Knowledge, Attitude, Practice and Barriers Towards Research Among Dental Undergraduates: A Questionnaire Based Survey

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Abstract

Research in the field of medicine heightens the extent of understanding and also inculcates evidence-based practice and further enhances clinical skills. The impact of research ranges from prevention to newer and alternative treatment modalities. However undergraduate student research experience is plagued by a number of obstacles. This study aims to evaluate the knowledge, attitude, practice, and the barriers towards research among dental undergraduate students. An online questionnaire consisting of 16 questions which included demographic details, and questions regarding their knowledge and perception of barriers towards research. The study was conducted among undergraduate students of a private dental institute. Data was collected from filled questionnaires and analysed using SPSS software. A total of 169 undergraduate dental students participated in the online survey. A majority of students (78.3%) expressed a positive attitude towards willingness to conduct research. Barriers for research were lack of time being overburdened with education/ exams (30.7%), lack of allocated research time (25.5%), difficulty in following up study subjects (22.6%), inadequate financial support (21.9%%) and difficulty in obtaining approval (22.6%). Only 9.4% of the study population chose lack of interest as a barrier towards conducting research. Majority of the participants had sufficient knowledge regarding research and expressed a positive attitude toward participation in research activity. Major barriers were lack of time, difficulty in patient follow-up and inadequate funds.

Keywords: *Attitude; awareness; research experience; research barriers*

Introduction

Research is a systematic process that helps acquire new knowledge, science or invention by the use of standard guidelines.The improved understanding of scientific principles and methods is necessary for the conduction of research. The students should be acquainted with the methods in carrying out research as this will enable them as future doctors to practice evidence-based medicine in patient care. Scientific research can prove or disprove theories and hypotheses through a systematic approach [1]. Research in the field of health care is useful in the development of prevention, diagnosis and treatment of diseases and also affects healthcare policies. The healthcare curriculum has integrated scientific research as one of the important subjects [2]. Both developing and developed countries have expressed increased concern toward scientific research as research in the biomedical field can significantly influence medical care [3]. Medical research involves basic, applied, or translational research in the field of medicine conducted to assist and contribute to the development of knowledge [4]. Early exposure to health training research is recommended by the recent undergraduate education system. Studies have identified the factors which critically affect research as knowledge, attitude, experience, and barriers toward research. [5–8] .

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Research, not just in the medical field but also in every other field, is a way through which students and scholars apply the information they obtained through books onto tests and find new conclusions or confirm pre-established facts. Research assures understanding of the subject and improves the knowledge of students. Understanding the concept of evidence-based medicine needs strong research knowledge, and that can only be obtained through experience. Though nobody denies the importance of research in the medical field, it is still not given much importance when it comes to the undergraduate Indian medical curriculum [9,10].

Dental research in the Indian setting is in the developing stages even though we have more than 300 dental colleges, which is higher than many countries in the world. This comprises an extensive number of oral health care professionals, who can make a considerable impact in the advancement of the dental research situation in India [11]. Unfortunately, the dental research representation by India on the international stage is almost infinitesimal. Advancement of research in the dental field is at a remarkable pace worldwide. Research in dentistry inculcates evidence-based practise and helps in better understanding of the subject. It has explored areas in dentistry such as diagnostic aids for early detection of caries [12], use and safety of fluoride [13] [10]. Research in dentistry has also investigated dentists' attitudes towards certain treatment modalities [14] [15] and knowledge regarding various instrumentation techniques [16] [17]. Research of course primarily focuses on dental caries, the importance of maintaining oral health [18] and efficacy of newer tooth brushing systems [19]. Research in the dental field can help improve quality of treatment and enhance clinical skills to ensure optimal treatment. Research to improve treatment includes advancement in instruments ,comparative analysis of various instrumentation techniques and treatment outcomes [20] [21] [22] [23] [24] [25] .

Research serves as the foundation of improving health care. Research experience is an integral part of the curriculum of many postgraduate dental programs and some undergraduate courses in India[26]. Active involvement in research results in students being more likely to complete specialty training, become faculty members, and also contribute to future research.[27]. A number of strategies have been recommended to increase the involvement of undergraduate dental students in research.[28]. Undergraduate involvement in research is comparatively lower due to their extensive curriculum, lack of familiarity with research methodology, and insufficient time. When these students get into their post graduation program, their capability in writing a protocol or proposal is not satisfactory. Grants are being provided by some of the regulatory bodies to encourage undergraduates and postgraduates students to carry out research. Even though these facilities are provided by the regulatory organizations and the institutions to expand the research by undergraduate students, there is deficiency in the research quantity and quality. Increase in research participation requires sufficient knowledge and positive attitude toward research as an essential component [29]. Identification of the factors that hinder the participation of students in conduction of research remains a critical issue in dental education. The objective of this study was to evaluate the knowledge, attitude, practise and perceived barriers towards research among dental undergraduate students.

Materials and Methods

This was a cross-sectional questionnaire-based study which was conducted among the undergraduate students from a private dental college, Chennai. The study was approved by the Institutional Ethics Committee. Students who were willing to participate in the study were included. A total of 138 undergraduate students from a private dental college participated in this study. A predesigned validated questionnaire consisting of 16 questions which included demographic details, and questions regarding their knowledge and perception of barriers towards research was employed. Questions were taken from previous similar studies [29]. Questionnaire validation was based on content validity and logical reasoning.

First part of the questionnaire was regarding the demographic details of the study participant such as age, gender, year of the study and number of indexed publications till date. The second part consisted of 14 questions on knowledge and attitude towards research, such as various study designs, hypothesis, protocol writing, and willingness to participate in a research methodology workshop and willingness to conduct clinical and community related research. The third part

assessed the motivational factors that help in conduction of research. The fourth part assessed various barriers deterring students from conducting research. A total of 23 probable factors were listed as barriers that addressed the concerned limitations on conducting research such as poor knowledge, lack of interest, insufficient funds, inadequate of encouragement by faculty, time constraints, and follow-up difficulties and the responses were evaluated by a 5-point Likert scale rating ranging from strongly disagree (score 1) to strongly agree (score 5).

The data was collected from the filled questionnaires and was entered in Microsoft Excel spreadsheet. The statistical program SPSS was used for data management and analysis. Descriptive statistics was computed. The frequency for each domain of knowledge, attitude, and practice was calculated after giving weightage for each option. Statistical test t-test was used to analyze the difference in the knowledge, attitude, and practice between various factors. A $P < 0.05$ was considered to be statistically significant.

Results and Discussion

A total of 138 students participated in this study and the response rate was 76.8% among female students and 23.2% among male students. The respondents were of the age group of 18-22 years with the mean age of 20.(Graph 1) Majority of the respondents were third year undergraduate students (53.6%)(Table 1). Majority of the respondents had between 1-5 publications (76.03%) (Table 2).

Questioning on attitude towards research 68.84% were willing to participate in a workshop on research methodology, 78.26% were willing to conduct clinical and community related research, 88.6% have participated in research, 50.72% have read journals related to dentistry regularly, 86.23% have publication in a journal and 89.86% have presented a poster or research paper at a conference.

Majority of respondents have contributed in proposal writing (21.01%) and data entry (18.84%). Majority of respondents have participated in clinical trial (21.01%) and case series (20.29%).

Questioning on preference for research 89.86% agreed that research should be a part of UG curriculum, 49.29% agreed that it will help in better understanding of subject, 52.17% agreed that research will help in clinical practice, 42.02% neither agreed or disagreed that research is an extra burden and 44.20% neither agreed or disagreed that research is not waste of time.

Questioning on what motivates you to conduct research 86.23% said it was compulsory (part of curriculum, 56.52% said that it is to fulfil their interest in research, 75.91% said that it would facilitate their acceptance to future education, 76.64% said that it shows positive accomplishment in their job resume, 71.74% said that it improves their research skills and 81.88% said that it is to have their research published.

On questioning about barriers about conducting research, 30.43% equally agreed and were neutral for lack of time due to educational activity, 38.41% strongly disagreed and were neutral that it was due to gender of the resident, 44.53% totally disagreed that it was other personal commitments and 35.04% totally disagreed that it was their lack of research curriculum.

Majority neither agreed or disagreed to the reasons of lack of interest (48.55%), inadequate facility for research(33.33%), difficulty in transportation(36.23), lack of interest by program/guide(38.69%), lack of motivation or reward(34.31%), inadequate support by mentors or assistance(31.39%), difficulty in obtaining a research supervisor(33.58%), inadequate training(29.2%), lack of statistical support(35.04%), inadequate financial support (38.69%), lack of allocated research time (35.77%), difficult in obtaining approval (42.34%), unavailability of samples/patients (40.15%), difficulty in following-up patients (37.23%), poor accessibility to data base (38.69%), difficulty in presenting research (40.86%), difficulty in publishing (45.26%) and acknowledgment for contribution(47.45%).

On comparison of responses based on gender, year of study and number of publications, only a few significant associations were noticed. Males had a higher number of publications (68.84%) when compared to females, which was statistically significant (Chi squared test; p-value = 0.035 - statistically significant). Although a higher percentage of III year undergraduates were willing to participate in a workshop on research methodology, a higher percentage of them denied it, which was not statistically significant (Chi square test; p-value = 0.33

- not statistically significant). Respondents with 1-11 publications had a higher chance of presenting a paper or poster at a conference when compared to respondents without any publication. This difference was highly significant (Chi square test; p-value = 0.000 - statistically significant)(Graph 2-4).

Research is an integral element in the improvement and growth of the health-care system which is attainable to the general population [30]. Appropriate knowledge, a positive attitude and adequate skills are required to carry out research in good standards [31,32]. In this study we intended to evaluate the knowledge, attitude, practice, and barriers to research among the undergraduate dental students. The total knowledge regarding research among them was encouragingly good and this finding was in accordance to another study done on undergraduates in Saudi Arabia [5] and among dental undergraduates in bengaluru city which showed good knowledge regarding research [5,33]. Majority of the students felt that research was important to clinical practice and helped in better understanding of the subject. This finding was found to be similar to a study done in South Africa that observed the importance of research interest by most of the participants [34]. The paper presentation (89.9%) and publication (86.2%) was higher among our study population which is in stark contrast with a study among medical undergraduates in Kolar as they had only a meager presentation and publication by students [29]. This response was owing to their progression academically which ends in a change in priorities, so most of them do not complete their project. A study done in India on resident doctors had similar findings among postgraduate students [35]. Many universities in India have made paper presentation and publishing of manuscript mandatory for postgraduates as a part of curriculum, however, it is not the case for undergraduates to be involved in research in many institutions.

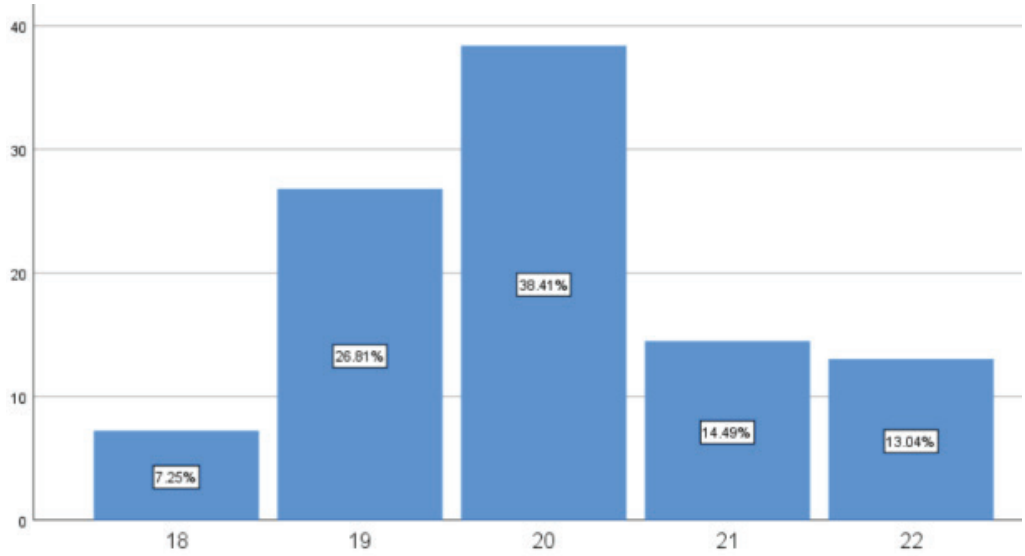
Even though students expressed a positive attitude toward research, the participation in research, presentation of paper, and publication were mostly motivated due to research being a compulsory part of the curriculum (87.7%). A few studies have shown that the prime motive of conducting research was due to research being mandatory part of their curriculum [36–38]. Barriers for research were lack of time (25.5%) , inadequate financial support (21.9%), lack of time being overburdened with education/ exams (30.7%), difficulty in following up study subjects (22.6%), difficulty in obtaining approval (22.6%), lack of interest (19.6%), lack of reward or motivation (19%). In this present study, the main barrier as opined by the students were lack of time and funds. Similar studies from Arabia, Canada, and Pakistan have reported findings similar to the current study regarding barriers of research [4,7,29,38–40]. The studies in India regarding the opinion of undergraduate dental students on research is very limited. This survey was made as an effort to evaluate their attitude, perception and perceived barriers regarding the same.

Our study reports that despite having sufficient knowledge and the right attitude towards dental research, the major motivation to participate in research was research being a mandatory part of the curriculum. However more than half the study population believed research should be included as part of the dental curriculum. The students should be acquainted with research methodology at the undergraduate level and at regular intervals. The students should be encouraged to present in undergraduate conferences and publish their completed work by providing incentives as lack of reward and motivation seems to be one of the prime barriers towards research. Training of dental faculties in research methodology and consequent motivation of students to take up research projects is recommended. In the present study, males had a higher number of publications when compared to females. Although a higher percentage of III year undergraduates were willing to participate in a workshop on research methodology, a higher percentage of them denied it. Both these results could be due to the uneven sample size that was noticed in the study. However respondents with 1-11 publications had a higher chance of presenting a paper or poster at a conference when compared to respondents without any publication. This could be due to the fact their respondents pursue their research to the next level by publishing them in various journals.

This study discussing research among dental undergraduates is one among a handful of studies. The present study results are limited to this particular university and corresponds to that of a small population. These findings should be relayed to the students so as to make them aware of their knowledge and perception. The barriers faced by the students need to be discussed

at the administrative level to bring about reforms in the dental curriculum so as to reduce the obstacles faced by students and also make the research experience uncomplicated.

8. TABLES AND GRAPHS



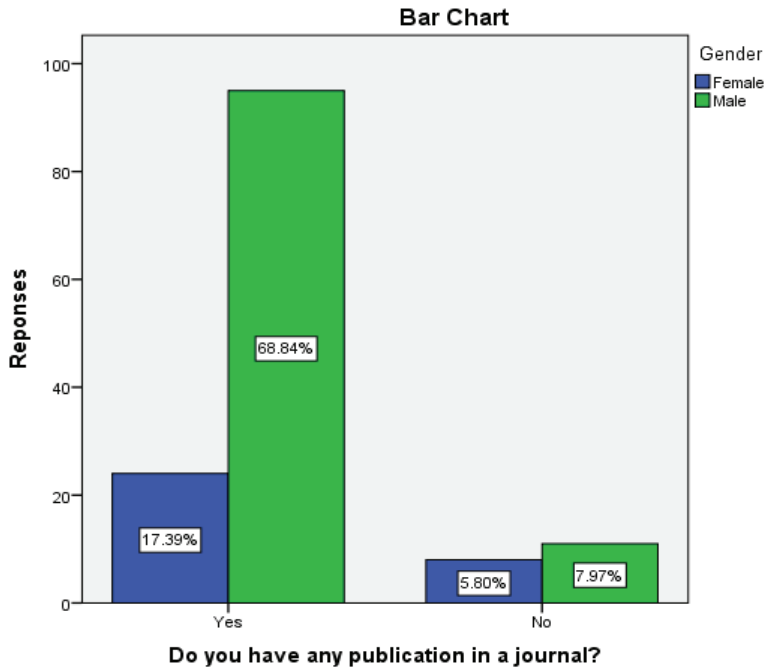
Graph 1: This bar graph represents the distribution of respondents based on age. X-axis denotes age group of participants and Y-axis denotes the percentage of participants. The respondents were between the age group of 18-22 years.

Table 1: Table showing representing demographic profile of study participants

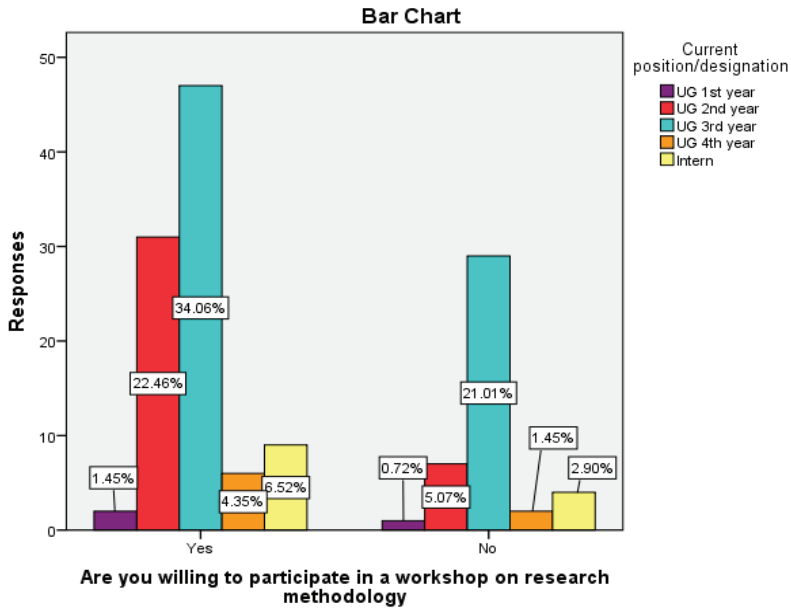
Designation	
UG 1st year	0.7 %
UG 2nd year	23.9 %
UG 3rd year	53.6 %
UG 4th year	4.3 %
Intern	9.4 %

Table 2: Number of publications

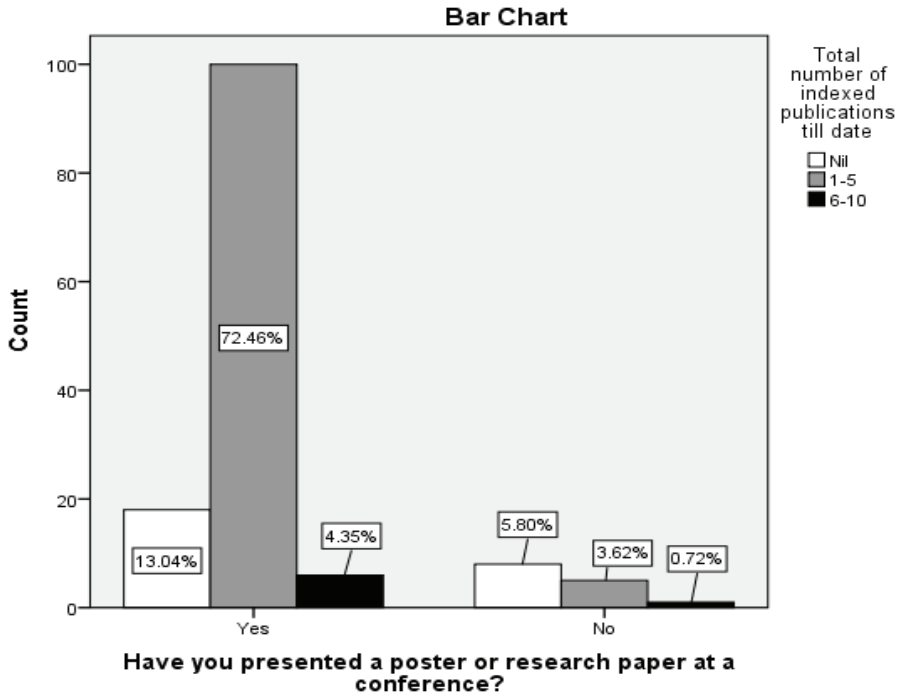
Total number of indexed publications	
Nil	18.9%
1-5	76.03%
6-10	5.07%



Graph 2: Bar graph representing comparison of responses based on gender to presence of publication in a journal. X- axis denotes the responses yes and no, Y-axis denotes the number of responses. Color blue and green represents female and male participants respectively. Males had a higher number of publications (68.84%) when compared to females, which was statistically significant. (Chi squared test; p-value = 0.035 - statistically significant)



Graph 3: Bar Graph representing comparison of responses based on year of study to the statement "Are you willing to participate in a workshop on research methodology". X- axis denotes the responses yes and no, Y-axis denotes the number of responses. Color violet represents 1st year UG students, red represents 2nd year UG students, blue represents 3rd year UG students, orange represents 4th year UG students and yellow represents interns. Although a higher percentage of III year undergraduates were willing to participate in a workshop on research methodology, a higher percentage of them denied it, which was not statistically significant. (Chi square test; p-value = 0.33 - not statistically significant)



Graph 4: Bar Graph representing comparison of responses based on number of publications to the statement "Have you presented a poster or research paper at a conference". X- axis denotes the responses yes and no, Y-axis denotes the number of responses. Color white represents no publications, grey represents 1-5 publications and black represents 5-10 publications. Respondents with 1-11 publications had a higher chance of presenting a paper or poster at a conference when compared to respondents without any publication. This difference was highly significant. (Chi square test; p-value = 0.000 - statistically significant)

Conclusion

Within the limitations of the current study, most of the undergraduate students had adequate knowledge regarding research and exhibited a positive attitude toward participation in research activity. Some of barriers that impede students in their involvement in research were inadequate time, insufficient funds, and difficulty in patient follow-up. Addressing the said barriers and subsequent changes by faculty and institutions can improve research involvement by students.

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Ethical Clearance: It is taken from "Saveetha Institute Human Ethical Committee" (Ethical Approval Number- SDC/SIHEC/2020/DIASDATA/0619-0320)

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