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Original Article

Does personalized goal setting and study planning improve academic performance and perception of learning experience in a developing setting?

Kazeem B. Yusuff, PhD

Department of Pharmacy Practice, College of Clinical Pharmacy, King Faisal University, Hofuf Al-Ahsa, KSA

الملخص

أهداف البحث: يجب أن تمكن عملية التعلم للصيادلة استخداما ماهرا لقدرات ما وراء المعرفة والتفكير النقدي الذي يضمن التطبيق الفعال للمهارات المتخصصة لتحقيق أفضل نتائج للمريض. قيمت الدراسة تأثير الأهداف الأكاديمية المطورة ذاتيا والخطط الدراسية على الأداء الأكاديمي للطلبة وإدراكهم لخبرة التعلم في بيئة نامية مثل المملكة العربية السعودية.

طرق البحث: أجريت دراسة أترابية مستقبلية في كلية الصيدلة الاكلينيكية، بجامعة الملك فيصل، بالمملكة العربية السعودية في مقرر إلزامي للسنة الرابعة (إدارة الصيدلة). تعرضت مجموعة الدراسة لتحديد الأهداف والتخطيط للدراسة بينما المجموعة الضابطة كان لديها فقط التدريس الاعتيادي وأنشطة تعليمية مصممة للمقرر. وتم تحديد الأداء الأكاديمي بواسطة الاختبارات الموجزة، والاختبارات النصفية والنهائية، ونسبة الإنجاز لأهداف المقرر. واستخدم تقييم نهاية المقرر، مع استبانة تم اختبارها مسبقا، لتقييم إدراك تجربة التعلم.

النتائج: شكلت مجموعة الدراسة ٤١.٤٪ (٢٩) من الجماعة في حين كانت ٥٨.٦٪ (٤١) في المجموعة الضابطة بمتوسط العمر ٢٢.٩ (الانحراف المعياري = ٣.٢) و٢١.٦(الانحراف المعياري= ٦.١) عاما على التوالي. كان متوسط الدرجات للاختبارات الموجزة ٨.٤ (الانحراف المعياري = ٢.٢)، والاختبارات النصفية ٢١.٩ (الانحراف المعياري = ٣.٧)، والاختبارات النهائية ٤٢.٨ (الانحراف المعياري = ٥.٣)، وكانت نسبة الإنجاز لأهداف المقرر أ (٧٧٪) و ب (٧٨٪) أعلى بكثير في مجموعة الدراسة. أظهرت التغذية الراجعة لنهاية المقرر اختلافات رئيسة في إدراك تجربة التعلم بين مجموعة الدراسة والمجموعة الضابطة.

Corresponding address: Department of Pharmacy Practice, College of Clinical Pharmacy, King Faisal University, P.O. Box 400, Al-Ahsa 31982, KSA.

E-mail: kyusuff@kfu.edu.sa

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الاستنتاجات: يبدو أن تحديد الأهداف الشخصية والتخطيط للدراسة يؤدي إلى تحسن كبير في المشاركة المستمرة للتعلم، والتركيز على الأهداف الأكاديمية والأداء الأكاديمي.

الكلمات المفتاحية: تحديد الأهداف؛ التخطيط للدراسة؛ الإنجاز الأكاديمي؛ خبرة التعلم

Abstract

Objective: The learning process for pharmacists must enable the skillful harnessing of metacognition, critical thinking, and effective application of specialized skills. This study assessed the impact of self-developed academic goals and study plans on pharmacy students' academic performance and perception of learning experience in a developing setting.

Methods: A prospective cohort study was conducted at the College of Clinical Pharmacy, King Faisal University, KSA, in a compulsory 4th year course (Pharmacy management). The study group was exposed to goal setting and study planning while the control group had only routine teaching and learning activities planned for the course. Academic performance was determined with quizzes, midterm, and final exams, and the percentage achievement for the course objectives. An end-of-course evaluation, with a pre-tested questionnaire, was used to assess the perception of learning experience.

Results: The study group constituted 41.4% (29), while 58.6% (41) were in the control group, with a mean ± SD age of 22.9 (SD = 3.2) and 21.6 (SD = 6.1) years, respectively. The mean ± SD scores for quizzes (8.4 (SD = 2.2), mid-term (21.9 (SD = 3.7), and final exams (42.8 (SD = 5.3), and the percentage achievement for the course objectives A (77%) and B (78%) were significantly

higher in the study group (P < 0.001). The end-of-course feedbacks showed key differences in the perception of learning experience between the study and control groups.

Conclusion: Personalized goal setting and study planning appeared to significantly improve continuous engagement with learning, focus on academic goals, and academic performance.

Introduction

The momentous shift of practice focus from products to patients necessitated the adoption of the doctor of pharmacy (PharmD) curriculum as the training paradigm for pharmacists in the United States. PharmD graduates must be highly skilled, effective, and efficient at the provision of direct patient care services in active collaboration with other healthcare professionals.[1] The continuously evolving clinical roles of pharmacists demand application of the specialized knowledge and skills targeted to ensure the rational use of medicines and the achievement of optimal outcomes.[2,3] Hence, the learning process for pharmacy students must be constructive and deep, and enable the skillful harnessing of metacognitive capabilities and critical thinking.[4,5] Several studies have reported the positive impact of the use of wide varieties of active pedagogical strategies on academic achievements and the overall learning experience among pharmacy students, particularly in developed settings.[6–10] However, such intervention studies are rare in developing settings, including the Middle East. We found only one such study, which assessed the impact of the use of self-reflection and peer assessment on metacognitive skills and academic performance among pharmacy students in the eastern part of KSA.[11] This is unsurprising as the historical disposition to learning in the Middle East is generally rooted in rote memorization and factual recall.[12–14] However, the wholesale adoption of the PharmD curriculum in the region as the model for the training of contemporary pharmacists warrants the use of active pedagogical strategies in the Colleges of Clinical Pharmacy. This is more likely to help students develop a culture of learning that is constructive and to sharpen the self-regulated higher order competencies needed to function effectively in the real world of practice.[11,15] Hence, the current study will provide perspectives from the Middle East, which may significantly add to global knowledge in the research area.

Goal setting and study planning are intellectually driven activities that are focused on specific valued outcomes. This is because a goal is a cognitive imagination of an intended futuristic valued outcome.[16–18] This valued outcome becomes a major driver of physical and mental activities geared towards its achievement.[19–21] On the other hand, a plan is a mission-accomplishing tool that is purposely designed for the achievement of a goal.[22,23] Therefore, ab initio, goal setting and study planning are activities that demand the intensive use of the higher realms of cognition and may thus facilitate constructive learning, and better academic achievement among students.[24,25] It was hypothesized that the use of personalized goal setting and study planning by students may help them to focus mentally and direct their learning activities towards the academic goals they set for themselves. Furthermore, the self-development of an appropriate study plan that is targeted to the set academic goals, and public commitment among peers to its implementation, may drive regular engagement with learning. The literature search did not reveal any study that was specifically focused on assessing the impact of goal setting and study planning on students' academic performance and learning experience, particularly among pharmacy students. The objective of the study was to assess the impact of personalized goal setting and study planning on academic performance and the perception of learning experience among pharmacy students in a developing setting such as KSA.

Materials and Methods

A prospective cohort study was conducted among 4th year students at the College of Clinical Pharmacy (COCP), King Faisal University, KSA, between January 25 and May 14, 2015. COCP pioneered the six-year PharmD training paradigm in the KSA, and this program is currently accredited by the Canadian Council for Accreditation of Pharmacy Programs (CCAPP) and the Accreditation Council for Pharmacy Education (ACPE) of the United States.[11] The study was exempted from Institutional Board review by the Quality Management Unit (QMU) within the COCP, as this was considered part of the mandatory process for continuous reflection on teaching and assessment practice for all academic staff. This was confirmed in writing: Reference # QMU/COCP/KFU 13/02/1436.

Male students constituted the study group, while females students were the controls. The samples were engaged separately by the facilitator of the index course (Pharmacy management). This is because separation by gender is a key organizational policy at the study site, and this was the key consideration in the group allocation of students. Furthermore, translucent glass barriers exist in the classrooms in the female section, which separate female students from male teachers. The females can clearly see and hear the teachers but the teachers can only hear but not see the female students. Hence, concerns about the potential interference of the translucent barrier with the intervention processes (goal setting and study planning) in the female section constrained the choice of male students (who had no such barrier) as the study group. However, all the teaching, learning, and assessment activities planned for the pharmacy management course, apart from the interventions (personalized goal setting and self-development of the study plan), were applied

equally to both groups. The course plan for pharmacy management detailing the course objectives, course outline, intended learning outcomes, and teaching and assessment strategies were shared with students in both groups, and copies of the document were provided at the beginning of the semester. Pharmacy management is a compulsory course offered in the second semester at the 4th year level and the total number of contact hours for both male and female students was 60 h (lectures and class discussions). The course objectives for Pharmacy Management are as follows:

- Explain the principles, concepts, and methods of management, decision making, leadership, and organizational behavior
- Apply the concepts of organizational, human resources, marketing, financial, and purchasing management; and leadership and decision making in pharmacy practice.

The tasks used for the assessment of academic achievements for the students in both groups included two quizzes, midterm, and final exams. The assessment tasks were all focused on the higher order learning as dictated by the course objectives, and these constituted 10%, 30%, and 50% of the final grade, respectively. Active participation in the class discussions throughout the 15 weeks of course delivery made up the remaining 10%. The grading of quizzes, midterm, and final examinations, and students' achievement of course objectives for pharmacy management in the study and control groups were determined by the same course instructor. In addition, the following measures were deployed to mitigate any potential confounding:

- Student exam assessment form: All students in the study and control groups reviewed the grading of all of their examination papers, clarified their concerns, and signed the exam assessment forms after being satisfied with the grades returned for all of the assessment tasks. No student objected to any of the grades.
- The students' grades, the grading scheme, and the mapping of the assessment tasks including quizzes, midterm, and final examinations with the ILOs and the course objectives for Pharmacy management were peer-reviewed by the QMU in the COCP.
- The Assessment Sub-committee of the QMU reviewed all the grades, the grading scheme used for the assessments, and the alignment of the assessment tasks with the course intended learning outcomes (ILOs) and objectives, and found no inconsistency.

The course objective achievement was calculated with the series of steps developed within the COCP, and this generally involved the following:

- Use of a blueprint to map all of the ILOs for each of the topics included in the course plan with the stated course objectives (This was done at the beginning of the course).
- Mapping of all the questions used in the quizzes, midterm, and final exams with the ILOs and course objectives (This was done during the preparation and validation of the exam questions).
- Allocation of marks for each of the question items used in all the assessments.

- Calculation of the average mark and percentage obtained for each of the questions used in all the assessments for all students in the study and control groups.
- Calculation of the percentage achievement for each of the course ILOs for all students in the study and control groups.
- Calculation of the percentage achievement for each of the two course objectives based on the mapped ILOs for the students in the study and control groups.

Each of the cohorts in the study group prepared a document containing personally set target scores for the two quizzes, midterm, and final exams; and the actionable study plan to be used to achieve these target scores. These personal goals and study plans were openly shared and discussed during three consecutive sessions. Students' academic progress and lessons learned from the implementation of study plans were also openly discussed. The control group was not exposed to the interventions. A pre-tested 5-item open-ended questionnaire was used to assess students' perception of learning experience at the end of the semester after the final examination for the course. The first draft of the questionnaire was developed after a thorough review of the relevant literature, and the selection of the final items was based on content validity. The final questionnaire items were pre-tested to reduce ambiguity and improve clarity. The data collected during pre-testing were not included in the final results. The questionnaire was focused generally on students' learning experience, perceived change in thinking, what was liked most about the course delivery, perceived changes needed in course delivery, and what was considered as the major strength of the course. Data coding and analysis were done with the Statistical Package for Social Sciences (SPSS) version 16 for Windows (SPSS Inc, Chicago, IL). Descriptive statistics were used to make comparisons between the study and control groups. A student t-test was used to compare means while Chi-square statistics were used for proportions. An a priori level of statistical significance of $P < 0.05$ was used for all comparisons. Students' written responses to the 5-item questionnaire were grouped manually and themes were identified.

Results

The study group (males) constituted 41.4% (29) of the cohort while 58.6% (41) were in the control group (females), with a mean (SD) age of 22.9 (SD = 3.2) and 21.6 (SD = 6.1) years respectively. The mean (SD) scores for quizzes, midterm, and final exams were significantly higher in the study group (Table 1). The proportion of higher academic grades (B and C) was significantly higher in the study group ($P < 0.001$). Analysis of the percentage achievements for the two course objectives for pharmacy management showed that the percentage achievements for course objectives A (77%) and B (78%) were significantly higher in the study group ($P < 0.001$). The trends in the academic achievements for students in the study group showed that 55.2% (16/29), 75.9% (22/29), 82.8% (24/29), and 79.3% (23/29) met or exceeded their personally set target scores for quiz-1, midterm examination, quiz-2, and final examination,

Table 1: Academic achievements among students in the study and control groups.

Pharmacy Management

Items	Study group (n = 29)	Control group (n = 41)	P-values
Quizzes (Mean ± SD)	8.4 (SD = 2.2)	7.0 (SD = 3.8)	0.02[a]
Mid-term exam (Mean ± SD)	21.9 (SD = 3.7)	19.2 (SD = 2.9)	0.01[a]
Final exam (Mean ± SD)	42.8 (SD = 2.6)	33.7 (SD = 3.5)	0.001[a]
Total for all assessment tasks	77.1 (SD = 5.2)	67.7 (SD = 4.3)	0.001[a]
Percentage pass	80% (23)	90.% (37)	0.001[b]
Course Objective achievement:			
A	77%	72%	0.01[b]
B	78%	70%	0.01[b]
Grades obtained by the students who passed (n (%))			
A	0 (0)	0 (0)	
B	6 (26.1)	3 (8.1)	0.001[b]
C	10 (43.5)	15 (40.5)	0.001[b]
D	7 (30.4)	19 (51.4)	

P ≤ 0.05 = significant difference; a = Independent t-test; b = Chi-square test.
Grade descriptors: A: 90−100.
B: 80−89.
C: 70−79.
D: 60−69.

respectively. The identified themes in the written end-of-course feedbacks from students in both the study and control groups are as shown in Table 2. A nuanced probe of the feedbacks appeared to show a stark difference between the students in the study and those in the control groups.

Discussion

The significantly better academic achievement of the students in the study group and the dominant themes that emerged

Table 2: End-of-course written feedbacks from students for Pharmacy Management in the study and control groups.

Study group (n = 29)	
Items	n (%)
Developed skills for setting personal academic goals, study plan, and self-monitoring of progress.	11 (39)
Driven to regularly engage with the course materials from beginning to end of semester	9 (29.3)
Greater determination to achieve set goals for quizzes, midterm, and final exams due to fear of embarrassment among peers	8 (26.8)
Improved self-confidence and communication skills, and learn new study strategies during peer discussions	1 (4.9)
Control group (n = 41)	
Good knowledge of management concepts and how to plan and lead an organization	13 (31.7)
Better focus of learning activities on understanding rather than memorizing	9 (22)
Exams were too focused on essay writing rather than other types of question, such as multiple choice questions	9 (22)
Better focus on understanding rather than only on memorizing	6 (14.6)
Course contents were relevant and will be useful but too heavy and stressful particularly as they are not business major students	4 (9.7)

from the written end-of-course feedbacks suggest that regular exposure to personalized goal setting and study planning may be beneficial in helping students to focus and continuously engage in a purposeful manner with their learning. This finding is consistent with that of Waskiewicz (2012), who used the achievement goal theory as an analytic framework to assess pharmacy students' academic achievement and reported a significant relationship between self-set performance goal and situational motivation.[24] Furthermore, the reported finding is also consistent with that reported by Alrakaf et al. (2014), who assessed the impact of pharmacy students' goal orientation on academic performance and reported a significant positive contribution of self-set goals.[25] The strong mental focus on the set goals appeared helpful in filtering distractions and incongruent behaviors.[17,19] In addition, the interventions in the study group provided the students with opportunities for self-reflection, identification of probable gaps that may threaten the achievement of set goals, and the deployment of appropriate mitigating solutions. These skills are crucial for achieving excellent academic performance, outstanding professional competence, and fulfilling careers as clinical pharmacists in the real world of practice.

However, despite the benefits inherent in the use of personalized goal setting, learners must be appropriately guided in a democratic learning space to prevent over- or under-estimation of academic goals.[26] The open discussion of the set goals and the self-developed study plans by all students among peers in a non-threatening learning environment appeared to have mitigated this potential confounder. In addition, the series of open discussions also offered students opportunities to evaluate their goals and revise the goals and/or study plans in light of inputs/comments provided by their peers.[27] This also appeared to have encouraged students to be more thoughtful in setting goals, and to focus on how best to engage with their learning. Furthermore, the public commitment to the set goals among peers appeared to get students to continuously engage with their learning due to the social pressure of not wanting to lose face.[28] Hence, this reputational risk

avoidance may positively modulate learners' behavior and facilitate the better academic achievement. It is noteworthy that the overall percentage of passes was significantly higher in the control group but half of this cohort obtained the lowest academic grade (D). However, this pales in comparison to the significantly higher proportion of the higher academic grades (B and C) in the study group.

The dominant themes from the end-of-course feedbacks showed a stark difference between students in the study and control groups. A majority of the students in the study group opined that the exposure to personalized goal setting and self-development of study plan pressured them to become more focused and continuously engaged with their learning. In addition, they provided the opportunity to reflect on the progress made and to revise goals and/or study strategies as appropriate. This is no doubt a pleasant pedagogical development, particularly within the Saudi cultural context, because of the historical attitude to learning that is focused mainly on rote memorization and factual recall. Furthermore, the students in the study group appeared to value the opportunities provided by the series of peer discussions to develop their communication skills and share ideas on the study strategies available to reach their academic goals. This is certainly good for cooperative learning among pharmacy students.[29]

On the other hand, the end-of-course feedback of the students in the control group was focused on general themes such as the specific knowledge gained, benefits derived from classroom activities, and perception of the teaching and assessment practices used for the course delivery. However, the feedback from the control also appeared positive and this suggests that the routine teaching, learning, and assessment practices used by the course instructor were perceived as beneficial by both groups. However, the nuanced differences in the perception of learning experience between the students in the two groups appeared to underscore the impact of personalized goal setting and the self-development plan in shaping learning behavior and experience in addition to facilitating better academic achievements.

The results of this study should be interpreted in light of the fact that the participants were sampled at a College of Clinical Pharmacy in KSA. However, the study site is an internationally accredited academic institution for the training of clinical pharmacists in KSA and the Middle East. Hence, its leading role in advancing the PharmD paradigm in this part of the world makes it a good fit for the current study. Furthermore, factors such students' innate academic prowess and attitude to learning, past academic achievements, and the constraint imposed on group allocation due to the organizational policy of the separation of sexes at the study site may be important confounders. However, measures that were used to mitigate this potential confounding are as follows: all the teaching, learning, and assessment strategies used, apart from the interventions, were applied in equal measure to both groups; the course plan detailing the ILOs, course objectives, course outline, and teaching and assessment strategies were shared with all students in both groups; grading was done by the same course instructor; and an institutionalized quality assurance system at the COCP was deployed to minimize any potential. In addition, this exploratory study provides the first initial perspective about the pedagogical impacts of personalized goal setting and study planning on academic performance and the overall learning experience among pharmacy students in a developing setting such as KSA, with a historical disposition of a surface and reproductive approach to learning.

Conclusion

Personalized goal setting and study planning significantly improved continuous engagement with learning, focus on academic goals, and academic performance.

Conflict of interest

The author has no conflict of interest to declare.

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