

**Original article:**

## **Assessment of knowledge among dental students regarding allergies in dentistry**

**DR. SAI SANGEETA POLASANI<sup>1</sup>, DR. K.V.N.R. PRATAP<sup>2</sup>, DR.T. MADHAVI PADMA<sup>3</sup>,  
DR.V. SIVA KALYAN<sup>4</sup>, DR.V. SRUJAN<sup>5</sup>**

1. Student (BDS), Department of Public Health Dentistry, Mamata Dental College, Khammam, India
  2. Professor & HOD, Department of Public Health Dentistry, Mamata Dental College, Khammam, India
  3. Professor, Department of Public Health Dentistry, Mamata Dental College, Khammam, India
  4. Reader, Department of Public Health Dentistry, Mamata Dental College, Khammam, India
  5. Senior Lecturer, Department of Public Health Dentistry, Mamata Dental College, Khammam, India
- Corresponding author : DR. SAI SANGEETA POLASANI.

### **ABSTRACT**

**Background:** Allergy is one among the most widespread diseases in the 21st century. On a regular basis, one can encounter a wide spectrum of allergens, with pollen, dust, and animal dander being the most frequent. We now use a variety of dental materials that are readily available worldwide, thanks to globalization and modernization of dentistry. However, the use of diverse dental materials are not devoid of the potential of causing allergic responses in dentistry.

**Methods:** A cross-sectional questionnaire study was undertaken in a tertiary care teaching dental hospital. The descriptive statistics were performed using SPSS version 23. A p value of <0.05 was used to appraise the statistical significance.

**Results:** A total of 207 students took part in the survey, 158 of them being female and the rest 49 being male. Age of the participants ranges from 20-24 years. The findings of the study revealed that female students have more knowledge regarding allergies in dentistry compared to male students and based on year of study interns have more knowledge regarding allergies in dentistry followed by 4th and 3rd year students.

**Conclusion:** Students who participated in this study have moderate knowledge regarding allergies in dentistry. It is essential for aspiring dentists to have adequate knowledge regarding these allergic reactions in order to improve their quality of service in practice.

**Key words:** allergen, allergic reactions, dental materials, hypersensitivity.

### **INTRODUCTION**

Allergies have been familiar for centuries, but their prevalence has a substantial increase in the last few decades, which can be explained by the fact that our changed lifestyle practice comes into contact with a large number of allergens (substances that cause allergies) like drugs, chemicals, certain foods and etc<sup>1</sup>. It wasn't until 1906 that a viennese paediatrician, Clemens Von Pirquet realised that the immune system's function should not be explained in terms of immunity from disease, but rather as an alteration in responsiveness to disease agents<sup>2</sup>. To convey such a concept, he coined a new word : Allergy, that can be defined as a hypersensitivity reaction initiated by specific immunologic mechanisms in response to an otherwise harmless environmental antigen called an allergen according to World Allergy Organisation<sup>3</sup>. Philip Gell and Robin Coombs devised a new classification approach in 1963 that outlined four categories of hypersensitivity reactions, Type I to Type IV.

The predisposition to allergies has raised in dentistry as well since the number of materials used in dentistry has increased significantly. The earliest known case of dental metal allergy was triggered by amalgam restorations in

the oral cavity, which developed stomatitis and dermatitis around the anus (Fleischmann 1928)<sup>4</sup>. The broad spectrum of signs and symptoms of allergies in dentistry include stomatitis, cheilitis, gingivitis, perioral dermatitis, lichenoid reactions, swelling of lips and face etc<sup>5</sup>. Metals and alloys like nickel, palladium, cobalt, chromium, gold, amalgam, components of dental composites and endodontic materials, resins, acrylates, impression materials, local anesthesia, latex gloves are some of the materials in dentistry that cause hypersensitivity<sup>1,6</sup>. Lidocaine is a major allergen that can produce severe symptoms, even anaphylactic shock. With the spike in hypersensitive reactions, it's becoming more important than ever to figure out what's driving them. As the number of patients with allergies to various materials increases, aspiring dentists should be thoroughly aware of the allergies caused by dental materials in order to prevent allergic manifestations in their practice. The purpose of this study is to evaluate dental student's understanding of allergies in dentistry.

**Aim:**

Aim of this study is to assess knowledge among dental students regarding allergies in dentistry.

**Objectives:**

\*To determine the knowledge among dental students regarding allergies in dentistry based on gender.

\*To determine the knowledge among dental students regarding allergies in dentistry based on year of study.

**MATERIAL AND METHODS:**

A cross-sectional study was undertaken in a tertiary care teaching dental hospital, khammam. A total of 207 students of third year, fourth year and interns, who responded to the questionnaire were included under the study.

An online questionnaire consisting of 20 closed ended questions based on knowledge regarding allergies in dentistry was sent to the students by copying link via social networking apps like Instagram and WhatsApp during the study duration of One week (31st aug-5th sep of 2021). Convenience sampling was used as the sampling method. Ethical clearance was obtained from Institutional Ethical Research Committee.

Statistical analysis: Data collected from the filled questionnaires was tabulated in MS Excel sheets and the descriptive statistics were calculated using SPSS version 23, and a p value of <0.05 was used to appraise the statistical significance.

**RESULTS**

A total of 207 students responded to the questionnaire among 300 students, resulting in a 69 percent rate of response.

Table 1 depicts that, out of 207 respondents, the majority of the age group is 21-23 with the mean age of 22 years. In the current study, the majority are female participants, 158(76.33%) and based on year of study the majority of the respondents are 4th years-79(38.16%) followed by 3rd years-72(34.78%) and interns-56(27.05%).

Table 2: on comparison of knowledge regarding allergies in dentistry, females (65.19%) have more knowledge than males (63.27%). Among all the students, interns (75.00%) have more knowledge than IV Years (67.09%) and III Years (54.17%).

Table 2 illustrates that, 65.19 percent of females think that the factors triggering allergies include both cross-sensitivity and Concurrent sensitization compared to males(63.27%). On comparison of knowledge regarding allergies in dentistry, females have more knowledge compared to males and it is statistically significant with a p value of 0.0280 and based on year of study, interns have more knowledge followed by 4th and 3rd year students.

**Table 1 : DEMOGRAPHIC PROFILE OF RESPONDENTS.**

Demographic profile	No of students	% of students
<b>Age in yrs</b>		
20yrs	6	2.90
21yrs	49	23.67
22yrs	56	27.05
23yrs	52	25.12
24yrs	44	21.26
<b>Gender</b>		
Male	49	23.67
Female	158	76.33
<b>Years of study</b>		
III BDS	72	34.78
IV BDS	79	38.16
Interns	56	27.05
Total	207	100.00

**Table 2 : COMPARISON OF KNOWLEDGE AMONG DENTAL STUDENTS REGARDING ALLERGIES IN DENTISTRY BASED ON GENDER AND YEAR OF STUDY**

	Gender		P-value	Year of Study			P-value
	Male (%)	Female (%)		III years (%)	IV years	Interns	
Cross-sensitivity.	7 (14.29)	4 (2.53)	P= 0.0110*	9 (12.50)	2 (2.53)	0 (0.00)	P=0.0100*
Concurrent sensitization.	3 (6.12)	17 (10.76)		8 (11.11)	10 (12.66)	2 (3.57)	
Both the above.	31 (63.27)	103 (65.19)		39 (54.17)	53 (67.09)	42 (75.00)	
Don't know.	8 (16.33)	34 (21.52)		16 (22.22)	14 (17.72)	12 (21.43)	

## DISCUSSION

A multitude of potentially sensitizing chemicals are constantly exposed to the oral cavity. During regular dental treatment, many substances such as topical drugs, synthetic resins, disinfecting agents, and metals have a high probability of interacting with the oral mucosa<sup>7</sup>. Allergic hypersensitivity symptoms manifest not only in the oral cavity, but also in the hands, feet, and the entire body<sup>8</sup>. There are four different types of allergic reactions known. Types I, II, and III are mediated by antibodies (IgE, IgG), resulting in immediate allergic reactions. Type IV, on the other hand, is mediated by cells and is referred to as a delayed reaction. Dental allergies often constitute delayed hypersensitivity reactions to specific dental materials<sup>9</sup>.

Occupational allergies impact a significant number of dental practitioners. Due to their frequent usage of latex gloves to avoid transmittable illnesses since 1980s, dentists have been one of the most afflicted occupational groups for latex allergy. In addition to direct skin contact with latex-derived products, airborne latex antigens (corn starch particles) can be inhaled into the lungs and elicit allergic responses<sup>10</sup>. In the present study Latex allergy has been observed by 14.98 percent of respondents or their colleagues which is less when compared to a cross-sectional study in a group of French dentists (66.7%) conducted by Lise Boudinar (2021)<sup>3</sup>.

There are numerous studies on dental allergies in the scientific literature. This study was conducted to assess the knowledge among dental students regarding allergies in dentistry. The results in our study depict that both (57%) immediate and delayed reactions are frequently caused by dental materials which is in contrast to a Romanian questionnaire based study conducted by Hajnal Lorincz (2020)<sup>1</sup>, where immediate reactions (68%) are more frequent than delayed reactions (32%). According to the results in our study, Nickel (57.49%) is the most common allergenic metal, which is in accordance with the results of study conducted by Mei-Eng Tu (2011)<sup>11</sup>. Majority (57.49%) of the students in our study believe in considering anamnestic details while taking case history.

Dental practitioners must be aware of dental material components that are potential allergens, given the rising prevalence of allergies among patients and the enormous variety of materials used in dentistry.

## CONCLUSION

The students who participated in this study have a moderate level of knowledge regarding allergies in dentistry and there is a need to improve their knowledge by listening to lectures or referring to different sources of information regarding allergies in dentistry. Our results suggest that Metals, Components of dental composites, Denture resin materials and etc are the different materials in dentistry that cause allergies. Nickel most frequently causes allergies among metals. Patch test, skin prick tests, Intradermal tests are the different tests to diagnose allergies. A wide range of dental materials, ranging from diagnosis to rehabilitation for the treatment of oral diseases, have the potential to cause allergic responses in dentistry. As a result, comprehensive dental care must be provided without affecting the patient's health.

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