



Research Article

ASSESSING KNOWLEDGE, ATTITUDE AND PRACTICES ABOUT CLINICAL RESEARCH AMONG DENTAL FACULTY AND POSTGRADUATE STUDENTS- AN OBSERVATIONAL STUDY

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ABSTRACT

Background: The multinational pharmaceutical companies are attracted to invest in countries like India and China as a result of globalization, the larger patient pool and also because of the availability of well trained medical and dental professionals. Even at this scenario, involvement of dental professionals in the field of clinical research is not very encouraging in India.

Hence it was decided to conduct a pilot questionnaire study to assess the present knowledge, attitude and practices regarding clinical research among Masters in Dental Science (MDS) faculty members and Postgraduate (PG) students in our dental institution.

Methodology: A self designed questionnaire with questions on various aspects of clinical research, present involvement in research and barriers commonly faced for getting engaged in research was circulated among the MDS faculty members and PG students of KLE VK Institute of Dental Sciences, Belgaum, Karnataka, India.

Results: It was observed that presently 38.6% of the participants were involved actively in research. 85.1% of them agreed that there is poor research scenario in dentistry in India at present. 80% of the participants felt that the scenario can be improved with proper training and by improving the infrastructure.

Discussion: The results of this questionnaire survey can be basically taken as an eye opener which discusses the vital factors responsible for lack of research among dental professionals. We have also made an attempt to discuss the measures to overcome the present scenario to make it more research friendly.

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INTRODUCTION

Clinical investigator and clinical research constitutes an important component in the process of bringing a discovery from the laboratory bench into the clinics. Clinical research, defined as “research that involves living humans as subjects, is composed of a wide spectrum of research types as clinical trials, translational research, epidemiological research, health services research, and outcomes research and is critical to translating the results of basic science into useable health care products and services.”¹ Most of the faculty members pursue academic careers because of the academic lifestyle, characterized by the unique opportunities to teach, conduct research, engage with colleagues of similar interests, and work in an environment devoted to discovery and lifelong learning. As academicians's salaries are generally lower than similarly educated professionals working outside of higher

education, monetary compensation is rarely thought to be primary motivation of the academicians.^{2,3} Scientific challenges and stimulation one gets by involving in active research is one of the top most priorities of the newly recruited faculty to choose academics. According to Schenkein HA and Best AM opportunity to carry out research and research training opportunities are thought to be the most important factors by new faculty members to choose academic dentistry as their profession.⁴

There are no data on shortages of clinical investigators in oral health research, however estimates of self reported needs from dental institutes indicates that faculty shortage has an impact on clinical research capacity.⁵ These observations suggest that the dental professionals needs to get trained from clinical researchers to conduct clinical research and to teach its application to practice. Increasing opportunities for clinical research training will eventually increase the number of

clinical researchers, raise faculty and student involvement in research which help to incorporate evidence into dental education and clinical decision making in order to promote science transfer.^{6,7,8}

The number of dental schools grew significantly in the past two decades, with a recent report indicating that 185 dental schools in India, a majority are private.⁹ The number of dental faculty and PG students engaged today in active clinical research in India has not been estimated. There is substantial concern about the present status and future of clinical research in dentistry. At this time when biology is exploding with new knowledge and remarkably user friendly technologies, there is some angst that scientific advances are not being sufficiently directed into correcting the disease.¹⁰

Every dental institution in India will not be able to mount a basic science or clinical research initiative. Nonetheless it is imperative that all dental institutions contribute in some way and that the contributions be meaningful and of high quality. It is particularly important to recognize that science is a continuum of efforts that includes basic, behavioral, translational, applied, patient-oriented, and educational approaches. Thus dental institutions should identify the opportunities in science where they can make a unique contribution.¹¹

India is no doubt gearing up in clinical research and research publications are given importance even in dentistry today. As per the Dental Council of India (DCI) requirement of compulsory publications for promotion as well as for PG teaching will definitely bring some positive changes. The amount of research happening in dentistry right now is mostly in the form of post graduate dissertation which can not suffice the competition we need to face globally. This in-turn is restricting the research activity to only a small number of PG institutions leaving behind a large amount of undergraduate (UG) institutions not contributing at all.

Collecting information from all dental colleges was not feasible. Hence the present pilot study was restricted to KLE VK Institute of Dental Sciences, Belgaum which comprises 51 MDS staff members and 126 PG students. The present study aimed to assess the knowledge, attitude and active involvement of today's dental faculty and PG students in clinical research in dentistry at our institute. The effort was also made to list the barriers faced by the participants for lack of representation in clinical research. We have also discussed a few remedies to improve the present scenario and let them bring into action.

METHODOLOGY

The research protocol for this study was reviewed and approved by the Institutional Review Board (IRB) of KLE VK Institute of Dental Sciences, Belgaum, Karnataka, India. The study was done from August-September 2009.

The objectives of the study were to:

- 1) Determine MDS faculty member's and PG student's knowledge and their attitude towards clinical research in dentistry,
- 2) Determine their current status of involvement in clinical research,
- 3) Identify the most commonly faced barriers for conducting clinical research, and

- 4) Encourage the participants about their views to improve the present scenario.

Design and subjects

This prospective study was conducted with a self designed questionnaire whose clarity and understanding was checked by circulating it among five faculty members as a pilot group. The overall questionnaire consisted of sixteen questions.

The questionnaire included four sections as follows.

- 1) Demographic details such as age, sex, faculty/PG, no of years in academics, cadre, specialty etc.
- 2) Knowledge, attitude and involvement in clinical research like components of clinical research, research methodology, CDE's attended, present involvement in research, applied for research grants etc.
- 3) Most commonly encountered barriers.
- 4) Remedies to improve the present scenario.

The questionnaire was hand delivered and was collected the next day.

All the MDS faculty and PG students irrespective of specialty were included in this study. Most of the questions were closed ended with 'yes' or 'no' as the option. Only 3 questions were open ended. The participation was made voluntary and the purpose of survey was briefed to them before obtaining the informed consent. It was assured in the beginning of the questionnaire itself that the results of the survey would be only presented or published as an aggregate data maintaining the confidentiality of personal information.

RESULT AND OBSERVATIONS

The response rate of the participants was 80.8%. 101 out of 125 questionnaire forms were duly completed and were interpretable.

67.3% of the participants were in the age group ranging between 25-30 years. The reason for majority being in this age group was because of the inclusion of PG students in the study. 32.7% of the participants were in the age group ranging between 30-40 years. The age distribution of academicians in our study truly represented the younger generation of our country.

There was a nearer equal representation of sex with 43.6% of the participants being females. We can definitely appreciate the increasing number of females in the sector of higher education especially in academic dentistry. (Table 1)

Table 1 Demographic data

Data	n=101
Age range(Years) (25: 26-40)	68:33
Gender(Males:Females)	57:55
Speciality(PG:Faculty)	78:23

89.1% of the participants accepted that they have not received any formal training other than post graduation to conduct clinical research. 42.6% of the participants felt that research methodology and various aspects of clinical research are not given due importance during their PG curriculum. In depth knowledge of steps involved in conducting clinical research, statistics, applying for grants, writing a publication, etc. are not gathered by a PG student during his/her post-graduation

tenure. 85.1% of the participants felt that the present research scenario in dentistry in India is not satisfactory. (Table 2)

Table 2 Clinical research (General awareness)

	YES	NO
1) Have you undergone any training in Clinical research(Other than Post graduation)	11	90
2) Was research methodology taught in detail during post graduation?	58	43
3) Do you feel the need for training programs to master the components related to clinical trial?	79	22
4) Have you attended any CDE/Workshop/Certificate course for orientation of clinical research?	61	40
a) Was it useful?	50	-
5) Is the present scenario of research in India satisfactory?	15	86

A few questions pertaining to specific knowledge of various phases of clinical trial were also asked (Table 3). Only 10% of the participants knew about various phases of clinical trial. For example inclusion of healthy volunteers for conducting phase I study was identified rightly only by 9.9 % of these participants. Similarly only 40.6% of the participants knew that a drug or a dental material can only be marketed after successful phase III trials. 64.4% of the participants had no idea of Phase IV trials which are called as post marketing trials. Phase IV trials are basically carried out to evaluate the drug or material for its long term adverse effects as well as its usefulness in various other populations.

Table 3 Specific knowledge of clinical research

	Answers		
	YES	NO	DON'T KNOW
6) A drug can be marketed after			
a) Phase I study		2	
b) Phase II study		4	
c) Phase III study		41	
d) Phase IV study		25	
e) Don't know		29	
7) Are healthy volunteers enrolled for Phase I study?	10	44	47
8) Is Indian Government approval optional for carrying out a clinical trial?	20	42	50
9) Is Written Informed Consent optional for carrying out a Clinical Trial?	30	53	18
10) Does Centralized Registry for conducting Clinical Trial exist in India?	42	10	49
11) Is Phase IV study done after the approval and marketing the drug?	36	25	40
12) Are you interested in carrying out clinical research/clinical trial?	87	14	-
13) Have you carried out/carrying out any clinical research at present?	39	62	-
14) Have you ever applied for Research Grants to any external agency?	86	15	-
a) If yes, was the response positive?	72	-	-
b) Was the procedure tedious?	68	-	-

33.7% of the participants at present were involved actively in clinical research and 14.8% of the participants had ever applied for research grants.

A few questions were also added on ethical and legal aspects of conducting clinical research especially in India. It was very encouraging to know that 52.5% of the participants were well versed with importance of taking informed consent from a patient before administering a drug or before carrying out a clinical procedure. These academicians were also aware of importance of taking approval of Institutional Ethical Committee (IEC) or Institutional Review Board (IRB) before carrying out any clinical research. 80.2% of the participants

agreed that they had no knowledge of legal aspects for conducting clinical trial in India.

Insufficient knowledge hence lack of confidence was thought to be the most important barrier by the participants (54.4%) for not getting engaged in clinical research. Lack of funds was identified as one more vital issue for not getting involved in active clinical research by dental academicians. 53.5% of them felt that they have time constrains because of administrative and academic responsibilities. Not having sufficient knowledge of legal and ethical aspects of clinical research was also identified as a hurdle. (Table 4)

Table 4 Barriers

15) What do you think are barriers which are preventing you from getting involved in clinical research?	
a) Insufficient knowledge	42
b) Lack of confidence	14
c) Lack of funding agencies	65
d) Time consuming	54
e) Legal aspects	23
f) Ethical restrictions	28
g) Unaware of procedures to begin	40
h) Unaware of approach	33
i) Lack of interest	5
j) Any other please specify	-

The participants were asked to come up with their own remedies to improve the scenario and most of them felt that improving the UG and PG curriculum, conduction of various CDE and certificate courses in clinical research, diploma courses at PG level will improve the situation. A few participants even suggested that all MDS faculty should undergo a compulsory clinical research training program before guiding the post-graduate students for their dissertations. (Table 5)

Table 5 Methods to improve the situation

16) What are the methods to improve the research culture among dentists in India?	
Answers	
a) CDE and workshops	56
b) Modification of curriculum of BDS and MDS	62
c) Certificate and diploma courses	65
d) Any other mode....	-

DISCUSSION

This is the first ever detailed study about the survey regarding clinical research which is done in India. Hence it was difficult for us to compare the findings of our study. The results of this pilot study hence can be verified by conducting similar studies throughout India.

The sample selected for the study consists of 23 MDS faculty and 78 PG students of a dental institution which is affiliated to both DCI as well as to UGC (Deemed University under UGC Act, 1956). The institution also has PG courses in all dental specialties for more than 10 years. Involvement of PG student's in the study actually makes us understand the attitudes of young budding academicians of India.

In our study we had very encouraging female representation; 43.6% of the participants in our study were females. This scenario is definitely encouraging as women are equally participating in administration, academics and research in case of higher education. Increase in female participants

especially in dentistry is also observed by Bhalla *et al*¹² recently in India. They also found that there is no salary disparity depending on gender which encouraged especially younger women of India to enter academic field in dentistry. 74.3% of respondents in our survey were PG students and 67.3% of them were less than 30 yrs of age. We can hence definitely assure that the opinions expressed here truly represent the present scenario of research in dentistry as today's PG students are the ones who are going to be tomorrow's dental academicians as well as research scholars. The reduced performance of participants regarding questions of specific knowledge of conducting a clinical trial can be attributed to lack of training. 89.1% of the participants had no hesitation and agreed that they never received a proper training for conducting clinical research, hence were not aware of various phases of clinical trial, applying for research grants or even writing the publication. Research productivity of Indian dental faculty and PG students as assessed by Gil Montoya JA *et al* ranks after western countries. To improve this scenario we feel that the areas like clinical research training and compulsory publications for up-gradation in the job have to be focused at present.

The reasons for reduced representation felt by the participants were lack of proper training in research methodology, lack of confidence, poor knowledge of ethical aspects of carrying out research and lack of funds. Clinical research in academic dentistry in India is now gaining importance. Earlier clinical research was conducted only in the form of post graduate dissertations.

The positive aspect was that 86.1% of the participants showed interest in getting trained in clinical research if given an opportunity.

42.6% of the participants felt that the research methodology taught to them as PG curriculum was/is insufficient and it needs to be modified according to the needs. This reflects on a major cause for lesser representation of dental professionals in clinical research. Lack of understanding of research fundamentals has traditionally resulted in the reluctance of practicing dental professionals to embrace new techniques and therapies. In addition the culture of dental education has not been conducive to research training due to perceived sacrifice of teaching clinical skills in an increasingly overcrowded curriculum.¹³ Along with lack of training, 64.4% of the participants in our study felt lack of funds as one of the major cause for getting involved in research. Not only in India even investigators in developed countries experience difficulties getting research grants funded for clinical research.¹⁴ Hence to encourage research especially in dentistry policy makers in India have to concentrate on increasing the funds.

It is not only lack of funding agencies; dental faculty and PG students even lack the knowledge of applying for research grants. Only 14.8% of participants had ever tried for applying for funds to an external agency in our study. Hence a positive research atmosphere can only be created not only by increasing the number of funding agencies but also by motivating the researchers and training them to apply for research grants to these funding agencies.

The third major barrier for getting involved in research was lack of time. Academic duties and administration duties exhausted their time and they felt that adjusting time for research was difficult. A survey conducted among radiology

residents of a Canadian radiology center also reported that research was an extra time commitment rather than an integral part of curriculum, and they were less willing to sacrifice their personal time for research training.¹⁵

64.4% of the participants felt that certificate and diploma courses can also be helpful especially for conducting clinical research. There has been an effort in many nations throughout the world to increase dental research productivity in response to increased emphasis on the social and behavioral determinants of oral health disparities. A recent database study examined research productivity, although it gave little insight into factors impacting individual investigators. According to this database United States of America, United Kingdom, Japan and Scandinavia are the most productive areas in terms of dental research publications while the United Kingdom has highest productivity rates per researcher. According to these authors many developing countries at present are showing rising number of publications.¹⁶

Today clinical research in dentistry in India is at infancy. We can see that most of the research publications are from the PG institutions which constitute a small part of dental academicians in our country. Recently a few health universities are conducting PG orientation programs which also include clinical research methodology. But as per our knowledge this is not followed uniformly all over India. The result of our study clearly indicated that we all as dental professionals are not happy with the present scenario and as well accept the reduced representation.

Dental Council of India is coming up with amendments like research publications are must for promotions as well as for PG teaching. This criterion might improve the present scenario in India. In recent years, Curriculum Guidelines have reconsidered the position of research and have recommended changes that allow research to be viewed as an educational principle.¹⁷

Overall the result of this study indicates that the present scenario of clinical research in dentistry in India is not very encouraging. Hence our study in this matter can be taken as a pilot study and further research can be carried out to know the clinical research scenario and research productivity of academicians in dentistry in India.

CONCLUSION

At this juncture, communication, collaboration, sharing of human capital, instrumentation, core facilities, technology, reagents, and expertise are all necessary in countries like India to create the appropriate environment to nurture outstanding research. But the result of our study strongly directs us towards the need for motivating dental professional's attitude towards research, and improving the PG curriculum. Currently dentistry has pockets of scientific excellence, but, overall significant science achievements and recognition are limited to a minority of institutions not only in India but everywhere else. Right now the perception is that dental science is not sufficiently deep or broad based to be on equal footing with the medical specialties. This perception can only be changed by making a dedicated commitment to a science based profession. Only then the dental institutions can be recognized as an equal partner in the field of human health. Dental institutions especially in India hence should strive to be centers not only of knowledge transmission, but of

knowledge generation. This transformation can only be brought when dental professionals take active part and interest in research. Training the present and future dental professionals in clinical research is the need of the hour. By increasing clinical research training we can have scientists, academicians, and students working toward common goals for research and problems faced in our profession. Such contribution and cooperation will ultimately improve the patient care by newer therapeutic and preventive options. We are very optimistic that the situation in dentistry in India will definitely change in the next decade and we all as academicians would have contributed to it and will be proud of it then.

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