Assessment of Knowledge, Attitude and Practice Towards Scientific Research Among Dental Students in Kanpur City: - A Questionnaire Based Study

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Abstract

Background: Research is a systematic process that helps acquire new knowledge, science, or invention using standard guidelines. An improved understanding of scientific principles and methods is necessary for conducting research. The students should be acquainted with the research methods, enabling them as future doctors to practice evidence-based medicine in patient care. **Aim**: To assess and compare the knowledge, attitude, and practice towards scientific research among dental students in Kanpur city: **Materials and Methods:** We conducted a cross-sectional study of 121 undergraduate and postgraduate dental students using a convenience sampling method at a dental college. We used a validated self-report questionnaire to collect data and assess the knowledge, attitude, and practice toward scientific research. "Statistical Package for the Social Sciences is used to analyzed the data" (SPSS) version 23.0 for Windows Data were analyzed by using Chi-Square Test. statistically significant for a value of $p \leq 0.05$, were considered **Results:** Out of 121 participants, 45 (37.2%) were male and 76(62.8%) female students respectively. Subjects, stratified according to year of study, included students in the third year=25 (20.7%); final year=26 (21.5%); Intern=29 (24.0%); postgraduate=41(33.9%). The mean and standard of the knowledge score were 3.46±1.723, 83.5 % had a positive attitude 57.02% had practised scientific research. **Conclusion**: A high level of research knowledge was found among dental students. Attitude toward research was found to be positive among students. A low level of practice towards scientific research was seen.

Introduction

Research is a systematic process that helps acquire new knowledge, science, or invention using standard guidelines. An improved understanding of scientific principles and methods is necessary for conducting research. The students should be acquainted with the research methods, enabling 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)

Advancement of research in the dental field is at a remarkable pace worldwide. Research in dentistry teaches evidence-based practice and helps in a better understanding of the subject. It has explored areas in dentistry such as diagnostic aids for early detection of caries(2)

Dental research in the Indian setting is in the developing stages even though we have more than 300 dental colleges, higher than many countries worldwide. And the number of students completing a Bachelor of Dental Surgery (B.D.S.) degree in 1 year is 23, 690 and the Master of Dental Surgery (M.D.S.) degree is around 4000. The dental staff in various dental colleges in India is about 12000. This comprises many oral health care professionals who can considerably impact advancing the dental research situation in India. Unfortunately, the dental research representation by India on the international stage is almost infinitesimal.(3)

Research serves as the foundation for improving health care. Research experience is integral to the curriculum of many postgraduate dental programs and some undergraduate courses in India. Active involvement in research results in students being more likely to complete speciality training, become faculty members, and contribute to future research.(4)

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 to write a protocol or proposal is unsatisfactory. Some regulatory bodies are providing grants to encourage undergraduate and postgraduate students to conduct research. Even though regulatory organizations and institutions provide these facilities to expand the study by undergraduate students, the research quantity and quality are deficient. Increasing research participation requires sufficient knowledge and a positive attitude toward research as an essential component.(5)

Identifying the factors that hinder students' participation in research remains a critical issue in dental education. This study aimed to evaluate the knowledge, attitude, and practice research among dental undergraduate students.

To our knowledge, no such studies have been conducted in Kanpur city. Therefore, this study determined dental students' knowledge, attitude, and practices toward scientific research.

Aim

This study aims to assess and compare the knowledge, attitude, and practice towards scientific research among dental students in Kanpur city: - A questionnaire-based study.

Material and Methods

Source of data- For the proposed study, data was collected from Rama Dental College, Hospital & Research Centre, Kanpur, India.

Study design and study population -It is a cross-sectional questionnaire-based study conducted among undergraduate and postgraduate students from a private dental college in Kanpur.

Study duration- The study was conducted over four months, from October to January 2021.

Ethical approval for the study- The study proposal was submitted for approval and clearance to the Institutional Review Board of Rama Dental College, Hospital and Research Centre, Kanpur, before the start of the study. The Ethical Committee reviewed the study protocol, and ethical clearance was granted.

Informed consent- A detailed information sheet in English was presented to the participants to explain the purpose of the study, procedure, benefits, and risks to the study participants. Following this, written informed consent was obtained from all participants willing to participate in the study. All Participants signed informed consent forms before participating in this study.

Validity and reliability of the questionnaire A pilot study was conducted to check for the feasibility of the questionnaire and its validity, as well as to test the reliability of the developed questionnaire. The faculty tested the face validity of the questionnaire in the department. Twenty subjects were randomly selected to assess the test-retest reliability of the questionnaire using Cohen's Kappa coefficient.

Sample size – The sample size was calculated based on the prevalence of the practice of scientific research (16%) taken from a study conducted by Kumar H et al.(6) at Kasturba Gandhi Medical College, Mangalore, in 2008, an absolute error of 5%, the sample size according to formula 4PQ/L2 plus loss to follow-up as 10% came out to be 121.

Sampling method- Samples were selected using the Convenience sampling technique.

Inclusion criteria

Individuals who studied at Rama Dental College were included in the study.

All dental students from 3rd year, final year, interns, and postgraduates

Exclusion criteria

1st year and 2nd-year B.D.S. students were excluded from the study.

Collection of data

The investigator interviewed the subjects, and the following data was collected through a validated, self-administered structured questionnaire which included:

Section 1-Demographic data Demographic characteristics include Name, Age, Gender, and Participant's year of study.

Section 2- Knowledge regarding scientific research

This consisted of five questions regarding scientific research; the correct answer for knowledge questions was awarded 1 mark each, and 0 for incorrect answers.

Section 3- Attitude of scientific research among dental students.

The attitude of dentists towards scientific research was assessed using eight questions. Dental students were asked to answer each question on a five-point Likert scale of strongly disagree, somewhat disagree, neither agree/ disagree, somewhat agree, and strongly agree.

Section 4- Practices of scientific research among dental students

This consisted of nine questions regarding scientific research among dental students.

Statistical analysis-

The data were entered in Microsoft Excel and analyzed using statistical software, "Statistical Package for the Social Sciences" (SPSS) version 23.0 for Windows. All study variables were described using descriptive statistical methods calculation of Frequencies, Percentages, and means. Data were analyzed by using Chi-Square Test. All values were considered statistically significant for a value of $p \leq 0.05$.

Results

Graph 1: This graph shows the age-wise frequency distribution of the participants. The participants were divided into two age groups that were 20-25 years and 26-30 years. In this study, 68 (56.2%) belonged to the 20-25 years age group and 53(43.8%) from the 26-30 years group. The maximum number of participants belonged to the 20-25 years group.

Graph 2: This graph shows the frequency distribution of study subjects according to gender. The percentage of female participants was higher, i.e., 62.8% (76), than males with 37.2% (45).

Graph 3: This graph shows the frequency distribution according to the year of study among the participants; 25 (20.7%) of participants were in 3rd year, 26(21.5%) participants were 4th year, 29(24.0%) participants were interns, and 41(33.9%) of participants were postgraduates' dental students.

Table-1: This table shows the Mean knowledge regarding scientific research; the Knowledge score was 3.46 with a standard deviation of 1.723.

Table-2: Knowledge regarding scientific research. Among all the participants, 71.9% had good knowledge regarding scientific research.

Table-3: Attitude regarding scientific research. Among all the participants, 83.5% had a positive attitude regarding scientific research.

Table-4: Practice regarding scientific research. Among all the participants, 57.2% had good practice regarding scientific research.

Table-5: This table shows the association between predisposing socio-demographic characteristics and knowledge regarding scientific research. Age and qualification were found to be statistically significant demographic characteristics for knowledge regarding scientific research. The prevalence of knowledge among people aged 26-30 years was more (43.0%) as compared to the aged 20-25 years (28.1%) and 31-35 years of age (0.8%) with the p-value of <0.000. The prevalence of knowledge was higher among those who had done post-graduation (P=0.000).

Table-6: This table shows the association between predisposing socio-demographic characters and attitudes regarding scientific research. Age and qualification were found to be statistically significant demographic characteristics for attitude regarding scientific research. The prevalence of attitude was found positive among people aged 26-30 years was more (42.1%) as compared to the aged 20-25 years (40.5%) and 31-35 years of age (0.8%) with a p-value of <0.001. The prevalence of attitude was positive and found to be more among those who had done post-graduation (P=0.000).

Table-7: This table shows the association between predisposing socio-demographic characters and practice regarding scientific research. Age and qualification were found to be statistically significant demographic characteristics for attitude regarding scientific research. The prevalence of attitude was found positive among people aged 26-30 years was more (33.1%) as compared to the aged 20-25 years (23.1%) and 31-35 years of age (0.8%) with a p-value of <0.000. The prevalence of practice was good and found to be more among those who had done post-graduation (P=0.000)

TABLES

TABLE 1: MEAN AGE OF THE STUDY PARTICIPANTS

N	Mean	ST Deviation	(Minimum – Maximum)
121	24.92	3.100	20-34

TABLE-2: MEAN KNOWLEDGE SCORE REGARDING SCIENTIFIC RESEARCH

N	MEAN	ST DEVIATION	(MINIMUM – MAXIMUM)
121	**3.46**	**1.723**	**1-5**

TABLE-3: ATTITUTE REGARDING SCIENTIFIC RESEARCH

Variables	Negative		Positive		TOTAL
	N	**%**	**N**	**%**	**N (%)**
	20	16.5%	101	83.5%	121(100.0%)

TABLE-4: PRACTICE REGARDING SCIENTIFIC RESEARCH

Variables	Negative		Positive		TOTAL
	N	**%**	**N**	**%**	**N (%)**
	52	42.98	69	57.02	121(100.0%)

Table-5: Association between pre disposing Sociodemographic Characters and Knowledge Regarding Scientific Research

VARIABLES	**KNOWLEDGE REGARD ING SCIENTIFIC RESEARCH**					
SOCIO-DEMOGRAPHIC	**POOR**		**GOOD**		**CHI SQUARE**	**P VALUE**
AGE GROUP	**N**	**%**	**N**	**%**		
20-25	34	28.1%	34	28.1%	36.85	**0.000**
26-30	0	0.0%	53	43.8%		
GENDER						
Males	11	9.1%	34	28.1%	.474	**.491**
Females	23	19.0%	53	43.8%		

YEAR OF STUDY						
3rd year	23	19.0%	2	1.7%	80.482	**0.000**
4th year	11	9.1%	15	12.4%		
Intern	0	0.0%	29	24%		
P. G	0	0.0%	41	33.9%		

TABLE-6: ASSOCIATION BETWEEN PRE DISPOSING SOCIO-DEMOGRAPHIC CHARACTERS AND ATTITUDE REGARDING SCIENTIFIC RESEARCH

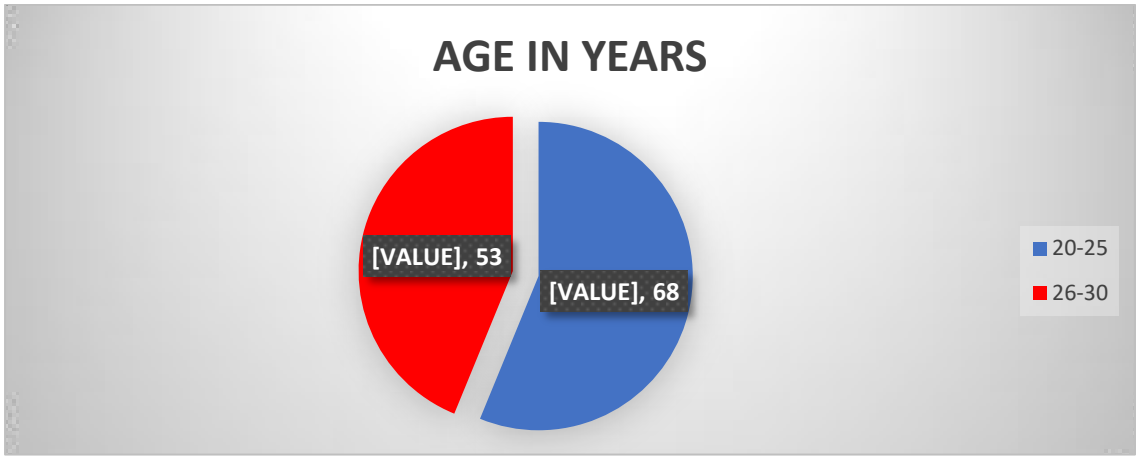
VARIABLES	**ATTITUDE REGARDING SCIENTIFIC RESEARCH**					
SOCIO-DEMOGRAPHIC	**NEGATIVE**		**POSITIVE**		**CHI SQUARE**	**P VALUE**
AGE GROUP	**N**	**%**	**N**	**%**		
20-25	19	15.7%	49	40.5%	14.657	**0.001**
26-30	1	0.8%	52	42.9%		
GENDER						
Males	5	4.1%	40	33.1%	1.524	**.217**
Females	15	12.4%	61	50.4%		
YEAR OF STUDY						
3rd year B.D.S	1	0.8%	24	19.8%	28.719	**0.000**
4th year B.D. S	12	9.9%	14	11.6%		
Intern	7	5.8%	22	18.2%		
P. G	0	0.0%	41	33.9%		

TABLE7: ASSOCIATION BETWEEN PRE DISPOSING SOCIO-DEMOGRAPHIC CHARACTERS AND PRACTICE REGARDING SCIENTIFIC RESEARCH

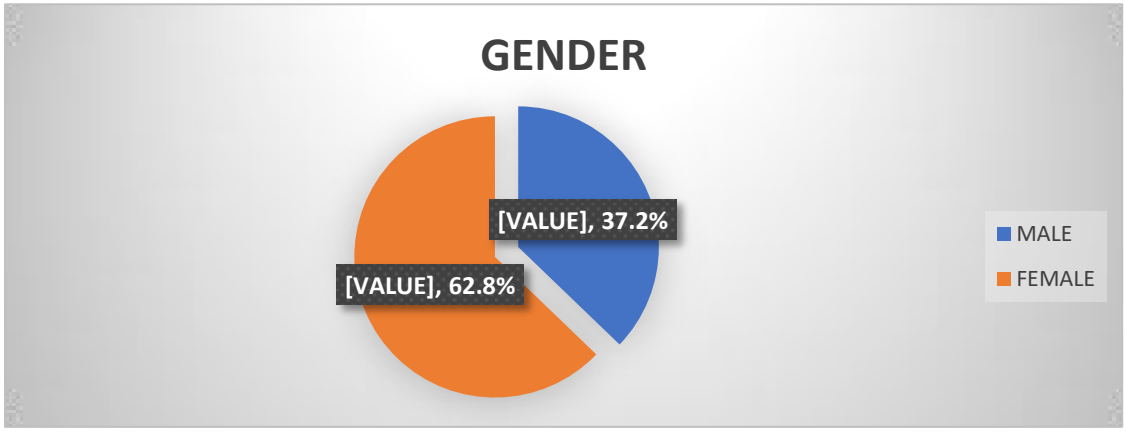
VARIABLES	PRACTICES REGARDING SCIENTIFIC RESEARCH					
SOCIO-DEMOGRAPHIC	**Negative**		**Positive**		**CHI SQUARE**	**P VALUE**
AGE GROUP	**N**	**%**	**N**	**%**		
20-25	40	33.1%	28	23.1%	16.124	**0.000**
26-30	12	9.9%	41	33.9%		
GENDER						
Males	20	16.5%	25	20.7%	.063	**0.802**
Females	32	26.4%	44	36.4%		
YEAR OF STUDY						
3rd year B.D.S	12	9.9%	13	10.7%	27.735	**0.000**
4th year B.D. S	22	18.2%	4	3.3%		
Intern	9	7.4%	20	16.5%		
P. G	9	7.4%	32	26.4%		

GRAPHS

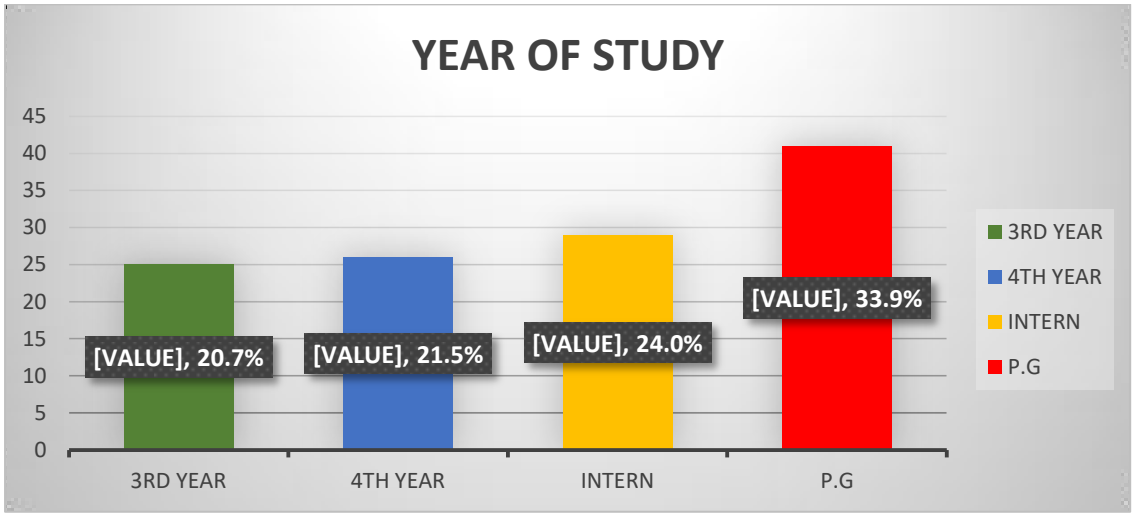
GRAPH 1: AGE WISE FREQUENCY DISTRIBUTION OF THE PARTICIPANTS



GRAPH 2: FREQUENCY DISTRIBUTION OF STUDY SUBJECTS ACCORDING TO GENDER



GRAPH 3: FREQUENCY DISTRIBUTION ACCORDING TO YEAR OF STUDY



Discussion

The present study assessed knowledge, attitude, and practices in research among U.G. and P.G. students in Rama Dental College, Hospital, and Research Centre.

In our study, a maximum number of participants were in the age group 20-25 years (56.2%).

Based on the results of the current study, a moderate level of knowledge (Mean Score 3.46±1.723) towards research among the dental students of Rama Dental College, Hospital and Research Centre was reported. 71.9% of participants had good knowledge of scientific research in the current study, which is higher than the results reported by Khan H et al. (7) (43.2%) and Wahdan et al. (8) (44%).

However, the findings for the attitude score among the current study participants were lower than the Karachi medical and dental students (83.5% vs 85.7%) and higher than the Croatian medical students (83.5% vs 82.3%). The dental students' knowledge of scientific research seems to be lower compared to the medical students. The study's results by Khan H et al. (7) indicate that medical students design and implement their research questions, analyze their data, and write detailed project reports. These could be the possible reasons for higher knowledge scores among medical students. However, the trend among dental students about scientific research is changing and becoming more positive. This is also evident from the current study's results, where the students' attitude towards research is higher than their knowledge.

83.5% and 71.9% of the participating students in the present study believe that research is important and that dental students should be involved in conducting research, respectively.

Gender was not found to be a significant predictor of knowledge about scientific research, with males and females having good knowledge at 29.1% and 43.8%, respectively, with a p-value of < 0. 491. The student's high school background did not affect their knowledge or attitude scores. Students' knowledge and attitude towards research significantly improved with increasing years of education. This finding was similar to previous studies reported by Khan H et al.(7) eight and Wahdan et al.(8). This indicates the contribution of teaching research methodology, statistics, epidemiology, and community dentistry during the last two years of dental school. According to Habib et al.(9), mandatory participation in research projects is the key to improving students' knowledge and awareness of research. Students who had been involved in research activities during their undergraduate education years are given priority for admission into postgraduate programs in many institutes. In a Canadian study by Siemens et al.(10) 12, 43% of respondents agreed that the main reason to participate in research during medical school was to facilitate acceptance into a residency program of choice. It is not surprising to see the same happening among dental undergraduate students.

In the present study, a maximum number of participants (59.5%) were willing to participate in a research project. This was in accord dance with studies conducted by Giri et al.(11).

The present study showed that more participants (50.4%) did not attend research courses outside the college. This was not by the study conducted by Sharma et al.(12), Pawar et al.(13), and Rani.(14)

The present study showed that more participants (64.5%) did not submit a research proposal. This was not in the study conducted by Sharma et al.(12), Pawar et al. 36, and Rani.(14)

Although the current study provided some information, there is a need for conducting further detailed studies across dental schools all over the country to address this vital subject of research. The factors affecting research among dental students, such as lack of research supervisors, cost of dental education, and time management, need to be evaluated and addressed further. The authors believe ways must be found to motivate dental students to participate in research. Dental schools should provide the students with an environment and facilities conducive to research activities, and the faculty should guide, encourage and motivate students to participate in research.

Conclusion

A high level of research knowledge was found among dental students in Rama Dental College Hospital and research centre, Kanpur. Attitude toward research was found to be positive among students. A low level of practice towards scientific research was seen. More efforts are needed to facilitate scientific research. Dental examination, including supervisors mentoring and university time allocation for research. Research components should be made essential in the under-graduated dental curriculum to form a strong foundation.

Recommandation

Knowledge and practices of undergraduate students can be improved by incorporating the research as an essential part of the under graduate curriculum. Dental student should also be encouraged to participate in research activities and a time should be allocated for research activities. The study was limited to a single centre with a small sample size with low generalizability

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