Original Article

Knowledge, attitude and practice of research ethics among dental professionals in dental colleges of South Kerala-A pilot study

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Received – 07 August 2020 *Initial Review – 14 August 2020* *Accepted – 20 August 2020*

ABSTRACT

Background: Research in the field of dentistry is increasing but there is dearth of information investigating the knowledge, attitude and practice of dental professionals for ethical principles in research especially in developing countries like India. The outcome of the present study will help the institution to understand how well research ethics are accepted in their institution. **Methods:** A cross sectional survey using validated questionnaire was administered to faculty members and postgraduates of two dental colleges in south Kerala. The questionnaire was designed to take approximately 10 minutes to complete and participants were asked to return it in drop box provided at principal's office. **Results:** A total of 97/113 dental professionals participated in the study with a response rate of 86%. Based on the questionnaire, there was fair knowledge among the faculties and postgraduates regarding informed consent, research involving children and research on retrospective samples. Less than one fourth of results showed good attitude towards research ethics whereas more than three fourth participants showed moderate attitude. There was no statistically significant difference between faculty and postgraduates on comparison of attitude towards research ethics ($p<0.148$). With regards to research ethics practice, about half of participants had moderate knowledge and less than half of participants had low knowledge. However, the difference of knowledge among faculty and postgraduates was not statistically significant ($p<0.756$). **Conclusion:** The present study highlights the need for nationwide study about research ethics to determine the generalizability of the results and the importance of research ethics training program .

Key words: *Research ethics, dental faculty, postgraduates, attitude, knowledge*

Ethics is derived from Greek word "ethos" meaning custom or character. It is defined as norms for conduct that distinguishes between acceptable and unacceptable behavior. It is important to adhere to ethical norms in research. Ethical norms promote the aim of the research such as knowledge, truth and avoidance of error; values that are essential to collaborative work such as trust, accountability, mutual respect and fairness; help to ensure that the researchers are held accountable to the public [1]. Research is defined as gathering of data, information and facts for advancement of knowledge in a systematic manner that follow rigid standard protocol. In recent era, there is growing number of research in the field of dentistry motivated by the need to improve overall health of the patient [2].

Medical research involves human subjects, thereby increasing the need to protect the participant's right and welfare by following fundamental ethical principles. In most developing countries research regulations and proper ethics review system are not met with adequately [3]. There are limited research investigating the attitude of dental faculty and practice of research ethics and the assessment of knowledge regarding the guidelines, regulations governing proper conduct of research

involving human subjects. Previous studies have a poor knowledge about ethical guidelines and research ethics among dental faculty in dental institution in India [2-6]. The present study was undertaken to assess and compare the knowledge, attitude and practice of research ethics among dental faculty and dental postgraduates in teaching institutions in South Kerala. The outcome of the present study will help the institution to understand how well research ethics are accepted in their institution and to unravel the importance of intensive training programme in research ethics for dental faculty and postgraduates, if required.

MATERIAL AND METHODS

A descriptive cross sectional questionnaire study was conducted among dental professionals in two teaching institutions in South Kerala over a period of 3 months from July to September 2016 after obtaining approval from institutional ethics committee. The questionnaire was adopted from mallela et al [2], consisted of five parts. The first part comprised the demographic details of the participant: age, gender, academic position, prior participation in human subject research, number of research projects involved, prior training in research ethics. The second part assessed the participant's awareness about research ethic guidelines and function ethics committee. The third part consisted of knowledge based questions; fourth part assessed the attitude regarding research ethics education and the fifth part assessed the knowledge about research ethics practice. Likert scale having points ranging from 1 to 5 (Strongly agree-5, Agree-4, Not sure-3, Disagree-2, Strongly disagree-1) was used in the fourth and fifth part of the questionnaire.

A pilot study on 12 randomly selected participants from single academic institution was carried out to estimate the reliability of the questionnaire. The cronbach's Alpha for questionnaire for Awareness was 0.67 and third part assessing knowledge was 0.82.The Guttman Split-Half Coefficient for fourth part assessing attitude was 0.86 and fifth part assessing practice was 0.88. Through convenience sampling, 113 participants-dental faculty having a postgraduate degree or pursuing post-graduation were selected. The postgraduates in the first year of study were excluded from the study. After obtaining an informed consent, the questionnaire was distributed while maintaining anonymity of all the participants. The questionnaire was designed to take approximately 10 minutes to complete. The participants were asked to return the completed questionnaire in the drop box provided at principal's office. The data was entered into SPSS software version 17.0. The descriptive statistical analysis calculating the percentages of the responses were determined. Chi-square test used to compare response between faculty and post graduates. The significance level was set as p value < 0.05.

RESULTS

A total of 97/113 dental professionals participated in the study with total response rate of 86%. The study cohort consisted of 50.5% post graduates and 49.5% faculties, of whom, 43.8% were Lecturers, 39.6% were Professors and 16.7% Readers. The mean age of participants was 33.1±7.5years, with 51.5% participants belonging to the age group of 25-30 years, followed by 18.6% between 31-35 years, 14.4% between 36-40 years and 15.5% above 40 years. The study consisted of 49.5% males and 50.5% females. In our study, only 36.1% participants had received prior training in Research ethics. Although, half of participants (50%) were involved in 1-3 research projects, only 29.2 % participants had conducted more than 3 projects and 20.8% were not involved in any research projects.We analyzed the awareness of ethical guidelines among the participants. In our study, 75.3% participants were aware about the function of ethics committee. Around 50.5% were aware of ethical guidelines whereas, 49.5 % participants were unaware. There was no statistically significant difference in the awareness about ethical guidelines ($p< 0.760$) and function of ethics committee ($p< 0.142$) between faculties and postgraduates.

Table 1. Distribution of the sample according to knowledge in research ethics:

Knowledge in research ethics	Percentage
Informed consent	59.8
Research involving children	60.8
Retrospective research on stored samples collected for clinical purposes	63.9
Confidentiality	85.6

The assessment of knowledge in research ethics among faculties and post graduates was assessed in terms of correct answers. Correct responses were 59.8% for informed consent, 60.8% for research involving children, 63.9% for retrospective research on stored samples collected for clinical purposes and 85.6% for confidentiality (Table 1). On assessment of the knowledge

in various ethical aspects for the conduct of medical research it was found that among the faculties 14.6% had good knowledge, 70.8% had fair knowledge and 14.6% had poor knowledge. Among the postgraduates 36.7% had good knowledge, 46.9% had fair knowledge and 16.3% had poor knowledge. There was statistically significant difference between faculties and postgraduates (p <0.030) (Table 2).

Table 2. Comparison of knowledge in research ethics amongst faculty and postgraduates:

Research ethics	response	Faculty (%)	PG (%)	X^2	P
Knowledge	Poor	14.6	16.3	7.02	0.03
	Moderate	70.8	46.9		
	Good	14.6	36.7		
Attitude	Moderate	79.2	89.8	2.1	0.15
	Good	20.8	10.2		
Practice	Low	45.8	49.0	0.1	0.76
	Moderate	54.2	51.0		

In our study, more than half participants (66%) strongly agreed that research ethics committee is helpful. Around 86.6% participants strongly agreed that the research involving human subjects must be reviewed by ethical committee. Nearly two third of them (71.1%) strongly agreed that members of research ethics committee should receive training in research bioethics. Around 57.7% strongly agreed that research ethics as mandatory postgraduate module. Table 3 shows distribution of sample according to attitude towards research ethics among the faculty and postgraduates respectively.

Table 4 shows the percentage distribution of the sample according to attitude in research ethics and was found to be 79.2% faculty and 89.8% post graduates showed good attitude and 20.8% faculty and 10.2% post graduates showed moderate attitude towards research ethics. However, the difference was not statistically significant (p<0.148). Two third of participants strongly agreed that patient data should be protected. About half of them strongly disagreed that patient should not be informed of full research details including risks and benefits, while more than half of them strongly agreed that informed consent from patient is necessary for use of biological samples in research. Less than one fourth of them strongly agreed to fabricate data to improve outcome of research. In case of exemption of research involving retrospective studies for ethical consideration (40.2%) are not sure while less than one fourth of them strongly disagreed. On comparison between faculty and postgraduates there was no statistically significant difference (p<0.756).

Table 3: Distribution of the sample according to attitude in research ethics

Attitude	Strongly Disagree (%)	Disagree (%)	Not sure (%)	Agree (%)	Strongly Agree (%)
Research ethics committee is helpful	1	2.1	3.1	27.8	66
Need for research ethics committee	1	0	6.2	29.9	62.9
Research with human subjects must be reviewed by ethics committee	1	0	4.1	8.2	86.6
Ethical review of research is only necessary for international collaborative research	53.6	30.9	8.2	7.2	0
Ethical review of research by an REC would delay research and make it harder for the researcher	16.5	28.9	19.6	29.9	5.2
The members of a research ethics committee should receive training in research bioethics	0	1	2.1	25.8	71.1
The members of a research ethics committee should receive training in research bioethics	0	1	2.1	25.8	71.1
Research ethics must be taught as a mandatory postgraduate module	2.1	1	4.1	35.1	57.7
All investigators must have some training in research ethics	2.1	0	2.1	40.2	55.7
Ethical review of research by an REC is not necessary since there are scientific committee	35.1	32	21.6	8.2	3.1

Table 4: Distribution of the sample according to knowledge in research ethics practice

Knowledge	Strongly Disagree (%)	Disagree (%)	Not sure (%)	Agree (%)	Strongly Agree (%)
There should be measures to protect patient data from being accidentally exposed	0	1	1	22.7	75.3
Patient should not be informed of full research details including risks and benefits	42.3	23.7	7.2	11.3	15.5
Informed consent from patient is necessary for use of their biological samples in research	0	1	5.2	33	60.8
Informed consent should always include patient signature	1	19.6	0	0	79.4
When involving patient with invasive procedures informed consent must be sought from each patient	2.1	1	1	21.6	74.2
Patient should be told about potential risks of a study because they may not enroll in the study	64.9	20.6	6.2	5.2	3.1
No need to obtain research informed consent for blood samples obtained for clinical tests	40.2	35.1	7.2	11.3	6.2
Vulnerable groups such as children and mentally ill could provide informed consent	48.5	12.4	13.4	18.6	7.2
If no surrogate is available to give informed consent for vulnerable groups they colud still be included	38.1	25.8	21.6	10.3	4.1
Is it okay to fabricate data to improve outcome of research as long as there is no harm to the patients	57.7	23.7	6.2	8.2	4.1
Retrospective studies should be exempted for ethical consideration	17.5	18.6	40.2	16.5	7.2

DISCUSSION

The essential prerequisite while conducting any research are knowledge about the study subject and awareness about research principles [7]. The international community had made several ethical guidelines or codes to avoid exploitation of human subjects. In the developing nations, there is concern for existence of functional review systems of individual and institutional research ethics. In order to achieve highest standard of dental health services, the values of ethics should be imparted during their academic curriculum [2]. The present study was conducted to analyse the awareness on ethical guidelines, the knowledge about research ethics, attitude and research ethics practice, among dental professionals in private dental institute in Kerala.

In our study, 50.5% participants were aware of the ethical guidelines and 75.3% knew about the function of ethics committee, which is higher than observed by Dessouky et al [3]. There was no statistically significant difference between faculty and postgraduates. The knowledge of post graduates are comparable to that of dental faculty since they are taught research ethics in the first year of study and the postgraduates of second and third year are only included in the study group.

Decreased knowledge about research could be due to insufficient training in the current curriculum which lacks specific training in research and knowledge gaps among dental professionals [3, 4] In our study, more than half of the faculty and postgraduates had knowledge about research involving children, which is in accordance with study by Mallela et al [2]. However, they found minority of researchers to have knowledge of retrospective research involving tissue samples for clinical purposes which is contrary to present study wherein more than half of faculty and postgraduates were aware of retrospective research. Obtaining informed consent in retrospective studies is still a dilemma. In most countries a consensus has been reached that retrospective and epidemiological research exempted from IC but it is subject to pre-approval by ethics or institutional review boards [8].

One third of the respondents agree and more than one third not sure about that retrospective samples be exempted for ethical consideration. About more than two third of the faculties and postgraduates had accurate knowledge about confidentiality, which is higher than 56% and 28% reported by Reddy et al [6] and mallela et al [2] in South and North India respectively. Although, Majority

of respondents (86.6%) in our study believe that research with human subjects must be reviewed by ethics committee, However, 29.2% believe that ethical committee would delay research and make it harder for researcher. This is in accordance with study by Mallela who reported that only 20% opined that ethical committee would delay research [2]. This suggests that some of researchers continue to be frustrated by delays to secure approval, which may be due to lack of complete understanding of process of research ethics committee (REC). Hence there is need for training for researchers to become familiar with functions of REC.

In our study, more than half of the respondents did not receive any training in research ethics. Majority (71.1%) believed that researchers should receive training in research bioethics which is in consistent with study by Mallela et al where 78% opined for need for training [2]. The respondents showed fair attitude towards research ethics and no statistically significant difference between faculty and postgraduates ($p<0.148$). The study by Janakiram C among medical and dental postgraduates inferred that medical students have better appreciation for healthcare ethics than their dental counterparts and recommended that inclusion of bioethics in the initial period of postgraduate programme would be beneficial [5].

More than two third of faculty and postgraduates disagree with fabricating data to improve outcome of research. This is accordance with study of Mallela et al were equal number agreed and disagreed with fabricating data [2]. Anup et al [9] inferred that the dental and medical professionals showed better knowledge and attitude than undergraduates and said that the difference is attributed to the training workshops ,conferences and CME they would have undergone. Ramalingham S et al insisted on need for introduction of ethics training during undergraduate course [10]. In our study, although there is fair knowledge among dental faculty and postgraduates about research ethics, there is still need for continuing educational programs to increase knowledge, awareness about ethical guidelines and improve the attitude and research ethics practice. The dental curriculum should needs to be more detailed regarding research ethics.

With results of our study, it has been inferred that the dental professionals require training in the area of research involving children and retrospective samples. There is acceptability of ethics committee but awareness and knowledge about guidelines needs improvement. The inclusion of detailed curriculum on research ethics is to be stressed. The limitation of the present study is that small sample size was elected based on convenience sampling, which limits the generalizability of results to entire dental faculty of south India. Further research is required with larger sample involving the faculties of dental colleges as nationwide study.

CONCLUSION

In the present study, the awareness, knowledge, attitude and research ethics practice among the participants was fair, the results were comparable between faculty and postgraduates. Although there is fair knowledge among dental faculty and postgraduates about research ethics, the study highlights the need for continuing educational programs to increase knowledge, awareness about ethical guidelines and improve the attitude and research ethics practice, need for implementing research ethics training programme which would further help in understanding ethical principles to conduct research in more appropriate manner.

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How to cite this article: Ravindran R, Kandhimadhi devi HR. Knowledge, attitude and practice of research ethics among dental professionals in dental colleges of South Kerala-A pilot study. J Orofac Res. 2020:9(3):49-54.

Funding: None; Conflict of Interest: None Stated.