



## **Feedback of Pharmacy Undergraduate Students Regarding the Effectiveness of Theoretical and Practical Courses in the Pharmacy Program**

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### **Authors' contributions**

*This work was carried out in collaboration among all the four authors. Author MJA designed the study and performed the analysis. Author NJA wrote the first draft of the manuscript. Authors NJA and MFK analyzed and reported the data. Author DAAMH supervised the project. All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Aim:** The curriculum of pharmacy needs continuing revision and assessment to effectively equip the students with the required skills and with the human values that are needed to become effective and responsible professionals. The aim of the present study was to investigate pharmacy undergraduate students' views regarding the effectiveness of theoretical and practical courses in the pharmacy program in Al Kharj, Saudi Arabia.

**Methods:** This study included a survey that was developed based on a literature review related to effectiveness of theoretical and practical courses. The data was collected using Google form and the descriptive data were represented as a numbers and percentages.

**Results:** Over 71% students agreed that the courses with practical were comparatively more

interesting than the courses that include only theoretical part. Additionally, more than 73% of the students agreed that the practical part helped them to understand the concepts of the course in better way. Only 26.53% of the students agreed that if the course containing theoretical only, it will be difficult to understand effectively and only 22.45% agreed that the courses containing practical only were difficult to understand effectively.

**Conclusion:** The study showed that pharmacy students had more interest in the practical learning as compared to theoretical learning. Pharmacy schools should ensure that their undergraduate pharmacy programs include enough credit hours of practical courses.

*Keywords: Effective learning; pharmacy education; views; practical; theoretical.*

## 1. INTRODUCTION

Nowadays, societies are characterized by rapid change. The curriculum of pharmacy needs continuing revision and assessment to effectively equip the students with the required skills and with the human values that are needed to become effective and responsible professionals [1]. This idea is reflected in educational parlance through the body of learning experience that provides persons with the wanted skills and values that will help them to reach their goals in life [1]. The usage of current, effective, evidence-based and innovative teaching methods by instructors is considered very important in present-day universities [2,3]. Though theoretical courses provide the deeper understanding of the concepts relevant to the subject, it fails to develop competency and problem solving skills that are utmost important to deal with real-life situations. The practical experience of the subject knowledge is often considered as crucial to the development of the competency, especially for the health disciplines such as medicine and pharmacy. Therefore, the curriculum of these disciplines should consists of substantial amount of practical courses integrated with theoretical courses.

There is a strong association between the methods of teaching and the performance of the student [4]. Teaching practices such as setting a clear goal and ongoing teacher feedback have been considered as evidence-informed practices that optimize the academic outcomes [4]. Providing effective feedback to students is not an easy process because there is no single correct approach. Furthermore, the students may not understand the feedback that is given [5] and if the students do not engage actively in it, its impact on their learning will be low [6]. This feedback should be students clear, constructive and non-judgmental [7]. Within education, feedback is considered essential for the

improvement of the performance and is broadly accepted as a vital aspect of learning and teaching in any environment [8,9]. A previous review of about 250 studies stated that feedback had positive effects on achievement and on learning [10]. Stevenson stated that learners who receive a response demonstrating whether or not their work is appropriate are more likely to maintain interest in the subject being taught [11]. Moreover, several researchers advocate feedback within medical education for the improvement of students' communication skills [12]. Some researchers consider that within healthcare disciplines if feedback isn't provided, this will lead to several problems. For example, if there is no feedback, good performance will not be reinforced, mistakes will not be corrected and clinical competence will be achieved empirically or not at all [13]. In spite of its known importance, many pharmacy students are not satisfied with the quantity and quality of feedback they receive from their professors [14,15]. Student dissatisfaction with feedback is a well-known problem that isn't unique to pharmacy [16,17].

There has been limited research conducted about the opinions of pharmacy students on effective learning of theoretical and practical courses. Accordingly, the aim of the present study was to investigate pharmacy undergraduate students' views regarding the effectiveness of theoretical and practical courses in the pharmacy program in Al-Kharj.

## 2. METHODS

A survey instrument was developed based on a literature review related to effectiveness of theoretical and practical courses in the pharmacy program. The inclusion criteria include pharmacy undergraduate students in Al-Kharj. They were invited via e-mail to complete the questionnaire during 2020 academic year.

The questionnaire consisted of 2 sections the first section was the level of the students and the second section included the main questions. The responses given on a Likert scale included 3 levels (agree, neutral and disagree).

The data were collected using google form and the descriptive data were represented as a numbers and percentages.

### 3. RESULTS AND DISCUSSION

The survey was filled by total number of 119 pharmacy undergraduate male and female students. Mostly students were in the fourth year amongst both genders. Amongst the male (63.27%) and amongst the female (57.14%) were the maximum respondent at fourth year. The detailed level of the students was shown in Table 1.

Table 2 shows the feedback of pharmacy undergraduate students regarding effective learning. Most of them agreed that the courses that contain both theoretical and practical were easy to understand (63.27%) were male students and 52.86 % were female students. Only 26.53 % male students and 27.14 % female students agreed that if the course containing theoretical only, it will be difficult to understand effectively and only 22.45% male students and 22.86 % female students agreed that the courses containing practical only were difficult to understand effectively.

Most of the students agreed that the practical part of the courses is important. More than 71% male students and 68% female students said that the courses with practical were comparatively more interesting than the courses that include only theoretical part. Additionally, more than 73% male students and 62% female students said that the practical part helps the students to understand the concepts of the course and only 24.49% male students and 27.14% female students said that practical were long and ineffective. About 40% of each male and female students said that the credit hours of practical were satisfactory and only 12.24% male students and 14.29% female students of them disagreeing with this statement. Generally, most of the respondents said that they didn't need more credit hours of practical and only 26.53% male students and 21.43% female students said that they need more practical credit hours.

About 49% male students and 43% female students agreed that all theoretical courses should contain practical also for easy understanding of subject but only 32.65% male students and 34.29% female students said that credit hours of theoretical and practical should be equal. Additionally, 53.06% male students and 50 % female students of the respondents said that some courses with practical only should be included.

The student's responses specifically for their views on practical courses only were further evaluated and data are presented as the average percentage of male and female students together that agreed, disagreed or remained neutral for the questions relevant to certain aspects of practical courses as shown in Fig. 1. Very high percentage of students agreed that practical courses were more helpful to them for the understanding of a particular subject.

Katajaviuri et al reported that the students should be able to practice their reflective skills during their theoretical studies, because the practice period was too short to permit sufficient development of reflective skills [18]. Madiha and Yang stated that pharmacy practice courses have less practical work than theoretical and represents only 3.03% of total curriculum. Additionally, they reported that it is essential to upgrade and strengthen pharmacy education and profession as it is the need of current health care system in the world [19]. Furthermore, Yamamura and Takehira reported that practical training programs are important for raising learning motivation in addition to providing clinical experience [20].

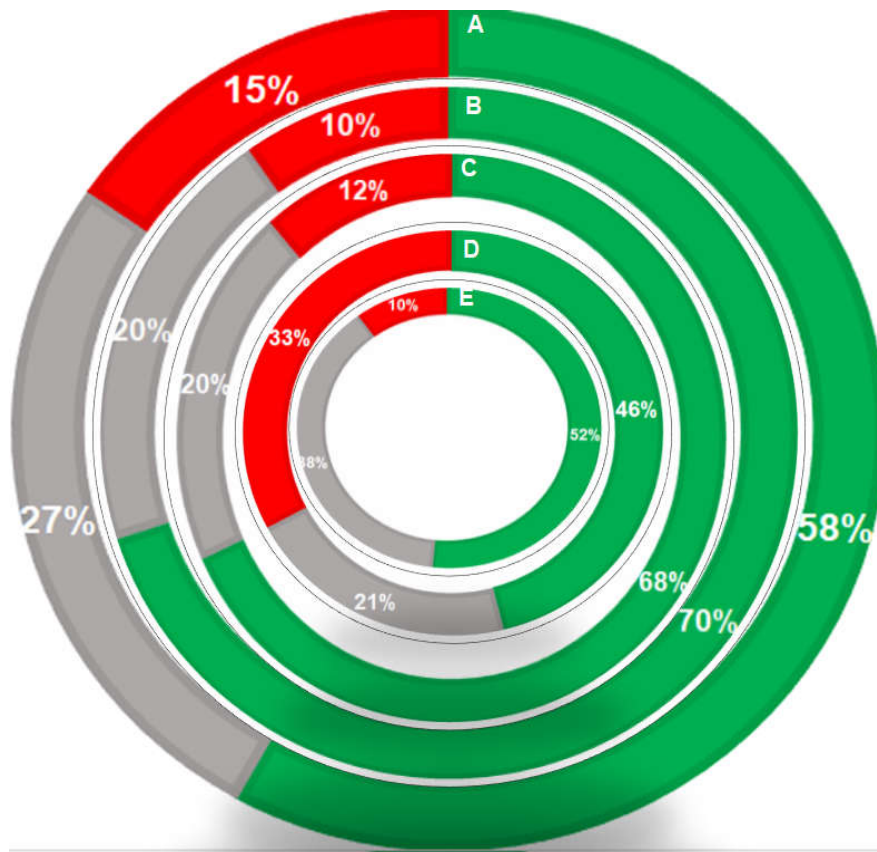
Pittenger et al stated that pharmacy programs should find additional ways to improve the student readiness for clinical psychiatric advanced pharmacy practice experience and to expand psychiatric learning opportunities in order to meet the increasing mental health needs across clinical settings [21]. Katajaviuri et al stated that it is necessary to pay more attention to the objectives and the content of the practice period. They also stated that there is a clear need to pay attention to reflective action to foster the quality of practical learning [22]. Moreover, Draugalis et al reported that the graduate course and advanced practice experience provide strategies to develop, recruits and to prepare future pharmaceutical educators [23].

**Table 1. Level of the male and female students**

Level	Number of students and their percentage			
	Male	Percentage	Female	Percentage
Second year	1	2.04	3	4.29
Third year	17	34.69	18	25.71
Fourth year	31	63.27	40	57.14
Fifth Year	0	0	9	12.86

**Table 2. Feedback of pharmacy undergraduate students regarding effective learning**

Variables	Category	Number of Students and their Percentage			
		Male	Percentage	Female	Percentage
A. The courses containing theoretical only were difficult to understand effectively	Agree	13	26.53	19	27.14
	Neutral	17	34.69	26	37.14
	Disagree	19	38.78	25	35.72
B. The courses containing practical only were difficult to understand effectively	Agree	11	22.45	16	22.86
	Neutral	18	36.73	27	38.57
	Disagree	20	40.82	27	38.57
C. The courses containing both theoretical and practical were easy to understand	Agree	31	63.27	37	52.86
	Neutral	12	24.49	20	28.57
	Disagree	6	12.24	13	18.57
D. The courses with practical were comparatively more interesting	Agree	35	71.43	48	68.57
	Neutral	10	20.41	14	20.00
	Disagree	4	8.16	8	11.43
E. The practical helped to understand the concepts of the course	Agree	36	73.47	44	62.85
	Neutral	8	16.33	17	24.29
	Disagree	5	10.20	9	12.86
F. The practical parts were long and ineffective	Agree	12	24.49	19	27.14
	Neutral	15	30.61	21	30.00
	Disagree	22	44.90	30	42.86
G. The credit hours of practical were satisfactory	Agree	20	40.82	28	40.00
	Neutral	23	46.94	32	45.71
	Disagree	6	12.24	10	14.29
H. The credit hours of practical should be more	Agree	13	26.53	15	21.43
	Neutral	9	18.37	19	27.14
	Disagree	27	55.10	36	51.43
I. All theoretical courses should contain practical also for easy understanding of subject	Agree	24	48.98	30	42.85
	Neutral	9	18.37	17	24.29
	Disagree	16	32.65	23	32.86
J. Credit hours of theoretical and practical should be equal	Agree	16	32.65	24	34.29
	Neutral	14	28.57	20	28.57
	Disagree	19	38.78	26	37.14
K. Some courses with practical only should be included	Agree	26	53.06	35	50.00
	Neutral	18	36.73	28	40.00
	Disagree	5	10.20	7	10.00



**Fig. 1. Concentric donut charts depicting responses of students (green color-agreed, red color-disagreed and gray color-neutral) regarding their views on certain aspects of practical courses. A- The courses containing both theoretical and practical were easy to understand, B- The courses with practical were comparatively more interesting, C- The practical helped to understand the concepts of the course, D- All theoretical courses should contain practical also for easy understanding of subjects E- Some courses with practical only should be included**

#### 4. CONCLUSION

The study showed that pharmacy students were interested in practical learning to help them to understand the concepts of their courses and to improve their skills. Pharmacy schools should ensure that their undergraduate pharmacy programs include enough credit hours of practical learning and to modify the programs that include few practical hours.

#### CONSENT

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

#### ETHICAL APPROVAL

It is not applicable.

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#### COMPETING INTERESTS

Authors have declared that no competing interests exist

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