

A Cross-Sectional Survey on Knowledge, Attitude and Practice of Dental Ethics among Dental Graduates of Karachi, Pakistan: A Multicenter Study

Fariha Irfan¹, Hira Akhtar², Sheikh Haroon Shah³, Hina Hammad Khan¹, Abdur Rehman⁴, Hina Nafees¹ and Syed Abrar Ali¹

¹Department of Operative Dentistry, Hamdard University, Karachi, Pakistan

²Department of Operative Dentistry, Dow University of Health Sciences, Karachi, Pakistan

³Department of Dental & Maxillofacial Surgery, Liaquat National Hospital, Karachi, Pakistan

⁴Department of Dental Materials, Hamdard University, Karachi, Pakistan

ABSTRACT

Background: Dental ethics apply moral principles and virtues governing the character and conduct of an individual to the practice of dentistry. In dental practice, various ethical issues arise which need to be dealt with extreme sensitivity and professionalism according to the various codes of dental ethics.

Objective: To determine the knowledge, attitude, and practice (KAP) of dental ethics among dental graduates and to compare the KAP of dental ethics between House officers (HOs) and Postgraduate students (PGs).

Methods: A questionnaire-based cross-sectional study was conducted at four different dental colleges in Karachi during January-June, 2022. The questionnaire consisted of 13 self-administered closed-ended questions. Questionnaires were distributed for the face-to-face survey among target participants. Knowledge, attitude, and practices of dental ethics principles about the routine dental clinical practice were inquired. Data were analyzed using SPSS version 23.

Results: A total of 390 complete responses were received. 65.7% of respondents were HOs, and 34.3% were PGs. 74% of dental graduates exhibited inadequate knowledge. 52.7% of dental graduates displayed poor attitudes. Fair to poor practices were recorded largely in our study as only 45.6% of overall respondents depicted favorable responses to the asked questions. The frequency of inadequate knowledge among HO and PGs was 84% and 64% respectively. 50% of HOs and 44.5% of PGs showed poor attitudes. 45.6% overall respondents (HOs and PGs) depicted favorable responses to the asked questions comparatively higher poor practices.

Conclusion: Inadequate knowledge, poor attitude, and comparatively higher poor practices related to dental ethics are noted by dental graduates in our study. Years of experience and learning have an impact on responses.

Keywords: *Dental ethics, Dental ethics principles, ethical practices, PMDC code of Ethics, KAP.*

INTRODUCTION

Ethics has been described as the science of moral principles and virtues governing the character and conduct of an individual group. Similarly, dental ethics apply these moral principles and virtues to the practice of dentistry [1]. In dental practice, various ethical issues arise including unethical behavior by dentists with patients and colleagues [2]. These issues need to be dealt with extreme sensitivity and professionalism according to the various codes of dental ethics which enable a professional to analyse and implement moral acts and values when dealing with patients. Consideration of ethical practices helps evaluate individual morality ensuring the best possible patient care and outcome [3, 4].

Dental surgeons have well-documented and outlined professional and ethical responsibilities. The training

of a health professional is regarded incomplete without acquiring the necessary education and training in ethics [5]. Daily, dental surgeons are required to apply the principles of ethics concerning clinical decision-making, professional responsibility, patient care, and researching human subjects. Ergo, dental schools and universities have a moral and academic responsibility to educate students to correctly manoeuvre diverse ethical and clinically sensitive areas [6].

In the vast field of health sciences ethics, values, and professionalism are best measured with comparison to practice [5, 7]. This hectic schedule also presents a challenge for the instructors to teach and expect students to exhibit professional behavior and moral responsibility in a short period [6, 8]. Hence dental ethics is usually a learned behaviour that is acquired via observation of clinical superiors and teaching instructors [9]. Furthermore, there is no quantifiable method to assess or evaluate the level of the moral and ethical development of dental students during their course of training and professional development [5, 9, 10, 11]. Therefore, there is a desirable need for assessing the

*Corresponding author: Fariha Irfan, Department of Operative Dentistry, Hamdard University, Karachi, Pakistan; Tel.: 03122733602; Email: fariha.irfan@hamdard.edu.pk

Received: December 03, 2022; Revised: February 16, 2023; Accepted: February 20, 2023

DOI: <https://doi.org/10.37184/lnjpc.2707-3521.5.27>

areas of competence, current knowledge, and orientation of dental professionals toward ethics. With an alarmingly increasing number of dental practitioners and enhanced competition, there is a need to make dental students understand the moral and ethical dynamics of dental practice. This can help prevent future practitioners to avoid falling for the commercialization of dentistry and also practice dentistry with the utmost standards of professionalism [10, 12].

The primary objective of this study is to determine the knowledge, attitude, and practice (KAP) of dental ethics among dental graduates (including House officers and postgraduate students) and the secondary objective is to compare the KAP of dental ethics between House officers (HOs) and Postgraduate students (PGs) in different dental colleges of Karachi.

METHODOLOGY

A questionnaire-based cross-sectional survey was conducted at four different public (Dow dental college, Karachi medical and dental college) and private (Hamdard college of medicine and dentistry and Liaquat College of Medicine and Dentistry) dental colleges of Karachi from 1st January to 30th June 2022. The sample size was calculated by OpenEpi software version 3.0. Taking the 60% response rate of poor attitude [13], the total sample size for this study was 369 with a 5% error, and the confidence interval was taken as 95%. We distributed 400 questionnaires to ensure maximum participation. Questionnaires were distributed for the face-to-face survey among target participants in printed form for ensuring maximum response. Target participants for this study included House officers (HOs) and Postgraduate students (PGs). Students from BDS 1st to 4th years and faculty members were excluded from our study.

A questionnaire was adopted from the previously published article [14] which was modified according to our settings and used in this study. A pilot study was done on 30 participants to determine the questionnaire reliability through Cronbach alpha which was calculated as 80%. The questionnaire consisted of 13 self-administered closed-ended questions that required 5-10 minutes to complete. The questionnaire comprised 4 sections in total including informed consent, demographics, knowledge, attitude, and practices. The first section of the questionnaire included respondents' demographic data which comprised of questions including age, gender, institution, and designation. The second section of the questionnaire inquired about 2 questions assessing knowledge and the third section inquired about 4 questions related to the attitude toward dental ethics. The last section of the questionnaire comprised seven statements inquiring about respondents' practices regarding the application of principles of dental ethics in different clinical scenarios. The questionnaire is attached as a supplementary file.

For grading each question was given a score of 1 in case of a correct or favorable answer and a score of 0 in case of an incorrect or unfavorable answer. Knowledge and attitude were graded as adequate and good in case of all correct answers respectively. Knowledge was marked inadequate and attitude was graded as poor if any of the related questions was answered incorrectly. Practices were labeled as good when the overall correct response of the given category was ≥80%, fair when ≥51-79%, and poor when ≤50% of the total score [15].

Data were analyzed using Statistical Package for Social Science (SPSS version 23). Descriptive analysis for categorical variables were done by using frequency and percentages. Numerical variable was presented as mean with standard deviation. Chi-square test was applied for analyzing significant differences between HOs and PGs for variables assessing knowledge and attitudes. P-value ≤0.05 was taken as statistically significant.

RESULTS

During the study period, a total of 400 participants were approached among which 390 participants submitted complete responses to the survey out of which 70.3% were females and 29.7% were males. An average age of the participants was 26 ± 4 years. Among the participants, 65.7% were HOs, and 34.3% were PGs.

Utilizing the scoring criteria mentioned earlier, it was found that 74% of dental graduates (HOs and PGs) exhibited inadequate knowledge. Among these 84% of HOs and 64% of PGs showed inadequate knowledge. Table 1 depicts responses assessing knowledge related to the code of ethics penned down by the Pakistan medical and dental governing body PMDC (Pakistan Medical and Dental Council) [16] and the importance of ethics teaching. Statistically significant differences were noted between the responses of HOs and PGs (Table 1).

For questions assessing respondents' attitudes towards ethical conduct and ethics teaching, 55.5% of PGs exhibited good attitudes as compared to 50% of HOs. Whereas, 44.5% of PGs responded with poor attitudes in contrast to 50% of HOs (Table 2). Overall 52.7% of dental graduates displayed poor attitudes.

With regards to discussing ethical issues, the clinical supervisor remains the preferred choice of HOs and PGs

Table 1: Knowledge related to the PMDC code of ethics and the importance of ethics teaching.

Response Options	House officer n(%)	Post-graduate students n(%)	p-value
Do you have any knowledge about the code of ethics of PMDC			
Yes	59(23.0)	28(35.8)	< 0.001
No	197(77.0)	86(64.17)	
Do you think knowledge of ethics is important to your work			
Yes	236(92.2)	134(100.0)	0.030
No	12(4.7)	0(0)	
Don't know	8(3.1)	0(0)	

Table 2: Attitude related to ethical conduct and ethics teaching.

Response Options	House officer n(%)	Post-graduate students n(%)	p-value
Do you feel the need for ethics to be taught in dental college at the undergraduate/post-graduate level?			
Yes	230(89.8)	132(98.5)	0.020
No	18(7.0)	0(0)	
Don't know	8(3.1)	0(0)	
How often have you been placed in a clinical situation in which you felt pressure to act unethically?			
Always	50(19.5)	35(26.11)	0.050
Frequently	175(68.4)	76(56.7)	
Never	31(12.1)	23(17.1)	
Do you discuss these ethical issues with your clinical supervisor?			
Yes	178(69.5)	104(77.6)	0.007
No	30(11.7)	22(16.4)	
Depends on the clinical situation	48(18.8)	11(12.4)	

Table 3: Reporting and discussing ethical issues encountered during clinical practice.

Whom to consult	House officers n(%)	Post-graduate students n(%)	Total n(%)	p-value
Colleague	31(12.1)	27(20.1)	58(14.9)	0.059
Supervisor	100(39.1)	51(38)	151(38.7)	
Head of the department	69(27.0)	32(23.8)	101(25.9)	
Hospital administrator	10(3.9)	10(7.4)	20(5.1)	
Ethics committee	26(10.2)	10(7.4)	36(9.2)	
Professional association	10(3.9)	02(4.4)	12(3.1)	
Text/Internet	06(2.3)	0(0)	06(1.5)	
Close family/friend	04(1.6)	02(2.2)	06(1.5)	

for reporting and discussing ethical issues encountered during clinical practice and no statistically significant difference was noted in between (Table 3).

Regarding practices of dental ethics, statistically, significant differences were noted for most statements between HOs and PGs as presented in Table 4 such as patients' wishes should always be adhered to ethical principles when performing the treatment, patients should always be informed of any wrongdoing during the dental procedure, dentists should do best irrespective of patients' opinion, taking consent only while performing any procedure related to treatment but not for radiographs/tests/medications, refusing treatment to a violent patient and referral to another dentist in case of a patient refusing treatment due to their beliefs. Related to patients' confidentiality participants agreed it to be an important component and no statistically significant difference was noted between HOs and PGs related to this. The majority of the respondents recorded responses for the given questions presenting fair practices of ethical principles. Among HOs only 18.75% recorded responses representing good ethical practices, 44.9% presented fair whereas 36.3 showed poor ethical practices. Post-graduate students presented responses depicting 34.3% good, 47% fair, and 18.6% poor ethical practices. Fig. (1) presents responses for practices with grading.

Table 4: Practices related to practices of dental ethics.

Response Options	House officer n(%)	Post-graduate students n(%)	p-value
Patient wishes must always be adhered to			
Agree	126(49.2)	66(49.2)	< 0.001
Disagree	29(11.3)	4(2.9)	
Not sure	15(5.8)	13(9.7)	
Mostly	64(25)	26(19.4)	
Sometimes	22(8.5)	25(18.6)	
Never	0(0)	0(0)	
Patients should always be informed of wrongdoing (File breakage, extraction)			
Agree	140(54.6)	104(77.6)	0.001
Disagree	39(15.2)	14(10.4)	
Not sure	14(5.4)	02(1.4)	
Mostly	18(7.0)	05(3.7)	
Sometimes	39(15.2)	06(4.4)	
Never	06(2.3)	03(2.2)	
Confidentiality-not important			
Agree	39(15.2)	20(14.9)	0.140
Disagree	146(57.0)	84(62.6)	
Not sure	45(17.5)	11(8.2)	
Mostly	07(2.7)	02(1.4)	
Sometimes	08(3.1)	07(5.2)	
Never	11(4.2)	10(7.4)	
Dentists should do their best irrespective of the patient's opinion			
Agree	100(39.0)	84(62.6)	< 0.001
Disagree	75(29.2)	13(9.7)	
Not sure	24(9.3)	15(11.1)	
Mostly	25(9.7)	11(8.2)	
Sometimes	24(9.3)	09(6.7)	
Never	08(3.1)	02(1.4)	
Consent only for procedure-not for radiographs/tests-medication)			
Agree	55(21.4)	29(21.6)	0.001
Disagree	107(41.7)	74(55.2)	
Not sure	33(12.8)	15(11.1)	
Mostly	18(7.0)	05(3.7)	
Sometimes	26(10.1)	03(2.2)	
Never	17(6.6)	08(5.9)	
Dentists should refuse to treat a violent patient			
Agree	51(19.9)	27(20.1)	0.001
Disagree	103(40.2)	46(34.3)	
Not sure	31(12.1)	12(8.9)	
Mostly	18(7.0)	05(3.7)	
Sometimes	42(16.4)	32(23.8)	
Never	11(4.2)	12(8.9)	
If the patient refuses treatment due to beliefs, they should be instructed to find another dentist			
Agree	99(38.6)	60(44.7)	0.001
Disagree	77(30.0)	39(29.1)	
Not sure	28(10.9)	13(9.7)	
Mostly	15(5.8)	00	
Sometimes	29(11.3)	07(5.2)	
Never	08(3.1)	15(11.1)	

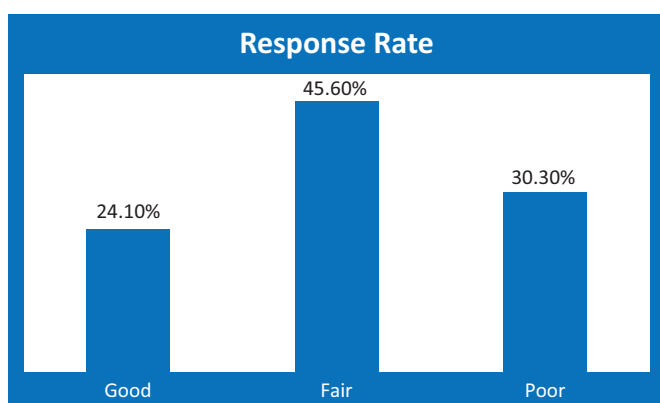


Fig. (1): Responses for practices with grading.

DISCUSSION

Dental professionals have well-recognized ethical responsibilities along with professional responsibilities. Dental professionals must exhibit proper ethical conduct while performing their professional duties [1, 2]. Knowledge and practices of the Ethical principles varied significantly between dental graduates in their house job and post-graduate trainees in this study. Nonetheless, all PGs and the majority of the HOs supported the idea that knowledge of dental ethics is pertinent.

Although 53.1 % of HOs and 52.5% of PGs reported that they were taught about dental ethics, (add comma , after dental ethics) majority of participants negated knowing the ethical code of PMDC which is a crucial set of standard regulations for having ethical practice in Pakistan. Similarly, Imran N, in their research reported that more than half of the respondents (interns and PGs) in their study had lack of awareness about the ethical code of PMDC [17] whereas Farooq W reported 51.2% of the participants in their study responded not reading about it [18]. The PMDC Code emphasizes incorporating its components in undergraduate as well as post-graduate curricula by universities running the related courses [19].

Another important finding in our study was that the clinical supervisor was noted as the common member to whom the survey participants felt most comfortable reporting and discussing ethical issues or problems they faced during working in the dental settings of their institute (39.1% HOs and 38 % PGs). This finding is in contrast to the results reported by Imran N which reported colleagues as the preferred contact of their study participants (interns and residents) for consulting on an ethical problem [17]. It is thus of paramount importance that the supervisors must be provided with repeated training courses so the students, HOs, and PGs feel comfortable discussing and taking their guidance for ethical issues. Through their knowledge refurbishment and understanding, they can guide to deal with the situation according to the best possible ethical practice.

Fair to poor practices of employing ethical principles during clinical practice and decision-making are noted

in our findings by HOs and PGs respectively. The practices of ethical principles among dental healthcare providers are found to be not at the desired level as reported frequently in the literature for reasons such as lack of deigned curriculum about ethical guidelines, less emphasis on ethical principles during clinical rotations, not including ethical conducts with patients and colleagues as part of testing and examination, and the lack of easily accessible guidelines regarding ethical conducts by the institute and higher governing medical and dental bodies [1, 2, 5, 6, 7, 10, 11].

In our study better responses were reported according to years of experience and learning with post-graduate students reporting maximum responses of adequate knowledge, good attitude, and fair practices as compared to fresh graduates *i.e.* HOs. Frequently researches in the literature have emphasized the importance and significance of teaching ethical practices from the early years of study [11, 12, 13, 14, 20, 21]. This stands crucial and must be given importance to ensure the best possible patient care is being given from every aspect.

The main limitation of our study includes the limited sample size which might underestimate the overall results. Still, the results of our study dictate that there is a profound need of including exhaustive teaching of dental ethics as a part of the curriculum throughout undergraduate and post-graduate years. Refurbishing ethical practices at under and post-graduate teaching levels can provide competent dentists with sustaining standard clinical practice with patient satisfaction and can help achieve patient confidence along with the finest working environment. Designated lectures to the students can benefit to elaborate and develop understanding and familiarity with ethical considerations in dentistry. Role-playing exercises related to ethical issues which are frequently observed can also be advantageous to train the students to act rightly by the ethical principles in a given situation. Also, it is an obligatory requirement that a faculty development program should be introduced for refining the teaching methods, and assessments of faculty and clinical supervisors should be frequently employed for assessing satisfactory competence.

CONCLUSION

Inadequate knowledge, poor attitude, and comparatively higher poor practices related to dental ethics are noted by dental graduates in our study. Years of experience and learning have an impact on responses with post-graduate students reporting maximum responses of adequate knowledge, good attitude, and fair practices of dental ethics principles as compared to fresh graduates *i.e.* House officers.

ETHICS APPROVAL

Ethical approval for this research was taken from the 'Research and Ethics Committee of Hamdard University bearing ERC number: 1316-06-10-19. Data collection in

this study was by the ethical standards as specified by the Helsinki declaration.

CONSENT FOR PUBLICATION

Each participant gave consent verbally to fill out the questionnaire after describing the purpose of the study.

AVAILABILITY OF DATA

Data from this study can be available from the corresponding author upon request.

FUNDING

This study did not receive any funding.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

ACKNOWLEDGEMENT

The authors extend their sincere gratitude to Dr. Wardah Ahsan (Research specialist at the Center of Excellence Women and Child Health, The Agha Khan University) for her help, guidance, and support for this study.

AUTHOR CONTRIBUTIONS

Fariha Irfan is responsible for conceptualization and writing the original version of the manuscript. Hira Akhtar is responsible for planning and writing up the manuscript. Sheikh Haroon Shah performed the data analysis. Hina Hammad Khan and Abdur Rehman contributed to the data analysis and wrote up the results section. Hina Nafees created the tables and graphs. Syed Abrar Ali revised and edited the manuscript. All authors approved the final version of the manuscript for publication.

REFERENCES

1. Al-Mutlaq R, Al-Feraih B, Al-Aidroos H, Al-Neema H, Al-Asmari R, Al-Balawi R. Knowledge of dental students and dentists towards dental ethics in Riyadh city: a cross-sectional study. *J Healthcare Sci* 2021; 1: 35-44. DOI: <http://dx.doi.org/10.52533/JOHS.2021.1105>
2. Bakir EP, Bakir S, Unal S, Sonkaya E. Are healthcare professionals sufficiently aware of dental ethics? Fields research in southeast Turkey. *Biotechnol Biotechnol Equip* 2021; 35(1): 325-33. DOI: <https://doi.org/10.1080/13102818.2021.1875877>
3. Day J, Stream S. Ethics in the Dental Office: Autonomy, beneficence, non-maleficence, and justice should guide your decisions. *Dent Assistant* 2018; 87(4): 8.
4. Simmons G. Ethics in US dentistry. *Faculty Dent J* 2019; 10(4): 154-5. DOI: <https://doi.org/10.1308/rcsfj.2019.154>
5. Verma M, Mohanty VR, Nawal RR, Saini AK. Ethical dilemmas amongst students in a dental institution. *J Manag Res* 2013; 13(3): 155-62.
6. Tenenbaum A, Moutel G, Wolikow M, Vial-Dupuy A, Azogui-Levy S. Implementation of a medical ethics course in undergraduate dental education and assessment of knowledge and attitudes. *J Int Soc Pre Com Dent* 2020; 10(5): 569-78. DOI: https://doi.org/10.4103/jispcd.jispcd_364_19
7. Sharp HM, Kuthy RA, Heller KE. Ethical dilemmas reported by fourth-year dental students. *J Dent Edu* 2005; 69(10): 1116-22.
8. Patrick AC. A review of teaching ethics in the dental curriculum: challenges and future developments. *Eur J Dent Edu* 2017; 21(4): e114-e8. DOI: <https://doi.org/10.1111/eje.12230>
9. Ali K, Raja M, Watson G, Coombes L, Heffernan E. The dental school learning milieu: students' perceptions at five academic dental institutions in Pakistan. *J Dent Educ* 2012; 76(4): 487-94. DOI: <https://doi.org/10.1002/j.0022-0337.2012.76.4.tb05281.x>
10. Siddiqui YTS, Parvez K, Askari R, Parvez K, Noor-ul-Ain, Qazi S. Dental ethics (a KAP study). *Int J Dent Oral Health* 2020; 6(3): 48-53.
11. Bukhari SH, Bukhari F, Gondal GM, Ara N, Asif M. Knowledge and attitude of students regarding ethics and its role in dental studies; a vignette based study. *Pak Oral Dent J* 2020; 40(3): 155-8.
12. Elsheikh NMA, Osman IMA, Husain NE, Abdalrahman SMA, Nour HEYM, Khalil AA, *et al*. Final year dental students' perception and practice of professionalism and ethical attitude in ten Sudanese dental schools: A cross-sectional survey. *J Family Med Prim Care* 2020; 9(1): 87-92. DOI: https://doi.org/10.4103/jfmpc.jfmpc_499_19
13. Moulana SA, Yashoda R, Puranik MP, Hiremath SS, Rahul GN. Knowledge, attitude and practices towards primary dentition among the mothers of 3-5 year old pre-school children in Bangalore city. *J Ind Assoc Pub Health Dent* 2012; 10(19): 83-92.
14. Hariharan S, Jonnalagadda R, Walrond E, Moseley H. Knowledge, attitudes and practice of healthcare ethics and law among doctors and nurses in Barbados. *BMC Med Ethics* 2006; 7: E7. DOI: <https://doi.org/10.1186/1472-6939-7-7>
15. Jain R, Oswal KC, Chitguppi R. Knowledge, attitude and practices of mothers toward their children's oral health: A questionnaire survey among subpopulation in Mumbai (India). *J Dent Res Sci Dev* 2014; 1(2): 40-5. DOI: <https://doi.org/10.4103/2348-3407.135073>
16. Code of Ethics. Pakistan Medical and Dental Council. 2002. Cited 2019 Oct. <http://www.pmdc.org.pk/LinkClick.aspx?fileticket=v5WmQYMvhz4%3D&tabid=102&mid=554>
17. Imran N, Haider II, Jawaid M, Mazhar N. Health ethics education: knowledge, attitudes and practice of healthcare ethics among interns and PGs in Pakistan. *J Postgrad Med Inst* 2014; 28(4): 383-9.
18. Farooq W, Jafarey A, Arshad A. Awareness of medical ethics principles and their applications among health care professionals in Pakistan. *Pak J Med Dent* 2018; 7(4): 81-8. DOI: <https://doi.org/10.36283/pjmd.v7i4.153>
19. Dar ARZ, Majeed FA, Mustafa N, Sharif MW. Awareness of medical ethics in undergraduate medical students-A literature review. *Pak Arm For Med J* 2018; 68(Suppl 3): 664-70.
20. Tabei SZ, Azar MR, Mahmoodian F, Mohammadi N, Farhadpour H, Ghahramani Y, *et al*. Investigation of the awareness of the students of Sheraz dental school concerning the patients' rights and the principles of ethics in dentistry. *J Dent* 2013; 14(1): 20-4.
21. Al-Zain SA, Al-Sadhan SA, Ahmedani MS. Perception of BDS students and fresh graduates about significance of professional ethics in dentistry. *J Pak Med Assoc* 2014; 64(2): 118-23.