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Medical Research Outlook Among Residents: A Revealing Study

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ABSTRACT

Background: Medical research is an essential component of evidence-based healthcare, contributing to improved clinical decision-making, patient outcomes, and professional development. Research engagement during postgraduate medical training is crucial for developing critical appraisal skills and strengthening the future medical research workforce.
Aim: To assess the knowledge, attitudes, and practices (KAP) regarding medical research among resident doctors at a tertiary care teaching hospital and identify barriers to research participation.
Materials and Methods: A questionnaire-based descriptive cross-sectional study was conducted among resident doctors at Government Doon Medical College, Dehradun, from January to March 2026. A structured, self-administered questionnaire was used to assess participants' knowledge, attitudes, research practices, and perceived barriers. Of 110 questionnaires distributed, 90 completed responses were included in the analysis. Data were analyzed using descriptive statistics, including frequencies and percentages.
Results: The response rate was 81.8%. More than half of the participants demonstrated adequate knowledge of fundamental research concepts; however, gaps were identified in Vancouver referencing, sampling techniques, and reference management software. Attitudes towards medical research were generally positive, with 86% recognizing its importance in improving patient care, 78% supporting compulsory research training during residency, and 82% advocating dedicated research time. Furthermore, 89% expressed interest in attending periodic research-related seminars. Regarding research practices, 78% had participated in data collection, 57% had experience in research writing, and 62% had presented research papers or posters at scientific meetings. Lack of time (78%) and prolonged postgraduate training and clinical duties (58%) were the most frequently reported barriers.
Conclusion: Resident doctors demonstrated favourable attitudes and reasonable knowledge regarding medical research; however, translation into active research engagement remains

suboptimal. Structured research training, protected research time, effective mentorship, and improved institutional infrastructure are essential to strengthen research participation and foster a sustainable research culture during postgraduate medical education.

Keywords: Biomedical Research; Internship and Residency; Knowledge; Attitude; Health Knowledge, Attitudes, Practice; Research.

INTRODUCTION

Scientific research forms the foundation of progress in healthcare by generating evidence that improves clinical decision-making and patient outcomes. Modern medical practice has increasingly shifted from reliance on personal experience towards evidence-based medicine, which combines clinical expertise with findings from systematic research. This approach supports more effective diagnostic strategies, therapeutic interventions, and healthcare delivery. Consequently, physicians are expected not only to apply research evidence but also to participate actively in the production of new scientific knowledge. [1]

Despite considerable potential arising from a large patient population and expanding healthcare infrastructure, India's contribution to global medical research remains relatively modest. Previous Medical research practice in India among resident doctors is still below par with India holding 12th rank globally with a share of only 1.59% according to a study by Gupta and Bala on Indian Research output in medicine. [2] The role of trainees in advancing medical science has been demonstrated through several historic discoveries. Contributions by students and early-career researchers, including the discovery of insulin and foundational work in neurophysiology, illustrate the significant impact that young investigators can have when provided with appropriate guidance and opportunities. [3] Such achievements emphasize the importance of developing research aptitude early in medical training.

Encouraging research engagement among medical students and residents is essential for strengthening healthcare systems. Participation in research fosters analytical thinking, promotes lifelong learning, and supports the practice of evidence-based medicine. To enhance research exposure among undergraduate students, the Indian Council of Medical Research introduced the Short Term Studentship program, which provides training in research methodology and practical experience. [4]

Previous analyses have reported limited research output from medical institutions in India. [2] Insufficient emphasis on research training, inadequate institutional support, and limited opportunities for skill development during medical education contribute to this gap. Although postgraduate training programs mandate dissertation work and research activities, awareness and effective participation among trainees remain limited. [5,6] Furthermore, the declining number of physicians pursuing research-oriented careers highlights the need to promote research engagement in medical education. [7]

Resident doctors represent an important component of the future research workforce and play a critical role in improving healthcare delivery. Understanding their knowledge, attitudes, and practices regarding research is necessary to identify barriers and design strategies that strengthen research capacity. Therefore, the present study aimed to assess knowledge, attitude, and practices related to medical research among resident doctors in a tertiary care hospital.

METHOD

Study Design and Setting

This questionnaire-based descriptive cross-sectional study was conducted among resident doctors at Government Doon Medical College, Dehradun, over a period of 3 months from January 2026 to March

2026. The study assessed knowledge, attitude, and practices related to medical research, along with perceived barriers to research participation.

Ethical Approval

Institutional Ethics Committee approval was obtained prior to commencement of the study. Participation was voluntary, and written informed consent was obtained from all participants.

Study Population and Sampling

Resident doctors from paraclinical, surgical, and nonsurgical specialties were included. Senior residents, faculty members, interns, house officers, and individuals unwilling to participate were excluded.

The sample size was calculated using OpenEpi software (version 3), assuming 50% expected prevalence, 95% confidence level, and 5% absolute precision. Participants were recruited using convenience sampling.

Study Instrument

Data were collected using a structured self-administered questionnaire developed after an extensive literature review. The questionnaire was peer-reviewed by experts and revised accordingly, and content validity was established through expert evaluation.

A pilot study was conducted to assess clarity and feasibility. Reliability of the attitude component showed good internal consistency (Cronbach's $\alpha = 0.83$).

The questionnaire consisted of three sections:

- **Section A:** Demographic details
- **Section B:** Knowledge and attitude toward medical research
- **Section C:** Research practices and perceived barriers

Data Collection Procedure

Participants were informed about the purpose of the study and instructions for completing the questionnaire. Completed questionnaires were collected immediately after completion.

Data Analysis

Data were entered into Microsoft Excel and analyzed using SPSS software (version 21). Descriptive statistics including frequencies, percentages, and mean scores were calculated.

RESULTS

Participant Characteristics

A total of 110 questionnaires were distributed, of which 90 were completed, yielding a response rate of 81.8%. Among respondents, 58% were first-year residents, 26% were second-year residents, and 16 % were final-year residents. The mean age of participants was 24.62 ± 1.94 years. Male participants comprised 58(64.4%) and females 32(35.6%).

The majority of participants belonged to clinical specialties 71(78.9%), followed by paraclinical departments 19(21.1%).

Knowledge Regarding Medical Research

Table 1: Knowledge of students towards medical research with answers and correct response percentage

Questions	Answers (A)	B	C	D	Correct Response %
1.Why is research important in postgraduate period?	Plays a pivotal role in shaping the academic and professional journey of students	Enhances understanding of subject matter	Equips them with essential skills for critical analysis, problem solving and innovation	All of the above	90
2. What is research?	Studying about patients	Reading about old literature	A systematic method of investigating scientific questions	Don't know	82

3. Which study design is best for determining causality	Cross sectional study	Randomized controlled trial	Case report	Don't know	68
4.Who will approve protocol?	Institutional ethics committee	Clinical trials registry, India	Drug controller general of India	Central drugs standard control organization	78
5. Institutional ethics committee approval is required	For all human subject research	Only for post graduate thesis	Only for drug trials	Only for international studies	68
6.What is purpose of literature review?	To increase sample size	To avoid ethical approval	To identify existing knowledge	Don't know	68
7.How to define research hypothesis?	An answer or solution to a question	A proposed idea of thought	An answer or solution to a question which has a capacity of verification	None of the above	56
8.Plagiarism refers to	Conducting surveys	Statistical analysis	Copying another person's work without acknowledgement	Don't know	62
9.Which of these are reference management software?	zotero	Mendeley	google	pubmed	45
10. Which of these is incorrect in Vancouver style reference?	Abbreviate page number as p	Add et al after 3 author's names	Use of and in between authors name	All are correct	30
11. Standard deviation measures	Central tendency	Strength of association	Dispersion of data	Probability of error	52
12. Randomization is mainly used	To increase sample size	Reduce bias	Improve questionnaire design	Reduce study duration	62
13.Which sampling technique gives every individual an equal chance of selection?	Convenience sampling	Purposive sampling	Simple random sampling	Snowball sampling	46
14. p value less than 0.05 indicates	Study is valid	Statistical significance	No association exists	Sampling bias	54

More than half of the participants demonstrated adequate knowledge regarding research processes as assessed by questionnaire but knowledge regarding correct Vancouver styling used in references, sampling techniques, software for reference management, type of sampling techniques was not up to date.

Attitude Towards Medical Research

Table 2: Attitude regarding medical research

Question	Positive response (%) Agree /strongly agree	Negative response (%) disagree/strongly disagree
Research improves patient care and medical practice	86	14

Research training should be made compulsory during residency	78	22
Medical research participation enhances clinical knowledge	72	28
Medical research is essential for evidence-based practice	68	32
Research methodology should be included in medical curriculum	74	26
Adequate time should be allotted separately in residency curriculum	82	18
Research burdens already overworked postgraduate residents	48	52
Residents should be encouraged to publish research articles	75	25
Conducting research improves critical thinking skills	68	32
Seminars and workshops are required periodically to update knowledge	89	11

Participants demonstrated a generally positive attitude toward medical research. More than half strongly agreed that research improves patient care and medical practice, enhances clinical knowledge and critical thinking skills. Moreover 68% believed that it is essential for evidence-based practice. Majority (78%) believed that research training should be made compulsory during residency, 76% believed that it should be part of medical curriculum, 82% stressed over need of adequate time to be allotted separately for research and 89% were interested in seminars periodically to update their knowledge. A small percentage (48%) thought that research burdens already overworked postgraduate residents.

Research Practices

Table 3: Practice related questions towards medical research

Question	Yes (%)	No (%)
Do you have experience in writing a research protocol or paper?	57	43
Have you ever participated in data collection for a research study?	78	22
Have you presented a research paper or poster at a conference?	62	38
Have you published any article in a medical journal?	52	48
Do you regularly read medical journals or research articles?	34	66
Have you ever applied statistical analysis in a research project?	68	32
Have you attended any workshop on research methodology or biostatistics?	56	44
Have you used reference management software (e.g. Mendeley, Zotero, EndNote)?	42	58
Have you participated in interdisciplinary or multicentric research projects?	24	76
Are you interested in conducting medical research in future?	89	11

Regarding research activities, 57% of residents had experience in writing a research protocol or paper, 78% participated in data collection for a research study, 62% had presented papers or posters at scientific meetings, 52% had published research articles, 34% regularly read medical journals or research articles, 68% had applied statistical analysis in a research project, 56% had attended research methodology workshops, 42% had used reference management software. Only 24% had participated in interdisciplinary or multicentric research projects. Majority (89%) were interested in conducting medical research in future.

Perceived Barriers to Research

Table 4: Barriers in conducting research

Perceived barrier	Percentage %
Lack of time	78
Lack of research facilities	35
Poor mentorship/guidance	24
Long hours of postgraduate training and duties	58
Personal reasons	15

The most commonly reported barrier was lack of time (78%) and long hours of postgraduate training and duties (58%). Other factors were lack of research facilities (35%), poor mentorship (24%) and personal reasons (15%).

Suggestions to Improve Research Engagement

Most participants suggested structured training programs and interactive teaching sessions to improve research awareness and participation. Many also expressed interest in learning biostatistics and research methodology. They stressed the importance of periodic assessment of research by the guides so that a continuity is maintained in studies. A need for free access of residents to standard articles was suggested through college library and internet.

DISCUSSION

Research competency is a fundamental component of postgraduate medical education, as it enables physicians to evaluate scientific evidence and apply it effectively in clinical practice. The present study found that resident doctors generally demonstrated adequate knowledge and positive perceptions regarding medical research; however, their involvement in research activities remained limited.

Participants showed satisfactory awareness of key research processes, including ethical approval and informed consent, which may reflect recent emphasis on research methodology training in postgraduate programs. Nevertheless, a clear disparity between theoretical knowledge and actual research engagement was observed, a finding consistent with previous investigations. [8-10]

Most residents recognized the importance of research in improving patient care and advancing medical knowledge, and many supported mandatory research training during residency. Despite this favorable outlook, research activities were often perceived as an additional responsibility alongside demanding academic and clinical duties.

Time constraints, heavy workload, and inadequate research infrastructure were identified as major barriers to research participation. Similar challenges have been reported in earlier studies evaluating research engagement among medical trainees. [11-13] Limited mentorship and institutional support may further contribute to reduced research productivity.

Participants recommended measures such as structured training programs, protected research time, and improved mentorship to enhance research involvement. Strengthening institutional infrastructure and providing dedicated research opportunities may help bridge the gap between knowledge and practice.

Although research training is mandated in postgraduate medical education by regulatory authorities, the present findings suggest that stronger implementation strategies and institutional support mechanisms are required to improve research outcomes. [14]

The study has certain limitations, including its single-institution setting, relatively small sample size, and reliance on self-reported data. Larger multicentric studies are recommended to provide more comprehensive evidence regarding research practices among resident doctors.

CONCLUSION

The study demonstrates that resident doctors possess adequate knowledge and a generally positive attitude toward medical research; however, translation of this knowledge into practice remains limited. Major barriers include lack of time, insufficient research facilities, limited guidance, and competing academic and clinical responsibilities.

Strengthening research training through structured programs, protected research time, mentorship, and institutional support may improve research participation among residents. Early exposure to research and strengthened postgraduate research programs may further enhance research competency and engagement.

Encouraging participation in research initiatives supported by organizations such as the Indian Council of Medical Research and integrating research more effectively into medical curricula may help strengthen research culture among future physicians.

Declaration

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Conflict of Interest: The authors declare no conflict of interest.

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