

RESEARCH ARTICLE

# Virtual vs traditional seminar course evaluation among two groups of pharmacy students: An observational study

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## Abstract

**Background:** Distance learning in pharmacy schools has gained importance with the growth of technology which accelerated the pace of implementing virtual learning not only to prevent the spread of the virus but also to ensure continuity of education. **Methods:** A total of 102 students' responses to the 8-questions survey were collected and analysed. The survey score was compiled for all questions to reflect the students' satisfaction. In this study, we have used descriptive statistics to find the comparison between Class 2019 and Class 2020. **Results:** The virtual seminar model reported conveniently high satisfaction, unlike the conventional in-class seminar model. **Conclusion:** The college of pharmacy was successfully able to modify the seminar course while maintaining the quality of the course, with improved students' satisfaction.

## Introduction

Studying the efficiency of combining online learning in pharmacy schools with face-to-face learning has been gaining importance with the growth of technology (Falcione *et al.*, 2011, Salter *et al.*, 2014, Almaghaslah *et al.*, 2018). However, since the declaration of COVID-19 as a pandemic infectious disease by WHO (WHO, 2020), the kingdom of Saudi Arabia has dramatically accelerated the pace of implementing virtual learning not only for preventing the spread of the virus but also to ensure the continuity of education. (Dost *et al.*, 2020, Muflih *et al.*, 2020). Current studies have provided emerging evidence assessing the distance learning environment, barriers, perceptions, and attitudes of educators as well as learners since the outbreak of the pandemic (Daniel, 2020, Dost *et al.*, 2020, Muflih *et al.*, 2020, Shawaqfeh *et al.*, 2020).

Despite the inevitable advantages of online learning such as reducing the need to travel, potential cost-saving, flexibility in scheduling, and the ability to ask questions anonymously, there were some expected challenges such as internet access, the timing of lectures and tutorials, lack of individual interaction between educators and learners, and interruption of normal lifestyle (Dost *et al.*, 2020). Furthermore, the face-to-face interactions among the students and the instructors in higher education is still an integral part of the educational experience and should be warranted (Singh, 2018).

### Seminar course description:

The College of Pharmacy (COP) in King Saud bin Abdul-Aziz for Health Sciences (KSAU-HS) was established by implementing an ACPE-accredited pharmacy program that provides not only didactic courses but also

research, basic and advanced pharmacy experiential courses, and a seminar course (Alkatheri *et al.*, 2019). This seminar course is a one-credit hour course for Pharm. D. students in their third and fourth professional years. This course is designed to help students gain the necessary skills for answering clinically controversial questions encountered in practice using the strongest evidence available. These skills comprised of literature review, critical evaluation of published studies, and presentation skills. The assessment of each student is done during seminar preparation (40% of the course grade) by the designated faculty members who served as a mentor for the preparation of the material and the final PowerPoint presentation. The rest of the course grade (60%) on the seminar presentation is carried out by the faculty members who attend the live seminar. However, after the occurrence of the COVID-19 pandemic, the seminar course was shifted to full online mode. Meetings between the students and the faculty members, preparation of the seminar outline, and PowerPoint presentation were done online through Zoom, Microsoft Teams, and other online means of communication. The seminar presentations were also carried out utilising the Microsoft Teams platform; students were divided among five virtual rooms, students presented their seminars, and were evaluated by faculty members in designated virtual meeting rooms according to the pre-announced course evaluation rubric. The evaluation rubric is an integral part of the course book, which is the document that includes the course description, meeting schedule, faculty members' information, grading system, as well as any additional materials like evaluation rubrics.

The seminar topics were suggested by faculty members and all topics were sent to the students to rank their preferred topics. The matching between students' preferred choices and the topics was done by the course administrators to ensure fair assignment. The process remained the same for the two classes.

The seminar course at the college of pharmacy is a mandatory course that is conducted in a longitudinal delivery. This will start with the faculty suggesting topics that will be made available to students to select their preferred topics. The chief coordinator of the course will match the student in a matching style that will be announced at the beginning of the semester. The student-mentor relationship starts according to a strict timeline to prepare the seminar topic that will be presented. There will be scheduled meetings throughout the course at the pre-announced schedule to prepare the students for necessary skills in literature search, seminar presentation skills, and

critical literature evaluation. The COVID-19 pandemic affected all aspects of educational activities, and the seminar was carried out virtually. This experience was very challenging for both students and faculty. The idea came from the set-up in the course to evaluate their experience and the faculty coordinators of the course thought to compare the student's perceptions and experience to this new format by benchmarking their responses to the previous seminar class where the communication was normal, and the delivery of the seminar was in-person. The expectations were to evaluate the new delivery format and students sent perceptions regarding the new experience.

The main objective of the study is to compare the students' overall course evaluation scores between two pharmacy students' classes after the transformation from traditional to virtual distance learning. This will also include the evaluation of both experiences to determine if the new distance learning model affects the overall course evaluation due to changes in the delivery mode of the course during this challenging environment.

## Methods

An observational study was conducted on a seminar course among two groups of pharmacy students in the year 2019 and 2020. Survey questions adopted by Therese I. Poirier Instructional design and assessment (Poirier, 2008).

The survey was sent electronically via e-mail to all students after the conclusion of the seminar presentation and the responses were collected and recorded for further analysis. A total of 102 students (81.6%) responded to the survey. A total number of forty-two students from class 2019 (79.4%) and 60 students from class 2020 students (83.3%) participated in the study. The student participation in this survey was completely voluntary and anonymous. The official institutional review board (King Abdullah International medical and research centre, Riyadh, Saudi Arabia), which approves all student and faculty research activities in the university; approved this research study.

The survey was anonymously distributed to students at the end of each course. No private information was collected, and the responses were collected for the quality assurance initiative performed by the college of pharmacy quality unit.

## Survey questionnaire

The survey was made up of a total of eight questions

with a 6-Likert scale (strongly agree, agree, slightly agree, slightly disagree, disagree, and strongly disagree). These were then converted to scores, having strongly agreed as 6, agree as 5, slightly agree as 4, slightly disagree as 3, disagree as 2, and strongly disagree as 1 with an expected maximum score of 48 and a minimum score of 6.

The survey was distributed after the conclusion of the seminar course and students were asked to record their responses anonymously and voluntarily. This was already carried out for class 2019 for quality assurance purposes and as an additional step to report the experience. Due to the COVID-19 pandemic, every form of learning was converted to the online mode for both Class of 2020 and 2019. The survey was sent to class 2019 after all presentations were concluded and responses were received within the following week. The same was done for class 2020.

The class of 2019 seminar presentation was done face-to-face in a large auditorium over five consecutive days. All college of pharmacy faculty were required to attend and served as evaluators. All students were also required to attend. Each presentation was for 25 minutes with an additional 5-minutes for questions and answers sessions from both faculty and students.

The class of 2020 seminar presentation was completely virtual utilising Microsoft teams. Five virtual meeting groups with five to six student presentations each were running at the same time. In each room, there were five to six faculty members

who served as evaluators using the same pre-announced evaluation rubric.

#### Data management and statistical analysis used

The data were organised and compiled and formulated by Microsoft Excel 2010 and were analysed by using statistical software SPSS version 21.0. The continuous variables were expressed by using descriptive statistics like mean, and standard deviation. To find the comparison between the overall course evaluation score for the first group (class of 2019) and the second group (class of 2020), an independent sample t-test was used and  $p$  value less than 0.05 was set as the level of significance of 0.05.

#### Results

A total of 102 students' responses were analysed in the present study. The mean total course evaluation survey score of the class 2019 students was  $(40.79 \pm 6.80)$ . The average total course evaluation survey score of the class 2020 students was  $(38.23 \pm 8.11)$ .

In class 2019, most of the students ( $n:25$ , 59.5%) scored more than 40, followed by 14 students (33.3%) scored 31 to 40, and three students (2.1%) scored  $\leq 30$ . This reflects a high percentage of positive course evaluations. In class 2020, twenty-five students (41.7%) scored more than 40, followed by 28 students (46.7%) scored 31-40, and seven students (11.7%) scored  $\leq 30$  as shown in Table I.

**Table I: Distribution of total course evaluation scores among students**

Total course evaluation scores	Seminar class	
	Class 2019 (Conventional in-class seminar model) N = 42 n (%)	Class 2020 (Virtual seminar model) N = 60 n (%)
$\leq 30$	3 (2.1)	7 (11.7)
31 – 40	14 (33.3)	28 (46.7)
$>40$	25 (59.5)	25 (41.7)

The mean course evaluation survey score of class 2019 was  $40.79 \pm 6.80$  and the mean course evaluation survey score of class 2020 was  $38.23 \pm 8.11$  and the difference between the means was not statistically significant with independent samples  $p=0.098$ . From this, it was concluded that both class of 2019 and class of 2020 have had a similar course evaluation score which was not affected by the changing presentation experience as shown in Table II.

Among the 42 class of 2019 pharmacy students, 25 (59.5%) students responded as 'strongly agree' to utilising the concept of 'strength of the evidence as a tool. Twenty-three (54.8%) of the study population responded as 'strongly agree' to the question that the 'course enhanced my presentation skills and 'further developed my skills in providing evaluations'. Seventeen students (40.5%) have 'enjoyed the course', a few students 4 (9.5%) were 'slightly disagree' and 1 (2.4%) student have responded as 'strongly disagree'.

**Table II: Comparison of mean between class 2019 and class 2020 pharmacy students' seminar course evaluation scores**

	Groups	Number of students	Mean score	Standard deviation	p-value
Course evaluation scores	Class 2019 (Conventional in-class seminar model)	42	40.79	6.80	0.098
	Class 2020 (Virtual seminar model)	60	38.23	8.11	

Exactly 50% (21 in number) of students thought that 'the learning environment was conducted in a supportive manner. 15 students (35.7%) responded as strongly agree to 'working in pairs as a team was effective in achieving course outcomes', five students (11.9%) disagree, and only two students (4.8%) 'strongly disagree'. Eighteen students (42.9%)

responded as strongly agree to 'my learning goals were achieved' and one (2.4%) 'strongly disagree. More than 50% of students 23 (54.8%) responded as strongly agree to 'I developed an appreciation for an opposing perspective contrary to my one for a specific policy issue' and only one student (2.4%) strongly disagree, as shown in Table III.

**Table III: Distribution of survey responses of class 2019 pharmacy students (conventional in-class seminar model) (n=42)**

Questions	Strongly Agree n (%)	Agree n (%)	Slightly Agree n (%)	Slightly Disagree n (%)	Disagree n (%)	Strongly Disagree n (%)
The course enhanced my appreciation of the concept of 'strength of the evidence as a tool for supporting my recommendations on the specific policy issue	25 (59.5)	13 (31.0)	4 (9.5)	0	0	0
The course enhanced my presentation skills	23 (54.8)	14 (33.3)	5 (11.9)	0	0	0
The course further developed my skills in providing evaluations	23 (54.8)	12 (28.6)	7 (16.7)	0	0	0
I enjoyed the course	17 (40.5)	12 (28.6)	7 (16.7)	4 (9.5)	1 (2.4)	1 (2.4)
The learning environment was conducted in a supportive manner	21 (50.0)	13 (31.0)	4 (9.5)	1 (2.4)	2 (4.8)	1 (2.4)
Working in pairs as a team was effective in achieving course outcomes	15 (35.7)	9 (21.4)	8 (19.0)	0	5 (11.9)	2 (4.8)
My learning goals were achieved	18 (42.9)	15 (35.7)	6 (14.3)	1 (2.4)	0	1 (2.4)
I developed an appreciation for an opposing perspective contrary to my one for a specific policy issue	23 (54.8)	11 (26.2)	6 (14.3)	0	0	1 (2.4)

Among sixty class of 2020 pharmacy students, thirty-three students (55.0%) responded as 'strongly agree' about the concept of 'strength of the evidence as a tool and 20 students (33.3%) agreed. A total of 27 students (45.0%) responded as 'strongly agree' that the 'course enhanced my presentation skills and only three students (5.0%) strongly disagree. 23 students (38.3%) responded that 'the course further developed my skills in providing evaluations' and six students (1.7%) 'strongly disagree'. 21 students (35.0%) have 'enjoyed the course', 14 students (23.3%) 'slightly agree' and only three students (5.0%) responded as 'strongly disagree'. 22 students (36.7%) thought 'the learning environment was conducted in a supportive manner, 12 students (20.0%) 'slightly agree' and only five (8.3%) 'strongly disagree'. 16 students (26.7%) responded as

strongly agree to 'working in pairs as a team was effective in achieving course outcomes', five students (8.3%) 'slightly disagree', and, 7 students (11.7%) 'strongly disagree'.

Twenty one students (35.0%) have 'enjoyed the course', 14 students (23.3%) 'slightly agree' and only three students (5.0%) responded as 'strongly disagree'. Twenty two students (36.7%) thought 'the learning environment was conducted in a supportive manner, 12 students (20.0%) 'slightly agree' and only five (8.3%) 'strongly disagree'. Sixteen students (26.7%) responded as strongly agree to 'working in pairs as a team was effective in achieving course outcomes', five students (8.3%) 'slightly disagree', and, seven students (11.7%) 'strongly disagree'. Twenty seven students (45.0%) responded as strongly agree that 'my learning goals

were achieved' and two students (3.3%) 'strongly disagree'. Twenty five (41.7%) responded with strongly agree to the 'I developed an appreciation for an

opposing perspective contrary to my one for a specific policy issue' and two students (3.3%) 'strongly disagree' as shown in Table IV.

**Table IV: Distribution of survey responses of class 2020 pharmacy students (virtual seminar model) (n=60)**

Questions	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
The course enhanced my appreciation of the concept of strength of the evidence as a tool for supporting my recommendations on the specific policy issue	33 (55.0)	20 (33.3)	5 (8.3)	1 (1.7)	0	1 (1.7)
The course enhanced my presentation skills	27 (45.0)	19 (31.7)	8 (13.3)	3 (5.0)	0	3 (5.0)
The course further developed my skills in providing evaluations	23 (38.3)	21 (35.0)	12 (20.0)	2 (3.3)	1 (1.7)	6 (1.7)
I enjoyed the course	21 (35.0)	11 (18.3)	14 (23.3)	4 (6.7)	7 (11.7)	3 (5.0)
The learning environment was conducted in a supportive manner	22 (36.7)	14 (23.3)	12 (20.0)	3 (5.0)	4 (6.7)	5 (8.3)
Working in pairs as a team was effective in achieving course outcomes*	16 (26.7)	10 (16.7)	19 (31.7)	5 (8.3)	1 (1.7)	7 (11.7)
My learning goals were achieved	27 (45.0)	17 (28.3)	11 (18.3)	2 (3.3)	1 (1.7)	2 (3.3)
I developed an appreciation for an opposing perspective contrary to my one for a specific policy issue*	25 (41.7)	12 (20.0)	15 (25.0)	4 (6.7)	1 (1.7)	2 (3.3)

\*Missing data occurred

The responses of agreement, as well as responses of disagreement, were combined for each question for class 2019 and class 2020. The difference between the responses of agreement (include all agree on responses: Strongly agree, agree, and slightly agree) and the responses of disagreement (include strongly disagree, disagree, and slightly disagree) of class 2019 students was statistically significant with the  $X^2=17.458$  with  $p=0.015$ . Similarly, the difference between agreement responses and disagreement responses of class 2020 students was statistically significant with  $X^2=21.287$  with  $p=0.003$ . However, for the individual question: "The course enhanced my presentation skills" the comparison of agreement/disagreement responses showed a statistically significant difference between class 2019 and class 2020 with a  $p=0.036$ , as shown in Table V.

## Discussion

In this descriptive study, the impact of modifying the method of conducting the seminar course during the COVID-19 outbreak was assessed by comparing the overall course evaluation scores between two pharmacy classes. The Class of 2019 had the traditional in-class face-to-face delivery and the class of 2020 had the virtual online distance delivery.

For both courses, the delivery of the presentation was the main difference. In addition, the meeting time/style with the faculty mentor was also affected. However, the selection of seminar topics, the students' matching to the topics/mentors, the faculty's evaluation of students in preparing their seminar, and the evaluation rubric of the presentation remained the same.

However, due to the COVID-19 outbreak, the class of 2020 students were not able to meet up with their supervisors physically like their colleagues in the previous year. During the COVID-19 outbreak, all meetings between supervisors and students in the seminar course were conducted virtually through different applications including Microsoft Team and Blackboard collaborate, in addition to emails and phone communication.

There was no significant effect on achieving the learning goal of the seminar course, where 92% of class 2020 students agreed that they were able to successfully achieve the learning goals of this course compared to 95% of class 2019 students ( $p$ -value 0.518). In addition, 80% of class 2020 students agreed that the learning environment of the seminar course was conducted in a supportive manner, compared to 90.5% of class 2019 students ( $p$ -value 0.183).

**Table V: Association between agreeing and disagree responses among Class 2019 and Class 2020 students**

Question	Class 2019 (n=42)		p-value	Class 2020 (n=60)		Chi-Square value & p-value	Comparison of individual questions among agree and disagree p-value
	Agree n (%)	Disagree n (%)		Agree n (%)	Disagree n (%)		
The course enhanced my appreciation of the concept of 'strength of the evidence as a tool for supporting my recommendations on the specific policy issue	42 (100.0)	0 (0)	<b>0.015*</b>	58 (96.67)	2 (3.33)	21.287 <b>0.003*</b>	0.235
The course enhanced my presentation skills	42 (100.0)	0 (0)		54 (90.0)	6 (10.0)		<b>0.036*</b>
The course further developed my skills in providing evaluations	42 (100.0)	0 (0)		56 (93.33)	4 (6.67)		0.090
I enjoyed the course	36 (85.71)	6 (14.29)		46 (76.67)	14 (23.33)		0.307
The learning environment was conducted in a supportive manner	38 (90.48)	4 (9.52)		48 (80.0)	12 (20.0)		0.183
Working in pairs as a team was effective in achieving course outcomes	32 (82.05)	7 (17.95)		45 (75.0)	13 (21.67)		0.465
My learning goals were achieved	39 (95.12)	2 (4.88)		55 (91.67)	5 (8.33)		0.518
I developed an appreciation for an opposing perspective contrary to my one for a specific policy issue	40 (97.56)	1 (2.44)		52 (86.67)	7 (11.67)		0.066

\*Bodled  $p < 0.05$  statistically significant

The impact of the virtual conduction of the seminar presentation activity was assessed. There was no significant difference between the class of 2020 (97%) and class of 2019 (100%) students in the agreement that the seminar course enhanced their appreciation of the concept of "strength of evidence" as a tool for supporting their recommendations on the specific policy issues, ( $p$ -value 0.235). Furthermore, 93% of class of 2020 students agreed that the course further developed their skills in providing evaluations, compared to 100% of the 2019 class of students, ( $p$ -value 0.090).

However, the proficiency of students' presentation skills was significantly affected by conducting the seminar presentation activity virtually. In class of 2020, 90% of the students agreed that the course enhanced their presentation skills compared to 100% of class 2019 students, ( $p$ -value 0.036). This difference mainly occurs because of lack of the experience of in the chance to apply the non-verbal communication skills while presenting the seminar topics. Previously, the seminar presentation activity was conducted in a large auditorium, with a capacity of more than 100 people, so students had the opportunity to present their seminar topics in front of a huge number of

audiences including students from different batches and faculty members with different specialities. However, for class 2020, they presented their seminar topics virtually, so they missed the opportunity to apply non-verbal communication skills such as maintaining eye contact with the audience and avoiding certain mannerisms, in addition to a maintained polished and poised posture.

Moreover, the influence of conducting the seminar course virtually was assessed by comparing the overall course evaluation score of class 2020 students with the previous class. The overall course evaluation score of class of 2020 students was not significantly different than that of class of 2019 students.

Furthermore, the comparison among each class showed a statistically significant difference between overall agreement responses and overall disagreement responses. The agreement responses were higher for both classes. This might indirectly reflect the overall satisfaction. Interestingly, there was only one question: "The course enhanced my presentation skills" that were significantly different between the two classes, and this was expected as the class of 2019 presented physically, which helps to

improve their presentation skills. However, none of the other survey questions were different.

Finally, the college of pharmacy at King Saud bin Abdul Aziz, University for Health Science has been able to modify the seminar course due to the COVID-19 outbreak while ensuring the safety of students and staff and maintaining the quality of the course. However, the reflected overall course evaluation was not affected the new model.

## Conclusion

The proficiency of students' presentation skills was significantly affected by conducting the seminar presentation activity virtually when compared to traditional face-to-face delivery. However, the unique experience of virtual seminar presentations did not affect the overall course evaluation compared to face-to-face traditional seminar presentations. The model can be further evaluated with a larger cohort of students and may suggest the utilisation of technology for better outcomes. The educators may utilise different course delivery methods with confidence that learning outcomes are well maintained. Away from the fading pandemic, a seminar delivery model that will be hybrid (virtual and on site) will worth an investigation.

## Declarations:

Availability of data and materials: The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

## Competing interests

The authors declare that they have no competing interests.

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