

Knowledge and perception about bioethics: A comparative study of private and government medical college students of Karachi Pakistan

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ABSTRACT

Introduction: Ethics plays an elementary role in current medical practice. Recent advancement in medical technology and its implications have raised many ethical issues and dilemmas in clinical practice, requiring dire needs for incorporation of bioethics into medical curriculum. **Aim:** The objective of this study is to assess the base line knowledge and perception of medical students regarding bioethical issues in clinical practice based on exposure to formal bioethics teaching in their medical curriculum. **Setting and design:** This cross sectional study was conducted among medical students of a private and government medical college who were currently enrolled into third to fifth year MBBS. **Methods and Material:** A pretested questionnaire was used to collect data. A structured questionnaire consisting of 27 questions was used for this study. An Ethics Review Committee approval was taken. **Analysis:** Data analysis was done under SPSS version 17 and frequencies were calculated. **Results:** A total of 285 medical students, 145 from private and 140 from government medical college participated in this study. Private college medical students (57%) had slightly better knowledge of bioethics as compared to the government students 43%. **Conclusion:** The study clearly signifies the need of teaching bioethics in the both the medical colleges. Our findings provide strong evidence for major educational initiatives related to bioethics education in medical curriculum.

Keywords: Bioethics, knowledge, medical students

Introduction

Ethics plays an elementary role in current medical practice. Bioethics is a practical discipline that provides a structured approach for identifying, analyzing, and resolving ethical issues in clinical medicine.^[1,2] Recent advancement in medical technology and its implications have raised many ethical issues and dilemmas in clinical practice.^[3] Doctors of 21st century need to be well aware and capable of dealing with all these ethical issues and

dilemmas in order to provide better care to patients and become independent decision makers for the wellbeing of their patients.^[4]

Knowledge about medical ethics is limited in Pakistan in all the health care providers including students, doctors, and nurses.^[5,6] These newly graduating doctors and consultants lack exposure to bioethics teaching and hence encounter problems while solving ethical issues in their daily clinical practice,^[6,7] and may show unethical behaviors towards their patients leading to poor satisfaction rates among patients and their families and creating a negative image of health care providers.^[8]

Importance of bioethics as a formal subject has been recognized throughout the world.^[9,10] However, its importance in Pakistan

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was overlooked and only few medical colleges were teaching bioethics to their undergraduate medical students^[11] until 2002 when Pakistan Medical and Dental Council (PMDC) felt the need of it and incorporated this as a formal subject for undergraduate teaching.^[12]

Despite being included as a formal subject by PMDC its status is still in infancy stage. Its implementation in medical colleges as a formal subject is still pending because of lack of uniform curriculum and limited number of formally trained doctors in bioethics to teach^[3,7] this subject thus making it difficult for the dissemination of knowledge of ethics throughout the country.

Keeping in view the above facts, the objective of this study was to assess the base line knowledge and perception of medical students regarding bioethical issues in clinical practice based on exposure to formal bioethics teaching in their medical curriculum. The results of this study will help us plan a formal curriculum and emphasize the importance of teaching biomedical ethics to undergraduate medical students.

Methods

This cross sectional study was conducted among medical students of private and government medical colleges of Karachi, an economical hub of Pakistan. Students from third year to final year were invited to participate in the study as they were exposed to clinical rotations from October 2019 to November 2019.

Sample size

To achieve the study objective, we required at least 285 participants. The sample size was calculated assuming the knowledge of ethics among medical students to be 50%, 6% bound on error and 7% non-response rate.

Ethical consideration

Written informed consent was obtained from the subjects after explaining the study objectives. The subjects were free to withdraw at any time without giving any reason. Strict confidentiality was maintained throughout the process of data collection, entry, and analysis. Ethics Review Committee reviewed and approved the study protocol and followed the principles of the Declaration of Helsinki.

Development of questionnaire

A self-administered questionnaire was developed by a team of expert research ethics team. The questionnaire was administered in English language. Urdu translation was not done as all the responders were well versed with the English language. Informed written consent was obtained from the participants after explaining them about the study protocol and ensuring the anonymity of the gathered information. The final questionnaire included multiple-choice and scenario-based questions related to ethical issues/dilemmas encountered during day-to-day clinical practice. For instance, need of informed consent for surgical

procedures, issues related to patients' confidentiality/disclosure, need of informing patients about the medical errors, etc.

The options to each item were designed on a 5-point Likert scale. For analysis, the points were merged to form binary variable (agree/disagree). The questionnaire was pre-tested on 5% of the sample.

Statistical analysis

Data entry and analysis was done using SPSS version 17. Descriptive analysis was performed, frequencies and percentages were generated for categorical variables. Knowledge scores were generated that is all the correct answers related to knowledge of medical ethics were marked as "1" and all incorrect as "0". The scores were then summed up and dichotomized based on the median split of the scores. Any scoring above the median was categorized as having adequate knowledge and below the median as having inadequate knowledge. The difference in knowledge status between the students of public sector and private medical institutions was assessed by applying Chi-square and Fisher's exact test where appropriate.

The factors independently associated with the knowledge level of ethics among the medical students were assessed using multivariate logistic regression model. The results are reported in the form of odds ratio and their confidence interval. All reported values are two tailed and a *P* value of ≤ 0.05 was considered statistically significant.

Results

A total of 285 medical students participated in this study. Out of these 285 students 145 were from private medical college and 140 from government medical college. Among these 285 respondents 89 (31%) were male and 196 (69%) female. Majority of the students 230 (81%) belonged to age group of 21–23 years while only a small number (13%) and (6%) were from age group of 18–20 years and 24–26 years, respectively. More than half (61%) of the respondents had working experience of 0–1 year followed by (39%) with 2–3 years experience. Altogether, 63% of the students had an adequate knowledge about bioethics [Table 1].

Graph 1 shows sources of knowledge regarding bioethics in private and government medical institutions. Majority of the students got awareness on the topic of bioethics from training during clinical rotation, teaching sessions, lectures, and seminars. However, it was found that the knowledge level of students from private medical college was better than the public sector medical college when compared across the sources of information.

Table 2 shows the factors independently associated with the knowledge level of the medical students categorized as adequate and inadequate on the basis of knowledge scores calculated. After adjusting for the effects of other variables in the logistic model the students from private college medical (57%) had better knowledge of bioethics as compared to the students

from public sector medical college (43%). Odds ratio was also calculated for the difference in knowledge level. It was found that the students with adequate knowledge were twice more likely to be exposed to bioethics-related teaching as compared to those who had inadequate knowledge (OR: 2.0; 95% CI: 1.3-3.0). Years of clinical experience was also significantly associated with the knowledge status of bioethics among the medical students ($P = 0.04$). However, there no statistically significant effect of previously encountered ethical problem on the knowledge level of the medical students observed ($P = 0.12$).

Table 3 shows the responses of medical students from government and private medical institutions regarding the various aspects of practicing ethics. The aggregated knowledge score has shown difference in the knowledge level of students from private and government medical colleges. However, there was no statistically significant difference between the opinions of medical students of both the colleges with respect to adherence to patients' wishes ($P = 0.14$), patient information ($P = 0.18$) and consent for procedures and treating violent patients. There was significant difference in knowledge of students from public

and private medical colleges, on issues such as informing a close relative of a patient ($P = 0.05$), euthanasia ($P = 0.05$), and patient refusal to treatment on religious or other grounds ($P = 0.04$).

Discussion

This study assessed the knowledge and perception of medical students belonging to private and government medical college regarding bioethical issues in clinical practice. This was a comparison study and findings of this study shows some difference in the knowledge and perception between students regarding bioethics. A total of 285 medical students participated in this study. Out of which 145 were from private medical college and 140 from government medical. The duration of experience of majority of the participants was less than or equal to one year as most of them were in third year MBBS. Clinical rotation in medical colleges of Pakistan starts from third year MBBS onward and during these years the students rotate in wards and this is the time when students are exposed to real patients and come across different ethical dilemmas.

On inquiring about sources of knowledge, it was evident that majority of the student from both private and government medical colleges acquired knowledge through lectures, seminars, or discussions during their clinical rotation. A small number in both the groups gathered knowledge by means of reading books or internet surfing; however, all these opportunities were more utilized by private medical student as compared to government. The results of this study are similar to a research done among physicians and medical students of other medical colleges.^[13,14] The reason for this is because bioethics has been incorporated as a subject by only few of the private institutes therefore they were able to enhance knowledge of bioethics by attending lectures and interactive sessions.

This study revealed that the medical students from the public sector college had inadequate knowledge as compared to the students from the private college. This is also evident from the results presented in Table 2, which suggest that students from private institute who had formal bioethics sessions in their curriculum had adequate knowledge scores as compared to the

Table 1: Sociodemographic characteristics of the study participants

Variables	n	%
Age		
18-20 years	37	13
21-23 years	230	81
24-26 years	18	6.3
Gender		
Male	89	31
Female	196	69
Medical College		
Government	145	51
Private	140	49
Duration of Clinical Experience		
≤1 year	175	61
2-3 years	110	39
Knowledge Scores:		
Adequate	181	63
Inadequate	104	37

Table 2: Factors associated with the adequacy of knowledge of medical ethics among medical students

Factors	Adequate Knowledge (181) n (%)	Inadequate Knowledge (104) n (%)	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)	P
Gender					
Female	128 (71)	68 (65)	—	—	
Male	53 (29)	36 (35)	1.2 (0.7-2.1)	1.1 (0.6-2.0)	0.005
Medical College					
Private	103 (57)	37 (36)	—	—	
Government	78 (43)	67 (64)	2.3 (1.4-4.0)	2.4 (1.3-4.6)	0.03
Duration of Clinical Practice					
2-3 Years	70 (39)	51 (49)	—	—	
≤1 year	111 (61)	53 (51)	4.2 (1.0-7.2)	2.4 (1.3-3.0)	0.04
Previously Encountered Ethical Issue					
Yes	105 (66)	46 (60)	—	—	
No	53 (33)	31 (40)	1.3 (0.7-2.3)	3.0 (2.6-3.8)	NS

Table 3: Knowledge regarding different ethical issues encountered during clinical practice

Knowledge Items	Total	Government n=145 n (%)	Private n=140 n (%)	P
Ethical conduct is important to avoid legal action	Agree	104 (72)	85 (61)	0.03
	Disagree	41 (28)	55 (39)	
patient's wishes must always be adhered to	Agree	79 (55)	86 (61)	0.14*
	Disagree	66 (45)	54 (39)	
patient should always be informed	Agree	112 (77)	115 (82)	0.18*
	Disagree	33 (23)	25 (18)	
Patients consent for operations but not for tests or medications	Agree	115 (79)	101 (72)	0.10*
	Disagree	30 (21)	39 (28)	
Close relatives must be informed about patient's condition	Agree	52 (36)	37 (26)	0.05
	Disagree	93 (64)	103 (74)	
Doctors and nurses should refuse to treat patients who behave violently	Agree	103 (71)	108 (77)	0.149*
	Disagree	42 (29)	32 (23)	
Patient who wishes to die should be allowed to do so no matter what their illness is	Agree	110 (76)	120 (86)	0.02
	Disagree	35 (24)	20 (14)	
A patient who refuses to be treated on religious or other grounds in a life-threatening situation should not be treated	Agree	65 (45)	78 (56)	0.04
	Disagree	80 (55)	62 (44)	
In a life-threatening situation if patient cannot afford treatment the doctor should treat the patient	Agree	129 (89)	127 (90)	0.38*
	Disagree	16 (11)	13 (9.3)	
If the patient has gunshot wound a doctor should provide emergency treatment	Agree	133 (92)	120 (86)	0.07
	Disagree	12 (9)	20 (14)	

* Not significant

students of public sector college who did not have any formal sessions on bioethics. This result is concordant with the other studies conducted in Iran and India which suggest that formal bioethics education should be an integral part of the medical educational system.^[15,16]

Interestingly, the current study results depict that previously encountered ethical issue is not associated with the knowledge level of the medical students. About 30% of the medical students believed that they have not faced any ethical dilemmas in clinical practice. It can be due to the fact that they were unable to identify any ethical issue in their practice due to lack of formal bioethics training.^[3,17] An alternative explanation could be that, even though the medical students are involved in patient care but they are not allowed to make independent decisions. Instead, they are continuously monitored by their mentors, for decisions regarding patient care. This can be a factor for being unable to identify the ethical dilemmas.

The study results revealed duration of clinical practice as a strong predictor for the adequacy of knowledge regarding bioethics among the medical students probably because of their increase exposure to ethical issues during their training or rotation. However, a study done in Bangalore India by Chatterjee *et al.*^[18] showed no difference in knowledge scores of medical students with increasing number of medical years. Similar results were reported by Ngan *et al.*^[19] and D Souza *et al.*^[20] suggesting that in addition to increasing exposure to ethics education during clinical years, innovative methods of teaching including case-based discussions, role of mass media, and popular culture^[21] using medical series depicting doctor-patient relationships with a major focus on ethical issues encountered in clinical practice creates a great impact and helps in communicating health information to medical students and promote awareness. In addition, researches

have also found hidden curriculum as an effective method of informal teaching of students through role modeling by teachers/mentors; hence, improving awareness about professionalism and moral values which medical students can exhibit during their doctor patient relationships.^[22,23] This also recognizes the need and importance of training of teachers and mentors on professionalism and effective role modelling.^[19]

Female medical students in our study have better knowledge of bioethics than their male counter parts. Reason for this gender difference relates back to our cultural background.^[4] As the females in our part of the world are being taught more about what is good and right, formally known as ethics.^[24] A study conducted in Barbados-West Indies exemplifies the same results that cultural background is also likely to influence the attitudes and knowledge of health care providers about bioethics.^[25]

The data from this study suggest that there was no difference in the knowledge level of students from government and private medical colleges with respect to patients' right to be informed of their medical condition, an important clause of the patients' bill of rights.^[26] These results are similar to a study done in Iran by Ghodsi Z *et al.*^[27] whereas another study done at Tabuk by Bashayer *et al.*^[28] among medical students who were taught about bill of right in undergraduate years showed moderate knowledge scores confirming that incorporation of bioethics teaching in undergraduate curriculum will help to improve students and doctors awareness and help them identify and resolve ethical issues during their clinical practice more efficiently resulting in increased patients satisfaction and improve care. Also, the students also responded that informed consent is an integral part for surgeries but not for medication and investigations. The results of this study are consistent with the studies conducted by Sullivan^[29] which have also concluded that the medical students have

some background knowledge of bioethics principles probably thorough moral values learn through informal teaching the hidden curriculum.^[23] However, they lack formal knowledge and practical application of these principles.^[20,30] A large number of these medical graduates after graduation may start their own practice as General Practitioners and may come across various ethical issues in their clinical practice which can easily be encountered if they are primed with ethical education in their medical years, thus improving patient's satisfaction and quality of care.^[31]

Strengths/Limitations

This study had some limitations. The study did not take information on self-perception of medical students regarding the need of including bioethics in the medical curriculum. The sample size of this study is not very large, so the generalizability of the results cannot be established. The strengths of this study include 100% response rate and participation of a substantial number of medical students in the study. To the best of authors' knowledge this is the first study to compare the knowledge regarding bioethics among the medical students of both private and government colleges.

Conclusion

Our findings provide strong evidence for major educational initiatives related to bioethics education in medical curriculum. The study signifies the need of quality bioethics teaching in the medical colleges specifically in Government Medical Colleges. There is also a need for large-scale studies for evaluation of bioethics educational interventions through medical students and residents' perspectives regarding ethics training in the medical colleges. Moreover, continuous ethics education for practicing physicians can play a role. Such strategies will help us create educational approaches that will prepare the next generation of physicians to serve with more professional attitude and ethical competence.

Key Messages

Bioethics education is crucial for undergraduate teaching curriculum. Different learning strategies needs to be used to enhance and teach bioethics to medical graduates.

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Declaration of patient consent

The authors certify that they have obtained all appropriate participant consent forms. In the form the participant(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The participants understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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