

RESEARCH ARTICLE

Undergraduate and Postgraduate Pharmacy Students' Perceptions of Plagiarism and Academic Honesty

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Objectives. To assess undergraduate and postgraduate pharmacy students' perceptions of plagiarism and academic honesty.

Methods. A questionnaire was administered to undergraduate and postgraduate pharmacy students to determine their levels of awareness of university policy concerning academic honesty; attitudes to plagiarism by rating the acceptability of a range of plagiarizing and cheating practices; and choice of appropriate penalties for a first and second occurrence. The choice of behaviors in response to a scenario about the preparation of a reading-based written assignment and the strategies that students would be prepared to use in order to submit the assignment on time were also assessed.

Results. Findings indicated widespread deficiencies in student knowledge of, and attitudes towards, plagiarism. Students did not perceive plagiarism as a serious issue and the use of inappropriate strategies for sourcing and acknowledging material was common.

Conclusions. The study highlights the importance of achieving a balance among the 3 dimensions of plagiarism management: prevention, detection and penalty.

Keywords: academic honesty, plagiarism, cheating, Australia

INTRODUCTION

Behaviors and attitudes that are acquired by students during their pharmacy degree program lay an important foundation for their ongoing professional practice. Of particular relevance to this practice are those behaviors and attitudes associated with academic honesty and dishonesty. De Lambert et al define academic honesty as "the submission of work for assessment that has been produced by the student who will be awarded credit, and which demonstrates the student's knowledge and understanding of the content or processes being assessed."¹ The nature and extent of academic misconduct is still not well understood, however, and terminology seems to be a source of confusion for students, academic staff members, and policymakers alike. Plagiarism and cheating behaviors are often differentiated on the basis of intent, with "negligent" or "accidental" plagiarism (such as in-text citation problems) at one end of the continuum and dishonesty (such as cheating in examinations) at the

other.^{2,3} There is also disagreement about how best to respond to academic dishonesty. McCabe noted that "rather than investing in detection and punishment strategies [such as] reacting to an increasing number of faculty complaints by simply subscribing to a plagiarism detection service. . . we would do better to view most instances of cheating as educational opportunities."⁴ Strong institutional pressure to maintain the integrity of academic work is a crucial determinant of students' decisions not to plagiarize. A useful framework to represent the interrelationships among intent to plagiarize, and the extent of the plagiarism, together with suggested relevant primary focus of response, is shown in Figure 1.²

The existence of academic misconduct in universities, particularly in the form of plagiarism and cheating, is widely acknowledged, and its incidence is evident in a series of major studies conducted in universities in the United States and the United Kingdom.^{1,4,5} For example, in Web surveys involving 40,000 undergraduate students on 68 campuses across the United States and Canada, 21% of respondents acknowledged at least 1 incident of serious test or examination cheating, and 51% acknowledged at least 1 incident of serious cheating on written work.⁴ There

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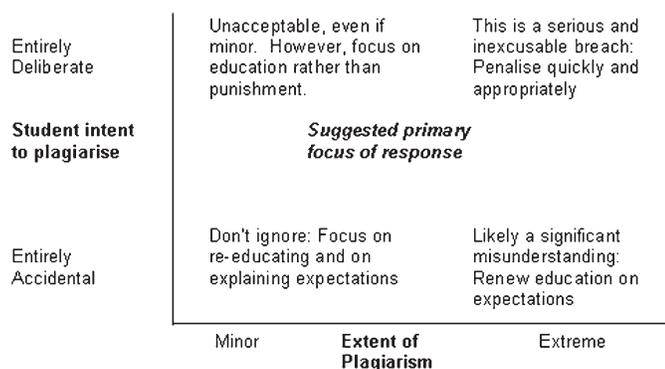


Figure 1. Plagiarism intent-extent-response graph.²

is also evidence that modes of academic misconduct have changed in recent years. The growth of Web-based information, paper mills, cheat sites, and easily reformatted text has blurred the boundaries of intellectual property.

In Australia, a large study of 954 students explored a range of self-reported plagiarism and cheating behaviors across 12 faculties in 4 universities.⁶ The authors found no link between the incidence of plagiarism and cheating and the provision of information on academic honesty policies to the students, a finding echoed in a small American study of students' behavior in an online unit of study.⁷ However, reminding students of academic honesty policies immediately before examinations had an impact on the incidence of cheating behaviors.⁸

While academic misconduct seems to be widespread in all discipline areas, there is a perception that there is more of such behaviors in some disciplines than in others. Differences among disciplines were found, but other factors such as workload and type of assessment task would need to be investigated and could possibly contribute to such differences.⁶ A study of 31 US undergraduate colleges found that students planning careers in business were most likely to indulge in academic misconduct.⁹ Two studies found the highest incidences of cheating¹⁰ and "potential plagiarism"¹¹ in science, engineering and technology courses. For first-year undergraduate science and engineering cohorts in Australia, common assessment tasks given in the first year (group work and examinations rather than written tasks) were possibly connected with the incidence of collusion and cheating.³

There are few published studies investigating academic dishonesty among pharmacy students. A study of pharmacy undergraduates in the United Kingdom confirmed the prevalence of plagiarism and cheating behaviors, with a finding that most infringements occurred in coursework situations.¹² The authors also made a connection between the incidence of dishonest behavior and the nature of assessment tasks, particularly experimental

practical examinations linked with falsification of data; and noted a difference in attitude between staff members and students as to the seriousness of this type of infringement. A Canadian study also found that a high proportion of pharmacy students self-reported the use of dishonest behaviors and confirmed the existence of a hierarchy of student values towards them.¹³ Another study identified a link between academic success and the likelihood of cheating among first- and third-year pharmacy students.¹⁴

In Australia, no published research has explored pharmacy students' attitudes and behaviors towards plagiarism. The current study arose out of findings from previous research with our first-year bachelor of pharmacy (BPharm) students (N = 135), which revealed that although many students evaluated themselves as understanding referencing and citation skills, analysis of their papers indicated a failure to put this "knowledge" into practice.¹⁵ For example, students evaluated their understanding of referencing principles as "good," but in fact employed few successful strategies when using source material in their written texts. There was an apparent gap between knowledge and the ability to apply it in their writing. The findings raised questions about the students' awareness of issues associated with plagiarism, and whether this was likely to be evident at all levels of their professional degree program. In addition, few studies have explored the writing habits of graduate students in this context.

Our study within the Faculty of Pharmacy was timely in that it coincided with the University of Sydney's review of its policy on plagiarism, so we decided to continue our focus on the issue of plagiarism related to written assignments, expanding our investigation across all 4 years of the BPharm program, and also including our master of pharmacy (MPharm) students. Our aim was to explore student attitudes, behaviors, and knowledge in the area of plagiarism in both undergraduate and postgraduate students. In particular, we studied:

- Students' knowledge of university policy and awareness of its contents
- Students' attitudes toward different forms of plagiarism, particularly regarding incident-reporting and penalties
- The behaviors that students are prepared to employ to submit a written assignment on time
- Comparisons of undergraduate and postgraduate attitudes and behaviors

METHODS

Ethical approval for this study was obtained from the Human Research Ethics Committee of the University of Sydney. All BPharm students (N = 990) and MPharm students (N = 90) enrolled in 2007 were invited to complete

a questionnaire (developed for the purpose of the study). The questionnaire was based on the work of Carroll,¹⁶ Aggarwal et al,¹² Brimble and Stevenson-Clarke,¹⁷ de Lambert et al¹ and Yeo³; and contained a combination of scenarios, single- and multiple-response items (either yes/no or Likert scale), and short-answer questions, together with opportunities for students to add comments throughout. It was designed to:

- Investigate the students' level of awareness of current University policy concerning academic honesty;
- Probe students' attitudes toward plagiarism, including their rating of the acceptability of a range of plagiarising and cheating practices, and their choice of appropriate penalties for a first and second occurrence;
- Investigate students' choices of behaviors in response to a scenario about the preparation of a reading-based written assignment, and the strategies that they would be prepared to use in order to submit the assignment on time.

As a measure of their attitudes to plagiarism, students were asked to rate a range of behaviors on an acceptability scale of 1 to 5. The behaviors were based on the authors' previous research¹⁵ and that of other writers, as listed previously.^{1,3,12,16,17} The scale was subsequently dichotomized to "acceptable" (combined responses of often, usually, or always) and "unacceptable" (combined responses of never and sometimes). Students were also asked to choose which penalty(ies) were appropriate for a first and second occurrence of plagiarism. The list of penalties was derived from the University's plagiarism policy.

To investigate their choices of behaviors, students were given the following scenario: "You are preparing a written assignment which requires a lot of reading. It is not the only assignment you are working on, so time management is important. You are concerned that, although you have some good journal references, you have not collected enough source material."

Students were then asked to choose from a list of 8 strategies those that they would consider using (1) to provide enough evidence and expert support for their points in a written assignment, and (2) to complete the assignment by the due date.

A trial survey was conducted in the University Learning Centre's large group session for new students titled "Successfully Avoiding Plagiarism"; and with individual postgraduate students in the Learning Centre Summer School workshop program in early 2007. Discussions with these individual students resulted in the fine tuning of wording and the final format of the questionnaire.

The data were collected between March 2007 and June 2007 in the case of the first-year undergraduate students, and between July 2007 and November 2007 in the case of the remaining cohorts. In a tutorial situation, the students in each cohort were provided with a participant information sheet and consent form, in accordance with University ethical procedures. The purpose of the study and its anticipated outcomes were discussed and students were given an opportunity for questions. It was emphasized that participation in the study was voluntary and it was possible to withdraw at any time, and that no identifying information was included on the questionnaire. Consenting students were given an appropriate amount of time to complete the questionnaire (approximately 15 minutes).

SPSS, Version 15.0 (SPSS, Inc, Chicago) was used for all statistical analyses. Due to the categorical nature of the data, descriptive statistics procedures were undertaken to determine proportions for students' responses. Paired comparisons within cohorts were tested using the McNemar's test and comparisons between undergraduate and postgraduate students were examined by the chi-square test for independent proportions. A significance level of 0.05 was used on all analyses. Students' written responses to open-ended questions on the survey instrument were tabulated and analysed for commonly occurring themes.

RESULTS

Eight hundred twenty-three of 990 (RR = response rate; RR = 83.1%) undergraduate students and 74 of 90 (RR = 82.2%) postgraduate students completed the survey instrument. Response rates for each cohort year were, for undergraduate Year 1: 233 of 270 (RR = 86.3%); Year 2: 224 of 251 (RR = 89.2%); Year 3: 228 of 241 (RR = 94.6%); Year 4: 138 of 228 (RR = 60.5%); and for postgraduate Year 1: 37 of 44 (RR = 84.1%); Year 2: 37 of 46 (RR = 80.4%).

Awareness and Knowledge of University Policy

The majority of undergraduate and postgraduate students indicated that they were aware of the existence of a University policy on plagiarism, but a significantly lower proportion ($p < 0.05$) knew what the policy covered. Overall, only a marginal difference was evident between undergraduate and postgraduate students' knowledge of policy, and this was not significant (chi-squared test, $p > 0.05$). There was no significant association between awareness of policy and knowledge of what the policy covered ($p > 0.05$). There was little change in the degree of awareness and knowledge from year 1 to year 4 of the BPharm program (Figure 2). Similar findings

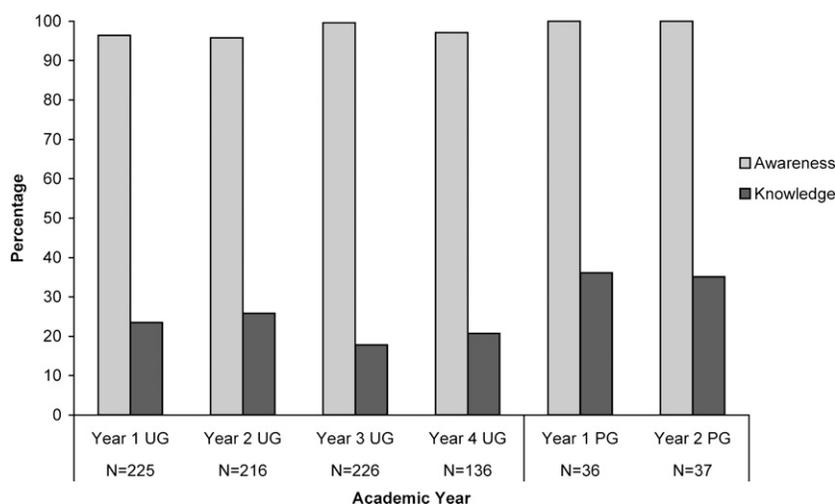


Figure 2. Policy awareness against knowledge about plagiarism policy for undergraduate (UG) and postgraduate (PG) pharmacy students across all years of the programs.

were evident in the postgraduate data across the 2 years of the program.

Attitudes to Plagiarism Behavior

Table 1 shows the ordered frequency of the responses. The 2 statements at the top of the table were the only 2 behaviors considered acceptable by the researchers.

Thirty-one percent of undergraduate students and 41% of postgraduate students indicated that the second of these statements (“quoting a paragraph exactly with quote marks, indentation, in text referencing and entry in the reference list”) was unacceptable. Conversely, the last 3 unacceptable items were considered acceptable by many undergraduate and postgraduate respondents. For

Table 1. Ordered Frequency of Acceptability^a of Plagiarism Behaviors by Undergraduate and Postgraduate Pharmacy Students

Strategy	Undergraduate, No. (%)	Postgraduate, No. (%)
Discussing an assignment with friends ^b	748 (92.9)	65 (89.0)
Quoting a paragraph exactly with quote marks, indentation, in text referencing and entry in the reference list ^b	554 (68.7)	43 (58.9)
Inventing references because you have forgotten to note the source details ³	716 (88.5)	72 (98.6)
Including someone else’s words in your assignment without referencing properly ^c	723 (89.7)	70 (97.2)
Using concealed information in an examination ^c	722 (90.5)	72 (100.0)
Getting somebody else to write your assignment / part of your assignment ^c	748 (92.8)	72 (98.6)
Submitting an assignment that has already been assessed ^c	756 (94.1)	70 (95.9)
Downloading material from the web and including it in your assignment without a reference ^c	760 (93.9)	73 (98.6)
Not contributing your share to a group assignment ^c	779 (96.4)	72 (98.6)
Copying another student’s work without their knowledge ^c	786 (96.7)	73 (98.6)
Getting somebody to ‘fix up’ your assignment ^c	467 (58.0)	53 (72.6)
Borrowing from different sources and connecting them to make a paragraph ^c	481 (60.1)	45 (61.6)
Copying another student’s work with their knowledge ^c	567 (69.8)	65 (87.8)

^aAcceptable = 3 (often), 4 (usually), or 5 (always); unacceptable = 1 (never), or 2 (sometimes)

^bThis statement was deemed “acceptable” by the researchers.

^cThis statement was deemed “unacceptable” by the researchers.

example, 72 students (9.5%) believed that it was acceptable to use concealed information in an examination.

Attitudes Regarding Penalties for Plagiarism

Table 2 indicates the range of penalties that were chosen by both undergraduate and postgraduate students in response to plagiarism. The distribution of responses for the 2 cohorts was similar. A majority of undergraduate and graduate students favored warning and counselling as a penalty for a first occurrence. Close to half of each cohort believed that the assignment should be resubmitted or another form of assessment undertaken. For a second occurrence, a majority of students indicated a preference for referral to the head of the department/school or the student failing the assessment. For the remainder of the options, the data were less clear.

In response to a question about willingness to report a student who was plagiarizing, a majority of students (71.9%) said they would not report it and an even higher proportion (83.4%) would not report it if the student concerned was a friend. Insight into both undergraduate and postgraduate students' patterns of reasoning in relation to these findings is gained from their written comments. Students who responded "yes" to either question typically saw an incidence of plagiarism as giving unfair advantage over other students, particularly, as some students noted, if it had been "copied from me" or someone had "taken my work." The majority of students who had responded "no" to the question indicated that it was "not my business" and/or that "staff will find out anyway." A strong theme

was not betraying their colleagues – perhaps best represented in 2 student's comments: "Even though plagiarism is unfair, I think betrayal is bigger," and "It is not part of Australian culture to 'dob-in' [to report or betray] others"

One undergraduate student however saw an inherent dilemma: "To intervene with another student's business morally to myself is wrong – although yes, plagiarism is also wrong."

Behaviors Used to Prepare and Submit a Written Assignment on Time

The ordered frequency of use (high, medium, and low) of the responses by both undergraduate and postgraduate students is outlined in Table 3 below. The distribution of students' responses has the same order in terms of frequency of use of strategies for both undergraduate and postgraduate students.

DISCUSSION

This study investigated undergraduate and postgraduate pharmacy students' knowledge, attitudes, and behaviors regarding plagiarism. While most of the undergraduate and postgraduate students were aware of the existence of the policy, few knew of its contents, and this view remained consistent across all years of the degree programs. Students' knowledge that a policy exists does not predict whether they will know what the policy covers. Students may not connect the policy with their personal academic work and the processes they engage in to produce that work. Clearly, the faculty has more

Table 2. Undergraduate and Postgraduate Students' Choices of Penalties for a First and Second Occurrence of Plagiarism

Penalties	First Occurrence, No. (%) ^a		Second Occurrence, No. (%) ^a	
	Undergraduate	Postgraduate	Undergraduate	Postgraduate
No action taken	151 (18.3)	5 (6.7)	15 (1.8)	0 (0.0)
Student receives counselling and a warning from a member of staff	643 (78.1)	58 (78.4)	125 (15.2)	11 (14.9)
Occurrence is referred to head of department/school	130 (15.8)	17 (23.0)	401 (48.7)	34 (45.9)
Student fails the particular assessment task submitted	128 (15.5)	12 (16.2)	373 (45.3)	36 (48.6)
Student is required to resubmit the work for assessment or to undertake another form of assessment	375 (45.6)	39 (52.7)	264 (32.0)	23 (31.1)
Student fails the course unit	26 (3.1)	1 (1.3)	251 (31.2)	33 (4.0)
Occurrence is referred to the university's registrar where record is kept	135 (16.4)	8 (10.8)	238 (28.9)	28 (37.8)
Suspension/expulsion from the university	9 (1.1)	0 (0.0)	139 (16.9)	10 (13.5)

^aResponses from undergraduate students, N = 823; responses from postgraduate students, N = 74.

Table 3. Ordered Frequency of Strategy Use by Undergraduate and Postgraduate Pharmacy Students to Complete a Written Assignment

Frequency of Use	Strategy	Undergraduate, No. (%) ^a	Postgraduate, No. (%) ^a
High			
A ^b	Use information from a source passage, with a lot of changes in language and organization; also making changes in the amount of detail and providing in-text acknowledgement and inclusion in your reference list	507 (61.6)	46 (62.2)
I ^b	Compose a paragraph by taking short phrases from a number of sources and putting them together, adding words of your own to make a clear message, and entering all sources in your final reference list.	497 (60.4)	45 (60.8)
Medium			
A	Quote an important passage by copying the exact words with quote marks and in-text acknowledgement and include the full reference in your list at the end of the assignment.	291 (35.4)	27 (36.5)
A	Agree to share source material with a friend who is working on the same assignment topic	261 (31.7)	25 (33.8)
I	Use some sentences from a source paragraph, while omitting others, and place them in a different order from the original. You include in-text acknowledgement and enter the source in your reference list.	216 (26.2)	24 (32.4)
Low			
I	Do a last minute key-word web search to provide yourself with more information which you can quickly download into your text.	76 (9.2)	3 (4.1)
I	Copy a passage from a source into your text. Note the source in your final reference list.	54 (6.6)	2 (2.7)
I	Accept the offer of a friend who did the assignment the semester before. She says you can use her paper, which had a high grade.	50 (6.1)	2 (2.7)

^a Responses from undergraduate students, N =823; responses from postgraduate students, N = 74.

^b Behavior considered appropriate (A) or inappropriate (I) by the researchers.

work to do in ensuring that students not only know that a university policy exists, but that they also have an understanding of its content.

Students' attitudes toward plagiarism, on the other hand, appear to be more worrisome. What would be considered as acceptable academic writing convention was viewed as unacceptable by a substantial proportion of both undergraduate and postgraduate students, and what would normally be viewed in academic settings as unacceptable was viewed as acceptable by approximately a third of the students. For example, an almost equal number of undergraduate and postgraduate students believed that it was acceptable to borrow text from different sources and connect the excerpts to make a paragraph (what Iverson et al¹⁸ refer to as "mosaic plagiarism"). Of most concern was the finding that nearly 10% of undergraduate students viewed cheating on examinations as acceptable.

Conversely, the relatively small numbers of students who chose the strategies that are listed in the "low" category of Table 3 (strategies that were deemed inappropriate by the researchers) was a reassuring result, and is consistent with good practice. Likewise, the relatively large number of students who chose the first (appropriate) strategy listed in the "high" frequency category was also reassuring. However, the second strategy in this category (which refers to composing a paragraph by taking short phrases from a number of sources), nominated by an approximately equal number of students, is not considered to be appropriate by the researchers.

The results in the "medium" frequency of use category are perhaps the most interesting. The first 2 statements were deemed "acceptable" by the researchers, yet almost two-thirds of both undergraduate and postgraduate students would not consider using them. Conversely, the third statement was deemed "inappropriate," yet

approximately one-third of students chose to use this strategy. Overall, the results suggest a disturbing lack of understanding of basic elements of academic writing.

The findings of our prior study showing that students employed few successful strategies for using source materials in their academic work is supported by the findings of the current study.¹⁵ Substantial numbers of undergraduate and postgraduate students seemed willing to adopt a wide range of inappropriate strategies and were at risk of plagiarism penalty. This is despite our efforts to improve students' understanding of what constitutes plagiarism across all years of our degree programs. It is also of concern that students' perceptions of what constitutes an appropriate penalty are unrealistic, indicating the lack of seriousness with which they perceive the act of plagiarism, and signals a degree of immaturity in their moral development.

The findings of this study will not likely come as a surprise to most readers. As we noted earlier, the incidence of plagiarism is widespread. The Internet has made plagiarism in written assignments easier for students. Full papers can be downloaded for free or at a relatively small cost and students can cut and paste from a range of sources without acknowledgment. In addition, the current emphasis in higher education on group work may have inadvertently led to an increase in students colluding with each other or benefiting as a "freeloader" from the work of others. The increase in class sizes, which often results in increased use of group tasks, means that students may not have ready access to their teachers and sometimes rely on a network of past students who provide "form guides" for full assignments for loan or purchase. This lack of contact and consequent disengagement from the institution can contribute to a devaluing of moral behavior and a rise in the incidence of academic misconduct.^{12,19} For example, Ashworth and colleagues, in their qualitative study of master's degree students, noted that feelings of alienation from the institution were often cited by students as facilitating and excusing such behaviors.⁵ These feelings may also somewhat explain the higher tolerance towards academic misconduct among students compared to staff members,¹⁷ and the reluctance of students to condemn others.⁵ The pervasive influence of competitiveness in university life and the achievement of individual academic goals through whatever means possible is another important influencing factor.^{12,19}

In dealing with dishonesty and plagiarism, a balanced approach should be taken that includes both prevention and deterrence.^{1,4} McInnis and Devlin² recommend a four-part strategy aimed at minimizing plagiarism:

- Maintaining a consistent and collaborative effort to recognize and counter plagiarism at every

level from policy, through faculty/division and school/department procedures, to individual staff practices;

- Educating students about the expected conventions for authorship and the appropriate use and acknowledgment of all forms of intellectual material;
- Designing approaches to assessment that support students' learning and minimize the possibility for students to submit plagiarized material, while not reducing the quality and rigor of assessment requirements;
- Implementing visible procedures for monitoring and detecting cheating, including appropriate punishment and re-education measures

A provocative theoretical framework in which these approaches could operate has been proposed.¹⁹ The central tenet is that moral development must be preceded by the opportunity to act immorally, and with the application of consistent rewards and punishments that reflect the gravity of the offense, students learn through "testing boundaries of honesty in order to further develop a moral sense." Academic dishonesty is thus seen as a normative behavior in the development of moral perspective; "necessary and to be expected" as students push boundaries and test limits of moral behavior within a safe academic setting. This framework, however, remains relatively untested.

CONCLUSION

A widespread deficiency in students' understanding of plagiarism was found across all years of our undergraduate and postgraduate pharmacy programs. The study highlights the importance of achieving a balance among the 3 dimensions of plagiarism management: prevention, detection, and penalty. More focused research is needed to further clarify the root causes of continuing plagiarism behaviors and the intervention strategies that can best address them.

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