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Original Research Article

BCBR Literacy Among the Postgraduate MD/MS Students and Faculty in Uttar Pradesh University of Medical Sciences in Western Uttar Pradesh

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Conflict of interest: Nil

Abstract

Background: Biomedical studies underpin improvements in medical know-how, patient care, and public fitness. The basic course in Biomedical research (BCBR), added through the Indian Council of scientific research (ICMR), goals to enhance research literacy among postgraduate college students and faculty in India. This study evaluates the information, mindset, and exercise (KAP) regarding BCBR among those groups at a medical university in Western Uttar Pradesh to identify gaps and opportunities for improvement.

Methods: A cross -sectional Study was became performed amongst postgraduate MD/MS college students and school the usage of a based, tested questionnaire. The questionnaire assessed know-how (20 objects), mindset (10 gadgets), and exercise (10 objects) associated with BCBR. Reliability turned into showed with Cronbach's alpha, and content validity became reviewed through specialists. statistics have been analyzed the usage of SPSS model 25, using descriptive information and Fisher's genuine take a look at to compare responses among organizations, with importance set at $p<0.05$.

Results: faculty scored better in know-how-primarily based questions, especially in framing studies questions (30% vs. 24%) and expertise 'FINER' criteria (60% vs. fifty-two%). each organization agreed on the significance of BCBR, with eighty% of school and sixty-three% of students finding course assignments useful. however, practical application of expertise, inclusive of statistical calculations, become greater difficult for college students (70% faculty vs. sixty-three% college students).

Conclusion: The study highlights high quality attitudes towards BCBR but identifies gaps in practical software and conceptual knowledge among postgraduate college students. improving mentorship, introducing interactive and case-based totally getting to know, and presenting institutional guide should bridge these gaps. those efforts are important to foster a studies-oriented way of life and improve the overall research competency of clinical professionals.

Keywords: Biomedical, Reliability Validity.

Introduction

Biomedical research plays a crucial role in advancing medical knowledge, enhancing patient care, and tackling public health challenges. The Basic course in Biomedical research (BCBR) is a compulsory online course introduced by the Indian council of medical research (ICMR) to improve research literacy among medical professionals. Its objective is to provide postgraduate students and faculty with the necessary skills in research methodology, study design, ethics, and scientific writing. In the present academic and clinical environment, a strong foundation in biomedical research is crucial for establishing evidence-based practices and upholding the quality of medical education.[1]

Postgraduate medical students and faculty members are essential contributors to research endeavors within medical institutions. The level of expertise and proficiency in research conducted by healthcare professionals directly affects the quality of studies, ultimately influencing healthcare outcomes.

Nevertheless, even with the existence of courses like bcbr, there may still be differences in research literacy between faculty members and postgraduate students. Recognizing their level of bcbr literacy is crucial for identifying areas of improvement, enhancing educational approaches, and cultivating a research-driven environment.

The objective of this study is to evaluate the level of bcbr knowledge among postgraduate medical students and faculty members at a medical university situated in western Uttar Pradesh. The study aims to assess the participants' knowledge and comprehension of important research concepts, in order to gain insights into their readiness for conducting rigorous biomedical research.[2]

Methodology

Study Design: This study aimed to evaluate the knowledge, attitude, and practice (KAP) concerning the fundamental course in biomedical research (BCBR) among postgraduate medical students and faculty members at a medical university in western Uttar Pradesh. The study focused on creating and distributing a structured questionnaire to assess the participants' understanding of key research concepts and their ability to apply them in real-world situations.

Study Population: The study targeted two primary groups within the university: postgraduate (MD/MS) students and faculty members. Purposive sampling was used to enrol study participants.

Questionnaire Development

A structured questionnaire was developed to evaluate three main areas:

1. This section comprised of multiple-choice questions that tested the understanding of critical concepts associated with bcbr, such as the number of assignments, the significance of informed consent, research methodology, and ethical considerations.
2. Attitude: this section aimed to assess participants' opinions and attitudes towards the significance of biomedical research and the BCBR course in their professional growth.
3. Practice: questions in this section focused on applying the knowledge gained from the BCBR course in real-life clinical or academic research scenarios.

The questionnaire was carefully crafted with 20 items for the knowledge section, 10 for attitude, and 10 for practice, guaranteeing a thorough examination of BCBR-related subjects.

Reliability and Validity of the Questionnaire

The reliability of the questionnaire was tested using Cronbach's alpha, which measures internal consistency. A pilot study was conducted with 30 participants and Cronbach's alpha was calculated for each part of the questionnaire (knowledge, attitude, and practice). A threshold value of 0.70 or higher was considered acceptable for reliability.

Content validity of the questionnaire was conducted by a panel of experts in medical research and education who ensured that the questions accurately reflected the objectives of the BCBR course and the objectives of the study. Feedback from experts was incorporated into the refinement and finalization of the questionnaire.

Data Collection

The finalized questionnaire was distributed to the participants either online or in paper format. Informed consent was obtained from all participants before they completed the survey. Participants were given two weeks to respond, with reminders sent to increase the response rate.

Data Analysis

Data was entered into a statistical software program (SPSS version 25) for analysis. Descriptive statistics (frequencies, percentages) were calculated for categorical variables, while mean and standard deviation were computed for continuous variables.

To assess the differences in BCBR literacy between faculty and postgraduate students, Fisher’s exact test was employed for categorical variables. This test was chosen due to its appropriateness in handling small sample sizes and determining the significance of associations between groups. A p-value of <0.05 was considered statistically significant.

Ethical Considerations

Ethical was not required for the study from the Institutional Ethics Committee. Participation was voluntary, and data confidentiality was maintained throughout the study.

Results

Table 1: Comparison of Knowledge Levels on Basic Course in Biomedical Research (BCBR) Concepts Among Faculty and Postgraduate Students

S. No	Question on Knowledge	Correct Response	Frequency of Correct Response (%) Faculty	Frequency of Correct Response (%) Postgraduate
1	What is BCBR?	Basic Course in Biomedical Research	90	97
2	How many assignments are there in BCBR?	23	97	82
3	Good research question must pass which test?	SO, WHAT	30	24
4	What does 'FINER' stand for?	Feasible, Interesting, Novel, Ethical, Relevant	60	52
5	Is it necessary to take informed consent?	YES	100	97
6	What does 'Double Blinding' involve?	Participant & Investigator (a & b)	91	91
7	'Urkund' is related to	Plagiarism	85	85

Table 2: Comparison of Attitudes and Perceptions Toward the Basic Course in Biomedical Research (BCBR) Among Faculty and Postgraduate Students

1.	Do you use PubMed?	YES	98	97
		NO	2	3
2.	Do you think, BCBR caters/add knowledge to your subject?	YES	100	63
		NO	0	25
		More Work Has to Be Done	0	12
3.	Did you find the assignments excessive?	YES	40	58
		NO	60	42
4.	Were the course content confusing to you?	YES	30	40
		NO	70	60
5.	How were the video lecture?	BORING	10	34
		EXCITING	10	9
		INFORMATIVE	80	57
6.	Were the course assignments were logically organized and sequenced?	YES	90	84
		NO	10	16
7.	Can you calculate sample size after studying it yourself?	YES	86	70
		NO	14	30
8.	Can you apply statistical formula after studying BCBR?	YES	78	63
		NO	22	37
9.	How useful assignments content of BCBR were in PG programme?	USEFUL	80	63
		NOT USEFUL	9	31
		DON'T KNOW	1	6
10.	Can course content lead to interdepartmental networking opportunities and potential collaborations in the future?	YES	50	72
		NO	20	13
		DON'T KNOW	30	15
11.	Do you think BCBR content should be department specific?	YES	10	67
		NO	60	24
		UNSURE	30	9
12.	Do you think content structure will be useful for national medical education?	YES	67	75
		NO	33	6
		JUST ANOTHER BURDEN OF PAPER	10	19
		YES	56	60
		NO	10	22
		UNSURE	34	18
13.	What do you think at which level bcbr should be imparted?	AFTER JOINING AS FACULTY	10	19
		DURING POST GRADUATION (MD/MS)	60	15

		INTERNSHIP (M.B.B.S.)	20	54
		U.G COURSE (M.B.B.S.)	10	12
14.	Have you appeared for BCBR yet?	Yes	90	91
		No	10	9
15.	Have you cleared proctored BCBR examination?	Yes	90	94
		No	10	6
16.	How did you study the BCBR material provided by NPTEL	BOTH	70	63
		NOTES	10	34
		VIDEO	20	3
17.	Had it not been made mandatory by NMC curriculum, would you like to participate in the BCBR?	Yes	40	39
		No	30	52
		Don't know	30	9

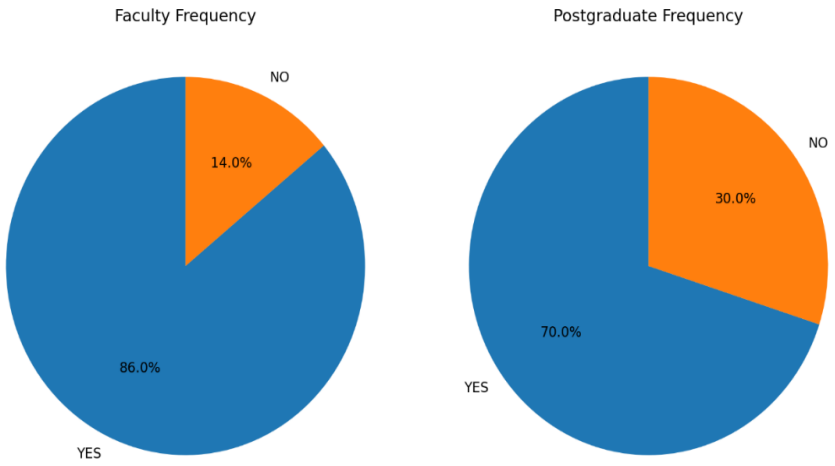

Image 1: Comparison of Faculty and Postgraduate Responses to BCBR Course Participation

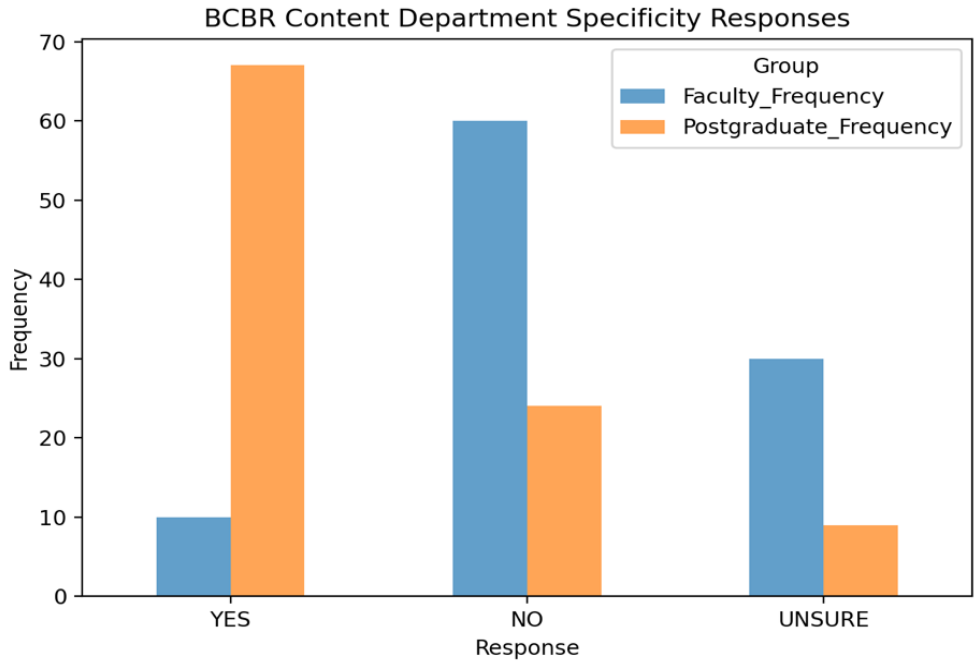

Image 2: Faculty and Postgraduate Perceptions on Department-Specific Content of BCBR

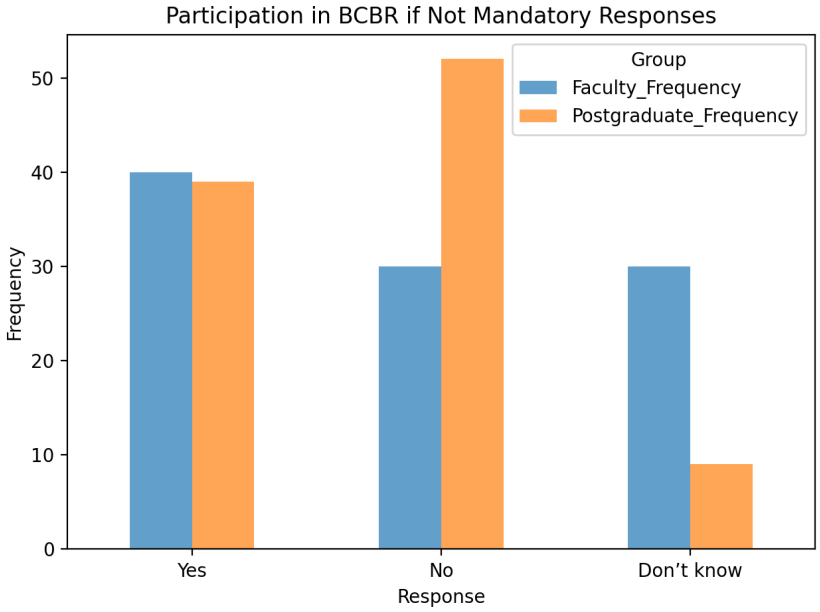

Image 3: Participation in BCBR if Not Mandatory: Faculty and Postgraduate Responses

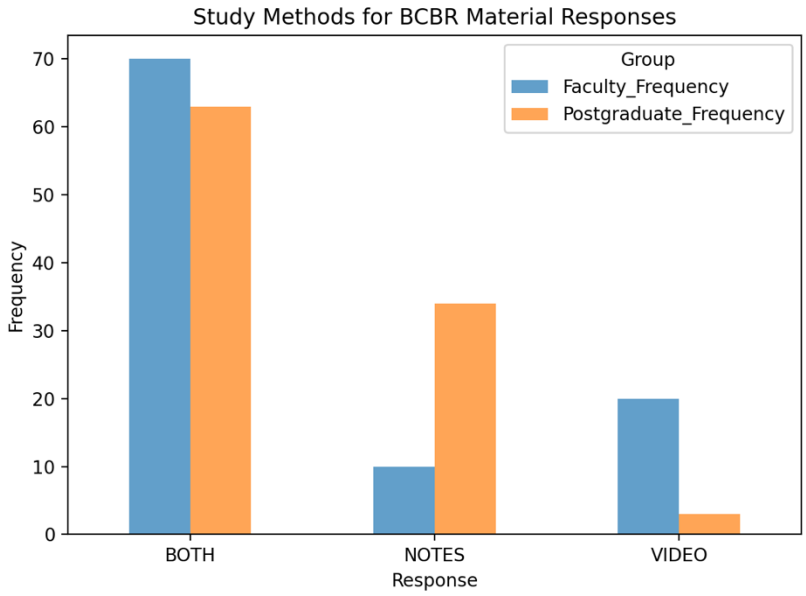

Image 4: Study Material used for the Exam

Discussion

The findings of this study provide a comprehensive overview of literacy levels in the Biomedical Research Foundation Course (BCBR) among MD/MS postgraduate students and faculty members of a medical university in western Uttar Pradesh. The study reveals several important insights about the current state of knowledge, attitudes, and practices related to biomedical research within the institution.

Only 2% of research publications in indexed journals are from LMICs [3]

A study on the status of research publications in India also showed that only 4.3% (25 of 579) institutions published more than 100 papers per year compared to 4,600 publications from Massachusetts General Hospital [2].

Knowledge Assessment

The results demonstrated that both faculty and postgraduate students have a solid understanding of fundamental research concepts, particularly the number of assignments in the BCBR course, and the importance of obtaining informed consent. However, differences emerged in areas like framing a good research question using the "SO, WHAT" test and understanding the components of 'finer' (feasible, interesting, novel, ethical, relevant). Faculty generally performed better, likely due to their greater experience in research and exposure to

practical scenarios. This disparity underscores the need for enhanced training and mentoring of postgraduate students to bridge knowledge gaps, particularly in formulating research questions—a critical skill for effective research.

Attitudes towards Biomedical Research

The attitudinal part of the questionnaire revealed that both faculty and students recognize the importance of biomedical research in medical education and clinical practice. A high level of agreement was observed regarding the importance of BCBR in developing research skills, reflecting a positive attitude towards the integration of research training into the medical curriculum. Despite the positive attitude, the research knowledge gap suggests that motivation alone is not enough; structured guidance and more interactive learning experiences are needed.

Research Procedures

Regarding the practical application of knowledge, the study identified problems. Although most participants demonstrated theoretical understanding, fewer were able to consistently put this into practice. Relatively lower practice scores indicate barriers to conducting research, such as limited access to resources, lack of mentoring, or time constraints due to clinical responsibilities. Addressing these barriers through increased institutional support, regular workshops, and hands-on training could improve research practices, especially among graduate students.

A high-level committee of the Government of India recognized the importance of research and strongly recommended that medical teachers devote one-third of their time to research [5]

Reliability and validity of the questionnaire

Reliability testing using Cronbach's alpha provided satisfactory results, indicating that the questionnaire was consistent in assessing knowledge, attitudes, and practice areas related to BCBR. Peer review also confirmed its content validity and ensured that it accurately captures essential components of biomedical research. These measures contribute to the robustness of the study results.

Implications for Curriculum Development

The results of this study have several implications for curriculum development. Given the knowledge gaps identified, particularly among graduate students, a revision of the BCBR course structure may be necessary. Incorporating more interactive case-based learning modules and mentoring opportunities could improve student understanding and engagement. In addition, faculty development programs should be implemented to maintain their research competencies, enabling them to serve as better mentors to students.

Limitations and Future Directions

This study has some limitations. It was conducted within a single institution, which may limit the generalizability of the findings to other medical universities. In addition, the use of self-administered questionnaires may cause response bias. Future research could expand to more institutions, use a mixed-methods approach to gain a deeper understanding of barriers, and examine the impact of targeted interventions aimed at improving BCBR literacy.

Conclusion

The study highlights the need for continued efforts to increase biomedical research literacy among faculty and students. While attitudes towards research are largely positive, practical barriers and knowledge gaps need to be addressed to foster a strong research environment. Tailored interventions, mentoring and institutional support can play a key role in developing the research capabilities of the next generation of medical professionals.

To address the shortcomings of insufficient training in conducting research and to encourage scientific inquiry and rational reasoning, the NMC made BCBR mandatory. Various studies have highlighted the potential benefits of short courses in biomedical research and biostatistics in improving biomedical research knowledge and skills [6-11]

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