

Original Research Article

Knowledge, attitude, and practice about plagiarism among dental interns and postgraduate dental students in Riyadh city, Kingdom of Saudi Arabia

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ABSTRACT

Background: Student's involvements in research activities are becoming more and more common in the current academic scenario. Both undergraduate and postgraduate are given responsibility to involve in the research activities from beginning of their student academic year. Though many universities are involving students in these activities as part of their curricular activities, training of the students to be done appropriately in such a way that every part of the research activities including research or scientific misconduct to be well informed and discussed.

Methods: A cross-sectional survey was conducted among a sample of 200 dental interns and postgraduate dental students in Riyadh Elm University. Validated questionnaire was utilised which had four sections as follows: (a) demographics (b) nine questions related to knowledge of plagiarism (c) twelve questions related to positive attitude toward plagiarism and; seven questions related to negative attitude toward plagiarism; and (d) eight questions related to practice of committing plagiarism. Data was analysed using the SPSS IBM software version 23.

Results: Although majority (82.6%) have heard about plagiarism, only 50.6% were familiar with instances and 45.3% were familiar with penalty of plagiarism. There is a statistically significant association between all positive attitude items and education level ($p < 0.05$) except one. Interns showed more positive attitude and less negative attitude as compared to postgraduates.

Conclusions: Though the study shows some relevant and basic knowledge among the subjects of the study, in-depth of the topic is required for the subjects so that they publish with the great pride.

Keywords: Attitude, Dental, Knowledge, Plagiarism, Practice

INTRODUCTION

In the recent years, scientific misconduct has been the focus of interest. Scientific misconduct has been considered like other criminal offences.¹ Students knowingly or unknowingly get involved in these misconducts. The most common type of misconduct includes plagiarism, fabrication and falsification of data, and duplication or redundant publications.² Involving in

such activities is not only waste of time and but also loss of originality. Adding to this is the absence of scientific value and contribution to the society.³

Plagiarism is simply an act of the stealing of another person's ideas, methods, results or words without giving proper attribution.⁴ It entails the use of writings belonging to others. It can be applied to copying of part of own previous published study without appropriate citation.⁵ It

is the act noticed and to be noticed by the relevant authorities to prevent such practice and at the meantime to give the due recognition for the activity of the original author.

In this digital era, with many things done at the click of finger, plagiarism has become an easy and simple task to perform. This act of copy and paste is not lesser than the stealing and providing false information or mutilated content of the specific subject will hold the society on still mode without any progression or innovation.

For any given university or institution, one of the goals is to achieve a better world ranking. Many of the ranking agencies gives the top priority for the research, considers research and innovations of the college or University for the ranking with greater proportions. With this goal in mind it is natural that all the colleges and universities established research as a part of curriculum for the students. This mandatory activity is incorporated because of expectation of increase in publication and thereby increase in the world academic ranking.

What gap remains in this implementation is that involvement of students along with their routine academic and clinical activities. Students fail to understand the importance of research and often consider as an additional work with already existing other activities, which leads to the way of finding out alternative simple routes to finish the research activities, such as plagiarism which is increasing in a slow and steady manner.

In the recent years, the prevalence of plagiarism has been increasing. Several reasons can be ascribed to the increased motivation towards plagiarism. Some of the reasons for plagiarism in scientific writings are easy availability of soft copies in computers, time limits for submission, poorly drafted, copy-pasted material with little modifications.⁶ Addition to this, lack of knowledge of predatory journals and paid journals which publish and perish any such activities without any peer review.

Undergraduate curriculum of many dental colleges all over world has introduced conducting a research and presenting the findings of the research as poster or publications in a journal as a mandatory activity. Similarly, research activity is a part of the course of any given postgraduates in dental and other health professionals. Though curriculum scheduling is done in such a way that student get an adequate time to devote for such activities without compromising other academic and clinical activities.

However, the pressure of completing in due time, compiling the data, understanding the statistics to write the results and other processes often requires an additional time than usual. Moreover lack of one's own interest in conducting the research and lack of understanding of the importance of publishing for future academic progress, lead to involve students who are

enticed to copy and paste from previous work, where a huge amount of information is easily available.⁷

In a student academic learning process, the process of plagiarism starts very early from the preparation for the assessment, followed by seminar presentation. This unethical research practice knowingly or unknowingly gets inculcated in student as a habit since it is easier and simpler. Though this practice at this early stage do not have any much consequences, it will have severe impact when the same habit continues for dissertation and publication work. Seriousness of the process is so much so that, the work will not be acceptable for any scientific journal with waste of time and resources and shame of mal-ethical practice and major hurdle for further research work.

Many factors contribute for undergraduate and postgraduate continuing this practice in their research work.⁸ One such factor is the basic knowledge, attitude, and practice (KAP) about the plagiarism. Though there are reports and publications regarding this, there is dearth of material and studies in the dental students especially in Saudi Arabia. Thus, this study is planned to fill this research gap and to apply the outcome among the interns and postgraduate dental students to prevent such practice in the future.

METHODS

Study design and setting

A cross-sectional survey was conducted during February-April 2020 among a convenient sample of 200 dental interns and postgraduate dental students in Riyadh Elm University, Riyadh city, Kingdom of Saudi Arabia to assess the knowledge, attitude, and practice about plagiarism. A sample size of 200 was chosen based on the previous literature available, employing empirical sample size determination. Approval of the study protocol by the Institutional Review Board (IRB Number: FPGRP/2020/462/133/124) and ethical clearance was obtained from the Institutional Ethical Committee of the University. Participants, of both genders who voluntarily enrolling into the study formed the inclusion criteria. Students not willing to be a part of the study were excluded. The identity of recruited participants was anonymously maintained. Data was collected online through a self-administered questionnaire.

Instrument, measures, and data collection

Validated questionnaires addressing knowledge, attitude, and practice of plagiarism were utilized consist four sections as follows: (a) general characteristics such as age, gender, and education level; (b) nine questions related to knowledge of plagiarism including three two-choice questions (yes/no); (c) twelve three-choice questions (agree/neither disagree nor agree/disagree) related to positive attitude toward plagiarism and; seven

three-choice questions (agree/neither disagree nor agree/disagree) related to negative attitude toward plagiarism; and (d) eight questions related to practice of committing plagiarism.^{9,10} The attitude questionnaire was a three-point Likert-type scale (agree/neither disagree nor agree/disagree) to facilitate the responses. 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.

Statistical analysis

Descriptive statistics was employed to describe the characteristics of participants and present the overview of the findings. Fisher's Exact/Pearson Chi Square tests were used to determine the association between knowledge, attitude, and practice and academic level. All analysis was performed at the 5% significance level ($p < 0.05$) using SPSS IBM version 23 (IBM SPSS Statistics for Windows, Version 21.0, IBM Corp: Armonk, NY).

RESULTS

Out of 200 participants, over half the participants were female (58.7%) and postgraduates (52.3%) (Table 1). The overall mean \pm SD age of the participants is 28.7 \pm 4.6 years

and the mean \pm SD age of the interns and postgraduate are 25.3 \pm 2.3 and 31.8 \pm 3.8 years respectively.

Table 1: Demographics.

	Percentage	
Sex	Male	41.3
	Female	58.7
Education level	Postgraduate	52.3
	Intern	47.7

Although majority (82.6%) have heard about plagiarism, only 50.6% were familiar with instances and 45.3% were familiar with penalty of plagiarism. The majority appropriately answered the domains which include plagiarism (74.4%), practices that may be considered as plagiarism (75.6%), practices that may not be regarded as plagiarism (53.5%), and the way coping another's work, word-for-word, may not be regarded as plagiarism (61.0%). Only 44.8% and 34.3% appropriately answered the way reprint of one's own previous work may not be considered plagiarism and practices may not be considered as plagiarism respectively (Table 2). Table 3 and 4 shows the negative and positive attitudes of the participants towards plagiarism. The majority of the participants reported that they have not practiced plagiarism (Table 5).

Table 2: Knowledge regarding plagiarism.

	Appropriate answers
Have you ever heard anything about plagiarism?	82.6%
Are you familiar with instances of plagiarism?	50.6%
Are you familiar with penalty of plagiarism?	45.3%
Which domain does plagiarism include?	74.4%
Which of the following practices may be considered as plagiarism?	75.6%
Which of the following practices may NOT be regarded as plagiarism?	53.5%
In what way reprint of one's own previous work may NOT be considered plagiarism?	44.8%
In what way coping another's work, word-for-word, may NOT be regarded as plagiarism?	61.0%
Which of the following practices may NOT be considered as plagiarism?	34.3%

Table 3: Positive attitude toward plagiarism.

	Agree	Neither disagree nor agree	Disagree
	%	%	%
Sometimes one cannot avoid using other people's words without citing the source because there are only so many ways to describe something	27.9	38.5	32.6
It is justified to use previous descriptions of a method because the method itself remains the same	34.9	54.1	11.0
Self-plagiarism is not punishable because it is not harmful (one cannot steal from oneself)	32.0	43.0	25.0
Plagiarized parts of a paper may be ignored if the paper is of great scientific value	11.6	43.0	45.3
Self-plagiarism should not be punishable in the same way as plagiarism is	40.7	44.8	14.5
Young researchers who are just learning the ropes should receive milder punishment for plagiarism	15.7	58.7	25.6
If one cannot write well in a foreign language (e.g., English), it is justified to copy parts of a similar paper already published in that language	22.1	37.8	40.1
I could not write a scientific paper without plagiarizing	9.3	52.3	38.4

Continued.

	Agree	Neither disagree nor agree	Disagree
	%	%	%
Short deadlines give me the right to plagiarize a bit	9.3	50.0	40.7
When I do not know what to write, I translate a part of a paper from a foreign language	19.2	44.8	36.0
It is justified to use one's own previously published work without providing citation in order to complete the current work	15.1	41.9	43.0
If a colleague of mine allows me to copy from her/his paper, I'm not doing anything bad, because I have his/her permission	31.4	39.0	29.7

Table 4: Negative attitude toward plagiarism.

	Agree	Neither disagree nor agree	Disagree
	%	%	%
Plagiarists do not belong in the scientific community	34.3	38.4	27.3
The names of the authors who plagiarize should be disclosed to the scientific community	33.3	50.0	16.3
In times of moral and ethical decline, it is important to discuss issues such as plagiarism and self-plagiarism	47.7	37.8	14.5
Plagiarizing is as bad as stealing an examination	54.1	30.8	15.1
Plagiarism impoverishes the investigative spirit	30.8	46.5	22.7
A plagiarized paper does no harm science	15.1	37.8	47.1
Since plagiarism is taking other people's words rather than tangible assets, it should not be considered as a serious offense	16.9	44.8	38.4

Table 5: Practice regarding plagiarism.

	Yes	No
	%	%
Have you ever used another's work without proper citation to the source?	25.6	74.4
Have you ever used another's idea as your own?	39.0	61.0
Have you ever borrowed your previous work without proper citation to primary source?	37.8	62.2
Have you ever submitted a paper for more than one journal simultaneously?	34.3	65.7
Have you ever submitted a paper for more than one journal with different languages without permission from the both publishers?	20.3	79.7
Have ever published a paper in more than one journal?	21.5	78.5
Have you ever presented the same work in more than two congresses?	27.9	72.1
Have you ever submitted a paper to a journal without permission of your co authors?	25.6	74.4

Table 6: Association between knowledge and education level.

	PG	Intern	P value
	%	%	
Have you ever heard anything about plagiarism?	73.2	91.1	0.002*
Are you familiar with instances of plagiarism?	45.1	55.6	0.222
Are you familiar with penalty of plagiarism?	45.1	45.6	1.000
Which domain does plagiarism include?	67.8	81.7	0.054
Which of the following practices may be considered as plagiarism?	72.0	78.9	0.374
Which of the following practices may NOT be regarded as plagiarism?	40.0	68.3	0.000*
In what way reprint of one's own previous work may NOT be considered plagiarism?	33.3	57.3	0.002*
In what way coping another's work, word-for-word, may NOT be regarded as plagiarism?	54.4	68.3	0.085
Which of the following practices may NOT be considered as plagiarism?	24.4	45.1	0.006*

* Statistically significant at $p \leq 0.05$

Although interns are more likely to have heard about plagiarism ($p < 0.05$), postgraduates were more likely to

know the practices that may not be regarded and considered as plagiarism ($p < 0.05$) and the way reprint of

one's own previous work may not be considered plagiarism ($p < 0.05$) (Table 6). There is a statistically significant association between all positive attitude items and education level ($p < 0.05$) except 'if one cannot write well in a foreign language (e.g., English), it is justified to copy parts of a similar paper already published in that language' (Table 7). Statistically significant association between negative attitude and education level was found only for 'plagiarists do not belong in the scientific community', 'In times of moral and ethical decline, it is

important to discuss issues such as plagiarism and self-plagiarism', and 'plagiarism impoverishes the investigative spirit' ($p < 0.05$) (Table 8). Interns showed more positive attitude and less negative attitude as compared to postgraduates. Interns are more likely to have used another's idea as their own ($p < 0.05$), submitted a paper for more than one journal simultaneously ($p < 0.05$), and published a paper in more than one journal ($p < 0.05$) (Table 9).

Table 7: Association between positive attitude and education level.

		Agree	Neither disagree nor agree	Disagree	P value
		%	%	%	
Sometimes one cannot avoid using other people's words without citing the source because there are only so many ways to describe something	PG	18.3	42.7	39.0	0.022*
	Intern	36.7	36.7	26.7	
It is justified to use previous descriptions of a method because the method itself remains the same	PG	29.3	68.3	2.4	0.000*
	Intern	40.0	41.1	18.9	
Self-plagiarism is not punishable because it is not harmful (one cannot steal from oneself)	PG	29.3	53.7	17.1	0.015*
	Intern	34.4	33.3	32.2	
Plagiarized parts of a paper may be ignored if the paper is of great scientific value	PG	2.4	56.1	41.5	0.000*
	Intern	20.0	31.1	48.9	
Self-plagiarism should not be punishable in the same way as plagiarism is	PG	39.0	53.7	7.3	0.014*
	Intern	42.2	36.7	21.1	
Young researchers who are just learning the ropes should receive milder punishment for plagiarism	PG	3.7	79.3	17.1	0.000*
	Intern	26.7	40.0	33.3	
If one cannot write well in a foreign language (e.g., English), it is justified to copy parts of a similar paper already published in that language	PG	28.0	40.2	31.7	0.063
	Intern	16.7	35.6	47.8	
I could not write a scientific paper without plagiarizing	PG	3.7	64.6	31.7	0.003*
	Intern	14.4	41.1	44.4	
Short deadlines give me the right to plagiarize a bit	PG	3.7	65.9	30.5	0.000*
	Intern	14.4	35.6	50.0	
When I do not know what to write, I translate a part of a paper from a foreign language	PG	17.1	54.9	28.0	0.035*
	Intern	21.1	35.6	43.3	
It is justified to use one's own previously published work without providing citation in order to complete the current work	PG	13.4	54.9	31.7	0.004*
	Intern	16.7	30.0	53.3	
If a colleague of mine allows me to copy from her/his paper, I'm not doing anything bad, because I have his/her permission	PG	28.0	53.7	18.3	0.000*
	Intern	34.4	25.6	40.0	

* Statistically significant at $p \leq 0.05$

DISCUSSION

Research and scientific work are the ways to progress in any given field and dentistry is not an exception to this. Original work and improved and further progress of already done work will ignite the new minds to think about newer aspect in dentistry, which is nothing but pure progression in the science. This not only helps the patient to get the best treatment but also helps the dental fraternity with ease of delivery of many treatments due to innovation in the material science and surgical and non-surgical aspect of dentistry. However, to compete with the others and in the so called "race to publish and perish", dental students, faculties, and researchers may be

taking the odd or wrong path of copying others work and credit themselves with the success, the practice commonly referred to as "plagiarism".

Various types of plagiarism are in the common practice due to many factors. One of the many factors which is said to have impact on this is the lack of knowledge and training. This lack of value-based education at the undergraduate and early postgraduate level influences the sanctity of publication at a later life of an individual. The present study conducted is an attempt to address this aspect so that to improve the future prospect in the field of research without plagiarism.

Table 8: Association between negative attitude and education level.

		Agree	Neither disagree nor agree	Disagree	P value
		%	%	%	
Plagiarists do not belong in the scientific community	PG	36.7	25.6	37.8	0.000*
	Intern	31.7	52.4	15.9	
The names of the authors who plagiarize should be disclosed to the scientific community	PG	36.7	44.4	18.9	0.295
	Intern	30.5	56.1	13.4	
In times of moral and ethical decline, it is important to discuss issues such as plagiarism and self-plagiarism	PG	63.3	23.3	13.3	0.000*
	Intern	30.5	53.7	15.9	
Plagiarizing is as bad as stealing an examination	PG	60.0	23.3	16.7	0.084
	Intern	47.6	39.0	13.4	
Plagiarism impoverishes the investigative spirit	PG	41.1	41.1	17.8	0.008*
	Intern	19.5	52.4	28.0	
A plagiarized paper does no harm science	PG	16.7	37.8	45.6	0.821
	Intern	13.4	37.8	48.8	
Since plagiarism is taking other people's words rather than tangible assets, it should not be considered as a serious offense	PG	21.1	36.7	42.2	0.063
	Intern	12.2	53.7	34.1	

* Statistically significant at $p \leq 0.05$ **Table 9: Association between practice and education level.**

		Yes	No	P value
		%	%	
Have you ever used another's work without proper citation to the source?	PG	32.2	67.8	0.054
	Intern	18.3	81.7	
Have you ever used another's idea as your own?	PG	25.6	74.4	0.000*
	Intern	53.7	46.4	
Have you ever borrowed your previous work without proper citation to primary source?	PG	31.1	68.9	0.061
	Intern	45.1	54.9	
Have you ever submitted a paper for more than one journal simultaneously?	PG	25.6	74.4	0.061*
	Intern	43.9	56.1	
Have you ever submitted a paper for more than one journal with different languages without permission from the both publishers?	PG	21.1	78.9	0.851
	Intern	19.5	80.5	
Have ever published a paper in more than one journal?	PG	14.4	85.6	0.025*
	Intern	29.3	70.7	
Have you ever presented the same work in more than two congresses?	PG	24.4	75.6	0.311
	Intern	31.7	68.3	
Have you ever submitted a paper to a journal without permission of your co authors?	PG	20.0	80.0	0.084
	Intern	31.7	68.3	

* Statistically significant at $p \leq 0.05$

Study group in the present study included interns and postgraduates with representation from both the genders. Participant numbers in the present study in each group were of almost equal with slight inclination towards females and slightly more of postgraduates. Probably this is the first study which has taken an intern and postgraduate group. Previous studies were done comparing the postgraduates from first to final years or group of postgraduates of different specialties. The importance of including interns and comparing them with the postgraduates is considered to be ideal since the internship is the end of undergraduate academic year and beginning of the next step in the academic carrier.

Inculcating the "good culture" in publication at this step will help in keeping this "good habit" in future academic career.

Overall knowledge of plagiarism of the present study found to be similar to the previous studies. Singh and Guram found almost the similar result with the percentage of response and Lindahl and Grace have found a better response than our study.^{11,12} It is natural that every student will be aware of what is plagiarism, since it is common topic discussed in the research field. A study done among the first-year students too has found that the students were aware of this subject. However, it is to be

noted that, just knowing about the topic and knowing in is detail, about its content and practicing the same is entirely different which was very much visible in the statements answered for the further questioning of the subjects.

Association between positive attitude and education level in the present study showed mixed response, with the answers for some statements were better among the interns compared to postgraduate, the results were statistically significant. However, it has to be noted that few questions like the one self-plagiarism should not be punishable in the same way as plagiarism has same response. These study results are similar to the study reported earlier Pupovac et al and Ismail where majority of the students felt the same.^{13,14} Similarly, Hren et al revealed noticeable level of approval of self-plagiarism among Croatian students.¹⁵ It proves the fact that, if someone else do that during publishing it is not acceptable, but if one does that on their own it need to be acceptable. At another statement where the agreement among both interns and postgraduates had same opinion is that, the short deadline is that reason for plagiarism. This is similar to the studies done previously among the pharmacy, medical, and nursing students.¹⁴ It may be faculties want to finish certain activities within available time in the semester, short deadline becomes inevitable. However, the burden of finishing in time with the students with the other activities may prompt students to copy and paste the work, which at point of time appears to be appropriate for the students.

Today's students, interns and postgraduates are going to be the future individuals who take the responsibility of publishing in a right way so that right evidence is dissipated among the colleagues of their field and better facility being available to the patients with the right outcome of the research. However, association of negative attitude and education level in the present study reveals certain findings which are alarming to the research field. For example, "a plagiarized paper does not harm science" answered by most of them positively which may not be the good sign in the publication field because the seriousness of such facts is necessary for the upcoming researchers. However, all the other statements answered in a manner that it is supportive to the field of research. This trend is found to be similar in the other studies like Pupovac et al where students felt that authors who plagiarize should be disclosed in public. However they had a strong doubt that majority of those students would report plagiarism if perceived. Nevertheless, students not supporting such statements are positive to the progress of the research work and innovations.¹³

In the present study, for the different statement of practice of plagiarism response is varied between 20.3 to 39.0%. Similar studies published earlier reported variable results. In a study which was conducted by Rennie and Crosby in USA reported about 56% prevalence of plagiarism commission among medical students.¹⁶ Another study was conducted by Bilic-Zulle et al on medical students in

Croatia reported that 83% of the students had plagiarized at least once.¹⁷ Kusnoor and Falik in their review of literature found that the frequency of various cheating behaviors including plagiarism among medical students in USA was 4.7-87.6% compared to our study.¹⁸ Study done in UK among the undergraduate students found 61.9% of them admitted to having plagiarized from sources online.¹⁹ In other instances, in one of the studies conducted in Pakistan, 94% of participants were not aware of the penalties for plagiarism in place at their academic institutions.²⁰ Lack of such knowledge leading to get into such practice. Better response in the present study could be due to the awareness of plagiarism and faculty involvement. Availability of software to check the plagiarism may also be the possible reason seen in the present study. High percentage of plagiarism seen in the other studies is due to several factors, including a failure to detect plagiarism by the faculty in-charge of the student in an academic institution or a lack of awareness of the legal consequences of plagiarism. With this, students who are non-native English speakers may just do the copy and paste due to their lack of proficiency in the English language. Other reasons for variations in rate of plagiarism may be due to differences in study sample, methodology employed, and other reasons.

Comparison between the knowledge and the educational level has shown that, for some of statements, interns answered more positively than the postgraduates. This could be due to several reasons. Among that one of the reasons is that, interns during their final year and internship are involved in research project. The knowledge about the research needs and article writing remains fresh with them. Further, there is more awareness is being created among the present generation students than before. Present postgraduates may have finished their academic carrier long ago and may not have gone through the detail of the plagiarism.

This study was subject to certain limitations. This study included only interns and postgraduates. Involving other students from third and final years provides great opportunity to teach them early so that they will be not plagiarize when they are ready for publication.

CONCLUSION

This study has given the opportunity to study the attitude and knowledge of interns and postgraduate students. Though the study shows some relevant and basic knowledge among the subjects of the study, in-depth of the topic is required for the subjects so that they publish with the great pride. To do so, a continuing research education program including all aspects of research activities with special attention to plagiarism will help to understand this topic very well. This study also highlights the need for training the postgraduates during the beginning of their postgraduate program to know in-depth about plagiarism.

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