

**DISTRIBUTION OF CLASSICAL ABO BLOOD GROUPS AMONG TYPE 2 DIABETES MELLITUS PATIENTS: AN ANALYSIS**M. Rama Devi<sup>1</sup>, O. Padmini<sup>2</sup>**HOW TO CITE THIS ARTICLE:**

M. Rama Devi, O. Padmini. "Distribution of Classical ABO Blood Groups among Type 2 Diabetes Mellitus Patients: An Analysis". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 34, April 27; Page: 5823-5826, DOI: 10.14260/jemds/2015/853

**ABSTRACT: BACKGROUND:** At present Diabetes Mellitus is a global phenomenon with the disease topping the list, comprising of about 32 million cases, India is in the forefront with 30% of the cases. The disease affects multiple organs and is a leading cause of much morbidity and mortality. Since it is a multi-factorial disease a major step would be to identify different associated factors, for an early diagnosis and prompt treatment. The ABO blood groups are often associated with several diseases, with one blood group more often seen with the patients of a particular disease. Our study will help to determine the frequency and distribution of blood groups in correlation with Diabetes Mellitus. **MATERIAL & METHODS:** This study was conducted in the Gandhi Medical College, Secunderabad, during a two year period. A random study involving every third diabetic patient was chosen and their blood group was determined. A total of 300 patients were selected with 150 male and 150 female patients. Another 300 volunteers who were not diabetics were chosen as controls and their blood groups were also determined. A pro-forma was given to both diabetics and controls which included the following variables: 1. Demographic data 2. Blood grouping 3. Fasting and post prandial blood sugar. Following this, blood groups of both cohorts and controls were determined by antigen antibody agglutination method. Data analysis was done after data was entered into excel sheet and double checked for errors using SPSS Software **RESULTS:** Our analysis showed that O group was significantly more among diabetic patients when all patients were compared to control.<sup>2</sup> there was a preponderance of blood group O among female diabetics and B among male diabetics. **CONCLUSION:** ABO blood groups have been determined in 300 diabetic patients and compared with the controls comprising of a series of 300 voluntary blood donors. When the results were analysed on the basis of sex, there was preponderance of group O in female diabetics. It can be observed that no uniform association has been found between blood groups and diabetes although the preponderance of one or the other blood group has been reported from time to time.. The results have been so variable and often inconclusive that the possible role of ethnic and social factors cannot be ignored.

**KEYWORDS:** Diabetes Mellitus, Blood groups.

**INTRODUCTION:** Diabetes Mellitus is a global problem. India tops the world with largest number of diabetic subjects, around 32 million at present this is projected to increase to 80 million by the year 2030. Previously a disease of the middle aged and elderly, type2 diabetes has recently escalated in all age groups and is now being seen in younger age groups, including adolescents, especially in high risk populations. This means that in developing countries , the majority of diabetic patients, acquire the disease during the most productive period of their lives .This will have major implications with respect to health care needs and costs as they will live up to an older age to develop chronic complications of diabetes. Diabetes Mellitus will be a leading cause of morbidity and mortality in the foreseeable future.

## ORIGINAL ARTICLE

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Type 2 diabetes mellitus is one of the predominant form of diabetes worldwide, accounting for 90 percent of the cases globally. It is currently thought to occur in genetically predisposed individuals who are exposed to a series of environmental influences that precipitate the onset of clinical disease.

Efforts have been made to study the genetic aspects of diabetes by means of statistical studies of multiple factors associated with it, one of them being ABO blood groups. Certain diseases are more prevalent in individuals with one blood type or another. An early detection of a particular predisposing factor on that account can be of great help to prevent the development of diabetes Mellitus. Our study will help to determine the frequency and distribution of blood groups in correlation with Diabetes Mellitus.

**METHODOLOGY:** Our study was a descriptive observational study, done in Gandhi medical college, Hyderabad, over a period of two years. A systematic random sample was taken where in every third known diabetic patient who attended the outpatient departments of Medicine and Endocrinology was chosen until 150 male's and 150 females with type 2 diabetics were obtained.

300 non Diabetics were selected from voluntary blood donors by the same systematic random sample to be used as controls. A questionnaire was given in the form of pro-forma to both diabetics and controls which included the following variables:

1. Demographic data.
2. Blood grouping.
3. Fasting and postprandial blood sugar.

Following this, blood groups of both cohorts and controls were determined by antigen antibody agglutination method. Data analysis was done after data was entered into excel sheet and double checked for errors using SPSS Software.

**RESULTS:** On analysis it was found that O group was significantly more among diabetic patients when all patients were compared to controls, irrespective of gender. (Table 1). There is a preponderance of blood group O among female diabetics and B among male diabetics. However on statistical analysis the difference was significant in case of females ( $p < 0.001$ ) but insignificant for the male patients ( $p > 0.05$ ). (Table 2).

**DISCUSSION:** Evidence for an association between the ABO blood groups and type 2 Diabetes Mellitus characterized by an increase in group O among female diabetics in our study is in concordance with studies of Anderson et al.<sup>1</sup> and Lang et al.<sup>2</sup> conflicting results of different studies where in preponderance of A group in young diabetic men.<sup>3</sup> and decrease in incidence of diabetes among O group subjects.<sup>4</sup> only add to the already existing confusion. As some studies also negated the association of blood groups and type 2 diabetes.<sup>5,6</sup> our study was a small attempt at giving a clear picture of one of the probable predisposing factors of diabetes Mellitus. Blood groups are examples of balanced polymorphism and that associations between Blood groups and disease might well exist. One study emphasize the relationship of blood groups to disease and discovered an association between cancer of stomach and blood group A.<sup>7</sup> There is now overwhelming evidence for several associations such as duodenal ulcer is about 40% common in people of group O, and it is noted there is some heterogeneity, the relative incidence of disease in persons of group O is higher.

## ORIGINAL ARTICLE

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Blood Group	Control (no DM)		Type 2 DM		P Value
	Number	%	Number	%	
A	52	17.33	47	17.00	p>0.05
B	102	34.00	96	34.00	p>0.05
O	118	39.33	131	38.67	p>0.05
AB	28	9.33	26	10.33	p>0.05
<b>Total</b>	<b>300</b>	<b>100</b>	<b>300</b>	<b>100</b>	

Table 1

Blood group	Control (NO DM)		Male DM		P value	Female DM		P value
	Number	%	Number	%		Number	%	
A	52	17.33	20	13.33	P>0.05	31	20.67	P>0.05
B	102	34.00	45	30.00	P>0.05	57	38.00	P>0.05
O	118	39.33	67	44.67	P>0.05	49	32.67	P<0.01
AB	28	9.33	18	12.00	P>0.05	13	8.67	P>0.05
<b>TOTAL</b>	<b>300</b>	<b>100</b>	<b>150</b>	<b>100</b>		<b>150</b>	<b>100</b>	

Table 2

## ORIGINAL ARTICLE

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