



A CROSS-SECTIONAL STUDY ON THE INTEREST OF DENTAL STUDENTS IN BASIC SCIENCES AND CLINICAL ELECTIVES

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ABSTRACT

Background: This cross-sectional study explores the elective preferences among dental students in Peshawar, focusing on their interest in both basic sciences and clinical electives. Understanding these preferences is crucial for curriculum developers aiming to enhance dental education.

Methods: A total of 237 students from various dental colleges participated in the study, which utilized a descriptive cross-sectional design. Data were collected using an online Google Form from November 2022 to February 2023. The study included sections on demographic information, interest in electives, preferred fields, and interest in basic versus clinical sciences. Data analysis was conducted using SPSS version 22, employing descriptive statistics to summarize participant responses.

Results: The findings indicate a predominant interest among dental students in clinical sciences, with Oral and Maxillofacial Surgery being the most preferred elective field (35.6%). In basic sciences, Research Methodology garnered the highest interest (39.9%). Significant interest was also noted in electives focusing on Communication Skills (30.1%) and Stress Management (28.0%). Short-term electives, particularly those lasting four weeks or less, were favored by a majority of students.

Conclusion: These results underscore the need for dental curricula to include diverse elective offerings that align with student interests, enhancing both clinical competencies and non-clinical

skills crucial for dental practice. Tailoring educational programs to meet these preferences can better prepare dental students for their professional careers. Future studies could further explore the impact of elective choices on career outcomes and patient care.

Keywords: Dental education, elective preferences, basic sciences, clinical sciences, curriculum development

Introduction

The field of dentistry is a dynamic and integral part of the healthcare system, characterized by its reliance on both robust foundational knowledge and practical, hands-on clinical skills¹. The education of dental professionals is traditionally structured around a comprehensive curriculum that encompasses the basic sciences, such as anatomy, physiology, biochemistry, and microbiology, alongside intensive clinical training². This dual focus ensures that graduates are well-equipped to understand the underlying biological mechanisms of oral health and disease, as well as to perform the diverse array of clinical procedures required in dental practice. Despite the structured nature of dental education, there is a growing recognition of the importance of incorporating elective courses into the curriculum³. Electives offer students the opportunity to pursue areas of personal and professional interest, allowing for a more tailored and enriching educational experience. These courses can range from advanced topics in basic sciences, such as genetics, pharmacology, and biomaterials, to specialized clinical fields like endodontics, oral surgery, pediatric dentistry, and cosmetic dentistry^{4,5}. The flexibility of electives enables students to explore new areas, deepen their knowledge in specific subjects, and potentially discover their niche within the vast field of dentistry⁶.

Electives serve multiple purposes in dental education. They provide a break from the mandatory coursework, allowing students to engage with material that they find particularly compelling or relevant to their future careers⁷. This engagement can foster a deeper passion for the subject matter, enhance learning outcomes, and improve overall academic satisfaction. Moreover, electives can help students develop a more holistic understanding of dentistry, encompassing both its scientific and clinical aspects⁸. The choice of electives can also have significant implications for students' career trajectories. By allowing students to specialize early in their education, electives can provide a competitive edge in the job market and facilitate entry into prestigious residency programs or advanced training opportunities. The ability to tailor one's education through electives can lead to greater professional fulfillment and a more defined career path^{9,10}.

Despite the potential benefits of electives, there is limited research on dental students' interest in these courses and how their preferences might shape the future of dental education. Understanding students' interests is crucial for several reasons. Firstly, it can help educational institutions design curricula that are both engaging and relevant, thereby improving student satisfaction and retention¹¹. Secondly, aligning elective offerings with student interests and industry demands can ensure that graduates are well-prepared for the challenges and opportunities in the evolving field of dentistry. Lastly, insights into students' preferences can guide resource allocation, faculty development, and the strategic planning of educational programs.

The primary objective of this study is to investigate the interest levels of dental students in elective courses. Specifically, the study aims to determine which elective fields students would choose if offered and to evaluate their interest in basic versus clinical sciences. By addressing these objectives, the study seeks to provide valuable insights into how elective courses can be effectively integrated into dental education to enhance both the learning experience and the professional preparedness of future dentists.

Methodology

Study Design: This study was designed as a descriptive cross-sectional study to assess the interest of dental students in basic sciences and clinical electives.

Study Duration and Setting: The study was carried out over a period of four months, from November 2022 to February 2023. It included all the dental colleges located in district Peshawar. The selection of this setting provided a comprehensive view of the interests of dental students across various institutions within the district.

Sampling Technique: A convenient sampling technique was employed to recruit participants for the study. This method was chosen due to its efficiency and ease of access to participants, allowing for a sufficient sample size to be obtained within the specified study period.

Data Collection: Data were collected using an online study form created on Google Forms. The online form was chosen for its accessibility and ability to reach a large number of students efficiently. The form was distributed via email and social media platforms to ensure broad participation. The study included questions designed to capture demographic information, interest levels in elective courses, preferred fields of electives, and the distinction between interest in basic and clinical sciences.

Study Instrument: The study instrument consisted of multiple sections designed to comprehensively capture the necessary data. The first section gathered demographic information, including age, gender, year of study, and the dental college of the participants. The second section focused on the interest in electives, with questions aimed at gauging the overall interest level of students in elective courses. The third section delved into the preferred fields, asking participants to specify which fields—basic sciences or clinical electives—they would choose if given the option. Finally, the fourth section assessed the relative interest in basic versus clinical sciences, with questions designed to evaluate the participants' preferences between basic science electives and clinical science electives.

Data Processing and Analysis: The data collected through the online study were downloaded and processed using Statistical Package for the Social Sciences (SPSS) version 22. Data cleaning and validation were performed to ensure accuracy and completeness. Descriptive statistics, such as frequencies and percentages, were used to summarize the data. Inferential statistics, such as chi-square tests, were employed to examine relationships between variables, such as the relationship between demographic factors and elective preferences.

Ethical Considerations: The study was conducted with the approval of the ethical committee of Peshawar Medical College. Informed consent was obtained from all participants prior to their inclusion in the study. Participants were assured of the confidentiality and anonymity of their responses. The study adhered to the ethical principles of respect for persons, beneficence, and justice. The ethical approval ensured that the study complied with all relevant guidelines and regulations for conducting research involving human participants.

Results

A total of 237 responses were received. Among the respondents, 76.8% were female and 23.2% were male students. The majority of students showed a preference for electives in clinical sciences, with 35.6% choosing Oral and Maxillofacial Surgery as their field of choice. In basic sciences, 39.9% of students were interested in Research Methodology. A 30% of students expressed interest in workshops on Communication Skills. The preferred duration for electives was four weeks, selected by 32.1% of the students. Table 1 provides a demographic breakdown of the participants. The majorities of respondents were from Peshawar Dental College (38.6%), and most were in their 3rd year of study (43.2%). Female students comprised 77.1% of the sample, highlighting a significant gender disparity among respondents.

Table 1: Demographic Information

Variable	Category	Frequency	Percent
College	Khyber College of Dentistry	38	16.1%
	Peshawar Dental College	91	38.6%
	Rehman College of Dentistry	45	19.1%
	Sardar Begum Dental College	62	26.3%
	Total	236	100.0%
Gender	Female	182	77.1%
	Male	54	22.9%
	Total	236	100.0%
Year of Study	1st Year	11	4.7%
	2nd Year	54	22.9%
	3rd Year	102	43.2%
	Dentist	1	0.4%
	Final Year	51	21.6%
	House Officer	17	7.2%
	Total	236	100.0%

Figure 1 shows the preferences of students for various clinical elective fields. Oral and Maxillofacial Surgery was the most preferred elective (35.2%), followed by Endodontics (16.9%) and Orthodontics (13.6%). This indicates a strong interest in surgical and restorative fields among dental students.

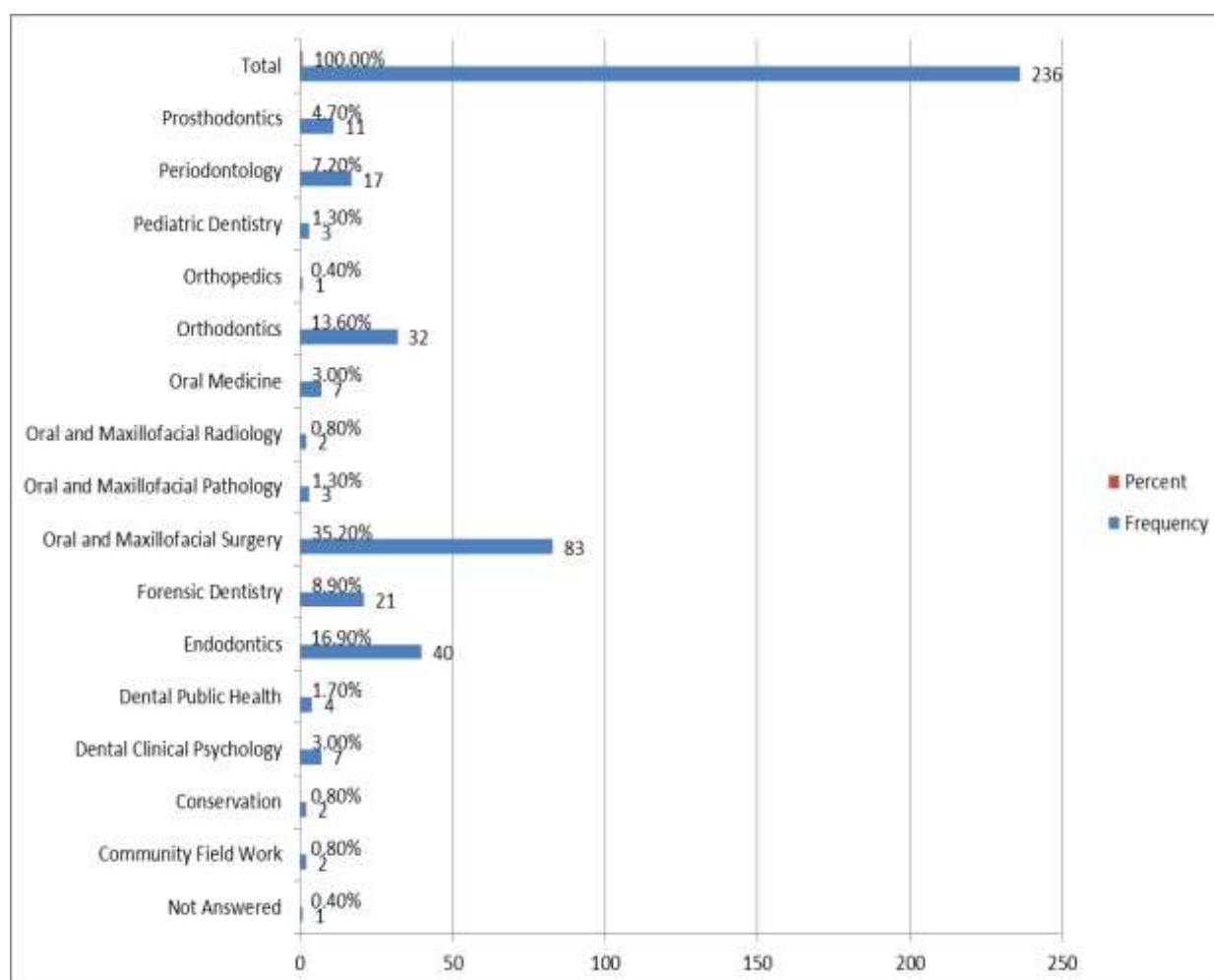
**Figure 1: Interest in Clinical Electives**

Table 2 details the interest of students in pre-clinical and research electives. A significant majority (94.9%) expressed interest in pre-clinical electives, with Oral Examination and Dental Indices being the most popular choice (29.2%). For research electives, 84.7% showed interest, with Research Methodology being the top preference (36.9%). Regarding preferred teaching methods, a clinical internship was the most favored (54.2%), indicating a preference for hands-on, practical learning experiences.

Table 2: Interest in Pre-Clinical and Research Electives

Variable	Frequency	Percent
Interested in Pre-Clinical Electives		
Not Answered	1	0.4%
No	11	4.7%
Yes	224	94.9%
Total	236	100.0%
Choice of Pre-Clinical Electives		
Not Answered	4	1.7%
Dental Waste Management	10	4.2%
Instrument Tray Setup and Cavity Designing	50	21.2%
Oral Examination and Dental Indices	69	29.2%
Rubber Dam Application	38	16.1%
Sterilization and Disinfection	32	13.6%
Teeth Setup for Complete Denture	33	14.0%
Total	236	100.0%
Interested in Research Electives		
Not Answered	1	0.4%
No	35	14.8%
Yes	200	84.7%
Total	236	100.0%
Choice of Research Electives		
Not Answered	19	8.1%
Data Processing and Presentation	42	17.8%
Literature Search and Review	39	16.5%
Research Methodology	87	36.9%
Study Design	49	20.8%
Total	236	100.0%
Preferred Teaching Methods		
Group Discussions	46	19.5%
Clinical Internship	128	54.2%
Lectures	11	4.7%
Workshops	51	21.6%
Total	236	100.0%

Table 3 outlines the interest of students in electives focusing on developing workplace skills. Communication Skills (30.1%) and Stress Management for Dental Students (28.0%) were the most popular areas, indicating a significant demand for soft skills and stress management training among dental students.

Table 3: Interest in Electives on Developing Workplace Skills

Variable	Frequency	Percent
Anger Management	12	5.1%
Communication Skills	71	30.1%

Entrepreneurship in Dentistry	31	13.1%
Handling Workplace Harassment	12	5.1%
Stress Management for Dental Patients	1	0.4%
Stress Management for Dental Students	66	28.0%
Substance Abuse Identification and Supportive Therapy	9	3.8%
Importance of Mentoring in Dental Profession	23	9.7%
Time Management	11	4.7%
Total	236	100.0%

Figure 2 give details of the preferred duration for elective courses among the respondents. Four weeks and two weeks were equally the most preferred durations, each chosen by 31.8% of the respondents. This indicates that students favor relatively short-term electives, with one-week (18.6%) and three-week (15.7%) durations also being popular choices.

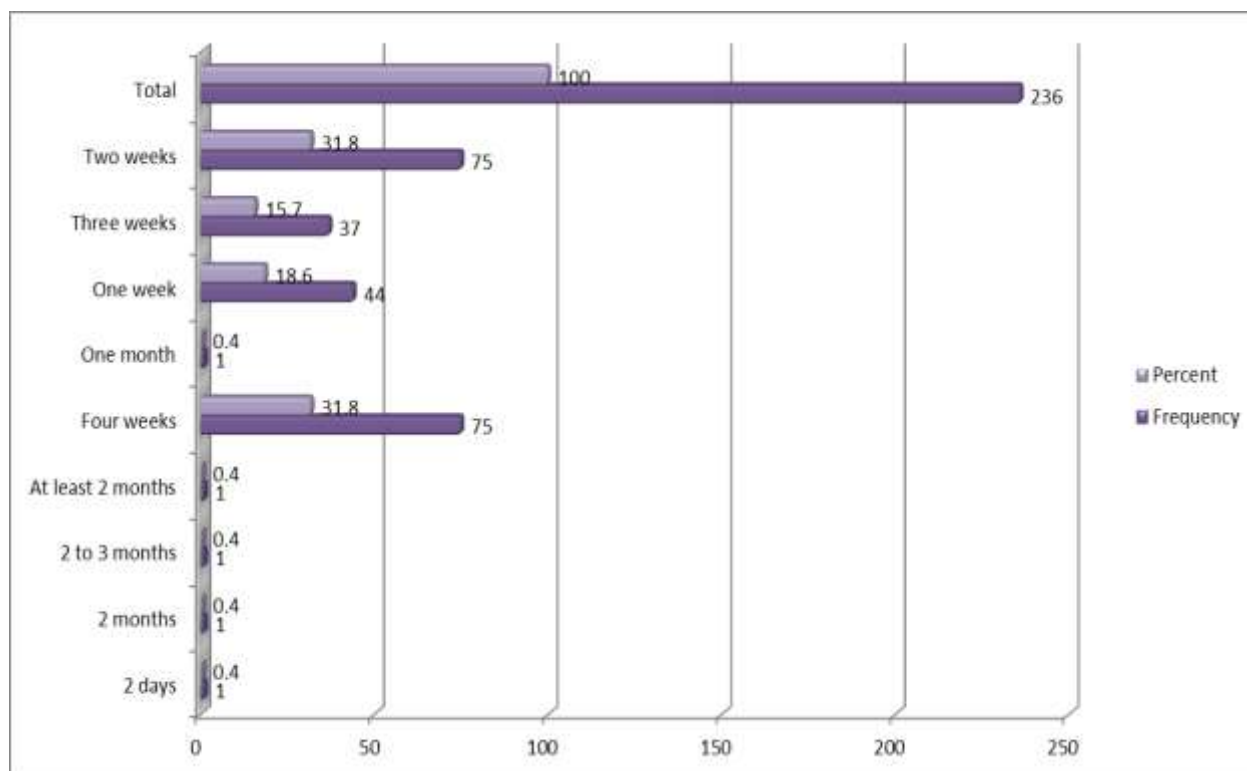


Figure 2: Preferred Duration of Electives

Table 4 compiles the various suggestions for additional programs that students felt should be included in their electives. The vast majority (81.7%) did not suggest additional programs, while the remaining suggestions were diverse, with Dental Photography and Digital Dentistry being the most frequently mentioned (0.8% each). This highlights a wide range of interests among dental students for potential elective courses.

Table 4: Suggestions for Additional Programs

Variable	Frequency	Percent
No	183	81.7%
Aesthetic Dentistry	1	0.4%
Anything that Helps	1	0.4%
Artificial Intelligence	1	0.4%
Chr	1	0.4%
Clinical Applications	1	0.4%

Clinical Exposures	1	0.4%
Clinical Rotations	1	0.4%
Cosmetic Dentistry in Islam	1	0.4%
Dental Camp in Underdeveloped Areas	1	0.4%
Dental Camps	1	0.4%
Dental Clinic Equipment/Materials Manufacturing, Purchasing, and Quality Assessment	1	0.4%
Dental Health Care Administration	1	0.4%
Dental Implant Workshop	1	0.4%
Dental Photography	2	0.8%
Digital Dentistry	2	0.8%
Doctorate Degree	1	0.4%
Electives in Local Cities for Hostelites with Right Guidelines	1	0.4%
Emergency Management Highly Recommended	1	0.4%
Financial Support	1	0.4%
Forensic Dentistry	1	0.4%
Free Camp	1	0.4%
General Practice	2	0.8%
Handling of Medical Emergencies in Dental Practice	1	0.4%
How to Deal with Your Colleagues	1	0.4%
I Don't Know	1	0.4%
I'm Not Much into Giving Lectures/Teachers as My Concern Is More in Clinics	1	0.4%
Improving Operative Dentistry Skills	1	0.4%
Lectures on Workplace Toxicity	1	0.4%
Medical Camps	1	0.4%
Mental Health in Dental Students	1	0.4%
Oncology	1	0.4%
Operative	1	0.4%
Oral Hygiene of Geriatrics	1	0.4%
Organization of Workshop Regarding Dental Practice	1	0.4%
Total	236	100.0%

Discussion

A significant majority of students preferred electives in clinical sciences, with Oral and Maxillofacial Surgery being the most chosen field (35.6%). This preference echoes findings from other studies, which reported high interest among dental students in surgical specialties¹². The preference for surgical disciplines may be attributed to the perceived prestige, potential for specialization, and the hands-on nature of these fields. In basic sciences, 39.9% of students expressed interest in Research Methodology. This is consistent with previous research that highlighted students' valuation of research skills and methodology courses as they enhance critical thinking and evidence-based practice^{13, 14}. The growing interest in research electives reflects the increasing emphasis on research in dental education and practice.

The study found substantial interest in electives focusing on workplace skills, with Communication Skills (30.1%) and Stress Management for Dental Students (28.0%) being the most popular. Previous research has also highlighted the importance of non-clinical skills like communication and stress management in dental education¹⁵. These skills are essential for effective patient interaction, team collaboration, and personal well-being. The preferred durations for electives were four weeks and two weeks, each selected by 31.8% of the students. This preference for shorter-term electives is consistent with findings from other studies, which reported that dental students prefer elective periods that do not significantly extend their overall study duration^{16, 17}. Shorter electives are often

more feasible within the constraints of the dental curriculum and allow students to gain diverse experiences without prolonged disruptions.

Compared to previous studies, the current research aligns well with general trends observed in dental education^{18, 19}. However, it also highlights some unique aspects specific to the context of dental colleges in Peshawar. For example, the strong preference for Communication Skills and Stress Management electives suggests a need for more emphasis on these areas in the local curriculum. This is particularly important given the high-stress environment of dental education and practice. Moreover, the high interest in research methodology electives underscores a growing recognition among students of the importance of research skills in their future careers. This trend supports the integration of research components into dental curricula to foster a culture of inquiry and evidence-based practice²⁰.

Limitations and Future Suggestions: Despite the valuable insights gained from this study, several limitations should be acknowledged. Firstly, the study relied on self-reported data, which may introduce response bias. Additionally, the study was conducted in dental colleges within Peshawar only, limiting the generalizability of findings to other regions or countries. Future research could employ a longitudinal design to track changes in elective preferences over time. Moreover, qualitative methods could complement quantitative findings by exploring the underlying reasons for elective choices among dental students.

Conclusion

This study illuminates the elective preferences of dental students in Peshawar, highlighting a strong interest in clinical sciences, particularly Oral and Maxillofacial Surgery, and a significant demand for skills-based electives such as Communication Skills and Stress Management. These findings underscore the importance of tailored curriculum development to meet student needs and prepare future dental professionals effectively. By integrating these insights into curriculum planning, dental education can better equip students with the diverse skills necessary for successful careers in dentistry.

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