



## The Relation of ABO Blood Groups with some Oral Diseases

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### Abstract

The present study was designed to find the relation between the ABO blood groups and some oral diseases. Fifty healthy – looking students aged 18 to 23 years old were selected randomly included (18) female and (22) males. Blood samples were taken and examined for blood grouping by the slide method. Dental caries was recorded using DMFT (Decay. Missing and Filling) index teeth and periodontal parameters recorded by GI (gingival index) and PI (plaque index). All data were analyzed statistically using SPSS version 13. The statistical analysis for blood grouping and oral diseases including (dental caries and periodontal problems) showed no significant differences in mean 0.71, 0.57, 0.21 respectively ( $p>0.001$ ). There are no relation between the ABO blood groups and some oral diseases.

### Introduction:

Oral diseases are major medical problems with caries lesions and periodontal diseases among the most essential avoidable worldwide infectious illnesses. Oral health effect the general personal satisfaction and poor oral health is connected to chronic conditions and foundational sicknesses <sup>(1)</sup>. Dental caries is disease caused by many factors <sup>(2)</sup>. It still a major community diseases in most developed countries, affect 60–90% kids and majority of adults <sup>(3)</sup>. This may be due to the combination of irreversible character of caries lesions <sup>(4, 5)</sup>. Human periodontal diseases includes a heterogeneous group of intended diseases

which caused pathological obliteration of the periodontal tissues. It is outstanding that periodontal infections can differ concerning to bacterial etiology, host response, and clinical infection progressions. In spite of the fact that distinctions be among the different types of the periodontal infection, all offer the familiar features for complex host-bacterial interaction. Disease beginning and progression reflect the equilibrium between homeostasis and destruction of the periodontal tissues <sup>(6)</sup>. In 1900, Landsteiner firstly portrayed the existing of serologic differences among people, and divided individuals to four groups

depending upon whether their RBC cells layer contain agglutinin (antigens). The mainly critical blood-composing systems, the ABO system, which involves 4 blood classifications: A, B, AB, and O. Blood type O erythrocytes had no rely antigen, however blood of O type people have antibodies to both A and B antigens. Both types A and B erythrocytes cells have antigens, respectively, and build antibodies to the other. Type AB erythrocytes cells don't produce antibodies to the other blood classifications since they have both A and B antigens <sup>(7)</sup>.

The antigens of the ABO system are an entire piece of the red cell membrane (the external carbohydrate covering glycocalyx), The existing or lack of specific antigens have be related with different disease and irregularities, the antigens besides acting as a receptors for infectious agents <sup>(8)</sup>. Everybody carries a blood types antigen on their blood cell, yet a great number of people ( between 80 and 85%) have blood type antigens that raft around freely in their body secretions. These individuals are called secretors, since they "discharge" their blood type antigens into their body fluids, for example, saliva, bodily fluid, and semen. Individuals who don't secrete their blood type antigens in different liquids other than blood are non-secretors <sup>(9)</sup>. The emission of the ABO antigens in to saliva may be depresses the capacity of microscopic organisms to join to the tooth surface; this is because of a considerable lot of microbes have surface lectins, which they used to connect to the body surfaces and are often ABO specific. Additionally, non-secretors have a tendency to have bring down levels of the immunoglobulin A (IgA) antibodies in their saliva, which 1) may trade off their capacity to keep bacterial counts low <sup>(6)</sup> ABO blood group shown variety around the world. A few 2) varieties have even been reported for various regions inside a similar nation. It has been accounted for that O blood group is most common in American and 3) Canadian people, B type in Chinese and Indian people, and the A group in Eskimos <sup>(10)</sup>.

The aim of this study was to find the

relation between the ABO blood groups and oral diseases.

## Materials and Methods:

### The Subject Sample:

This present investigation, was started from the January 2017 to December 2017, 50 students of collage of Dentistry in Tikrit university at Salah al-Deen governorate with age ranged between 18-23 years were chosen by chance and agree to take part in this study, both gender with apparently healthy status were included, and all accepted to participate in this study after explanation the aim of it. Blood samples were collected by a sterile finger puncture with a disposable needles. The blood grouping test was done by the slid method <sup>(11)</sup>.

### Oral Examination:

Intraoral examination was carried out in a dental chair by a mouth mirror, a standard probe and adequate illumination (as described in oral health survey; basic methods; WHO 1997) and caries status of each patient was assigned using the DMFT index (oral health survey; basic methods; WHO 1997) for the dentition status and treatment need. The treatment need score was not assigned. For each patient, the DMFT score was calculated from it for each patient <sup>(12)</sup>. Recording of oral hygiene was by registration of two indices based on Loe and Silness <sup>(13)</sup>.

### Plaque index (PI):

It measure the thickness of the plaque at the cervical margin of the tooth with the following criteria:

- 1- 0 no plaque
- 2- 1 a film of plaque adhere to the free gingival margin and adjacent area of the tooth.
- 3- 2 moderate accumulation of soft deposits with in the gingival pocket, or the tooth and gingival margin which can be seen with the naked eye.
- 4- 3 abundance of soft matter with in the gingival pocket and / or on the tooth and gingival margin.

### **Gingival Index (GI):**

It measure the severity of the gingivitis based on color, consistency and bleeding on probing. A probe used to move along the soft tissues wall adjacent to the entrance to the gingival sulcus and the bleeding potential is based on the following criteria;

**1- 0** normal gingival

**2-1** mild inflammation slight change in color, slight edema, and no bleeding on probing.

**3-2** moderate inflammation; redness, edema, glazing and bleeding on probing.

**4-3** sever inflammation; marked redness and edema, ulceration and tendency for spontaneous bleeding <sup>(12)</sup>.

Statistical analysis of the data done using Spearman and Pearson tests for correlation coefficient, ANOVA tests for comparison between more than two groups. The level of significance was accepted at  $p < 0.001$ .

### **Results:**

Table (1), shows the mean values and standard deviation of DMF, D, plaque index and gingival index among both genders and the comparison between them. It was found that the mean value of DMF was higher in males ( $8.84 \pm 2.93$ ) than that in females ( $6.16 \pm 3.26$ ) with statistically highly significant difference ( $p < 0.001$ ), while the mean value of D, plaque index and gingival index was statistically not significantly difference among both genders. Table (2), shows the number and percentages of different blood groups according to gender. In this study the A blood type was more common (58%), follow by B type (32%) and AB type (6%) while the less common was O type (4%). Table (3), shows the DMFs among different blood groups by using ANOVA test used to compare between different blood groups. There was no significant difference in DMFs among blood group. Table (4), shows the Ds among different blood groups, by using ANOVA test. There was no significant difference Ds among blood group the  $p$ -value 0.06. Table (5), shows PI among different blood groups, by using ANOVA

test used to compare between different blood groups. There were no significant differences in PI among blood group the  $p$ -value 0.57. Table (6), show the GI among different blood groups shows GI among different blood groups, by using ANOVA test, there were no significant differences in GI among blood group the  $p$ -value 0.21.

### **Discussion:**

One of the still puzzle of public health is why a few population are more healthier than others. The answer of such clearly simple question, Even if they are complicated to solve, are the crucial in understanding oral diseases and how they may be killed or controlled through the advancement of fitting open strategies and projects. Oral diseases running from caries to tumor are all serious dangers to oral health. Oral health is an important part of general health. Many studies appears there might be a connection between oral diseases and other medical problems, for example, diabetes, heart diseases and stroke as well as pre-term and low-birth-weight babies. Periodontal diseases, as one of the most critical oral diseases including gingivitis and periodontitis. The principle reason for periodontal diseases is bacterial plaque. Poor oral cleanliness and plaque accumulation as the fundamental etiology of periodontitis. nevertheless, with the increase in knowlage of the etiology of preiodentitis, it was concluded that periodontal disease are multi factorial with more research it was comprehend that part from the regular etiological specialists and ecological components, certain unknown factors played a part in the progress of periodontal diseases. Therefore the focal point of deciding the disease susceptibility altered to hereditary qualities. Be that as it may, the studies investigation the connection between ABO blood group and periodontitis is narrow <sup>(10)</sup>. Demir et al.<sup>(15)</sup> examined the connection between periodontal infection and ABO blood group. He found a higher level of blood group type A in patints with gingivitis and a higher level of blood group O in patients with periodentitis. Ali

S. T. Al Ghamdi <sup>(8)</sup> found the mean CAL were most prominent among patients of blood group B. In this investigation there was no significant relations between the ABO blood group and periodontal diseases. This results may be due to the fact that periodontal disease could be affected by local causing like the present of plaque and poor oral hygiene more than the other systemic factors. In dental caries many investigations demonstrated connection between ABO blood group and caries lesions severity, Khalid M Salih et al <sup>(16)</sup> demonstrated that higher dental caries was in the blood group B and the least was in blood group AB. While Rania F <sup>(7)</sup> show that the students with type B had significantly DMFs value than students with other blood group, in the present study low value of caries was in A blood group but it's not significant .this difference could be attributed to difference in the sample size and differences in the methods of measure caries lesion as well as the geographical, racial and ethnic state

which effected on blood type distribution. In this study there was a significant differences in caries severity between genders , it is more in male than that in female this result could be reflect the fact that the female in this sample who had well oral health state and behavior. They were impressively worried about their teeth, gum and halitosis. This results agree with El-Samarrai <sup>(17)</sup> who demonstrated that males exhibited higher estimations of (DMFS) in compared with females. Furthermore, disagree with Alayoubi <sup>(18)</sup> how discovered no significant differences between the (DMFS) file of both genders.

### Conclusions:

There are no relation between the ABO blood groups and oral diseases. We recommend for more researches a in this subject to achieve more accurate results.

Table (1): Comparison between different variables in both genders, T-test used. There was a significant difference between DMFs in males and females, while there were no significant difference between Ds, PI, and GI in both genders.

Sex	No.	DMFs		Ds		PI		GI	
		mean	SD	mean	SD	mean	SD	mean	SD
Male	25	8.84	2.93	7.08	3.12	3.12	1.12	2.92	1.20
Female	25	6.16	3.26	3.40	2.74	2.88	1.19	2.60	1.40
p-value		<b>0.001</b>		2.18		0.24		0.20	

Table (2): Incidence distribution of ABO blood type among both genders.

sex	A		B		AB		O	
	No.	%	No.	%	No.	%	No.	%
Male	14	56%	8	32%	2	8%	1	4%
Female	15	60%	8	32%	1	4%	1	4%
Total	29	58%	16	32%	3	6%	2	4%

Table (3): The mean and variance of the DMFT in blood groups, the ANOVA single factor test used to compare between different blood groups. There was no significant difference in DMFs among blood group.

Blood Group	DMFT		
	Mean	Variance	p-value
A	7.28	13.92	0.71
B	7.44	7.86	
AB	9.67	4.33	
O	8	18	

Table (4): The means and variance of the Ds in the blood groups.

Blood Group	Ds		
	Mean	Variance	p-value
A	4.31	12.72	0.06
B	6	6.53	
AB	9	7	
O	7	32	

Table (5): The mean and variance of PI in blood groups.

Blood Group	PI		
	Mean	Variance	p-value
A	3.12	1.05	0.57
B	2.69	1.83	
AB	3.5	1.75	
O	3	2	

Table (6): The mean and variance of GI in blood groups, the ANOVA single factor test used to compare between different blood groups.

Blood Group	GI		
	Mean	Variance	p-value
A	2.517241	1.937192	0.21
B	2.875	1.283333	
AB	4	0.75	
O	3.5	0.5	

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