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Original Article

Knowledge in Ethical Code of Conduct and Its Factors among Health Professionals In Governmental Health Facilities of Hawassa City, Sidama Region, Ethiopia: A Cross-Sectional Study

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Abstract

Background: The ethical code of conduct is fundamental to healthcare practice, ensuring integrity and accountability in service delivery. In Ethiopia, concerns persist regarding the level of understanding and implementation of ethical standards among health professionals, particularly in public health facilities. This study aimed to assess the knowledge and attitude towards the ethical code of conduct and to identify associated factors among health professionals in governmental health facilities of Hawassa, Sidama region, in 2023.

Methods: An institution-based cross-sectional study was conducted in July 2023 among 466 randomly selected health professionals in Hawassa public health facilities. Data were collected using a structured, self-administered questionnaire addressing demographics, knowledge, and attitudes toward the ethical code of conduct. Data entry was performed in Epi-data 4.6.0 and analysis in SPSS version 25. Descriptive statistics summarized participant characteristics. Bivariate logistic regression was used to identify variables for multivariable analysis, with a threshold of $p < 0.25$. Multicollinearity was assessed using variance inflation factor (VIF) and tolerance as part of linear regression diagnostics. Model fitness was checked using the Hosmer-Lemeshow test. Adjusted odds ratios (AOR) with 95% confidence intervals (CI) were reported; significance was set at $p < 0.05$.

Results: Out of the total participants, 334 (71.7%) had good knowledge of the ethical code of conduct. A favorable attitude was observed in 57.3% of respondents. Factors significantly associated with higher knowledge included profession (AOR = 0.405, 95% CI: 0.199–0.822), prior training on ethics (AOR = 2.644, 95% CI: 1.307–5.348), and experience with ethical dilemmas (AOR = 0.409, 95% CI: 0.194–0.861). Working in a general hospital (AOR = 0.710, 95% CI: 0.356–1.414) was not statistically significant.

Conclusion: Although the majority of health professionals demonstrated good knowledge of ethical codes, over two-thirds acknowledged the presence of a knowledge gap in medical ethics and legal medicine. This apparent contradiction suggests a potential discrepancy between perceived and actual knowledge. Therefore, it is essential for health authorities and institutional leaders to strengthen ethical training programs and facilitate structured experience-sharing platforms to bridge this gap and enhance ethical competencies among healthcare workers in Hawassa, Sidama region.

Keywords: Medical ethics, Health professionals, Ethical code of conduct, Ethiopia, Cross-sectional study

Introduction

Ethics in healthcare is essential for safeguarding patient rights, guiding clinical decision-making, and maintaining public trust. Globally, health professionals are expected to adhere to ethical standards that ensure respect, dignity, and fairness in the delivery of care (1,2). These standards are embedded in international frameworks, including the World Medical Association's (WMA) International Code of Medical Ethics and the Declaration of Helsinki, which outline physicians' duties to their patients, society, and profession (3). The WMA further advocates for the mandatory inclusion of ethics education in medical training to instill these principles from early stages of professional development (4).

Despite the widespread recognition of ethical principles, studies across the globe continue to report gaps in knowledge and practice among health professionals. In countries like Nepal and Sri Lanka, for instance, a considerable number of healthcare workers lack awareness of foundational ethical codes such as the Hippocratic Oath and the Nuremberg Code (5.6). This lack of knowledge can lead to ethical breaches, undermining the quality of care and patient safety. Poor understanding of ethical conduct also contributes to decreased trust in health systems, medical errors, and professional dissatisfaction - outcomes that can have long-term repercussions for public health (7,8).

In the Ethiopian context, the Health Professionals' Code of Ethics was formalized under Regulation No. 299/2013, followed by the establishment of the Federal Health Professionals Ethics Committee (FHPEC) in 2014. Professional associations such as the Ethiopian Medical Association (EMA), Ethiopian Midwives Association (EMwA), and Ethiopian Nurses Association (ENA) have developed guidelines to support ethical practice. However, evidence suggests these efforts are not yet fully effective (9,10,11). Researches conducted in different parts of Ethiopia revealed variable levels of ethical knowledge among healthcare professionals. A study at Saint Paul's Hospital found an average ethics knowledge score of 12.3 out of 23, indicating a notable gap. Similarly, only 30.4% of doctors in Addis Ababa, Ethiopia, were found to demonstrate good ethical practice, with knowledge identified as a key determinant. Other studies point to inconsistencies influenced by factors such as gender, professional rank, education level, and institutional support (10,11).

Study reports from other countries also showed similar trends. Reports of unethical conduct and patient complaints remain common, reflecting persistent challenges in ethical application within the healthcare system (12,13). These challenges are often more pronounced in resource-constrained

settings, where institutional support and access to ethical education may be limited (14).

This study was conducted to assess the level of ethical knowledge among health professionals in Hawassa, Ethiopia. It seeks to identify persistent gaps and challenges in ethical understanding and practice and to inform strategies that can improve ethical conduct and, by extension, healthcare quality. While the study may not resolve all systemic issues, it provides essential baseline data and practical recommendations to strengthen ethics education and policy implementation in local contexts (14).

Methods and Materials

Study Setting

This study was conducted in Hawassa City, the capital of Sidama Regional State, located approximately 275 km south of Addis Ababa, Ethiopia, and 1,125 km north of Nairobi, Kenya. Geographically, Hawassa lies between 6°55′0″ to 7°06′0″ N latitude and 38°25′0″ to 38°34′0″ E longitude. The city spans an area of 157.2 square kilometers and is subdivided into 8 sub-cities and 32 kebeles. It is bordered by Lake Hawassa to the west, the Oromia region to the north, Wendogenet Woreda to the east, and Shebedino Woreda to the south. According to the most recent data, the city has a total population of 409,810, nearly evenly split between men and women (15).

Hawassa hosts a total of 8 hospitals (4 public and 4 private, along with 1 university teaching hospital) and 12 health centers (11 public and 1 NGO run). The total number of health professionals employed in public health facilities is 1,778. This includes general practitioners, health officers, nurses, midwives, pharmacists, laboratory technicians, anesthetists, radiographers, and urban health extension workers.

Study Design and Period

An institution-based cross-sectional study was conducted from July 20 to 30, 2023**.**

Population, Inclusion and Exclusion Criteria

Study Population

The source population comprised all health professionals working in governmental health facilities in Hawassa City. The study population included only those health professionals working in the randomly selected public health facilities within the city during the study period.

Inclusion Criteria

Health professionals including physicians, health officers, nurses, and midwives who were actively employed in the selected public health facilities.

Exclusion Criteria

Health professionals who had resigned or were on extended leave**,** or had less than six months of work experience at the time of data collection were excluded. Other professional categories such as laboratory technicians and pharmacists were excluded

from the final sample because the study specifically targeted frontline clinical staffs who routinely engage in direct patient care and are most frequently involved in ethical decision-making scenarios. This focus aligns with the study objectives of assessing knowledge and attitudes towards medical ethics in clinical contexts.

Sample Size Determination and Sampling Procedure

Sample Size Determination

Sample size was calculated based on two primary objectives:

Estimating the proportion of health professionals knowledgeable about ethical codes:

Assumed proportion: 60% (based on a previous study conducted in Ethiopia in 2020). **Confidence level**: 95%; **Margin of error**: 5%; **Initial sample size**: 368 with 10% non-response rate: Final sample = 405. Identifying factors associated with knowledge of ethical codes: **Main factor**: Prior training in medical ethics Assumptions: AOR = 1.73, 95% CI, power = 80%, outcome among unexposed = 29% Resulting sample size = 466. The larger sample size (466) was selected to ensure sufficient power for both objectives. Additionally, finite population correction was applied since the source population (1,778) was less than 10,000. A design effect of 1.5 was applied to account for the use of cluster sampling.

Sampling Technique: A multi-stage sampling approach was used

Facility Selection: Five public health facilities (3 health centers and 2 hospitals) were selected using simple random sampling.

Sample Allocation: A proportional allocation method was applied based on the number of eligible professionals in each facility: Adare General Hospital (n=307) →196; Tilte Health Center (n=95)→61, Alamura Health Center (n=97)→62; Millennium Health Center (n=102)→65; Motite Fura Primary Hospital (n=128)→82.

Final Participant Selection:

A sampling frame was prepared for each facility by professional category (physician, nurse, midwife, health officer). Final participants were selected using simple random sampling within each category to ensure representativeness.

Study Variables

Dependent Variable

Knowledge of the ethical code of conduct

Independent Variables

Sociodemographic Factors: Age, sex, religion, profession, educational status, years of work experience Institutional/Professional Factors: Type of health facility exposure to ethics education during undergraduate training, availability of in-service medical ethics training Experience with ethical dilemmas in clinical practice Availability of a system for reporting unethical conduct Attitudinal Factors: Attitudes toward ethical codes and ethical behavior in healthcare

Methods and Materials

Data Collection Instrument, Procedure, and Quality Assurance

Instrument Development and Pilot Testing

A structured, self-administered questionnaire was developed based on validated tools from previous studies. It included three main sections: socio-demographic and professional background, attitudes toward ethical conduct, and knowledge of ethical codes. To ensure its clarity, reliability, and contextual relevance, a pilot test (not a pre-test, which generally occurs before finalizing the design phase) was conducted with 10% of the calculated sample size (Approximately 47 participants) at Yirgalem General Hospital**,** located outside Hawassa. This population was excluded from the main study to prevent bias. The feedbacks from the pilot study were used to refine the language, structure, and flow of the questions. Adjustments were made for cultural appropriateness and clarity.

Structure of the Questionnaire

Knowledge Assessment: 15 **true/false** questions assessed factual knowledge on ethical codes. Each correct answer scored 1 point; incorrect or "don't know" responses scored 0.

Attitude Assessment: 10 **5-point Likert scale** items (from "strongly disagree" to "strongly agree"). Some items were reverse-coded to reduce response bias.

Socio-demographic Section: Captured age, sex, marital status, profession, work experience, education, and related variables.

Data Quality Control

The questionnaire was translated into Amharic and back-translated into English to ensure consistency. Data collectors were trained on study protocols. Daily supervision and checking were conducted to ensure completeness and consistency.

Operational Definitions

Good Knowledge: Correctly answered ≥ 60% (≥9 out of 15**)** knowledge questions. The 60% cut-off is based on prior studies and is commonly used in similar contexts (16).

Poor Knowledge: < 60% correct answers.

Favorable Attitude: A total attitude score above the sample mean**.**

Unfavorable Attitude: A score equal to or below the sample mean.

Ethical Dilemma: Operationalized as facing a situation during professional duties where the appropriate ethical course of action is unclear or conflicting values exist. The frequency and types were measured by a multiple choice item.

Data Analysis and Processing

The collected data were carefully processed through several stages to ensure quality and analytical accuracy. Data entry was completed using Epi-Data version 4.6.0, followed by exportation to SPSS version 25 for statistical analysis. Descriptive statistics were employed to summarize the socio-

demographic and institutional characteristics of the respondents. Continuous variables such as age and years of work experience were described using means and standard deviations (±SD), while categorical variables were presented as frequencies and percentages. To ensure the reliability of the data collection instrument, internal consistency was assessed for the knowledge and attitude sections separately: Cronbach's alpha (17) was used to measure the internal consistency of each scale. A threshold of $\alpha \geq 0.70$ was considered acceptable. The attitude section yielded an alpha of 0.79, while the knowledge section returned an alpha of 0.72, indicating good internal consistency for both. In addition to Cronbach's alpha (17), item-total correlation coefficients were calculated to assess the contribution of individual items to the overall scale. Items with correlation coefficients below 0.3 were reviewed for potential removal or revision. Inter-item correlation matrices were generated to check the homogeneity of scale items. Acceptable values ranged between 0.15 and 0.50. Outliers outside this range were evaluated for redundancy or poor fit. These steps ensured that the measurement scales were internally consistent and conceptually coherent, which strengthens the validity of subsequent analyses namely bivariable and multivariable analysis. To explore the factors associated with the level of knowledge on the ethical code of conduct, binary logistic regression was used: A bivariable analysis was first conducted to identify candidate variables for the multivariable model. Variables with a p-value < 0.25 in the bivariable analysis were retained for inclusion. A multivariable logistic regression model was constructed to adjust for confounding variables and assess the independent association of each factor with the outcome variable (good vs. poor knowledge). Several diagnostic tests were conducted to evaluate the performance and assumptions of the regression model: Multi-collinearity was assessed using the Variance Inflation Factor (VIF) and tolerance values. All VIFs were below 5, indicating an acceptable level of collinearity among the independent variables. The Hosmer-Lemeshow goodness-of-fit test (18") was used to assess how well the model fit the observed data. A p-value > 0.05 indicated good model fit. Wald statistics were examined to determine the significance of individual coefficients within the model. The model's explanatory power was further assessed using Nagelkerke's R^2 (19), providing insight into the proportion of variance explained by the included factors. The strength of association between the outcome and independent variables was expressed using Adjusted Odds Ratios (AOR) with 95% Confidence Intervals (CI). A p-value of < 0.05 was considered statistically significant. All numeric results were rounded to two decimal places for clarity and consistency

Results

Socio demographic characteristics of participants

A total of 466 healthcare professionals from governmental health institutions in Hawassa City participated in the study. The majority were female (59.4%), with most aged 25-34 years (63.3%). More than half (51.7%) of the participants were single. The religious distribution was Protestant (46.6%), Orthodox (44.0%), and Muslim (9.4%) (Table 2).

Table 2: The socio-demographic characteristics of study participants

Variables	Frequency	Percent (%)
Age		
<25 years	44	9.4
25 - 34 years	295	63.3
≥35 years and above	127	27.3
Sex		
Male	189	40.6
Female	277	59.4
Religion		
Orthodox	205	44.0
Muslim	44	9.4
Protestant	217	46.6
Marital status		
Single	241	51.7
Married	225	48.3

Out of all participants, 75.1% had ≥ 2 years of work experience. The most common profession was nursing (42.3%), followed by physicians (23%), midwives (18.5%), and health officers (16.3%). Among nurses, the majority were BSc holders (61.9%)(Figure 1).

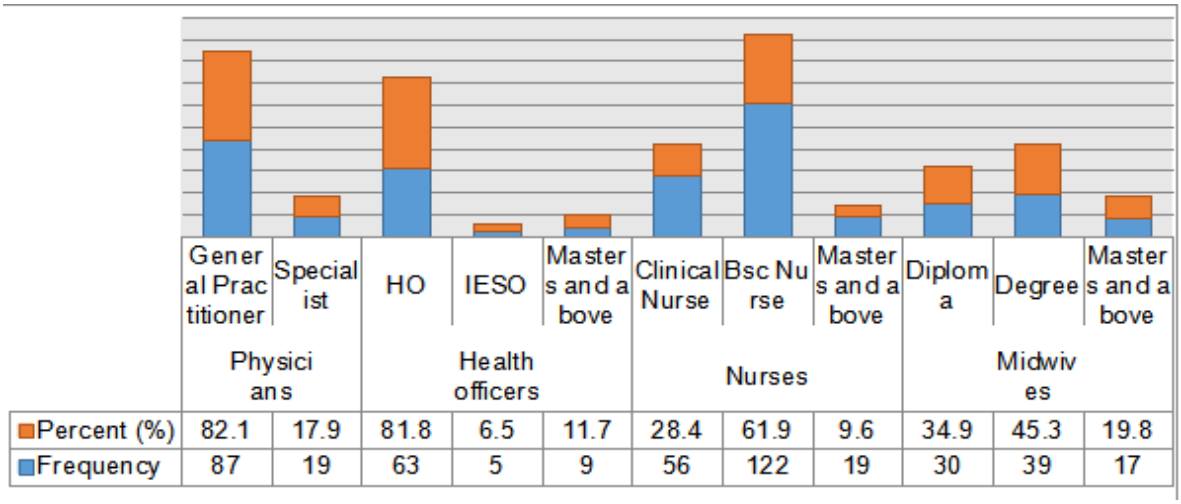

Figure 1: The Educational backgrounds and specializations among the participating health professionals

Facility related characteristics of the participant

Regarding (a) **workplace,** 42.7% were based in general hospitals**,** 39.3% in health centres**,** and 18**%** in primary hospitals**;** (b) **Ethics training:** only 71.2% reported receiving ethics education in Colleges**,** and 18.7**%** received on-the-job ethics training**. (c) Ethical dilemma frequency:** 31.3% experienced ethical dilemmas daily or weekly**,** while 8.8% reported never facing any dilemma - this may be subject to recall bias or underreporting**,** especially if ethical dilemmas were not recognized or documented. System Awareness: Only 56.7**%** were aware of a functional system for reporting unethical conduct (Figure 2).

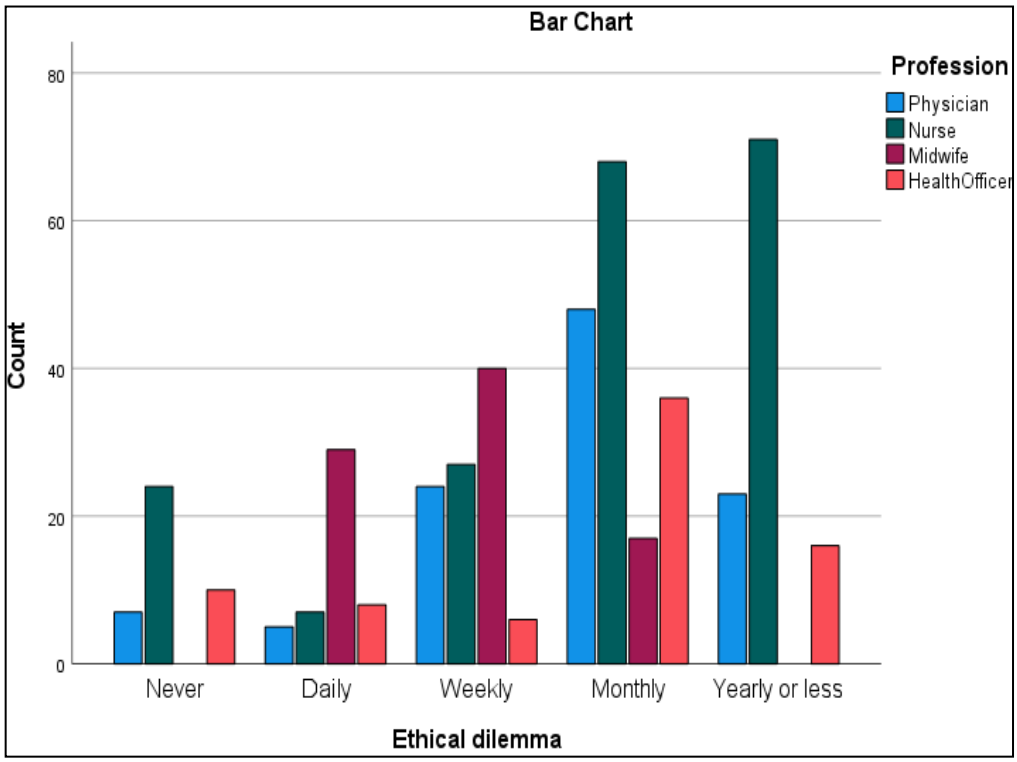

Figure 2: The frequency of ethical dilemmas faced by health professionals in Hawassa, Sidama

Pertaining to the choice of consultant for ethical dilemma at workplace, 143 (30.7%) chose hospital administration followed by colleagues 131 (28.1%) and immediate senior 120 (25.8%). On the presence of functional system for reporting and handling unethical conduct in the health facility 264(56.7%) answered "**Yes**" while 70 (15%) answered "**No**". The rest 132 (28.3%) do not know if such system exists in the facility or not. The commonest source of knowledge on healthcare ethics and law among participants is experience 155 (33.3%) followed by person's own reading 111 (23.8%) and training 106 (22.7%) (Figure 3).

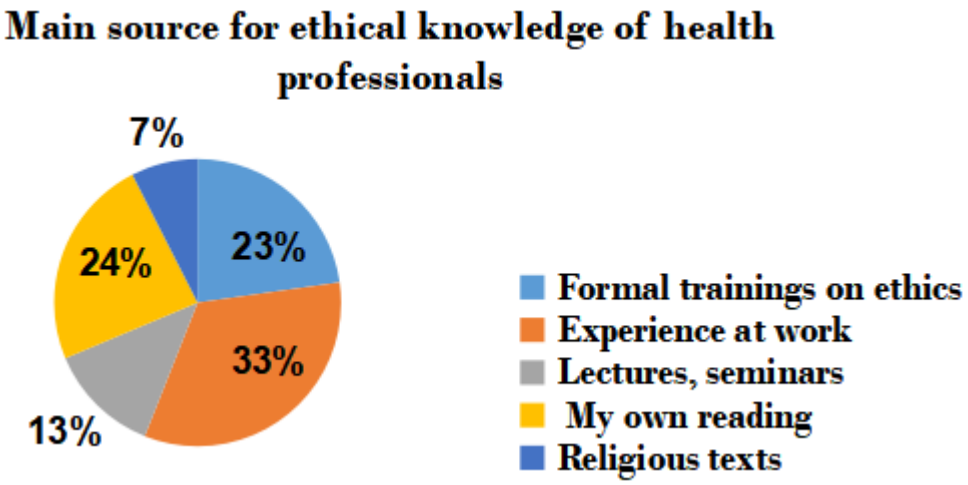

Figure 3: The main source for ethical knowledge of health professionals in Hawassa, Sidama region

Magnitude of health professionals Knowledge of ethical code of conduct

According to the findings of the study out of the 466 health professionals 334(71.7%) of them had good knowledge of ethical code of conduct and 132 (28.3%) had poor knowledge (Figure 4). The mean score (±SD) of the participants (out of 15 marks) was 10.76 (±2.62). The lowest score recorded was 5 with frequency of 1 and highest 15 with frequency of 36. The highest mean score by profession was among physicians 12.3 followed by 10.82 (±2.55) of health officers. The mean score of midwives was 10.24 (±2.58) and nurses 10.13 (±2.5). When we further look into the mean knowledge score with respect to educational level of the participants, specialist physicians top the list with 13.63 (±1.46) mean score followed by Health officers with master's degree with 12.78 (±1.48) and nurses with master's degree with 12.47 (±2.29) (Table 5).

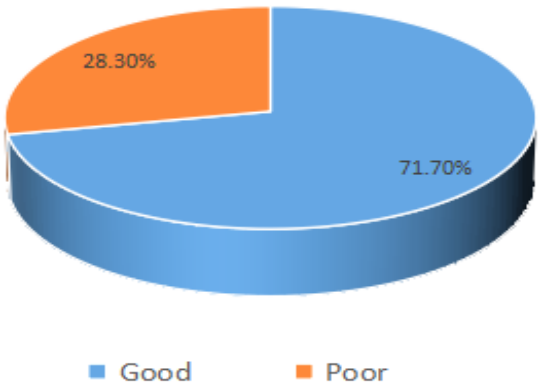

Figure 4: The ethical code knowledge level of health professionals in Hawassa city Sidama region, 2024

Table 5: The average knowledge score by educational level and profession of health care workers in Hawassa city, Sidama region

Health profession	Mean	N	SD (±)
PHYSICIANS			
General Practitioner	12.00	87	2.372
Specialist	13.63	19	1.461
HEALTH OFFICERS			
HO	10.43	63	2.563
IESO	12.60	5	1.517
Masters and above	12.78	9	1.481
NURSES			
Clinical Nurse	8.93	56	2.529
Bsc. Nurse	10.32	122	2.220
Masters and above	12.47	19	2.294
MIDWIVES			
Diploma	8.73	30	2.100
Degree	10.59	39	2.414
Masters and above	12.12	17	2.342

All health officers who had Masters and above along with all specialist physicians enrolled in the study had good ethical knowledge. On the contrary, midwives with diploma and clinical nurses have the highest number of participants with poor knowledge with 73.3% and 58.9%, respectively. Knowledge on ethical code of conduct among different educational levels is summarised below (Figure 6).

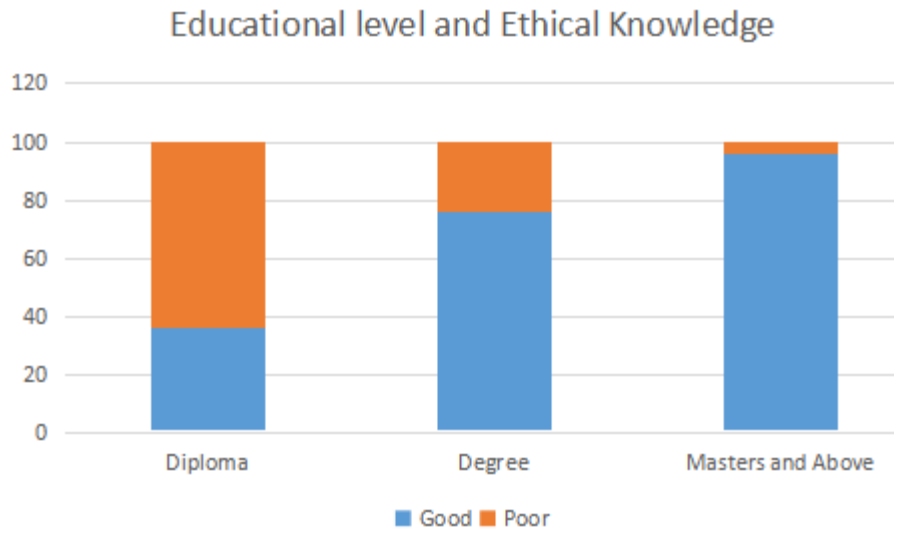

Figure 6: The ethical knowledge and educational level of health professionals in Hawassa city, Sidama region

Attitude of health professionals on ethical conduct

Out of all the health professionals involved in the study 57.3% were shown to have favourable attitude while the remaining 42.7% had unfavourable attitude. Of the participating professionals 70.4% agree that most health professionals have inadequate

knowledge on ethical codes of the profession. And 92.7% agreed that adequate knowledge on health care ethics will improve healthcare service provided for patients. Similarly, vast majority (96%) agreed that in-service training on ethical codes is necessary for health professionals and 80.2% of the participants are interested to learn more on their respective codes of ethics if given the opportunity. Regarding duty to provide care in an emergency case outside the working setting only 35.8% agreed while 38.2% did not consider it their duty to provide care outside work setting (Table 6).

Table 6: The attitude of health professionals on ethical issues, Hawassa city, Sidama region

Attitudinal question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	±SD
Professionals with adequate knowledge on healthcare ethics will improve health care service provided for patients	62%	30.7%	4.7%	2.6%	0%	4.52	0.7
In service training on ethical code of conduct is necessary for health professionals.	59.4%	36.5%	2.6%	1.3%	0.2%	4.54	0.63
I am interested to learn more on ethical codes of my profession, if given the opportunity	51.9%	28.3%	17.8%	1.5%	0.4%	4.3	0.84
Most health professionals have inadequate knowledge on their code of ethics and legal medicine	28.8%	41.6%	19.5%	8.8%	1.3%	3.88	0.96
Health professionals should never use their knowledge to harm another person.	52.1%	29.4%	12.4%	4.3%	1.7%	4.26	0.95
Health professionals should consider the patient's religious and cultural views while providing care.	35.2%	41.2%	15.2%	6.2%	2.1%	4.01	0.97
It is important to seek additional education to update knowledge and skills.	39.1%	45.3%	11.6%	3.0%	1.1%	4.18	0.83
Ethical conduct is only important to avoid legal action.	21.0%	47.4%	16.5%	11.6%	3.4%	2.29	1.03
A patient is a patient, not a partner in his/her care.	11.4%	28.1%	25.8%	26.8%	7.9%	2.92	1.14
I have no professional duty to provide care in an emergency case outside the working setting.	11.4%	24.2%	26.2%	29.0%	9.2%	3.00	1.16

Factors Associated with Ethical Knowledge

Out of the independent variables considered profession (AOR=0.405 CI: (0.199,0.822)), trainings on code of ethics at work place (AOR= 2.644 CI: (1.307,5.348)) type of health facility (AOR: 0.710 CI:(0.356,1.414)), having favourable attitude

(AOR =0.456 CI:(0.287,0.723)) and facing ethical dilemma (AOR= 0.409 CI:(0.194,0.861)) all showed significant relationship with ethical knowledge level with p value < 0.05 (Table 7). On the contrary, no statistically significant relationship was observed between ethical knowledge and sex, age, marital status, work experience or presence of unethical conduct handling system in the facility. The Table (Table 7) summarises all the variables with P<0.25 in univariate analysis that were further considered for multivariate analysis with their respective adjusted odds ratios and P-values.

Table 7: The associated factors with Level of knowledge of health professionals in Hawassa city, Sidama region

Items	Category	Knowledge		COR	AOR	P value
		Good	Poor			
Marital Status	Single	180	61	1.36(0.9,2.03)	1.458 (0.934, 2.277)	0.097
	Married	154	71	1	1	
Type of health facility	Health centre	118	65	0.98(0.54,1.80)	0.542(0.324,0.905)	**0.019***
	Primary Hospital	64	20	0.56(0.35,0.87)	0.710 (0.356,1.414)	0.329
	General Hospital	152	47	1	1	
Training on code of ethics	Yes	86.2	13.8	2.89(1.51,5.52)	2.644(1.307,5.348)	**0.007***
	No	68.3	31.7	1	1	
Ethical dilemma	No	20	21	0.33(0.17,0.64)	0.409 (0.194,0.861)	**.001***
	Yes	314	111	1	1	
Ethics course in college	Yes	254	78	1	1	
	No	28	21	0.40(0.22,0.76)	1.548 (0.870,2.754)	2.754
	I do not remember	52	33	0.48(0.29,0.80)	0.802 (0.362,1.776)	1.776
System for handling unethical conduct	Yes	193	71	1	1	
	No	53	17	1.35 (0.86,2.13)	1.530 (0.912,2.565)	0.107
	I don't Know	88	44	1.55 (0.80, 3.00)	1.412 (0.673,2.961)	0.362
Profession	Physician	95	12	1	1	
	Health Officer	60	16	2.1 (0.93, 4.77)	0.298 (0.138,0.644)	**0.002***
	Nurse	128	69	0.49 (0.26,0.92)	1.329 (0.545,3.244)	0.532
	Midwife	51	35	0.38(0.19, 0.78)	0.405 (0.199,0.822)	**0.012***
Attitude	Favourable	208	59	1		
	Unfavourable	126	73	0.49(0.32,0.73)	0.456 (0.287,0.723)	**0.001***

Discussion

The data of the present study revealed that 71.7% of the participated health professionals had good knowledge on ethical codes (Figure 4). This is in line with the findings of other studies conducted in similar socio-economic settings. One good example is the study conducted among medical doctors practicing in Addis Ababa, Ethiopia,

which reported 75% good knowledge (10). Nurses working in Cape coast city of Ghana with knowledgeable nurses of 78% (19). The ethical knowledge level of health professionals from this research is higher than other similar studies like the one that was conducted in Gondar, Ethiopia, which reported good level of knowledge only in 59% of the health professionals (20). This discrepancy can be explained by the difference in methodology such as the included professions and the scope of the studies. The study conducted in Gondar, Ethiopia, involved ten different types of health professionals like lab technicians, environmental workers, and physiotherapists with less patient contact and decision making. It also assessed only the knowledge specifically in one area of ethics that is patient confidentiality. The study found that 57.3% of health professionals had a favourable attitude towards ethical issues. This is supported by other studies, such as one conducted in Addis Ababa, Ethiopia, which reported a favourable attitude of 60.6% (10). These findings align with broader literature on ethical attitudes among health professionals in different regions, highlighting the importance of context and content in ethics education (21-25).

In the present study, 92.7% of the participants agreed that ethical knowledge of health professionals is essential in providing quality health service, and also the majority of the health professionals (70.4%) have agreed that most health care workers have inadequate knowledge on their code of ethics and legal medicine. Fortunately, 80.2% of the participants showed interest to learn more on ethical codes if given the opportunity. Popular sources for ethical knowledge of health professionals were found to be experience at work, own reading and formal trainings on ethics. These finding with literature reports of studies conducted in in Nepal (5) and Barbados (26).

The vast majority of the participants (91.2%) answered that they have experienced ethical dilemma at work place to some degree. Out of which 67.6% reported, they face ethical dilemma at least once a month. From the professionals participated in the study, midwives reported to be facing ethical dilemmas most frequently (with 80.2% of the midwives reporting to have faced ethically perplexing scenarios at least on a weekly basis). This can be attributed to the fact that midwives provide services in reproductive health such as delivery, family planning and abortion which can be morally ambiguous. This finding hints at which profession to prioritise, when providing ethical support and trainings for health workers in resource limited setups (27).

According to findings of this study, the highest mean score on ethical knowledge questions was from specialist physicians with 13.63±1.461. Specialist doctors were similarly reported to have a better ethical knowledge on several other studies, like the one in Nepal (1.5) and in a study in a

teaching hospital at Manipur, India (28). The possible explanation could be attributed to the fact that specialist physicians are more likely to attend trainings and workshops as they are involved in crucial decisions regarding patient care. Moreover, they are the ones primarily engaged in teaching activities, which prompts further reading and exploration.

Another striking finding from our study is the negative correlation of academic level of health professionals and their ethical knowledge level. According to the results, the percentage of nurses with poor ethical knowledge drops from 58.9 % among clinical nurses to 27.9% among BSc nurses and it further drops to a staggering 10.5% among nurses with masters and above. This pattern is also seen in midwives and health officers. Similar results were reported by prior studies in Ghana (19) and Barbados (26). From the participating health professionals, only 71.3% answered "Yes, I have taken ethics course in College". This result revealed lower coverage of ethics training in our study area as compared to data reported from similar studies from Addis Ababa, Ethiopia (10), and hospitals in Taif Government, Kingdom of Saudi Arabia (29) that reported 91% and 86.9%, respectively, participating health professionals had studied medical ethics (21). Moreover, the study revealed that out of the considered variables, getting trained on medical ethics (AOR = 2.644, 95% CI: 1.307–5.348), having a favourable attitude towards ethical issues (AOR = 0.456, 95% CI: 0.287–0.723), profession (AOR = 0.298, 95% CI: 0.138–0.644), and type of health facility (AOR = 0.542, 95% CI: 0.324–0.905). This showed significant association of training with the level of ethical knowledge among health practitioners. This is also consistent with the findings of other studies reported in literatures (20, 21)

As mentioned above, the present study similarly demonstrated that health professionals with unfavourable attitudes (<55%) were less likely to have good ethical knowledge. A possible explanation for this finding is that those with favourable attitudes are often more curious and motivated to learn about ethical issues, thereby improving their understanding and awareness of ethics in clinical settings (21,23). According to the present study, health professionals practicing in health centres were 29%, and less likely to have good ethical knowledge compared to those working in general hospitals**.** This could be due to the narrow scope of service provided in health centres which may which may limit exposure to complex and ethically challenging clinical situations. Furthermore, resource limitations in health centres may restrict opportunities for formal ethics training (24,29).

A limitation of the present study was the challenge in developing a reliable and fair questionnaire capable of accurately estimating the knowledge and attitudes of

various health professionals. Although the core principles of medical ethics are universally applicable across all healthcare professions, variations in roles, responsibilities, and accountabilities introduce differences in how these principles are applied in practice (30,31). Another limitation was the cross-sectional nature of the study, which identifies associations between variables but does not establish causality (24,32). Reflecting on the findings and limitations, the importance of tailored ethics education that considers the context and professional diversity is crucial (22, 25, 33).

Conclusion

The study described that majority of health professionals agreed that there is a knowledge gap regarding medical ethics and legal medicine amongst themselves. Fortunately, vast majority of health professionals are eager to learn more on the topic if the opportunity presented itself. This suggests that healthcare workers are interested to learn more and rectify this knowledge gap.

The study demonstrated that health professionals who got the privilege of attending trainings on ethics had significantly higher score on ethics knowledge. This emphasises the role of organising trainings, workshops or seminars on medical ethics to improve their ethics knowledge. The study also described that commonest sources for ethical knowledge of health professionals were experience at work, own reading and formal trainings on ethics. This implies that in addition to setting up trainings to update health professionals on ethical codes, it is equally important to provide them with reading materials and arrange experience sharing platforms where real cases can be discussed at work place.

It was found that the percentage of health professionals who took formal ethics course in health science colleges were lower than reported on other prior studies. This suggests that the mandatory ethics and legal medicine courses proposed in health science curriculums are not being executed accordingly. Additionally, the percentage of participants who replied that they do not remember if they took ethics course or not (18.2%) implies that even when ethics course is provided it is not delivered in such a manner where it is practical and impressionable. This hints that the curriculum for ethical education could benefit from a review and revitalisation.

The level of education was one factor that was described in this study. The knowledge level was seen to increase as the academic rank of the health professional increases. This articulates the need for encouraging and supporting health professionals to pursue further education and upgrade themselves.

List of Acronyms and Abbreviations

AOR	Adjusted Odds Ratio
COR	Crude Odds Ratio
CI	Confidence Interval
EFMHACA	Ethiopian Food, Medicine and Healthcare Administration and Control Authority
EMA	Ethiopian Medical Association
ENA	Ethiopian Nurses Association
EmWA	Ethiopian Midwives Association
FHPEC	Federal Health Professionals Ethics Committee
HEC	Hospital Ethics Committee
WMA	World Medical Association

Declaration

Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Ethics Approval and Consent to Participate

Primarily an ethical approval letter was obtained from Pharma College Institutional Research Ethics Review Committee (PC-IRERC). Informed written consent was obtained from all respondents after an explanation of the purpose of the study. Confidentiality of the participant's response was maintained by excluding personal information like the patients' name or card number throughout the study.

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Consent for publication

Not applicable.

Availability of data and materials

For those who are interested; the datasets of this study could be accessed from the corresponding author on reasonable request

Author contributions

TT: Conceived, designed the study, supervised the data collection, performed the analysis, interpretation of data and drafted

the manuscript and approved the final manuscript. WS, SE, SK, MGE, WG: Supervised the data collection, performed the analysis, interpretation of data and approved the final manuscript.

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