



## Construction of Knowledge, Attitude and Practice Questionnaire for Assessing Plagiarism

*\*J Poorolajal<sup>1</sup>, P Cheraghi<sup>2</sup>, A Doosti Irani<sup>3</sup>, Z Cheraghi<sup>3</sup>, M Mirfakhraei<sup>3</sup>*

1. *Research Center for Health Sciences and Dept. of Epidemiology & Biostatistics, School of Public Health, Hamadan University of Medical Sciences, Hamadan, Iran*
2. *Dept. of Public Health, School of Public Health, Hamadan University of Medical Sciences, Hamadan, Iran*
3. *Dept. of Epidemiology & Biostatistics, School of Public Health, Hamadan University of Medical Sciences, Hamadan, Iran*

**\*Corresponding Author:** Tel: +98 811 8380090 Email: poorolajal@yahoo.com

(Received 23 May 2012; accepted 11 Sep 2012)

### Abstract

**Background:** This study was conducted to develop a questionnaire in order to evaluate knowledge, attitude and practice (KAP) of the faculty members and students toward plagiarism.

**Methods:** A KAP study was conducted from June to October 2011 enrolling 390 volunteers anonymously (response rate 96%). The questionnaire included the following four parts: (a) general characteristics like gender, academic degree and education level; (b) nine questions regarding knowledge (Min=0, Max=9); (c) nine questions regarding attitude (Min=9, Max=27); and (d) eight questions regarding practice (Min=0, Max=8). A pilot study was conducted to assess reliability of the questions regarding knowledge and attitude. Cronbach's alpha coefficient for the knowledge and attitude questions was 0.70 and 0.74 respectively.

**Results:** The overall prevalence of at least once plagiarism commission was 38% (SD=0.035). The overall mean score of knowledge, attitude and practice was 5.94 (SD=1.66), 24.12 (SD=2.99), and 0.66 (SD=1.15) respectively. Knowledge of plagiarism was significantly higher among higher academic degrees and females. Their negative attitude toward plagiarism was stronger too. No statistically significant difference regarding plagiarism commission was observed among different academic degrees in both sexes. According to linear regression analysis, plagiarism commission decreased 13% per one unit increase in score of knowledge ( $P=0.005$ ) and 16% per one unit increase in score of attitude ( $P<0.001$ ).

**Conclusions:** This knowledge, attitude, and practice (KAP) questionnaire was developed as a standard tool in order to assess perception of subjects toward plagiarism and to estimate the prevalence and the type of plagiarism commission.

**Keywords:** Plagiarism, Questionnaire, Knowledge, Attitude, Practice, Iran

### Introduction

Many people may think of plagiarism as copying another's original words, or borrowing someone else's original ideas as though they are their own. However, terms such as 'copying' and 'borrowing' can disguise the seriousness of the offense (1). According to the Merriam-Webster Online Dictionary, 'plagiarism' means: "to steal and pass off

the ideas or words of another as one's own, to use another's production without crediting the source, to commit literary theft, and to present as new and original an idea or product derived from an existing source" (2). In other words, plagiarism is considered as an act of 'fraud' (1).

Using the internet has facilitated the copying of people's works and ideas. However, it has made the detecting plagiarism much easier as well (3). The most common type of plagiarism is copying and pasting passages from previously published work into a paper by relatively junior researcher. These people may even claim they did not understand they were committing plagiarism, particularly when English is not their first language (3). Paraphrasing only the words of an original source is not sufficient to prevent plagiarism. One must properly credit to the source whenever he or she borrows someone else's original ideas or work (1). However, majority of the cases of plagiarism can be prevented by crediting to the source. Simply disclosing that a certain idea or words have been borrowed from another's original work, and giving the readers the information necessary to find the source again, is usually enough to avoid plagiarism.

In recent years, plagiarism has been the focus of special attention of many academic and scientific communities (4-10). Several questionnaires have been developed and proposed to investigate plagiarism most of which focused on only the 'attitude' of the participants toward plagiarism (10-12). Whereas, evaluating the people's knowledge of plagiarism and estimating the prevalence of plagiarism commission are also essential, especially among junior researchers. This study was conducted to develop a standard questionnaire for plagiarism in order to assess knowledge, attitude and practice of the researchers working in academic and research institutes.

## Materials and Methods

### *Developing questionnaire*

The questionnaire was developed based on the relevant literature (1, 2, 10-13). The relevant scientific literature related to plagiarism was reviewed and finally 26 questions were generated addressing knowledge, attitude and practice of plagiarism commission.

The questionnaire (Appendix 1) consisted of four sections as follows: (a) general characteristics such as gender, academic rank or education level; (b)

nine questions related to knowledge of plagiarism including three two-choice questions (Yes/No) and six four-choice questions, with a total score between zero to nine; (c) nine three-choice questions (Agree/No idea/Disagree) related to attitude toward plagiarism, with a total score between nine to 27; and (d) eight questions related to practice of committing plagiarism, with a total score between zero to eight. Only those participants who had already participated in at least one research project or had previously published at least one paper answered questions regarding practice.

A panel of experts in the field of epidemiology and health education evaluated the validity of the questionnaire. The reliability of the questionnaire was investigated by conducting a pilot study on 30 people. The questionnaire was reevaluated and revised after first pilot study and then another pilot study was conducted on 30 other people. The value of Cronbach's alpha coefficient for the knowledge and attitude questions was 0.70 and 0.74 respectively. Assessment of reliability of the questions regarding practice was not possible because each participant might have committed one or more cases of plagiarism.

### *KAP study*

A knowledge, attitude, and practice (KAP) study was conducted from June to October 2011 in Hamadan University of Medical Sciences, Hamadan Province, the west of Iran. Local Human Subject Review board of the university approved this study. All participants were enrolled voluntarily and anonymously into study.

The pilot study estimated the prevalence of plagiarism 40%. Assuming prevalence of plagiarism to be 40%, we arrived at a sample of 369, with 0.05 significance level and error level of 0.05. Because a limited number of high-degree faculty members had participated in the study, we raised the sample size to 390 in order to increase the number of professors and associate professors participated in the study.

A stratified random sampling was done. Strata composed of six colleges including Medicine, Dentistry, Health, Nursing & Midwifery, Paramedicine, and Pharmacy as well as four Vice-

chancellors' domain including Treatment services, Health services, Education, and Research & Technology. Then, according to the proportion of Faculty members, staffs and students in each stratum, a random sample was taken. Response rate was 96%.

Analysis of variance was used to compare mean score of knowledge, attitude and practice across subgroups. Linear regression model was employed to estimate the effect knowledge and attitude on committing plagiarism. All analysis were performed at the 5% significance level ( $P < 0.05$ ) using Stata 11 (StataCorp, College Station, TX, USA).

## Results

From 390 volunteers enrolled into the study, 190 were males and 200 were female, 80 were faculty members, 310 were either experts or students. Two hundred and ten participants had already

participated in at least one research project or had published at least one paper. The prevalence of committing plagiarism at least once ever was about 38% (80/210). In other words, 38% of the participants had committed plagiarism at least once in the past.

Mean score of knowledge, attitude and practice of the participants are shown in Table 1. The total mean score of the participants' knowledge of plagiarism was 5.94 (SD=1.66). The maximum and minimum mean scores of knowledge belonged to professors (7.67) and medical students (5.21) respectively ( $P < 0.001$ ).

The total mean score of the participants' attitude toward plagiarism was 24.12 (SD=2.99). The maximum and minimum negative mean scores of attitude toward plagiarism belonged to associate professors (26.33) and the Masters of Science (23.22) respectively ( $P < 0.001$ ).

**Table 1:** Mean score of knowledge, attitude, and practice of the participants regarding plagiarism by academic degree and sex using analysis of variance method

| Variable               | Number | Knowledge <sup>a</sup> |        | Attitude <sup>a</sup> |        | Practice <sup>a</sup> |        |
|------------------------|--------|------------------------|--------|-----------------------|--------|-----------------------|--------|
|                        |        | Mean (95% CI)          | Pvalue | Mean (95% CI)         | Pvalue | Mean (95% CI)         | Pvalue |
| <b>Academic degree</b> |        |                        | <0.001 |                       | <0.001 |                       | 0.883  |
| Bachelors of science   | 161    | 5.37 (5.14, 5.60)      |        | 23.22 (22.71, 23.74)  |        | 0.71 (0.28, 1.15)     |        |
| Masters of science     | 64     | 6.91 (6.46, 7.35)      |        | 24.34 (23.67, 25.02)  |        | 0.68 (0.31, 1.04)     |        |
| Medical students       | 72     | 5.21 (4.95, 5.46)      |        | 24.26 (23.61, 24.91)  |        | 0.59 (0.29, 0.90)     |        |
| PhD students           | 13     | 6.85 (6.08, 7.61)      |        | 25.00 (23.59, 26.41)  |        | 0.31 (0.05, 0.57)     |        |
| Trainers               | 20     | 6.59 (6.13, 7.04)      |        | 25.18 (24.41, 25.94)  |        | 0.57 (0.26, 0.88)     |        |
| Assistant professors   | 20     | 6.35 (5.49, 7.21)      |        | 25.25 (24.24, 26.26)  |        | 0.75 (0.30, 1.20)     |        |
| Associate professors   | 6      | 7.45 (6.87, 8.03)      |        | 26.00 (25.39, 26.61)  |        | 0.75 (0.28, 1.22)     |        |
| Professors             | 34     | 7.67 (7.01, 8.32)      |        | 26.33 (25.68, 26.99)  |        | 1.17 (-0.12, 2.46)    |        |
| <b>Gender</b>          |        |                        | 0.660  |                       | 0.044  |                       | 0.051  |
| Males                  | 190    | 5.98 (5.74, 6.22)      |        | 23.81 (23.35, 24.27)  |        | 0.81 (0.58, 1.05)     |        |
| Females                | 200    | 5.91 (5.68, 6.13)      |        | 24.42 (24.04, 24.80)  |        | 0.50 (0.30, 0.71)     |        |
| <b>Total</b>           | 390    | 5.94 (5.78, 6.11)      |        | 24.12 (23.83, 24.42)  |        | 0.66 (0.51, 0.82)     |        |

<sup>a</sup> Score of knowledge (Min=9; Max=18); Score of attitude (Min=9; Max=27); Score of practice (Min=8; Max=16)

The total mean score of the practice of committing plagiarism was 0.66 (SD=1.15). In other words, maximum and minimum mean scores of practice were seen among professors (1.17) and PhD students (0.31) respectively. However, the difference was not statistically significant ( $P=0.883$ ).

Mean scores of knowledge, attitude and practice regarding plagiarism were better in females than males. However, no significant differences regarding plagiarism were observed between the two sexes.

The impact on knowledge and attitude on committing plagiarism are shown in Table 2.

**Table 2:** Linear regression analysis assessing the effect of knowledge and attitude on plagiarism commission

| Variable         | Coefficient | Standard Error | 95% CI |       | Pvalue |
|------------------|-------------|----------------|--------|-------|--------|
| <b>Knowledge</b> | -0.13       | 0.05           | -0.22  | -0.04 | 0.005  |
| Constant         | 2.63        | 0.69           | 1.27   | 3.99  | <0.001 |
| <b>Attitude</b>  | -0.16       | 0.03           | -0.22  | -0.10 | <0.001 |
| Constant         | 4.65        | 0.75           | 3.18   | 6.13  | <0.001 |

According to this results, plagiarism commission decreased 13% per one unit increase in score of knowledge ( $P=0.005$ ). The impact of attitude on committing plagiarism was stronger, so that plagiarism commission decreased 16% per one unit increase in the score of attitude ( $P<0.001$ ).

## Discussion

We developed a standard questionnaire and found it as a useful and reliable tool for assessing knowledge and attitude of the participants toward plagiarism as well as types of plagiarism that they might have ever committed. It is worth to say that evaluation of the perception of the faculty members and students particularly the junior researchers is the first step for understanding the situation and planning educational programs for reducing and preventing plagiarism commission.

Mavrinac et al. (12) developed a questionnaire in order to measure attitude toward plagiarism. They tested the questionnaire on 227 undergraduates and graduate students from three Croatian universities. The final version of the questionnaire included 29 items and consisted of three parts including: (a) positive attitude toward plagiarism (12 items); (b) negative attitude toward plagiarism (7 items); and (c) subjective norms toward plagiarism (10 items). They concluded that the questionnaire could be sufficiently used as standard method for measuring psychometric characteristics and exploring attitude toward plagiarism. However, knowledge of the participants as well as the number and types of plagiarism commission were not considered. Another questionnaire was developed by Rennie et al. (10) in order to explore medical students' attitudes and to report their behavior on academic misconduct. The questionnaire consisted 14 scenarios in which a fictitious student, 'John', had engaged in dishonest behavior. The question-

naire was distributed among 461 medical students. Then, they were asked whether they felt John was wrong and whether they had done or would consider doing the same. They could estimate the perception and attitude of the participants toward plagiarism. However, the reliability of questionnaire was not investigated. In addition, plagiarism commission report was a mixture of what the participants had done and what they would consider doing in the future. Such measurement may overestimate the true prevalence of plagiarism commission. A third questionnaire was constructed by Ryan et al. (13) in order to assess undergraduate and postgraduate pharmacy students' perceptions of plagiarism. The questionnaire included a combination of scenarios, single- and multiple-response items (either Yes/No or Likert scale), and short-answer questions. The questionnaire was developed to investigate the students' level of awareness of academic honesty; their attitudes toward plagiarism, and their choices of behaviors regarding plagiarism. However, the reliability of the questionnaire was not explored. The types of plagiarism actions committed by the students were not assessed.

According our findings, the prevalence of committing plagiarism at least once ever was estimated about 38% (80/210). Whereas, nearly half of the participants (210/390) had already participated in at least one research project or had published at least one paper. Thus, the overall prevalence of plagiarism is less than the estimated value. On the other hand, total mean score of plagiarism commission 0.66. That means the total number of plagiarism commission occurred is less than one case per person. Similar previous studies have reported the prevalence of plagiarism very different. In a study which was conducted by Rennie et al. in the USA reported the prevalence of plagiarism commission



about 56% among medical students (10). Another study was conducted by Bilic-Zulle on 198 medical students in Croatia reported that 83% of the students had plagiarized at least once (5).

According to the results of present study, the incidence of plagiarism commission decreased 13% per one unit increase in score of knowledge and 16% per one unit increase in score of attitude. These findings indicate the importance of the perception of peoples regarding plagiarism. Thus, educational program like scientific writing course may increase knowledge and improve attitude of the participants especially junior researchers toward plagiarism and may be effective on reducing or even preventing of plagiarism commission. An important limitation of this questionnaire like any other questionnaire-based study was that the participants responded the questions subjectively. Although questionnaire was anonymous and the participation of the subjects was voluntarily, however, some of the questions may be answered dishonestly. This issue may raise the possibility of the measurement bias.

In conclusion, this knowledge, attitude, and practice (KAP) questionnaire was developed as a standard tool in order to assess perception of subjects toward plagiarism and to estimate the prevalence and the type of plagiarism commission. Furthermore, this questionnaire may be useful for evaluation of situation in order to plan educational program like periodic scientific writing course to improve the knowledge and attitude of junior researchers and thus reduce or prevent plagiarism commission.

### Acknowledgments

We would like to thank Research Center for Health Sciences as well as the Vic-chancellor of Research and Technology of Hamadan University of Medical Sciences for financial support of this study. The authors have no conflicts of interest to declare for this study.

### Ethical considerations

Local Human Subject Review board of Hamadan University of Medical Sciences approved this study.

All subjects participated voluntarily and anonymously in this study.

### References

1. What is Plagiarism? Plagiarism.org. 2012 [cited January 12, 2012]; Available from: <http://www.plagiarism.org>.
2. Merriam-Webste. Merriam-Webste Online Dictionary. Massachusetts: Merriam-Webster Inc; 2012 [cited January 12, 2012]; Available from: <http://www.merriam-webster.com>.
3. Cross M. Policing plagiarism (2007). *BMJ*, 335: 963-4.
4. Ardalan F, Arfaei H, Mansouri R, et al (2009). Iran's scientists condemn instances of plagiarism. *Nature*, 462 (847): 704-5.
5. Bilic-Zulle L, Frkovic V, Turk T, Azman J, Petrovecki M (2005). Prevalence of plagiarism among medical students. *Croat Med J*, 46 (1): 126-31.
6. Chalmers I (2006). Role of systematic reviews in detecting plagiarism: case of Asim Kurjak. *BMJ*, 333 (7568): 594-6.
7. Vasconcelos S, Leta J, Costa L, Pinto A, Sorenson MM (2009). Discussing plagiarism in Latin American science. *EMBO Rep*, 10: 677-82.
8. Habibzadeh F, Shashok K (2011). Plagiarism in scientific writing: words or ideas? *Croat Med J*, 52 (4): 576-7.
9. Mason PR (2009). Plagiarism in scientific publications. *J Infect Developing Countries*, 3 (1): 1-4.
10. Rennie SC, Crosby JR (2001). Are "tomorrow's doctors" honest? Questionnaire study exploring medical students' attitudes and reported behaviour on academic misconduct. *BMJ*, 322 (7281): 274-5.
11. Elzubeir MA, Rizk DE (2003). Exploring perceptions and attitudes of senior medical students and interns to academic integrity. *Med Educ*, 37 (7): 589-96.
12. Mavrinac M, Brumini G, Bilić-Zulle L, Petrovecki M (2010). Construction and validation of attitudes toward plagiarism questionnaire. *Croat Med J*, 51 (3): 195-201.
13. Ryan G, Bonanno H, Krass I, Scouller K, Smith L (2009). Undergraduate and Postgraduate Pharmacy Students' Perceptions of Plagiarism and Academic Honesty. *Am J Pharm Educ*, 73 (6): 1-8.