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## Original article

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### Different aspects of scientific misconduct among Iranian academic members

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**Objective:** Publications and research experiments are a major part of daily activities of the university academic members. Research misconduct, specifying its frequency and identifying the related behaviours is controversial. In recent years, there have been reports of scientific misconduct by Iranian academics. We examined the frequency of research misconduct by academic members in Mashhad University of Medical Sciences in Iran.

**Method:** 157 academic members participated in this study. A validated questionnaire according to Martinson study was used.

**Results:** Our results showed that the most frequently admitted research misconduct was “inaccurate assignment of authorship credit” by 35% of academic members and 54.8% of their colleagues. All the respondents mostly emphasized their colleagues’ engagement in research misconduct rather than themselves. Almost 43% of the respondents had engaged in at least one of the top ten scientific plagiaristic behaviours listed in the table of results.

**Conclusion:** Nearly 43% of the Iranian academic members had engaged in at least one of the top ten misbehaviours over the past three years. A relatively high proportion of misconduct behaviours should be addressed in the scientific community by all relevant institutions and factors and by scientific journal editors.

**Keywords:** Plagiarism, Scientific misconduct, Academic member, Health researchers, Iran

#### Introduction

Publication ethics constitute a set of expectations about proper extraction and presentation of information from the literature.<sup>1</sup> Previous studies have listed 14 primary violations of professional standards by scholars, such as research misconduct, privacy/confidentiality violations, informed consent failures, conflict of interest violations, and improper care of animals.<sup>2</sup>

Research misconduct is usually defined as falsification, fabrication, or plagiarism (FFP). Falsification involves altering the research process or inaccurate recording and reporting of the results. Fabrication is inventing, recording, or reporting hypothetical findings.<sup>3-5</sup> Plagiarism is defined

as the “appropriation of another person’s ideas, processes, results or words without giving appropriate credit to the source or author”<sup>6</sup>. Another important issue is text recycling (previously self-plagiarism), which involves reusing one’s own disseminated ideas or information from previously published papers in another article.<sup>7</sup>

One of the best-known research fabrications was reported in 2006 by Woo Suk Hwang in the field of stem cell research. He published several articles in high profile journals and became infamous for fabricating his experiments.<sup>8</sup> Also, among Iranian authors, the former vice president was accused of the best known case of plagiarism at Tarbiat Modares University.<sup>9</sup> This case was discovered by the DEJAVU database of duplicate publications, and the author later apologized for her shortcomings and mistakes.<sup>10,11</sup>

Marshall believed that specifying the frequency of FFP is controversial.<sup>12</sup> According to a meta-analysis on academic misconduct, nearly 2% of scientists admitted to at least one form of research misconduct.<sup>3,13</sup> Moreover, based on a study by Adeleye *et al*, around one fifth of medical and dental researchers admitted to at least one form of FFP in Nigeria.<sup>14</sup>

Little attention has been paid to research misconduct in developing countries,<sup>14</sup> particularly in Iran. To the best of our knowledge, health researchers’ understanding of scientific misconduct and preventive measures has not been studied in universities, so far. Today, although most faculty members are involved in research projects, it is not clear whether they are familiar with the issues of research misconduct. In the current study, we examined the frequency of research misconduct by academic members in Mashhad University of Medical Sciences in Iran.

#### Methods

This descriptive study was conducted on the faculty members of a university in Iran in March 2014. We used a validated questionnaire, previously utilized in a study by Martinson and colleagues.<sup>15</sup> The questionnaire was translated into Farsi and tested on ten academic members for content verification. Three questions were removed

from the questionnaire, considering the cultural differences in the Iranian scientific community. All questionnaires were anonymous and addressed research misconduct.

The questionnaires were distributed in academic departments of the university and two general teaching hospitals (Ghaem and Imam Reza hospitals). Educational posters were distributed in several departments to promote knowledge on different aspects of research misconduct. The study objectives were fully explained to all the participants; participation was completely voluntary.

Academic members were asked about their personal experience of research misconduct over the past three years. The participants were divided into two groups of early-career (less than four years of employment) and mid-career (more than four years of employment). They were asked to deliver the completed questionnaires in a sealed envelope to maintain confidentiality. Demographic characteristics including age, sex, scientific rank, and field of study were gathered, as well. The study protocol was approved by Ethics Committee of Mashhad University of Medical Sciences, Mashhad, Iran (IR.MUMS.REC.1390.55).

Quantitative data were expressed as mean±SD. Categorical variables were compared using the Chi-square test. Analysis of quantitative variables was done using an independent sample t-test. SPSS version 11.5 was used for statistical analysis. *P*-value less than 0.05 was considered significant.

## Results

A total of 157 academic members, mean age 45.8±8 years, participated in this study. Demographic characteristics of the participants are presented in Table 1.

**Table 1. General characteristics of 157 subjects**

Variables	Groups	Mean±SD/ Number (%)
Age	Total	45±8
	Female	36 (26.7%)
Sex	Male	99 (73.3%)
	Instructor	4 (2.9%)
Academic rank	Assistant professor	78 (56.9%)
	Associate professor	35 (25.5%)
	Professor	20 (14.6%)
	Non-clinical	3 (2.2%)
Academic degree	Clinical	131 (97.8%)

The most frequent research misconduct was “inaccurate assignment of authorship credit”, reported by 35% and 55% of the participants and their colleagues, respectively (Table 2). The most frequent misconduct among the top ten behaviours was “overlooking others’ use of flawed data or questionable interpretation of data”, as admitted by 15% (23) of the respondents. Also, 25% (39) of the respondents believed that one of the most frequent forms of plagiarism by their colleagues was “use of someone else’s ideas without obtaining permission or giving due credit”. Almost 43% (68)

of the respondents had engaged in at least one of the top ten behaviours, as listed in Table 2. These results showed that all the respondents mostly reported instances of research misconduct by their colleagues rather than themselves.

As presented in Table 3, there was no significant difference between early- and mid-career respondents in terms of research misconduct, except for the following two behaviours: “Witnessing changing the design, methodology, or results of a study in response to pressure from a funding source” and “Witnessing using unfair hiring practices”. Regarding both behaviours, the number of early-career academic members was higher than their mid-career counterparts.

## Discussion

The results showed that nearly 43% of the Iranian academic members had engaged in at least one of the top ten misbehaviours over the past three years (Table 2). This high frequency of research misconduct among Iranian academic members might be attributed to the low level of knowledge on the definition and criteria for research misconduct. Research misconduct was reported by Martinson *et al* in 33% of scholars in the United States.<sup>15</sup>

As confirmed by the participants, the most frequently admitted research misconduct was “inaccurate assignment of authorship credit”, admitted by about one third of academic members and just over half their colleagues. According to a study by Mirzazadeh *et al*, honorary authorship was reported in 56% of the articles in two issues of the *Iranian Journal of Public Health*, *Journal of Kerman University of Medical Sciences*, and *Tehran University Medical Journal*.<sup>16</sup>

A recent meta-analysis by Pupovac and Fanelli (2015) showed that the proportion of researchers reporting about colleagues who committed academic misconduct is higher for plagiarism than for data fabrication and falsification. Moreover, they reported that self-admission rates for plagiarism, fabrication and falsification decrease over time.<sup>13</sup> These results are in line with our study where 30% of participants noted their colleagues’ research misconduct rather than their own (2%).

Overall, there is little information on different aspects of plagiarism among Iranian academic members. Ghajarzadeh *et al* assessed academic members’ attitudes towards plagiarism at the Medical School of Tehran University of Medical Sciences in 2012. This study highlighted the necessity of training courses and workshops for familiarizing academic members with research misconduct because the attitude towards plagiarism was inadequate.<sup>17</sup>

In this study there was no significant difference between early- and mid-career respondents in terms of research misconduct, with the exception of their experience of witnessing unfair hiring practices and changing the design, methodology, or results of a study in response to pressure from a funding source. Interestingly, early-career respondents reported this among their colleagues almost two times more than mid-career respondents. This might be attributed to the higher level of knowledge on plagiarism among early-career academic members, compared to their mid-career counterparts.

**Table 2. Engagement of 157 academic members in research misconduct over the past three years**

Behaviours	Colleagues	Yourself
	Yes	Yes
<b>Top-ten behaviours</b>		
1. Not properly disclosing involvement in firms whose products are based on one's own research	10 (6.4%)	1 (0.6%)
2. Falsifying or "cooking" research data	33 (21%)	5 (3.2%)
3. Ignoring major aspects of human subject requirements	23 (14.6%)	7 (4.5%)
4. Unauthorized use of confidential information in connection with one's own research	20 (12.7%)	8 (5.1%)
5. Failing to present data that contradict one's own previous research	16 (10.2%)	8 (5.1%)
6. Using another's ideas without obtaining permission or giving due credit	39 (24.8%)	14 (8.9%)
7. Circumventing certain minor aspects of human subject requirements (eg informed consent, confidentiality, etc)	35 (22.3%)	14 (8.9%)
8. Changing the design, methodology, or results of a study in response to pressure from a funding source	26 (16.6%)	17 (10.8%)
9. Relationships with students, research subjects, or clients that may be interpreted as questionable	38 (24.2%)	20 (12.7%)
10. Overlooking others' use of flawed data or questionable interpretation of data	35 (22.3%)	23 (14.6%)
<b>Other behaviours</b>		
11. Publishing the same data or results in two or more publications	49 (31.2%)	12 (7.6%)
12. Inappropriate assignment of authorship credit	86 (54.8%)	55 (35%)
13. Withholding details of methodology or results in papers or proposals	39 (24.8%)	26 (16.6%)
14. Using inadequate or inappropriate research designs	49 (31.2%)	24 (15.3%)
15. Dropping observations or data points from analyses based on a gut feeling that they are inaccurate	24 (15.3%)	15 (9.6%)
16. Inadequate record-keeping related to research projects	50 (31.8%)	53 (33.8%)

In the present study, there was no difference in early career and mid-career participants' reporting. This result is in contrast with the study by Martinson *et al* in which mid-career scholars reported more instances of misbehaviour; in their study, the difference between early and mid-career respondents was significant.<sup>15</sup> The present results showed that the two research misconducts mentioned, ie "changing the design, methodology, or results of a study in response to pressure from a funding source" and "using unfair hiring practices", are more common among early career academic members, than their mid career counterparts. In this regard, Vasconcelos *et al* reported that the most important reason for plagiarism was "lack of English proficiency in non-English

speaking countries".<sup>18</sup> Also, "lack of respect for intellectual properties" and "social benefits" were noted by McCabe and colleagues.<sup>19</sup>

All respondents in our study mostly emphasized their colleagues' engagement in research misconduct rather than their own. However, such surveys have been shown to produce conservative results, given the under-reporting of plagiarism.<sup>15</sup>

The relatively high proportion of misconduct behaviour should be addressed within the scientific community by all relevant institutions and factors and by scientific journal editors. These data show the need for training and awareness programmes to make Iranian academic members familiar with research integrity.

**Table 3. Comparison of the responses of early- and mid-career academic members to research misconduct**

Behaviours of colleagues	Yes		P-value
	Group 1: Early-career (33)	Group 2: Mid-career (97)	
Witnessing changing the design, methodology, or results of a study in response to pressure from a funding source	9 (27.2%)	13 (13.4%)	0.042
Witnessing using unfair hiring practices	18 (54.5%)	25 (25.7%)	0.004

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*This article was corrected on 1st March 2019 following discovery of a missing row in Table 3.*

*The changes are highlighted in this PDF.*

*The publishers apologise for this error.*