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ORIGINAL RESEARCH ARTICLE

RESEARCH INTEGRITY AMONG POSTGRADUATES AND FACULTY: A CROSS-SECTIONAL STUDY

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ABSTRACT

BACKGROUND

Research integrity is crucial for trustworthy research, especially among postgraduates and faculty who conduct research for academic progress. Understanding their knowledge and attitudes regarding research ethics is essential for maintaining research quality.

MATERIALS AND METHODS

A cross-sectional study was conducted using a validated questionnaire assessing 'Knowledge' and 'Attitude' of research practices. The questionnaire was distributed via Google Forms through WhatsApp groups using a three-point Likert scale. Descriptive analysis and chi-square tests were used for statistical analysis.

RESULTS

The study achieved response rates of 51.06% from postgraduates and 10.63% from faculty. The mean knowledge scores were 6.96 ± 1.51 for postgraduates and 8.37 ± 1.36 for faculty. Attitude scores were 5.29 ± 2.07 and 6.92 ± 2.11, respectively. Both knowledge ($p = 0.001$) and attitude ($p = 0.008$) showed statistically significant differences between groups. Publication experience positively correlated with research perception.

CONCLUSION

Faculty demonstrated better knowledge and attitudes regarding research integrity compared to postgraduates, likely due to greater publication experience. The findings emphasize faculty's role as mentors in fostering research integrity among postgraduates.

KEYWORDS

Research Ethics, Research Integrity, Publication Ethics, Medical Education.

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INTRODUCTION

Research studies are essential components for the successful completion of postgraduate degrees and academic advancement of faculty in medicine. The implications of research significantly impact healthcare delivery and community well-being.[1] Early career training in research integrity is vital for maintaining scientific and social value.[2] Research misconduct not only hampers study credibility but may also harm patients and waste resources.[3] Understanding researchers' perceptions of scientific misconduct is crucial for preventing unethical practices and guiding students appropriately.[4]

Aims and Objectives

The study aimed to assess the knowledge and attitude of postgraduate students and faculty regarding research ethics using a validated questionnaire and to sensitize them towards research integrity through this assessment process.

MATERIALS AND METHODS

A questionnaire-based cross-sectional study was conducted among postgraduate students and faculty of the institution. The study utilized a validated questionnaire with demographic information, knowledge about misconduct, and attitude towards misconduct. The knowledge questions were derived from validated studies by Azakir et al.,[5] and Yi et al.,[6] while the attitude questionnaire was developed by Kalichman.[7] The questions were divided into three segments: five questions on demographic information, ten on knowledge about misconduct, and nine on attitude towards misconduct. The students and faculty were provided with the questionnaire online (based on a three-point Likert scale) and informed that participation in the study was regarded as informed consent. Anonymity was ensured using an appropriate online survey tool through WhatsApp groups.

Study Population

Students enrolled in postgraduate medical programs and teaching staff members of the institution were included in the study.

Data Collection

Online questionnaire using a three-point Likert scale distributed through WhatsApp groups.

Statistical Analysis

Descriptive analysis and chi-square tests were performed. P-value ≤ 0.05 was considered significant.

Ethics Statement

Approval of the Institutional Ethics Committee was obtained.

RESULTS

***Response Rate*:** 24 postgraduates out of 47 and 27 faculty members out of 254 responded to the questionnaire. The response rates of postgraduates and faculty were 51.06% and 10.63%, respectively.

Score: The mean level of ‘knowledge’ score was based on 10 questions, and the mean level of ‘attitude’ score was based on 9 questions. A score of one was given for correctly answered questions of the ‘knowledge’ section and for the right attitude in the ‘attitude’ section.

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		N	Mean	Std. Deviation	t	P
Knowledge	Post-Graduate	24	6.9583	1.51741	-3.501	.001
	Faculty	27	8.3704	1.36292		
Attitude	Post-Graduate	24	5.2917	2.07426	-2.782	.008
	Faculty	27	6.9259	2.11089		

Table 1: Mean Scores of 'Knowledge' and 'Attitude' among PGs and Faculty

The study reveals a significant disparity in both knowledge and attitude scores between faculty and PGs (Post-Graduates) (Table 1). Faculty members demonstrated superior performance with knowledge scores of 8.37 ± 1.36 compared to PGs 6.96 ± 1.51 ($p = 0.001$). Similarly, in attitude assessment, faculty scored 6.93 ± 2.11 versus PGs 5.29 ± 2.07 ($p = 0.008$). These differences are statistically significant, indicating a substantial gap in research ethics understanding between the two groups.

	Gender		Academic Position		Prior Training		Publishing Experience	
	Men	Women	PGs	Faculty	Yes	No	Yes	No
Total	25	26	24	27	27	24	33	18

Table 2: Demographics Distribution

The study population showed a balanced gender distribution with 25 men and 26 women, along with a slight majority of faculty (27) over PGs (24) (Table 2). A notable finding emerged in the publishing experience distribution, where a striking 92.6% of faculty members had publishing experience compared to only 29.2% of PGs. The prior training statistics were more balanced, with 59.26% of faculty and 45.8% of PGs having received prior training in research ethics.

Characteristic	PGs	Faculty
Prior Training	11 (45.8%)	16 (59.26%)
Publishing Experience	7 (29.2%)	25 (92.6%)

Table 3: Association of Academic Position with Prior Ethical Training and Experience in Research Publication

Analysis of academic positions reveals notable differences between PGs and faculty members in terms of ethical training and publishing experience (Table 3). While faculty showed higher engagement in both areas, with 59.26% having prior ethical training compared to 45.8% of PGs, the most striking difference was observed in publishing experience. Only 29.2% of PGs had published research, whereas an overwhelming 92.6% of faculty members possessed publication experience, reflecting their more advanced stage in academic careers and professional requirements.

Questions	Gender (%)		Academic Position (%)		Prior Training (%)		Publishing Experience (%)	
	Men (n = 25)	Women (n = 26)	PGs (n = 24)	Faculty (n = 27)	Yes (n = 27)	No (n = 24)	Yes (n = 33)	No (n = 18)
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
1. Publication Guidelines	19(76 %)	22 (84.6%)	16 (66.7%)	25 (92.6%)	24 (88.9%)	17 (70.8%)	9 (27.3%)	11 (61.1%)

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2. Manuscript Submission	20 (80%)	20 (76.9%)	15 (62.5%)	24 (88.9%)	21 (77.8%)	19 (79.2%)	28 (84.8%)	12 (66.7%)
3. Fabrication	16 (64%)	10 (38.5%)	10 (41.7%)	18 (66.7%)	16 (59.2%)	11 (45.8%)	22 (66.7%)	5 (27.8%)
4. Falsification	15 (60%)	21 (80.7%)	13 (54.2%)	23 (85.2%)	23 (85.2%)	13 (54.2%)	24 (72.7%)	12 (66.7%)
5. Research Work Pressure	22 (88%)	22 (84.6%)	21 (87.5%)	24 (88.9%)	25 (92.6%)	19 (79.2%)	26 (78.8%)	17 (51.5%)
6. Misrepresentation	21 (42%)	24 (92.3%)	21 (87.5%)	24 (88.9%)	26 (96.3%)	15 (62.5%)	27 (81.8%)	18 (100%)
7. Copying Without Crediting	22 (88%)	24 (92.3%)	20 (83.3%)	26 (96.3%)	24 (88.9%)	22 (91.7%)	29 (87.8%)	17 (51.5%)
8. Conflict of Interest	16 (64%)	17 (65.4%)	12 (50%)	18 (66.7%)	21 (77.8%)	12 (50%)	22 (66.7%)	11 (61.1%)
9. Authorship	15 (60%)	25 (96.1%)	16 (66.7%)	24 (88.9%)	25 (92.6%)	15 (62.5%)	25 (75.7%)	14 (77.8%)
10. Mosaic Plagiarism (Yes)	21 (42%)	25 (96.1%)	20 (83.3%)	26 (96.3%)	25 (92.6%)	21 (87.5%)	28 (84.8%)	18 (100%)
Overall Score								
Average Knowledge Score	66.4%	80.7%	68.3%	85.9%	85.2%	68.3%	72.7%	56.9%
>70% (7-10)	15 (60%)	22 (84.6%)	12 (50%)	25 (92.6%)	23 (85.2%)	14 (58.3%)	26 (78.8%)	11 (61.1%)
>40% (4-6)	8 (32%)	4 (15.4%)	10 (41.7%)	2 (7.4%)	3 (11.1%)	9 (37.5%)	5 (15.1%)	7 (38.9%)
<40% (1-3)	2 (8%)	-	2 (8.3%)	-	1 (3.7%)	1 (4.2%)	2 (6.1%)	-

Table 4: Knowledge of Research Ethics: Association between Correct Responses and Independent Variables.

Academic experience and training significantly influenced publication knowledge, with faculty (85.9%) and those with prior training (85.2%) showing higher comprehension than PGs (68.3%) (Table 4). Women demonstrated better overall understanding (80.7%) compared to men (66.4%), while publishing experience correlated with higher knowledge scores (72.7% vs. 56.9%). The data suggests that formal training and academic seniority are key factors in understanding publication ethics, with the strongest performance observed among faculty members and those with prior ethical training.

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Questions	Gender (%)		Academic Position (%)		Prior Training (%)		Publishing Experience (%)	
	Men	Women	PGs	Faculty	Yes	No	Yes	No
1. Republish others' work in another language	22 (88%)	25 (96.1%)	23 (95.8%)	24 (88.9%)	26 (96.3%)	21 (87.5%)	29 (87.8%)	18 (100%)
2. Don't use portions of previous publication for a new publication	22 (88%)	21 (80.7%)	19 (79.2%)	24 (88.9%)	24 (88.9%)	19 (79.2%)	28 (84.8%)	15 (45.4%)
3. Don't search for statistically significant analysis	10 (40%)	13 (50%)	7 (29.2%)	17 (62.9%)	17 (62.9%)	7 (29.2%)	20 (60.6%)	3 (16.7%)
4. Professional education should include standards of research ethics	18 (72%)	25 (96.1%)	18 (75%)	25 (92.6%)	27 (100%)	16 (66.7%)	29 (87.8%)	14 (77.8%)
5. Dishonesty does not really hurt anybody	16 (64%)	18 (69.2%)	12 (50%)	22 (81.5%)	22 (81.5%)	12 (50%)	25 (75.7%)	8 (44.4%)
6. Acceptable to selectively omit contradictory results	12 (48%)	16 (61.5%)	10 (41.7%)	18 (66.7%)	20 (74.1%)	7 (29.2%)	19 (57.6%)	8 (44.4%)
7. Willing to report misconduct to a responsible official	15 (60%)	12 (46.1%)	12 (50%)	15 (55.5%)	18 (66.7%)	9 (37.5%)	18 (54.5%)	9 (50%)
8. All co-authors must equally share the blame of fabricated data	16 (64%)	21 (80.7%)	14 (58.3%)	23 (85.2%)	23 (85.2%)	14 (58.3%)	24 (72.7%)	13 (72.2%)
9. All co-authors must equally share the punishment for fabricated data	14 (56%)	17 (65.4%)	12 (50%)	19 (70.4%)	18 (66.7%)	13 (54.2%)	21 (63.6%)	10 (55.5%)

Table 5: Attitude Regarding Ethics in Research Publications: Association between Correct Responses and Independent Variables.

Analysis of attitudes toward research ethics revealed distinct patterns across different groups (Table 5). Faculty and those with prior training consistently demonstrated stronger ethical awareness, particularly regarding publication standards (92.6% and 100% respectively) and data fabrication consequences (85.2% for both). Women showed higher ethical consciousness than men in most categories, notably in professional education standards (96.1% vs. 72%). The most significant gaps were observed in attitudes toward statistical analysis manipulation, where only 29.2% of PGs and those without prior training opposed searching for statistically significant results, compared to 62.9% of faculty. Willingness to report misconduct was relatively low across all groups (46-60%), while understanding of republishing restrictions was consistently high (88-100%). Those with publishing experience generally showed more ethical awareness, though interestingly, those without experience were more stringent about not republishing others' work (100%).

DISCUSSION

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In Table 1, the findings of our study reveal significant disparities in research integrity awareness between postgraduates and faculty members. Faculty demonstrated superior performance in both knowledge (8.37 ± 1.36) and attitude (6.92 ± 2.11) compared to postgraduates (knowledge: 6.96 ± 1.51; attitude: 5.29 ± 2.07). This aligns with Anderson et al.'s findings that demonstrated how experience and mentorship significantly influence research integrity understanding.[8]

A particularly striking finding was the substantial gap in publication experience between faculty (92.6%) and postgraduates (29.2%) shown in Table 3. This experiential difference correlates strongly with ethical awareness levels, supporting Haven et al.'s research showing that hands-on research experience enhances ethical decision-making capabilities.[9] The higher scores among those with prior training (85.2% vs. 68.3%) further emphasize the crucial role of formal ethics education in developing research integrity.

According to Table 4 gender differences emerged as a notable factor, with women showing higher overall knowledge scores (80.7%) compared to men (66.4%). This pattern aligns with Martinson et al.'s findings regarding gender-based variations in research integrity perceptions.[10] However, the most concerning finding was the relatively low willingness to report misconduct (46-60% across groups), suggesting a need for stronger institutional support systems for whistleblowing, as emphasized by Resnik and Neal's work on institutional research misconduct policies.[11]

As per Table 5, the understanding of statistical ethics proved particularly challenging for postgraduates, with only 29.2% recognizing inappropriate statistical practices. This finding echoes Fanelli's comprehensive analysis of research misconduct prevalence, highlighting the need for enhanced statistical ethics training.[12] The data suggests that formal training programs significantly improve both knowledge and attitudes towards research ethics, supporting Steneck's arguments for mandatory ethics education in research institutions.[13]

The study revealed critical gaps in understanding complex ethical situations, particularly among early-career researchers. This aligns with Fisher et al. work highlighting the importance of mentorship in developing ethical research practices.[14] Our findings suggest that a more structured approach to research ethics education, combined with practical exposure, could help bridge these knowledge gaps.

Limitations of the Study

This study was based on convenience sampling and the response rate was low; thus the professionals who completed the survey may not reflect the awareness, knowledge, and attitudes of the entire membership of the faculty.

Second, the particulars of the previous ethical training were not obtained. The mode of training and content could be improved upon in future training sessions.

CONCLUSION

The study reveals that faculty members possess better knowledge and attitudes regarding research integrity compared to postgraduates, attributed to their greater publication experience. This emphasizes the crucial role of faculty as mentors in nurturing research integrity among postgraduates. The findings suggest a need for structured research ethics training early in medical education.

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