



Barriers to Undertaking Medical Research from the View point of a Researcher in a Developing Medical Institution in Northern India

¹Raj Kumar, ²Brajesh Ranjan, ³Foulisa Pyrbot, ⁴Fariza Jamil, ⁵Arka Mondal, ⁶Nitin Kumar Pathak and ⁷Nand Kishore Singh

¹Department of Community Medicine, P.t., B.D., Sharma P.G.I.M.S., Rohtak, Haryana, India

²Department of Anatomy, Rani Durgavati Medical College, Banda, Uttar Pradesh, India

³Department of Community Medicine, Saraswati Medical College, Unnao, Uttar Pradesh, India

⁴Department of Physiology, Era's Lucknow Medical College, Lucknow, Uttar Pradesh, India

⁵Department of Pharmacology, S.G.T., Medical College Hospital and Research Institute, Gurgaon, India

⁶Department of Community Medicine, G.S., Medical College, Hapur, Uttar Pradesh, India

⁷Department of Community Medicine, S.H.K.M., Government Medical College, Nuh, Haryana, India

OPEN ACCESS

Key Words

Time, acknowledgment, workshop, analytical tools

Corresponding Author

Fariza Jamil,
Department of Physiology, Era's
Medical College, Uttar Pradesh
drfariza2612@gmail.com

Author Designation

^{1,3,4,5} Assistant Professor

^{2,7} Associate Professor

⁶ Professor

Received: 24 November 2023

Accepted: 25 December 2023

Published: 1 January 2024

Citation: Raj Kumar, Brajesh Ranjan, Foulisa Pyrbot, Fariza Jamil, Arka Mondal, Nitin Kumar Pathak and Nand Kishore Singh, 2024. Barriers to Undertaking Medical Research From the Viewpoint of a Researcher in a Developing Medical Institution in Northern India. Res. J. Med. Sci., 18: 67-72, doi: 10.59218/makrjms.2024.3.67.72

Copy Right: MAK HILL Publications

ABSTRACT

Conducting high-quality medical research that enhances patient care, advances medical education, decreases costs and benefits society as a whole, is a significant yet frequently undervalued task. It is necessary to implement appropriate procedures when a medical college is newly established, since this presents an opportunity to undertake this study. To identify the barriers faced by the researchers for various domains. Study included currently working faculties including senior residents and demonstrators as participants. A structured questionnaire with close ended responses was used which covered the baseline characteristics of subjects and perceived research barriers among researcher. The study was initiated after obtaining the institutional ethical approval. During analysis of data an association between variables was significant for $p < 0.05$. In present study out of 217 eligible participants only 156 of them participated. The mean age of participants was 35.40 ± 4.45 years. Among various barrier domains the individual items having lowest mean rank were lack of acknowledgement (2.30 ± 1.06) and lack of a research cell. The difference in the scores for various domains was not significantly associated with participants age, designation and gender ($p > 0.05$). Despite the presence of a young workforce, it was surprising to notice that about half of the faculty members did not consider research as a part of their job responsibility, probably due to lack of acknowledgement, lack of implementation of research findings, difficulty in getting scholar/fellowships, lack of confidence for their role and lack of sufficient financial budget. Time, acknowledgment, workshop, analytical tools.

INTRODUCTION

Research, both scientific and systematic review, is a crucial cornerstone in the advancement of human civilization. Furthermore the advancement of scientific and rational concepts relies heavily on the backing of thorough study. The study is recognized as a significant measure of growth. The institution of higher education plays a crucial role in the production and distribution of knowledge, which is essential for the sustainable development of the country. The primary responsibilities of the institution include training human resources, fostering knowledge development and growth and conducting research to address identified problems^[1-5].

Developing the capacity is a highly effective and long-lasting tool for development in the health sector, particularly in developing countries. Health research in the field of health systems aims to improve healthcare by making it more equitable and less discriminatory^[6-8]. However, research in developing countries is insufficient and limited compared to developed countries, with minimal investment in human resources, budget and research facilities. This is evident from the fact that, between 2005 and 2015, 57% of medical colleges in India did not produce a single publication^[9].

A medical educator has a range of duties, such as instructing undergraduate and postgraduate students, conducting clinical practice, managing administrative tasks, overseeing assessments and providing guidance for postgraduate dissertations and mentoring. The primary research endeavors are carried out by residents and faculties^[10]. In recent years, there has been a significant focus on researching the obstacles faced by faculty members. These obstacles, such as insufficient budget allocations, untimely and inaccurate information, frequent changes in management and laws, scarcity of professional researchers, inadequate selection and administration and absence of a conducive research program, hinder the progress of research^[11-13].

Conducting high-quality medical research that enhances patient care, improves medical education, reduces costs and benefits society as a whole is an important but often underestimated responsibility. When a medical college is new and in a developing phase, it is crucial to take appropriate measures to ensure that no gaps are left in creating an environment that is conducive to conducting excellent research. Therefore, this presented an opportunity to study at our healthcare institution in order to determine the obstacles faced by researchers at different levels of individual, professional, establishment, financial, scientific and management.

METHODS

The present quantitative study was cross-sectional in design, conducted at a tertiary care teaching

hospital of Haryana state for a duration of four months (August-November 2020). The study took place over a four-month period from August to November 2020. This tertiary care teaching hospital was established in 2013 under the Government of Haryana Legislative Act. In recent times a limited number of departments have initiated postgraduate programs in the medical college.

The study participants consisted of all faculty members, including senior residents and demonstrators (post PG) who were currently employed at the study site during the study period. The roster of study participants was acquired from the Dean's office, including their contact information, totaling approximately 217 eligible individuals. The participants who could not be reached after three or more consecutive attempts were excluded from the study. A total of 217 participants taken as per previous article found faculty perceiving research barriers were 50% and taken confidence interval of 95% and 10% absolute allowable error, by convenience sampling method.

A structured questionnaire comprising of closed-ended questions was created to gather information about the fundamental characteristics of the participants and the obstacles encountered by researchers. The questionnaire was tested on a limited sample of researchers (n = 10) and the average duration for completing the questionnaire was between 20 and 30 min. The gathered questions underwent content evaluation by a team consisting of 15 medical specialists. The objective was to ascertain the issues that exhibited a substantial level of consensus among experts. Aiken's statistic was employed to measure the level of agreement among experts for each individual issue. The study included questions with an Aiken's value greater than 0.7. The questions were deliberately designed to be straightforward and clear in order to align with the study's aims. Modifications were implemented as necessary to enhance understanding and structure the questions prior to distributing the final survey to the study participants.

The study questionnaire was completed independently by students and consisted of two components. Section 1 examined the fundamental data of the participants, encompassing their age, gender and professional roles (such as professor, associate professor, assistant professor, senior residents and demonstrators). Section 2 gathered data on the obstacles that researchers perceive in their research work. These barriers were categorized into six domains individual level (11 items) professional level (6 items) research facility level (5 items) financial level (3 items) scientific level (4 items) and managerial-organizational level (4 items)^[14]. Each item in these domains was rated on a five-point Likert scale, with 5

indicating complete disagreement and 1 indicating complete agreement. Participation in this study was optional and did not involve any form of compensation. The participants were informed about the goal of the study and asked to participate. After gaining their informed consent, they were enrolled in the study. Throughout the study the anonymity and confidentiality of the participants were upheld. The investigator personally handed the questionnaire to the study respondents and then reviewed the completed questionnaires for completeness. The study was commenced following the acquisition of ethical approval from the Institutional Ethics Committee (IEC) of the medical college.

The collected data was entered into the MS Excel spreadsheet, suitably coded and subsequently cleansed. The analysis was conducted using IBM SPSS Statistics for Windows, Version 22.0 (IBM Corp. Armonk, NY, USA). Additional variables were generated during the process of data cleaning to enhance the correlation between variables. Prior to conducting frequency testing, distinct values for different outcomes were established. Categorical data were expressed as percentages while quantitative data were expressed as the mean (Standard Deviation) and median. A score below or equal to the median score for different barrier domains was classified as bad. The mean score/variance of several domains among different groups was assessed using the Independent t-test and ANOVA test. The tests were conducted at a significance level of 5%, meaning that an association was considered significant if the p-value was below 0.05.

RESULTS

Out of the 217 individuals that were qualified to engage in the study, only 156 actually took part. Of the participants, 61.5% were males and 38.5% were females. More than three quarters of the participants were between the ages of 31 and 40, with an average age of 35.40 ± 4.45 years. Approximately 40% of the participants were either senior residents or professors (Table 1). Table 2 the data indicates that among various barriers the individual items with the lowest average rank were lack of acknowledgement (2.30 ± 1.06) lack of a research cell (2.33 ± 1.28) lack of knowledge about author guidelines (2.56 ± 0.97) and lack of implementation of research findings (2.56 ± 1.12). On the other hand the items with the highest average rank were difficulty in establishing relationships with researchers (3.24 ± 0.96) lack of time due to patient care (3.29 ± 1.01) lack of confidence for study duration (3.37 ± 1.21) and work overburden (3.24 ± 0.96). Table 3 the data indicates that the highest average score was observed for the individual

Table 1: Baseline characteristics of study participants (N = 156)

Variables	Frequency/mean	Percentage/SD
Gender		
Male	96	61.5
Female	60	38.5
Age (in years)	35.40	4.45
Age groups		
<31 years	18	11.5
31-40 years	118	75.6
>40 years	20	12.8
Designation		
Senior resident/demonstrator	60	38.5
Assistant professor	30	19.2
Associate professor	44	28.2
Professor	22	14.1

(3.01 ± 0.92) and professional level (3.08 ± 0.79) domains of research barriers. Conversely the lowest average score was observed for the research facility (2.73 ± 0.87) and organizational managerial level (2.60 ± 0.66) domains. This suggests that these two barrier domains are the primary areas of concern that should be addressed within the institution. Furthermore, when considering the median score as the threshold for categorizing scores in different categories as either "good" or "poor" it was noted that over half of the participants obtained low scores in all domains related to research hurdles.

In Table 4 an investigation was conducted to determine the correlation between the average scores of different barrier domains and the baseline characteristics of the participants. It was discovered that there was no significant link between the differences in scores for various domains and the age, designation and gender of the participants ($p > 0.05$).

DISCUSSIONS

The primary obstacles to research effort, as revealed by this study are the absence of recognition and failure to put research findings into practice. Only 25% of faculty members agreed that lack of time due to patient care is a barrier to research activity, as supported by Nath *et al.*^[15] study. This finding contrasts with studies conducted by Pager *et al.*, Ellis *et al.* and Wenke *et al.* which identified extrinsic factors such as workload and lack of time as barriers to research^[16-18]. These results suggest that faculty members in the medical college prioritize clinical duties over research activity.

The individual elements, namely lack of personal desire and lack of interest by the faculty to conduct research projects are the least significant limiting factors. Fortunately, they are also the most challenging to overcome. A study conducted by Conradie *et al.* identified several barriers to research, including the absence of a specialized research team (47.7%) unreliable internet access (32.6%) and a lack of staff with research skills (31.8%)^[19]. Another study conducted by Fournier *et al.* among residents revealed that barriers to research include a limited amount of dedicated time (64%) insufficient financial resources (55%) and a lack of research education (45%)^[20].

Table 2: Distribution of perceived barriers for items of various domains among study participants (N = 156)

Domain	Items	Mean rank	Standard deviation	
Individual level	Lack of interest	3.16	1.06	
	Engagement in administrative/non-academic activity	3.00	1.17	
	Sensitivity to social issues	2.87	1.23	
	Lack of commitment	3.08	1.33	
	Lack of Motivation	3.22	1.16	
	Lack of mental relaxation	3.06	1.25	
	Lack of mentorship	3.07	1.24	
	No direct monetary benefit	2.63	1.23	
	Lack of confidence in topic selection	2.97	1.22	
	Lack of confidence for their role	2.63	1.11	
	Lack of confidence for study duration	3.37	1.21	
	Professional domain	Work overburden	3.42	0.99
		Lack of time due to patient care	3.29	1.01
		Lack of manpower	2.85	1.26
Difficulty in establishing relation with researchers		3.24	0.96	
Difficulty in getting scholar/fellowships		2.66	1.01	
Hurdles in attending conferences/workshops		2.99	1.05	
Research facility level		Tedious and time-consuming process	2.58	1.35
	Limited access to research database at institute	2.67	1.26	
	Lack of a research cell	2.33	1.28	
	Non-availability of well-equipped research lab	3.07	1.00	
	Lack of research training facility	3.03	1.14	
Finance level	Low/ No financial incentive	2.90	1.18	
	Time taking process to obtain funds	2.81	1.26	
Scientific level	Lack of sufficient financial budget	2.78	1.16	
	Lack of skill for research methodology	2.81	1.06	
	Lack of skill for statistics analytics tools	2.81	1.16	
	Lack of skill for review and submission process	2.99	1.20	
Scientific level organizational-managerial level	Lack of knowledge about author guidelines	2.56	0.97	
	Lack of implementation of research findings	2.56	1.12	
	Lack of interdepartmental coordination	2.69	1.14	
	Weak system of information dissemination	2.83	1.06	
	Lack of acknowledgement	2.30	1.06	

Table 3: Mean value of the perceived barriers for various domains among study participants (N = 156)

Research barrier domains	Mean	SD	Minimum	Maximum	Median	Poor n (%)
Individual level	3.01	0.92	1.64	4.91	3.00	82 (52.2)
Professional level	3.08	0.79	1.67	4.67	2.83	84 (53.5)
Research facility level	2.73	0.98	1.00	4.60	2.60	79 (50.3)
Finance level	2.83	0.87	1.00	5.00	2.67	84 (53.5)
Scientific level	2.79	0.74	1.00	4.50	2.75	86 (54.8)
Organizational-managerial level	2.60	0.66	1.25	4.25	2.50	88 (56.4)

Table 4: Association of perceived barriers with baseline characteristics of study participants (N = 156)

Variable	Individual level	Professional level	Research facility level	Finance level	Scientific level	Organizational-Managerial level
<31 years	2.95±0.64	2.91±0.54	2.60±0.82	3.09±1.07	2.65±0.74	2.55±0.54
31-40 years	2.96±0.93	3.07±0.81	2.71±0.99	2.83±0.84	2.82±0.68	2.62±0.68
≥40 years	3.25±1.00	3.24±0.83	2.96±1.01	2.55±0.92	2.73±1.00	2.47±0.61
p-value	0.433	0.449	0.490	0.154	0.608	0.631
Male	2.95±0.89	3.04±0.78	2.63±0.93	2.90±0.88	2.86±0.70	2.63±0.66
Female	3.08±0.94	3.12±0.80	2.88±1.03	2.71±0.82	2.86±0.77	2.53±0.65
p-value	0.377	0.517	0.126	0.180	0.151	0.350
Senior resident/demonstrator	3.05±0.86	3.14±0.77	2.77±0.98	2.93±0.92	2.75±0.72	2.60±0.57
Assistant professor	2.82±0.84	2.96±0.79	2.68±0.97	2.72±0.74	2.88±0.71	2.72±0.83
Associate professor	2.98±1.02	2.99±0.82	2.67±0.99	2.84±0.78	2.84±0.76	2.51±0.65
Professor	3.15±0.94	3.19±0.77	2.80±1.00	2.65±0.99	2.67±0.75	2.54±0.64
p-value	0.586	0.600	0.924	0.522	0.703	0.594

The mean score for the research facility domain was 2.60, while the average score for the organization and managerial domain was 2.73. A study conducted by Holden *et al.*^[21] found that the average scores for the organization, team and individual domains were 5.4 (with an interquartile range of 3.9-7.7) 4.4 (with an interquartile range of 2.6-6.1) and 3.9 (with an interquartile range of 2.9-6) respectively. Another study by Lyons *et al.*^[22] also identified organization and communication domains as significant barriers to research. In a study by Ataee *et al.*^[23], it was observed that the average score for regulatory barriers was higher than the average score for personal obstacles ($p < 0.05$). The averages scores for different domains do

not substantially change based on gender, which is consistent with the findings of Marrone *et al.*^[24] who demonstrated a notable rise in the number of women researchers during the previous ten years. However a study by Witteman *et al.* revealed that gender disparities in grant financing among faculty members are associated to less positive evaluations of women as principal investigators rather than the calibre of their planned research. Additionally the results of Lone *et al.*^[25] clearly show that, in comparison, men are more productive on average than women in all performance indicators, particularly research productivity, patent creation, funding and cross-disciplinary collaboration; however, over time the difference is closing. A study by Hagan *et al.*^[26]

discovered that although female faculty members, especially in allied health fields, believe research has more personal significance than male faculty members, their research activities are more hampered by a lack of time^[27].

It is possible to speculate that younger faculty members may be more inclined to be content with their first job in academia. However, in the current study, there was no difference in the average scores for different areas based on the academic rank and age of the faculty. On the other hand a study conducted by Hagan *et al.*^[27] found that the age of the faculty member was negatively related to their overall satisfaction with research opportunities ($r = -0.283$, $p = 0.019$). Additionally, neither the duration of employment at the institution nor the academic rank had any significant association with the outcomes ($p > 0.05$). The study's shortcomings stem from the use of convenience sampling, which restricts the capacity to apply the findings to a broader population.

CONCLUSION

Although there is a young workforce, it is surprising that approximately half of the faculty members do not view research as a component of their job obligations. This is likely due to a lack of recognition, failure to apply research findings, absence of a research department, challenges in obtaining scholarships or fellowships, lack of confidence in their role and insufficient financial resources. In order to acknowledge this reality and encourage research in the medical institutions of the country the National Medical Commission (NMC) has established a requirement for the publication of original articles as a condition for advancement. All recently hired teachers must also complete a research methodology course within a set timeframe. The NMC has proposed that medical college lecturers should be encouraged to acquire PhD degrees in order to enhance their research interests and capabilities.

REFERENCES

1. Bowling, A., 2002. Research Methods in Health: Investigating Health and Health Services. 2nd Ed Edn., Philadelphia Pennsylvania, Maidenhead,
2. Doyle, M.P., 2000. Academic Excellence: The role of research in the physical sciences at undergraduate institutions. Tucson, Arizona.
3. Whitcomb, M.E., 2003. The medical school's faculty is its most important asset. Acad. Med., 78: 117-118.
4. Sadana, R., C. D'Souza, A.A. Hyder and A.M.R. Chowdhury, 2004. Importance of health research in south asia. BMJ., 328: 826-830.
5. Dandona, L., Y.S. Sivan, M.N. Jyothi, V.U. Bhaskar and R. Dandona, 2004. The lack of public health research output from India. BMC. Public. Health., 4: 1-12.
6. Hennink, M. and R. Stephenson 2005. Using research to inform health policy: Barriers and strategies in developing countries. J. Health. Commun., 10: 163-180.
7. Majumder, M.A., 2004. Issues and priorities of medical education research in Asia. Ann. Acad. Med. Singapore., 33: 257-263.
8. Nejatizadeh, A., M. Sarnayzadeh, K. Kahnouji, R. Ghasemi and N. Nakhodaei, 2016. Constraining factors of research among faculty members at hormozgan university of medical sciences. Electron. physician, 8: 2405-2409.
9. Ray, S., I. Shah and S. Nundy, 2016. The research output from Indian medical institutions between 2005 and 2014. Curr. Med. Res. Pract., 6: 49-58.
10. Albert, M., B. Hodges and G. Regehr, 2006. Research in medical education: Balancing service and science*. Adv. Health Sci. Educ., 12: 103-115.
11. Tullu, M. and S. Karande, 2016. Quality research in Indian medical colleges and teaching institutions: The need of the hour. J. Postgraduate. Med., 62: 213-215.
12. Tullu, M. and S. Bavdekar, 2016. Research publications for academic career advancement: An idea whose time has come. but is this the right way? J. Postgraduate Med., 62: 1-3.
13. Asokan, N. and K. Shaji, 2016. Methods to enhance capacity of medical teachers for research publications. Indian J. Public Health, 60: 154-158.
14. Ehtesham, H., R. Safdari, M. Robiaty and N. Ziaee, 2018. Barriers to participation in medical research from the perspective of researchers. J. Educ. Health Promotion, Vol. 7. 10.4103/jehp.jehp_26_17
15. Nath, B., R. Kumari, 2017. Perceived barriers and effect of knowledge-based intervention on the competencies of medical faculty members towards conducting. Research, J. Med. Edu. Vol. 16
16. Pager, S., L. Holden and X. Golenko, 2012. Motivators, enablers and barriers to building allied health research capacity. J. Multidiscip. Health., 5: 53-59.
17. Ellis, N., T. Loughland, 2016. The challenges of practitioner research: A comparative study of singapore and NSW. Australian. J. Teacher. Education., 41: 2-16.
18. Wenke, R.J., S. Mickan and L. Bisset, 2017. A cross sectional observational study of research activity of allied health teams: Is there a link with self-reported success, motivators and barriers to undertaking research? BMC. Health. Serv. Res., Vol. 17. 10.1186/s12913-017-1996-7
19. Conradie, A., R. Duys, P. Forget and B.M. Biccadd, 2018. Barriers to clinical research in Africa: A quantitative and qualitative survey of clinical researchers in 27 African countries. Br. J. Anaesth., 121: 813-821.

20. Fournier, I., K. Stephenson, N. Fakhry, H. Jia and R. Sampathkumar *et al.*, 2019. Barriers to research among residents in otolaryngology - head and neck surgery around the world. *Eur. Ann. Otorhinolaryngol., Head. Neck. Dis.*, 136:
21. Holden, L., S. Pager, X. Golenko and R.S. Ware, 2012. Validation of the research capacity and culture (rcc) tool: Measuring rcc at individual, team and organisation levels. *Aust. J. Primary Health*, 18: 62-67.
22. Lyons, C., T. Brown, M.H. Tseng, J. Casey and R. McDonald, 2011. Evidence-based practice and research utilisation: Perceived research knowledge, attitudes, practices and barriers among Australian paediatric occupational therapists. *Aust. Occup. Ther. J.*, 58: 178-186.
23. Ataee, M., A. Hesamzadeh and M. Kheradmand, 2015. Research barriers from experts' viewpoints who attended the research workshops of mazandaran university of medical sciences. *J. Med. Life.*, 55: 2071-2074.
24. Marrone, A.F., L. Berman, M.L. Brandt and D.H. Rothstein, 2020. Does academic authorship reflect gender bias in pediatric surgery? an analysis of the journal of pediatric surgery, 2007–2017. *J. Pediatr. Surg.*, 55: 2071-2074.
25. Witteman, H.O., M. Hendricks, S. Straus and C. Tannenbaum, 2019. Are gender gaps due to evaluations of the applicant or the science? a natural experiment at a national funding agency. *Lancet.*, 393: 531-540.
26. Lone, F.A. and M. Hussain, 2017. Gender variations in research productivity: insights from scholarly research. *Libr. Philos. Pract.*, 1: 1-12.
27. Hagan, J.L., P. Armbruster and R. Ballard, 2019. Barriers to research among faculty at a health sciences university. *Am. J. Educ. Res.*, 7: 44-48.