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# Knowledge, attitudes, practices and barriers related to research utilization: A survey among dental students in India

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**Abstract:**

Research participation among dental postgraduates remains inadequate despite its critical role in advancing evidence-based dentistry and improving patient care. Therefore, it is of interest to assess the knowledge, attitudes, practices and perceived barriers toward research among 100 Indian dental postgraduate students using a pre-validated questionnaire. Most participants demonstrated good knowledge (79.98%) and positive attitudes, with 89% considering research an essential component of dental education; however, undergraduate research exposure and publication experience were limited. Administrative permissions (60%), difficulty in obtaining adequate sample sizes (30%) and publication-related challenges (10%) were identified as the major barriers. Thus, data shows the strengthening research training, mentorship and institutional support may enhance research participation and scientific productivity among dental postgraduates.

**Keywords:** Postgraduate, knowledge, attitude, barriers, research, practice, dentistry**Background:**

Scientific research comprises of collecting data and its interpretation. The scientific process is constituted of both qualitative and quantitative research. Research is vital for achieving technological advancements in fields of diagnosis as well as treatment and maintaining oral health [1]. Scientific research improves patient care quality along with developing clinical practice [2]. Observation is central to any scientific research. All experiments must be replicable by another researcher [3]. Hence, an objective and systematic approach that involves scientific research may be utilized for proving or disproving theories as well as hypotheses. Therefore, research in health constitutes main area in medical education and research [4, 5]. Research aids students in improving their practical knowledge along with treatment methods and also, help in advancements in research [6]. Scientific research plays an important role in understanding behaviours that help to developing critical thinking skills allowing one to learn and gather information that is applicable in day-to-day life [7]. Therefore, it is of interest to assess the level of knowledge, attitude, practice and barriers towards research among postgraduate dental students in India.

**Materials and methods:****Study design and settings:**

This cross-sectional study was conducted after obtaining institutional ethical consent from concerned ethical committee in two teaching dental hospitals. Informed consent was obtained

from all the selected study participants before distributing the study questionnaire.

**Study participants and sampling:**

The convenient sampling technique was used for selecting student participants for the study. Total 100 post-graduate students who consented to voluntarily participate in the study from different study branches from separate colleges were selected for the study. All students provided written and signed informed consent.

**Data collection tool and techniques:**

A self-administered and self-designed pre-validated study questionnaire was distributed among the post-graduate students of selected dental school. The questionnaire was self-designed and validated by a pilot study by the investigators themselves. The questionnaire contained total of fifteen questions and was circulated as Google forms via social media platforms such as WhatsApp and electronic mail system. Internal consistency of study questionnaire was obtained as 1.0 by making use of Cronbach's alpha. Inclusion criteria: These were a) post-graduate students b) those who were well versed with filling up of questionnaire surveys and c) those who gave consent for study participation. Exclusion criteria: These included a) those who did not provide study consent

**Statistical analysis:**

Obtained data was analyzed statistically by use of Statistical Package for the Social Sciences (SPSS) software version 23.0 (IBM, Chicago, USA). Descriptive statistics was done for frequency distribution of responses received for questionnaire items. Pearson's chi-square association statistical tool was employed for studying knowledge, attitude, practice and perceived barriers towards research among selected study participants. P-value lesser than 0.05 was considered to have statistical significance.

#### Ethical consideration:

Institutional Ethical Committee clearance was obtained before initiating the study. The ethical approval number obtained was (IECNM/23/N13).

#### Results:

On analyzing the age range, it was observed that the mean  $\pm$  SD age (in years) for male subjects was  $28.13 \pm 0.19$  and for female subjects was  $27.03 \pm 0.18$ , respectively. This was found to have no statistical significance ( $P=0.08$ ). On studying gender distribution, there were 35 % male postgraduate and 65% female postgraduate students. This was found to have statistically significant difference (**Table 1**). Knowledge towards scientific research was estimated by the assessment of items. 79.98 % of postgraduate students had knowledge regarding importance of scientific research in dentistry. 89% participants considered research as an important and mandatory aspect of dental education (**Table 2**). Attitude towards inclusion of scientific

research in Dental Sciences was assessed from the questionnaire. 72% of post-graduates were of agreement that research is an important aspect of academics while 80% agreed regarding the importance of research in clinical practice. On assessment of practice levels, only 31% of study subjects reported participation in any form of research activities during their undergraduate studies. 18% students had submitted separate research proposal (s) form apart from their dissertation topics. 33% student participants had attended research training courses as part of undergraduate study curriculum. 28% of them attended research courses outside of their college. 35% students had scientific publications in various phases of publication. 59% postgraduate students had a scientific presentation in form of poster or paper in scientific conference/convention. 60% of postgraduate students reported getting appropriate permissions from hospital authorities and outsourced laboratories outside their colleges as major barrier for pursuing their research work. 30% considered reaching correct sample size as an arduous task while 10% considered getting a research publication in prescribed time period to be difficult.

**Table 1:** Table showing demographic characteristics of study respondents

| Subjects            |                  | Mean $\pm$ S.D. age (years) | P Values |
|---------------------|------------------|-----------------------------|----------|
| a)                  | Male subjects:   | 28.13 $\pm$ 0.19            | 0.08     |
| b)                  | Female subjects: | 27.03 $\pm$ 0.18            |          |
| Gender distribution |                  |                             |          |
| a)                  | Male subjects:   | 35%                         | 0.05     |
| b)                  | Female subjects: | 65%                         |          |

**Table 2:** Demonstrating knowledge, attitude, practice and perceived barriers towards research among studied dental postgraduate students

| Parameter assessed                                                                                 | Numbers of responses received | P values     |
|----------------------------------------------------------------------------------------------------|-------------------------------|--------------|
| <b>Knowledge:</b>                                                                                  |                               |              |
| a. Scientific research is an important part of Dentistry                                           |                               |              |
| b. Research is important in Dental education                                                       | 79.98<br>89                   | 0.09<br>0.09 |
| <b>Attitude:</b>                                                                                   |                               |              |
| a. Research is important part of academic curriculum                                               |                               |              |
| b. Research is important in clinical practice                                                      | 72<br>80                      | 1.0<br>1.0   |
| <b>Practice:</b>                                                                                   |                               |              |
| a. Have you participated in any form of research during your undergraduate studies:                |                               |              |
| Yes                                                                                                |                               |              |
| No                                                                                                 |                               |              |
| b. Have you submitted any research (study) proposal apart from your dissertation work?             | 31<br>69                      | 0.06         |
| Yes                                                                                                |                               |              |
| No                                                                                                 |                               |              |
| c. Have you undergone any research training program during undergraduate program?                  |                               |              |
| Yes                                                                                                |                               |              |
| No                                                                                                 | 18                            | 0.05         |
| d. Have you received any research training program outside your college?                           | 82                            |              |
| Yes:                                                                                               |                               |              |
| No:                                                                                                |                               |              |
| e. Have you done any scientific publication?                                                       |                               |              |
| Yes:                                                                                               | 33                            | 0.06         |
| No:                                                                                                | 67                            |              |
| f. Have you done any scientific paper or poster presentation at any conference/seminar/convention? |                               |              |
| Yes:                                                                                               |                               |              |
| No:                                                                                                | 28<br>72                      | 0.05         |
|                                                                                                    | 35                            | 0.06         |

|                       |                                                                 |    |      |
|-----------------------|-----------------------------------------------------------------|----|------|
|                       |                                                                 | 65 |      |
|                       |                                                                 | 59 | 1.0  |
|                       |                                                                 | 41 |      |
| Barriers in research: |                                                                 |    |      |
| a)                    | Obtaining permissions from concerned authorities?               |    |      |
|                       | Yes                                                             |    |      |
|                       | No                                                              | 60 |      |
| b)                    | Acquiring required size of a sample population for their study: | 40 | 0.06 |
|                       | Yes:                                                            |    |      |
|                       | No                                                              |    |      |
| c)                    | Getting a research paper published within a short time frame?   |    |      |
|                       | Yes:                                                            | 30 |      |
|                       | No:                                                             | 70 | 0.06 |
|                       |                                                                 | 10 |      |
|                       |                                                                 | 90 | 0.05 |

Discussion:

Evidence-based dentistry is considered the most appropriate approach for delivering safe, effective and cost-efficient oral healthcare interventions [8, 9]. Dental research helps reduce variations in diagnosis, prognosis, treatment outcomes and clinical decision-making by strengthening the available scientific evidence [10]. The successful implementation of evidence-based practice depends on research quality, clinical expertise, decision-making ability and the availability of reliable scientific literature [11]. Although the growth of the dental workforce has contributed to advances in dentistry, research training within Indian dental education remains relatively limited [12]. Postgraduate dental education combines academic instruction, faculty guidance, journal discussions and clinical experience; however, these components may not always be fully integrated with evidence-based practice [11, 12]. Therefore, assessing the knowledge, attitude, practices and perceived barriers related to research among postgraduate dental students is essential for improving evidence-based clinical care. Limited published evidence is available regarding these aspects among Indian postgraduate dental students, which justifies the need for the present study [12]. Most of the evaluated parameters demonstrated limited research knowledge, relatively lower attitudes and the presence of several perceived barriers to conducting research. Selvaraj *et al* reported comparable findings regarding research knowledge and practice among postgraduate students, although the major barriers identified included difficulty in finding research supervisors, limited time, inadequate research skills and insufficient opportunities for research [13]. Alyousefi *et al.* observed inadequate research knowledge among a majority of respondents, with insufficient clinical training, lack of funding, poor motivation and inadequate mentorship identified as the principal barriers to research participation [14]. In contrast, Alsabaani *et al.* reported that undergraduate dental students demonstrated good knowledge and positive attitudes toward scientific research despite limited participation in research activities, emphasizing

the importance of incorporating structured research training into the dental curriculum [15]. Previous studies have consistently shown that dental students and young dental professionals generally possess positive attitudes toward scientific research despite having only moderate research knowledge and facing barriers such as limited mentorship, inadequate research training and time constraints. Strengthening structured research education, mentorship programs and institutional support can improve research participation, confidence and evidence-based clinical decision-making. These findings reinforce the need to integrate research competencies into dental curricula to promote lifelong scientific inquiry and high-quality patient care [16, 17]. A major strength of the present study is its exclusive focus on postgraduate dental students from multiple dental specialties. However, the findings should be interpreted in light of the relatively small sample size and single-institution setting and future multicenter studies with larger samples are recommended to improve generalizability.

Conclusion:

Postgraduate dental students showed moderate knowledge and generally positive attitudes toward scientific research. Several barriers continue to limit active participation in research despite satisfactory awareness of its importance. Strengthening research training, mentorship and institutional support may improve research engagement among postgraduate dental students.

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