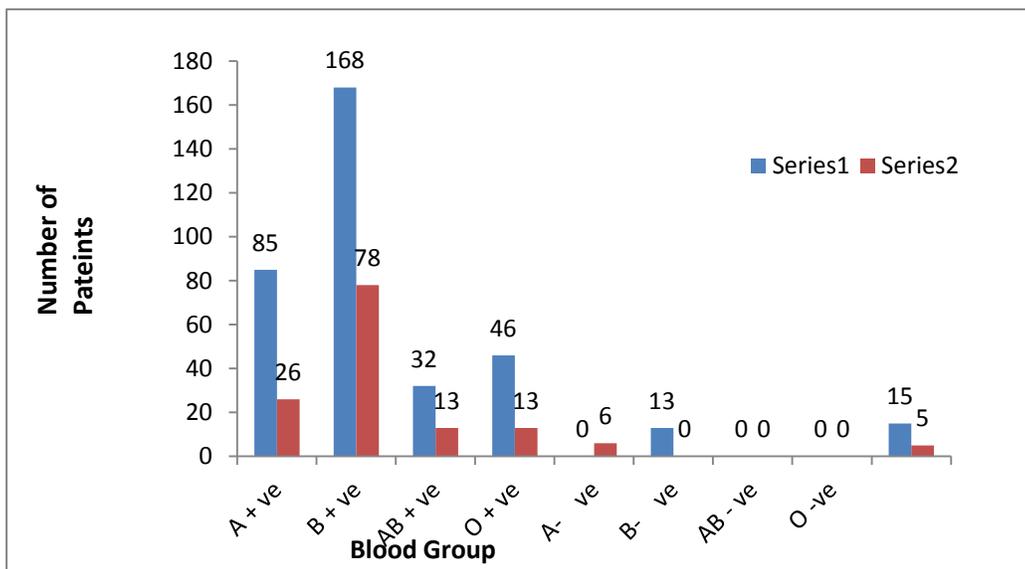
patients were male and 26 patients were female, 246 patients having B +ve blood group out of that 168 patients having male and 78 were female , 32 male patients and 13 female patients , total 45 Patients are having AB +ve group , 59 patients having O +ve group out of that 46 , and 13 were male and female respectively. , There were no any male patients found from blood group A –ve but 6 female patient were found from blood group A –ve, There were no any female patients found from B –ve blood group but 13 Male patients were found B –ve blood group. There were no any patients were found from A –ve and O- ve group .15 Male DM patients and 5 female DM patients unknown their own blood group.

**Table 1: Male and Female distribution of ABO Blood Groups in DM patients**

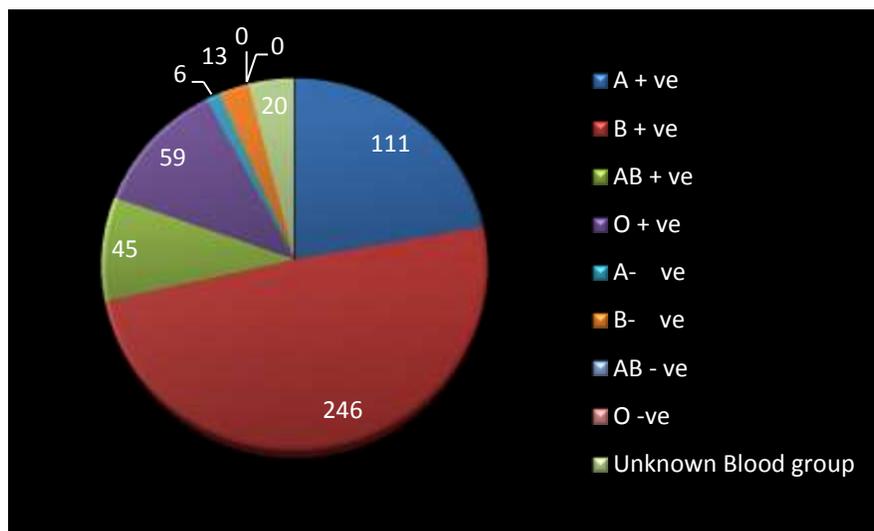
<b>Blood Group</b>	<b>Male Patients</b>	<b>Female Patients</b>
A + ve	85	26
B + ve	168	78
AB + ve	32	13
O + ve	46	13
A- ve	00	06
B- ve	13	00
AB - ve	00	00
O -ve	00	00
Unknown Blood group	15	05
<b>Total</b>	<b>359</b>	<b>141</b>

**Table 2: Distribution of overall ABO blood group in DM Patients.**

<b>Blood Group</b>	<b>Total Patients</b>
A + ve	111
B + ve	246
AB + ve	45
O + ve	59
A- ve	06
B- ve	13
AB - ve	00
O -ve	00
Unknown Blood group	20
<b>Total</b>	<b>500</b>



**Figure 1: Graphical representation of Male and Female distribution of ABO Blood Groups in DM patients**



**Figure 2: Graphical Representation of distribution of overall ABO blood group in DM Patients**

**CONCLUSION**

Considering all these previous varying results from different part of globe, this study attempted to evaluate the association of ABO blood groups with DM in Pune city of Maharashtra. From our study we conclude that association exists between blood group B + ve and Diabetic Mellitus. The result of study shows that 50 % of diabetic patient having B +ve blood group.

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