INTERNATIONAL JOURNAL OF HEALTH SCIENCES (IAHS)

Original Research

Open Access

Knowledge and Attitude of Undergraduate Dental Students towards Research in a private dental institute, Karachi

M. Naz [1]

[1] Lecturer in Oral Medicine, Jinnah Sindh Medical University

Abstract:

Background:

Scientific research in healthcare is crucial for maintaining oral health and for the prevention, diagnosis, and treatment of oral disorders. It is regarded as a basic skill and one of the important areas in the medical education curriculum related to heal th care. The objective of this study was to evaluate the knowledge and attitude of undergraduate dental students towards research.

Methodology: A cross-sectional study was conducted from BDS students using nonprobability convenient sampling technique. Study was conducted from a private dental institute from December 2023 -May 2024. The estimated sample size was 160 using Open epi version 3.01, after inserting the prevalence 88.2% participants feel that they can plan and prepare research, with 95% confidence interval and 5% margin of error.

Results:

The research was conducted on 168 students from different BDS years. Most participants were in the age group of 20-25years (73.8%). Most of the participants were from BDS's second and third years of the students, 40.5% were familiar with the literature review procedure; About 42.8% of students expressed interest in pursuing this research as part of their dental profession. Reasons given by students for not being interested in doing research, 27% of the students recommended lack of time and lack of resources as the limitation in pursing research study.

Conclusion:

Research culture needs to be promoted since it benefits patients' health and the community that students will serve in addition to their career paths.

It takes a foundational understanding of research methodology to practice medicine and dentistry competently. Engagement in research is the most effective means of achieving this familiarity.

Keywords: biomedical research, curriculum, students, evidence-based medicine, research design, developing countries

Introduction

Research is a methodical procedure that follows set rules to produce new research, information, or inventions(1, 2). Health research is described as the process of combining fresh information with scientific techniques to identify. and address health-related problems(3, 4). Scientific research in healthcare is crucial for maintaining oral health and for the prevention, diagnosis, and treatment of oral disorders. It is regarded as a basic skill and one of the important areas in the dental education curriculum related to health care(4-7).

Innovation and research in healthcare are essential to the development of new standards and protocols for clinical practice around the world. Collaboration between healthcare researchers and practitioners is essential to the delivery of high-quality healthcare services(8). Sustaining a stable balance between these two vocations is necessary to reliably deliver evidence-based treatment(9, 10).

A major factor in the scientific and knowledge gaps in the community is the government's and the educated community's lack of attention to research. For scholars and those who shape healthcare policy, there should be a connection between research and instruction(1). This has prompted some to emphasize how important it is that undergraduate students get instruction in a setting informed by research. Regardless of whether a student chooses to pursue an academic or research career, undergraduate research (UR) has grown in importance as

Corresponding Author:

Name: Dr. Maria Naz

Affiliation: Jinnah Sindh Medical University

Email: maria.naz@jsmu.edu.pk

Date of Receiving: June 24, 2024

Date of Revision: August 2, 2024

Date of Acceptance: August 2, 2024

DOI: https://doi.org/10.69491/ny3r4p67

a component of dental education in many nations. It has been demonstrated to enhance the performance of health professionals by fostering the development of critical thinking, self-directed learning, and leadership abilities(10). When it comes to undertaking research studies after graduation, undergraduate students' involvement in research has a greater influence than that of graduates who did not participated(1)

In general, students attending universities with higher research interest could be more conscious of research(11, 12).A culture of research among healthcare professionals, including students, is influenced by various factors. The first and most crucial factors in starting a scientific study are the students' knowledge and beliefs, which are followed by their curiosity and enthusiasm in the subject matter as well as their drive to find a solution to an issue or question that has not yet been addressed(1, 11).

Because biomedical research has the potential to improve medical treatment, concern over scientific research has grown in developing nations. Conducting research requires having up-to-date knowledge of scientific concepts and procedures(13). Since medical students will eventually become doctors and must provide patient care using evidence-based medicine, they should be familiar with research methodology(14).

Even while previous student opinions toward scientific research were positive, many go on to choose clinical practice over health research as a career. As a result, there is a global scarcity of scientists conducting health research(15, 16) Dental scientists are becoming more and more needed, but there is a shortage in the area and less competition for skilled dentists. The great majority of dental practitioners have excellent clinical skills but very weak research ability(10)

Methodology:

A cross-sectional study was conducted by BDS students using nonprobability convenient sampling technique. The study was conducted at a private dental institute.

The estimated sample size was 160 using Open epi version 3.01, after inserting the prevalence 88.2% participants feel that they can plan and prepare research, with 95% confidence interval and 5% margin of error.

A closed ended questionnaire was used to assess the perception of dental students towards research. The first part of the questionnaire consists of demographic details whereas the second part consisted of knowledge and attitude questions.

Results:

The research was conducted on 168 students from different BDS years. Most participants were in the age group of 20-25years (73.8%) as shown in table 1.

Table1: Demographic variables of the Participants were asked nine questions on the topic of research and their responses are shown in Table 2. Of the students, 40.5% were acquainted with the literature review procedure; the majority of participants were from BDS's second and third years (Figure 1). Between 36.9% and 41.7% of participants are aware of the significance of dental research. Around 51.2% of the participants, or the majority, were unclear about how to choose research methodology for their projects. About 42.8% of students expressed interest in pursuing this research as part of their dental profession. Figure 2 lists the reasons given by students for not being interested in doing research, 27% of the students recommended lack of time and lack of resources as the limitation in pursing research study.

Characteristics		n	%
Age	Under 20	42	25
	20-24 years	124	73.8
	25-29 years	-	-
	Above 30 years	2	1.2
Gender	Male	40	23.8
	Female	128	76.2
Study Year	1st year	42	25
	2nd year	60	35.7
	3rd year	58	34.5
	4th year	8	4.8

Table 2: student's perception regarding knowledge of research

Characteristics		n	%
Have you participated in any research-related activities during your undergraduate dental education?	Yes	42	25
	No	124	73.8
	Maybe	-	-
Are you familiar with the process of literature review and citation in research	Yes	68	40.5
	No	74	44
	Maybe	26	15.5
Can you identify different research methodologies commonly used in dental research?	Yes	34	20.2
	No	48	28.6
	Maybe	86	51.2
How important do you think research is for the field of dentistry?	Somewhat	10	6
	Moderate	26	15.5
	Very important	70	41.7
	Extreme	62	36.9
Do you believe research experience during your undergraduate studies will benefit your future career as a dentist?	Strongly Disagree	8	4.8
	Disagree	-	-
	Neutral	22	13.1
	agree	62	36.9
	Strongly agree	76	45.2
Would you be interested in pursuing research as part of your future career in dentistry?	Definitely	56	33.4
	Possibly	72	42.8
	Not	40	23.8
Do you think your dental college provides enough support and resources for students interested in research?	Yes	48	28
	No	42	25.0
	Maybe	78	46.4

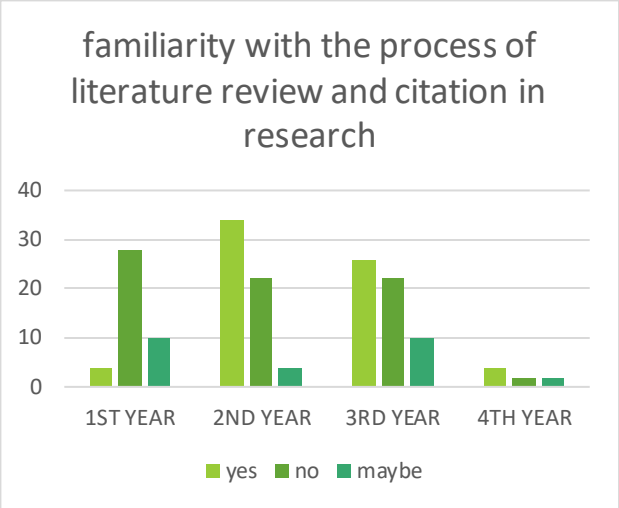

Figure 1: familiarity of students with literature review

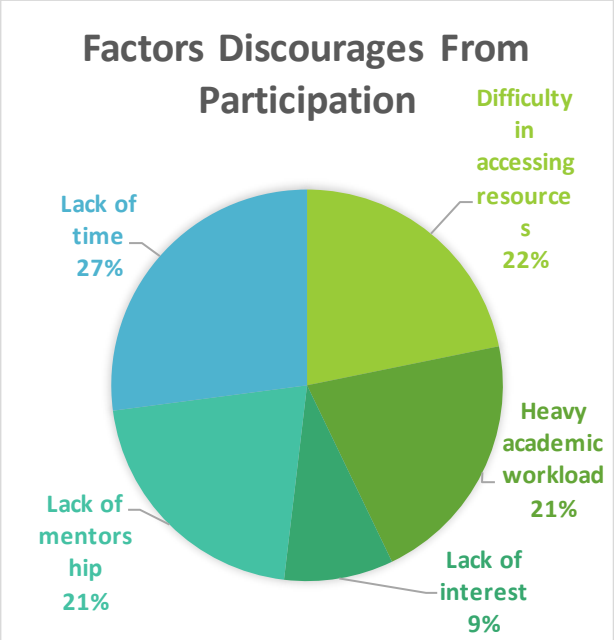

Figure2: barrier/factors in participation to research

Discussion:

The Gies report8 from 1926 made the persistent recommendation that research opportunities be included in the optional dental curriculum for dentistry education. A key component of undergraduate dentistry education is Undergraduate dentistry Basic Research Education (UDBRE), which offers a setting for critical thinking and active learning(17). To improve dentistry, UDBRE promotes scientific curiosity and challenges dental students to think critically about fundamental science issues they face in clinical practice. Students with UDBRE training make up a valuable talent pool of scientist-dentists who are more likely to stay in academia and seek jobs as teachers since they are prepared with both clinical skills and fundamental research abilities. This lessens the issue of brain drain and increases the number of college employees(10, 18).

Research promotion initiatives are essential to the advancement of science, and decisions based on evidence are better for all facets of life. Staying up to date with the newest research allows health care practitioners who prioritize research to provide the community with better treatment. Students that participate in research projects also develop their critical thinking abilities, teamwork, and subject comprehension(19).

According to Abu-Zaid et al,(20) the assessment of undergraduate students' perceived attitudes, nearly all of them had a good attitude toward research. Moraes et al. (2011)(21) found that whereas 81.7% of medical students were interested in research, just 4.7% thought it was important. Study finding from Rawalpindi were supported by another Saudi Arabian survey, which found that just 44.4% of undergraduate students had a good attitude toward research. Ismail and associates. Ismail et al. found that most students at both medical campuses were interested in research when they compared their levels of interest in the subject. Undergraduate dentistry students' attitudes were assessed by Habib et al; their mean attitude score was 3.87, which was deemed to be a favorable attitude(19).

The bulk of participants in our study, according to the results, were between the ages of 20 and 24.Approximately 44% of the participants had no idea about the literature review and citation(22). Around 51.2% were unsure to identify different research methodologies used in dental research. In the discipline of dentistry, the majority of participants (78.6%) chose research as an essential area and 33.4% were interested in pursuing their career as researcher in dentistry. About 46.4% of participants were unclear about the resources and assistance offered by the college for research. Most participants believe that the inability to access resources and a lack of time were the main deterrents in pursuing research projects(22).

According to survey conducted in India showed that 52% of students felt comfortable analyzing and writing research papers, 57.2% believe they can organize and carry out research projects without supervision, and 56.4% believe that doing research might be a viable career option. Sixty-eight percent of students believe that time should be set aside specifically for research projects, and sixty-eight percent believe that they don't have enough time to complete their research and analyze the data(23). A study carried in Islamabad shows that the main challenges in research were inadequate time due to the overburdened curriculum (69%), resource scarcity (68%), and inappropriate or insufficient research guidance

(60%). The following obstacles were identified by another study16: insufficient time (89%), work-related stress (83.2%), and a lack of supervisors (73.3%). Another study by Alsalem SA et al. revealed that a barrier to conducting research is a lack of reward and/or motivation (65%)(22).Lack of time (25.5%), insufficient funding (21.9%), being overworked from school or exams (30.7%) was a barrier to research. Other barriers included difficulty following up with study subjects (22.6%), getting approval (22.6%), lack of interest (19.6%), and lack of reward or motivation (19%). According to the students in this survey, time and money constraints were the biggest obstacles. Studies on research barriers from Arabia, (24)Canada, and Pakistan have found comparable things to what is being found in the study of India(25, 26).

Study of Khyber Pakhtunkhwa, Pakistan showed that Time restrictions was identified as a major issue, with 40% of all students stating that they were a very serious barrier. The findings align with a related study carried out in Pakistan, which found that junior medical faculty members at four medical universities/teaching hospitals were unable to perform research due to time restrictions(27). Time restrictions are a hindrance for medical students, according to similar research done in neighboring countries like Saudi Arabia(28).
Undergraduate medical and dentistry students who wish to undertake research must have access to an enabling environment that includes institutional resources, advice, and mentorship to enhance productivity, skill development, and research involvement. According to this survey, 53% of students cited inadequate institutional support as a primary obstacle preventing a research culture. One major obstacle, according to an examination of primary and secondary materials and interviews with eminent academics from seven Pakistani higher education institutions, is the absence of institutional support. Furthermore, a different study discovered that medical students found it challenging to engage in research because of a lack of institutional support(29). These results highlight how important it is to create a climate in academic institutions that is conducive to research, particularly by providing facilities, financing, and resources(30).

Dental students were aware of the value of research in their education, according to Grossman and Naidoo's study on their attitudes about it at four South African dental schools. But the majority of them did not find the study experience enjoyable, and they were less inclined to conduct additional research(31). A dental undergraduate should be educated in accordance with current developments in the field, and research is a fundamental instrument for finding novel approaches, methods, and techniques. In order to generate practitioners that are oriented toward science, it is critical to support research in dental schools(32). However, a college finds it challenging to pay for research on top of all other costs because of restricted funding.
It can be challenging for students in many nations to get scholarships to pay for their education. Lower socioeconomic background students must rely on loans or scholarships to finish their education. As a result, the cost of education and research for students is severely hampered(33).In Saudi Arabia, the Ministry of Higher Education offers financial aid to deserving and competitive students. Universities also offer support for research and ongoing education. With e-books and e-journals, university digital library services also support and assist instructors and students. Via digital library services, some 250,000 e-books and 60,000 e-journals are accessible(34).This makes it possible for Saudi students to do research in a comfortable setting(35).
The factors that are directly associated with carrying out research activities include knowledge and attitudes regarding research. One of the most crucial steps is a literature review, which is carried out to prevent tedious work, to guarantee a thorough understanding of the subject, to identify related work that has been done in the field, to identify knowledge gaps that require further investigation, to compare prior findings, to critically analyze current findings, and to recommend additional research(36).
Undergraduate dental students may encounter several challenges that deter them from participating in research projects. A curriculum that is overly demanding, a lack of exposure to research opportunities, inadequate skills for conducting literature searches, a lack of knowledge about research, and the inability to locate a mentor for research supervision are a few instances of these challenges.17 Teaching undergraduate dentistry students the importance of research in the development of new procedures, approaches, and methods is crucial to inspiring them to pursue research. Dental schools have a significant impact on the advancement of research and the development of scientifically minded practitioners. Students from lower socioeconomic origins sometimes have difficulty obtaining scholarships to help pay for their education (10). This restriction impedes academic and professional progress, inhibits the study of prospects, and hinders effective research participation(30).

Conclusion:

Activities for professional development could be started in order to help students change for the better. Research culture needs to be promoted since it benefits patients' health and the community that students will serve in addition to their career paths.
It takes a foundational understanding of research methodology to practice medicine and dentistry competently. Engagement in research is the most effective means of achieving this familiarity. As a result, dental students should be familiar with the fundamentals of both biostatistics and research techniques. Research education and initiatives should be supported by universities and

colleges. They ought to assist students by offering digital library services, accessible software, e-books, and e-journals additionally aid and support teachers and students.

To support and help teachers and students, they should encourage the provision of e-books and e-journals, digital library services, and available software. Students will be able to conduct study in a comfortable research environment.

References:

1. Habib SR, AlOtaibi SS, Abdullatif FA, AlAhmad IMJJoAMCA. Knowledge and attitude of undergraduate dental students towards research. 2018;30(3):443-8.
2. Memarpour M, Fard AP, Ghasemi RJAPfm. Evaluation of attitude to, knowledge of and barriers toward research among medical science students. 2015; 14:1-7.
3. Development CoHRf. Health research: essential link to equity in development: Oxford University Press, USA; 1990.
4. Abdulrahman S, Aboalshamat K, Muthana M, Sait G, Bantan N, Hafiz S, et al. Knowledge, attitude, practice, motives and barriers towards scientific research among dentists and dental students in Saudi Arabia. 2020;14(1).
5. Zehra N, Hassaan A, Mushtaq S. RESEARCH AMONGST JUNIOR AND SENIOR MEDICAL STUDENTS.
6. Abu-Zaid A, Alkattan KJMeo. Integration of scientific research training into undergraduate medical education: a reminder call. 2013;18(1):22832.
7. Vujaklija A, Hren D, Sambunjak D, Vodopivec I, Ivaniš A, Marušić A, et al. Can teaching research methodology influence students' attitude toward science? Cohort study and nonrandomized trial in a single medical school. 2010;58(2):282-6.
8. Bovijn J, Kajee N, Esterhuizen T, Van Schalkwyk SJBme. Research involvement among undergraduate health sciences students: a cross-sectional study. 2017; 17:1-10.
9. Ommering BW, Wijnen-Meijer M, Dolmans DH, Dekker FW, van Blankenstein FMJBme. Promoting positive perceptions of and motivation for research among undergraduate medical students to stimulate future research involvement: a grounded theory study. 2020; 20:1-12.
10. Vishwanathaiah S, Maganur PC, Alali MA, Muyidi AM, Jaferi NE, Wasli BM, et al. Knowledge and Experiences of Undergraduate Dental Students and Interns toward Research: A Cross-sectional Study. 2023;16(6):824.
11. Ismail IM, Bazli M, O'Flynn SJP-S, Sciences B. Study on medical student's attitude towards research activities between University College Cork and Universiti Sains Malaysia. 2014; 116:2645-9.
12. Deolia SG, Prasad K, Chhabra KG, Kalyanpur R, Kalghatgi SJJoc, JCDR dr. An insight into research ethics among dental professionals in a dental institute, India-A pilot study. 2014;8(9): ZC11.
13. Wilson EB. An introduction to scientific research: Courier Corporation; 1990.
14. C.S Y. KNOWLEDGE ATTITUDE AND PERCEIVED BARRIERS TOWARDS SCIENTIFIC RESEARCH: THE PERSPECTIVES OF UNDERGRADUATE DENTAL STUDENTS. International Journal of Early Childhood Special Education (INT-JECSE) 2022;14(02).
15. Ryan EJJJocn. Undergraduate nursing students' attitudes and use of research and evidence-based practice–an integrative literature review. 2016;25(11-12):1548-56.
16. Imafuku R, Saiki T, Kawakami C, Suzuki YJIjome. How do students' perceptions of research and approaches to learning change in undergraduate research? 2015; 6:47.
17. Gies WJ. Dental education in the United States and Canada: a report to the Carnegie Foundation for the Advancement of Teaching: Carnegie Foundation for the advancement of teaching; 1926.
18. Slavkin HCJJode. The impact of research on the future of dental education: how research and innovation shape dental education and the dental profession. 2017;81(9): eS108-eS27.
19. Imran S, Nazir M, Dar W, Aziz U, Shoaib R, Saleem Q, et al. Attitude towards research among undergraduate and postgraduate medical students. 2019;35(4):239-43.
20. Abu-Zaid A, Alnajjar AJPoME. Female second-year undergraduate medical students' attitudes towards research at the College of Medicine, Alfaisal University: A Saudi Arabian perspective. 2014; 3:50-5.
21. Moraes DW, Jotz M, Menegazzo WR, Menegazzo MS, Veloso S, Machry MC, et al. Interest in research among medical students: Challenges for undergraduate education. 2016; 62:652-8.
22. Farooq N, Ali S, Aslam F, Ayaz A, Farooq FJJOKCOD. PERCEPTIONS, ATTITUDES, PRACTICES AND BARRIERS TOWARDS SCIENTIFIC RESEARCH AMONG UNDERGRADUATE DENTAL STUDENTS OF ISLAMABAD. 2024;14(01):55-9.
23. SK MJAJPCR. Knowledge, attitude, and practices regarding infection control among undergraduate dental students. 2016;9(1):220-4.
24. Burgoyne LN, O'Flynn S, Boylan GBJMeo. Undergraduate medical research: the student perspective. 2010;15(1):5212.
25. Sudarsan R, Ravindran V, Anjaneyulu KJIJoFM, Toxicology. Knowledge, Attitude, Practice and Barriers

Towards Research Among Dental Undergraduates: A Questionnaire Based Survey. 2020;14(4).
26. Pallamparthy S, Basavareddy AJPicr. Knowledge, attitude, practice, and barriers toward research among medical students: A cross-sectional questionnaire-based survey. 2019;10(2):73-8.
27. Sabzwari S, Kauser S, Khuwaja AKJBme. Experiences, attitudes and barriers towards research amongst junior faculty of Pakistani medical universities. 2009; 9:1-7.
28. Alsaleem SA, Alkhairi MAY, Alzahrani MAA, Alwadai MI, Alqahtani SSA, Alaseri YFY, et al. Challenges and barriers toward medical research among medical and dental students at King Khalid University, Abha, Kingdom of Saudi Arabia. 2021; 9:706778.
29. Bilal M, Haseeb A, Mari A, Ahmed S, Khan MAS, Saad MJC. Knowledge, attitudes, and barriers toward research among medical students of Karachi. 2019;11(9).
30. Qamar WJPo. Understanding challenges to medical and dental student research practices. An insight from a cross-sectional study of the public sector in Pakistan. 2023;18(12): e0295567.
31. Grossman ES, Naidoo SJJode. Final-year South African dental student attitudes toward a research component in the curriculum. 2009;73(11):1306-12.
32. DePaola D, Howell H, Baker CG, Boy-Lefevre ML, Hull P, Holmstrup P, et al. 1.4 Research and the dental student. 2002; 6:45-51.
33. DePaola DPJJoDE. The revitalization of US dental education. 2008; 72:28-42.
34. Moyo LMJTEL. Electronic libraries and the emergence of new service paradigms. 2004;22(3):220-30.
35. Khan SQ, Farooqi FA, Moheet IA, Rejaie ASJSJoM, Sciences M. Attitude and experiences of undergraduate dental students and interns towards research. 2016;4(2):108-11.
36. Wali A, Siddiqui T, Ajmir NJJoIM, College D. KAP Survey of Dental students about Scientific research. 2022;11(1):42-8.

Conflict of interest: Author declares no conflict of interest.

Funding Disclosure: Nil

Author's Contribution:

Dr. Maria Naz: Concept, data collection, Write up and final review.