

# Knowledge and Attitude on Ethical Conduct of Clinical Research Among Nurses Working in the University Hospital of Nepal

Shreejana Singh,<sup>1</sup> Deepak Raj Joshi,<sup>2</sup> Ajanta Maharjan,<sup>3</sup> Pratima Khatri,<sup>4</sup> Bhibhooti Shahi,<sup>5</sup> Manisha Chapagai,<sup>2</sup> Bimala Parajuli,<sup>6</sup> Mohan Raj Sharma<sup>2</sup>

<sup>1</sup>Institute of Medicine, Tribhuvan University, Kathmandu, Nepal, <sup>2</sup>Maharajgunj Medical Campus, Institute of Medicine, Tribhuvan University, Kathmandu, Nepal, <sup>3</sup>Maharajgunj Nursing Campus, Institute of Medicine, Tribhuvan University, Kathmandu, Nepal, <sup>4</sup>Manmohan Cardiothoracic Vascular and Transplant Center, Kathmandu, Nepal, <sup>5</sup>Tribhuvan University Teaching Hospital, Institute of Medicine, Kathmandu, Nepal, <sup>6</sup>National Academy of Medical Sciences, Bir Hospital Nursing Campus, Kathmandu, Nepal.

## ABSTRACT

**Background:** Nurses are pivotal in primary healthcare and often serve as the first point of patient contact. Delivering evidence-based care is essential for ensuring high-quality services. Clinical research in hospital settings provides the evidence base that supports such care. This study aimed to assess nurses' knowledge of clinical research ethics and their attitudes toward conducting research at a university hospital.

**Methods:** A pretested semi-structured questionnaire, developed from literature and expert input, was used to collect data on demographics, research knowledge, and attitudes toward ethical conduct of clinical research among 279 nurses at the University Hospital. Ethical approval was obtained from the Institutional Review Committee, and data were analyzed using descriptive and inferential statistics (t-test and ANOVA) in SPSS version 26.

**Results:** Most respondents were aged 26–30 years, held bachelor's degrees, and lacked formal research training, though over half had prior research experience. Knowledge of clinical research, particularly ethics and trial procedures, was high, and attitudes were largely positive. Misconceptions persisted regarding vulnerable populations, the use of placebos, and blinding. Knowledge and attitude scores were significantly associated with education and research experience, while nearly all nurses acknowledged the necessity of clinical trials (98.9%) and ethical guidelines (93.5%).

**Conclusions:** Nurses demonstrated strong knowledge of research ethics and positive attitudes toward clinical research, though gaps in specific ethical concepts highlight the need for enhanced formal training to strengthen their confidence and readiness for ethical research engagement.

**Keywords:** Attitude; clinical research; ethics; knowledge; Nepal; nurses.

## INTRODUCTION

Health research is essential for improving health systems and ensuring quality care. It uses scientific methods to generate evidence, either supporting or challenging existing practices, and is central to evidence-based healthcare. Nursing research focuses on various dimensions of care (promotive, preventive, therapeutic, and rehabilitative) and helps enhance clinical practice, outcomes, and professional development.<sup>1-3</sup> It involves a systematic and critical investigation of

nursing practices and their effects on patients, families, and communities. Clinical research, conducted under strict ethical and legal standards, is vital for improving healthcare services and ensuring quality care.<sup>3,4</sup> Globally, increasing investments in clinical research have led to a rapid expansion of healthcare literature.<sup>5</sup> For instance, a study in Tokushima University Hospital found 90% of nurses were aware of clinical research, though fewer understood the distinctions within it.<sup>6</sup> This study aims to assess clinical nurses' knowledge and awareness of conducting research at Tribhuvan University Teaching

**Correspondence:** Mr. Deepak Raj Joshi, Maharajgunj Medical Campus, Institute of Medicine, Tribhuvan University, Kathmandu, Nepal. Email: raazdpk@gmail.com, Phone: +9779841591379.

Hospital in Nepal.

## METHODS

A semi-structured research questionnaire was developed based on the study objectives through literature review and expert consultation. Initially drafted in English, it was reviewed by a linguistic expert for clarity. The tool included:

**Part I** - Socio-demographic data

**Part II** - Knowledge on research and ethics

**Part III** - Attitude scale (Likert format) toward conducting research.

Content validity was ensured through expert and peer reviews, with revisions incorporated. Pretesting of the questionnaire was done in 10% of the sample in a similar setting before the study started, followed by necessary modifications.

A sample size of 294 was determined using an estimated prevalence of good knowledge of 50%, a 95% confidence level, a 5% margin of error, a 10% allowance for non-response, and a finite population correction based on a total 869 nurses in the hospital. Before data collection, study objectives were explained and written consent obtained. Participants were assured of confidentiality, with coded identifiers used instead of names. Data were used solely for research purposes and discarded after study completion. Participants had the right to withdraw at any time without providing a reason. All ethical precautions were taken to protect participants' rights throughout the study. Data were collected from primary sources by using convenience sampling from all the departments and self-administered methods and analyzed using SPSS version 26. After checking for the completeness of the data, only 279 were included in the analysis. Frequency, percentage, mean, and SD were computed to summarize the data, and an independent t-test and one-way ANOVA were used to compare the knowledge and attitude scores among different categories of the independent variables after assessing the normality of the data. A p-value below 5% was considered statistically significant. Results were presented in tables.

## RESULTS

Table 1 shows that most clinical nurses were aged 26-30, making up 132 (40.5%) of the sample. Almost half were married (135, 48.4%). Most nurses (228, 81.7%) had a bachelor's degree, while only a few (7, 2.5%) had a master's degree in nursing

**Table 1. Socio-demographic characteristics of the respondents. n=279**

| Variables                         | Categories         | n (%)       |
|-----------------------------------|--------------------|-------------|
| Age (in years)                    | < 25               | 95 (34.05)  |
|                                   | 26-30              | 113 (40.50) |
|                                   | 31-35              | 43 (15.41)  |
|                                   | > 35               | 28 (10.04)  |
| Marital Status                    | Married            | 135(48.39)  |
|                                   | Unmarried          | 141(50.54)  |
|                                   | Divorced           | 3(1.07)     |
| Educational level                 | PCL                | 44(15.77)   |
|                                   | BNS/B.Sc.          | 228(81.72)  |
|                                   | MN/M.Sc.           | 7(2.51)     |
| Experience in Nursing             | 1 year or less     | 37 (13.26)  |
|                                   | 2-5 years          | 103 (36.92) |
|                                   | 6-10 years         | 88 (31.54)  |
|                                   | 11-15 years        | 34 (12.19)  |
|                                   | More than 15 years | 17 (6.09)   |
| Any training on Research          | Yes                | 23 (8.24)   |
|                                   | No                 | 256 (91.76) |
| Experience in conducting research | Experienced        | 160 (57.35) |
|                                   | Not-experienced    | 119 (42.65) |

| Table 2. Distribution of knowledge regarding conducting clinical research. |                                                                                                                                                                                                                                |            |            |            |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|
|                                                                            | Knowledge-related items                                                                                                                                                                                                        | Yes (%)    | No (%)     | No Idea(%) |
| 1.                                                                         | Clinical research is a study of drugs, biological materials/ devices in human subjects, with the intent to discover potential beneficial effects and determine their safety                                                    | 250(89.61) | 29(10.39)  | -          |
| 2.                                                                         | Before new medicine can be made available to the public, it must undergo clinical trials                                                                                                                                       | 276(98.92) | 3(1.08)    | -          |
| 3.                                                                         | Clinical research cannot be initiated without an ethics committee's approval                                                                                                                                                   | 260(93.19) | 19(6.81)   | -          |
| 4.                                                                         | Clinical research should be conducted on the ethical principles that have their origin in the Declaration of Helsinki, and that are consistent with Good Clinical Practice (GCP) and the applicable regulatory requirement (s) | 221(79.21) | 58(20.79)  | -          |
| 5.                                                                         | Compliance with the ethical guidelines provides public assurance that the rights, safety, and well-being of research subjects are protected                                                                                    | 261(93.55) | 18(6.45)   | -          |
| 6.                                                                         | A volunteer is defined as a patient or healthy person who participates in clinical research and provides written informed consent                                                                                              | 248(88.89) | 31(11.1)   | 31(11.11)- |
| 7.                                                                         | The informed consent form (ICF) is a document that provides detailed and comprehensible information about clinical research to volunteers considering participation                                                            | 249(89.25) | 30(10.75)  | -          |
| 8.                                                                         | The volunteer must sign the ICF before participating in clinical research                                                                                                                                                      | 246(88.17) | 33(11.83)  | -          |
| 9.                                                                         | Participants' safety in clinical research is a high priority.                                                                                                                                                                  | 265(94.98) | 14(5.02)   | -          |
| 10.                                                                        | Clinical research with children, pregnant and lactating mothers, and restrictions is strictly prohibited under national legislation                                                                                            | 133(47.67) | 58(20.79)  | 88 (31.54) |
| 11.                                                                        | In clinical research, participants' personal and medical information is kept confidential                                                                                                                                      | 260(93.19) | 6(2.15)    | 13 (4.66)  |
| 12.                                                                        | Volunteers cannot be offered high payments to encourage their participation in clinical research                                                                                                                               | 202(72.40) | 32(11.47)  | 45 (16.13) |
| 13.                                                                        | A participant can leave clinical research at any time without giving a reason                                                                                                                                                  | 192(68.82) | 87(31.18)  | -          |
| 14.                                                                        | The treatment costs of the adverse effects that occur during the clinical research are covered by the sponsor                                                                                                                  | 155(55.55) | 124(44.45) | -          |
| 15.                                                                        | It is possible to use a placebo in clinical research                                                                                                                                                                           | 131(46.95) | 148(53.05) | -          |
| 16.                                                                        | Blinding (single-blind, double-blind) is used in clinical research to avoid errors arising from partiality and bias                                                                                                            | 121(43.37) | 158(56.63) | -          |

Table 2 The results indicate a high level of awareness among respondents regarding the foundational aspects of clinical research, such as the necessity for clinical trials (98.92%) and the importance of ethical guidelines (93.55%). However, misconceptions were evident in areas like the prohibition of research on vulnerable populations (47.67%, Yes) and the use of placebos (46.95%, Yes). Additionally, a significant portion of respondents were unaware of the role of blindness in minimizing bias (56.63%, No).

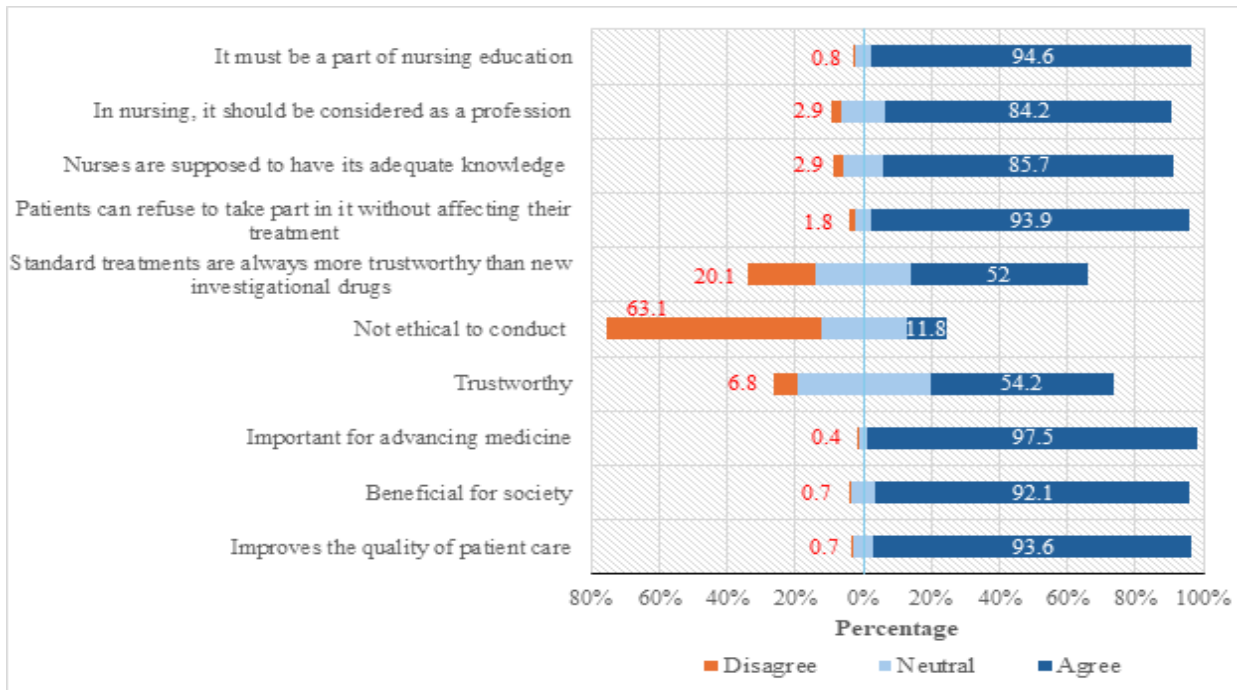


Figure 1. Participants' perceptions regarding different aspects of clinical research.

In figure.1. Most respondents expressed a positive attitude toward clinical research, recognizing its role in improving patient care, benefiting society, advancing medicine, and its importance in nursing education. While the majority supported patients' rights and nurses' involvement in research, trust remained moderate (54.20%), with some neutrality and preference for standard treatments over investigational drugs. Overall, attitudes were highly favorable, with minor reservations regarding trustworthiness and new treatments.

Table 3. Comparison of knowledge and attitude scores of the respondents among different categories of the independent variables.

| Variables                         | Categories           | Knowledge Score<br>Mean± SD         | P-value | Attitude Score<br>Mean± SD          | P-value |
|-----------------------------------|----------------------|-------------------------------------|---------|-------------------------------------|---------|
| Age (in years)                    | Below 30             | 12.54 ± 2.42                        | 0.601   | 38.01 ± 2.82                        | 0.650   |
|                                   | 30 and above         | 12.31 ± 2.62                        |         | 38.22 ± 3.31                        |         |
| Marital status                    | Married              | 12.44 ± 2.62                        | 0.993   | 38.12 ± 3.11                        | 0.796   |
|                                   | Single               | 12.44 ± 2.41                        |         | 38.12 ± 3.21                        |         |
| Education level                   | PCL                  | 11.27 ± 2.36                        | 0.001*  | 37.11 ± 2.42                        | 0.028*  |
|                                   | Bachelor's and above | 12.63 ± 2.46                        |         | 38.19 ± 3.23                        |         |
| Years of experience in Nursing    | Up to 5 years        | 12.41 ± 2.43                        | 0.894   | 38.81 ± 3.02                        | 0.863   |
|                                   | More than 5 years    | 12.44 ± 2.51                        |         | 37.84 ± 3.31                        |         |
| Experience in conducting Research | Experienced          | 13.03± 2.23                         | <0.001* | 38.56 ± 3.34                        | 0.002*  |
|                                   | Not-experienced      | 11.64 ± 2.61                        |         | 37.40 ± 2.75                        |         |
| Total Score                       |                      | 12.43 ± 2.51<br>(Min, Max) = (5,16) |         | 38.14 ± 3.1<br>(Min, Max) = (27,46) |         |

After applying t-test and ANOVA to compare the ethical knowledge and clinical research attitude scores among the

different categories of the sociodemographic variables, the ethical knowledge and clinical research attitude were significantly associated with the education level ( $p$ -value = 0.001 and 0.013) and experience in conducting research ( $p$ -value = <0.001 and 0.002).

## DISCUSSION

This study provides insight into the knowledge and attitudes towards clinical research among clinical nurses at a university hospital in Nepal. The findings reveal generally positive attitudes towards research, alongside notable gaps in knowledge, particularly regarding ethical and methodological aspects of clinical research. These results underscore the need for targeted educational interventions within Nepal's nursing workforce.

A high proportion of participants displayed foundational knowledge about clinical research, including the ethical need for trial approval and the importance of informed consent. This mirrors findings in similar studies where general awareness among nurses was strong, yet significant gaps persisted in complex areas like the application of placebo and ethical standards in vulnerable populations. For instance, studies found that while nursing students in Saudi Arabia showed foundational understanding, they lacked clarity on complex ethical requirements in clinical trials, suggesting a global trend of varied knowledge levels about essential research principles among nurses at different career stages.<sup>7, 8</sup> Like wisely, study done in the Nepal among researchers stated that half of the respondents have knowledge on the different aspects of health ethics.<sup>25</sup>

Misconceptions about placebo use and research involving vulnerable populations observed in this study align with the findings by Al-Mahmoud and Mullen (who reported that clinical nursing staff at an acute hospital displayed gaps in understanding ethical guidelines in research. Such gaps can hinder the effectiveness of clinical research, particularly in ethically sensitive areas, underscoring the need for ongoing ethical education.<sup>9</sup> Goes into prefix with the existing literature, participants with higher educational qualifications and prior research experience in our study scored significantly better in both knowledge and attitude metrics. Kumar and Ajayi (2019) found that nurses with a background in higher education and prior research involvement in an urban academic hospital had greater awareness of the value of research and its impact on patient care. These findings align with our study, where nurses holding bachelor's or master's degrees demonstrated a deeper understanding ( $p$  = 0.001), emphasizing the importance of advanced

education in fostering research competence among clinical staff.<sup>10</sup> Similarly, Bashar and Abalkhail (2019) demonstrated that targeted education interventions significantly improved both research knowledge and attitudes among nursing students. Our study supports this observation, as those with research experience scored higher in attitudes toward the societal benefits of research ( $p$  = 0.002).<sup>7</sup>

Alamri and Shandilya (2020) also observed that perceived barriers to research, such as lack of formal training, could be mitigated by structured educational programs, indicating that hands-on experience and continued education are critical for advancing research competency.<sup>11</sup> Our findings revealed strong support for the professionalization of clinical research nursing and the inclusion of research in nursing education. This aligns with another study which revealed that over ninety percent of participants recognized research as essential, enriching medical education and fostering critical thinking, with similar support for integrating research into MBBS/BDS curricula.<sup>12</sup> The study findings indicate that a significant majority agreed clinical research enhances patient care quality, benefits society and is essential for medical advancement. These results align with previous studies highlighting that the perceived quality of research reports significantly influences the adoption of evidence-based nursing.<sup>13</sup>

For evidence-based practice to be effectively implemented, nurses need targeted research education, strong clinical leadership, and supportive work environments. However, the perception that undergraduate nursing education lacks sufficient focus on research, combined with the absence of a well-defined clinical-academic career pathway for nurses compared to physicians, continues to portray research as a 'specialist' and somewhat 'mysterious' pursuit.<sup>14</sup> The findings highlight a need for policy initiatives to integrate research training into nursing curricula at all levels.

Only very few of participants having undergone formal research training, there is a clear opportunity to strengthen this aspect of professional development. Tailored training programs, including workshops on ethical issues, the use of placebos, and methodologies to mitigate biases in research, could significantly improve knowledge levels and support a research-positive culture within healthcare. The implementation of continuous professional development (CPD) programs in collaboration with academic institutions could further enhance these efforts, in line with international

best practices, as suggested by the WHO, which noted that accessible CPD programs could improve nurses' research literacy, and many nurses expressed a desire for more training in clinical research, indicating a gap between willingness and capability.<sup>15,16</sup> This gap is further reflected in the limited participation in clinical research, with one study reporting that only 8.6% of nurses were involved, and the mean knowledge score was 10.1 out of 19.<sup>17,18</sup> Perceived barriers, particularly limited knowledge, significantly impacted the practice of evidence-based nursing, with knowledge identified as a key predictor of such practice.<sup>19,20,21</sup>

Clinical Nursing Research (CNR) is advancing to meet evolving healthcare needs but faces challenges due to limited resources. Nursing development depends on science, technology, research, and evidence-based practice.<sup>22,23,24</sup> In order to motivate nurses to actively participate in research, nursing research might be linked to professional progression prospects like promotions, recognition awards, or academic credits, adjusting duty hours if any clinical nurses are associated with research and establishing nursing research unit in the university hospital.

This study is limited by its single-site design, which may limit the generalizability of findings to broader nursing populations in Nepal. Additionally, the use of self-reported data may introduce response biases. Future research should aim to include multiple hospitals across various regions to gain a more comprehensive understanding of the knowledge and attitudes toward clinical research within Nepal. Longitudinal studies assessing the impact of specific educational interventions on knowledge and attitudes over time would also be beneficial.

## CONCLUSIONS

Clinical nurses working in University Hospitals in Nepal show strong awareness and positive attitudes toward research, but gaps persist in areas like placebo use, vulnerable populations, and blinding. Higher education and prior research experience were linked to better performance. Targeted training and policy support are needed to build a research-literate nursing workforce in Nepal for improved patient care."

## CONFLICT OF INTEREST

Authors declare there are no any conflicts of Interest.

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