

# Exploring Knowledge, Attitudes, and Practices of Medical Students towards Plagiarism: A Cross-Sectional Study

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## ABSTRACT

**Introduction:** This study aims to determine how many medical students at MMC know about plagiarism, how they feel about it, and what they do about it. The study would find out how much they know about plagiarism, how they feel about it, how much they value academic integrity and originality, how smart they are, and what they think about academic honesty and intellectual property rights. Also, the study would look into what makes medical students feel good or bad about cheating. It could mean looking into educational interventions and policies that can raise knowledge of plagiarism and discourage it in the classroom.

**Methods:** The Muhammad Medical College (MMC), located in Mirpurkhas, Sindh, Pakistan, conducted a cross-sectional study on MBBS students from the first to Final year. The self-administered, closed-ended questionnaire evaluated medical students' awareness, respect, and attitude toward plagiarism—a 3-option survey with closed questions. Two hundred medical students, ranging from (A) agree to (N) neutral to (DA) disagree. One hundred seventy medical students provided pros and disadvantages. Data were gathered, processed, and analyzed using Excel and SPSS 22.

**Results:** First-question data demonstrates that most male and female students understand plagiarism's morality. Most students will understand citation and plagiarism if the second question is representative. Apathy helps students learn. The fourth question shows that most medical students—male and female—understand plagiarism's ethical implications. The subsequent questions show that medical students of different academic levels disagree on whether research newbies should be forgiven for plagiarism. Most students are agnostic or share this view. Based on these results, medical students doubt annual anti-plagiarism training. Some pupils need help to create an opinion. Most medical students, especially senior students, want tighter plagiarism laws.

**Practical Implication:** Some learners need clarification on their stance or need extra knowledge and help before formulating an opinion. According to the research, most medical students, especially those in their last year, support discussing plagiarism at all academic levels. It shows a mature perspective of the students.

**Conclusion:** This study illuminates medical students' views on plagiarism at undergraduate and graduate levels. Percentages show students' agreement, disagreement, and ambiguity. Data reveal that students of different academic years agree. These changes show that students question the efficacy of mandatory anti-plagiarism training at the start of each academic year

**Keywords:** Plagiarism, Academic integrity, Intellectual property, Citation, Originality, Copyright infringement, Ethics, Attribution, Academic dishonesty, and Source acknowledgment.

## INTRODUCTION

Unethical act of using someone else's work as your own with or without consent of an author is said to be plagiarism. Scientific writing is threatened for such transgressions since it constitutes literary theft. To maintain academic integrity and authenticity of research it is necessary to avoid plagiarism. A research publication's authenticity and intellectual vibrancy depend on its original and distinct ideas.(1) Plagiarism should be avoided as it is opponent of innovations and credibility. It ceases the mental development and prevents development of personality of an individual. Instead, it is crucial that you contextualize your writing within the scholarly discussions in your field. Academic writings nearly usually use and discuss content published by others, but this is different from plagiarism with proper citation and acknowledgment.(2)

We have been tackling plagiarism from the rock bottom academic levels to the levels of scientific studies and experimentations. Especially in the developing countries (including Pakistan) where no such step is taken to educate students or professionals to avoid plagiarism whether it is undergraduate or post graduate levels. Such malpractices have gained popularity because of effortless approach to internet. Worldwide, plagiarism is on the rise.(3) The percentage of publications rejected owing to plagiarism has more than tripled over the last 20 years, according to a 2018 Retraction Watch. Due to the individuals' inability to gain access to plagiarism detection tools like Turnitin and iThenticate, plagiarism is a widespread occurrence. Yet, these technologies cannot replace proper training. Also, the lack of human and financial resources in developing countries prevents researchers from adopting excellent research techniques. As a result, researchers and academics engage in these unethical behaviours to fulfil requirements for promotion and other reasons. (4)

However, plagiarism seems to be undisciplined act when it comes to research or academics. In this research the students were attentively inquired for their knowledge about plagiarism and designment to narrate for their attitudes about plagiarism and strategies were made to find out how possibly plagiarism can be staved off.(5)

In present study students were provided with close ended questionnaire, and most of the responses showed positive attitude of our students towards plagiarism. The aim was to inspect knowledgement and attitude of students towards plagiarism and to educate them to avoid plagiarism by means which are acceptable to achieve our objective.(6)

The unethical act of using someone else's work as your own without or with the consent of a writer is plagiarism. Scientific writing is threatened for such transgressions since it constitutes literary robbery.(7) To maintain academic integrity and authenticity of research it is necessary to avoid plagiarism. A research publication's authenticity and intellectual vibrancy depend on its original and distinct ideas.(8) Plagiarism should be avoided as it is opponent of innovations and credibility. It ceases the mental development and prevents development of personality of an individual. Instead, it is crucial that you contextualize your writing within the scholarly discussions in your field. Academic writings nearly usually use and discuss content published by others, but this is different from plagiarism with proper citation and acknowledgment.(9)

We have been tackling plagiarism from the rock bottom academic levels to the levels of scientific studies and experimentations. Especially in the developing countries (including Pakistan) where no such step is taken to educate students or professionals to avoid plagiarism whether it is undergraduate or post graduate levels. Such malpractices have gained popularity because of effortless approach to internet.(10)

Worldwide, plagiarism is on the rise. The percentage of publications rejected owing to plagiarism has more than tripled over the last 20 years, according to a 2018 Retraction Watch.

Researchers have always been beyond curious to assess the knowledge of students towards plagiarism and there is a debatable reason for them to do so and also a thriving urge to research and study why exactly plagiarism has to exist and why not the art or creativity of thinking, observing, learning and recreating, or why does it prevail among students, what may be the need to plagiarize and what exactly drives them to do so or what is their attitude towards this unethical misconduct and what are the root causes of this violation, researches have put forward many studies which analyzes thoroughly over the impact of plagiarism on the students.(11)

Human being is a result of constant copying, learning, failing and growing, and all of this dwells around the being, one cannot grow, humanize or evolve without socializing or copying and recreating, but when it comes to mimicking someone else's work which they have created all new which never exists or is recognized by that particular work, is thought be a malpractice and should never be preached or emulated.(12)

There are well-known and endless researches over the assessment of knowledge and attitude of medical students towards plagiarism, such as a survey which was taken out from (August 2013–January 2014) among the students and faculty members of three private and four public medical colleges in Lahore and Rawalpindi. The objective of their survey was to dissect the attitudes of faculty members and medical students in Pakistan towards plagiarism. The questionnaire was distributed in 7 medical colleges of Rawalpindi and Lahore among 130 faculty members and 550 medical students.(13)

Independent sample T-test disclosed that the medical students who had been training formally in medical writing were found to have low scores in the "Attitude towards Plagiarism" questionnaire, on the contrary, the students who had been engaged in research ethics or were in the process of writing a research paper, did not drastically vary from their counterparts.(14)

No quantifiably significant relation was observed between mean scores of "Attitude towards Plagiarism" and job designation, experience levels or educational level. There is little formal undergraduate instruction in research methodologies, medical ethics, or publication ethics in Pakistan. Even the faculty members need a thorough understanding of the definition, types, and implications of plagiarism and unethical behaviour in medical writing and research.(15) The institution and doctors and surgeons in Pakistan do not effectively address plagiarism and other unethical activities in the mandatory training sessions provided to trainees and supervisors. According to this study, the "Attitude towards plagiarism" assessment of Pakistani medical professors and students, plagiarism was commonly accepted.(16) Training in biological ethics and ethical standards for medical writing is limited. They also suggested and we also agree that we should include courses in research ethics and medical writing in the undergraduate and graduate curriculum of medical schools. Faculty members should stay current on domestic and international policies against plagiarism. The PMDC, CPSP, and HEC should take action to spread awareness of this concern in Pakistan.(17)

There was another research conducted in North Punjab among dental professionals to examine the attitudes and knowledge of dental professionals regarding plagiarism. They conducted a cross-sectional study over the course of four months which embodied 5000 dental practitioners chosen at random. This study led to understand that there was plagiarism among dental professionals, and that the awareness of scientific check methods and proper penalties are the only ways to significantly reduce it. The behavior of dental professionals was extremely concerning, and it is crucial to maximize the value of ethical medical writing. Also, a dearth of consciousness and acceptance of this act's immorality could be seen in conflicting attitudes. Also, there was a

general disposition in some cases towards communicating socially acceptable perspectives, which is quite the contrary of the major norm being embraced.

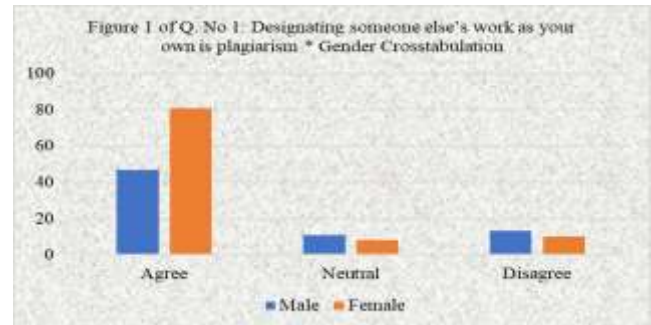
This study apparently shows that the medical ethics courses among medical students and the programs taken out for the awareness of plagiarism had no positive impact on the medical students in Saudi Arabia, whether because of the lack of concern by the medicos or the institution itself.

**Significance of the study:** The significance of this study lies in its ability to provide valuable insights into the knowledge, attitudes, and behaviors of MBBS students at Muhammad Medical College (MMC) towards plagiarism; By assessing the knowledge levels of medical students regarding plagiarism; it provides an opportunity to raise awareness and promote education on the importance of academic integrity, originality, and responsible research practices among medical students; support in understanding the attitudes and behaviors of medical students towards plagiarism is crucial for fostering ethical conduct and professionalism in the medical field.

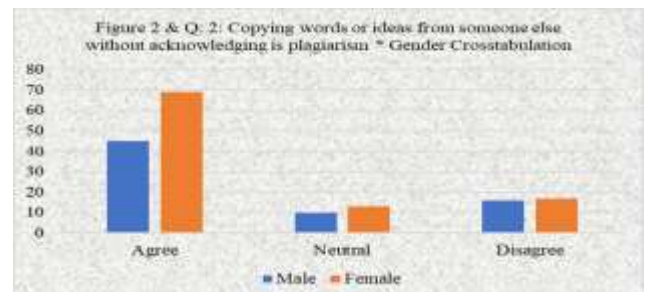
## METHODS

A cross-sectional study was conducted among the 1st year to Final year MBBS students of Muhammad Medical College (MMC), Mirpurkhas Sindh, Pakistan. The self-administrated close-ended questionnaire was used to collect data on knowledge, respect, and attitude towards plagiarism and also medical students' wisdom and frame of mind towards it. It was a close-ended questionnaire that consisted of 3 options (A) Agree, (N) Neutral, (DA) Disagree, was distributed to 200 medical students; among them. Data were collected from 170 medical students, from which we evaluated positive and negative responses. Data were collected, entered, and analyzed using MS Excel and SPSS version 22.

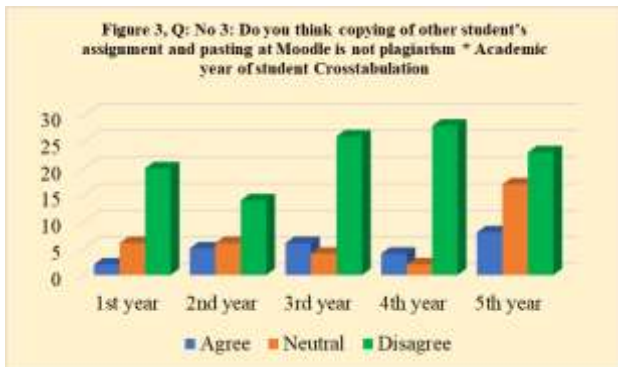
## RESULTS AND DISCUSSION



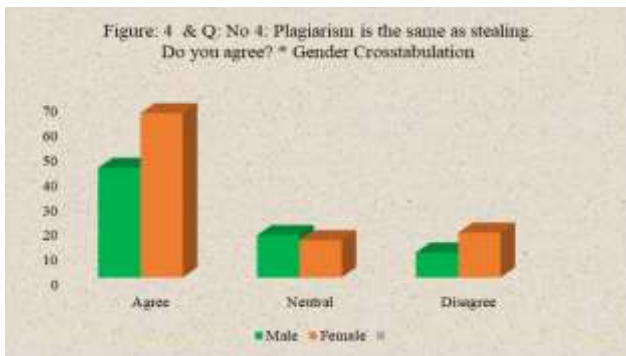
**Figure 1:** According to this data, most of MMC's male and female medical students believe that claiming someone else's work as one's own is deemed plagiarism. This remark was agreed with by 66% of male students and 82% of female students. Only 15% of males and 8% of females declared themselves neutral. A smaller proportion of students disagreed with the assertion, with 18% of males and 10% of females agreeing. According to these statistics, most male and female students understand plagiarism and grasp the ethical repercussions of taking someone else's work.



**Figure 2:** According to this table, most male and female students understand plagiarism as stealing words or ideas from someone else without crediting the source. The statement was agreed with by 63.38% of males and 69.69% of females. The percentage of neutral students on the subject was quite low, with only 14% of males and 13% of girls falling into this category. A lower proportion of students, 23% of males and 17% of females disagreed with the assertion. Based on this data, it is possible to conclude that most students understand plagiarism and the importance of properly citing sources in academic work. However, there is room for improvement, given that most students are indifferent or negative.



**Figure 3:** Based on this data, there are some variations of opinion among medical students at various academic levels about whether copying another student's assignment and pasting it into Moodle is deemed plagiarism. The number of students who agree that this is not plagiarism varies by academic year, with first-year students having the lowest percentage at 7.14% and second-year students having the highest at 20%. It is worth noting, however, that most students across all academic years disagree with this notion. The number of students who are neutral on this subject fluctuates over academic years, with fifth-year students having the most significant percentage.(30) Finally, the percentage of students who disagree that copying another student's assignment and pasting it on Moodle is not plagiarism is generally high across all academic years, ranging from 56% among second-year students to 85% among fourth-year students.



**Figure 4:** According to this data, the majority of students agree that plagiarism is the same as stealing. 62% of male and 67% of female students agreed with the statement, indicating that they understand the ethical implications of plagiarism. The percentage of neutral students on this issue was relatively low, with only 24% of males and 15% of females. However, a small percentage of students disagreed with the statement, with 14% of males and 18% of females taking this position. This indicates that there is still room for improvement in educating students about the seriousness of plagiarism and the importance of academic integrity. Overall, this data suggests that most male and female medical students

have a good understanding of plagiarism and the ethical implications of stealing someone else's work.(31)

Table 1: Do you think beginners in the field of research should be forgiven for plagiarism since they're at the early stage of learning?

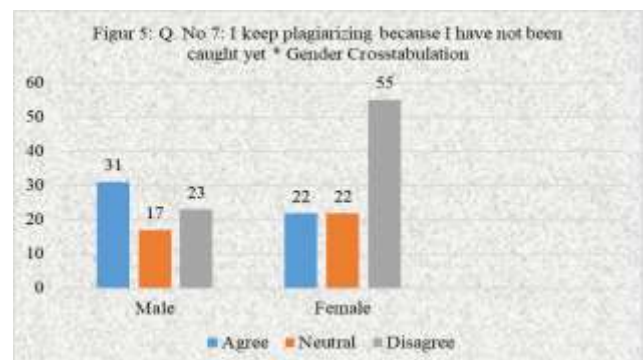
Response	1st year	2nd year	3rd year	4th year	5th year	Total	%
Agree	17	15	19	15	21	87	51.1
Neutral	8	8	4	10	10	40	23.5
Disagree	3	2	13	8	17	43	25.2
Total	28	25	36	33	48	170	
%	16.4	14.7	21.1	19.4	28.2		

**Table 1:** Based on the data, there is a difference of view among medical students at various academic levels on whether newcomers in the field of research may be forgiven for plagiarism since they are still in the learning process. The number of students who agree with the statement is highest among first-year students (61%) and second-year students (60%), but declines as students' progress, with just 44% of fifth-year students agreeing. The number of neutral students on this subject varies by academic year, with third-year students having the lowest percentage (11%), and second-year students having the largest (32%). Finally, among first- and second-year students, the number of students who disagree with the statement is often low. This data suggests a divide in opinion among medical students at various academic levels on whether newcomers in the field of research should be forgiven for plagiarism. However, it is vital to remember that the majority of students across all academic years either agree or are neutral on this subject.(32)

Table 2: If a colleague of mine allows me to copy from his/her paper, I am not doing anything wrong

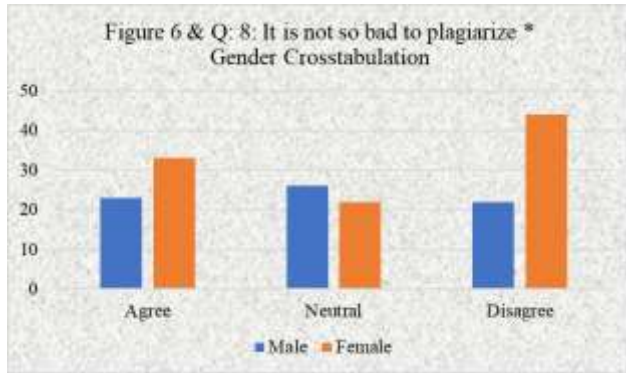
Response	1st year	2nd year	3rd year	4th year	5th year	Total	%
Agree	8	11	15	22	21	77	45.2
Neutral	7	9	6	3	9	34	20
Disagree	13	5	15	8	18	59	34.7
Total	28	25	36	33	48	170	
%	16.4	14.7	21.1	19.4	28.2		

**Table 2:** According to the research, a sizable proportion of students across all years argue that copying from a colleague's paper is not unethical. This indicates that the pupils comprehend the idea of plagiarism and its ethical consequences. However, it is worth mentioning that a sizable proportion of first- and fifth-year students are either indifferent or think that copying from a colleague's paper is not improper. This might imply that they need to familiarize themselves with plagiarism or its ramifications. Furthermore, the percentage of students who disagree with the statement declines from the third to the fourth year before climbing again in the fifth year.(33)





**Figure 5:** Based on the statistics, it appears that a sizable proportion of male students agree that they keep plagiarizing because they have not been caught yet. However, a majority of female students disagree with this notion. This suggests that there may be a difference in the mentality of male and female students towards plagiarism. Male students may be more likely to engage in plagiarism and have a more lenient attitude. In contrast, female students may be more aware of the consequences of plagiarism and have a more ethical approach toward academic work. It is also worth noting that a significant percentage of students (both male and female) are neutral on the issue. This could indicate that they may need to understand the seriousness of plagiarism fully or may have a strong opinion on the matter. Overall, the data suggests that there may be a need for more education and awareness of the consequences of plagiarism, particularly among male students.(34)



**Figure 6:** Based on this data, it is disturbing that a sizable proportion of both male and female students are either indifferent or believe that "it is not so bad to plagiarize." This remark was agreed with by 32% of male students and 33% of female students, while 37% of males and 48% of females were neutral on the subject. This shows that many students may need to be made aware of the seriousness of plagiarism and its impact on the university's academic integrity. However, it is heartening that the majority of students, both male and female, disagreed with the assertion. 31% of men and 67% of women disagreed with the statement, showing that they understand plagiarism is a severe problem. Overall, the evidence reveals that, while the majority of students recognize the seriousness of plagiarism, a considerable proportion of students are either neutral or do not regard it as a severe issue. This emphasizes the significance of continual training and guidance on academic integrity and plagiarism penalties.(35)

Table 3 of Q: 9 Young researchers who are just learning should receive less punishment for plagiarism

S. No	Response	1st year	2nd year	3rd year	4th year	5th year	Total	%
1	Agree	17	13	16	20	26	92	54.1
2	Neutral	5	5	10	6	15	41	24.1
3	Disagree	6	7	10	7	7	37	21.7
4	Total	28	25	36	33	48	170	
5	%	16.4	14.7	21.1	19.4	28.2		

**Table 3, and Q 9:** The statistics show that different percentages of medical students agree, are neutral, or disagree on whether young researchers who are just starting should face reduced punishment for plagiarism. The percentages represent the pupils' knowledge and attitude against plagiarism. Notably, greater numbers of final-year and fourth-year students agree with lessening plagiarism punishment, indicating a mindset that values the learning process and the need for assistance over stringent sanctions. A lesser number (21.7%) of disagree, reflecting an attitude toward

academic dishonesty. The neutral replies (24.1%) throughout the years suggest indecision or want for further information. Overall, these data emphasize the range of viewpoints among medical students.(36)

Table 4, of Q: 10: Introductory lectures on plagiarism should be given at freshmen orientation programs

S. No	Response	1st year	2nd year	3rd year	4th year	5th year	Total	%
1	Agree	20	16	25	23	32	116	68.2
2	Neutral	4	5	5	6	10	30	17.6
3	Disagree	4	4	6	4	6	24	14.1
4	Total	28	25	36	33	48	170	
5	%	16.4	14.7	21.1	19.4	28.2		

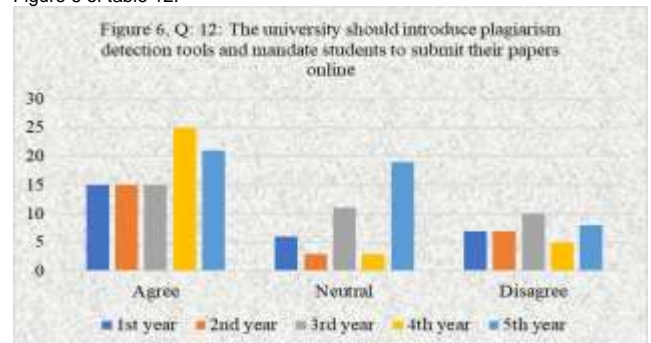
**Table 4:** The statistics showed students' attitudes about the inclusion of introductory lectures on plagiarism in freshman orientation programs over academic years. The percentages represent students' replies, which are classified as agreement, disagreement, or uncertainty, spanning many years of study. The comparison demonstrates that the percentages of agreement range from 64% to 71% throughout all academic years. This indicates a similar attitude among students from all years, who see the necessity of combating plagiarism during orientation. However, when the percentages of disagreement are compared, minor differences arise. The numbers range from 14% to 21%, demonstrating a mental divide among students from various academic years.(37)

Table 5, of Q: 11, Plagiarism should be discussed at different levels from undergraduate to postgraduate levels

1	Response	1st year	2nd year	3rd year	4th year	5th year	Total	%
2	Agree	24	19	21	31	19	114	67
3	Neutral	1	4	13	1	21	40	23.5
4	Disagree	3	2	2	1	8	16	9.4
5	Total	28	25	36	33	48	170	
6	%	16.4	14.7	21.1	19.4	28.2		

**Table 5:** Based on the data, the research sheds light on medical students' understanding and attitudes about the plagiarism discussion at various academic levels, from undergraduate to postgraduate. The percentages show the degrees of agreement, disagreement, and uncertainty among the pupils. The figures reveal that students from different academic years agree significantly. The differences imply a shift in student mentality, with some students questioning the necessity for thorough plagiarism courses throughout their academic careers.(38) Furthermore, a number of students are unsure, may be of their position or want further knowledge and direction to make an informed opinion. Overall, statistics reveal that the majority of medical students, particularly those in their last academic year, favor discussing plagiarism at various academic levels. This demonstrates a positive approach and understanding of the subject.

Figure 6 of table 12:



**Figure 6:** The data provides insight into students' comprehension and attitudes about the usage of plagiarism detection tools and the university's demand for online paper submissions, particularly among males and females. The percentages indicate the responses of the pupils, which were categorized as agreement, disagreement, or uncertainty.(39) The greater percentages of agreement among both males and females indicate a common understanding of the benefits of plagiarism detection systems and online submissions. Students who agree are more inclined to appreciate academic honesty. There was another research conducted in North Punjab among dental professionals to examine the attitudes and knowledge of dental professionals regarding plagiarism. They conducted a cross-sectional study over the course of four months which embodied 5000 dental practitioners chosen at random.(18) This study led to understand that there was plagiarism among dental professionals, and that the awareness of scientific check methods and proper penalties are the only ways to significantly reduce it. The behavior of dental professionals was extremely concerning, and it is crucial to maximize the value of ethical medical writing. Also, a dearth of consciousness and acceptance of this act's immorality could be seen in conflicting attitudes. Also, there was a general disposition in some cases towards communicating socially acceptable perspectives, which is quite the contrary of the major norm being embraced.(19)

Another research was conducted in Saudi Arabia during the year 2018 between April and May, which proposed the attitudes and perception of medical students concerning plagiarism. This study elaborated how medical students were affected by taking medical writing or medical ethics courses.(20) This survey involved 551 students in total, out of which 57% were male students and 47.5% students had a GPA between 4.25 to 5.0. 58.8% of the respondents were involved in taking medical ethics courses, 20.7% had previously drafted and published dissertation. This research concluded that the students who took medical ethics courses and the ones who had a published article of their own were linked to unfavorable or negative perceptions about plagiarism.(21) This study apparently shows that the medical ethics courses among medical students and the programs taken out for the awareness of plagiarism had no positive impact on the medical students in Saudi Arabia, whether because of the lack of concern by the medicos or the institution itself.(22) So, they suggested that future researches should look into the topics included in medical school ethics courses and if academic deception and plagiarism are treated equally throughout medical schools.(23)

A cross-sectional study was showcased in Croatia, to analyze the credibility of Croatian medical students towards academic honesty. Four Croatian medical schools participated, with third- and fifth-year students. The questionnaire was comprised of questions related to cheating, perceived seriousness of cheating, perceptions on integrity atmosphere, cheating behavior of peers and on willingness to report malpractice.(24) Risk factors were discussed later in results of the following study which enlightened the students' attitude towards plagiarism and honesty academically being a great deal of concern. students' judgments of peer cheating behavior, peer approval of cheating, poor awareness of the consequences of cheating, and the inappropriate severity level of tests and instructional materials were all susceptible of cheating.(25)

There was an article published during the course of 2004-2006 by the University of Novi Sad, Serbia, the intent of this paper was to increase students' understanding of and adherence to the principles of scientific writing.(26) Their method of study was worth appreciation, they actually delivered a 45-minute-long lecture to the 98 invitees related to the types and definitions of Plagiarism; science ethics in general. Thereafter, they proposed invitees a questionnaire based on the content delivered during 3 courses of the lecture.(27) Despite believing they lack sufficient training in science ethics, their response was positive even before the experiment, the lecture did put a mark on them and the findings

supported the widely held belief that the most effective strategy for preventing plagiarism would be through education.(28)

A cross-sectional survey was taken place at People's university, Bhopal, Madhya Pradesh, India in 2014, there sole purpose was to assess postgraduate health professionals' knowledge of and attitudes about plagiarism, it was comparative analysis to examine the information of medical and dental postgraduates about the norms related to plagiarism that are objective, subjective, and both. The results featured preference of dentistry students towards plagiarism more than the medical students.(27) A study of 2015, taken place in Mamata Dental College, Khammam, Telangana State, India, reviewed the behaviors of post-graduate students and faculty members onto plagiarism.(29) Their target was to direct all attendees' attention towards educational malpractice/plagiarism by focusing three attributes; subjective norms, negative attitudes, and positive attitudes. The ultimate outcome of this survey as cautious conduct of teachers and post-graduate students towards this academic negligence portrayed a negative outcome as a whole.(4) Medical resources, diagnosis, and treatment must improve in developing countries. There are limited resources available on medical education and research in Pakistan: lack of access to medical and health resources to the patients about disease; limited knowledge and trainings, and awareness about disease. The trainings should be conducted to improve the health literacy and how to access the medical resources for patients in Pakistan.<sup>38-45</sup>

## CONCLUSION

Based on the results, we concluded in light of the presented data, Understanding and knowledge of plagiarism. Most of Muhammad Medical College's (MMC) male and female medical students know plagiarism and its ethical ramifications. They understand that using someone else's work without giving due credit constitutes plagiarism. The perception that plagiarism is theft Both male and female students, in considerable numbers, believe that plagiarism is when someone uses another person's words or ideas without giving them credit.(40) This knowledge emphasizes the significance of appropriately citing sources and the gravity of plagiarism. Various perspectives about copying from newcomers and colleagues: Regarding the acceptance of plagiarizing from a peer's paper or pardoning newcomers for plagiarism, medical students' opinions vary between academic years. This implies the necessity for more research and instruction on these subjects to reach an agreement on moral behaviour. According to the statistics, attitudes against plagiarism may differ between male and female students. While female students show a more vigorous opposition to plagiarism and a higher admiration for academic honesty, male students tend to be more neutral or forgiving.

**Conflict of interest:** This study has nothing conflict of interest.

**Funding resources:** The researchers have yet to receive any resources from anyone.

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