ORIGINAL ARTICLE

Healthcare Professionals' Attitudes, Challenges, and Potential Solutions for Conducting Research: A Mixed-Method Study

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ABSTRACT

Objective: To explore healthcare professionals' attitudes toward research, identify key barriers they face, and uncover potential solutions for overcoming these obstacles, as proposed by the professionals themselves.

Study Design: Exploratory Sequential Design Mixed method study.

Place and Duration of Study: It was conducted from 15th April 2022 to 15th Oct 2022 among health professionals working in tertiary care hospitals of Rawalpindi and Islamabad.

Materials and Methods: A total of 276 junior to mid-level health professionals were included through nonprobability consecutive sampling. The quantitative part was done using a structured close ended questionnaire regarding research barriers. The SPSS version 24.0 was utilized for statistical analysis of quantitative data.

Results: In this study a total of 276 health care professionals were included. Male and female doctors were 144 (52.2%) & 132 (47.8%)respectively. Regarding attitude of research 121 (43.8 %) participants believed that research promotes critical thinking and 116 (42.0%) considered it most helpful to improve patients' care. 133 (48.2%) participants attended research training of minimum 8 hours. The common barriers to research as identified by health professionals are absence of support especially technical guidance, less time allotted for research, less funding opportunities, no proper mentoring or supervision, lack of knowledge and skills about research.

Conclusion: Health professionals face several research barriers, including a lack of technical support, time, funding, mentorship, and research skills. The absence of a research culture and logistical support further complicates the situation, leaving them overwhelmed and without time for research. Addressing these challenges is essential for enabling impactful research.

Key Words: *Barriers, Health Research, Health Care Professionals, Junior Faculty, Solutions.*

Introduction

Research is considered a systematic assessment, that includes research proposal development, testing hypothesis and evaluations, with the aim to add to the generalizable body of knowledge.[1, 2]There is an increasing need for the utilization of evidence-based medicine in clinical practice and that requires good quality scientific research too.[3]This demands proper research knowledge and experience as well as time, financial assistance, and a team of scientists.[4,5]

Many studies have been done previously on medical students as well as postgraduate trainees to find out their interest in health research and barriers while conducting their research work.[6] A study conducted by Auf Al et al.,[7] on teaching faculty stated that main barriers in research are lack of funding, financial incentives followed by work stress. Lack of allocated time, statistical, supervisor and research skill were also main barriers in research. Another study on health care workers concluded that doctors have a positive attitude towards research but they find it to be a stressful task as well.[8] A study conducted by Asaar A et al; on doctors analyzed that lack of time, insufficient research training, improper mentorship, and deficient statistical support are the main barriers to research. [9] Khalaf AJ et al., reported that 76.5% of the respondents mentioned that the time allowed

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for conducting research is not appropriate and is one of the most significant barriers. They also pointed out that no financial (63.0%) and statistical support (50.0%) is available for facilitating the research process.[3]

The rationale of study was that it is the need of an hour to find out the barriers and their relevant solutions in the process of research, to fill the gap and create a research conducive environment in health institutions. Scientific gap in literature still prevails because studies on research barriers are not only lacking nationally but also internationally. Since there is a lack of evidence on research barriers and possible solutions especially considering doctors perceptions, there is a need to conduct further research to reach some positive conclusions. Moreover, there is paucity of evidence generated through in-depth qualitative exploration of perceptions of doctors regarding solutions to barriers and their suggestions to overcome these barriers. So, we conducted this study with the aim of identifying the attitude of health care professionals of different institutes belonging to different specialties. This study was aimed at identifying barriers faced by health care professionals while conducting research. The novelty of this study is that it aimed at in-depth exploration of the ideas and suggestions of health care professionals to overcome the health research barriers to fill the gap in literature to some extent. This study addressed the gaps and barriers to research and recommends suggestions to overcome the barriers thus promoting research. The Objective of study was to explore healthcare professionals' attitudes toward research, identify key barriers they face, and uncover potential solutions for overcoming these obstacles, as proposed by the professionals themselves.

Materials and Methods

An Exploratory Sequential Design Mixed Method study was conducted from 15th April 2022 to 15th October 2022. Junior to mid-level health care professionals (House officers, medical officers, Registrars and Assistant professors) working in tertiary care hospitals of Rawalpindi and having some prior experience of conducting health research were included. Undergraduate medical students and post graduate trainees were not included in this study. Sample size was calculated to be 276 using WHO sample size calculator and following statistical assumptions: Confidence level=95%, Alpha error = 5 ,Relative precision = 5%, Anticipated proportion mentioning insufficient research time allotted = 76.5%.[3] Approval from ethical committee was taken via letter no 0-83-22/09/2022. Nonprobability consecutive sampling technique was employed to select the sample. Quantitative data was collected by administration of pre-determined and validated closed ended questionnaire. Permission from the primary author to use the pre-validated questionnaire was seeked through email. A written informed consent was taken from all participants. The identity of all participants in terms of their names and institutes was kept confidential. The questionnaire was based on demographic details like age, sex, professional experience, degree, designation. The second part was based on questions regarding attitude and barriers of research. It was measured on a Likert scale (1-5 points) where the higher score showed a positive attitude and more barriers. The survey questionnaire was filled out online by all participants. Data was entered and analyzed with statistical program SPSS version 24. Descriptive statistics were calculated for quantitative numerical variables such as mean and standard deviation for age and professional experience. The categorical variables like gender, attitude towards research and possible barriers were measured as frequency and percentages. The demographic characteristics were associated with positive attitude and possible barriers towards health research. ANOVA was applied to compare attitudes towards research based on age, years of practice, designation and qualification. $P < 0.05$ was taken as significant.

Qualitative part of the data was collected through In-Depth Interviews (IDIs) and Focus Group Discussions (FGDs). A total of 3 FGDs and 10 IDIs were conducted. An open-ended questionnaire was developed to assess the ideas and perceptions of respondents towards possible solutions in conducting health research. The methods of data collection during focus group discussion included audio and tape recording, note-taking and participant observation. The study investigator moderated all the interviews herself using a semi structured data collection form (open ended questionnaire). Among participants of

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1st FGD there were 3 Medical officers (MOs),2 Registrars and 1 Assistant Professor. In 2nd FGD there were 6 MOs and in 3rd FGD there were 6 Registrars. Similarly, the individual interviews were conducted using the same data collection form from 3 House officers, 3 Medical officers, 2 Registrars and 2 Assistant Professors. All interviewees belonged to the same population on whom the quantitative survey was done. For qualitative interviews and FGDs verbal consent was taken from interviewees before recording their perceptions and views regarding barriers and possible solutions to health research. For the qualitative part, notes and recordings of the 10 interviews and 3 focused group discussions were converted into transcripts. A Five steps thematic analysis was done as: organization of notes and recordings as transcripts, reading and review of transcripts, development of codes from transcripts, conversion of codes into themes and subthemes, review the themes. Triangulation was done for validation of qualitative data. For this purpose a qualified medical educationist and a content specialist from an independent medical institute were referred to. They were involved in thematic analysis in all 5 steps. They confirmed and ensured the obtained data in the form of themes and subthemes that almost matched their perceptions.

Results

In this study a total of 276 health care professionals were enrolled. Males and females were 52.2% & 47.8% respectively. Most of the respondents were in the age groups of 25 to 30 and 31 to 35 years. Four groups of years of practice were made as shown in Table I.

Information about involvement in Research Activities, independently conducting Research and Research Trainings are shown in Table II.

Attitude of Health Care Professionals towards Research are shown in Table III.

Barriers faced By Health Care Professionals in Conducting Research Shown in Table IV.

Perceptions of health care professionals towards research based on gender difference revealed that there is no significant difference in the male and female attitude towards the research work as t= 1.21, p>.05. Both males and females' attitude towards research was positive and they believed that research is helpful in many ways.

Table I: Respondents Demographic Information (n=276)

Variables	Groups	Number	Percentage
Gender	Male	144	52.2%
	Female	132	47.8%
Age	Less than 25	30	10.9%
	25 to 30	97	35.1%
	31 to 35	74	26.8%
	36 to 40	51	18.5%
	41 to 45	13	4.7%
	46+	11	4.0%
Years of Practice	less than 5	152	55.1%
	5 to 10	75	27.2%
	11 to 15	25	9.1%
	More than 15	24	8.7%
Designation	House officer	44	15.9%
	Medical officer	101	36.6%
	Registrar	48	17.4%
	Assistant professor	26	9.4%
	Other*	57	20.7%
Highest Qualification	MBBS /MD	173	62.7%
	Diploma	10	3.6%
	MCPS	16	5.8%
	FCPS	58	21.0%
	Other	19	6.9%

Others*: General Physicians and General practitioners.

Table II: Information about involvement in Research Activities, independently conducting Research and Research Trainings (N=276)

Question Statements	YES n (%)	NO n (%)
Presently involved in any research activity	116 (42.0%)	160 (58.0%)
Conducted a research by your own	144 (52.2%)	132 (47.8%)
Attended any research training so far at least 8 hours	133 (48.2%)	143 (51.8%)

Table III: Perceptions of HCP Towards the Significance of Conducting Research

	1 Not Helpful	2 Somewhat Helpful	3 Helpful	4 Very Helpful	5 Most Helpful
	n (%)	n (%)	n (%)	n (%)	n (%)
Promotes critical thinking	5(1.8%)	7(2.5%)	58(21.0%)	85(30.8%)	121(43.8%)
Improves patients care	5(1.8%)	5(1.8%)	51(18.5%)	99(35.9%)	116(42.0%)
Helps in promotion	6(2.2%)	5(1.8%)	47(17.0%)	96(34.8%)	122(44.2%)
Helps professional enhancement	3(1.1%)	2(0.7%)	44(15.9%)	98(35.5%)	129(46.7%)
Helps to change health policy	6(2.2%)	11(4.0%)	47(17.0%)	90(32.6%)	122(44.2%)

Table IV: Barriers Faced By Health Care Professionals in Conducting Research (N=276)

	1 Not a Barrier	2	3 Somewhat Barrier	4	5 Maximum Barrier	Mean	SD
	n(%)	n(%)	n(%)	n(%)	n(%)		
Insufficient research allotted time	8 (2.9%)	17(6.2%)	81(29.3%)	82(29.7%)	88(31.9%)	3.82	1.044
Lack of research training and skills	3(1.1%)	12(4.3%)	48(17.4%)	77(27.9%)	136(49.3%)	4.20	.950
Lack of statistical support	3(1.1%)	9(3.3%)	41(14.9%)	85(30.8%)	138(50.0%)	4.25	.903
Lack of mentorship and teamwork	1(0.4%)	12(4.3%)	42(15.2%)	91(33.0%)	130(47.1%)	4.22	.885
Insufficient financial support	3(1.1%)	17(6.2%)	53(19.2%)	72(26.1%)	131(47.5%)	4.13	.999
Technical & logistic support like computer and internet not easily available	26(9.4%)	39(14.1%)	60(21.7%)	82(29.7%)	69(25.0%)	3.47	1.266
Lack of self - interest and motivation	18(6.5%)	31(11.2%)	88(31.9%)	77(27.9%)	62(22.5%)	3.49	1.149
Lack of communication and linkages with other institutions	5(1.8%)	13(4.7%)	65(23.6%)	92(33.3%)	101(36.6%)	3.98	.978
Lack of financial incentives	4(1.4%)	17(6.2%)	55(19.9%)	76(27.5%)	124(44.9%)	4.08	1.011

Attitude towards Research Based on Age, Years of Practice, Designation and Highest degree are shown in Table V.

Table V: Attitude towards Research Based on Age, Years of Practice, designation and highest degree

		Mean	SD	F	p	95%CI
Age (years)	Less than 25 (n=30)	4.02	0.86	.277	0.01	3.69, 4.34
	25 to 30 (n=97)	4.02	0.72			3.87, 4.16
	31 to 35 (n=74)	4.30	0.70			4.14, 4.46
	36 to 40 (n=51)	4.30	.622			4.13, 4.48
	41 to 45 (n=13)	3.93	.660			3.53, 4.33
	46+ (n=11)	4.49	.500			4.15, 4.82
Years of Practice	Less than 5 (n=152)	4.03	.737	4.19	0.006	3.91, 4.15
	5 to 10 (n=75)	4.35	.677			4.19, 4.51
	11 to 15 (n=25)	4.19	.722			3.89, 4.49
	More than 15 (n=24)	4.36	.529			4.14, 4.59
Designation	House officer (n=44)	3.97	.709	1.448	0.218	3.75, 4.19
	Medical officer (n=101)	4.16	.710			4.02, 4.30
	Registrar (n=48)	4.28	.626			4.10, 4.46
	Assistant professor (n=26)	4.31	.612			4.06, 4.56
	Other (n=57)	4.13	.831			3.91, 4.35
Qualification	MBBS /MD (n=173)	4.11	.739	1.577	0.181	4.00, 4.22
	Diploma (n=10)	4.52	.413			4.22, 4.81
	MCPS (n=16)	3.98	.850			3.53, 4.44
	FCPS (n=58)	4.28	.665			4.11, 4.46
	Other (n=19)	4.24	.598			3.95, 4.53

Barriers faced by health care professionals towards conducting Research Based on Age, Years of Practice, Designation and Highest degree showed no significant mean score difference with p>.05.

Only mean score difference was found in various groups of designations as p<.05. The mean level (4.27) of research barriers was greater in Assistant professors compared to other professional cadres in this study. This shows that the higher the mean score, the better the attitude of the higher designation category.

Qualitative Findings

The review and detailed observation of the transcriptions led the researcher to code the verbatim. Based on synthesis and coding of transcriptions, various themes and subthemes were drawn. The list of themes is mentioned below, and the sub-themes have been described accordingly as per the perceptions and ideas of the various respondents of the in-depth interviews.

Discussion

In this study, a total of 276 medical doctors in their early to mid-career were enrolled. The average age was 29.1 ± 4.7 years and most of the study respondents were found between 25 to 35 years in the current study. In a local study the majority of the junior faculty members of medical universities of Pakistan were male and more than or equal to 35 years of age[10] A comparative study from Bahrain by

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Table VI: Thematic Analysis of Possible solutions

Theme: Common barriers and probable solutions to research
Sub-themes: • Proper training and technical assistance • Reducing overburden from hospitals • Availability of proper facilities and environment for research • Adequate time allocation for research
Theme: Research environment
Sub-themes: • Logistics like internet and computer facility • Encouraging organizational culture
Theme: Coordination and communication
Sub-themes: • Advocacy and awareness regarding research • Availability of financial support
Theme: Solutions for improvement of research facilities
Sub-themes: • Technical support • Financial incentives
Theme: Capacity development
Sub-themes: • Training workshops • Specialized focused classes • Research in medical curriculum • Proper research mentoring
Theme: Statistical and technical support
Sub-theme: Institutionalization of statistical support
Theme: Fake data and research corruption
Sub-themes: • Penalties for research corruption • Strict policy for plagiarism
Theme: Further suggestions for improvement of research
Sub-themes: • Coordination and research channelization • Awareness regarding developments and advancements • Focus on local communities for finding local solutions to problems
Theme: The diseases are changing patterns and shapes
Sub-theme: • Proper logistical and technical support

Khalaf *et al*., witnessed mean age of 43.0 ± 4.7 years in their study respondent physicians.[3] Similarly, in the current study just by slight margin but the males constituted the majority (52.2%). Many previous studies have also witnessed this stratum and there is no significance of respondents' gender.[11,12] Most of the evidence revealed female gender preponderance.[13] When the attitude of doctors towards research was assessed in the current study, it was noted that research studies were helpful in doctors' professional enhancement such as promotion of critical thinking, support policy change and beneficial for patient care. Many previous research studies on this topic had similar findings. A study by Khalaf J et al also found that junior doctors had a positive attitude towards research.[3] Another undergraduate medical student's-based study witnessed that most of the students agreed that research is beneficial in their profession, they had an overall positive attitude towards research and believed that it is relevant to their profession.[14]

In our study most of the interviewees mentioned that there is a lack of training, non-availability of mentors and logistic support. Atreya et al in their study observed similar findings.[15] In the current study, the common barriers faced by the junior doctors were lack of multiple factors like; statistical support, research allotted time, research training and skills, mentorship, financial support or incentives. There is huge evidence regarding barriers faced by medical students and medical faculty in conducting research as witnessed by many investigators.[16,17] A previous study from Pakistan by Sabzwari *et al*., also witnessed similar findings.[10,18] Khalaf *et al*., also witnessed that insufficient research allotted time, lack of financial support, financial incentives and technical support in terms of statistics were the major barriers.[3] Another recent study by Assar *et al*., assessed perceived barriers towards research in medical students and found out that lack of access to lab equipment, lack of time due to educational tasks, poor attention given to researchers, lack of funding, poor collaboration between different academic departments and research centers, insufficient research skills, lack of research space, lack of professor input and lack of familiarity with research studies were the key barriers as thought out by junior medical professionals.[17] These are similar to findings observed by our study. Pakistan is a lower middle-income country; the research budget and opportunities are also very few or rare.[19] One of the key barriers is lack of opportunity to conduct research and lack of supervision and mentorship skills for research in the country. Our study also observed that the solution to these limitations could be proper training of health care professionals. Capacity development in the shape of training workshops, specialized classes, and hiring of qualified and proficient research mentors could

solve this issue. Demirtas A et al and Habineza H et al found similar solution to these barriers.[20,21]

Following themes and subthemes were identified by qualitative part of our study:

- Proper training and technical assistance
- Decreasing burden in hospitals during duty
- Provision of proper research environment and in-house facilities
- Proper time allocation for conducting research, at least 1 to 2 hours daily or 4 to 5 hours weekly
- Communication skills, especially learning analytical and writing skills
- Financial support
- Technical support in terms of statistical support
- Developing a research culture and organizational attitude
- Proper coordination and channelization of research activities

There is no proper guidance, mentorship facility or logistical support. The supervisors are often heads of the departments, they have many other tasks like administration of wards, clinical consultations & teaching. Due to lack of research and writing capacity, many of mentors and supervisors are not well versed with research basics, so often they avoid indulging or discussing it.[22] The solution for this limitation could be proper training and grooming of health care professionals in their mid and advanced level of training, especially, with focused and courses and hands on regarding scientific research planning, conduct and analysis as well as writing skills.

The issue of unawareness, lack of coordination and communication is affecting the already poor research status of our medical institution. Capacity development in the shape of training workshops, specialized classes, and hiring of qualified and proficient research mentors could solve this issue.[23] One of the possible solutions identified in our research was proper training and technical assistance. Technical support, especially statistical issues are one of the barriers and weaknesses, there is a need to institutionalize statistical support. Thus, statistical support is crucial if one wants to conduct research and improve the overall research environment. [3, 18] Scientific research provides an opportunity to identify and understand emerging threats as well as predict future challenges and issues.[24] Like all research this study also had a few limitations. Primary health care physicians working in primary & secondary health care weren't included.

Conclusion

Health professionals face several research barriers, including a lack of technical support, time, funding, mentorship, and research skills. The absence of a research culture and logistical support further complicates the situation, leaving them overwhelmed and without time for research. Addressing these challenges is essential for enabling impactful research.

Recommendations

- By conducting advocacy and refresher courses regarding research opportunities and advancements, one can solve the issue of lack of information among healthcare professionals.
- By providing technical support, especially statistical support in medical institutions and hospitals, this issue can be solved as claimed by most of the interviewees in the present study.
- To enhance and promote overall research culture, the senior faculty and mentors could be trained and sensitized regarding basics of research so that they can guide junior doctors and other colleagues while conducting research.
- An environment of teamwork and coordination for research activity needs to be institutionalized.

Conflict of Interest

There was no conflict of interest in this study.

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CONFLICT OF INTEREST

Authors declared no conflicts of Interest.

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DATA SHARING STATMENT

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