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RESEARCH ARTICLE

KNOWLEDGE AND ATTITUDE TOWARDS PLAGIARISM OF DENTAL POST GRADUATE STUDENTS IN BANGALORE

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ABSTRACT

Introduction: Plagiarism is defined as “unauthorized appropriation of another’s work, ideas, methods, results or words without acknowledging the source and original author. Academic misconduct has been the focus of interest in recent times. The new age of technology has enabled the scientific community to fabricate, falsify and plagiarize at a greater rate than before. Many people may plagiarize unknowingly as their knowledge regarding this is limited. Thus, this study was conducted to assess the knowledge and attitude of dental post graduate students of Bangalore city towards plagiarism. **Method:** A pretested self-administered questionnaire consisting of 24 items was used to assess the knowledge and attitude regarding plagiarism. The questionnaire was administered to the post graduate students of 5 randomly selected dental colleges of Bangalore. All the students present on that day were included in the study. **Results:** Branch wise 100% of Public Health dentists and Oral Pathologists were aware of what is plagiarism. Lowest percentage was seen in the Department of Oral and Maxillofacial Surgery (83.5%). Although almost 90% of the participants reported they know what plagiarism is, only 58% could state what it is correctly. Among the 3 years, 1st MDS students showed highest negative attitude towards plagiarism and highest practice related attitude. Those who learnt about plagiarism through self-efforts had better attitude (low positive and high negative attitude) and practice related attitude towards plagiarism. None of the differences were found to be statistically significant. **Conclusion:** Positive attitude scores towards plagiarism indicate tolerance towards plagiarism. Negative attitude towards plagiarism was high but still considered in the neutral zone. Self-efforts may be a more fruitful method of learning about plagiarism.

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INTRODUCTION

Scientific inquiry, a quality of the human mind, has been the impetus for all the research conducted, discoveries and inventions made and all the cures found for various diseases that affect mankind. It is important to acknowledge that scientific research does not exist without error. Unintentional errors can be introduced in a study anywhere in the methodology of the study. Fortunately such errors can be controlled for as well as spotted easily for better interpretation of results. However, “scientific misconduct” is a term saved for those intentional ‘errors’ which are conducted by authors, researchers, publishers or statistician in the form of falsification, fabrication or plagiarism.¹ Plagiarism is the most common type of scientific misconduct among the three.

The Council of Scientific Editors defines plagiarism as:²

“a form of piracy that involves the use of text or other items (figures, images, tables) without permission or acknowledgment of the source of these materials”

It is the unauthorized appropriation of another’s work, ideas, methods, results or words without acknowledging the source and original author.¹ Research misconduct does not include honest error or differences of opinion, and implies wilful acts. Apart from this, misconduct may also be manifested in not conforming to the authors’ guidelines of a particular journal and hence offering “gift authorship” (inclusion among the authors of an individual who does not fulfil the requirements for authorship), “ghost authorship” (non-inclusion of individuals as authors who played an effective part in the work and were qualified for authorship), “duplication” (publication of the same paper in different journals with little or no change at all in its content).

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It may also involve “salami” publishing, where authors slice up their research, carving multiple papers from a single study with the sole aim of having multiple publications credited to them.^{3,4} Today’s technological era is equally well equipped to facilitate scientific misconduct as it is to prevent it. The popularity, usage, and accessibility of the internet has made plagiarism very common and much more difficult to combat. Extent of plagiarism and academic misconduct is likely much worse than it appears.⁵ Any form of misconduct diminishes the investigative spirit and is an antithesis to science’s quest in the search of truth. Post graduate students form a very important part of the scientific community, and it is important that their scientific thinking be prevented from being affected by the hazards of plagiarism. The knowledge, skills and practices learnt during one’s post graduate years are likely to last a life time. Same values would be inculcated by them in their students once they become mentors. Hence it is important to target this section of the scientific community and assess their knowledge and attitude towards plagiarism in order to determine how prevalent this practice is and to lay down a foundation for preventing it. Hence, the aim of this study was “To assess Knowledge and Attitude towards Plagiarism of Dental Post Graduate Students in Bangalore.”

MATERIALS AND METHODS

This is a Cross – sectional survey which was conducted among Dental Post Graduate students studying in Bangalore. Ethical Approval was obtained from the Institutional Review Board of Krishnadevaraya College of Dental Sciences, Bangalore. Required permissions were obtained from the concerned authorities. Cluster random sampling technique was employed to select the samples. Five dental colleges were randomly selected from a total of 17 dental colleges in Bangalore using Lottery Method. All post graduate students present in the colleges on the day of the study were then included in the study. This resulted in a total sample size of 284 Post graduate students. Voluntary informed consent was obtained from the participants before conducting the study. A predetermined timetable was followed for conducting the survey among the five dental colleges. Days were designated for each college. The questionnaires were filled and collected on the same day so as to prevent loss of data.

A pretested validated questionnaire consisting of 23 questions (Annexure-1) was self-administered to the participants which took a total time of 10 – 12 minutes approximately. It was a closed ended questionnaire. The questionnaire was divided into three parts. The first part consisted of demographic data and branch and year of study. The second part dealt with Knowledge based questions. The responses to the second part were either dichotomized into yes or no or else they had multiple options. For example three options were given for source of learning about plagiarism – Thesis Supervisor, colleagues and self-effort. The third part of the questionnaire was an adapted version of the “Attitudes towards plagiarism Questionnaire” developed and validated by Mavrincac et al¹ in 2010.

Responses to this part were collected on a three point likert scale. The scores given as follows:

- Agree = +1
- Neither agree nor disagree = 0
- Disagree = -1

Except for questions 6 questions for which this scoring order was reversed. The third part of the questionnaire assessing attitude was further divided into 3 aspects - Positive attitude, Negative attitude and Practice related attitude. Higher positive attitude score expresses higher tolerance/approval of plagiarism. Higher negative attitude score expressed higher disapproval of plagiarism. Higher practice related attitude score suggests good conduct and less tendency to plagiarise. The questionnaire used in the present study was pilot tested to determine feasibility and internal consistency. Cronbach’s alpha was reported to be 0.72, which is acceptable. The data was compiled using Microsoft Excel and statistically analysed using SPSS version 20. Kruskal Wallis ANOVA was used to ascertain the difference in score of the groups divided on the basis of year of study and mode of learning about plagiarism.

RESULTS

A total number of 284 post graduate students participated in the Study. The participants were divided based on year of study (I,II or III) and the source of learning about plagiarism – Thesis supervisors, Colleagues or Self efforts. The participants were equally distributed among the 3 academic years. 33.1% belonged to I MDS, 34.2% to II MDS and 32.7% to III MDS (Figure 1).

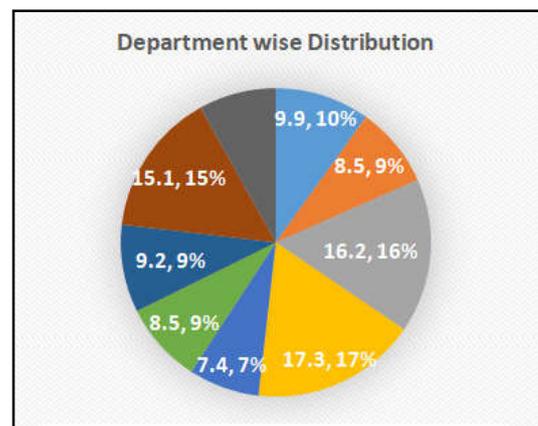
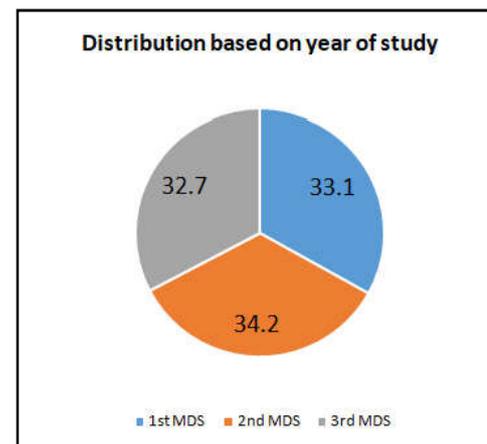


Figure 1. Academic year wise and department wise distribution of Participants

Figure 2 gives the department wise distribution of subjects. Branch wise 100% of Public Health dentists and Oral Pathologists were aware of what is plagiarism. Lowest percentage was seen in the Department of Oral and Maxillofacial Surgery that is 83.3% (Table1).

Table 1. Department wise distribution of participants for the question “do u know what is plagiarism”

Branches	Do you know what is plagiarism?	
	Yes	No
Oral Medicine & Radiology	89.3%	10.7%
Public Health Dentistry	100%	0%
Periodontology	91.3%	8.7%
Pedodontics	89.8%	10.2%
Prothodontics	90.5%	9.5%
Oral and Maxillofacial Surgery	83.3%	16.7%
Conservative and Endodontics	92.3%	7.7%
Orthodontics	88.4%	11.6%
Oral and Maxillofacial Pathology	100.0%	0.0%
Total	90.8%	9.2%

Table 2.

Question	Response in Percentages	
	Yes	No
Do you know what is plagiarism?	90.8%	9.2%
Plagiarism is	Right Answer – 58.5%	Wrong Answer – 41.5%
When did you first learn about plagiarism?	BDS – 28.2 %	MDS – 71.8 %
How did you learn about plagiarism	Thesis Supervisors – 27.1%	Colleagues – 50.3% Self-Efforts – 22.6%

Although almost 90% of the participants reported they know what plagiarism is, only 58% could state what it is correctly. Only 28.2% of the subjects learnt about plagiarism during their graduation, the rest of them learnt about it only during their post-graduation (Table 2). Only 27.1% of the respondents reported that they first learnt about plagiarism from their Thesis Supervisors whereas 50.3 % and 22.6% learnt from colleagues and self-efforts respectively

Table 3 shows the comparison of the attitude scores according to the year the student belongs and based on source of learning irrespective of year. First MDS students showed highest negative attitude towards plagiarism indicating disapproval of plagiarism, followed by second years and then third years. Positive attitude was either zero (II MDS) or negative (I and III MDS). This indicated low tolerance to plagiarism, which is a positive finding.

However, these scores are still in the neutral zone. Highest Practice related attitude was seen in I MDS students, however overall the practice related attitude was poor indicating tendency to plagiarize. None of these differences were statistically significant. Comparison of attitude with respect to source of learning showed that good scores were seen amongst those who learnt by self-efforts. Positive attitude towards plagiarism was found to be poorest among those who learnt through colleagues indicating high tolerance to plagiarism. Negative attitude was acceptable in all the groups that is a score of 21.8 for thesis supervisors group, 27 for colleagues group and 38.4 in Self efforts group. Practice related attitude was highest in self-efforts group, indicating least tendency to plagiarise. Comparisons based on source of learning revealed that that 63.6% of the participants who learnt about plagiarism from their Thesis Supervisors answered what is plagiarism correctly. This value was 55.9 % for those whose source of learning were colleagues, and 57.8% for those who learnt by self-efforts (Table 4).

Table 3. Comparison of Attitude towards plagiarism based on different years of education and based on source of learning

Year	Positive attitude score	Negative attitude score	Practice related attitude score
Ist MDS	-2.9	32.8	13.7
IInd MDS	0	29.3	11.9
IIIrd MDS	-3.4	22.4	11.1
Source of Learning			
Thesis Supervisor	-5.8	21.8	9.7
Colleagues	3.7	27	6.5
Self Efforts	-10.4	38.4	27.9

Table 4. Knowledge of study participants regarding plagiarism based on source of learning

Source of learning	Right Answer	Wrong Answer
Thesis Supervisor	63.6	36.4
Colleagues	55.9	44.1
Self-Efforts	57.8	42.2

DISCUSSION

The present study is a cross sectional survey which was conducted amongst Dental Post graduate students in Bangalore City with the aim of assessing their knowledge and attitude towards Plagiarism. The study assessed knowledge with the help of two questions and attitude scores were divided into positive attitude, negative attitude and practice related attitude. The attitude towards plagiarism was better in the Ist MDS students, and also those who learnt about it by their own methods. In the present study about 90.8% of the individuals knew about plagiarism, this was similar to a study reported by Singh et al⁶ (2014), wherein 85% of the individuals reported that they knew about plagiarism. In the present study the percentage of participants who had learnt about plagiarism during BDS were only 28.2%, this was found to be low in the study conducted by Singh et al as well (17%). Singh et al⁶ also reported that about 43% of the respondents learnt about plagiarism from their thesis supervisors, whereas 24% and 16% learnt through colleagues and by self efforts, this was different from the present study where a majority of students depended on colleagues for their knowledge regarding plagiarism. This may be another reason for poor attitude towards plagiarism shown in the present study.

Gomez et al⁷ conducted a study in 2014 to assess attitude towards plagiarism amongst dental post graduate students and faculty members. They reported a high score for positive attitude i.e. 60.8. This was much higher than what was reported in the present study. That is the present study had lower tolerance to plagiarism (lower positive attitude score), as compared to the study conducted by Gomez et al. The negative attitude score reported by the aforementioned study was 64.2 which was low in our study at 28.2, this indicates lesser degree of disapproval of plagiarism in the present study as compared to Gomez et al⁷. Practice related attitude was 58.6 in the study by Gomez et al indicating better conduct and lesser tendency to plagiarize than seen in the present study at 12.2. Similarly a study conducted by Varghese et al² which was done on Under graduates students in Tamil Nadu also reported high scores than the present study for positive attitude, negative attitude and practice related attitude at 38.3, 65.5 and 28.7 respectively. Higher negative attitude amongst undergraduate students as compared to post graduate students could be due to pressure to publish studies to meet academic requirements.

In the study conducted by Varghese et al² in 2014 on medical undergraduates showed significant difference between positive attitude scores of males and females (M>F). Present study showed no such difference; however Male score is higher than females with respect to this parameter. Shirazi et al (2010)⁸ conducted a study to assess knowledge and perceptions of plagiarism in medical students and faculty of private and public medical colleges in Karachi. Group A consisted of medical students while group B comprised faculty members. There was a statistically significant difference among the two groups regarding the issue of self-plagiarism, with 63% of respondents in Group A and 88% in Group B demonstrating correct understanding. Both groups showed a general lack of understanding regarding copyright rules and 18% of Group A and 23% of respondents in Group B knew the correct responses. Eighteen percent of respondents in Group A and 27% in Group B claimed to have never indulged in this practice.

Khairnar et al⁹ conducted a study in Maharashtra regarding attitudes towards plagiarism among PG students, it was noted that PG students showed more positive attitude and less negative attitude as compared to faculty members. Positive attitude decreased with increase in age ($\beta = -0.147$; $P = 0.008$), number of publications ($\beta = -0.195$; $P = 0.001$), and from males to females ($\beta = -1.209$; $P = 0.044$) whereas negative ATP increased with age ($\beta = 0.093$; $P = 0.001$). Verma et al¹⁰ in their study reported that 84% of PG students were aware about plagiarism this was comparable with the present study where about 90% were familiar with plagiarism. Rathore et al¹¹ conducted a survey among health professionals to determine attitude towards plagiarism before and after conducting a workshop on scientific misconduct. It was reported that there was a significant improvement in attitudes toward plagiarism after attending the workshop (mean difference = 7.18 (6.2), $t = 10.32$, $P < .001$). This indicates that continued learning is beneficial in instilling positive attitude towards plagiarism. Another study by Rathore et al¹² revealed poor attitude towards plagiarism among students as compared to faculty members, this aspect was not explored in the present study but appears to be plausible.

Some notable findings in the present study not explored in any other studies in literature are worth mentioning, such as, the study reported better results for learning by Self-efforts, i.e. it reported much lower positive attitude and higher negative attitude as compared to other groups. This indicated that learning by word of mouth (colleagues) was less effective and revealed poor scores. It was also noted that the 1st year post graduate students had higher negative attitude towards plagiarism – one may conclude that the rat race to publications and pressure to meet deadlines as one advances in the course compels students to disregard these norms eventually. It is noteworthy to mention that plagiarism is not limited to publications and scientific writing but extends to exams as well which determines the future of students. In this era of COVID -19 Pandemic we are seeing large number of institutions conducting Remote E-exams, this increases the threat and promotes tendency to plagiarise¹³. Sensitizing students about plagiarism is essential in order to avoid this. The present study has certain limitations. The sample size was not scientifically determined and social desirability bias is inherent in such a study. The study revealed that although many individuals claim to know about plagiarism; the understanding of it is often incorrect.

The study recommends that knowledge regarding plagiarism must be instilled in students at the under graduate level. The concept of Publications and writing an article must be introduced in BDS so that individuals are well equipped when they enter post-graduation. A thorough understanding of Plagiarism is still lacking in India. Scientific misconduct must be discouraged in all manners and at all levels in the academic hierarchy.

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ANNEXURE 1**KNOWLEDGE AND ATTITUDE OF DENTAL POST GRADUATE STUDENTS
TOWARDS PLAGIARISM IN BANGALORE**

Age:
Branch:

Sex:
Year of Study:

1. Do you know what plagiarism is?

Yes No

2. Where did you first learn about plagiarism

BDS MDS

3. How did you first hear about plagiarism?

Thesis supervisors Colleague Self-efforts

4. Plagiarism is?

- Using others words as if they were your own
 Using others results as if they were your own with citation
 Sharing work with other and pooling ideas
 Getting your ideas from a text book

Sr. No.	Question	Agree	Neither agree nor disagree	Disagree
1.	Sometimes one cannot avoid using other people's words without citing the source, because there are only so many ways to describe something.			
2.	It is justified to use previous descriptions of a method, because the method itself remains the same.			
3.	Plagiarized parts of a paper may be ignored if the paper is of great scientific value.			
4.	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.			
5.	When I do not know what to write, I translate a part of a paper from a foreign language			
6.	It is justified to use one's own previously published work without providing citation in order to complete the current work.			
7.	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.			
8.	Young researchers who are just learning the ropes should receive milder punishment for plagiarism.			
9.	The names of the authors who plagiarize should be disclosed to the scientific community.			
10.	Plagiarizing is as bad as cheating in an exam.			
11.	Plagiarism diminishes the investigative spirit.			
12.	Authors say they do NOT plagiarize, when in fact they do.			
13.	Sometimes I'm tempted to plagiarize, because everyone else is doing it (students, researchers, physicians).			
14.	I keep plagiarizing because I haven't been caught yet.			
15.	I work (study) in a plagiarism-free environment.			
16.	Plagiarism is not a big deal.			
17.	Sometimes I copy a sentence or two just to become inspired for further writing.			
18.	I don't feel guilty for copying verbatim a sentence or two from my previous papers.			
19.	Sometimes, it is necessary to plagiarize.			
