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Research Paper

The influence of pharmacy education on students' moral development at a school of pharmacy in the USA

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Abstract

Objectives The aim was to assess the relationship between moral development and pharmacy education at a small, private pharmacy school located in the south-eastern region of the USA. Corollary objectives were to assess the impact, if any, of gender, age and grade point average on moral development.

Methods Seventy-one pharmacy students' moral reasoning was assessed during a 2-week orientation before the beginning of first-year classes in August 2006, and again after finishing didactic requirements for the Doctor of Pharmacy degree (PharmD) at the University of Charleston School of Pharmacy in April 2009.

Key findings A paired *t*-test revealed that significant growth in moral reasoning occurred during their didactic pharmacy education. The class mean N2% score in August 2006 was 38.68 compared with 42.32 in April 2009 ($P < 0.01$). Based on independent *t*-tests and Pearson correlations, there were no significant differences in the sample between age and N2% score, and between grade point average and N2% score.

Conclusions The findings reveal that the students at University of Charleston School of Pharmacy experienced significant moral growth during the three didactic years of the pharmacy curriculum. As concluded in previous studies within the health professions, females scored significantly higher than males on moral reasoning in both the first and second assessment.

Keywords cognitive moral development; defining issues test; moral reasoning

Introduction

During the past several decades, the pharmacy profession has sought to become a more patient-focused profession, the goal of which is the shared responsibility between pharmacists and patients for optimal drug-therapy outcomes.[1–5] Pharmaceutical care was the highlight of this movement and is defined as 'the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life'.[3] The shared responsibility between pharmacists and patients implicitly implies an ethical covenant for positive drug-therapy outcomes.[6] In an effort to graduate patient-focused pharmacists the curriculum of schools and colleges of pharmacy in the USA was extended in the early 1990s to include an extra year of clinical experiences.[7,8] The sole terminal degree of graduates of professional pharmacy programmes in the USA changed from a bachelor's degree in Pharmacy to a Doctor of Pharmacy degree (i.e. PharmD).[7,8]

Embracing pharmaceutical care serves at least two major positive purposes. First, to the extent that pharmacists are able to prevent drug misadventures in their patients by providing a high level of care, the result may be significant global healthcare savings by a reduction in emergency room and doctor visits due to drug–drug interactions, medication non-adherence and drug–disease interactions. Johnson and Bootman utilized early 1990s data to estimate the cost of drug-related problems in the USA and concluded that it is in the US$80–150 billion range.[9] A subsequent investigation utilized a decision analytical model and more reason cost data.[10] The authors concluded that the cost of drug-related morbidity and mortality in the USA in 2000 was $177.4 billion. Significant drug-related problems identified several misadventures that pharmacists can reduce: improper drug selection, adverse drug reactions and drug interactions.[10] Thus, if pharmacy schools can graduate pharmacists who are proficient at delivering pharmaceutical care to their patients then not only will patients experience a higher quality of life, but the national healthcare

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system may experience significant resource savings. A second positive outcome of pharmacists embracing pharmaceutical care revolves around increased legitimacy for the pharmacy profession.[2,11,12] Historically, community pharmacy has battled an image as being a marginal profession because of not only being located in supermarkets and stores that sell merchandise ranging from tobacco to soft drinks, but also a public perception that pharmacists primarily dispense prescriptions that physicians prescribe.[2,12] As pharmacists' value as drug-therapy experts becomes more visible, the profession's legitimacy may increase.

As pharmacists expand their roles to include pharmaceutical care, significantly more opportunities for ethical problems become apparent because each patient is unique and may require a non-standardized response to optimize his/her drug-therapy outcomes. Those pharmacists who have better conceptual tools for handling the ethical ambiguity that is a large component of pharmaceutical care may be better equipped, and may provide a higher level of care than those with inadequate tools.[13] According to Kohlberg, the psychology of moral reasoning is an integral component of Cognitive Moral Development (CMD) theory and examines one's decision-making process prior to the actual decision.[14] Rather than being concerned with a decision, moral reasoning is concerned with the various conceptualizations people go through to arrive at final decisions. For example, a 22-year-old pharmacy student and a 12-year-old child might both think that euthanasia is wrong. However, their reasoning for why it is wrong may be vastly different. Kohlberg's theory of cognitive moral development is based on the seminal work of Piaget, who concluded that children progress through three stages as their reasoning develops: intuitive, concrete operational and formal operational.[15] Kohlberg's theory posits that individuals advance along a state-sequence continuum represented by three cognitive levels comprised of two stages in each level.[14] The first level is the pre-conventional level of moral development in which self interest rules. For example, a pharmacist's thought process at the pre-conventional level may revolve around 'the chances of getting caught' or 'is the risk worth it?' if asked by a physician to mislabel a drug solution for a patient.

The second level of moral reasoning is called the conventional level and the establishment of long-term relationships and the upholding of laws are the key to this level. In the above example, the pharmacist's thought process at the conventional level of moral reasoning may revolve around the pharmacist's duty to the patient and the physician, as well as 'is it against the law to mislabel a drug solution for a patient?'

Finally, the post-conventional level is the third level of moral development and revolves around universal principles, which include the ethical principles of utilitarianism and deontology. Laws are usually valid because they often rest on universal principles, but if they violate ethical principles the post-conventional pharmacist will act in accordance with ethical principles. The post-conventional pharmacist would probably not mislabel the drug solution because he or she would reflect on such thoughts as 'would mislabelling in this case bring more total good for society?' and 'is the patient's autonomy at risk if I mislabel the drug solution?'

Several studies from a broad range of health professions, including nursing, medicine, physical therapy and pharmacy have demonstrated significant and meaningful relationships between moral reasoning and clinical performance.[14–18] In fact, at least two studies revealed that scores on moral reasoning were a greater predictor of clinical performance than traditional measures of academic success such as grade point average (GPA) and standardized test scores.[17,19] In nursing, Krichbaum *et al.* examined the relationship between moral reasoning, clinical performance, high school GPA and aptitude test scores in Baccalaureate nursing students. The authors concluded that moral reasoning was a greater predictor of clinical performance than the cognitive markers of GPA and aptitude test scores.[17] In physical therapy, Sisola found similar results with physical therapy students.[19]

Based on the aforementioned investigations, the relationship between moral development and pharmacy education warrants consideration and examination. A review of the extant literature found no longitudinal studies in pharmacy education that assessed this relationship. There have been several longitudinal studies in medical education.[20–22] According to Kolhberg's CMD theory one's moral reasoning should become more mature as one's education level increases. The above medical education studies assessed medical students' moral reasoning in the first year of medical school and again at the end of the fourth year of medical school. Interestingly, the expected increases in moral reasoning did not occur, causing the authors to speculate that, perhaps, medical education, because of the rigidity of the curriculum, inhibits growth in moral reasoning.[20,22] Similar results occurred in veterinary medicine education. A veterinary medicine study assessed the relationship between moral reasoning and veterinary education over 4 years of veterinary school and concluded that no significant increase in moral reasoning resulted over the 4 years of veterinary school.[23] A subsequent study with many of the same authors revealed a significant increase in moral reasoning among medical students from their first year to their fourth year.[24] The design of this study distinguished it from the others because it tested students' moral reasoning at the beginning of their first year, at the end of a required ethics course in the first semester, and at the end of their fourth year. The students showed the most significant growth on the second moral reasoning assessment (i.e. immediately after taking the required ethics course). The authors attributed the significant increase to the compulsory first-year ethics course.

In pharmacy education, Latif utilized case studies involving ethical dilemmas in second-year pharmacy students in a required communications course at a large pharmacy school in the north-eastern USA.[25] Students' moral reasoning was assessed before and immediately following the course. The post-test revealed that students scored significantly higher than on the pre-test. It was concluded that moral reasoning skills are teachable and that small-group dilemma discussion may enhance those skills.

In the most widespread study to date of the moral reasoning of pharmacy students, Latif used a cross-sectional survey design to assess the moral reasoning of 755 first-year

and 809 third-year pharmacy students from 24 schools and colleges of pharmacy in the USA.[26] Rest's Defining Issues Test (DIT) was used as a surrogate measure of students' moral reasoning to assess the two cohorts. It was shown that, as a group, pharmacy students lagged behind medical and nursing students in their moral development.[13,27] Although not longitudinal in nature, the investigation supported the above medical and veterinarian studies in demonstrating no significant difference in moral reasoning between first-year and third-year pharmacy students. In addition, females scored significantly higher than males in this sample, which supported the results of other investigations in the health professions.[20–23]

The primary purpose of this longitudinal investigation was to assess the relationship between moral development and pharmacy education at a small, private pharmacy school located in the south-eastern region of the USA. Corollary objectives were to assess the relationships if any, of gender, age and GPA with moral development.

Methods

Pharmacy students' moral reasoning was assessed during a 2-week orientation before the beginning of first-year classes in August 2006, and again after finishing didactic requirements for the Doctor of Pharmacy degree (PharmD) at the University of Charleston School of Pharmacy in April 2009. There were 80 students who took the DIT-2 in August 2006. Due to student attrition, the number of students retaking the DIT-2 in April 2009 was 71. The number of females and males who took both assessments was 40 and 31 respectively. The mean age of students upon admission to pharmacy school was 26 years for females and 28 years for males. Pre-pharmacy GPAs on a 4.0 scale were 3.23 for females and 3.08 for males.

The five-scenario DIT-2 was used as the surrogate measure of students' moral reasoning.[27] Students were given an instruction booklet and printed sheets that contained the items and answer grids, and were asked to complete the paper-and-pencil DIT-2 in a classroom setting within 1 h. They were told the purpose of the test was to assess 'how students think about social issues'. After each administration the protocols were sent for scoring to the Center for Ethical Development, University of Alabama, Tuscaloosa, AL, USA (developers of the DIT-2 instrument). The DIT has been used for over 50 years to measure moral reasoning skills according to the CMD theories posited by Kohlberg.[13,27–29] As such, its reliability and validity have been established and it is a psychometrically strong instrument.[14,28,29] During the past several years, many researchers have used a revised DIT-2 that has updated ethical scenarios.[28,29] The correlations between DIT-1 and DIT-2 have been strong and psychometrically sound.[28,29] The DIT-2 is a self-administered instrument consisting of five hypothetical dilemmas. Historically, the most important result has been the P or principled score, which is defined as 'the relative importance a subject gives to principled considerations in making a decision about ethical dilemmas'.[12] A more robust index called the New Index (N2) has been used by researchers for the past several years because it purports to measure not only one's level of principled thinking (i.e. P score), but also the degree to which non-principled items receive lower ratings.[28,29] Stated differently, in addition to assessing the P score (which considers how one ranks post-conventional items), the N2 score assesses the extent to which one distinguishes post-conventional thinking from lower level personal-interest thinking.[28,29] Therefore, the N2 index is considered the more robust index. Thus, this investigation utilized the N2 index rather than the P index.

Results

Seventy-one students took the DIT-2 in August 2006, and again in April 2009. The response rate was 100%. As shown in Table 1, a paired *t*-test revealed that significant growth in moral reasoning occurred during their didactic pharmacy education. The class mean N2% score in August 2006 was 38.68 compared with 42.32 in April 2009 ($P < 0.01$). Based on independent *t*-tests and Pearson correlations, there were no significant differences in the sample between age and N2% score, and between GPA and N2% score.

Using a Student's *t*-test for independent samples revealed that females scored significantly higher on moral reasoning than did males ($P < 0.05$). The female mean N2% score was 44.98 compared with 38.89 for males in the class for the April 2009 assessment.

Discussion

The present investigation is the first longitudinal study to date in pharmacy to examine the relationship between progression through pharmacy curricula and students' moral development. The obtained results indicate that the students at University of Charleston School of Pharmacy experienced significant moral growth during the three didactic years of the pharmacy curriculum. It must be stressed that these results are suggestive, in that it cannot be concluded that progression through the pharmacy curricula caused increased development. According to Rest, years of education significantly contribute to the variance associated with moral reasoning scores.[13] As stated previously, several studies in the health professions, including pharmacy, have demonstrated a significant link between moral reasoning and aspects of clinical performance.[16–20] In addition, previous studies in medicine and veterinary medicine have stated that the expected moral growth in schools of medicine and schools of veterinary medicine may not occur due, in part, to the rigidity of the medical curriculum.[20–24] Latif speculated

Table 1 Moral reasoning scores (N2%)

N2% score	*n*	Mean	SD	*P*
August 2006	71	38.68	12.47	
April 2009	71	42.32	11.77	0.006**
April 2009				
Female	40	44.98	11.04	0.030*
Male	31	38.89	11.97	

*$P < 0.05$; **$P < 0.01$.

that the limited exposure of pharmacy students to liberal arts courses such as humanities and social sciences may inhibit moral growth because the complexities of human behavior may present opportunities for students to appreciate a greater range of thinking and points of view on issues.[26] To this end, researchers in both medicine and pharmacy demonstrated that ethics courses emphasizing small-group discussions that revolve around critically analysing scenarios by probing assumptions and taking the other side's point of view may have a positive impact on moral development.[24,25] These conclusions were supported by Rest, who reviewed 57 DIT studies regarding the impact of education interventions on growth in moral judgement. He concluded that peer discussion of moral dilemmas result in growth because it allows students to practice moral problem-solving skills, to probe alternative assumptions and rationale, and to appreciate alternative and higher levels of moral arguments made by classmates and peers.[27]

There are many areas of the University of Charleston School of Pharmacy curriculum that provide students with opportunities for peer discussion of moral dilemmas, including small-group discussions and problem-based learning. In addition, students are required to develop an ethics portfolio in which they must assess relevant healthcare ethical dilemmas according to an ethical decision-making process. Also, many classes throughout the curriculum analyse cases that have ethical dilemmas (e.g. Early Experiential Experiences, Management, Pharmacogenomics).

The present investigation supports the conclusions from several previous investigations in the health professions that females score significantly higher than their male colleagues on moral reasoning.[20–23,26,30] The results from these investigations suggest that health professional females score higher on moral reasoning than their male colleagues. This result warrants further investigation in light of the significant increase in females at schools and colleges of pharmacy.

This investigation has several limitations. First, the study was done at one small school of pharmacy in the south-eastern region of the USA. There can be no assurance that the results are representative of pharmacy students in other parts of the USA and other countries. A review of investigations pertaining to the DIT in over 40 Western and non-Western countries concluded that there are consistencies in the trends of scores throughout the world (e.g. scores improve with age and years of education).[13] In addition, DIT scores from samples in the USA were in the middle of the group of studies examined. However, it is possible that the studies examined were not representative of the world population. A second limitation is that the University of Charleston School of Pharmacy began taking students in 2006. Thus, it is a new pharmacy school and results may be different than more established schools and colleges of pharmacy. A third limitation is the potential threat to internal validity because of the test/retest nature of the study design. A fourth limitation is that the study design did not allow for a cause-and-effect conclusion. Therefore, we cannot state that the curriculum caused moral development in our pharmacy students. Finally, the N2% score was used as the surrogate measure of students' moral reasoning. An assumption is made that moral reasoning can be measured.

Despite these limitations the present investigation is the first known pharmacy publication that uses longitudinal data to assess the impact of the pharmacy curriculum on students' moral development at one new school of pharmacy in the USA. Additional studies must be done at other schools and colleges of pharmacy in the USA and at pharmacy schools throughout the world to assess the relationship between the curriculum and moral development. If, as previous investigations have indicated, those pharmacists scoring at a high level of moral reasoning perform at a high level of clinical performance, it might be prudent to fine-tune pharmacy curricula to maximize moral development.

Conclusions

This investigation examined the relationship between moral development and pharmacy education at a small, private pharmacy school located in the south-eastern region of the USA. Additional objectives were to assess the impact, if any, of gender, age and GPA on moral development. The findings reveal that the students at University of Charleston School of Pharmacy experienced significant moral growth during the three didactic years of the pharmacy curriculum. These results are preliminary. Additional longitudinal investigations are needed in different regions of the USA and in both Western and non-Western countries throughout the world. If the results of those studies replicate the present findings, curricula should be re-evaluated with the goal of maximizing moral reasoning skills through strategies such as the increased use of small-group discussion of pertinent ethical dilemmas. This investigation supported previous studies within the health professions in concluding that females scored significantly higher than males on moral reasoning in both the first and second assessment.[20–23,26,30]

Declarations

Conflict of interest

The Author(s) declare(s) that they have no conflicts of interest to disclose.

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