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Original Article

Perception, Participation, and Limitations in Research Among Undergraduate Health Professionals: A Descriptive Study

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Abstract

Background: Undergraduate health professionals frequently lack awareness of research and demonstrate limited participation due to insufficient opportunities, inadequate training, and the perception that research is irrelevant to clinical practice. However, their involvement is crucial for advancing medical knowledge.

Objectives: This study aimed to assess undergraduate healthcare students' perceptions and participation in research, identify perceived barriers, and collect their recommendations for improving engagement.

Methods: This cross-sectional study was conducted at Lahore Medical & Dental College with 1514 medical, dental, and allied health science participants. Data were collected using a five-section questionnaire covering demographics, perceptions, participation, limitations, and recommendations. SPSS version 22.0 was used for reliability, descriptive, and inferential statistical analysis.

Results: Among 1514 students, 76.5% acknowledged the importance of research. However, 77.8% had neither attended a research course/module nor participated in a project, and 44.9% had never planned a research question. The primary barrier was the lack of perceived relevance, with 32.3% unaware of the research. For improvement, 60.3% recommended establishing a research support center, and 56.6% emphasized the need for qualified, research-oriented mentors.

Conclusion: The findings highlight the need to enhance research engagement among undergraduate healthcare professionals. Limited awareness, supervision, and funding contribute to poor participation. Universities should integrate research modules into the curriculum, conduct workshops, and provide necessary resources to promote student involvement.

Keywords: Knowledge; Perception; Research; Health Professionals

Background

Research is pivotal in the advancement of all academic disciplines. In today's dynamic world, driving innovation across fields, including medicine, is essential (1). In addition to exploration of new findings, medical research inculcates critical thinking and analytical skills of healthcare professionals. Health professionals can play a crucial role in advancing the field of medicine through their participation in research. They have the potential to contribute significantly to our understanding of diseases and developing new treatments and therapies (2). However, undergraduate health professionals often have limited exposure to research due to inadequate opportunities, lack of training, and the misconception that research is irrelevant to clinical practice (3). Such limitations hinder their ability to contribute meaningfully to medical progress.

At admission, undergraduate health professionals possess varying degrees of previous research experience. Multiple factors, including institutional background, pre-medical education, personal interests, and the influence of teachers or role models, can shape and influence their perception of research (4). Despite these differences, most undergraduates view research as a valuable component of their

education and future careers, acknowledging its role in enhancing knowledge and improving patient care (5). However, their engagement is frequently constrained by limited access to research opportunities, insufficient exposure to research methodologies, and inadequate training. Moreover, some students misconceive that research lacks relevance to clinical practice. The lack of institutional and government support for research is a broader issue, contributing to the persistent disconnect between scientific knowledge and its application. Growing concern in developing countries emphasizes the need to promote research and bridge this gap (6).

To better engage undergraduate health professionals in research and harness their potential contributions, it is essential to understand their perceptions, levels of participation, and the limitations they encounter. Accordingly, this study was designed to assess undergraduate healthcare students' perceptions and participation in research, identify their challenges, and gather recommendations for improving research involvement. The findings aim to inform strategies for addressing these limitations and fostering a more research-positive mindset among students.

Objectives

This study aimed to assess undergraduate healthcare students' perceptions and participation in research, identify perceived barriers, and collect their recommendations for improving engagement.

Methods

This cross-sectional study was conducted at Lahore Medical & Dental College, Lahore, from January 2023 to July 2023 (Ethical Review No: LMDC/22796), involving 1514 students from MBBS, BDS, Pharm D, BS Nutrition, and BS Biotechnology programs. A sample size of 670 was calculated using Open-Source Epidemiologic Statistics for Public Health (OpenEPI) with a 95% confidence interval for an estimated population of 2600 (7). Convenience sampling was employed, and all 1514 students who volunteered were included, increasing the confidence level to 99%. The study instrument was a structured questionnaire developed based on findings from preliminary literature on undergraduate research involvement in health sciences (8-10). It comprised five sections: demographics, perceptions, participation, limitations, and recommendations. The perception section contained three questions, while the participation, limitations, and recommendations sections included seven, five, and seven questions, respectively. The questionnaire featured multiple-choice items, checkboxes, Yes/No questions, and 4-point Likert scales. Frequencies were calculated for each question, recording the number of students selecting each response (such as 'Yes' or 'No') and the level of agreement. This methodology enabled a detailed distribution of responses and provided a comprehensive overview of participants' perspectives. Responses to Likert scale questions were summed to create composite scores for perception and participation, which were then compared across disciplines. Questionnaire reliability was assessed using Cronbach's alpha. The Content Validity Index (CVI) was determined for each item (I-CVI) and the entire scale (S-CVI), with an acceptable threshold set at 0.83 (11, 12).

Informed consent was obtained from all participants, and confidentiality of responses was assured. Data were entered and analyzed using Statistical Package for the Social Sciences (SPSS) statistical software (version 22.0, International Business Machines Corporation, New York, USA). Normality was tested via the Kolmogorov–Smirnov test, with values > 0.05 indicating normal distribution. Descriptive statistics are presented as frequencies and percentages. Chi-square tests assessed associations between yes/no responses and gender or residential status. Composite perception and participation scores were compared across disciplines using analysis of variance (ANOVA), with significance set at $p < 0.05$. Post-hoc Tukey's test identified group differences.

Results

Table 1 presents participants' demographics: 1514 students participated, including 1078 (71.1%) women and 437 (28.8%) men. The reliability of the questionnaire was 0.78. The I-CVI values ranged from 0.83 to 1, with an overall S-CVI of 0.96. The minimum acceptable Content Validity Ratio (CVR) per item was 0.83, with an average CVR of 0.95.

Table 2 details students' perceptions and participation in research. Most (76.5%) agreed that research is necessary, 15.3% were neutral, and 7.2% disagreed. Nearly half (44.9%) had never planned to design a research question. Moreover, 77.8% had neither attended research courses/workshops nor participated in research projects. Chi-square tests revealed no significant association between participation and gender or residential status (Table 3).

ANOVA showed significant differences in perception scores among MBBS, BDS, and DPT students (Table 4), with Tukey's Honestly Significant Difference (HSD) test indicating higher perception scores for MBBS students than for BDS and DPT (Table 4).

Figure 1 illustrates the reported research limitations. The primary barrier was the lack of perceived importance, with 32.3% unaware of the research. Other notable limitations included insufficient funding (16.4%) and inadequate supervision/counseling (28.1%). Figure 2 summarizes recommendations to enhance research involvement: 60.3% proposed establishing research support centers, 56.6% advocated for qualified, research-oriented mentors, and 57.7% recommended workshops to improve understanding. Moreover, 43.8% suggested organizing undergraduate research competitions.

Discussion

This study highlights valuable insights into the perceptions and participation of undergraduate health professionals in research activities. A majority recognized the importance of research in their academic journey and expressed their interest in research projects. However, most had minimal hands-on research experience, consistent with findings from previous studies (13). Medical students lacking exposure to research opportunities or formal training lack the necessary skills and knowledge to contribute meaningfully to the medical field (14). A researcher's perception of their field strongly influences their attitude, motivation, and engagement. In the present study, some participants displayed disinterest in research. This finding is supported by previous findings reporting low enthusiasm for research, even at the postgraduate level, among faculty in medical institutions across Pakistan (15). El Achi et al. (2020) reported that students who perceive research as irrelevant to clinical practice often perceive it as abstract and disconnected from real-world medicine, diminishing their engagement (8). One possible reason for this disinterest could be the curriculum prioritizing theoretical instruction over experimental research. These results align with the findings by Khan et al. (2009), who reported greater interest in research among students enrolled in problem-based learning programs compared to those in traditional lecture-based settings (16).

Conversely, a positive attitude toward research is observed in many countries despite common barriers (such as lack of funding, time constraints, inadequate knowledge, and limited supervision) (6). Students who participated in research in the current study reported positive outcomes, describing the experience as beneficial. These findings align with previous studies that reported early research involvement as essential for enhancing critical thinking and academic performance (17, 18).

Among the identified limitations, lack of funding and resources were prominent, echoing previous reports that limited access to research infrastructure is particularly challenging for students in rural or under-resourced settings (19). Moreover, inadequate supervision and mentorship were major obstacles. These findings are supported by studies highlighting the shortage of experienced research mentors (9), which contributes to insufficient training and a lack of confidence in conducting research (20). Although students are trained in clinical competencies, they often lack the methodological skills to design, implement, and analyze research projects, hampering their ability to contribute to the scientific community (20). Time constraints due to heavy academic workloads were another commonly cited limitation; this finding aligns with findings by Memarpour et al., (2015) (6) who identified similar challenges. Many students suggested that research should be integrated as a mandatory component of undergraduate education. Research is often treated as optional or secondary, discouraging student participation and limiting their academic growth. A lack of recognition and incentives for research contributions further demotivates students. These findings echo the concerns of Arshad et al., who reported that students desired rewards, such as incentives for publication, to justify their time investment in research (13). Moreover, many students were unaware of available research opportunities and found it difficult to balance research with academic responsibilities—concerns also documented in earlier studies (9, 21). Encouragingly, participants strongly preferred structured research training through workshops, mentorship programs, and the establishment of dedicated research support centers. These recommendations align with best practices cited in the literature to enhance undergraduate research engagement (22, 23).

To overcome these limitations, medical universities must prioritize integrating research into undergraduate medical education. Students can be encouraged through structured research opportunities, curriculum-based research training, and emphasis on its clinical relevance. Government support is crucial in providing funding and resources. Policymakers should revise existing policies and implement initiatives that foster research progress. These efforts will help cultivate a more research-positive mindset among medical students, preparing future healthcare professionals to meet evolving challenges in the field.

Conclusion

Medical students hold significant potential to contribute to the advancement of medicine through research. However, limited awareness, poor perception, and other barriers impede their engagement. This study highlights the urgent need to enhance undergraduate research involvement. Most students lack the practical exposure and planning for meaningful participation, highlighting a substantial educational gap. Bridging this gap requires integrating research modules into the curriculum, conducting targeted workshops, and ensuring access to supportive resources that facilitate undergraduate research engagement.

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Conflict of interests: There is no conflict of interest.

Ethical approval: This cross-sectional study was conducted at Lahore Medical & Dental College, Lahore, from January 2023 to July 2023 (Ethical Review No: LMDC/22796).

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Table 1. General Information of the study participants

Variable	Category	Frequency (f)	Percentage (%)
Total number of participants	n	1514	100
Gender	Female	1078	71.1
	Male	437	28.9
Residential Status	Day Scholar	367	24.2
	Hostelite	1147	75.8
Mother's Education	Matric / O levels	342	22.6
	F Sc / A levels	312	20.6
	Bachelors	507	33.5
	Postgraduate	352	23.2
Father's Education	Matric / O levels	207	13.7
	F Sc / A levels	257	16.9
	Bachelors	479	31.7
	Postgraduate	571	37.7
Year of Study	1st Year	618	40.8
	2nd Year	386	25.5
	3rd Year	195	12.9
	4th Year	153	10.1
	5th Year	162	10.7
Discipline	MBBS	491	32.4
	BDS	144	9.5
	DPT	386	25.5
	PharmD	441	29.1
	BS Biotechnology	34	2.2
	BS Nutrition	18	1.1

n = sample size, Data is presented as frequencies and percentages

Table 2. Perception and participation of students towards research

Variable	Category	Frequency (f)	Percentage (%)
Do you think that research is important for undergraduate students?	Strongly Disagree	67	4.4
	Disagree	58	2.8
	Neutral	231	15.3
	Agree	455	30.1
	Strongly Agree	703	46.4
Extent of your interest in participating in research at undergraduate level?	Not Interested	104	6.9
	Interested	772	51.0
	Very Interested	638	42.1
Have you ever planned to design a research question?	Never	680	44.9
	Occasionally	668	44.1
	Many Times	166	11.0

Have you attended any research course/module or workshop?	Yes	336	22.2
	No	1178	77.8
Have you ever been a part of any research project?	Yes	338	22.3
	No	1176	77.7
If you have participated in research, was the process beneficial?	Yes	1407	92.9
	No	107	7.1
If you have participated in research, have you ever published any study?	Yes	1428	94.3
	No	86	5.7

Data is presented as frequencies and percentages

Table 3. Association of research participation with residential status and Gender

Variable	Participation in research			
	Yes	No	p value	OR and CI
Residential Status	n	1514	100	
Day scholar	263	884	0.34	1.1 (0.86-1.5)
Hostelite	75	292		
Gender				
Male	105	331	0.30	1.1 (0.88-1.4)
Female	233	845		

Chi square test of association, OR: Odds Ratio, CI: 95% Confidence Interval, p value < 0.05 considered significant

Table 4. Differences Across Various Disciplines Regarding Perception of Research

Variable	p-value (ANOVA)	Group	Mean (SD)	Post Hoc Tukey Test	Mean Difference (95% CI)
Perception of Research	0.001*	MBBS (a)	4.24 (0.9)	a-b: <0.01*	0.40 (0.11–0.69)
		BDS (b)	3.84 (1.2)	a-c: <0.05*	0.21 (0.01–0.42)
		DPT (c)	4.02 (1.0)	b-c: >0.05	-0.18 (-0.48–0.11)

p value calculated by ANOVA and Post Hoc Tukey Test, 95 % CI: Confidence Interval, *significant p value < 0.05

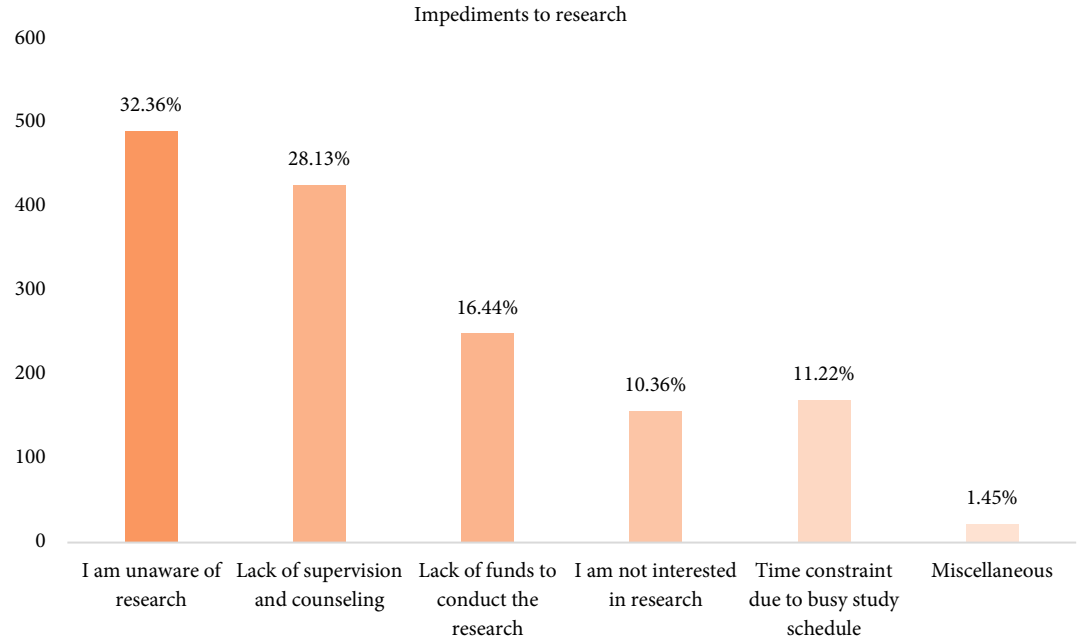

Figure 1. Percentages of students for various impediments to research

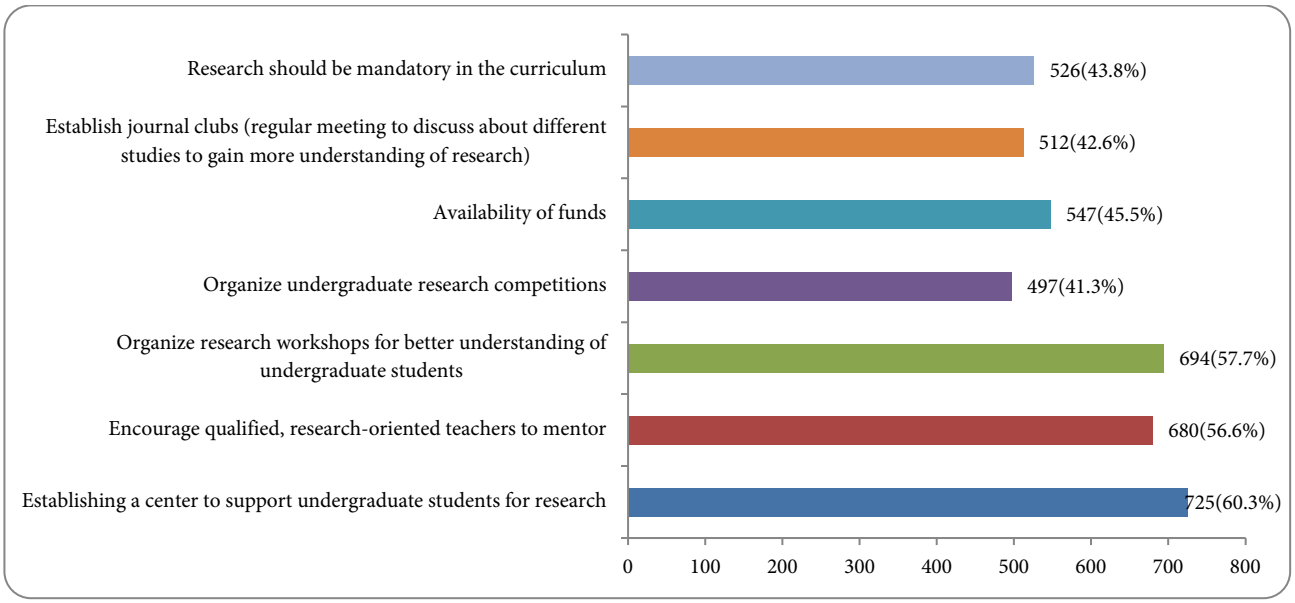

Figure 2. Frequencies and percentages of students for various recommendations to improve research involvement among undergraduate health professionals