

## Exploring the Attitude of Dental Undergraduate Students in Saudi Arabia Towards Plagiarism

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### ABSTRACT

*Aim: The present cross-sectional study was conducted among dental students to know the knowledge and awareness regarding plagiarism.*

*Materials and Methods: A cross-sectional study was carried out on the sample size of 246 dental students (Males 179 and Females 67) in College of Dentistry, King Khalid University, Abha, Saudi Arabia, to know the awareness of plagiarism among dental students. The questions were designed such that they assessed the plagiarism among dental students and was circulated among dental students in the dental college. The survey data was collected and organized into Microsoft Excel spreadsheets (Microsoft Inc., USA), and was statistically analyzed utilizing the Statistical Package for the Social Sciences version 20.0 software (IBM Inc., USA). The statistical test used here was the chi-square test, and P values less than 0.05 were statistically significant (P<0.05).*

*Results: A total of 246 persons responded to the questionnaire. 179 (73%) were males, and 67 (27%) were females. 82% of study subjects were of 20-25 years, 10% were of 26-30 years, 8% were of 31-35 years. 42.7% of dental students agreed that short deadlines in academics are a significant impetus to the practice of plagiarism. Only 23.6% students said that they are studying in a plagiarism-free environment. Our finding showed that more than 44.3% of students thought that plagiarism is sometimes necessary, and 76% agreed that a lack of faculty members to address this issue during their education. Nearly half of them agreed (58.9%) that self-plagiarism should not be punishable in the same way as plagiarism.*

*Conclusions: The general knowledge and attitudes of dental students were positive. Plan and program to educate students about academic integrity and research methodology required on all educational level.*

**Key words:** Plagiarism, Academic misconduct, Dental students, Ethics, Questionnaires, Saudi Arabia

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### INTRODUCTION

Plagiarism is defined as an unauthorized appropriation of another's work, ideas, methods, results or words without acknowledging the source and original author [1]. It is a serious offence in academia and a major ethical concern in scientific writing. Perhaps, the

most widely recognized unethical practice in medical literature is plagiarism. Although some dictionaries treat the etymology of the word plagiarism as coming from the Latin means "plagiarius" [hijacker or kidnapper]. Plagiarism seems to have increased with the availability of internet access, simply because so much matter is readily available, and it is so easy to copy [2]. Despite an increased awareness of the dangers of plagiarism in academic circles and the media, plagiarism is present in scientific writing. Scientific misconduct has been the focus of interest in recent

years. Research misconduct usually includes fabrication, falsification, plagiarism, and other unethical behavior in professional, scientific research. Out of these, plagiarism is the most frequent type of misconduct.

Plagiarism is one of the most common types of research misconduct that leads to an increase in the number of published papers without adding any scientific value [1]. It can be summarized as nothing but copying others' work without giving original authors' proper credit or reference for their work and showcasing it as their work by the plagiarist [3]. Plagiarism not only includes copying text but also uses published pictures and tables/graphs without written permission. Many cases of plagiarism were reported in the region of Asia, Europe, Australia, and the USA [4]. The rising trend of "publish or perish" mantra has alarmingly increased the plagiarism cases and as an illegal act to increase the number of publications without enough work [5]. The reasons for plagiarizing are poor language proficiency, deficit training in scientific writing, forced educational requirements to publish articles, unawareness of the future consequences of detected plagiarism and easy access to online resources. Plagiarism begins very early during education. It probably starts with the seminar presentations students make first during their professional studies. Most dissertations submitted by dental students was copied from previously published literature [6]. Dental students, being budding practitioners as well as novice researchers, can be a frequent target as well as the victim for plagiarism. But there is a shortage of literature on the perception of students towards this pollutant of science. Literature shows that awareness regarding plagiarism is substantially low among health-care students, and most of them have been engaged in the act of plagiarism at least once [7]. Given the limited number of studies on dental professionals in Saudi Arabia, this paper is an attempt to assess and compare the attitude of dental students in Saudi Arabia towards plagiarism. Hence, the present study was conducted among dental undergraduate students to know the knowledge and awareness levels regarding plagiarism.

#### MATERIALS AND METHODS

A cross-sectional study was carried out on the sample size of 246 dental students (Males

179 and Females 67) in College of Dentistry, King Khalid University, Abha, Saudi Arabia, to know the awareness of plagiarism among dental students. Written consent was taken from the respondents, and ethical approval for performing the survey was obtained from the Scientific Research Committee (SRC/ETC/2018-19/085) of King Khalid University, College of Dentistry.

The questions were designed such that they assessed the plagiarism among dental students and was circulated among dental professionals in the dental college. Questionnaires were translated into the local language (Arabic) and then back to English to ensure that the translated version gives the proper meaning. The survey consists of two main parts: Part 1 includes sociodemographic information of the participants (age, sex and educational qualification), part 2 is related to the dental professionals' knowledge of plagiarism (15 items). The questionnaire consisted of 15 close-ended, validated, structured, self-administered questions on awareness regarding plagiarism and was prepared based on other studies [1,7]. Using convenience sampling, the questionnaires were distributed to all the 246 dental students from the College of Dentistry.

The sample size was calculated by G\*power version 3.1.9.2. It was revealed from the pilot study the correlation coefficient was 0.226, and power 95%,  $\alpha$  error probability 5%; the sample size was 246. A self-administered structured questionnaire was developed and tested among a convenience sample of 20 dental students, who were interviewed to gain feedback on the overall acceptability of the questionnaire in terms of length and language clarity, according to their feedback the questions were corrected. Face validity was also assessed before the start of the study. Both descriptive and analytical statistical measurements were used to describe the main variables by SPSS 18 (IBM Corporation, Armonk, New York, USA) software. Chi-square, ANOVA was used to compare the qualitative and quantitative variables. The comparison of means of knowledge scores and attitude cores by t-test for two independent groups. The statistical significance of the coefficients in the statistical analyses will be tested at 0.05 ( $\leq 0.05$ ) level.

## RESULTS

A total of 246 persons responded to the questionnaire. 179 (73%) were males, and 67 (27%) were females. 82% of study subjects were of 20-25 years, 10% were of 26-30 years, 8% were of 31-35 years (Table 1). Comparison of Knowledge and attitude about plagiarism

amongst male and female dental students were shown in Table 2.

The comparison of means of knowledge scores and attitude by t-test for two independent groups show no significant difference (Table 3). In the present study, one-factor structure was determined by the Scree-test (Figure 1), interpretability criteria and have high Eigenvalue

Table 1: Distribution of study sample according to age.

Age	n	%	P-Value
20-25 years	202	82%	0.984
26-30 years	24	10%	
31-35 years	20	8%	

\*P<0.05; n=Number; %=Percentage

Table 2: Comparison of Knowledge and attitude about Plagiarism amongst male and female dental students.

QUESTIONS	Males (n)-179	%	Females (n)-67	%	Total (246)	%	P value
Q1. Know the meaning of the term "Plagiarism"?							
Yes	142	79.30%	60	89.60%	202	82.10%	0.063
No	37	20.70%	7	10.40%	44	17.90%	
Q2. Plagiarism is an act of academic malpractice							
Yes	171	95.50%	63	94%	234	95.10%	0.627
No	8	4.50%	4	6%	12	4.90%	
Q3. Plagiarism is a punishable offence							
Yes	155	86.60%	59	88.10%	214	87%	0.761
No	24	13.40%	8	11.90%	32	13%	
Q4. Has adverse effect on the health of the community							
Yes	162	90.50%	56	83.60%	218	88.60%	0.128
No	17	9.50%	11	16.40%	28	11.40%	
Q5. Practiced plagiarism							
Yes	31	17.30%	15	22.40%	46	18.70%	0.364
No	148	82.70%	52	77.60%	200	81.30%	
Q6. Staff encourage plagiarism							
Yes	29	16.20%	9	13.40%	38	15.40%	0.593
No	150	83.80%	58	86.60%	208	84.60%	
Q7. Plagiarism hurt your inner conscience							
Yes	141	78.80%	53	79.10%	194	78.90%	0.955
No	38	21.20%	14	20.90%	52	21.10%	
Q8. Lack of faculty members to address this issue							
Yes	139	77.40%	48	71.60%	187	76%	0.326
No	40	22.60%	19	28.40%	59	24%	
Q9. Software's available to check plagiarism							
Yes	70	39.10%	33	49.30%	103	41.90%	0.151
No	109	60.90%	34	50.70%	143	58.10%	
Q10. Regulations should be laid down against plagiarism							
Yes	165	92.20%	57	85.10%	222	90.20%	0.095
No	14	7.80%	10	14.90%	24	9.80%	
Q11. Self-plagiarism should not be punishable in the same way as plagiarism is							
Yes	103	57.50%	42	62.70%	145	58.90%	0.465
No	76	42.50%	25	37.30%	101	41.10%	
Q12. Short deadlines give me the right to plagiarize a bit							
Yes	71	39.70%	34	50.70%	105	42.70%	0.118
No	108	60.30%	33	49.30%	141	57.30%	

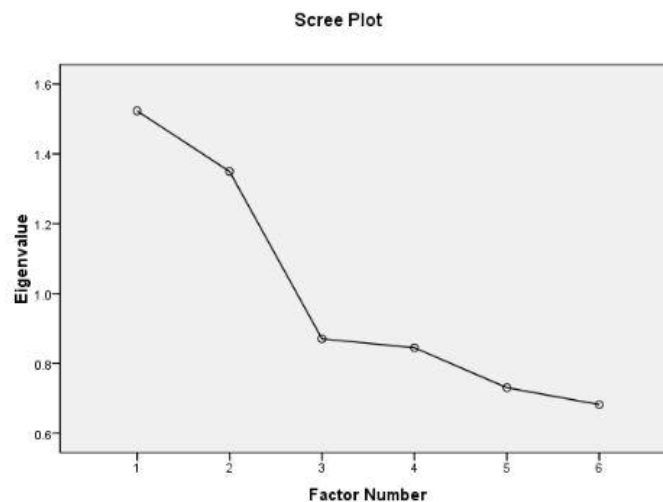
Q13. If a colleague of mine allows me to copy from her/his paper, I'm NOT doing anything bad, because I have his/her permission.							
Yes	101	56.40%	45	67.20%	146	59.30%	0.127
No	78	43.60%	22	32.80%	100	40.70%	
Q14. I work (study) in a plagiarism-free environment							
Yes	47	26.20%	11	16.40%	58	23.60%	0.106
No	132	73.80%	56	83.60%	188	76.40%	
Q15. Sometimes, it is necessary to plagiarize							
Yes	73	40.80%	36	53.70%	119	44.30%	0.069
No	106	59.20%	31	46.30%	137	55.70%	

\*P<0.05; n = Number; % = Percentage

**Table 3: Comparison of mean ± S.d. of Knowledge score and Attitude score between male and female by t-test for two independent groups.**

	Gender	N	Mean±Std. Deviation	Diff. mean ±S.E.M.	t,d.f	P value
Knowledge score	Male	179	10.3743 ±1.09627	.11824±.16264	.727,244	.468NS
	Female	67	10.4925 ±1.23550			
Attitude score	Male	179	13.5642 ±1.58293	.21187±.21729	.975,244	.330NS
	Female	67	13.7761±1.32369			

NS Not significant p>0.05



**Figure 1: Scree plot (Knowledge) for the obtained one factor structure.**

**Table 4: Factor structure of the knowledge towards plagiarism questionnaire with factor loadings.**

	Factor loading
Q 1. Know the meaning of the term "Plagiarism"?	-0.031 <sup>a</sup>
Q4. Has adverse effect on the health of the community?	0.211
Q7. Plagiarism hurt your inner conscience	0.275
Q9. Software's available to check plagiarism	-0.115
Q10. Regulations should be laid down against plagiarism	0.39
Q11. Self-plagiarism should not be punishable in the same way as plagiarism is	-0.16
Extraction Method: Principal Axis Factoring	
<sup>a</sup> Item 1 is not included in the final factor structure, because of to low (p < 0.10) factor loading.	

1.523 and the reliability of the factor calculated with Cronbach's alpha ( $\alpha=0.73$ ). The obtained factor represents an overall Knowledge towards plagiarism consisting of higher subjective norms. Table 4 presents the factor structure of the Knowledge towards Plagiarism questionnaire with factor loadings. Item 1 was not included in

the final factor structure and analyses because of low factor loading ( $p<0.10$ ).

In the present study, one-factor structure was determined by the Scree-test (Figure 2), interpretability criteria and have high Eigenvalue 2.090 and the reliability of the factor calculated with Cronbach's alpha ( $\alpha=0.83$ ). The obtained

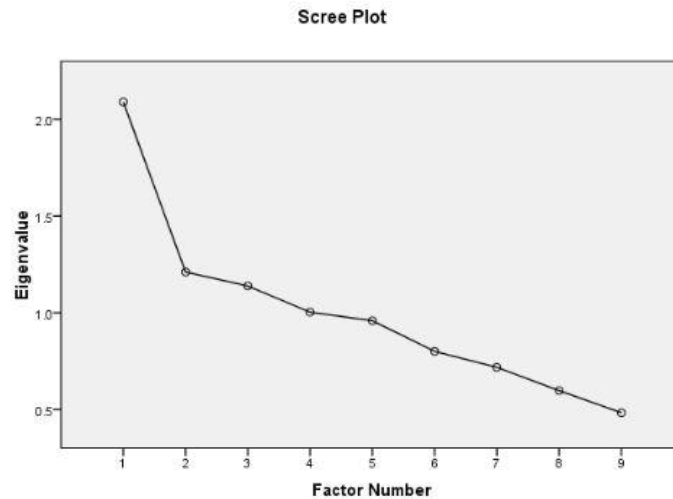


Figure 2: Scree plot (Attitude) for the obtained one factor structure.

Table 5: Factor structure of the attitude towards plagiarism questionnaire with factor loadings.

	Factor loadings
Q2. Plagiarism is an act of academic malpractice	-0.043 <sup>a</sup>
Q3. Plagiarism is a punishable offence	-0.061 <sup>a</sup>
Q5. Practiced plagiarism	0.218
Q6. Staff encourage plagiarism	0.102
Q8. Lack of faculty members to address this issue	0.092
Q12. Short deadlines give me the right to plagiarize a bit	0.209
Q13. 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.	0.064 <sup>a</sup>
Q14. I work (study) in a plagiarism-free environment	-0.035 <sup>a</sup>
Q15. Sometimes, it is necessary to plagiarize	0.519
Extraction Method: Principal Axis Factoring.	
<sup>a</sup> Items 2,3,13,14 are not included in the final factor structure, because of to low ( $p < 0.10$ ) factor loading	

factor represents an overall Attitude towards plagiarism, consisting of positive and negative subjective norms. Table 5 shows the factor structure of the attitude towards plagiarism questionnaire with factor loadings. Items 2, 3, 13, 14 were not included in the final factor structure and analyses because of low factor loading ( $p < 0.10$ ).

**DISCUSSION**

Plagiarism has become the easy escape-way for academicians and clinicians as well. Failure to recognize the quality of scientific literature is serious than the number of publications. Dental students in healthcare are the torchbearers of future research. Hence, they should be sincere and honest in their search for scientific truth. Plagiarism can also adversely affect the health of patients because patients are benefitted only from high standards of evidence-based practice. By prescribing erroneous treatment to an individual, the only single patient is affected. Still, by presenting incorrect data or transcripts,

the whole scientific universe subjected to that treatment modality can be affected. Although both scenarios are highly undesirable, one can assume the magnitude of the effect of the later [8]. The quest for achieving an accurate and efficient image forgery detection method in digital documentation is never-ending. Developing a robust plagiarism detector by overcoming the limitations associated with human intervention is the key issue [9] and many Software/services to detect plagiarism have been developed [10]. After finishing graduation, medical and dental students may be interested in pursuing higher education. Doing research and publishing articles is mandatory in the post-graduate curriculum of many universities all over the world. Since dental students are often under pressure to publish articles, they may be eager to copy and paste from the internet, where a tremendous amount of information is readily available [11]. In Saudi Arabia, there has been an effort to educate dental students on ethical issues involved in dental practice. The present study targeted dental students studying in the



King Khalid University to assess their perception towards the plagiarism. They asked to respond to an online google forum. Thus, the present study used the mode which greatly appealed to students and was easy to respond, fast and convenient. This mode was purposefully selected over the conventional paper and pencil survey to ensure a better response rate and to reach out to a higher number of dental students easily in a shorter period.

The literature search revealed very few studies on the perception of plagiarism on dental and medical students. On dental professionals, most of the dental professionals know about plagiarism, and they believe that pressure to publish was a primary reason along with several others, which accounts for more and more indulgence in plagiarism [10]. According to a study conducted by Gomez et al. [1] on dental post-graduate students and faculty members, 31% of post-graduate students and 25% of faculty members agreed to the statement that short deadlines give them the right to plagiarize a bit, but 41% of post-graduate students and 47% of faculty members disagreed for the same and 51% of post-graduate students and 41% of faculty members disagreed for the statement that they are working or studying in a plagiarism-free environment. This was in accordance to the present study where 42.7% of dental students agreed that short deadlines in academics are a significant impetus to the practice of plagiarism and only 23.6% of students said that they are studying in a plagiarism-free environment. Our finding showed that more than 44.3% of students thought that plagiarism is sometimes necessary, and 76% agreed that a lack of faculty members to address this issue during their education. These observations highlight serious concerns of the student's behavior towards plagiarism. Hence it is necessary to make sufficient efforts to counter these behaviors of students through promoting the education of bioethics and establishing research integrity cell to check for the plagiarism offences. Along with advances in dental science, in recent decades, plagiarism is one of the responsible factors to dilute the worth of research papers [12].

Our results are consistent with similar studies carried out. Ryan et al. investigated students' awareness and knowledge about plagiarism in Australia [13]. Level of knowledge and

awareness against plagiarism was. It is hard to expect that students' attitude will change during the educational process without strict policy toward plagiarism and proper training on scientific methodology and integrity. A special issue that arose in the last decade is self-plagiarism in the academic and scientific environment [14]. Generally, our students do not perceive self-plagiarism as being offensive. Nearly half of them agreed (58.9%) that self-plagiarism should not be punishable in the same way as plagiarism. These results are consistent with previously published studies revealing that 47% in Bulgaria committed self-plagiarism at least once [15]. In previous Croatian study, 65% of biomedical students find self-plagiarism justifiable and acceptable [15]. Their acceptance of self-plagiarism resides on an attitude that one cannot steal from oneself. In an academic environment, it is also unacceptable to submit the same student's essay twice. Therefore, it is nothing more than cheating. If the enormous effort not undertaken through the educational process, our society could not expect to have experts and scientists of high quality.

In a recent study, most of the respondents (both medical students and faculty) confessed to having plagiarized at least once in their life [16]. This contradicted to our findings, where most students 81.3% disagreed that they have never practised plagiarism and but unfortunately 23.6% of dental students agreed that they worked in a plagiarism-free environment. The causes of this evil practice might be due to a lack of faculty members addressing the issue or no proper strict rules and regulations laid down by the institutions against plagiarism. Many times even if the students are called by the administration regarding cheating behavior, they are seldom punished. Yes, it hits bull's eye!!! Students tend to take home a wrong message that their dishonest act was not that egregious enough for punishment by dental schools [17]. However, some teachers are concerned that detecting and punishing plagiarism may have negative consequences for them personally or for their university as a result of adverse publicity [18]. In a study conducted among pharmacy students to know the knowledge of plagiarism, concluded that only half of the respondents could differentiate what the consequences of

research misconduct are, which may be related to insufficient and planned lectures for ethics training during academic years [19]. Other reasons not to pursue plagiarism cases officially include the administrative burdens of preparing the case, the high risk of students not being held accountable, and that teachers were often recommended not to pursue claims.

In our study, 42.7% of dental students agreed that short deadlines gave them a right to plagiarize. Thus, approaching deadlines (pressure to submit an assignment, dissertation and publication) and promotions in academia have led to a focus on quantity rather than the quality of research products. Most of the respondents in our survey agreed that they are tempted to plagiarize or copy from colleagues with their permission. Therefore, in our opinion, the identities of the plagiarists should be brought to light to set an example for the academic community and keep plagiarism in check with updated software. Various studies have been reported that health care students who cheat in the classrooms are more likely to fabricate clinical data like health care professionals. The makeup laboratory values, patient histories and physical examination results and may report a finding as usual without obtaining a full history [20]. Various dental schools have used a code of ethics within their programs.

### CONCLUSION

The general knowledge and attitudes of dental students were positive. Students should be well-educated regarding the professional behavior and consequences associated with unethical behavior. A dental school that attempts to graduate highly moral and ethical professionals should also value the importance of encouragement and reward. The university should come up with rules and regulations to prevent plagiarism and to install software to detect plagiarism in work submitted by the students as well as faculty members. A committee should be established in the respective institutions to detect plagiarism.

### CONFLICT OF INTEREST

No funds were provided by any outside agency for this study, and neither author has any conflict of interest.

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