

Does Teaching Clinical Ethics to Medical Students Improve Knowledge, Attitude, and Practice of Medical Ethics Among Clinicians? An Observational Study in a Tertiary Care Hospital in Nepal.

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Abstract

Background: The importance of doctors being aware of medical ethics has been highlighted in a number of studies. Our first study (Study-1) aims to assess the knowledge, attitude, and practices of medical ethics among clinicians at Patan Academy of Health Sciences (PAHS). We then follow up with the effect of teaching clinical ethics to medical students (Study-2). The purpose of this study is to assess the awareness regarding appropriate ethical principles, application of medical ethics and the effect of teaching medical ethics to students.

Methods: There are two studies presented: Study-1 is a cross-sectional questionnaire-based study. A total of 72 participants, selected by simple random sampling, included doctors working as interns, medical officers and consultants in six departments of PAHS. Study-2 was a follow-up, cross-sectional online questionnaire-based comparative study conducted at PAHS to compare KAP of medical ethics among medical officers with and without formal medical ethics training. We used the validated questionnaire from our previous study. All graduates of PAHS 2016 and all medical officers employed at PAHS at the time of study who had graduated from other medical schools that did not include Medical Ethics in their core curriculum were included.

Results: Study-1: A positive correlation between Knowledge ($p = 0.088$), Attitude ($p = 0.002$), Practice of medical ethics ($p = 0.000$), and years of practice was found. No significant difference in KAP of medical ethics between MBBS graduates from Nepal and abroad ($p = 0.190$) was found. The majority scored poorly in issues concerning autonomy. The follow-up study found a statistically significant difference ($p = 0.000$) in the knowledge between the doctors who were taught medical ethics and those who were not.

Conclusions: Doctors find it easier to discuss ethical dilemmas with their colleagues rather than department heads. The KAP of the consultants were found to be better than that of the interns and medical officers. Autonomy is the least understood ethical principle. 'Medical Ethics' as a part of the core curriculum in medical schools would improve ethical practice.

Background

The practice of medicine poses various clinical and social scenarios that demand a sound knowledge of ethical principles. The ethical practice deals with the responsibility and duties of health professionals towards patients and colleagues. It relates to their disciplinary actions, personal behavior, and professional conduct. As such medical ethics is the basis of a good doctor-patient relationship. Realization of the importance of clinical ethics in day to day practice has led to its incorporation in the medical education and training curriculum of health professionals. Medical ethics education is in its infancy in Nepal. Patan Academy of Health Sciences has incorporated medical ethics as its core curriculum starting from the first year of undergraduate medical studies. This is a relatively novel concept in medical education in Nepal. The impact of this training on the Knowledge, Attitude, and Practice (KAP) of Medical Ethics among Clinicians has not yet been assessed.

A generally accepted notion especially true for teaching institutes is that medical practitioners should set an example for undergraduate students by practicing medicine ethically. [1] The idea that KAP of practicing physicians not only affects their patients but also has a direct effect on the KAP of future doctors has been echoed in various medical ethics textbooks. [2] Our study was aimed to assess firstly, the KAP of Medical Ethics among Clinicians and secondly, to assess if teaching medical ethics to medical students improves KAP of clinical ethics when they work as doctors.

The primary responsibility of a doctor towards a patient can be summarized in the four principles of ethics which are autonomy, beneficence, non-maleficence, and justice. The importance of doctors being aware of medical ethics has been highlighted in a number of studies conducted in Pakistan, [3] South Africa [4] and Lithuania [5] where patient-reported low satisfaction towards their doctor's practice of medical ethics.

Growing public awareness regarding the ethical conduct of healthcare practitioners demands a continued growth of practicing physicians in the domain of medical ethics. Increasing complaints against medical practitioners bring into question the knowledge of practicing clinicians regarding clinical ethics. Conventional wisdom suggests that as the number of years of practice increases KAP regarding medical ethics should also improve [6]. Whether or not this true is not clear. Keeping this in mind, this research aims to assess the knowledge, attitude, and practice of medical ethics among clinicians at Patan Academy of Health Sciences (PAHS). The purpose of this study is to assess the awareness regarding appropriate ethical principles, application of medical ethics in day to day practice and enlist the shortcomings. A follow-up study was conducted after the 1st batch of students at PAHS started working as interns. The purpose of the follow-up study was to assess if or not formal medical ethics training as a major component of the medical curriculum would improve the KAP of practicing doctors right from year 1 of practice. Generally agreed upon curriculum for medical ethics cover certain core competencies [7]. For this study, formal medical ethics training was defined as the presence of an ethics curriculum apart from that taught during forensic science rotation and regular assessment distributed throughout medical training.

Methods

Study Design

Two studies, a cross-sectional questionnaire-based study was conducted at Patan Academy of Health Sciences (PAHS), a tertiary referral center in Nepal (Study 1) and a follow-up cross-sectional online questionnaire-based comparative study was conducted at PAHS to compare KAP of medical ethics among medical officers with and without formal medical ethics training (Study 2). Figure 1 demonstrates the study design. Study 1 was conducted from July, 2015 to August, 2015. The study was carried out in six departments: surgery, medicine, pediatrics, orthopedics, emergency, and gynecology and obstetrics. PAHS includes medical ethics as part of their teaching curriculum beginning from the first year of medical school. Participants included

doctors working as interns, medical officers and consultants in these six departments. Interns are medical students in their final year of training. Medical officers are those who have completed their undergraduate medical training and consultants are those who have completed their post-graduate education in their respective departments. The study was conducted from March 2017 to April 2017. We used the validated questionnaire from our previous study. The questionnaire for the study was distributed through emails to all graduates of PAHS 2016 and to all medical officers currently employed at PAHS who had graduated from other medical schools that did not include Medical Ethics in their core curriculum. In this manuscript, we shall refer to the former study as study-1 and the latter study as study-2.

Questionnaire

The questionnaire consisted of four parts (Part A to D). Part A comprised of demographic questions. Part B included questions related to the general view of the respondents towards medical ethics, who they preferred consulting, the source of medical ethics knowledge, rating about the importance of ethics and knowledge regarding various code of ethics. Part C included 10 hypothetical case scenarios regarding medical ethics to assess knowledge, attitude, and practice. There were 22 questions to assess knowledge and 10 questions each to assess practice and attitude. Knowledge was assessed with 2 sets of questions, one that checked whether the respondents have the knowledge about a particular ethical issue and the other regarding the knowledge about the main ethical principle involved in that particular scenario. To assess ethical practice, different options were given which included the best option, the other possible options as well as the wrong option regarding the case scenario. The possible options were also marked correct and given weight accordingly. To assess attitude, the participants' view towards the way the ethical issue was handled was questioned and rated using a Likert scale (strongly disagree to strongly agree, 1–4). Part D was a short questionnaire regarding the respondents' reflection after having gone through the various case scenarios.

The questions were reviewed by members of the clinical review committee present at PAHS and were piloted among a group of 12 doctors; two from each of the six chosen departments. Internal Consistency Reliability of the pre-test results across the items in the questionnaire was assessed with the help of Cronbach's alpha which was >0.7 .

Data collection

For study-1: Our pre-test participants and members of the clinical review committee were excluded during the sampling. Simple random sampling was done and a proportion wise number of respondents were selected from each department. Informed written consent was obtained from respondents. A self-administered questionnaire was given to be filled up by the doctors for data collection.

For study- 2: The questionnaire for the study was distributed through emails to all graduates of PAHS who graduated in the year 2016 and to all medical officers currently employed at PAHS who had graduated from other medical schools. Data collection was stopped once the sample size was reached. The sample size was calculated using two-arm sampling using the prevalence calculated in our previous study. The first arm consists of medical officers who had received formal medical ethics training during MBBS. Our pre-study hypothesis was that only PAHS graduates from the year 2016 have received formal training; however, during our study, we found that graduates from Kathmandu University School of Medical Sciences (KUSMS) and KIST Medical College have also received training apart from those taught in forensic medicine. Therefore, we included graduates from PAHS, KUSMS, and KIST in our first arm which included a total of 54 samples. The second arm consisted of medical officers working in PAHS who had been trained in other institutes and had not received formal medical ethics training besides those included in the forensic curriculum. This arm consisted of 60 samples.

Ethics

The study received ethical approval from the Institutional Review Committee (IRC) PAHS. Written informed consent was taken from each participant before filling up the questionnaire.

Data analysis

Data was analysed using Statistical Package for Social Sciences (SPSS) version 20.0. We used percentages for analysis of Part A (participant demographics) and Part B (general view towards medical ethics). In analysis of Part C (KAP), we used Shapiro-Wilk to assess the normality of respective data. In study 1, we used Independent t-test for parametric data and Mann-Whitney test for non-parametric data to compare KAP in relation to qualification, MBBS completed from and use of resources. ANOVA was used for parametric data and Kruskal-Wallis for non-parametric data to compare KAP against different designations and departments. Spearman's test was used to check for correlation between years of practice and KAP. In Study 2, we used an Independent t-test for parametric data and Mann-Whitney test for non-parametric data to compare KAP between the two groups. P-value < 0.05 was considered statistically significant.

Results

A total of 72 physicians at PAHS were included randomly in study-1. All the respondents returned the questionnaires. However, some questionnaires consisted of non-response items. To preserve the sample size, pairwise deletion was done to analyze the data.

The majority of respondents were male 46 (66%) with a mean age of 29 ± 6 years. The mean years of clinical practice after MBBS was 4 ± 5.5 years (Table 1). If an ethical dilemma arose, 39 (55%) respondents would prefer to consult colleagues first. 46 (63.9%) doctors cited gaining knowledge regarding ethics through work experience (Table 2). The median score for the relevance of medical ethics in work practice was 8 with an IQR (InterQuartile Range) of 3 on a 10 point rating scale. Most respondents faced ethical issues at least once a month (Fig. 2). All respondents agreed that medical ethics should be a part of medical education.

Table 1
Participant Demographics for study 1.

Characteristics	Category	n (%)
Due to missing data, not all category groups sum to 72		
Age (years)	(N = 71)	
	20 to 25	14 (20)
	26 to 30	33 (46)
	31 to 35	17 (24)
	≥ 36	7 (10)
Sex	(N = 70)	
	Male	46 (66)
	Female	24 (34)
Qualification	(N = 72)	
	MBBS	47 (65)
	MD/MS	25 (35)
Designation	(N = 72)	
	Interns	11 (15)
	Medical officers	36 (50)
	Consultants	25 (35)
Department	(N = 72)	
	Emergency	17 (24)
	Gynaecology/Obstetrics	14 (19)
	Medicine	16 (22)
	Orthopedics	5 (7)
	Pediatrics	11 (15)
	Surgery	9 (13)
MBBS from	(N = 70)	
	Nepal	26 (37)
	Abroad	44 (63)
Years of Practice after MBBS	(N = 68)	
	Less than 1 years	23 (34)
	Less than 5 years	26 (38)
	Less than 10 years	10 (15)
	More than 10 years	9 (13)

Table 2
Source of knowledge of medical ethics for study 1 (n = 72)

Source	n (%)
Work Experience	46 (63.9%)
Lectures During MBBS	44 (61.1%)
Books/Literature	31 (43.1%)
Seminar/Workshops/CME	19 (26.4%)
Lectures During PG	11 (15.3%)

The majority of the doctors were aware of the Hippocratic oath and Nepal Medical Council code of ethics (Table 3). There was no clinical ethics committee present in Patan Hospital at the time of the study. However, 40 (56%) of the respondents were unaware of it. 58 (81%) knew about the presence of a legal advisor in Patan Hospital. The median for the importance of an ethical committee in a hospital was rated at 9 out of 10 with an IQR of 3.

Table 3
Code of medical ethics heard and rating of knowledge for study 1 (n = 71)

Code of Ethics	n (%) Heard	Median	1st Quartile	3rd Quartile	IQR
Hippocratic Oath	66 (93.0%)	7	5	8	3
Nepal Medical Council Code of Ethics	54 (76.1%)	6	1	7	6
Declaration of Helsinki	33 (46.5%)	0	0	4	4

70 out of 72 participants who responded, 13 (18%) claimed to have used resources to complete the questionnaire. However, there was no significant difference ($p = 0.990$) observed in the knowledge score of those who had and had not used resources. Only 21 (30%) of the respondents considered the patients themselves to be the best judge while 50 (70%) of the clinicians thought that doctors are the most capable to judge what is good for the patient.

There was a positive correlation between knowledge (correlation coefficient = 0.218, $p = 0.088$) practice of medical ethics (correlation coefficient = 0.522, $p = 0.000$), attitude (correlation coefficient = 0.376, $p = 0.002$) and years of practice (Table 4 and Table 5). Although statistically insignificant, difference was observed in the knowledge of medical ethics between MBBS and MD/MS graduates ($p = 0.050$), between interns, medical officers and consultants ($p = 0.144$), between the different departments ($p = 0.093$) and between MBBS graduates from Nepal and abroad ($p = 0.539$).

Table 4
Assessment of knowledge, Practice, Attitude and combined KAP of medical ethics for study 1

		Knowledge			Practice			Attitude			Combined KAP		
		N	Mean ± S.D. (n = 22 questions)	p-value	N	Measure of Central Tendency ± Dispersion (n = 10 questions)	p-value	N	Median ± IQR (n = 10 questions)	p-value	N	Measure of Central Tendency ± Dispersion (n = 42 questions)	p-value
Qualification	MBBS	43	12.00 ± 2.96	0.050	46	5.50 ± 1.59	< 0.001	46	6.00 ± 1.00	0.002	41	23.88 ± 4.35	0.001
	MD/MS	21	13.67 ± 3.45		24	7.38 ± 1.47		24	7.00 ± 1.00		19	28.42 ± 5.88	
Designation	Intern	10	11.80 ± 3.19	0.144	11	5.09 ± 1.87	< 0.001	11	6.00 ± 2.00	0.005	10	22.70 ± 5.12	0.004
	Medical Officer	33	12.06 ± 2.94		35	5.63 ± 1.50		35	6.00 ± 1.00		31	24.26 ± 4.10	
	Consultant	21	13.67 ± 3.45		24	7.38 ± 1.47		24	7.00 ± 1.00		19	28.42 ± 5.88	
Department	Emergency	17	11.94 ± 3.34	0.093	16	6.00 ± 1.75	0.300	15	7.00 ± 2.00	0.546	14	23.50 ± 7.50	0.472
	Gynae/Obs	12	11.58 ± 3.58		13	5.00 ± 2.50		14	7.00 ± 2.00		11	25.00 ± 10.00	
	Medicine	14	11.79 ± 2.01		16	7.00 ± 2.50		16	6.00 ± 1.00		14	25.00 ± 7.25	
	Orthopedics	3	13.00 ± 2.00		5	7.00 ± 2.50		5	7.00 ± 1.00		3	27.00 ± 0.00	
	Pediatrics	11	15.00 ± 3.07		11	6.00 ± 3.00		11	7.00 ± 2.00		11	26.00 ± 8.00	
	Surgery	7	13.14 ± 3.63		9	8.00 ± 3.00		9	7.00 ± 2.00		7	29.00 ± 8.00	
MBBS completed from	Nepal	24	12.92 ± 3.82	0.539	25	7.00 ± 3.00	0.302	25	7.00 ± 2.00	0.272	22	26.55 ± 5.68	0.190
	Abroad	38	12.39 ± 2.81		43	6.00 ± 2.00		43	7.00 ± 1.00		36	24.64 ± 5.07	
N = Number of Doctors													
☐ Mean ± S.D.													
☐ Median ± IQR													
☐ Independent T-test													
☐ ANOVA													
☐ Kruskal-Wallis													
☐ Mann-Whitney U													

Table 5
Correlation of years of medical practice with KAP for study 1

	N	Rho (Correlation Coefficient)	p-value
Knowledge	64	0.218	0.088*
Attitude	66	0.522	< 0.001*
Practice	66	0.376	0.002*
Combined KAP	58	0.347	0.008*
*Spearman's			

A significant statistical difference favoring the group with greater years of practice was observed in the attitude ($p = 0.002$) and practice ($p = 0.000$), of medical ethics between MBBS and MD/MS graduates. Similar results were also observed among interns, medical officers, and consultants ($p = 0.000$). However, there was no significant difference in the practice of medical ethics between MBBS graduates from Nepal and abroad ($p = 0.302$). A statistically significant difference ($p = 0.005$) was also observed in the attitude between interns, medical officers, and consultants with the median score highest among the consultants. However, no significant difference was observed in the attitude regarding medical ethics among respondents of different departments ($p = 0.546$) and between MBBS graduates from Nepal and abroad ($p = 0.272$).

There was a positive and statistically significant correlation between knowledge and practice (correlation coefficient = 0.441, $p = 0.000$), knowledge and attitude (correlation coefficient = 0.611, $p = 0.000$) and practice and attitude (correlation coefficient = 0.554, $p = 0.000$).

A significant statistical difference ($p = 0.001$) was observed in the KAP of medical ethics between MBBS and MD/MS graduates with the mean score higher for MD/MS graduates. Similarly, a significant difference was observed ($p = 0.004$) in the KAP of medical ethics among interns, medical officers, and consultants. The mean score was highest for consultants (Table 4). A positive and statistically significant correlation was observed between KAP of medical ethics and years of practice (correlation coefficient = 0.347, $p = 0.008$). However, there was no significant difference in KAP of medical ethics among the various selected departments ($p = 0.472$) and between MBBS graduates from Nepal and abroad ($p = 0.190$) (Table 4).

Among the ethical issues, respondents scored well in obtaining informed consent; however, the majority scored poorly in issues concerning autonomy (Table 6).

Table 6
Number of Doctors with Correct answers in each Case Scenarios

S. No	Ethical Issue	Knowledge of presence of breach of ethics n (%)	Knowledge on principle of ethics involved n (%)	Practice n (%)	Attitude n (%)
1	Obtaining informed consent	64 (88.89)	54 (76.06)	35 (48.61)	68 (95.77)
2	Revealing diagnosis to patient	64 (88.89)	24 (34.29)	8 (11.11)	63 (87.50)
3	Revealing information to patient's relatives	50 (70.42)	57 (79.17)	33 (45.83)	59 (81.94)
4	Respecting autonomy of patient	32 (44.44)	23 (32.39)	19 (26.39)	36 (50.00)
5	Do not resuscitate	37 (51.39)	32 (45.07)	21 (29.17)	36 (50.00)
6	Euthanizing child	53 (73.61)	32 (45.07)	16 (22.22)	64 (88.89)
7	Withdrawal of treatment and autonomy	44 (61.11)	33 (46.48)	29 (40.85)	41 (56.94)
8	Reportable illness	38 (53.52)	31 (44.93)	10 (14.08)	22 (30.99)
		57 (80.28)	26 (37.14)	-	-
9	Contraceptive and autonomy	29 (40.28)	40 (56.34)	23 (31.94)	31 (43.06)
10	Reporting colleague's error	52 (72.22)	29 (40.85)	10 (13.89)	59 (83.10)

A total of 114 medical officers were included in our follow up study (study-2). The study was conducted in a 1:1 ratio among those who have had medical ethics lectures during their MBBS period apart from forensic medicine and those who have not had separate medical ethics lectures. Out of the total of 114 medical officers, 54 (47.36%) respondents had medical ethics lectures during their MBBS program (referred to as group 1 moving forward) and 60 (52.63%) respondents did not have medical ethics lectures (referred to as group 2 moving forward). Among group 1 who had medical ethics lectures during their MBBS program, the majority were those who had graduated from PAHS 37 (68.51%).

The majority of the respondents were male 67 (58.77%). The majority of respondents fell in the age group of 25–30 years (51.75%) followed by the age group of 20–25 years (47.36%). 75 (65.78%) of respondents completed their MBBS from Nepal, followed by Bangladesh 17 (14.91%), China 17 (14.91%) and Philippines 5 (4.3%). Majority of the doctors 54 (47.36%) had at least 6 months of practice after completion of MBBS followed by 39 (34.21%) doctors who had a practice of 6 months to 1 year and 21 (18.42%) doctors had a practice of more than a year (Table 7 and Table 8). Statistically significant negative correlation of years of medical practice with KAP of medical ethics was found in Study 2. We suspect it is due to the fact that our respondents did not have a long enough medical practice for the correlation to be of implicational value.

Table 7
Participants demographics for Study 2

Characteristics	Category	n (%)
Age (years)	20 to 25	54 (47.37%)
	26 to 30	59 (51.75%)
	31 to 35	1 (0.88%)
Sex	Male	67 (58.77)
	Female	47 (41.22)
MBBS from	Nepal	75 (65.78)
	Abroad	39 (34.21)
Months of Practice after MBBS	< 5	55
	6 to 11	39
	> 12	20

Table 8
Comparability of Group 1 and Group 2 in study 2

Characteristics	Shapiro-Wilk	P-value
Age (years)		
Group 1	< 0.001	0.913*
Group 2	< 0.001	
Months of Practice after MBBS		
Group 1	< 0.001	< 0.001*
Group 2	< 0.001	
*Mann-Whitney		

The source of knowledge of medical ethics among doctors was mainly from lectures during MBBS study 92 (80.70%) and work experience 69 (60.52%). All of the respondents thought that medical ethics should be a part of medical education.

Out of the 5 codes of ethics (Hippocratic Oath, Declaration of Helsinki, NMC code of ethics, AMA code of ethics, AMC code of ethics), the majority of the respondents knew about Hippocratic Oath 102 (89.47%) and NMC code of ethics 95 (83.33%). Among 114 respondents, 50% rated their knowledge regarding the Hippocratic Oath and NMC code of ethics above 7 in a scale of 1 to 10 (1 = lowest). In group 2 only 7 (11.66%) considered that the patients themselves are capable of judging what is best for them compared to 28 (51.85%) among those who received formal medical ethics training in group 1. Among group 1, 38 (70.37%) preferred to consult their colleagues if an ethical dilemma arose compared to 30 (50%) in group 2.

The median score for self-reported knowledge in group 1 was 7 compared to 5 in group 2. Out of the 22 questions asked to assess knowledge, the maximum number of questions answered correctly by medical officers in group 1 was 21 and the minimum was 9 with a median of 14. For medical officers in group 2, the maximum number of questions correctly answered was 16 with a minimum of 7 and a median of 12. There was a statistically significant difference ($p = 0.000$) observed in the knowledge between the two (Table 9).

Table 9
Comparison of KAP of medical ethics between Group 1 and Group 2 for study 2

		N	Measure of Central Tendency ± Dispersion	p-value
Knowledge Score (Total question = 22)	Group 1	54	14.00 ± 4.00	< 0.001
	Group 2	60	12.00 ± 4.00	
Practice Score (Total question = 10)	Group 1	54	6.00 ± 2.25	< 0.001
	Group 2	60	5.00 ± 2.00	
Attitude Score (Total question = 10)	Group 1	54	7.00 ± 2.00	0.001
	Group 2	60	6.00 ± 2.00	
KAP Score (Total question = 42)	Group 1	54	27.09 ± 5.07	< 0.001
	Group 2	60	22.28 ± 4.09	
☐ Mean ± S.D.				
☐ Median ± IQR				
☐ Mann-Whitney				
☐ Independent T-test				

Out of 10 questions asked to assess practice, in Group 1, the maximum number of questions answered correctly was 10 with a minimum of 7 and a median of 9. In Group 2, the maximum number of correctly answered questions was 10 with a minimum of 5 and a median of 9. A significant statistical difference ($p = 0.030$) was observed in the practice of medical ethics between Group 1 and Group 2 (Table 9).

Out of 10 questions asked to assess attitude, in Group 1, the maximum number of questions answered with the correct attitude was 9, with a minimum of 3 and a median of 7. In Group 2, the maximum number of questions answered with the correct attitude was 8, with a minimum of 3 and a median of 6. A significant difference ($p = 0.001$) was observed in the attitude between Group 1 and 2 (Table 9).

Out of 42 questions asked to assess knowledge, attitude, and practice of medical ethics, the maximum number of questions answered correctly by Group 1 was 39 with a minimum of 19 and a median of 39. In Group 2, the maximum number of correctly answered questions was 33 with a minimum of 15 and a median of 26. A significant statistical difference ($p = 0.000$) was observed in the KAP of medical ethics between Group 1 and Group 2 (Table 9).

Discussion

Many studies draw attention to major deficiencies in understanding of medical ethics among medical graduates. [1,8] Studies conducted in Chennai, India [9] also revealed similar conclusions that the majority of the doctors' knowledge regarding clinical ethics was inadequate. Our study showed that the majority of doctors value medical ethics. Over 50% of the respondents rated the relevance of medical ethics 8 on a 10 point rating scale. A study conducted in a tertiary care teaching hospital in Barbados [8] revealed similar results, where 100% of the participating doctors felt that medical ethics was important to their work.

All respondents in our study agreed that medical ethics should be a part of medical education. Studies conducted in Barbados [8] and Northern India [10] revealed similar findings, where 100% and 85% of participants respectively agreed that medical ethics should be taught in medical school. The teaching of medical ethics and law contributes to the overall objective of medical education—"the creation of good doctors who will enhance and promote the health and medical welfare of the people they serve in ways which fairly and justly respect their dignity, autonomy, and rights." [11]

A study in Barbados [8] revealed that 29% of the respondents were unaware that an ethical committee existed within their hospital premises. Our study revealed a higher percentage (56%) of respondents unaware that a similar committee was not present in the Patan Academy of Health Sciences. A greater part of the doctors preferred to consult a colleague on an ethical problem (58%) compared to consulting heads of departments and supervisors. Studies conducted in Chennai, India [1] and in Manipur [3] revealed similar conclusions that the majority of the doctor's knowledge regarding clinical ethics was inadequate. Subramanian et al. [1] similar to Hariharan et al. [1] reported that the majority of the doctors remembered little of the Hippocratic Oath once taken. Another study conducted among a number of physicians in Bavaria, Germany [4] showed that the longer the duration of practice, the poorer the opinion they had on patients' capacities to make decisions regarding their illness.

In a study conducted in Barbados among physicians, 29% of physicians were unaware of the existence of an ethics committee at the institution. [12] In another study, around 33.3% knew of the existence of an ethics committee. [8] In our study, an even higher number of doctors 40 (56%) were unaware that a clinical ethics committee did not exist at PAHS. A study conducted among physicians in Manipur, [8] India revealed that the majority of the respondents (54%) were unable to recall any of the contents of the Hippocratic Oath. A similar study conducted in Barbados [10] found out that a significantly lesser number of respondents (11%) did not know the contents of the Hippocratic Oath. In our study, the majority of the participants 66

(92%) were aware of the oath, however, the knowledge of the contents of the oath was not assessed. The same study conducted in Barbados [12] also revealed that over 90% of physicians did not know of the Helsinki Declaration. However, our findings were better with only 38 (53%) of the participants had not heard of the Helsinki Declaration. However, our study did not assess whether knowing the existence of the Hippocratic oath or the Helsinki declaration translated in the KAP of clinical ethics in practice.

We found a positive correlation between the number of years of practice and KAP among the doctors with $p = 0.015$. A study in Manipur also found that senior doctors had better knowledge in medical ethics which they argued that the difference could be because of experience or by attending more CMEs, conferences, and workshops. [8] Another study conducted among a number of physicians in Bavaria, Germany [13] showed that the longer the duration of practice, the poorer the opinion they had on patients' capacities to make decisions regarding their illness.

In a study conducted in Northern India, only 38.4% of the doctors agreed on revealing a doctor's mistake to the patient. [3] Similar findings were noted by Brogen et al. [8] where doctors were generally not in favor of revealing doctors' mistakes to patients. In a case scenario-based question in our study, however, a higher percentage of doctors 66 (92%) would inform their colleagues regarding their error.

As noted by Brogen et al. [8] and another study in Northern India [10] majority were more likely to lean towards revealing a patient's condition to the close relatives, irrespective of whether or not the patient's permission was sought. However, in another study, the majority of respondents disagreed on the statement that doctors should reveal the patient's condition to close relatives irrespective of whether the patient gave permission (80.0%). [8] A similar finding was observed in our study where majority 64 (89%) of the respondents claimed that they would not reveal the patient's condition to relatives.

Most of the respondents (47.6%) in a study in Manipur [8] said that they would consult a lawyer or the head of the department or the ethics committee when faced with ethical or legal problems. [12] In a research conducted in Barbados, [12] majorities of physicians said they would approach the immediate supervisor first. However, in our study, the majority of the respondents preferred to consult their colleagues 39 (55%) followed by the head of department 32 (45%).

Majorities of the physicians responded that they acquired their knowledge of ethics during training and during work in Barbados study [12]. Also, in another study, [8] majorities (72.3%) responded that they obtained their knowledge of ethics during their undergraduate training, 29.8% through experience at work whereas 33% stated that they got it through attending lectures, seminars, workshops or continuing medical education (CME). In our study, similar findings were obtained with the majority of the doctors (44, 64%) obtaining their knowledge through work experience followed by training during MBBS (44, 61%).

In order to improve the understanding of medical ethics among practicing doctors, many studies have recommended including medical ethics as a mandatory and separate subject in undergraduate studies. [14,15] In Nepal, medical ethics is taught as part of Forensic Medicine in the third year of the medical curriculum in Kathmandu University and Tribhuvan University boards. At PAHS, medical ethics covers a major part of the curriculum. Here, students are introduced to medical ethics starting from the first year of medical school up to the third year. The same curriculum does not apply to medical schools outside Nepal. Nevertheless, no significant difference was found in our study regarding KAP of medical ethics among practitioners who completed their MBBS from Nepal (27.42 ± 4.37) compared to that from abroad (29.05 ± 5.12) with $p = 0.204$.

Many argue that ethics is not something that can be taught within the four walls of a classroom primarily because there are no right or wrong answers. Also, ethics is more about the overall moral development of an individual which will be difficult to transform through instructions. Nevertheless, escaping from teaching ethics is not the solution. [1,16,17] Rather than simply delivering lectures on ethics, getting students to discuss ethical issues that they have witnessed may have a greater impact on their future practice.

Conclusions

The KAP of the consultants and MD/MS graduates were found to be better than that of the interns, medical officers, and MBBS graduates. Doctors find it easier to discuss ethical dilemmas with their colleagues rather than department heads or seniors. The majority of the respondents gained their knowledge of medical ethics through lectures during their MBBS/MD level and work experience. A requirement for an ethics curriculum that addresses the local socio-demographic needs can be concluded by the result showing low scores in the domain of medical ethics concerned with autonomy and contraceptives. Our follow up study (study-2) showed a statistically significant difference in KAP of medical ethics among graduates with formal training on medical ethics and those without. Those with formal training on medical ethics achieved better results in all aspects of KAP of medical ethics. Based on the results we suggest that the inclusion of 'Medical Ethics' as a part of the core curriculum in medical schools would improve the practice of ethical medicine.

Abbreviations

IRC Institutional Review Committee

IQR Inter-Quartile Range

KAP Knowledge Attitude and Practice

MBBS Bachelor of Medicine and Bachelor of Surgery

MD/MS Doctor of Medicine/ Masters of Surgery

NMC Nepal Medical Council

OPD Outpatient Department

PAHS Patan Academy of Health Sciences

PG Post Graduate

SD Standard Deviation

Declarations

Ethics approval and consent to participate

Written consent was obtained from each individual participant of the research.

Ethical approval was obtained from the Institutional Review Committee – Patan Academy of Health Sciences. The committee's reference number is std1508031078. Attached herewith is the statement on ethics approval and consent. This study received research ethics approval from IRC, PAHS for the distribution of surveys to interns, medical officers, residents and consultants at all departments of PAHS. Survey respondents were informed of their rights as research participants in written form for study 1 on the first page of the printed questionnaire. Respondents consented to participate by signing their initials at the bottom of the consent form. In study 2 description section of the anonymous online survey (google form) contained the complete informed consent statement. Consent to participate was provided by clicking "Continue" to begin the survey. In both our studies participants were informed that they were free to exit the survey and make their responses excluded from the study at any time. All PAHS, IRC was presented with the consent form and they approved this method of obtaining consent to participate.

Consent for publication

Not applicable.

Availability of data and materials

The datasets supporting the conclusions of this article are available from the corresponding author on request.

Competing interests

The authors declare that they have no competing interests.

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Author's contributions

CS, AS, JJ, SK, SA were involved with the conceptualization, data collection, data analysis, and writing the manuscript. SJ was involved in the supervision of the research, questionnaire development and proofreading. All authors have read and approved the final manuscript.

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Figures

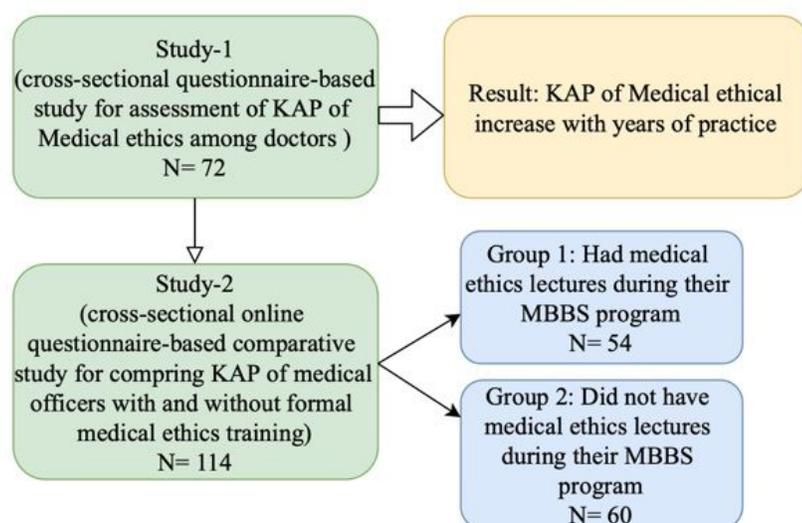


Figure 1

Study design diagram.

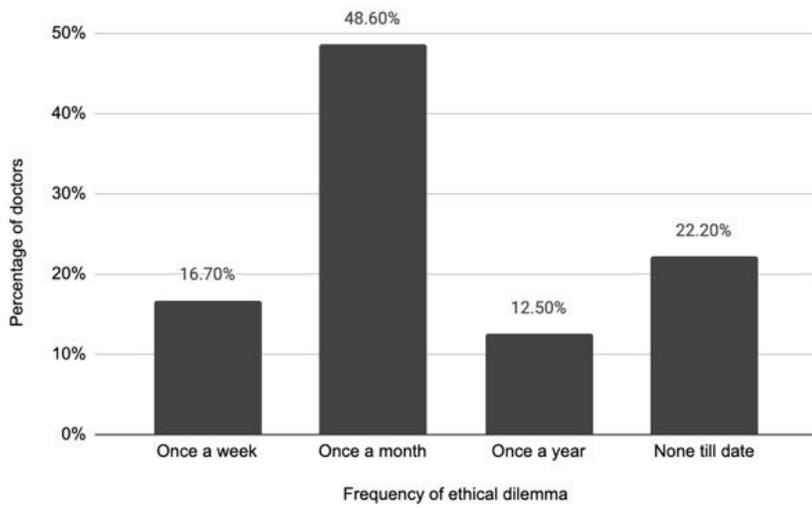


Figure 2

Frequency of ethical dilemma faced by clinicians at PAHS

Supplementary Files

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- [ConsentformandSurveyQuestionnaireofStudy1.pdf](#)
- [AuthorshipKAPEthics.docx](#)
- [Declaration.docx](#)
- [ForwardingLetterKAPEthics.docx](#)
- [ConsentformandSurveyQuestionnaireofStudy2.pdf](#)