



RESEARCH ARTICLE

ASSOCIATION BETWEEN BLOOD GROUP, DENTAL CARIES AND TOOTH IMPACTION – A CROSS- SECTIONAL STUDY

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ABSTRACT

This cross-sectional study investigates the association between ABO blood groups, dental caries, and tooth impaction in a sample of 120 subjects from Malabar Dental College and Research Centre. Participants aged 20 to 60 years underwent oral health examinations, including blood group determination, DMFS index assessment for caries, and intraoral radiographs for impaction confirmation. Statistical analysis using SPSS 26.0 revealed a significant association between B blood group and higher mean DMFS scores for dental caries. However, no significant association was found between blood groups and impacted third molars. These findings suggest a potential role of blood types as a risk factor for dental caries but warrant further investigation with larger and diverse populations.

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INTRODUCTION

Dental caries is a multifactorial illness that affects people of all ages due to a complex combination of genetic and environmental variables. Dental caries is caused by the interaction of cariogenic organisms, fermentable carbohydrates, and the vulnerable tooth.^{3,5} The significance of genetics in an individual's vulnerability to dental caries has been explored in recent scientific research. Blood group is one such inherited genetic character. ABO method of classifying blood groups is universal. Many diseases show preferences among ABO blood type. Limited research is carried out with respect to oral diseases. In this system, there are four groups of blood A, B, AB & O. ABO blood groups could play a diagnostic role and a prognostic factor for oral and dental diseases, but the literature available on the same are still controversial and inconsistent. Impaction occurs when one tooth or more teeth cannot completely erupt to the normal position in the oral cavity.

The main objective of this study is to find the association of ABO blood groups, dental caries and impacted tooth as it is important to predict which population is more vulnerable to grow impacted third molars and dental caries, which could lead to making better intervention.

MATERIALS AND METHODS

- Cross-sectional study was done on patients and students of Malabar dental college and research centre, Edappal. A total of 120 subjects were randomly selected to be enrolled in this study.

Inclusion criteria: Individuals with an age between 20 and 60 years old who wanted to participate in the study voluntarily.

Exclusion criteria: A diagnosis of any systemic diseases such as cancer, autoimmune diseases such as Systemic Lupus Erythematosus, blood diseases such as Thalassemia, congenital syndromes such as Down Syndrome, craniofacial

deformities such as facial cleft, jaw pathology lesions, primary teeth dentition, and/or previous craniofacial trauma.

Besides, the patients with lack of information about their blood groups were excluded from the study.

- Participants were interviewed and examined by a group of dental practitioners. The study of the demographic data (such as blood group type) were recorded on a survey sheet and oral health examination was carried out in the department of public health dentistry. Blood groups of patients were obtained from their medical records and driving license cards. Clinical oral examinations were done using mouth mirrors and sickle shaped dental explorer.
- Caries experience of each subject was measured by using DMFS index for permanent teeth, which is the method of choice for World Health Organization (WHO) in their basic survey technique
- If the subject has impacted teeth clinically, an intraoral periapical radiograph was taken to confirm the same. The no and site of impacted teeth were also recorded in the sheet.

RESULTS & STATISTICAL ANALYSIS

Data was analysed using the statistical package SPSS 26.0 (SPSS Inc., Chicago, IL) and level of significance was set at $p < 0.05$. Descriptive statistics was performed to assess the mean and standard deviation of the respective groups. Inferential statistics to find out the difference was done using One way ANOVA test followed by Tukey's HSD test. Chi square test was used to check the proportion.

Table 1. Caries experience vs blood group (dmfs)

	GROUP	MEAN	SD
BLOOD GROUP	A	5.85	2.67
	B	8.5	3.22
	AB	5.46	2.66
	O	5.86	3.45
P VALUE (ONE WAY ANOVA TEST)		0.0001*	
POSTHOC TEST	A vs B	0.0001*	
	A vs AB	0.91	
	A vs O	0.91	
	B vs AB	0.0001*	
	B vs O	0.0001*	
	AB vs O	0.92	

* $P < 0.05$ IS STATISTICALLY SIGNIFICANT

- B group is having significantly higher mean DMFS compared to other blood groups ($p < 0.05$)
- In accordance with survey done by Kaluram Yadav et al² (B group reported highest DMFS) and in accordance with research done by Paromita Mazumdar et al¹. But our research is in contradictory with research done by Dr. Afreen Jan et al⁵, in which they found that AB blood group had higher DMFS score compared to other groups.

Table 2. Impaction vs blood group

	GROUP	MA	DA	H	V	P value (chi Square test)
BLOOD GROUP	A	12	13	0	5	0.24
	B	8	14	2	6	
	AB	8	12	4	6	
	O	9	10	2	9	

* $P < 0.05$ IS STATISTICALLY SIGNIFICANT (chi square)

- No significant difference was observed between the group regarding the frequency of impaction types ($p > 0.05$). In accordance with research done Hanie Ahmadi et al⁴ and research done by Deepak Narang⁶.

CONCLUSION

According to the findings of this study, there is a substantial link between blood types and the onset of dental caries. As a result, blood types may be a risk factor for the development of dental caries. B blood group had the highest mean DMFS score for dental caries. The evaluation of the relationship between the blood group and impacted tooth revealed that blood groups have no association with the impacted third molars. However, more studies with higher and diversified participants should be done to find comprehensive results.

REFERENCES

- Paromita Mazumdar, Utpal Kumar Das, Sanhita Goswami, "Correlation between blood group and dental caries in 20-60 years age group: A study", International Journal of Advanced Research (2014), Volume 2, Issue 11, 413-424.
- Kaluram Yadav, Jitender Solanki, C. L. Dileep, B. R. Adyanthaya, Prashant Mishra, Omprakash Yadav, "Association between different blood groups, depression and oral health status of dental students", Clujul Med. 2018 Jul; 91(3): 317–321. DOI: 10.15386/cjmed-830.
- Smit Singla, Akhilesh Verma, Snehil Goyal, Itika Singla, Anjali Shetty, "Correlation of dental caries and blood group in Western Punjab population in India", Indian Journal of Multidisciplinary Dentistry 5(2):59 DOI:10.4103/2229-6360.175034
- Hanie Ahmadi, Alireza Ebrahimi, Farhad Ghorbani, "The Correlation between Impacted Third Molar and Blood Group", Int J Dent. 2021; 2775913. Published online 2021 Nov 12. DOI: 10.1155/2021/2775913
- Dr. Afreen Jan, Dr. Dipanshu Aggarwal, Dr. Kriti Pallavi, Dr. Asifa Ashraf, Dr. Poonam Waghmode, Malik Aqueel Ahmed Khan, "ABO Blood Group as a Potential Risk Factor for Dental Caries: A Cross-Sectional Study", International Journal of Medical Science and Diagnosis Research (IJMSDR), Volume 5, Issue 11; November:2021; Page No. 21-24
- Deepak Narang, Abhishek Singh Nayyar, Piyush Gandhi, "Assessment of correlation of ABO blood grouping and Impacted third molars: A Blind trial", International Journal of Research in Health and Allied Sciences |Vol. 2|Issue 1| January - March 2016