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Perceptions of Undergraduate Pharmacy Students on Plagiarism in Three Major Public Universities in Egypt

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Keywords

Plagiarism; Pharmacy Students; Cheating; Research misconduct; Research Ethics; Academic dishonesty

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Running title: Perceptions of Egyptian Pharmacy Students on Plagiarism

Abstract:

Aims: The Survey aimed to capture the perceptions of undergraduate pharmacy students towards plagiarism in three major public universities in Cairo, Egypt; Helwan, Ain-Shams, and Cairo Universities.

Methods: This was a paper- based self-administrated survey study. The questionnaire was validated by both content and face validation. The final survey form captured the knowledge of the students on plagiarism definition, attitudes and practicing of plagiarism.

Results: Four hundred and fourteen students, 320 females and 94 males, participated in the study. There was a significant difference between the students who knew the definition of plagiarism among the three universities with p -value = 0.01. More than half of the participants (67%) claimed that they had no previous education or training on plagiarism. However, after being informed about plagiarism, most of them agreed that plagiarism should be regarded as stealing and a punishment. Additionally, poor study skills and the ease of copy and pasting from internet were identified by the majority of the students to be the leading causes behind plagiarism.

Conclusion: Pharmacy students need to have more education on plagiarism and its consequences on research and educational ethics. Finally, more strict policies should be incorporated to monitor and control plagiarism in undergraduate section.

Introduction:

Recently, incredible amount of information and knowledge are available on many sources due to the huge development of information technologies. This leads to a significant increase in opportunity for research misconduct, especially plagiarism. (Sarwar, Moin, and Jabeen 2016) The term plagiarize is derived from the Latin word "plagiary" which means kidnap. (Karami and Danaei 2016) According to the American Association of University Professors, plagiarism is defined as "taking over the ideas, methods, or written words of another, without acknowledgment and with the intention that they may be taken as the work of the deceiver". (Roig 2002)

Plagiarism is a widespread serious type of research misconduct and academic dishonesty, and one of the most reported types. Despite that, plagiarism is poorly acknowledged in most of the developing countries. (Carnero et al. 2017) This might be contributed to culture and economic factors. Which is mainly due to lack of training, institutional policies, oversight of academic centers and journal, and finally poor development of writing skills. (Carnero et al. 2017) On the other hand, language may be a great obstacle to many non-native speakers of English. (Heitman and Litewka 2011)

Students tend to plagiarize for many reasons, which can be intentionally or unintentionally. These reasons could vary from being careless and lazy to being unable to understand plagiarism due to lack of sufficient education regarding such issue. (Šprajc et al. 2017; Choo Elaine and Paull 2013) Being easier and faster than journals, books, encyclopedias and one can reach information needed with little efforts, internet became the preferred line for getting information. This caused plagiarism to spread greatly and it became contagious among students.(Shrivastava 2017) Furthermore, Internet contains large and variable amount of knowledge that made it indispensable source of information. (Foltynek 2014)

Although plagiarism can be considered as a critical research issue, we can avoid plagiarism easily by first determining the reasons behind plagiarism, and then implement the appropriate solutions such as teaching the students about plagiarism. Additionally, construct policies that tend to reduce and prevent plagiarism in the undergraduate students' researches and assignments.(Sutar and Khardekar 2017) Moreover, plagiarism detection tools might be helpful, where the use of text-matching software has been shown to help students to improve their writing skills and developing citation techniques. (Löfström, Huotari, and Kupila 2017)

On the other hand, paraphrasing differs from plagiarism, and also paraphrasing is not the only way to prevent plagiarism. Hence, citation here is necessary when we recall someone's work to maintain copyright. (Poorolajal et al. 2012) As mentioned before, plagiarism is a worldwide issue; however, it is only reported exclusively from developed countries where research education and training are usually implemented in the underground studies and curricula. (Rathore et al. 2015; Carnero et al. 2017) Therefore, more studies are needed to explore such problem in the developing countries.

Plagiarism constitutes one area of academic dishonesty, besides fabrication and falsification. (Henning et al. 2013) Plagiarism is not exclusive to developing countries, but it is a problem concerning all over the world. (Ellery 2008; Coughlin 2015) The exact prevalence of plagiarism by underground students is still unknown, however it was reported from large-scale studies that more than 30% of students plagiarize.

(Ehrich et al. 2016) Students who engage in academic dishonesty tend to be less responsible and less confident. (Click 2014)

Very few published research addressed the issue of plagiarism in Egypt among undergraduate students. (Elzubeir and Rizk 2003; Click 2014) Darrag et al, reported that there were significant levels of academic dishonesty among students in Egyptian universities. (Darrag, Yousri, and Badreldin 2012) Belal and Springuel in 2006 addressed the issue of plagiarism among Egyptian undergraduate students, and they reported that plagiarism was spreading in Egypt due to lacking policies and procedures to monitor and prevent plagiarism in Egyptian universities. (Belal and Springuel 2006) The issue of plagiarism was discussed in press as well; the head of Egypt's Academy of Scientific Research and Technology reported that plagiarism was wide spreading in Egypt. He added that lacking of scientific writing skill and lacking the facilities to detect and monitor plagiarism, as well, could be behind the high prevalence of plagiarism in Egypt. (Eldin and Ela 2016)

The prevalence of plagiarism is high among health professions. Moreover, around 15% of the articles in drug-therapy publications were retracted because of plagiarism. (DeGeeter et al. 2014) Because of the nature of the health profession, students of this sector should have the highest possible behavioral and academic integrities. (Jiang, Emmerton, and McKauge 2013) The problem of plagiarism is not limited to academic dishonesty, but this problem can reflect the unethical attitudes in professional setting and dishonest behaviors. (Ewing et al. 2017; Henning et al. 2013; DeGeeter et al. 2014)

Pharmacists are expected to have high standards of ethics as any unethical behavior during their study could affect their future profession. (Shakeel et al. 2013) Therefore, implementing policies and procedures to educate students about academic dishonesty and to prevent such action is essential. The perceptions of pharmacy students were studied in many countries around the world, such as Australia (Ryan et al. 2009; Emmerton, Jiang, and McKauge 2014), United States of America (Forinash et al. 2010; Rabi et al. 2006; Whitley and Starr 2010; DeGeeter et al. 2014), United Kingdom (Ng et al. 2003), New Zealand (Henning et al. 2013), Pakistan (Shakeel et al. 2013), and Croatia (Pupovac et al. 2010).

In this study, we aimed to investigate the perceptions of undergraduate pharmacy students towards plagiarism in three major public universities in Cairo, Egypt.

Methods:

Study Design

A survey based study was carried out between September 2017 to October 2017 in faculties of pharmacy of Ain Shams, Cairo and Helwan Universities. The survey was paper based self-administrated. All pharmacy undergraduate students of the three faculties were allowed to participate except only first year undergraduate students who were excluded. The questionnaire was distributed as a part of students' activity. Students were invited to participate voluntarily in the survey, and they were told that they were participating in a study, and that they had to answer all the questions, and return the completed survey within the same day. All data were collected anonymously. The Study was approved by The Ethical Committee of Faculty of Pharmacy Helwan University. Uncompleted Surveys were excluded from the study.

Survey Construction and Validation

Since, we had no access to an already validated questionnaire; the construction of the survey was based on the extensive review of literature of previously published studies in same area using PubMed. We followed steps published by (Burns et al. 2008) to perform face and Content Validity. Firstly, three professors at the faculty of Pharmacy Helwan University validated the content of the survey through checking the questions for any scientific errors, and they were asked to give advice in order to improve the questionnaire. Then, a first pilot survey was conducted on 10 random pharmacy students of different years, and their feedbacks were collected regarding the integrity and language of the survey. Some modifications to the language were made. Afterwards, a second pilot survey was carried out on another 20 random students. No changes were made then and the final survey form (appendix 1) was ready for distribution. The data collected from the two pilot studies we not included in the results.

The questionnaire consisted of twenty closed-ended questions that was divided into five sections; the first section aimed to collect the student characteristics and demographics. The second section was on the knowledge, testing whether students knew the definitions of plagiarism, and research ethics and types research misconduct. Before the third section, the definition of plagiarism (appendix 1) was given to the participants, and then they were asked about their attitudes towards plagiarism. The next section had three questions on plagiarism practicing. Finally, the last section included three miscellaneous questions on frequency of plagiarism in their faculty and reasons behind plagiarizing.

Statistical Analysis

All the statistical analysis were done using IBM SPSS (version 22; SPSS Inc., Chicago, IL, USA). Students' characteristics were summarized using descriptive statistics. Percentages and frequencies were used to present the answers. Chi Square test was used to compare between groups, and p-value ≤ 0.05 was considered statistically significant.

Results:

Students Characteristics

Out of 520 students who were invited to fill in the survey, nine survey forms from Cairo University , seven from Helwan University and five from Ain Shams university were excluded because they returned either incomplete or empty survey forms. However, 414 agreed to participate and returned a completed survey form with an overall response rate of 80%. The majority of the participants were females with 320 (77 %) participants. Most of the participants were from the final year (42%) while, the fourth year students were of the least participation in the survey with only 57 participants (14%). In respect to the university, the number of the participants was almost the same for the three universities; Helwan, Ain Shams and Cairo universities with numbers of 153, 140, and 121 participants, respectively. The Characteristics of the participating students were summarized in table (1).

Knowledge

In this section, students were asked about their knowledge on the definition of plagiarism. The Number of Students from Helwan University who claimed to know the definition of plagiarism was nearly equally between students who did not know about it. On the other hand, almost two-thirds (62%) of the participating students from Cairo Students claimed to know the definition of plagiarism. On the contrary, in Ain Shams University 62% of the students (86 students) did not know about the definition. Pharmacy students of Cairo University had the highest ratio of students who claimed to know the definitions of plagiarism and those how did not (p-value = 0.001 and 0.005 for Q1 and Q3 respectively). However, students who knew correctly the definition of plagiarism did not differ statistically between the three universities (p-value = 0.891). The answers of the rest of the knowledge section were statistically different between the different universities. Table (2) included the frequencies of students' answers to first section based on their universities. Age and Gender had statistically insignificant influence on all the knowledge section. The academic year could significantly affect the degree of knowledge (p-value= 0.05 for Question 1, 0.01 for Question 2 and 0.002 for Question 3) However, most of the students, regardless of their academic year, tend be unaware about research misconduct (p-value = 0.835).

Attitudes

Six Questions in this section were used to capture the attitudes of the students towards plagiarism, table (3). The majority of students (70%) agreed that plagiarism should be considered stealing, while only 33 students (8%) shared the opposite opinion, and do not considered it to be a crime. More than half of the participants (228 students) agreed that there must be a punishment upon plagiarism. Three hundred and fourteen students considered the internet to have a great influence on increasing plagiarism.

Practice

More than half of the participating students (67%) claimed that they had no previous education on plagiarism. Three Hundred students uses the internet regularly for their assignments. However, only 50

students (12%) claimed to check all their assignments for plagiarism. Table (4) contains questions of practice section.

Miscellaneous Questions

Students were asked about the reasons behind plagiarizing, figure (1). It was found that around 24% of students tend to plagiarize because of the pressure of the study and due to the ease of copy and pasting from websites. Poor study skills and lack of understanding of the seriousness of plagiarism were 19% and 18%, respectively.

Finally, students were asked to estimate the frequency of plagiarism through a scale from 1 (very low) to 5 (very high) in their respective faculties, students from Helwan and Cairo Universities claimed that plagiarism had an average frequency; however, Ain Shams Students claimed that there was a low frequency of plagiarism in their faculty. All the students from the three universities stated that their faculties had weak vision about plagiarism and on how to preventing it.

Discussion:

To the best of our knowledge, this research was found to be the first to capture the perceptions of pharmacy students towards plagiarism in Egyptian Universities. This research aimed to capture the degree of knowledge as well as, the perceptions of pharmacy students on plagiarism. The selected universities are considered the major three public universities in Cairo, the capital of Egypt.

The obvious difference in the number of the participating females (320 students) and males (94 students) reflected the fact that most of the students joining pharmacy schools in Egypt were females. In some universities, the females attending pharmacy school could reach more than two-thirds of all students. All the students from all academic years were allowed to participate in the study except students of the first year as they were considered new to academia and university, hence, they were considered to have low or no knowledge on plagiarism. This consideration was based on that the fact that Egyptian secondary

schools and curricula have no research projects or assignments that require teaching students about plagiarism.

Nearly half of the participating students claimed to know the definition of plagiarism and 87% of these students knew the correct definition of plagiarism. However, this result was opposing the answers of the question asking the students about research misconduct. Three hundred and sixteen students did not know about research misconduct, hence, this concluded that most of the students did not know that plagiarism is considered a type of research misconduct and they might have only heard about the concept of plagiarizing. El-Shinawi and his colleagues (El-Shinawi et al. 2016) concluded the similar results, when they found that most of the Medical students in Ain Shams University did not have the sufficient knowledge on neither plagiarism nor research misconduct.

In respect to the impact of gender of the answers towards knowledge section, it was found that gender did not significantly affect any of the knowledge questions. This was similar to other studies, which found that there was no difference between male and female responses towards academic dishonesty. (Emmerton, Jiang, and McKauge 2014; Eric J. Ip, Jai Pal, Shadi Doroudgar, Monica K. Bidwal 2017) On the other hand, Henning and his colleagues (Henning et al. 2013) in New Zealand and Shakeel and his colleagues (Shakeel et al. 2013) in Pakistan reported that males tend to have higher levels of academic dishonesty.

Age, as well, had no influence on knowledge section. This was in consistence with what Darrage and his colleagues concluded in their study on Egyptian students, where they found that there was no relationship between age and academic dishonest behavior. (Darrag, Yousri, and Badreldin 2012)

The students' attitudes towards plagiarism were satisfactory. The majority of the students agreed that plagiarism is stealing and should be faced with a punishment, this was in consistence with what Forinash and his colleagues (Forinash et al. 2010) reported for pharmacy students in Florida, USA. They found that more than 90% of the students agreed that plagiarism is dishonest action. (Forinash et al. 2010)

Sheridan et al, (Sheridan, Alany, and Brake 2005) and Ryan et al, (Ryan et al. 2009) indicated in their studies which type of punishment students prefer when they were caught on plagiarizing. However, McInnis and Devlin recommend four strategies that may help minimizing plagiarism rather than punishment. (Shakeel et al. 2013)

Although some students are willing to learn more about plagiarism, as 42% of our sample students agreed that they would attend any sessions for plagiarism. The majority were either neutral or refuse. This indicated that most of the students did not know the influence of such academic misconduct on their academic and professional life. This indicated that there should be an integrated part in their curricula which focuses on research ethics, academic dishonesty and how to avoid such actions. In some situations, those sessions and workshops aided in increasing the knowledge and awareness of the students, as reported by some studies conducted in Egypt and United states. In United states, DeGeeter and his colleagues found that applying an educational intervention to students can significantly improve their perceptions towards plagiarism. (DeGeeter et al. 2014) El-shinawi and his colleagues concluded that educational awareness campaigns were useful in increasing awareness of medical students towards research ethics. (El-Shinawi et al. 2016) Y. Eldin and L. Ela revealed that faculty staff of Nursing School in Damanhor University, Egypt had a positive change in their degrees of perceptions after attending workshops on plagiarism awareness. (Eldin and Ela 2016) Although the later study was conducted on faculty members, but we can expect the same for the students because the educational environment and conditions are the same.

Turning to the Internet, The influence of the internet was reported in many studies that it had made plagiarism easier. (Ryan et al. 2009) Likewise, most students in this study agreed on the statement “internet has greatly increased plagiarism”. Although they agreed that internet influences students to plagiarize, most of the students (73%) tend to use the internet in all their assignments and researches. In United States, Rabi et al, found that most of pharmacy students admitted direct copying from internet. (Rabi et al. 2006)

Nonetheless, more than two-thirds of the students never or sometimes checked their assignments or projects for plagiarism. Additionally, friends could influence each other to plagiarize, as most of the students agreed that they might tend to plagiarize upon knowing that their friends have done so. This was similar to a study, which supported a model of cheating behavior where student are more likely to plagiarize when they knew that their peers plagiarize. (Rettinger and Kramer 2009) Moreover, sixty percent of the students agreed that not being caught after plagiarizing might lead to more plagiarizing. All of these reasons indicated that there was no implemented policy in the three faculties to control the process of plagiarizing of students in their researches and assignments. Consequently, this have been proven when all the students from three university stated that their faculties have weak vision regarding plagiarism.

In contrast to their answers in the knowledge and practice section, students from Ain Shams University claimed that they had low frequency of plagiarism in their faculty. Some students tend to preserve the image of their faculty, so when answering questions related to the reputation of their faculty they tend to select the less offending. This reason might be behind those conflicting results of Ain Shams students. Their response can be explained by what is called to be social desirability bias. (Grimm 2010)

Lack of knowledge and understanding about the seriousness of plagiarism, and poor study skills could be reasons that lead to plagiarism as reported by 18% and 19% of the students, respectively. Lack of plagiarism understanding has been identified in some studies to have a contribution to the incidence of plagiarism.(Fischer and Zigmund 2011; DeGeeter et al. 2014) Pressure of study and ease of copy and pasting were identified by the majority of the students (24%) to be a reason behind plagiarism. The pressure of study was reported before by other researches from Slovenia, United Kingdom and Australia to influence plagiarism. (Ng et al. 2003; Šprajc et al. 2017; Emmerton, Jiang, and McKauge 2014)

Recommendation

In order to construct a national wide policy for preventing and controlling research misconduct in the undergraduate section as well as encouraging the students not to plagiarize, we recommend conducting more surveys on research misconduct and academic dishonesty among different Faculties of Pharmacy in Egypt with larger sample size and with more comprehensive questionnaire.

Conclusion:

Pharmacy students in the three universities need to have more education on plagiarism and research misconduct. The vision of the three faculties of pharmacy should be modified and be more strict towards plagiarism and policies should be implemented to control and prevent such academic dishonesty.

Study Limitations

One limitation of this study was the relatively low sample size, 414 students may not be able to generalize the results to all pharmacy students around Egypt. The culture of using surveys in Egypt is recognized as well as, the low perceptions of undergraduate students towards survey studies and questionnaires might be the reason behind the low participant numbers. Another limitation was that we were unable to prevent social desirability bias, which appeared in some of students' responses as in case of Ain Shams students.

Conflict of Interests:

The authors declare no conflict of interests.

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Appendix 1

Survey Questions

Domain (1) : Definitions Knowledge

1. Do you know the definition of Plagiarism?

- Yes
- No

2. If yes, Plagiarism is defined as (select correct definition)

- Stating someone else’s ideas or rewriting someone else’s words after using quotations.
- The action or practice of taking someone else’s work, ideas, etc., and passing it off as one’s own
- is the process of writing a scientific article with no consideration to research ethics

3. Do you know about research ethics?

- Yes
- No

4. Do you know the types of research misconduct?

- Yes
- No

Plagiarism Definition

- Plagiarism is a concern of copying the text and claiming to be one's own.
- Plagiarism is taking someone else's work, ideas, etc., and passing it off as one's own, by incorporating it into your work without proper acknowledgment of the source.

Types of plagiarism

1-Intentional plagiarism which attributed to the fact that the one who misuse the work of another author without giving proper credit or citation (reference)and reflect others as it was of his own

2-Unintentional Plagiarism, which is the act of accidental copying as plagiarism that happen among students.

Domain (2) : Attitudes

5. Plagiarism is considered stealing

- Agree
- Neutral
- Disagree

6. If your faculty organizes a session on plagiarism, will you attend?

- Agree
- Neutral
- Disagree

7. There must be a punishment upon plagiarism.

- Agree
- Neutral
- Disagree

8. Internet has greatly increased plagiarism.

- Agree
- Neutral
- Disagree

9. Less chances of being caught might be a reason for plagiarism among students.

- Agree
- Neutral
- Disagree

10. When students know that their friends plagiarized, they tend to plagiarize too?

- Agree
- Neutral
- Disagree

Domain (3) : Practicing

11. Have you ever been educated about plagiarism and scientific writing?

- Yes
- No

12. How often do you use internet to do your assignments?

- Always
- Sometimes
- Never

13. Have you ever check your assignments/projects for plagiarism before submitting them?

- Always

Sometimes

Never

Domain (4) : Miscellaneous

14. If you estimate the frequency of plagiarism in your faculty,

(you will rate from 1 (very low) to 5 (very high))

1

2

3

4

5

15. What is your university's vision about plagiarism?

Strict

weak

Normal

16. Why do you think student plagiarize?(Choose the most important factor)

Pressure of study

Poor study skill

Cut and paste from the websites are easier

Lack of understanding about the seriousness of plagiarism

Time saving

Table 1. The characteristics of the participating students

Characteristic	N (%)
Gender	
Male	94 (23)
Female	320 (77)
Age	
≤ 20	140 (34)
> 20	274 (66)
Academic Year	
Second Year	82 (20)
Third Year	103 (25)
Fourth Year	57 (14)
Final Year	172 (41)
University	
Helwan	153 (37)
Ain Shams	140 (34)
Cairo	121 (29)

Table 2. Summary of Knowledge Questions

	University				p-value ^a
	Helwan	Ain shams	Cairo	Total N	
Q1. Do you know the definition of Plagiarism?					
Yes	75	54	75	204 (49%)	0.001*
No	77	86	46	209 (51%)	
Q2. Plagiarism is defined as:					
Correct	64	45	66	175 (87%)	0.891
Wrong	11	7	9	27 (13%)	
Q3. Do you know about research ethics?					
Yes	76	71	82	229 (55%)	0.005*
No	77	68	39	184 (45%)	
Q4. Do you know types of research misconduct?					
Yes	37	24	37	98 (24%)	0.038*
No	116	116	84	316 (76%)	
^a Chi-Square test was used to compare between different groups. * Statistically significant with p-value ≤ 0.05					

Table 3. Attitudes questions towards plagiarism

	University			
	Helwan	Ain shams	Cairo	Total N
Q5. Plagiarism is considered stealing				
Agree	95	100	93	288 (70%)
Neutral	46	30	17	93 (22%)
Disagree	12	10	11	33 (8%)
Q6. If your faculty organizes a session on plagiarism, will you attend?				
Agree	66	53	54	173 (42%)
Neutral	58	46	56	160 (39%)
Disagree	28	41	11	80 (19%)
Q7. There must be a punishment upon plagiarism.				
Agree	86	69	73	228 (55%)
Neutral	40	37	32	109 (26%)
Disagree	27	34	16	77 (19%)
Q8. Internet has greatly increased plagiarism.				
Agree	108	104	102	314 (76%)
Neutral	31	30	14	75 (18%)
Disagree	14	6	5	25 (6%)
Q9. Less chances of being caught might be a reason for plagiarism among students.				
Agree	80	90	78	248 (60%)
Neutral	51	38	36	125 (30%)
Disagree	22	12	7	41 (10%)
Q10. When students know that their friends				

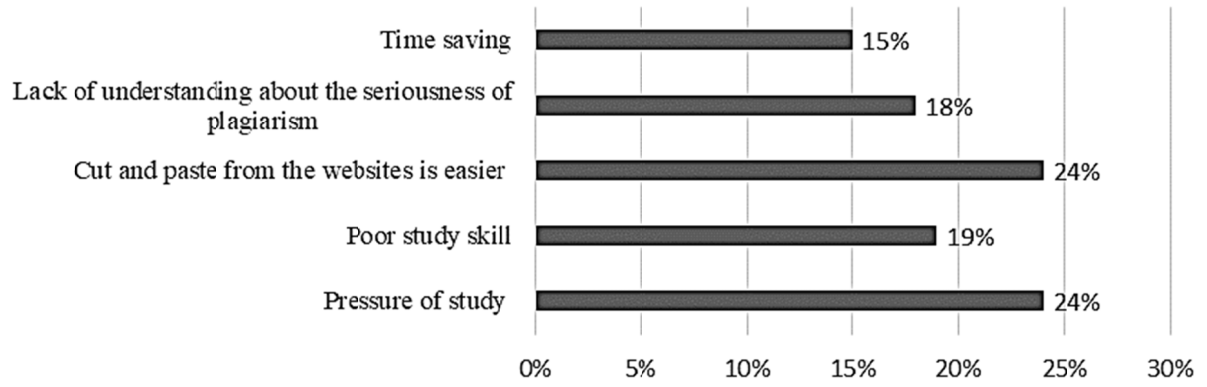
plagiarized, they tend to plagiarize too.				
Agree	65	66	52	183 (44%)
Neutral	43	41	40	124 (30%)
Disagree	45	33	29	107 (26%)

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Table 4. Practice Questions

	University			
	Helwan	Ain shams	Cairo	Total N
Q11. Have you ever been educated about plagiarism and scientific writing?				
Yes	58	38	40	136 (33%)
No	95	102	81	278 (67%)
Q12. How often do you use internet to do your assignments?				
Always	119	91	90	300 (72%)
Sometimes	27	47	29	103 (25%)
Never	7	2	2	11 (3%)
Q13. Have you ever check your assignments / projects for plagiarism before submitting them?				
Always	19	18	13	50 (12%)
Sometimes	73	65	51	189 (46%)
Never	61	57	57	175 (42%)

Figure (1) The frequency of selecting the reasons for plagiarizing based on students selection.



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