



Research Paper

Frequency of ABO Blood Groups and Rh factor Among the Diabetes Mellitus Type 2 Patients at Nangarhar University Teaching Hospital

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ABSTRACT:

Background: It is expected that type 2 diabetes is hereditarily determined by ABO blood groups and phenotypic documentation of Rh factor is often related with type 2 diabetes. This will be useful for those with blood types who are susceptible to self-care by evading other blood types. Risk factors and taking preventive methods. Our Aim is Frequency of ABO and Rh blood groups among the diabetes mellitus type 2.

Materials and Methods: The Nangarhar University Teaching Hospital internal medical ward conducted a hospital-based cross-sectional study from 1400 to 1401. During this period, 1,000 diabetic type 2 patients were referred, of which 278 patients were selected according to ABO blood groups and Rh factor, and we detected their ABO blood group and Rh factor. We used the Direct Slide and test tube procedures were used to determine the ABO blood group and Rh factor. The fully automated clinical chemistry analyzer from micro lab, model 300, was used to measure biochemical parameters. IBM SPSS version 26 statistical software was used to analyse the data.

Results: We studied 1000 diabetes mellitus type 2 patients, of which 278(27.8%) patients were selected. In terms of gender, 167 (60, 07%) (16.7) patients were female and 111(39.93%) (11.1%) patients were male. Minimum age was 50 years old, maximum age was, 85-year-old, mean age was 56.92 and ST. D was (56.924 ± 8.155). (CI 95%, Marginal error 5%, Population proportion 50%, Sample size 278). According to ABO blood group DM type- 2, B⁺82(29.5%), A⁺75(26.98%), O⁺68(24.46%), AB⁺44(15.83%), A⁻3(1.08%), B⁻2(0.72%), AB⁻2(0.72%), O⁻2(0.72%). According to Rh, blood group DM type -2, 259(93.17%) were Rh⁺ and 19 (6.83%) were Rh⁻.

Conclusions: The purpose of this study was to find out how common ABO blood group and Rh factor are in people with type 2 diabetes. This will be helpful for people with different blood types who can take care of themselves by avoiding people with different blood types. Risk elements and using preventative measures. Prevalence of type 2 DM is more in B⁺ blood group. Rh⁺ is riskier for type 2 DM. and 50years old is modest for type2 DM. females is more predispose to type2 DM.

Manuscript Information
<p>Received Date: 18-06-2023 Accepted Date: 15-07-2023 Publication Date: 01-08-2023 Plagiarism Checked: Yes Manuscript ID: IJCRM:2-4-5 Peer Review Process: Yes</p>
How to Cite this Manuscript
<p>Dr. Saifullah Hadi. Frequency of ABO Blood Groups and Rh factor Among the Diabetes Mellitus Type 2 Patients at Nangarhar University Teaching Hospital. International Journal of Contemporary Research in Multidisciplinary. 2023; 2(4):38-44.</p>

KEYWORDS: type 2DM, ABO blood groups, Rh factor, age and gender.

INTRODUCTION:

A common condition called type 2 diabetes makes the amount of sugar (glucose) in the blood rise too high. Excessive thirst, the urge to urinate frequently, and weariness are just a few symptoms it might produce. Additionally, it can raise the chance of significant heart, nerve, and eye issues. Because there are many diabetic patients in our hospital,

research has not been done to determine which blood type is affected. As a result, it is important to take care the blood type that is more susceptible to the disease so that the patient does not develop diabetes and experience negative outcomes. Type 2 diabetes is characterized by chronic hyperglycemia and typically manifests in adults. Islet B-cell function deteriorates and eventually fails in this condition. (Sharjeel, 2021). Type 2 diabetes is hypothesized to have a genetic component that is influenced by the ABO and Rh blood group antigens. The phenotypic traits of the blood group are more closely associated with type 2 diabetes. It is advisable to take care of yourself if you have a blood type that is susceptible to such illnesses by avoiding additional risk factors and adopting preventive measures. (Legese, 2020). On the outside of tissues and red blood cells, the phenotypic blood groups "ABO" are hereditary antigenic elements. One idea holds that genetic predispositions like the blood group "ABO" are responsible for the incidence of diseases like type 2 diabetes. (Meo, 2016). Diabetes mellitus is a condition characterized by elevated blood sugar levels due to decreased insulin secretion or elevated insulin levels. From 140 million in 1998 to 300 million by 2025, according to Hilary King, individuals with diabetes. The most typical system in humans is the ABO blood group system. Two genes, A and B. (Kamil, 2010), influence the blood type of humans. Our research focused on the prevalence of ABO blood groups and Rh factor among diabetes mellitus type 2 patients in the internal medicine ward at Nangarhar University Teaching Hospital.

MATERIALS AND METHODS:

From 1400 to 1401, the internal medicine ward of Nangarhar University Teaching Hospital carried out a hospital-based cross-sectional study.

Firstly, we make a questioner for type2 DM patients and after the diagnosis of diabetes, the patient's ABO blood groups and Rh factor were determined with the consent of the patient. All laboratory examination of patients is performed free of charge in the hospital. During this time, we identified the ABO blood groups and Rh factor of 278 of the 1,000 diabetic type 2 patients who were referred. To identify the ABO blood groups and Rh factor, we employed the Direct Slide and test tube procedures. Biochemical parameters were measured using the fully automated Micro Lab model 300 clinical chemistry analyzer. The data were analyzed using statistical software from IBM SPSS version 26.in this research all diabetes mellitus type -2 patients were included.

RESULTS:

We studied 1000 diabetes mellitus type 2 patients in Nangarhar University teaching hospital from 1400 to 1401, of which 278(27.8%) patients were selected.in figure (1) show the statistic age group, Minimum age was 50 years old, maximum age was 85-year-old, and ST. D was (56.924 ± 8.155). (CI 95%, Marginal error 5%, Population proportion 50%, Sample size 278). in figure (2) show frequency of age groups. Fig (3) show the gender and ABO blood groups, in terms of gender, 167 (60, 07%) (16.7) patients were female and 111(39.93%) (11.1%) patients were male. According to ABO blood group DM type- 2, B+82(29.5%), A+75(26.98%), O+68(24.46%), AB+44(15.83%), A-3(1.08%), B-2(0.72%), AB-2(0. 72%).O-2(0. 72%).fig(4) shows the Rh factor in DM type -2, 259(93.17%) were Rh+ and 19 (6.83%) were Rh -.

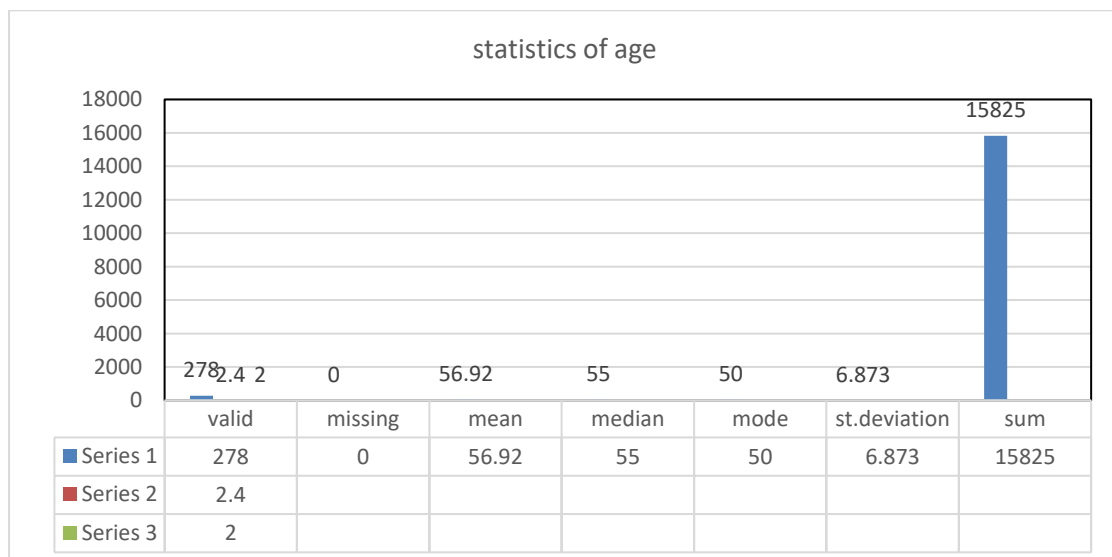


Figure 1: show the statistics of age it means the TYPE 2 DM is mode in 50 years old

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	50	86	30.9	30.9	30.9
	51	2	.7	.7	31.7
	52	5	1.8	1.8	33.5
	53	3	1.1	1.1	34.5
	54	7	2.5	2.5	37.1
	55	43	15.5	15.5	52.5
	56	14	5.0	5.0	57.6
	57	2	.7	.7	58.3
	58	4	1.4	1.4	59.7
	59	2	.7	.7	60.4
	60	63	22.7	22.7	83.1
	61	1	.4	.4	83.5
	62	2	.7	.7	84.2
	63	1	.4	.4	84.5
	64	1	.4	.4	84.9
	65	15	5.4	5.4	90.3
	68	2	.7	.7	91.0
	70	17	6.1	6.1	97.1
	71	1	.4	.4	97.5
	72	1	.4	.4	97.8
75	2	.7	.7	98.6	
76	1	.4	.4	98.9	
81	1	.4	.4	99.3	
85	2	.7	.7	100.0	
	Total	278	100.0	100.0	

Table 1: frequency of age

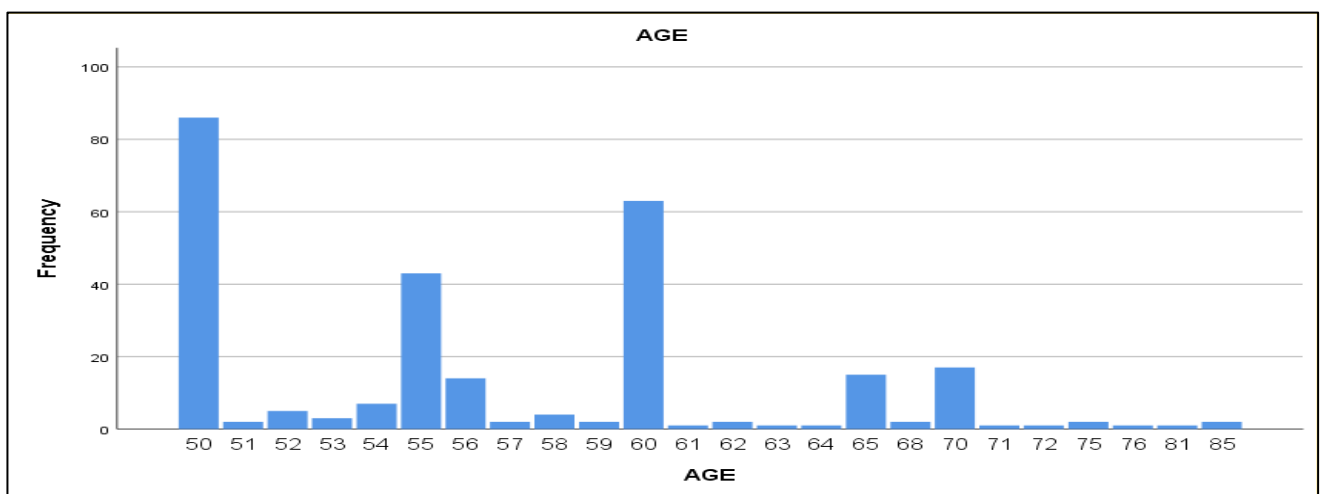


Figure 2: it illustrate frequency of age the T2 DM is frequently in 50years old

Gender	F								M							
ABO	B+	AB+	A+	O+	B-	A-	AB-	O-	B+	AB+	A+	O+	B-	A-	AB-	O-
Frequency	49	29	38	46	1	3	0	1	33	15	37	22	1	0	2	1
%	17.63%	10.43%	13.67%	16.55%	0.36%	1.08%	0%	0.36%	11.87%	5.4%	13.31%	7.91%	0.36%	0%	0.72%	0.36%
% within Gender	29.34%	17.37%	22.75%	27.54%	0.6%	1.8%	0%	0.6%	29.73%	13.51%	33.33%	19.82%	0.9%	0%	1.8%	0.9%

Table 2: Gender and ABO blood group frequency in T2DM patients

Gender	F								M							
ABO	B+	AB+	A+	O+	B-	A-	AB-	O-	B+	AB+	A+	O+	B-	A-	AB-	O-
Frequency	49	29	38	46	1	3	0	1	33	15	37	22	1	0	2	1
%	17.63%	10.43%	13.67%	16.55%	0.36%	1.08%	0%	0.36%	11.87%	5.4%	13.31%	7.91%	0.36%	0%	0.72%	0.36%
% within Gender	29.34%	17.37%	22.75%	27.54%	0.6%	1.8%	0%	0.6%	29.73%	13.51%	33.33%	19.82%	0.9%	0%	1.8%	0.9%

Table 3: Gender and ABO blood group frequency in T2DM patients

Table 3 in the table is indicated that female B+ blood group is more predisposed to T2 DM than other positive blood group and T2DM is more prevalent in female than male. A- Blood group is more predisposed to T2DM in

female than other negative blood group. In male T2DM is more prevalent in B+ blood group than other positive blood group and AB negative blood group is more predisposed to T2DM than other negative blood group.

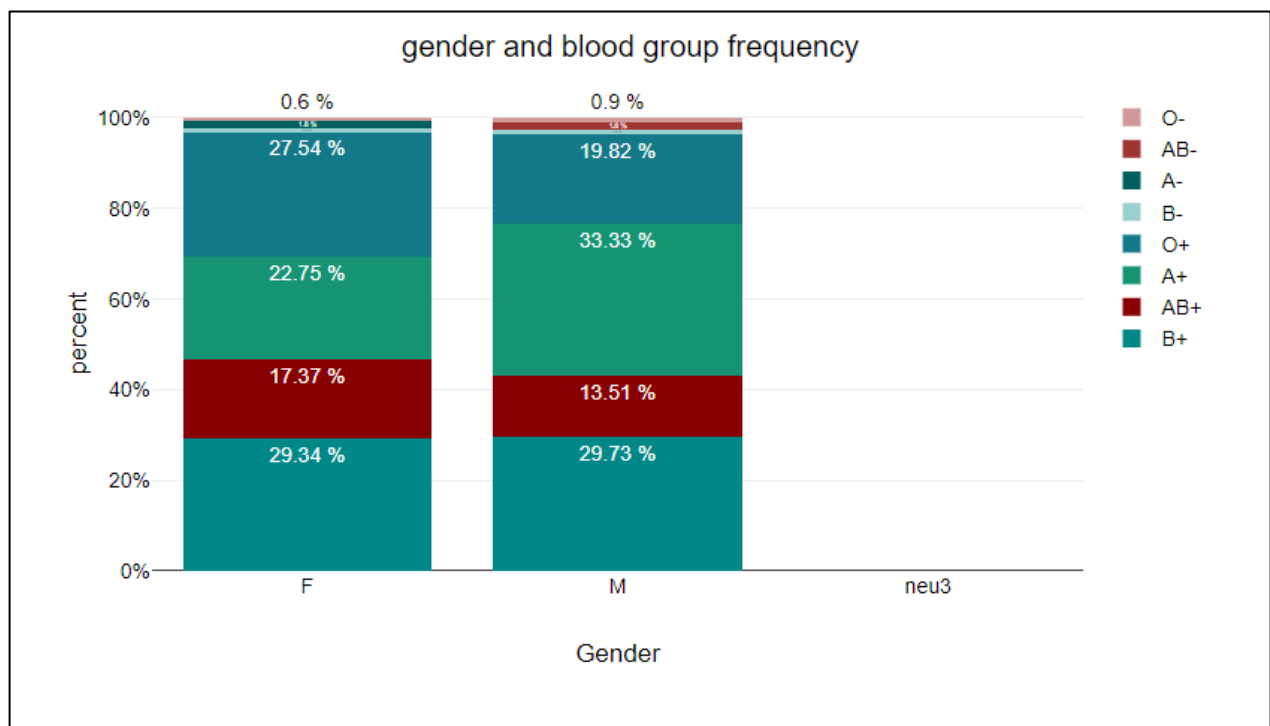


Figure 2: distribution of gender and ABO blood group, it showed that the type2 DM is more prevalent in female

Gender	F		M	
RH	+	-	+	-
Frequency	154	13	105	6
%	55.4%	4.68%	37.77%	2.16%

Table 4: in this table is showed the frequency of type2 DM in gender and Rh positive and negative group

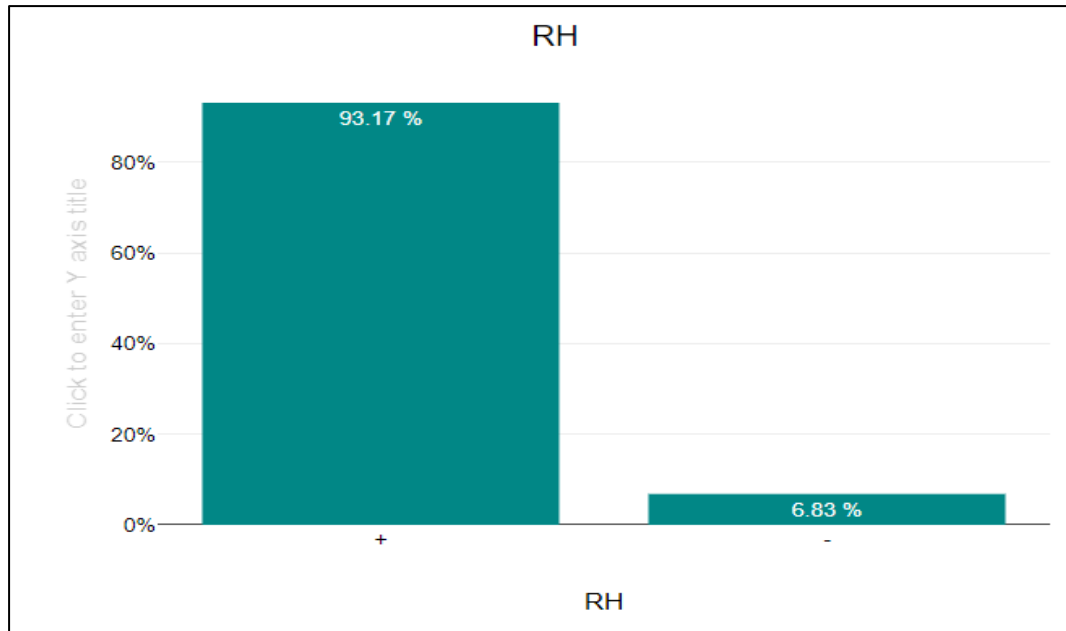


Figure 4: in this graph is showed that the Rh-positive blood group is more predisposed to type 2 DM

DISCUSSION:

Our sample size of type 2 DM was 278(27. 8%).In terms of gender, 167 (60, 07%) (16.7) patients were female and 111(39.93%) (11.1%) patients were male. According to ABO blood group DM type- 2, B+82(29.5%) was more and AB+44(15.83%) was less, A-3(1.08%), and O-2(0.72%). Type2 DM was more in Rh-positive blood group (259(93.17%) than Rh negative19 (6.83%) blood group. In this research, it was seen B blood group and Rh+ is favorable to type 2 diabetes regardless of other blood groups, so it should be tried that this group should follow the lifestyle modification for the prevention of type 2 diabetes, it is because the number of women suffering from diabetes is more than that of men. In this research, there were more female patients because there are more female patients in the hospital. This is important because research has not been carried out in this way until now, and it has been carried out in the blood groups and Rh positive and negative patients of DM- 2. We studded frequency of ABO and Rh blood group in type2 DM in positive and negative blood group and Rh. Other researchers studded only frequency ABO blood group in type2 DM patients. During the implementation of this research, the important, unexpected, and different points from other researches

were that we found some number of patients with diabetes type-2 in ABO blood group negative and Rh-negative patients. The strong points of this research were that international journals and database such as google scholar and PubMed were used, and in terms of ethics, we did not have any problems during patient examinations because all hospital laboratory examinations were free, and all laboratory personnel and my colleagues cooperated me in the collection of materials. During the physical and laboratory examinations, we shared the information with the patient, the patient agreed to the physical and laboratory examinations. We only examined the frequency of ABO and Rh blood group in type 2 diabetes patients; others can also examine this frequency in type 1 diabetes. It is suggested that physicians should closely monitor subjects with blood group “B” as these subjects have an increased risk of type 2 diabetes. You can greatly reduce your risk for type 2 diabetes and prediabetes by eating a healthy diet, getting plenty of physical activity, and losing excess weight. Managing blood pressure, Making healthy food choices. Managing cholesterol levels. Not smoking. T2DM and ABO blood groups were significantly associated. blood group O had a lower risk of T2DM than other blood groups, but blood

group B had a higher risk. (Legese, 2020). According to the study, type 2 diabetes mellitus and blood group B are strongly correlated, while type 2 diabetes mellitus and blood group O are negatively correlated. Additionally, there was no obvious connection between blood types A or AB and type 2 diabetes mellitus. (Sharjeel, 2021). Blood types A, B, and AB values were higher in diabetes patients by 4.36, 17.15, and 7.34 percent, respectively. Blood type O values were lower by 28.94%. (Qureshi, 2003). Diabetes mellitus and blood types were found to significantly correlate. While type-2 diabetics had a noticeably greater incidence of the A blood group, the incidence of Rh-negative patients was substantially higher in type-2 diabetics. (Oner, 2016). In comparison to other blood groups, male and female patients with blood type O had considerably higher levels of glucose; these levels steadily decreased from group A to group B to AB and from group O to group O to AB. (Jassim W. 2012). There was a strong association between blood groups A, AB, and blood group 2 Rh-positive and diabetes. (Sidhu, 1988). They learned that GDM risk was higher for those with blood type AB 2 than for other blood types. (Karagoz, 2015). The outcomes show an adverse association with a lower likelihood of developing between DM type 2 and ABO blood types A and O. (Kamil, 2010). ABO blood groups A and O and type 2 diabetes had a negative link. (Sheikh MK, 2009). Blood Group-B blood have a higher chance of getting diabetes mellitus (DM), which has a positive correlation with the ABO blood types. (Ghafar, 2022). DM is more predominant in people with blood type B (Bener, 2014). The blood type O are less likely to develop type 2 diabetes mellitus (Fagherazzi, 2015). People with blood group "B" are at high risk of developing type 2 diabetes, while subjects with blood group "O" are at minimal risk. (Meo, 2016). ABO blood types A and O and DM type 2 demonstrated a negative correlation; with the A and O blood types having a decreased probability of developing diabetes. (Kamil, 2010). Blood group "B" individuals have a greater risk of type 2 diabetes, but blood group "O" individuals have a lower risk. (Meo, 2016).

CONCLUSION:

We want to know how common ABO blood groups and Rh factor in people with type 2 diabetes. For those with different blood types who can take care of themselves by avoiding those with different blood types, this will be useful. Employing preventative actions and risk factors. Type 2 diabetes is more common in the B+ blood group. Rh+ poses a greater risk for type 2 DM. and 50 years old is a respectable age for type 2 DM. Women are more susceptible to type 2 diabetes.

ACKNOWLEDGEMENT:

I would like to express my deep gratitude to the laboratory technicians to examination ABO and Rh blood group and blood sugar.

CONFLICT OF INTEREST: there is no conflicting opinions.

FUNDING: there was no funding of any organization for performing this research

AUTHORS CONTRIBUTIONS: In this research, there is only one author; all the research work was done by Dr. Saifullah.hadi.

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