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Adherence to medical ethics and its determinants among medical doctors in Ethiopia

Mesafint Abeje Tiruneh[1*] and Azwihangwisi Helen Mavhandu-Mudzusi[2]

Abstract

Background Medical ethics is an applied branch of ethics that addresses the moral issues and challenges encountered in clinical practice. Medical ethics should be adhered to during clinical practice. Non-adherence to medical ethics may cause unnecessary burdens and consequences on patients, deterioration of health status, exposure to other health problems or diseases, unnecessary surgery, additional medical expenditure, psychological distress, bodily injury and death. Globally, adherence to medical ethics is not uniform, while in Ethiopia, there is limited information on adherence to medical ethics and its determinants. Therefore, this study aimed to assess the level of adherence to medical ethics and its determinants among medical doctors in Ethiopia.

Methods An institution-based cross-sectional study was conducted among 1,012 medical doctors from 01 August 2024 to 31 October 2024 in Ethiopia. A multistage sampling technique was applied to select the respondents. A structured self-administered questionnaire was used for data collection. Relevant descriptive statistics was done for all variables. Multivariable binary logistic regression analysis was used to identify factors significantly associated with adherence to medical ethics.

Results The study revealed that only 588 (58.1%) medical doctors had good adherence to medical ethics. Year of medical ethics course (AOR: 1.77; 95% CI: 1.27, 2.46), integration of medical ethics course with clinical practice (AOR: 1.34; 95% CI: 1.08, 1.72), pre-service orientation on medical ethics (AOR: 1.60; 95% CI: 1.15, 2.23), in-service training on medical ethics (AOR: 1.44; 95% CI: 1.11, 1.89), institutional ethics committee (AOR: 1.54; 95% CI: 1.11, 2.13), clinical communication skills (AOR: 1.68; 95% CI: 1.08, 2.61), clinical leadership skills (AOR: 1.74; 95% CI: 1.07, 2.86), knowledge of medical ethics (AOR: 2.56; 95% CI: 1.72, 3.83), and attitude towards medical ethics (AOR: 10.38; 95% CI: 7.02, 15.33) were significantly associated with adherence to medical ethics.

Conclusions and recommendations Adherence to medical ethics among medical doctors was low. Year of medical ethics course, integration of medical ethics course with clinical practice, pre-service orientation on medical ethics, in-service training on medical ethics, institutional ethics committee, clinical communication skills, clinical leadership skills, knowledge of medical ethics, and attitude towards medical ethics were significantly associated with adherence to medical ethics. Therefore, the implementation of various strategies and interventions is very important to improve adherence to medical ethics among medical doctors in Ethiopia.

*Correspondence:
Mesafint Abeje Tiruneh
mesabeje@gmail.com

Full list of author information is available at the end of the article

Keywords Adherence, Determinants, Ethics, Medical doctors, Medical ethics

Background

Ethics is a philosophical field of study that tries to define and understand what is morally right and wrong in human actions [1]. It involves the study of morality and the accepted codes of conduct that guide the daily life of human beings. Ethics encompasses the implementation of moral choices and values, as well as the decision-making processes that arise from these choices [1–3].

Medical ethics is an applied branch of ethics that addresses the moral issues and challenges encountered in clinical practice [4–6]. Moreover, medical ethics is a deontological responsibility of medical doctors in clinical practice that highlights the relationship between medical doctors and patients. This relationship includes the basic ethical values, such as privacy and confidentiality [7]. It focuses on what a medical doctor must do to a patient in a specific condition, regardless of the outcome [7, 8].

Medical ethics depends on a set of key principles that guide medical doctors when faced with ethical dilemmas. These principles include autonomy, beneficence, non-maleficence, and justice [4, 6, 9]. Medical ethics is an essential component of the practice of clinical medicine. It deals with the choices made by medical doctors and the actions related to these choices. It includes the responsibilities and obligations of medical doctors to their patients. An ethical medical practice considers the interests of patients and clients and includes a systematic method to make decisions and take measures [6, 10].

The principles of medical ethics are universally accepted. However, countries can modify them and develop country-specific meanings aligned with the social norms, culture, religious beliefs, standards of medical practice, laws of the country and the health system [11]. Ethiopia developed and endorsed the code of conduct of health professionals, including medical doctors in 2013, considering its own healthcare system, regulatory laws and other conditions [12].

Adherence to medical ethics is one of the most crucial components of quality healthcare provision [13]. Nonadherence to medical ethics among medical doctors affects the relationship between medical doctors and patients and compromises quality healthcare accessibility and utilisation. Furthermore, nonadherence to medical ethics decreases the reputation of medical doctors, leadership, and health system [14]. The problem of nonadherence to medical ethics may arise from medical doctors themselves or the health system [14].

Public concern about the issue of adherence to medical ethics among medical doctors is rising [5]. There is dissatisfaction among health service users regarding the care given by medical doctors due to poor adherence to the code of conduct [15]. The issues of medical ethics must be practiced in line with the principles and codes of ethics and must ensure professionalism. However, there are claims and litigations regarding unethical practices of medical doctors [16, 17]. Non-adherence to medical ethics affects the relationship between medical doctors and patients, compromises quality of care, affects health service access and utilisation, decreases the reputation of medical doctors, and decreases trust in the health system [14]. Moreover, non-adherence to medical ethics may cause unnecessary burdens and consequences on patients, deterioration of health status, exposure to other health problems or diseases, unnecessary surgery, additional medical expenditure, psychological distress, bodily injury and death [17, 18]. Low public awareness, weak enforcement of the code of conduct, weak monitoring of medical doctors, lack of an unethical practice reporting system, and weak collaboration among stakeholders are the most common challenges in the current solutions and interventions to ensure adherence to medical ethics [19].

The majority of medical doctors adhered to medical ethical practices in Jodhpur, Rajasthan, India [20] and 69% of medical doctors had good adherence to medical ethics in Tamil Nadu, Southern India [21]. Some level of non-adherence to medical ethics among medical doctors was reported in Sri Lanka [6] whereas the majority of medical doctors did not adhere to medical ethics in Ndola, Zambia [14]. Furthermore, many medical doctors lacked basic behavioural ethical conduct in medical practice in Southeast Nigeria [22]. In contrast, medical doctors demonstrated good adherence to medical ethics standards to ensure professional conduct in the Southwest Region, Cameroon [23]. Furthermore, 74.3% of non-surgical medical doctors and 55.6% of surgical medical doctors adhered to ethical principles in Tanta University Hospital, Egypt [24].

There is a gap in the adherence to medical ethics among medical doctors in Ethiopia [25]. The trend of medical malpractice claims and litigation in Ethiopia has increased over time. Among the claims and litigations reported, most of them were against medical doctors [17]. Most studies conducted in Ethiopia did not use well-known codes of medical ethics and validated data collection tools. Most studies are descriptive and do not show a statistical association between adherence to medical ethics and its determinants. Furthermore, nearly all studies were conducted in a few health institutions or in a single health institution. This shows the limitation of comprehensive national studies, which show a bigger picture. Hence the level of adherence to medical ethics and its determinants among medical doctors in Ethiopia has

not been well documented. Therefore, this study aimed to assess the level of adherence to medical ethics and its determinants among medical doctors in Ethiopia.

Methods

Study design, period and setting

An institution-based cross-sectional study was conducted to assess the level of adherence to medical ethics and its determinants among medical doctors in Ethiopia from 01 August 2024 to 30 October 2024. In Ethiopia, there are 12 regional states and two city administrations. There were about 34,572 health institutions that provide primary, secondary and tertiary levels of healthcare in Ethiopia. Among these health institutions, 27, 163, and 327 were comprehensive specialised hospitals, general hospitals and primary hospitals respectively [26]. Furthermore, there were approximately 13,117 medical doctors practicing medicine in Ethiopia. Among these medical doctors, about 8,400 work in general hospitals and comprehensive specialised hospitals [26, 27].

Source population and study population

Medical doctors working in general hospitals and comprehensive specialised hospitals in Ethiopia were the source population of this study, and medical doctors working in selected general hospitals and comprehensive specialised hospitals were the study population. Medical doctors who had at least six months of work experience, and available during the data collection period, were included in the study. However, the study excluded foreign medical doctors who work for medical campaigns and medical doctors who were working in non-clinical positions in hospitals.

Sample size determination

The sample size was determined using the single population proportion formula. The sample size calculation was facilitated using Open Epi version 2.3 software. The sample size calculation considered 95% CI, 4% margin of error, 30.4% proportion based on a previous study [19], design effect of 2, and 10% non-response rate for the proportion of adherence to medical ethics. Therefore, the sample size became 1,054.

Sampling procedure

A multistage sampling technique was used to select the respondents. All regional states and city administrations were included in the study and a total of 57 hospitals general and comprehensive specialised hospitals (30% of 190 general and comprehensive specialised hospitals) were selected [28] for this study with proportional allocation considering the number of hospitals found in each of the regional states and city administrations. In the next stage, government and private hospitals were stratified with proportional allocation. Of these hospitals, 41 were governmental hospitals, whereas the remaining 16 hospitals were private hospitals. Moreover, general and comprehensive specialised hospitals were allocated proportionally. Accordingly, 49 general hospitals and eight comprehensive specialised hospitals were included. The number of medical doctors working in each hospital was identified, and proportional allocation of samples was done considering the number of medical doctors working in each hospital. Finally, samples were selected from each hospital using a simple random sampling technique by creating a sampling frame, assigning numbers to each medical doctor, selecting random numbers using the OpenEpi version 2.3 software random number generator, and identifying the sample by matching the random numbers with the assigned numbers for each medical doctor (Fig. 1).

Operational definitions

Adherence to medical ethics: Indicates how much medical doctors respect and practice medical ethics during healthcare provision.

- Good adherence: Scored ≥ 75% on medical ethics adherence-related questions.
- Poor adherence: Scored < 75% on medical ethics adherence-related questions [29].

Attitude towards medical ethics: Indicates a feeling or perception toward medical ethics.

- Favourable attitude: Scored ≥ 75% on attitude-related questions.
- Unfavourable attitude: Scored < 75% on attitude-related questions [29].

Knowledge of medical ethics: Indicates the level of understanding of medical ethics.

- Knowledgeable: Scored ≥ 75% on knowledge-related questions.
- Not knowledgeable: Scored < 75% on knowledge-related questions [29].

Job satisfaction: Indicates a measure of medical doctors' contentment with their job and workplace, as well as their satisfaction with specific aspects of their job.

- Very high satisfaction: Scored ≥ 81% for employee satisfaction index (ESI).
- High satisfaction: Scored 41–80% for employee satisfaction index (ESI).
- Low satisfaction: Scored 21–40% for employee satisfaction index (ESI).

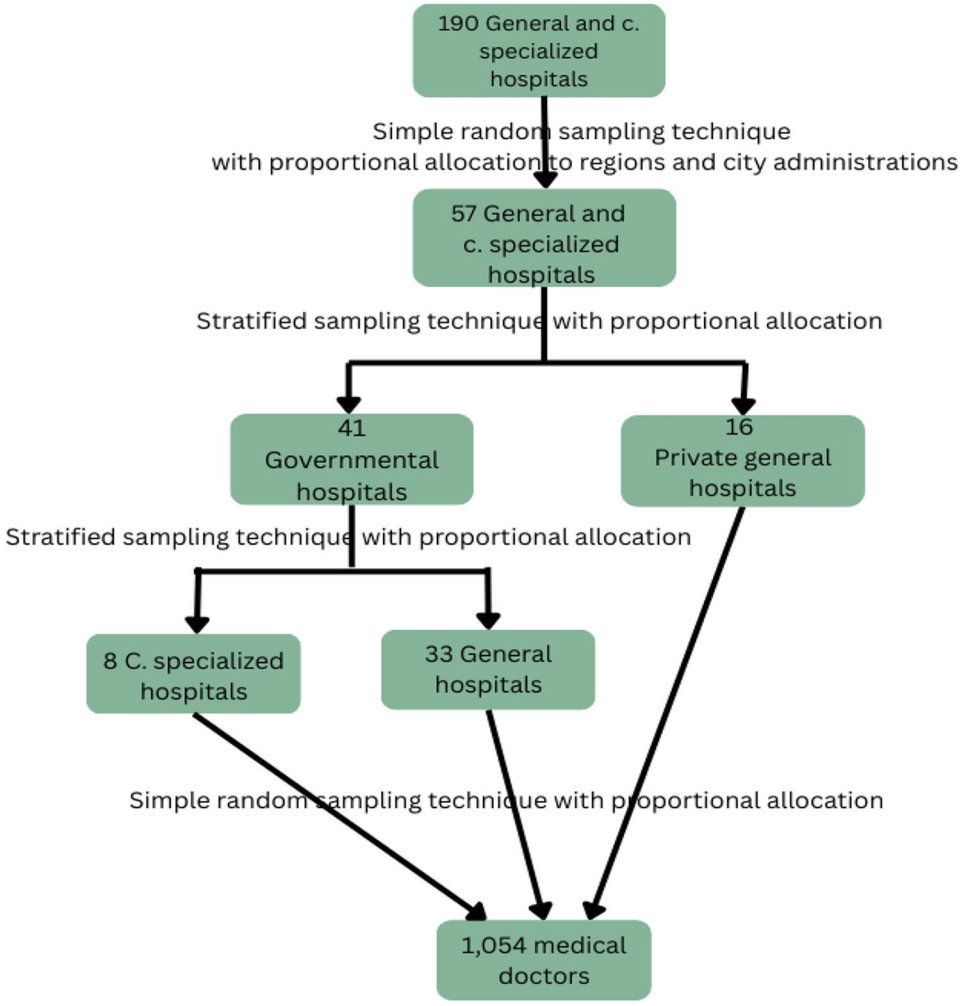

Fig. 1 Sampling procedure of the study

- Very low satisfaction: Scored ≤ 20% for employee satisfaction index (ESI) [30].

Data collection tool, procedure and quality assurance

A structured self-administered questionnaire was employed to gather data. The questionnaire was developed after reviewing various literatures appropriate for this study. Sociodemographic characteristics included basic components such as sex, age, marital status, religion, educational status, and work experience applicable to this study. The questions to assess knowledge of medical ethics, attitude toward medical ethics, and adherence to medical ethics were developed based on various codes of medical ethics such as the Ethiopian Health Professional Code of Conduct [12]; Ethiopian Medical Association Code of Medical Ethics [11]; World Medical Association International Code of Medical Ethics [31]; and the Hippocratic Oath [32]. The questionnaire for adherence to medical ethics, knowledge of medical ethics, and attitude toward medical ethics was validated using a modified Delphi process [33]. About 10 senior experts were selected from university, hospital, and health program for the Delphi process. The experts were selected based on their academic background and experience in medical ethics. Two rounds of Delphi consensus were conducted. Finally, the responses were reviewed and the consensus was defined [34]. Consensus was achieved by having at least 80% of the Delphi participants rate four or higher on a five-point Likert scale [35, 36]. Moreover, the questionnaire was reviewed by senior experts in the field of medicine and medical ethics to ensure completeness, comprehensiveness, understandability, and applicability for the intended purpose.

The reliability of the questionnaire was assessed to measure internal consistency. Cronbach's α was used to assess the internal consistency of questions for some variables such as knowledge of medical ethics, attitude towards medical ethics, and adherence to medical ethics. A pilot study was conducted on 50 medical doctors working in hospitals, which was not included in

the actual study [37]. The level of the questionnaire and how it constantly generates similar findings under the same conditions for these variables was assessed accordingly. Moreover, the questionnaire was pre-tested for its clarity and practicability and to identify gaps on 53 (5%) randomly selected medical doctors prior to actual data collection in hospitals that were not included in the actual study. Accordingly, minor editorial amendments were made to the questionnaire after the pretest for more clarity and understanding. Health professionals who have experience in field work and data collection were recruited for data collection. They were trained by the principal investigator on data collection process.

Data management and analysis

The collected data were coded and entered into Epi-Data version 3.1 software. The data set was exported to the SPSS version 29.0 statistical package for analysis. Transforming and recoding of variables was done based on the nature of the collected data. Relevant descriptive statistics were done for all variables based on the nature of the variables. Adherence to medical ethics was measured using 20 five-point Likert scale questions (always = 5, often = 4, sometimes = 3, rarely = 2, and never = 1 for positively stated questions) and (always = 1, often = 2, sometimes = 3, rarely = 4, and never = 5 for negatively stated questions). The adherence score was calculated from 100% for all respondents, and based on this calculation, the adherence score was categorised into good adherence for those who scored 75% and above and poor adherence for those who scored less than 75%. Furthermore, inferential statistics, specifically a binary logistic regression analysis, were employed to determine the association between adherence to medical ethics and independent variables. Univariate binary logistic regression analysis was performed at a 20% significance level to select potentially significant variables, and using these determinants, multivariable binary logistic regression analysis was performed at a 5% significance level to identify significantly associated variables. Hosmer and Lemeshow's goodness of fit test was used to check model adequacy statistically and the model fitted for the data ($p = 0.320$). Moreover, a collinearity test was performed to verify the assumption of no multicollinearity and no multicollinearity detected. A 95% confidence interval was considered to identify significantly associated variables, and variables with a p-value < 0.05 were taken as statistically significant.

Results

Sample characteristics

A total of 1,012 respondents from 57 hospitals participated in this study which makes the response rate 96%. The larger sample size was taken from Oromia Region State (251), Amhara Region State (220), and Addis Ababa City Administration (217) which considered proportional allocation of hospitals and respondents (Fig. 2).

Among the respondents who participated in this study, 816 (80.6%) were from governmental hospitals, and the majority (73.7%) were male respondents. About 381 (37.6%) and 352 (34.85%) respondents were in the age group of 30–34 years and 25–29 years respectively. About 516 (51%) respondents were single/unmarried, and 636 (62.8%) respondents were Orthodox Tewahedo religion followers. The profession choice of 868 (85.8%) respondents was determined by their own interest in being a medical doctor. The majority of the respondents (60.2%) were general medical practitioners, followed by specialists (37.2%). Regarding work experience, 420 (41.5%) respondents had 3–5 years of work experience, and 302 (29.8%) respondents were from a health professional family. The median average monthly income of the respondents was 12,579 (IQR: 10,000.00–20,000.00)

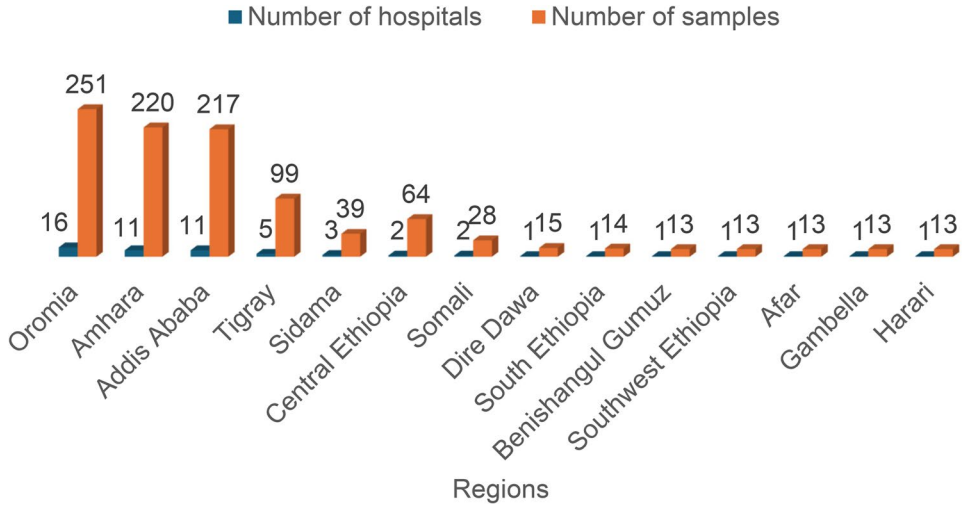

Fig. 2 Number of hospitals and samples distribution among regions

Ethiopian Birr, with 6,600.00 and 180,000.00 Ethiopian Birr minimum and maximum average monthly income respectively (Table 1).

Medical ethics curriculum-related factors

Medical ethics curriculum-related issues were assessed in this study. Accordingly, among all respondents who participated in the study, 969 (95.8%) of them took a medical ethics course during their medical education. Of those who took a medical ethics course during medical education, only 411 (42.4%) took the course which was offered by an ethicist/ ethics graduate instructor. More than half (54.9%) of them took the course by two credit hours, and 330 (34.1%) of them did not think the credit hours of the course were enough. The respondents took the medical ethics course in different years from 1st year to 5th year, and 342 (35.3%) of them took the course in 1st year, followed by 220 (22.7%) in 4th year. About 509 (52.5%) respondents reported that the medical ethics course was integrated with the clinical practice. About 632 (65.2%) and 425 (43.9%) respondents reported that the medical ethics course included the medical code of conduct and health professional regulatory laws respectively. The most common mode of medical ethics course delivery was lecture (97.6%), and the most common medical ethics course assessment method was a written exam (96.4%). About 454 (46.9%) respondents reported that the medical ethics course they took did not prepare them to apply ethical clinical practice. The results show that the leading gap of the course was methodology (69.5%), followed by the number of credit hours (55.1%) (Table 2).

Table 1 Sample characteristics ($n = 1,012$)

Characteristics	Responses	Frequency	Percentage
Type of hospital	Governmental	816	80.6
	Private	196	19.4
Sex	Male	746	73.7
	Female	266	26.3
Age in years	25–29	352	34.8
	30–34	381	37.6
	35–39	202	20.0
	≥ 40	77	7.6
Marital status	Single/unmarried	516	51.0
	Married	487	48.1
	Divorced	5	0.5
	Widowed	4	0.4
Religion	Orthodox Tewahedo	636	62.8
	Muslim	192	19.5
	Protestant	164	16.2
	Others*	15	1.5
Career/profession choice	Own choice/interest	868	85.8
	By chance	52	5.1
	Family choice	51	5.0
	For job opportunity	39	3.9
	Others**	2	0.2
Level of education	General medical practitioner	609	60.2
	Specialist	376	37.2
	Subspecialist	27	2.7
Work experience	< 3 years	335	33.1
	3–5 years	420	41.5
	6–8 years	152	15.0
	≥ 9 years	105	10.4
Family job category	Non-health professional	710	70.2
	Health professional	302	29.8

*Indicates religions such as Catholic, Adventist, Apostolic, and Jehovah's Witness

**Indicates other reasons such as personal and others expectation for high score at grade 12

Institutional factors

Potential institutional factors that can influence adherence to medical ethics such as pre-service orientation, in-service training, availability of medical equipment, supplies and medicines, working environment, workload, availability of medical doctors, institutional influence, institutional ethics committee, self-regulation system, rewarding and recognition system, clinical ethics consultation team, and availability of role model were assessed.

Among all respondents who participated in this study, 458 (45.3%) of them received pre-service orientation on medical ethics, and 448 (44.3%) of them received in-service training on medical ethics. Regarding satisfaction on the availability of medical equipment, supplies, and medicines in the hospital, the respondents had different levels of satisfaction that shows 358 (35.4%) respondents were dissatisfied and 249 (24.6%) were satisfied. More than half (56.6%) of the respondents perceived that the working environment they are working in is convenient (up to standard) to provide healthcare, and 615 (60.8%) of the respondents perceived a high workload in their area of practice or department. About 638 (63%) respondents reported a shortage of medical doctors in their area of practice or department. About 681 (67.3%) respondents reported overcrowding in their area of practice or department, and 385 (38.0%) respondents reported the existence of influence from the hospital to provide healthcare that does not align with medical ethics principles. Half of the respondents stated their hospital has an institutional ethics committee that investigates and decides on complaints and claims raised by patients or their families. About 340 (33.6%) respondents reported that the hospital has a self-regulation/ auditing system for practice of medical ethics. Only 218 (21.5%) of respondents stated the hospital has a rewarding and recognition system based on ethical medical practice. About 257 (25.4%) respondents testified that the hospital has a dedicated department/ centre for medical ethics, and 242 (23.9%) of respondents stated that the hospital has a clinical ethics consultation team. Moreover, 422 (41.7%) respondents

Table 2 Medical ethics curriculum related factors ($n=1,012$)

Factors	Responses	Frequency	Percentage
Medical ethics course taken during medical education	Yes	969	95.8
	No	43	4.2
Medical ethics instructor was an ethicist/ ethics graduate ($n=969$)	Yes	411	42.4
	No	283	29.2
	I don't know	275	28.4
Credit hours of medical ethics course ($n=969$)	1	126	13.0
	2	532	54.9
	3	255	26.3
	4	56	5.8
The credit hours of medical ethics course were enough ($n=969$)	Yes	330	34.1
	No	639	65.9
Year of medical ethics course taken ($n=969$)	1st year	342	35.3
	2nd year	131	13.5
	3rd year	116	12.0
	4th year	220	22.7
	5th year	160	16.5
Medical ethics course was integrated with the clinical practice ($n=969$)	Yes	509	52.5
	No	460	47.5
Medical ethics course included medical code of conduct? ($n=969$)	Yes	632	65.2
	No	373	34.8
Medical ethics course included health profession regulatory laws ($n=969$)	Yes	425	43.9
	No	544	56.1
Mode of medical ethics course delivery ($n=969$)	Lecture	946	97.6
	Case study	182	18.8
	Role play	44	4.5
	Bedside teaching	36	3.7
Content comprehensiveness of medical ethics course was enough to the actual medical practice ($n=969$)	Yes	308	31.8
	No	661	68.2
Medical ethics course assessment method ($n=969$)	Written exam	934	96.4
	Continuous evaluation	92	9.5
	Oral exam	82	8.5
	Peer evaluation	20	2.1
	Client feedback	16	1.7
Medical ethics course prepared you to apply ethical clinical practice ($n=969$)	Yes	515	53.1
	No	454	46.9
The gap of medical ethics course ($n=515$)	Methodology	358	69.5
	Credit hour	284	55.1
	Content	264	51.3
	Timing/year of the course	262	50.9

had a role model on medical ethics in their area of practice (Table 3).

Job satisfaction

Job satisfaction was among the factors considered in this study, and the respondents' level of job satisfaction was evaluated. The level of respondents' job satisfaction was calculated using the employee satisfaction index (ESI) formula and categorised into four levels. The respondents had different levels of job satisfaction that show 468 (46.2%) of them had high satisfaction and 265 (26.2%) of them had low satisfaction (Fig. 3).

Regulation-related factors

Adherence to medical ethics is governed by various regulatory laws and a code of ethics. Accordingly, regulation-related factors were assessed in this study. Most of the respondents (76.2%) knew that Ethiopia has a health professional code of conduct. About 600 (59.3%) respondents were aware that the health regulatory authorities had health professional ethics committees. However, only 329 (54.8%) respondents knew the powers and duties of the health professional ethics committee. About 558 (55.1%) respondents reported that they knew the health regulatory laws that govern medical practice and ethics,

Table 3 Institutional factors ($n = 1,012$)

Factors	Responses	Frequency	Percentage
Pre-service orientation provided on medical ethics	Yes	458	45.3
	No	554	54.7
In-service training provided on medical ethics	Yes	448	44.3
	No	564	55.7
Satisfaction on availability of medical equipment, supplies and medicines in the hospital	Very satisfied	85	8.4
	Satisfied	249	24.6
	Neutral	208	20.6
	Dissatisfied	358	35.4
	Very dissatisfied	112	11.1
Working environment is convenient (up to standard) to provide healthcare	Yes	573	56.6
	No	439	43.4
Perceived workload in the practice area/ department	High	615	60.8
	Medium	363	35.9
	Low	34	3.4
Shortage of medical doctors in the practice area/ department	Yes	638	63.0
	No	374	37.0
Overcrowding in practice area/ department	Yes	681	67.3
	No	331	32.7
Influence from the hospital to provide healthcare that does not align with medical ethics principles	Yes	385	38.0
	No	627	62.0
The hospital has an institutional ethics committee	Yes	506	50.0
	No	506	50.0
The hospital has a self-regulation/auditing system for practice of medical ethics	Yes	340	33.6
	No	672	66.4
The hospital has a rewarding, and recognition system based on ethical medical practice	Yes	218	21.5
	No	794	78.5
The hospital has a dedicated department/ centre for medical ethics	Yes	257	25.4
	No	755	74.6
The hospital has a clinical ethics consultation team	Yes	242	23.9
	No	770	76.1
Have you a role model in your area of practice on medical ethics?	Yes	422	41.7
	No	590	58.3

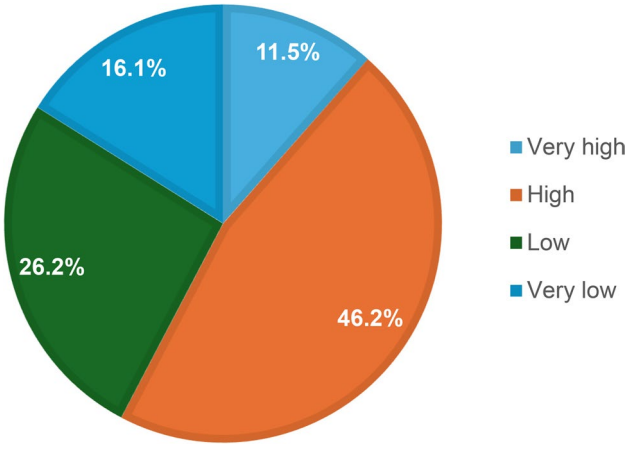

Fig. 3 Level of job satisfaction among medical doctors ($n = 1,012$)

and 663 (65.5%) respondents revealed that ethical evaluation is one of the requirements for professional licence renewal. Most of the respondents (81.7%) knew that the health regulatory authorities take administrative measures like suspension and revocation of a professional licence against unethical medical doctors, and more than half of the respondents (52.4%) did not think that health regulatory authorities are enforcing implementation of the Ethiopian Health Professional Code of Conduct (Table 4).

Understanding of basic clinical skills

Clinical practice needs various skills beyond the competency of a specific discipline. The medical doctors' level of understanding of various skills relevant to ethical clinical practice was assessed. Accordingly, only 218 (21.5%) respondents correctly identified clinical communication skills, and 261 (25.8%) respondents correctly identified clinical conflict management skills. About 381 (37.6%) of the respondents correctly identified

Table 4 Health profession regulation related factors ($n=1,012$)

Factors	Responses	Frequency	Percentage
Ethiopia has a health professional code of conduct	Yes	771	76.2
	No	241	23.8
There are health professional ethics committees under health regulatory authorities	Yes	600	59.3
	No	412	40.7
Aware of the powers and duties of the health professional ethics committee ($n=600$)	Yes	329	54.8
	No	271	45.2
Aware of health regulatory laws that govern medical practice and ethics	Yes	558	55.1
	No	454	44.9
Ethical evaluation is one of the requirements for professional licence renewal	Yes	663	65.5
	No	349	34.5
Health regulatory authorities take administrative measures like suspension and revocation of licence against unethical medical doctors	Yes	827	81.7
	No	185	18.3
Health regulatory authorities are enforcing implementation of the Ethiopian Health Professional Code of Conduct	Yes	482	47.6
	No	530	52.4

Table 5 Understanding of basic clinical skills ($n=1,012$)

Clinical skills	Level of understanding	Frequency	Percentage
Clinical communication skills	Correctly identified	218	21.5
	Not correctly identified	794	78.5
Clinical conflict management skills	Correctly identified	261	25.8
	Not correctly identified	751	74.2
Clinical problem-solving skills	Correctly identified	381	37.6
	Not correctly identified	631	62.4
Ethical dilemma-solving skills	Correctly identified	191	18.9
	Not correctly identified	821	81.1
Clinical leadership skills	Correctly identified	167	16.5
	Not correctly identified	845	83.5

clinical problem-solving skills, and only 191 (18.9%) of the respondents correctly identified ethical dilemma-solving skills. Furthermore, only 167 (16.5%) respondents correctly identified clinical leadership skills (Table 5).

Knowledge of medical ethics

Among all respondents who participated in this study, 702 (69.4%) were knowledgeable about medical ethics whereas 310 (30.6%) were not knowledgeable.

Attitude towards medical ethics

Among all respondents who participated in this study, 683 (67.5%) had a favourable attitude towards medical ethics whereas 329 (32.5%) had an unfavourable attitude.

Adherence to medical ethics

Among all respondents, 588 (58.1%; 95% CI: 54.9, 61.2) had good adherence to medical ethics, and 424 (41.9%; 95% CI: 38.8, 45.1) had poor adherence to medical ethics.

Determinants of adherence to medical ethics

The determinants of adherence to medical ethics were identified using binary logistic regression analysis. From univariate binary logistic regression analysis, various socio-demographic, curriculum-related, institutional, and individual-related factors had a significant association with adherence to medical ethics among medical doctors at 20% level of significance.

Among those variables that had significant association with adherence to medical ethics among medical doctors at 20% level of significance, only the year of medical ethics course, integration of medical ethics course with clinical practice, pre-service orientation, in-service training, institutional ethics committee, clinical communication skills, clinical leadership skills, knowledge of medical ethics, and attitude towards medical ethics were significantly associated with adherence to medical ethics in the multivariable binary logistic regression analysis at 5% level of significance.

The odds of having good adherence to medical ethics among medical doctors who took a medical ethics course from the 3rd to 5th year of medical education were 1.77 times the odds of those who took a medical ethics course from the 1st to 2nd year of medical education (AOR: 1.77; 95% CI: 1.27, 2.46). Similarly, the odds of having good adherence to medical ethics among medical doctors who said the medical ethics course was integrated with

clinical practice were 1.34 times the odds of their counterparts (AOR: 1.34; 95% CI: 1.08, 1.72).

The odds of having good adherence to medical ethics among medical doctors who received pre-service orientation on medical ethics were 1.60 times the odds of those who did not receive pre-service orientation on medical ethics (AOR: 1.60; 95% CI: 1.15, 2.23). The odds of having good adherence to medical ethics among medical doctors who took in-service training on medical ethics were 1.44 times the odds of those who did not take in-service training on medical ethics (AOR: 1.44; 95% CI: 1.11, 1.89). Correspondingly, the odds of having good adherence to medical ethics among medical doctors who reported the presence of an institutional ethics committee in the hospital were 1.54 times the odds of their counterparts (AOR: 1.54; 95% CI: 1.11, 2.13).

The odds of having good adherence to medical ethics among medical doctors who correctly identified clinical communication skills were 1.68 times the odds of those who did not correctly identify clinical communication skills (AOR: 1.68; 95% CI: 1.08, 2.61). Similarly, the odds of having good adherence to medical ethics among medical doctors who correctly identified clinical leadership skills were 1.74 times the odds of those who did not correctly identify clinical leadership skills (AOR: 1.74; 95% CI: 1.07, 2.86).

The odds of having good adherence to medical ethics among medical doctors who were knowledgeable about medical ethics were 2.56 times the odds of those who were not knowledgeable about medical ethics (AOR: 2.56; 95% CI: 1.72, 3.83). Similarly, the odds of having good adherence to medical ethics among medical doctors who had a favourable attitude towards medical ethics were 10.38 times the odds of those who had an unfavourable attitude towards medical ethics (AOR: 10.38; 95% CI: 7.02, 15.33) (Table 6).

Discussion

The objective of this study was to assess the level of adherence to medical ethics and its determinants among medical doctors in Ethiopia. Adherence to medical ethics is the obligation and commitment of medical doctors to provide healthcare to patients without discrimination, considering the basic principles of medical ethics and code of medical ethics. Adherence to medical ethics is an essential element of healthcare provision and has a significant impact on patient outcomes [38, 39]. This study assessed the level of adherence to medical ethics among medical doctors in Ethiopia.

Among all medical doctors who participated in this study, 588 (58.1%) had good adherence to medical ethics. This study's finding indicates that a significant number of medical doctors had poor adherence to medical ethics. This finding is consistent with studies conducted in Sri Lanka [6], Zambia [14], Southeast Nigeria [22], and Northwest Ethiopia [29], which show poor adherence to medical ethics among medical doctors. The level of adherence to medical ethics in this study is relatively higher than studies conducted in Addis Ababa, Ethiopia, which shows only 30.4% of medical doctors had good practice of medical ethics [19]; Ambo Town, Central Ethiopia that shows only 27.3% medical doctors had good practice of medical ethics [40]; and Ethiopia, which shows only 32.7% of the study participants adhered medical ethics [25].

Determinants significantly associated with adherence to medical ethics are identified. The odds of having good adherence to medical ethics among medical doctors who took a medical ethics course from the 3rd to 5th year of medical education were 1.77 times the odds of those who took a medical ethics course from the 1st to 2nd year of medical education. This may be due to educational, cognitive, and experiential factors. Medical students who learn medical ethics from 3rd to 5th year of medical education have the advantage of close relations and the direct application of medical ethics principles to clinical practice. This opportunity gives medical students more cognitive and professional maturity and direct exposure to ethical dilemmas [41, 42].

The odds of having good adherence to medical ethics among medical doctors who said the medical ethics course was integrated with clinical practice were 1.34 times the odds of their counterparts. Medical doctors who reported that their medical ethics course was integrated with clinical practice may have better adherence to medical ethics for various reasons. When a medical ethics course is integrated with actual clinical practice, medical doctors can directly see how principles of medical ethics apply to their daily clinical practice. This learning approach helps consolidate the importance of principles of medical ethics and encourages their application in patient care [43].

The odds of having good adherence to medical ethics among medical doctors who received pre-service orientation on medical ethics were 1.60 times the odds of those who did not receive pre-service orientation on medical ethics. Medical ethics pre-service orientation is crucial in shaping medical doctors' adherence to medical ethics. Medical doctors who received pre-service orientation on medical ethics may adhere to medical ethics due to various reasons. The pre-service orientation familiarises medical doctors with basic principles of medical ethics. This basic knowledge helps medical doctors to recognise ethical issues and dilemmas and address them appropriately [44].

The odds of having good adherence to medical ethics among medical doctors who took in-service training on medical ethics were 1.44 times the odds of those who did

Table 6 Binary logistic regression analysis for factors associated with adherence to medical ethics ($n = 1,012$)

Variables	Adherence		COR (95% CI)	AOR (95% CI)	*p*-value
	Good	Poor			
Type of hospital					
Governmental	461	355	1.00	1.00	
Private	127	69	1.42 (1.03, 1.96)	1.27 (0.79, 2.05)	0.329
Level of education					
General medical practitioner	343	266	1.00	1.00	
Specialist	245	158	1.20 (0.93,1.55)	1.03 (0.75, 1.44)	0.700
Work experience					
≤ 5 years	422	333	1.00	1.00	
> 5 years	166	91	1.44 (1.07, 1.93)	1.20 (0.80, 1.79)	0.383
Year of medical ethics course					
1st – 2nd year	250	223	1.00	1.00	
3rd – 5th year	309	187	1.47 (1.14, 1.90)	1.77 (1.27, 2.46)	< 0.001*
Medical ethics course integrated with clinical practice					
Yes	311	198	1.34 (1.04, 1.73)	1.34 (1.08, 1.72)	0.034*
No	248	212	1.00	1.00	
Medical ethics course includes health profession regulatory laws					
Yes	281	144	1.87 (1.44, 2.43)	1.03 (0.75, 1.44)	0.709
No	278	266	1.00	1.00	
Medical ethics course prepared you for ethical clinical practice					
Yes	313	202	1.31 (1.02, 1.69)	1.16 (0.81, 1.86)	0.417
No	246	208	1.00	1.00	
Pre-service orientation					
Yes	312	146	2.15 (1.66, 2.79)	1.60 (1.15, 2.23)	0.005*
No	276	278	1.00	1.00	
In-service training					
Yes	286	162	1.53 (1.19, 1.98)	1.44 (1.11, 1.89)	0.037*
No	302	262	1.00	1.00	
Convenient working environment					
Yes	355	218	1.44 (1.12, 1.85)	1.07 (0.73, 1.55)	0.735
No	233	206	1.00	1.00	
Overcrowding					
Yes	374	307	1.00	1.00	
No	214	117	1.50 (1.15, 1.97)	1.23 (0.84, 1.81)	0.286
Hospital's influence					
Yes	191	194	1.00	1.00	
No	397	230	1.75 (1.36, 2.27)	1.11 (0.77, 1.58)	0.580
Institutional ethics committee					
Yes	314	192	1.39 (1.08, 1.78)	1.54 (1.11, 2.13)	0.010*
No	274	232	1.00	1.00	
Clinical communication skills					
Correctly identified	174	44	3.63 (2.54, 5.20)	1.68 (1.08, 2.61)	0.021*
Not correctly identified	414	380	1.00	1.00	
Clinical conflict management skills					
Correctly identified	199	62	2.99 (2.17, 4.11)	1.11 (0.70, 1.75)	0.653
Not correctly identified	389	362	1.00	1.00	
Clinical problem-solving skills					
Correctly identified	289	92	3.49 (2.63, 4.62)	1.24 (0.81, 1.89)	0.318
Not correctly identified	299	332	1.00	1.00	
Ethical dilemma solving skills					
Correctly identified	153	38	3.57 (2.44, 5.23)	1.22 (0.73, 2.03)	0.447
Not correctly identified	435	386	1.00	1.00	
Clinical leadership skills					

Table 6 (continued)

Variables	Adherence		COR (95% CI)	AOR (95% CI)	*p*-value
	Good	Poor			
Correctly identified	129	38	2.86 (1.94, 4.20)	1.74 (1.07, 2.86)	0.027*
Not correctly identified	459	386	1.00	1.00	
Knowledge of medical ethics					
Knowledgeable	512	190	8.30 (6.10, 11.29)	2.56 (1.72, 3.83)	< 0.001*
Not knowledgeable	76	234	1.00	1.00	
Attitude toward medical ethics					
Favourable attitude	532	151	17.18 (12.23, 24.12)	10.38 (7.02, 15.33)	< 0.001*
Unfavourable attitude	56	273	1.00	1.00	

COR Crude odds ratio, *AOR* Adjusted odds ratio, *CI* Confidence interval

* Statistically significant at 5% level of significance

not take in-service training on medical ethics. This association can be attributed to several reasons. In-service training enhances medical doctors' understanding of basic principles of medical ethics and the code of medical ethics. This knowledge makes it easier for medical doctors to recognise and deal with ethical dilemmas in clinical practice. In-service training often includes case studies and discussions that help medical doctors apply ethical principles to real cases. This active participation promotes critical thinking and better decision-making in clinical practice [6].

The odds of having good adherence to medical ethics among medical doctors who reported the presence of an institutional ethics committee in the hospital were 1.54 times the odds of their counterparts. This study finding is comparable with a study conducted in Ethiopia that reported study participants who worked at health institutions that have functional ethics clinical committees were 1.76 times more likely to have good practice of medical ethics compared to those who worked at health institutions without functional ethics clinical committee [25]. Moreover, another study identified the importance of an institutional ethics committee and recommended the establishment of a hospital ethics committee composed of various experts to deal with medical ethics issues that arise during clinical practice in order to improve adherence to medical ethics [45].

The odds of having good adherence to medical ethics among medical doctors who correctly identified clinical communication skills were 1.68 times the odds of those who did not correctly identify clinical communication skills. This disparity might be due to different reasons. Clinical communication skills, such as active listening, empathy, and clear explanations, are fundamental components of patient-centred care, which aligns with basic principles of medical ethics. Medical doctors who have these communication skills may be more cautious and interested in honouring patients' rights by involving patients in decision-making and prioritising their well-being. Effective clinical communication builds trust and strengthens relationships between medical doctors and patients. When trust is established between patients and medical doctors, patients may be interested in sharing accurate and complete information openly with medical doctors, which enables them to make ethical decisions appropriate for the patient's conditions [46].

The odds of having good adherence to medical ethics among medical doctors who correctly identified clinical leadership skills were 1.74 times the odds of those who did not correctly identify clinical leadership skills. This relationship between clinical leadership skills and adherence to medical ethics can be explained by various factors. Clinical leadership involves skills such as critical thinking, communication, teamwork, and emotional intelligence. Medical doctors with good clinical leadership skills might be capable of analysing ethical dilemmas, considering all stakeholders, and making decisions that align with ethical principles such as patient autonomy, beneficence, non-maleficence, and justice [47].

The odds of having good adherence to medical ethics among medical doctors who were knowledgeable about medical ethics were 2.56 times the odds of those who were not knowledgeable about medical ethics. This study finding was in line with a study conducted by Tiruneh and Ayele [19] in Addis Ababa, Ethiopia, which stated that knowledgeable medical doctors were 1.84 times more likely to have good adherence to medical ethics than those who were not knowledgeable about medical ethics. This study finding was comparable with a study conducted in Central Gondar Zone, Northwest Ethiopia which indicated that study participants who had good knowledge of the medical code of ethics were 1.95 times more likely to practice medical code of ethics compared to those who had poor knowledge [29]. Moreover, according to Saleh and Masoud [48] knowledge was significantly associated with the practice of medical ethics, and medical doctors with high knowledge scores were more likely to adhere to the code of medical ethics in clinical medical practice.

The odds of having good adherence to medical ethics among medical doctors who had a favourable attitude towards medical ethics were 10.38 times the odds of those who had an unfavourable attitude towards medical ethics. This finding is comparable with a study conducted by Tiruneh and Ayele [19] in Addis Ababa, Ethiopia, which reported medical doctors who had a favourable attitude were 7.4 times more likely to have good practice of the medical code of ethics compared to those who had an unfavourable attitude. It is similar to another study conducted in Ethiopia which stated that study participants who had a favourable attitude towards medical ethics were 1.92 times more likely to have good practice of medical ethics compared to those who had unfavourable attitude [25]. The findings of this study are in line with a study conducted in Central Gondar Zone, Northwest Ethiopia, that reported study participants who had a favourable attitude regarding medical code of ethics were 1.55 times more likely to practice medical code of ethics than those who had unfavourable attitude [29]. Furthermore, a study conducted by Althobaiti, Alkhaldi [49] in Saudi Arabia shows practice of medical ethics and attitude scores were found to have a highly positive correlation.

The implications of low adherence to medical ethics among medical doctors extend beyond individual unethical medical practice and compromise the entire healthcare system. A compromised ethical framework often results in decreased patient trust in hospitals and medical doctors. As a result, patients may perceive hospitals and medical doctors are more concerned with profit than care, particularly in a market-oriented healthcare that increasingly values competition and profit over humanity. Consequently, a system that does not prioritise medical ethics undermines patient well-being and causes unethical medical practice that reduces the social value inherent in healthcare delivery [50, 51].

Strength and limitation of the study

This study is a nationwide study that tried to show the national image regarding the level of adherence to medical ethics and its determinants among medical doctors in Ethiopia. Moreover, a validated data collection tool was used for this study. However, there might be recall bias regarding past experiences, and social desirability bias due to the sensitivity of the issue and the nature of the questions that asked the respondents about expected issues that a medical doctor should know and do.

Conclusion

The level of adherence to medical ethics among medical doctors in Ethiopia was low. The factors that determined the level of adherence to medical ethics were identified. Accordingly, the year of the medical ethics course, integration of the medical ethics course with clinical practice, pre-service orientation, in-service training, institutional ethics committee, clinical communication skills, clinical leadership skills, knowledge of medical ethics, and attitude towards medical ethics were significantly associated with adherence to medical ethics. Therefore, integrated effort and intervention of different stakeholders, including medical doctors themselves, is very important to ensure adherence to medical ethics. Moreover, further research is required to assess the progress in the improvement of adherence to medical ethics and explore the experience of medical doctors in adhering to medical ethics.

Supplementary Information

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Supplementary Material 1.

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Author contributions
MAT conceived the idea, wrote the proposal, coordinated the data collection process, analysed data and wrote the manuscript. AHMM reviewed, commented on, and amended the proposal and manuscript. Both authors approved the final manuscript and agreed on all aspects of this study.

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Data availability
All data generated or analysed during this study are included in this published article.

Declarations

Ethics approval and consent to participate
The study was approved by the University of South Africa (Ref. No.: 20758014_CREC_CHS_2024) and the Ethiopian Public Health Institute (Ref. No.: EPHI-IRB-562-2024), and ethical clearance was obtained. Moreover, an official support letter was taken from the Ministry of Health of Ethiopia to facilitate the data collection. The purpose of the study was explained to all hospitals included in this study, and permission was obtained from each hospital before the data collection to recruit the respondents. The basic principles of research ethics such as autonomy, beneficence, non-maleficence, and justice were respected during sampling and data collection to protect the rights of the respondents and ensure their safety and well-being. Accordingly, written informed consent was obtained from all respondents before the data collection.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

Author details
[1]Department of Health Studies, University of South Africa, Pretoria, South Africa
[2]University of South Africa, Pretoria, South Africa

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