

2023

Knowledge, Attitudes, and Practices of Plagiarism by Undergraduate Healthcare Science in Gauteng

Nontembiso Magida

University of Pretoria, South Africa, nontembiso.magida@up.ac.za

Kyla Cross

University of Pretoria, South Africa, kylacross16@gmail.com

Khanyisa Penelope Baloyi

University of Pretoria, South Africa, u18142576@tuks.co.za

Tatum Skye Mitrovich

University of Pretoria, South Africa, u19132540@tuks.co.za

Lavender Rutendo Muyengwa

University of Pretoria, South Africa, lavenderm18@gmail.com

See next page for additional authors

Follow this and additional works at: <https://ro.uow.edu.au/jutlp>

Recommended Citation

Magida, N., Cross, K., Baloyi, K. P., Mitrovich, T. S., Muyengwa, L. R., Mupambirei, P. T., Van der Mescht, M., & Graham, M. (2023). Knowledge, Attitudes, and Practices of Plagiarism by Undergraduate Healthcare Science in Gauteng. *Journal of University Teaching & Learning Practice*, 20(6). <https://doi.org/10.53761/1.20.6.4>

Knowledge, Attitudes, and Practices of Plagiarism by Undergraduate Healthcare Science in Gauteng

Abstract

Plagiarism is a growing concern in Healthcare Sciences in the current digital era. Plagiarism threatens institutions' integrity and academic reputation; therefore, it is essential to understand all contributing factors to eradicate unethical practices effectively. The study aimed to establish the knowledge, attitudes, and practices of plagiarism among Healthcare Science students at a selected higher education institution in Gauteng. A cross-sectional study was used, with a total population of 803 second to fourth-year students from the School of Healthcare Sciences, and 83 students completing the survey. Ethical clearance and approval (617/2021) were obtained from the ethics and research committee of a selected higher educational institution in Gauteng. An adapted Likert scale self-reported questionnaire was sent via a Google form link to the teaching platform with the consent form embedded. The statistical Package for Social Science was used to analyse demographic data descriptively, and Spearman's rho test determined the correlation between study variables. Most students were female (94.0%) and non-native English speakers (71.1%). The majority (83.1%) of the students reported understanding the instances of plagiarism; however, approximately one-third (36.1%) were unable to identify specific instances correctly. Just over half (56.6%) of the students felt self-plagiarism should not be punishable. The correlation between the knowledge of plagiarism and negative attitudes towards plagiarism was found to be statistically significant ($p=0.009$). The results demonstrated low practice of plagiarism, possibly due to a lack of self-awareness. Therefore, continuous in-depth education on plagiarism and improved policies should be fostered to promote the integrity of future healthcare professionals.

Practitioner Notes

1. Familiarity with the definition of plagiarism but the inability to identify specific instances which constitute plagiarism presents as the most prominent gap in plagiarism knowledge fostered by undergraduate students.
2. The gaps in knowledge pose a threat to their own academic work, as well as the reputation and integrity of the university and especially future patient quality care.
3. In-depth knowledge and fostering of University policies are mandatory to improve plagiarism instances in higher education students.
4. A positive correlation between the knowledge students possess regarding plagiarism and the seriousness with which they view plagiarism. demonstrates the importance of fostering in-depth educational programs.
5. Encouraging Healthcare Science students to foster negative attitudes toward academically dishonest practices is essential to eradicate plagiarism and ensure exceptional future patient care.

Keywords

Knowledge, Attitudes, Practices, School of Healthcare Science, Students, Higher education institution

Authors

Nontembiso Magida, Kyla Cross, Khanyisa Penelope Baloyi, Tatum Skye Mitrovich, Lavender Rutendo Muyengwa, Perseverence Tendai Mupambirei, Marizaan Van der Mescht, and Marien Graham

This article is available in Journal of University Teaching & Learning Practice: <https://ro.uow.edu.au/jutlp/vol20/iss6/>

Introduction

Plagiarism is a growing concern in Healthcare Sciences, as the rise in incidences of digital plagiarism seriously threatens the institution's integrity and academic reputation. Plagiarism is a form of academic misconduct involving presenting formal academic work under the false pretence of the work being entirely one's own (Korn & Davidovitch, 2016; Nabee et al., 2020). The act of plagiarism, whilst always unethical, can be either unintentional, due to misunderstanding and negligence or deliberate, due to pure dishonesty (Alhadlaq et al., 2020; Nabee et al., 2020). Deliberate plagiarism is committed by students who are fully aware of the consequences and often occurs as direct quotations without proper referencing (Baždarić, 2012; Kirthi et al., 2015). The most prominent motivators leading university students to plagiarism are poor time management, complicated academic requirements, strict deadlines, and the desire for academic excellence or the fear of failure (Kirthi et al., 2015; Nabee et al., 2020).

The literature demonstrates that the primary cause of academic plagiarism among students is a lack of comprehensive education and, thus, a lack of knowledge (Alzahrani et al., 2020; Matsebatlela & Kuhudzai, 2018). Despite the majority of university students being familiar with the definition of plagiarism, a large percentage of the students have either limited or non-existent knowledge regarding the university's plagiarism prevention policies, what constitutes plagiarism, as well as the exact consequences thereof (Ahmed et al., 2018; Alzahrani et al., 2020; Ismail, 2018; Ryan et al., 2009). Even though several countries have plagiarism policies in place, less than one-third of students in Western Europe reported they received plagiarism training (Foltynek & Glendinning, 2015). In contrast, South Europe reported no plagiarism policies at all (Foltynek & Glendinning, 2015). In Europe, plagiarism is influenced by the cultural environment (Pupovac et al., 2008), which includes different conceptions of intellectual property and originality (Roig, 2006). In Asia, collectivism is a cultural tradition, and they do not claim exclusive rights to intellectual property (Kutieleh & Adiningrum, 2011). Additionally, in Asia, they follow the ancient tradition of memorising, taking point by point (Mavrinac et al., 2010). A recent study investigating plagiarism in Asia, reported that students in higher education institutions blame unclear university policies on plagiarism (McCulloch & Indrarathne, 2022). Evidence demonstrates that most Healthcare Science university students unintentionally commit plagiarism due to an evident lack of in-depth knowledge (Matsebatlela & Kuhudzai, 2018; Valdes, 2019).

Studies demonstrate a relationship between the attitudes Healthcare Science university students possess towards plagiarism and the practice thereof (Molnar, 2015). Apathetic attitudes towards plagiarism resulted in a high prevalence of academic dishonesty. In contrast, severe and attentive attitudes were linked to avoiding plagiarism and, thus, fewer incidences of academic misconduct (Molnar, 2015). Evidence across literature demonstrates that Healthcare

Academic Editors

Section: Curriculum and Assessment
Senior Editor: Dr Joseph Crawford
Associate Editor: A/Prof Suzanne Fergus

Publication

Received: 29 August 2022
Revision: 23 February 2023
Accepted: 19 June 2023
Published: 16 August 2023

Copyright: © by the authors, in its year of first publication. This publication is an open access publication under the Creative Commons Attribution [CC BY-ND 4.0](https://creativecommons.org/licenses/by-nd/4.0/) license.

Science university students have a poor attitude toward the implications and consequences of academically dishonest practices (Kirthi et al., 2015; Molnar, 2015). Most university students do not regard plagiarism as a serious offence and often rationalise the act of academic misconduct due to the advantages gained and the lack of punishment experienced (Kirthi et al., 2015). The belief that plagiarism can be justifiable within specific contexts demonstrates that university students predominantly have a complete disregard for ethical academic practices and the harm academic misconduct can cause to one's reputation as well as the standard of research within the particular academic field (Kirthi et al., 2015; Molnar, 2015).

The practice of plagiarism is a serious violation of academic integrity as it detracts from the originality and value of academic work and causes permanent harm to a student's academic career (Alzahrani et al., 2020; Mohammed et al., 2015). The constant opportunity to plagiarise as a simpler, less time-consuming approach to academic work largely influences many university students to practice academic dishonesty (Alzahrani et al., 2020). The theoretical and clinical knowledge that Healthcare Science students gain while studying has been proven to be crucial for the safety and well-being of students' future patients (Alhadlaq et al., 2020). The eradication of plagiarism through careful monitoring and penalisation of academically dishonest practices, particularly within the Healthcare Science field, is essential (Alhadlaq et al., 2020; Kirthi et al., 2015).

Given the current digital era and recently due to the COVID-19 pandemic, many students were required to complete academic tasks virtually with increased access to online resources, posing an increased opportunity for plagiarism to occur (Raihanah et al., 2011). The current study analysed Healthcare Science students' knowledge, attitudes, and practice of plagiarism at a selected higher education institution (HEI). With a noticeable rise in the number of plagiarism cases amongst university students, it was a concern that Healthcare Science students were unaware of what plagiarism was and therefore have been oblivious to the extent of their history of plagiarism, be it intentional or unintentional (Raihanah et al., 2011). The current study aimed to ascertain the knowledge, attitudes, and practice of plagiarism among Healthcare Science students at a HEI in Gauteng, South Africa.

Methods

Ethical approval and permission for this study were obtained from the selected HEI ethics and research committee department (617/2021). Approval to survey undergraduate students enrolled within the School of Healthcare Sciences (SoHCS) was granted by all departmental heads within the school. A cross-sectional study with a total population sample of 803 SoHCS students was conducted from March to April 2022 among all second to final-year undergraduates enrolled in the 2022 academic year. However, only 83 students responded to the questionnaire. The study used a non-probability total population purposive sampling technique (Brink et al., 2018; Etikan et al., 2016). The sampling technique targeted SoHCS students who demonstrated specific experience, knowledge, or skills and met the study's objective (Lavrakas et al., 2019). This sampling technique allowed the questionnaire to be sent to the entire population, aiming to receive feedback from as many students as possible.

We excluded first-year students as their university experience had been only two months at the commencement of data collection, and their exposure to the university's plagiarism policies was inadequate. A validated questionnaire used by Alzahrani et al. (2020) was adapted to allow most questions to be answered in the form of a 5-point Likert scale (1 = "strongly disagree", 2 = "disagree", 3 = "uncertain", 4 = "agree" and 5 = "strongly agree") and to adjust questions which were not appropriate for undergraduate level. The questionnaire consisted of a section of brief demographic questions, followed by the main questions, consisting of three distinct sections. These sections focused on the knowledge of plagiarism, attitudes towards plagiarism, and the practices of plagiarism, respectively.

In February 2022, the pilot study was conducted to establish the reliability and validity of the questionnaire and how long the questionnaire took to complete. The Cronbach's alpha was used to establish the reliability of the instrument. The Cronbach's alpha for the knowledge of plagiarism, the positive attitudes, the negative attitudes and the practice of plagiarism questions were equal to 0.610, 0.647, 0.733 and 0.836, respectively. A Cronbach's alpha value above 0.6 is acceptable (Van Griethuijsen et al., 2015). The questionnaire was therefore deemed reliable. The validity was determined by establishing convergent and discriminant validity. Convergent validity is established by running correlations between items loading on the same constructs (which should correlate strongly). Discriminant validity is established by running correlations between items that do not belong to the same construct (which should correlate less strongly). For conciseness, the vast number of correlations are not presented here. However, the correlations confirmed that the questionnaire was valid. Since both the reliability and validity were established, no further adaptations were made prior to the final study conducted in March 2022.

Following the pilot study, the self-reported questionnaire was shared through a Google form link and distributed to the selected sample of 803 SoHCS students via the teaching platform of the HEI. The questionnaire was available through this platform for four weeks, with a weekly reminder distributed via the same platform. Completion of the questionnaire was entirely voluntary, anonymous, and permitted only once informed consent had been obtained. An appendix is attached that depicts the questionnaire used in this study. Following the link to the questionnaire's closure, the researchers extracted data from the Google form, using the 83 responses received, and captured it in an Excel spreadsheet. All data were analysed using Statistical Package for Social Sciences (SPSS) version 28 with the assistance of a qualified statistician. Descriptive statistical analysis was employed to describe participant characteristics and establish overall results regarding frequencies and percentages. Spearman's correlation coefficients were calculated and reported to describe the correlation between the knowledge, attitudes, and practice of plagiarism.

Results

Out of 803 SoHCS students who received access to the questionnaire, 83 students responded, giving a response rate of 10.3%. Table 1 depicts the demographic characteristics of the students, including gender, age, home language, department of study and year of study.

Table 1
Demographic Characteristics of the Students (n = 83)

Criteria	Category	n	%
Gender	Female	78	94.0
	Male	5	6.0
Age	18-20	13	15.7
	21-23	60	72.3
	24-26	6	7.2
	27 and above	4	4.8
Home language	English	24	28.9
	Other	59	71.1
Department of study	Department A	16	19.3
	Department B	43	51.8
	Department C	9	10.8
	Department D	5	6.0
	Department E	10	12.0
Year of study	2 nd	8	9.6
	3 rd	39	47.0
	4 th	36	43.4

The percentage of students speaking English as their home language was just under one-third (28.9%, n = 24), and many students (43.3%, n = 36) were in their fourth year of study. Table 2 depicts the results of all questions pertaining to the students' knowledge of plagiarism.

Table 2
Knowledge of Plagiarism (% , n)

Criteria	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
"I have heard something about plagiarism."	1.2 (1)	2.4 (2)	0.0 (0)	9.6 (8)	86.7 (72)
"I am familiar with instances of plagiarism."	1.2 (1)	3.6 (3)	12.0 (10)	20.5 (17)	62.7 (52)
"I am familiar with the penalty of plagiarism."	2.4 (2)	2.4 (2)	12.0 (10)	28.9 (24)	54.2 (45)
"The following practice is considered plagiarism: A student copies a paragraph. Makes small changes. The source appears in a reference list."	6.0 (5)	14.5 (12)	15.7 (13)	36.1 (30)	27.7 (23)
"The following practice is considered plagiarism: A student paraphrases a paragraph. Language, structure and details are changed. The source appears in a reference list."	59.0 (49)	19.3 (16)	8.4 (7)	7.2 (6)	6.0 (5)
"Copying another's work, word-for-word is not considered as plagiarism"	91.6 (76)	2.4 (2)	0.0 (0)	0.0 (0)	6.0 (5)

Most students (96.4%, n = 80) had heard something about plagiarism. Out of the 83 (100%) students, 94.0% (n = 78) acknowledged that copying another's work word-for-word is plagiarism. However, 16.9% (n = 14) of students were uncertain or entirely unfamiliar with the penalty for plagiarism. Although the students report that they are familiar with instances of plagiarism (83.1%, n = 69), just over one-third (36.1%, n = 30) could not recognise that copying a paragraph and making a few changes constitutes plagiarism. Table 3 depicts the results of all questions on positive attitudes toward plagiarism.

Table 3*Positive Attitudes Towards Plagiarism (% , n) **

Criteria	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
“Sometimes one cannot avoid using other people’s words without citing the source because there are only so many ways to describe something.”	20.5 (17)	9.6 (8)	18.1 (15)	21.7 (18)	30.1 (25)
“It is justified to use previous descriptions of a method because the method itself remains the same.”	3.6 (3)	14.5 (12)	36.1 (30)	27.7 (23)	18.1 (15)
“Self-plagiarism is not punishable because it is not harmful.”	15.7 (13)	14.5 (12)	13.3 (11)	21.7 (18)	34.9 (29)
“Plagiarised parts of a paper may be ignored if the paper is of great scientific value.”	66.3 (55)	20.5 (17)	9.6 (8)	1.2 (1)	2.4 (2)
“Self-plagiarism should not be punishable in the same way as plagiarism is.”	3.6 (3)	12.0 (10)	27.7 (23)	27.7 (23)	28.9 (24)
“Young researchers who are just learning the ropes should receive milder punishment for plagiarism.”	16.9 (14)	30.1 (25)	21.7 (18)	21.7 (18)	9.6 (8)
“If one cannot write well in English, it is justified to copy parts of a similar paper already published in that language.”	51.8 (43)	31.3 (26)	8.4 (7)	4.8 (4)	3.6 (3)
“I could not write a scientific paper without plagiarising.”	56.6 (47)	21.7 (18)	14.5 (12)	3.6 (3)	3.6 (3)

Some students demonstrated positive and, therefore, less severe attitudes toward plagiarism. Approximately half (51.8%, n = 43) indicated that sometimes plagiarism is unavoidable and slightly more (56.6%, n = 47) indicated that the punishment for self-plagiarism should not be equal to other forms of plagiarism. Table 4 depicts the results of all questions pertaining to positive attitudes toward plagiarism.

Table 4*Negative Attitudes Towards Plagiarism (% , n) **

Criteria	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
"Plagiarists do not belong in the scientific community."	8.4 (7)	4.8 (4)	20.5 (17)	44.6 (37)	21.7 (18)
"The names of the authors who plagiarise should be disclosed to the scientific community."	12.0 (10)	12.0 (10)	32.5 (27)	25.3 (21)	18.1 (15)
"In times of moral and ethical decline, it is important to discuss issues such as plagiarism and self-plagiarism."	3.6 (3)	3.6 (3)	9.6 (8)	24.1 (20)	59.0 (49)
"Plagiarising is as bad as stealing an examination."	6.0 (5)	2.4 (2)	10.8 (9)	33.7 (28)	47.0 (39)
"A plagiarised paper does not harm science."	60.2 (50)	19.3 (16)	7.2 (6)	13.3 (11)	0.0 (0)
"Since plagiarism is taking other people's words rather than actual assets, it should not be considered as a serious offence."	53.0 (44)	27.7 (23)	8.4 (7)	7.2 (6)	3.6 (3)

Almost 80% of students (79.5%, n = 66) acknowledged that plagiarism negatively impacts science, while slightly more (80.7%, n = 67) agreed that plagiarism should be considered a serious offence. Table 5 depicts the results of all questions about the students' practice of plagiarism.

Table 5*Practices of Plagiarism (% , n) **

Criteria	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
"I have used another individual's work without proper citation to the source."	31.3 (26)	34.9 (29)	19.3 (16)	9.6 (8)	4.8 (4)
"I have used another individual's idea as my own."	56.6 (47)	27.7 (23)	8.4 (7)	4.8 (4)	2.4 (2)
"I have borrowed my previous work without proper citation to primary source."	28.9 (24)	26.5 (22)	22.9 (19)	15.7 (13)	6.0 (5)

Reported incidences of plagiarism were low, with only 14.5% of students (n = 12) acknowledging having used another individual's work without proper citation. Most of the students (84.3%, n = 70) reported that they had not used another individual's idea as their own. Table 6 depicts the mean (*M*), standard deviation (*SD*), median (*Mdn*) and interquartile range (*IQR*) for each of the constructs.

Table 6

Descriptive Statistics for the Constructs of Knowledge, Positive Attitudes, Negative Attitudes, and Practice of Plagiarism

Criteria	M (SD)	Mdn (IQR)
Knowledge of plagiarism	4.55 (0.61)	4.75 (0.75)
Positive attitudes towards plagiarism	3.32 (0.82)	3.40 (1.40)
Negative attitudes towards plagiarism	4.11 (0.68)	4.20 (0.80)
Practice of plagiarism	2.11 (0.89)	2.00 (1.33)

The Likert scale ranged from one (strongly disagree) to five (strongly agree), with a midpoint of three (uncertain). If the mean or median falls below three, the students tended to disagree more with the statements in a section. If the mean or median falls above three, the students tended to agree more with the statements in a section. The mean and median of the knowledge of plagiarism are 4.55 and 4.75 respectively, thus, close to five. These values show that the students mostly agreed with the questions asked. Therefore, overall, the students have a high level of knowledge regarding plagiarism. The students had a mean of 2.11 and a median of 2.00 when answering questions regarding their practice of plagiarism. As both values are below three, the data indicate that the students disagreed with the statements about practising plagiarism, which shows that, on average, the students report low incidences of plagiarism. Table 7 depicts the correlation between each construct.

Table 7

Spearman's Correlation Coefficients with Corresponding P-values Between the Constructs of Knowledge, Positive Attitudes, Negative Attitudes and Practice of Plagiarism

Criteria	Knowledge of plagiarism	Positive attitudes	Negative attitudes	Practice of plagiarism
Knowledge of plagiarism	-			
Positive attitudes	.055 (.623)	-		
Negative attitudes	.284 (.009*)	-.168 (.130)	-	
Practice of plagiarism	-.178 (.107)	.120 (.280)	-.199 (0.071)	-

A weak¹ positive correlation ($r_s = 0.284$) was found between the knowledge of plagiarism and negative attitudes towards plagiarism, indicating that students with increased knowledge regarding plagiarism scored highly on questions concerning negative attitudes towards plagiarism.

¹ The strength of the correlation is according to the criteria of Akoglu (2018)

Discussion

The sampled participants in our study consisted of students from the Nursing, Radiography, Physiotherapy, Occupational Therapy and Dietetics departments. There were limited studies that were studied in this group of healthcare students. A study in Iraq was conducted on medical and nursing students, where they found more prevalence in medical than nursing students (Ismail, 2018). The majority of the students in the current study were aged 21–23 years, with the composition of the gender being predominantly female (94.0%, $n = 78$). A similar demographic split was seen in a plagiarism study conducted in the Kingdom of Saudi Arabia, with more than half of the students being female and the mean age of the participants being 28.7 years ($SD = 4.6$) (Alzahrani et al., 2020). The gender difference in the current study may be due to the large predominance of females in healthcare professions. This result agrees with a study which investigated gender equity in the healthcare workforce across 104 countries and reported an average of 70% more females than males (Boniol et al., 2019).

Although English is the language of communication and instruction used by the HEI, more than two-thirds (71.1%, $n = 59$) of the students are non-native English speakers. Several studies stated that university students who are non-native English speakers might plagiarise unintentionally due to a lack of understanding (Nabee et al., 2020) or a lack of proficiency in the English language (Alzahrani et al., 2020). A Vietnamese study demonstrated a statistically significant ($p = .005$) difference in plagiarism practices among native and non-native English-speaking students (Perkins et al., 2018). In addition, a qualitative study conducted in Tanzania demonstrated that non-English speakers plagiarised more frequently to receive good results and attributed their unethical practices to poor language competency (Anney & Mosha, 2015).

Only 10.3% of the total population of students responded to the survey. This low response rate can be attributed to the fact that response rates to online surveys are declining due to survey fatigue. Survey fatigue comes as a consequence of the COVID-19 pandemic, where people were overwhelmed by the many daily online surveys they received (De Koning et al., 2021). Most students are currently in their third or final year of study. Therefore, it is difficult to generalise our results to all SoHCS students at the selected HEI due to the disproportionate representation of second to fourth-year students in the current study sample. A review of the recent literature relating to academic plagiarism concluded that there are more incidences of plagiarism amongst first-year students than fourth-year and post-graduate students (Mbutho & Hutching, 2021). Due to the large percentage (90.4%) of students in the current study who are in their senior academic years, the overall degree of uncertainty regarding their plagiarism practices should be viewed cautiously.

Results of the current study demonstrate that the majority of Healthcare Science students at the selected HEI have adequate knowledge regarding the existence of plagiarism and simple instances which constitute punishable plagiarism. These results could be explained by the plagiarism declaration all students must sign before completing any online test or assignment. A Pakistani study agrees with the overall student awareness of plagiarism (Ramzan et al., 2012). Another study conducted at a medical university in the Kingdom of Saudi Arabia also revealed that most students had sufficient knowledge of plagiarism's basic definition and characteristics

(Ahmed et al., 2017). Contrary to the results of the current study, a study conducted in Cyprus found that university students lack a clear understanding of the definition of plagiarism (Kokkinaki et al., 2015). The results of the current study demonstrate that over three-quarters of the students (96.4%, $n = 80$) had heard about plagiarism and reported being familiar with instances of plagiarism (83.1%, $n = 69$); however, just over a third of the students were unable to identify instances that were considered plagiarism correctly. The large majority of students (83.1%, $n = 69$) in the current study were familiar with the penalties of plagiarism. These results contrast with a study in the Kingdom of Saudi Arabia, which reported that over 80% of students had heard of plagiarism, but only half were familiar with the instances and even fewer were familiar with the penalty (Alzahrani et al., 2020). The results from a similar study conducted amongst medical students in Tehran supported the current study's results, as only 14% of the students in their study could correctly answer all the questions regarding what instances are considered plagiarism (Gharedaghi et al., 2013).

The majority (94.0%, $n = 78$) of students in the current study responded that copying another person's work word-for-word is plagiarism. This result correlates with another South African study in which 96% of students also considered verbatim copying to be plagiarism (Matsebatlela & Kuhudzai, 2018). This study however, did not consider Healthcare Sciences students in solidarity, but rather students from varying disciplines. In contrast, a study from the Kingdom of Saudi Arabia found that only 61% of their study agreed that verbatim copying is plagiarism (Alzahrani et al., 2020). The high percentage of students agreeing that word-for-word copying is considered plagiarism could be because students are taught early on that verbatim copying is an unethical practice. The current study results show that, overall, the students reported a high level of knowledge about plagiarism. This result is similar to another South African study exploring the predictors of academic plagiarism amongst university students, which discovered high levels of knowledge regarding plagiarism (Nabee et al., 2020). The current study reveals that the more knowledge a student possesses regarding plagiarism, the more the student tends to hold more serious (negative) attitudes towards plagiarism ($p = 0.009$). This result could be because these students are more aware of how plagiarism can harm academic integrity and therefore regard plagiarism as a serious offence. A similar relationship was established in an Indian study, where a significant positive correlation between knowledge of plagiarism and serious attitudes towards plagiarism was found (Varghese & Jacob, 2015).

Positive attitudes towards plagiarism indicate that students do not consider plagiarism a serious offence and thus attempt to justify acts of academic dishonesty rather than avoiding them. In the current study, very few students agreed that plagiarism in a scientific paper might be ignored if the paper is of great value. This result indicates that overall, the students in the current study do not support the act of plagiarism. A study conducted in India found contrasting results, in which almost two-thirds (65%) of the students agreed that plagiarism in a scientific paper of great value might be ignored (Shubham et al., 2015). These contrasting results demonstrate that students from institutions in different countries may have vastly different perspectives on plagiarism. Less than one in ten students in the current study agreed that those who cannot write well in English could justify copying parts of a similar paper that has already been published. A study in the Kingdom of Saudi Arabia demonstrated similar results, with only 22.1% of students agreeing that non-native English-speaking students can justifiably copy similar work (Alzahrani et al., 2020). It

is clear that students regard plagiarism as a serious offence and that language barriers should not be considered a justification to practice plagiarism. In the current study, over two-thirds of the students do not regard self-plagiarism as a serious offence compared to plagiarism, demonstrating positive attitudes towards self-plagiarism. The above-mentioned fact is supported by Halupa and Bolliger (2015), as more than half of the students in their study felt self-plagiarism should not be punishable. The justification for this fact could be that students feel they own their previous work and can use it freely without proper citation or are unaware that it is classified as a form of plagiarism.

Negative attitudes towards plagiarism indicate that students are against the practice of plagiarism and consider it a serious offence which should be avoided rather than justified. In the current study, most students (83.1%, $n = 69$) agreed or strongly agreed it is important to discuss plagiarism and self-plagiarism. In contrast, less than half (47.7%) of the students in a Kingdom of Saudi Arabia study agreed that plagiarism and self-plagiarism should be discussed (Alzahrani et al., 2020). The current study also revealed that approximately two-thirds (66.3%, $n = 55$) of the students agreed or strongly agreed that plagiarists do not belong in the scientific community, reinforcing the overall result of serious attitudes toward plagiarism. A plagiarism study in India revealed that one-third (33.3%) of their students agreed that plagiarists do not belong in the scientific community (Khairnar et al., 2019). The contrasting results between the current study and those conducted in the Kingdom of Saudi Arabia and India demonstrate the largely contrasting attitudes that students can have towards plagiarism. This result could be due to the differing views of students who study at institutions with differing educating and punishing systems for academic dishonesty. Students who commit plagiarism at the current HEI, credit is not granted for the plagiarised work and may even be expelled from the university. University staff are required to provide students with guidance on how to prevent plagiarism and reference correctly. Students are given warnings to avoid plagiarism in study guides, pop-up messages when a student signs onto the University system, assignment briefing sheets containing warnings against plagiarism and are required to sign the declaration of originality which is to accompany each assignment. Finally, each student must submit their assignment to plagiarism detection software (Turnitin) together with each assignment submitted.

The current study demonstrates that most students (84.3%, $n = 70$) had not used another individual's idea as their own. A study conducted in the Kingdom of Saudi Arabia demonstrated similar results, with 61% of students stating that they had not used other individuals' ideas as their own (Alzahrani et al., 2020). Both studies demonstrate low practices of plagiarism amongst students. The smaller percentage of students avoiding plagiarism in the latter could be due to their larger population size (200 students) and differing study population consisting of interns and post-graduate students rather than undergraduate students. The current study showed that fewer than a quarter of students had committed self-plagiarism, copying their own previous work without citation. In contrast, a study conducted in the Kingdom of Saudi Arabia concluded that the most frequent acts of plagiarism committed by undergraduate healthcare students are self-plagiarism and retraction (Mohammed et al., 2015). However, in the current study, more students admitted to committing self-plagiarism compared to other acts of plagiarism, such as using other individuals' work without acknowledging the source. This result could be because the students in the current study do not feel that self-plagiarism should be punishable.

The current study results demonstrate that few students are practising plagiarism, with less than a quarter of the students agreeing with all the statements regarding the practice of plagiarism. This result correlates with a study conducted in Israel which found that only 12.5% of undergraduate students had plagiarised in some manner (Korn et al., 2016). In the current study, most students are in their third or fourth year of study, which could explain why their practice of plagiarism is low, as they may have had more exposure to plagiarism policies and the consequences of failing to adhere to them. The majority of students in another study engaging in plagiarism practices are in their first year of study due to a lack of pre-university education regarding plagiarism (Mbuttho & Hutchings, 2021). Another possible reason for the low practice of plagiarism could be that students may be unaware that they are committing acts of plagiarism. Therefore, the students reported they had not engaged in the unethical practice of plagiarism, but many students in the current study cannot correctly identify what instances are considered plagiarism, thus leading to unintentional plagiarism and under-reporting of unethical practices. The current study demonstrates that as the knowledge of plagiarism increases, the practice of plagiarism decreases; however, this correlation is not statistically significant, indicating that further research needs to be conducted. This negative correlation between knowledge and practices of plagiarism was also statistically significant ($p > 0.001$) in an Indian study ($p < 0.001$) (Varghese & Jacob, 2015). Contrary to the current study's findings, a Nigerian study found a positive correlation between the knowledge of plagiarism and the practice (Babalola, 2012). The differing correlations call for further research to draw concrete conclusions about how students' knowledge of plagiarism relates to the practice of plagiarism.

Conclusion

The current study establishes the knowledge, attitudes, and practices of plagiarism amongst undergraduate Healthcare Science students utilising a self-reported questionnaire. The current study also correlates knowledge of plagiarism and the attitudes toward plagiarism with the practice of plagiarism. The Healthcare Science students at the selected HEI have adequate knowledge of the basic concepts of plagiarism; however, they cannot identify specific practices that are considered plagiarism correctly. The students show more negative attitudes towards plagiarism, therefore viewing the academic violation as more serious and unethical, significantly correlating with the knowledge of plagiarism. The students do, however, exhibit a less serious attitude towards self-plagiarism. Overall, the current study results show a low practice of plagiarism amongst Healthcare Science students. However, this could be because students are unaware of the technical aspects of plagiarism and therefore unaware of their practice of plagiarism. The current study demonstrates the need for this tertiary educational institution to provide more comprehensive plagiarism courses to refine the level and instances of plagiarism.

Recommendations

The researchers recommend future studies be conducted into the methods of plagiarism education utilised at HEIs and the influence thereof on the practice of plagiarism. The researchers recommend that future studies expand to include first-year students as the reported practice of plagiarism in this study was low; however, that may not have been the case if first year and

postgraduate students had been included. Additionally, future studies that explore the practice of plagiarism using a qualitative research design to alleviate dishonesty are recommended. It is noted in the current study that plagiarism is acknowledged as a serious offence; however, the ability to correctly identify practices that are considered plagiarism is lacking amongst the SoHCS students. We, therefore, recommend a future qualitative study to further identify the specific gaps in knowledge regarding instances of plagiarism to assist the HEI to instil more extensive educational interventions against plagiarism.

Conflicts of Interest

The researchers declare no conflicts of interest pertaining to the study. The researchers declare that no financial support was received for the study.

Limitations

The researchers acknowledge that using a self-reported questionnaire allows self-report bias, and that some students may have answered dishonestly, despite the questionnaire being anonymous. The use of a self-reported questionnaire also allows students to misinterpret the questions or the rating scale, despite both being adapted to be as simple as possible. The researchers acknowledge that the limited number of responses and the large discrepancy in students representing each year group allows for sampling bias. Therefore, the current study's results may not accurately represent the entire population that the study aimed to address. The results should therefore be interpreted with caution as there was a large discrepancy in response rate per department and male versus female participants.

Acknowledgements

We would like to thank all fellow students who responded to the questionnaire and participated in the current study. We hereby confirm that Artificial Intelligence (AI) is not responsible for this research output and that no AI assistance, including but not limited to ChatGPT and Bing AI, was used during this study. Consequently, AI is omitted from the acknowledgements section of this study.

References

- Ahmed, S. Z., Ahmad, F., Merchant, M. S., & Nazir, M. A. (2017). Knowledge and practice of understanding plagiarism by students from Baqai medical university. *Pakistan Journal of Public Health*, 7(3), 169-173.
- Akoglu, H. (2018). User's guide to correlation coefficients. *Turkish Journal of Emergency Medicine*, 18(3), 91-93. <https://doi.org/10.1016/j.tjem.2018.08.001>
- Alhadlaq, A. S., Dahmash, A. B., & Alshomer, F. (2020). Plagiarism perceptions and attitudes among medical students in Saudi Arabia. *Sultan Qaboos University Medical Journal*, 20(1), e77-e82. <https://doi.org/10.18295/squmj.2020.20.01.011>
- Alzahrani, M. S., Ingle, N. A., & Assery, M. K. (2020). Knowledge, attitude, and practice about plagiarism among dental interns and postgraduate dental students in Riyadh city, Kingdom of Saudi Arabia. *International Journal of Community Medicine and Public Health*, 7(9), 3327-3334. <https://dx.doi.org/10.18203/2394-6040.ijcmph20203888>
- Anney, V. N., & Mosha, M. A. (2015). Student's plagiarisms in higher learning institutions in the era of improved internet access: Case study of developing countries. *Journal of Education and Practice*, 6(13), 203-216.
- Babalola, Y. T. (2012). Awareness and incidence of plagiarism among undergraduates in a Nigerian private university. *African Journal of Library, Archives & Information Science*, 22(1), 53-60.
- Baždarić, K. (2012). Plagiarism detection - quality management tool for all scientific journals. *Croatian Medical Journal*, 53(1), 1-3. <https://doi.org/10.3325/cmj.2012.53.1>
- Boniol, M., Mclsaac, M., Xu, L., Wuliji, T., Diallo, K., & Campbell, J. (2019). *Gender equity in the health workforce: Analysis of 104 countries* (No. WHO/HIS/HWF/Gender/WP1/2019.1). World Health Organization.
- Brink, H., Van der Walt, C., & Van Rensburg, G. (2018). *Fundamentals of research methodology for healthcare professionals* (4th ed.). Juta and Company Ltd.
- De Koning, R., Egiz, A., Kotecha, J., Ciuculete, A. C., Ooi, S. Z. Y., Bankole, N. D. A., Erhabor, J., Higginbotham, G., Khan, M., Dalle, D. U., Sichimba, D., Bandyopadhyay, S., & Kanmounye, U. S. (2021). Survey fatigue during the COVID-19 pandemic: An analysis of neurosurgery survey response rates. *Frontiers in Surgery*, 8, Article 690680. <https://doi.org/10.3389/fsurg.2021.690680>
- Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1-4. <https://doi.org/10.11648/j.ajtas.20160501.11>
- Gharedaghi, M. H., Nourijelyani, K., Sadaghiani, M. S., Yousefzadeh-Fard, Y., Gharedaghi, A., Javadian, P., Morteza, A., Andrabi, Y., & Nedjat, S. (2013). Knowledge of medical students of Tehran University of Medical Sciences regarding plagiarism. *Acta Medica Iranica*, 51(6), 418-424.

- Halupa, C., & Bolliger, D. U. (2015). Student perceptions of self-plagiarism: A multi-university exploratory study. *Journal of Academic Ethics*, 13(1), 91-105. <https://doi.org/10.1007/s10805-015-9228-4>
- Ismail, K. H., (2018). Perceptions of plagiarism among medical and nursing students in Erbil, Iraq. *Sultan Qaboos University Medical Journal*, 18(2), 196-201. <https://doi.org/10.18295/squmj.2018.18.02.012>
- Khairnar, M. R., Wadgave, U., Shah, S. J., Shah, S., Jain, V. M., & Kumbhar, S. (2019). Survey on attitude of dental professionals about plagiarism in Maharashtra, India. *Perspectives in Clinical Research*, 10(1), 9-14. https://doi.org/10.4103/picr.PICR_141_17
- Kirthi, P. B., Pratap, K. V. N. R., Padma, T. M., & Kalyan, V. S. (2015). Attitudes towards plagiarism among post-graduate students and faculty members of a teaching health care institution in Telangana - A cross-sectional questionnaire-based study. *International Journal of Advanced Research*, 3(8), 1257-1263.
- Kokkinaki, A. I., Demoliou, C., & Iakovidou, M. (2015). Students' perceptions of plagiarism and relevant policies in Cyprus. *International Journal for Educational Integrity*, 11(1), Article 3. <https://doi.org/10.1007/s40979-015-0001-7>
- Korn, L., & Davidovitch, N. (2016). The profile of academic offenders: Features of students who admit to academic dishonesty. *Medical Science Monitor*, 22, 3043-3055. <https://doi.org/10.12659/MSM.898810>
- Kutieleh, S., & Adiningrum, T. S. (2011). How different are we? Understanding and managing plagiarism between East and West. *Journal of Academic Language and Learning*, 5(2), A88-A98.
- Lavrakas, P. J., Traugott, M. W., Kennedy, C., Holbrook, A. L., de Leeuw, E. D., & West, B. T. (Eds.). (2019). *Experimental methods in survey research: Techniques that combine random sampling with random assignment*. John Wiley & Sons.
- Marshall, S., & Garry, M. (2006). NESB and ESB students' attitudes and perceptions of plagiarism. *International Journal for Educational Integrity*, 2(1), 26-37.
- Matsebatilela, E. & Kuhudzai, A. G. (2018). Attitudes toward plagiarism. The case of undergraduate health sciences students at the University of Pretoria. *Alternation*, 25(2), 181–209. <https://doi.org/10.29086/2519-5476/2018/v25n2a8>
- Mavrinac, M., Brumini, G., Bilić-Zulle, L., & Petrovečki, M. (2010). Construction and validation of attitudes toward plagiarism questionnaire. *Croatian Medical Journal*, 51(3), 195-201.
- Mbutho, N. P., & Hutchings, C. (2021). The complex concept of plagiarism: undergraduate and postgraduate student perspectives. *Perspectives in Education*, 39(2), 67-81. <https://doi.org/10.18820/2519593X/pie.v39.i2.6>

- Mohammed, R. A. A., Shaaban, O. M., Mahran, D. G., Attellawy, H. N., Makhlof, A., & Albasri, A. (2015). Plagiarism in medical scientific research. *Journal of Taibah University Medical Sciences*, 10(1), 6-11. <https://doi.org/10.1016/j.jtumed.2015.01.007>
- Molnar, K. K. (2015). Students' perceptions of academic dishonesty: A nine-year study from 2005 to 2013. *Journal of Academic Ethics*, 13(2), 135–150. <https://doi.org/10.1007/s10805-015-9231-9>
- Nabee, S. G., Mageto, J., & Pisa, N. (2020). Investigating predictors of academic plagiarism among university students. *International Journal of Learning, Teaching and Educational Research*, 19(12), 264-280.
- Perkins, M., Gezgin, U. B., & Roe, J. (2018). Understanding the relationship between language ability and plagiarism in non-native English-speaking business students. *Journal of Academic Ethics*, 16(4), 317-328. <https://doi.org/10.1007/s10805-018-9311-8>
- Pupovac, V., Bilic-Zulle, L., & Petrovecki, M. (2008). On academic plagiarism in Europe. An analytical approach based on four studies. *Digithum*, 10, 13-18.
- Raihanah, M. M., Hashim, R. S., Zalipour, A., & Mustafa, M. A. (2011). Developing a critical response, avoiding plagiarism among undergraduate students. *Procedia-Social and Behavioural Sciences*, 18, 517-521. <https://doi.org/10.1016/j.sbspro.2011.05.075>
- Ramzan, M., Munir, M. A., Siddique, N., & Asif, M. (2012). Awareness about plagiarism amongst university students in Pakistan. *Higher Education*, 64(1), 73-84. <https://doi.org/10.1007/s10734-011-9481-4>
- Roig, M. (2006). *Avoiding plagiarism, self-plagiarism, and other questionable writing practices: A guide to ethical writing*. Retrieved June 30, 2022, <https://www.inmed.us/wp-content/uploads/Avoiding-Plagiarism-Self-Plagiarism-and-Other-Questionable-Writing-Practices-2015-71-Pages.pdf>
- Ryan, G., Bonanno, H., Krass, I., Scouller, K., & Smith, L. (2009). Undergraduate and postgraduate pharmacy students' perceptions of plagiarism and academic honesty. *American Journal of Pharmaceutical Education*, 73(6), Article 105.
- Shubham, J., Vrinda, S., Sudheer, H., Manish, J., Nilesh, T., & Vijayta, S. (2015). Comparison of opinion referendum of medical and dental postgraduates towards plagiarism in Bhopal-central India. *Journal of the College of Physicians and Surgeons Pakistan*, 25(7), 514-518.
- Valdes, O. (2019, October 01). *What is plagiarism? Defining plagiarism and techniques to avoid it*. ThoughtCo. Retrieved June 15, 2022, from <https://www.thoughtco.com/plagiarism-definition-1691631>
- Van Griethuijsen, R. A. L. F., Van Eijck, M. W., Haste, H., Den Brok, P. J., Skinner, N. C., Mansour, N., Gencer, A. S., & BouJaoude, S. (2015). Global patterns in students' views of science and interest in science. *Research in Science Education*, 45(4), 581-603. <https://doi.org/10.1007/s11165-014-9438-6>

Varghese, J., & Jacob, M. (2015). Do medical students require education on issues related to plagiarism? *Indian Journal of Medical Ethics*, 12(2), 82-87.

Appendix

Adapted questionnaire from Alzahrani et al. (2020)

Demographic Questions
<ul style="list-style-type: none">• I have read the informed consent document and I consent to be a part of the study• Please select your gender• Please select your age• Please select your home language• Please choose your department of study• Which year of study are you currently in?
Main Questions
<ul style="list-style-type: none">• I have heard something about plagiarism• I am familiar with instances of plagiarism• I am familiar with the penalty of plagiarism• The following practice IS CONSIDERED as plagiarism: A student copies a paragraph from a textbook or web page. He/she makes small changes in the paragraph (replaces a few verbs and adjectives). The source appears in a list of references at the end of the article.• The following practice IS CONSIDERED as plagiarism: A student paraphrases a paragraph. He/she substantially changes the language, structure and arrangement of the sentences. Some of the details are also changed. The source appears in a list of references at the end of the article.• Copying another's work, word-for-word is not considered as plagiarism• Sometimes one cannot avoid using other people's words without citing the source because there are only so many ways to describe something.• It is justified to use previous descriptions of a method because the method itself remains the same.• Self-plagiarism is not punishable because it is not harmful (one cannot steal from oneself).• Plagiarised parts of a paper may be ignored if the paper is of great scientific value.• Self-plagiarism should not be punishable in the same way as plagiarism is• Young researchers who are just learning the ropes should receive milder punishment for plagiarism• 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.• I could not write a scientific paper without plagiarising.• Plagiarists do not belong in the scientific community.• The names of the authors who plagiarise should be disclosed to the scientific community.• In times of moral and ethical decline, it is important to discuss issues such as plagiarism and self-plagiarism.• Plagiarising is as bad as stealing an examination.• A plagiarised paper does not harm science.• Since plagiarism is taking other people's words rather than actual assets, it should not be considered as a serious offence.• I have used another individual's work without proper citation to the source.• I have used another individual's idea as my own.• I have borrowed my previous work without proper citation to the primary source.