Research Article

Exploring Ethical Perspectives in Laboratory Medicine: A Survey of Laboratory Professionals at the Annual Conference in Nepal

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Keywords

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Abstract

This study aimed to explore the ethical perspectives of laboratory professionals in Nepal regarding laboratory medicine practices. A survey was conducted among participants at the annual conference of laboratory professionals in Nepal in April 2024, with a total of 32 complete responses collected. The survey consisted of questions categorized into three phases of laboratory practice: pre-examination (4 questions), examination (4 questions), and post-examination (5 questions). Each section addressed specific ethical considerations and practices within these phases, including issues related to sample collection, testing accuracy, result interpretation, and reporting. The responses were analyzed to identify trends, challenges, and areas where ethical standards in laboratory medicine could be improved. The findings highlight the need for greater awareness and training in ethical practices, with particular emphasis on improving consistency and transparency across all phases of laboratory work.

Background

Laboratory medicine plays a critical role in diagnosing, monitoring, and guiding the treatment of patients, making it essential to uphold high ethical standards throughout its processes. Ethical challenges in laboratory medicine can arise at various stages, including the pre-examination, examination, and post-examination phases each of which requires adherence to professional and ethical guidelines to ensure patient safety, privacy, and the reliability of results.

In Nepal, the healthcare system, including laboratory services, faces unique challenges such as limited resources, lack of standardized protocols, and variable training opportunities for laboratory professionals [1]. These challenges can exacerbate ethical concerns and impact the quality of laboratory services. Despite the importance of ethical decision-making in laboratory medicine, there is limited research exploring the specific ethical perspectives and practices of laboratory professionals in Nepal.

The standardization and harmonization of methods, reference intervals, test names and practices in laboratory medicine, have been central efforts of the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC), as well as national societies affiliated with IFCC. Given that Nepalese Association for Clinical Chemistry (NACC) is the national society, we believe this platform of annual congress is ideal for conducting the survey, as it includes members from across the country and from various types of laboratories, ensuring that the survey results will be broadly applicable. By conducting a survey at this event, this study aims to identify common ethical concerns among laboratory professionals in Nepal, assess the awareness and understanding of ethical principles across different laboratory phases, and identify areas for improvement in ethical training and practice.

Methods

This cross-sectional survey was conducted during the NACC Annual Congress in April 2024, targeting registered laboratory professionals attending the event, which was held in Kathmandu. [2]. A structured, self-administered questionnaire, which included informed consent and additional measures, was printed and distributed to the attendees. Participation in the survey was voluntary. Survey of this nature was exempted from ethics approval at the institution where this survey was performed. This study ensured strict anonymity and confidentiality of the collected data. The questionnaire consisted of 15 questions categorized into three phases of laboratory practice: pre-examination (4 questions), examination (4 questions), post-examination (5 questions) and others (2 questions). These questions were developed based on a review of relevant literature and consultation with expertise in the field. The questionnaire was then reviewed and approved by an independent expert in laboratory medicine. For face validity, the expert assessed the clarity and appropriateness of the questions. For content validity, the expert evaluated whether the questionnaire adequately covered key ethical aspects in laboratory medicine. While formal statistical validation was not performed, expert feedback was incorporated to refine the questionnaire. The questions were primarily multiple-choice, with respondents allowed to select more than one option. A total of 32 complete responses were received. Data were summarized using descriptive statistics, and all analyses were performed using Microsoft® Excel® 2019.

Results

There were total 32 responses which included 18 participants from various medical colleges and 14 from private laboratories. The participants' experience in laboratory medicine varied, with the distribution of years of experience as follows:

- 1–5 years: 19 participants
- 6–10 years: 4 participants
- 11–15 years: 6 participants
- 16–20 years: 3 participants

The responses to the questions were analyzed and are presented below. The total of 32 responses may not be reflected in some questions due to participants skipping certain questions. On assessing ethical practices in the pre-examination phase, the majority (72%) reported encountering ethical dilemmas occasionally, while 19% frequently faced such issues (Figure 1). Common ethical challenges included sample mislabeling, inadequate sample collection and improper sample transportation and storage (Figure 2).

Figure 1: Frequency of encounter with ethical issues in preanalytical phase.

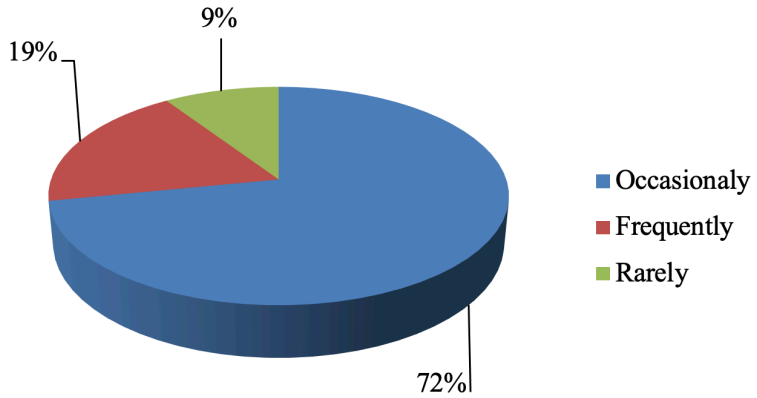
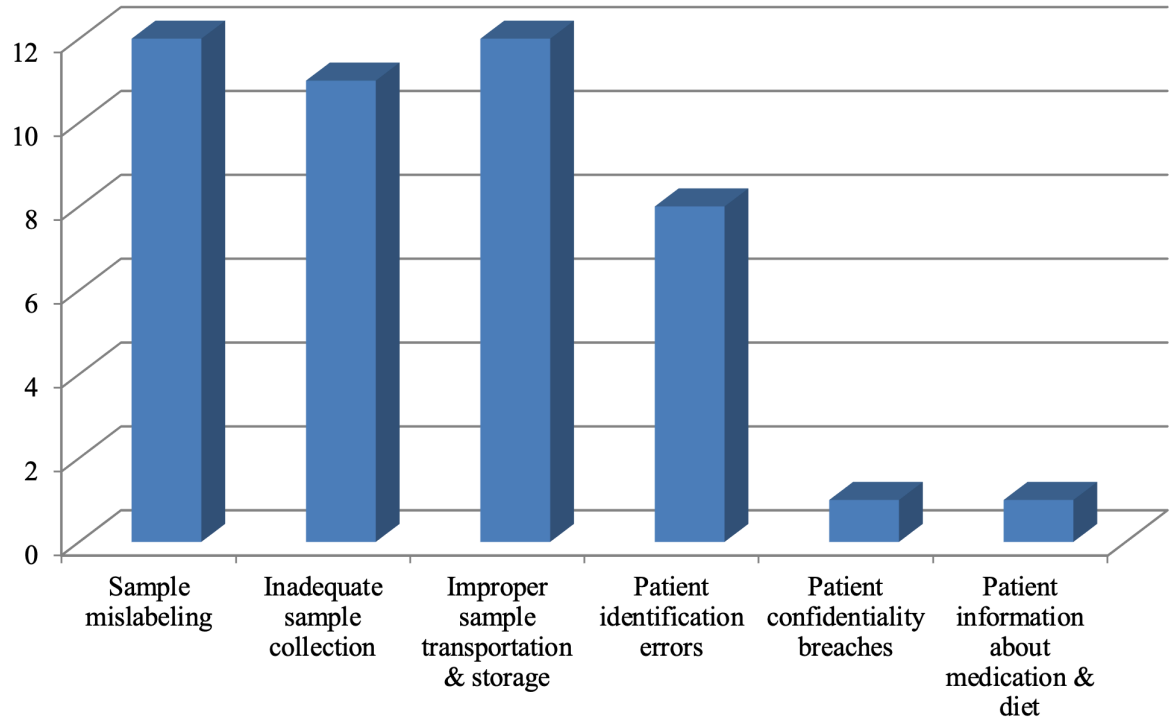


Figure 2: Types (X-axis) and Number of Responses (Y-axis) of ethical issues encountered in the preanalytical phase.



A significant number of respondents confirmed that all patients were treated equally during sample collection without preference, and they affirmed that tests performed were necessary and beneficial based on the best medical evidence (Table 1).

Table 1: Response to other questions in pre-examination phase.

Question: Pre-examination Phase	Choice	Response (number)	Response(Percentage)
Is equal treatment given to all patients during the sample collection process without preference or expedited handling?	Yes	26	86.60%
	No	4	13.30%
Do you consider that all test performed are necessary and beneficial to the patient based on the best medical evidence?	Yes	27	90.00%
	No	3	10.00%

Our study found that 100% of laboratory professionals reported refusing to analyze specimens when there were pre-examination issues and confirmed that their laboratories ensured equal treatment of all patient samples (Table 2). All respondents confirmed they ensure timely access to results, especially in emergencies, regardless of payment status. While 75% were aware of bio-banking rules and ethical considerations, only 60% had formal policies on residual sample use, revealing a gap in standardized ethics. Additionally, only 73.33% obtained patient consent for further testing of leftover samples. Lastly, 66.67% offered patients the option to consent to family members accessing their medical records (Table 3).

Table 2: Response to questions in examination phase.

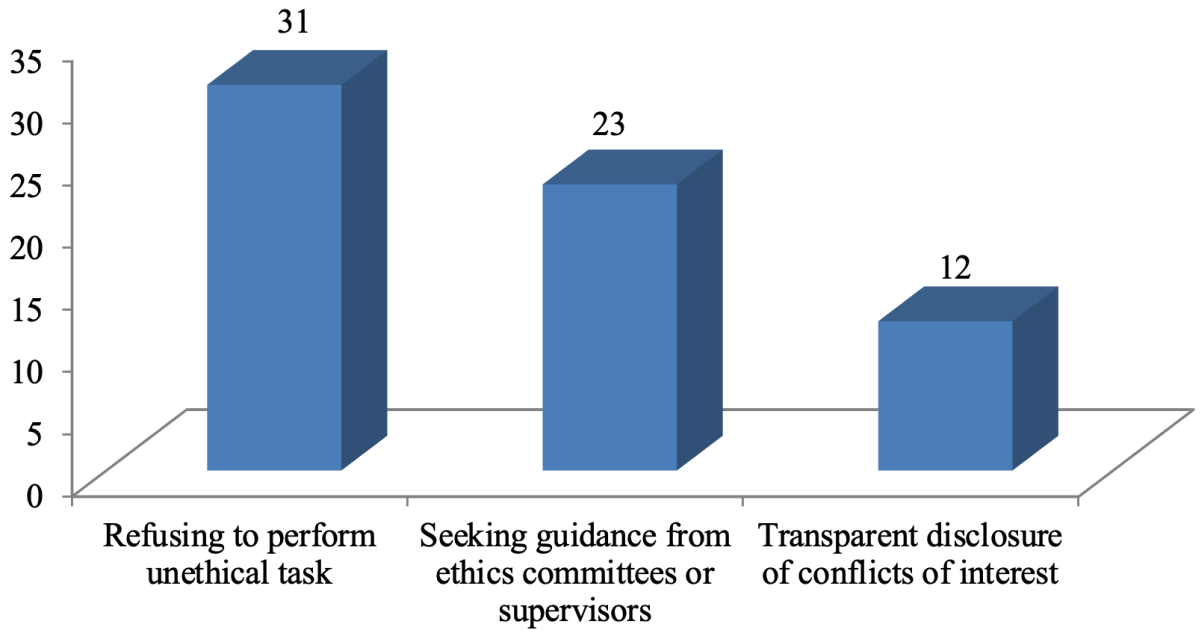
Questions: Examination Phase	Choice	Response (number)	Response (Percentage)
Do you refuse to analyze when there is evidence of poor sample integrity, incorrect or poor labeling and other deficiencies that may compromise the test result?	Yes	32	100%
Are rigorous quality assurance programs, including quality control and proficiency testing and laboratory accreditation, established in your laboratory?	Yes	31	96.60%
	No	1	3.30%
Does your laboratory ensure equal treatment of all patient samples without discrimination based on gender, age or ancestry?	Yes	32	100%
Are special care and measures taken to maintain confidentiality in point-of-care testing settings?	Yes	31	96.60%
	No	1	3.30%

In response to the question, "Do you think sufficient training and education regarding ethics in laboratory medicine is provided to us in Nepal?" our study reveals a significant gap in laboratory ethics training, with 70% of professionals reporting insufficient education in this field. While 23.33% felt adequately trained, the findings underscore the need for greater integration of ethics into laboratory curricula. In response to the question, "How do you handle conflicts of interest or pressures that may compromise professional integrity in laboratory medicine?" 42.86% of participants reported refusing unethical tasks, demonstrating a commitment to integrity. Additionally, 25% seek guidance from ethics committees or supervisors, and 12.50% disclose conflicts of interest (Figure 3). Fewer respondents used a combination of these approaches, highlighting the importance of mentorship and transparency in addressing ethical issues.

Table 3: Response to questions in post- examination phase.

Questions: Post Examination Phase	Choice	Response (number)	Response (Percentage)
Do you ensure timely access to results, especially in emergency situations, regardless of payment status?	Yes	32	100%
Are you aware of the rules and practices regarding bio-banking of leftover specimens and associated ethical considerations?	Yes	24	75.00%
	No	8	25.00%
Do you have a policy on the use of residual samples, considering ethical issues and patient consent?	Yes	18	60.00%
	No	12	40.00%
Do you obtain patient consent for any further testing of residual samples beyond the requested laboratory tests?	Yes	22	73.30%
	No	8	26.60%
Are patients given the option to provide consent for others (such as family members) to access their medical records?	Yes	20	66.60%
	No	10	33.30%

Figure 3: Response of participants to ethical dilemma (X-Axis) and Number of participants (Y-axis).



Discussion

Our study highlights key ethical challenges and practices in the pre-examination, examination, and post examination phases of laboratory medicine in Nepal. The pre-examination phase is marked by ethical concerns such as proper patient identification, informed consent, and confidentiality. Most participants encountered ethical dilemmas occasionally, with issues such as sample mislabeling, inadequate collection, and improper storage being the most common. A majority ensured equal treatment of patients and affirmed that tests performed were beneficial based on medical evidence, indicating a strong commitment to ethical practices.

In the examination phase, confidentiality and sample integrity emerged as significant concerns. These may happen particularly in smaller laboratories and point-of-care settings. A robust quality assurance program, including proficiency testing and laboratory accreditation is essential to ensure the accuracy and reliability of results. Our findings suggest that laboratory professionals maintain high ethical standards in this phase, with 100% confirming that sample integrity is a priority and that all patients are treated equally, regardless of gender, age, or ancestry. Moreover, special care is taken to preserve confidentiality, highlighting the importance of maintaining trust in laboratory services.

The post examination phase focuses on the ethical management of patient results, including specimen storage, retention, and destruction, as well as safeguarding patient confidentiality. While 100% of respondents reported ensuring timely access to results, regardless of payment status, there were gaps in formal policies regarding the use of residual specimens and obtaining patient consent for further testing. Therefore, there is a need for clearer policies and more education around bio-banking and specimen use. In resource-limited settings, the handling of leftover samples becomes a challenge, as highlighted in the published report [3]. Additionally, while the majority allowed patients to consent to family members accessing their medical records, a significant portion did not, indicating room for improvement in practices surrounding patient autonomy.

A concerning finding in our study is that 70% of laboratory professionals felt insufficiently trained in ethics, suggesting a significant gap in education and professional development. When faced with ethical dilemmas, most professionals prioritized integrity, either by refusing unethical tasks or seeking guidance from supervisors or ethics committees. These findings highlight the need for more comprehensive ethics training, clear guidelines, and institutional support systems to address ethical conflicts effectively. A recent report by the IFCC Task Force on Ethics indicates that formal teaching of ethics is absent from many clinical chemistry and laboratory medicine training programs and that there is a perceived need for training tools, with a particular desire of directors of training programs to have online tools [4]. A recent study in Iran highlights that teaching ethical attitudes to clinical laboratory professionals through lecture-based and problem-based learning methods significantly improved their ethical attitudes, while the role-playing method showed no notable effect [5]. This suggests a substantial gap in professional development and underscores the need for targeted education and training programs. The Nepalese national society of clinical laboratory medicine should establish a clearly defined and publicly accessible policy outlining the ethical standards for its members' professional conduct. This policy, published as a code of ethics, is recommended by experts in the field [6]. The IFCC code of ethics outlines the ethical principles and standards for clinical laboratorians, emphasizing their duty to patients, colleagues, and society, with a focus on maintaining high-quality practices, confidentiality, integrity, collaboration, and social responsibility [7].

Since this study is a preliminary report, we focused on descriptive analysis to offer an initial overview of ethical perspectives in laboratory medicine. We recognize that future research with a larger dataset could build upon the findings of this study. Expanding the sample size in future studies is recommended to explore these issues more comprehensively on a national scale.

Conclusion

Despite the commitment of the Nepalese laboratory professionals to ethical practices, further improvements in training, policy development, and support structures are essential to ensure consistent and high-quality ethical decision-making in laboratory settings.

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Conflict of Interest

Authors declare no conflict of interest in the publication of this manuscript.

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