RESEARCH ARTICLE

Faculty perceptions on online education in a school of pharmacy during the COVID-19 pandemic

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Abstract

Objective: To determine the perception of pharmacy faculty towards online education at the School of Pharmacy at the Lebanese International University upon the sudden shift to remote education due to COVID19. **Methods:** A cross-sectional, descriptive, quantitative study was conducted through a questionnaire administered to faculty members. It inquired about institutional educational changes and measured faculty perceptions towards this new educational method. **Results:** About 79% of the faculty responded to the survey (N = 49) and only 24.5% had previous experience with online education (N = 12). The majority (75.5%) used blended methods for course delivery (N = 37). More than half (N = 27) were generally undecided whether online learning was better or worse than normal education. More than 55% of the respondents showed high positive perceptions regarding remote education (N = 27). **Conclusion:** The preliminary findings reflect that faculty are still uncertain regarding the prompt educational shift to online learning, however, faculty members felt that better opportunities and enhanced experience for students may be provided through additional faculty support and training.

Introduction

The global educational system has been affected by the coronavirus diseases (COVID19), declared pandemic as of March 2020, and by the associated measures of lockdown and physical distancing. In order to contain the spread of the disease, educational institutions around the world have been forced to suddenly adopt and use the technical resources available to develop material for remote learning for students in all sectors (Toquero, 2020). In March 2020, COVID19 has resulted in school closures in Lebanon (Committee Extends Closure of Schools, Universities and Nurseries until March 14, n.d.). As a

result, there has been a fundamental shift in education that has led to the transfer of teaching and all educational activities to digital/virtual platforms.

Due to the physical and social distancing protocols, online education is an inevitable alternative to decongest classrooms and help reduce transmission of COVID19. Although it can be argued that fully online teaching methods can be feasible (Cahapay, 2020), the sudden shift to online learning as well as the lack of training of faculty to conduct online classes present challenges to the adoption of online teaching in Lebanon.

For the time being, prior research has shown that faculty who teach online have a more positive perception of online instruction compared to those who do not (Lee *et al*., 2015; 2019 Faculty Attitudes on Technology, 2020). Additionally, previous studies have identified many encouraging and discouraging variables that may affect faculty motivation to teach online (Shreaves, 2019). For instance, instructors perceive online learning as attractive to students, but they need online courses to be carefully regulated, with robust faculty resources, effective technology and strong infrastructure (Shreaves, 2019). Accordingly, properly addressing the faculty's concerns regarding online education is necessary because their acceptance of the new educational technology will ultimately lead to the success of these new learning systems in academic institutions (Farhan *et al*., 2019).

In recent years, despite advances in computer technology and the rapid growth of technological applications that have paved the way for online education worldwide (Abraham, 2014), few scholars have studied the preparedness of faculty for online teaching (Martin *et al.*, 2019). There is also little research about how faculty perceive online courses (Otter *et al*., 2013). In addition, while most of the available literature about online education refers to academia in Western countries, there is a lack of published research available on faculty perceptions of online education in Lebanon, a country where pharmacy education is renowned for distinctive academic programmes, positive sociocultural attitudes, and external validation (Khachan *et al*., 2010), and where previous steps have been taken to improve pharmacy education and training (Chahine & Alkhateeb, 2019). Besides, as a developing country and with its current unprecedented financial and social collapse, the Lebanese experience in remote learning is poor, and during the COVID-19 pandemic, faculty perception towards online learning has not been well documented. Hence, the purpose of this research was to determine the perception of pharmacy educators towards online education at the School of Pharmacy (SOP) at the Lebanese International University (LIU) during the COVID-19 pandemic.

Methods

This study utilised a descriptive, quantitative, cross-sectional research design using an online survey, which was sent to all faculty members at the SOP at LIU, using convenience sampling. As such, all faculty members working at the school at the time of this research was conducted, and who were electronically accessible to the authors and may be willing to participate were approached. The survey was anonymous and was completely voluntary. Participants' agreement to proceed in completing the survey after reading the introductory statement and purpose of the study was considered an ethical consent to participate.

Data were gathered using a three-part questionnaire. The first part addressed the demographic and work-related profile of the participants, the second part explored the COVID19 institutional changes, and the third part measured the perception of faculty towards online education. To prepare the third part, a set of 17 questions inspired by previous literature on online education, addressing various personal, external, technical, pedagogical and institutional factors, was prepared (Lee *et al*., 2015; L. Maguire, 2009; L. L. Maguire, 2005, 2008). The questionnaire was piloted on a small sample of ten faculty members whose comments were considered for adjustment. The piloted responses were excluded from the study results. Reliability of the items was tested by calculating Cronbach's alpha as a function of test items and the average inter-item correlation. All items were answerable in a 5-point Likert scale format ranging from '1' strongly disagree to '5' strongly agree. Data were collected online using Google Forms in the months of June and July 2020 during the COVID-19 pandemic. During this time, the university had already switched to emergency remote learning and faculty members had had to implement this new method of teaching.

Data were extracted from Google Forms into Microsoft Excel, and then analysed using IBM Statistical Package for the Social Sciences (SPSS) version 23.0 (IBM, Inc, Chicago, IL). Continuous variables were expressed by their mean (± standard deviation). Categorical variables were expressed by their frequencies and percentages. The perception score was calculated by adding the scores from the Likert scale for the 17-items; a score equal or above the median score for all participants was considered a positive perception of online education. The normal distribution of the perception score was evaluated by Shapiro-Wilk test. The perception score was dichotomised into below, equal to or above its median. The bivariate analysis between the sociodemographic characteristics of participants and the perception score modalities utilised chi-square or Fisher exact test, and student T-test. The level of significance was set a *p* value < 0.05 with an acceptable margin of error 5%.

Results

Out of the 62 faculty members at the SOP to whom the survey was sent, 49 responded, with a response rate of almost 80%. The demographic data of the participating faculty are shown in Table I. The majority of the faculty were females (75.5%), aged 27 – 61 (mean 36.7 ± 8.1 years). More than half resided in the city (51%), 65.3% were married, and 61.2% lived in a household size of three to five persons. As for the work-related profile, most participating faculty were holders of a Doctor of Pharmacy degree (36.7%), followed by Doctor of Philosophy degree (24.5%), with majority having academic ranks of instructor or clinical instructor (53.1%). About 27% of the participants had full-time employment, and 18.4% held administrative institutional positions. Moreover, most of responding faculty teach in Beirut and/or remote campuses (79.6%), where the SOP is located in two central campuses in Beirut and Bekaa, while it also offers pre-pharmacy courses in six other campuses across the different Lebanese governorates.

The 17-item scale had an acceptable Cronbach's alpha of 0.63 among this sample (Tavakol & Dennick, 2011). As for the institutional changes that have been implemented due to COVID19, very few expressed having had previous experience in online teaching (24.5%). As for delivery of the material, it was done mainly by voice over PowerPoint followed by online sessions (75.5%) and the time allotted for the transition of course materials to a remote learning setting was estimated to be less than 14 days (28.6%). The majority of participants needed up to 20 hours to adapt courses to the online format, and worked for 11-20 hours per week on online courses preparation and delivery. The detailed institutional modifications as reported by faculty are shown in Table II.

Figure 1 displays how well do faculty members believe their students are learning during lockdown as well as the faculty perception score. Faculty were generally undecided whether online learning was better or worse than usual face-to-face teaching (55.1%). With respect to the faculty perception score, 55.1% had higher positive perceptions regarding remote learning (median of 51 or above).

The bivariate analysis revealed that there was a significant difference in the favourability towards online education among faculty in terms of age ($p = 0.04$), educational level ($p = 0.003$), academic rank ($p = 0.02$), institutional position ($p = 0.004$), and teaching campus ($p = 0.01$). The bivariate associations between faculty perception score and demographic characteristics are shown in Table III.

Table I: Demographic characteristics of the participating faculty members

Demographic Characteristics (N = 49)		n(%)
Gender	Females	37 (75.5)
	Males	12 (24.5)
Age	n (Mean ± Standard Deviation) 49 (36.7 ± 8.1)	-
	[Min – Max] [27-61]	-
Place of living	City	25 (51)
	Town	12 (24.5)
	Village or rural area	12 (24.5)
Marital status	Single	17 (34.7)
	Married	32 (65.3)
Household size	Two persons	2 (4.1)
	Three to five	30 (61.2)
	Six or more	17 (34.7)
Educational level	B.Pharm.	1 (2)
	B.Pharm. & Master	2 (4.1)
	B.Pharm. & Ph.D.	1 (2)
	Pharm.D.	18 (36.7)
	Pharm.D. & Master	10 (20.4)
	Master	3 (6.1)
	Ph.D.	12 (24.5)
	Other	2 (4.1)
Rank	Lab assistant	1 (2)
	Instructor OR Clinical instructor	26 (53.1)
	Assistant professor OR Clinical assistant professor	11 (22.4)
	Associate professor OR Clinical associate professor	8 (16.3)
	Professor	3 (6.1)
Institutional position*	Administration	9 (18.4)
	Faculty	35 (71.4)
	Others	5 (10.2)
Employment status	Part time	36 (73.5)
	Full time	13 (26.5)
Campus	Bekaa	10 (20.4)
	Beirut &/or remote	39 (79.6)

Min, Minimum; Max, Maximum; B.Pharm., Bachelor of Pharmacy; Ph.D, Doctor of Philosophy; Pharm.D., Doctor of Pharmacy.
*This question referred to whether participants hold an administrative role besides teaching, and the responses reveal roles such as administrative, faculty, or other. Faculty (as a response to this question) refers to those who have teaching duties only. However, the term faculty throughout the paper refers to all participants as all of them held teaching duties, although some have additional roles.

Discussion

The present study determined the perception of a sample of Lebanese pharmacy educators regarding online education during the COVID19 pandemic. It adds to the growing body of literature assessing pharmacy faculty attitudes and experiences on remote education which has been accumulating since the beginning of the pandemic (P.S. Olson *et al.*, 2022; Prescott *et al.*, 2022), with reports emerging from our region (Al-Alami *et al.*, 2022; Halat *et al.*, 2022; Sonji *et al.*, 2022), at a time when pharmacy education witnessed more major modifications than it had
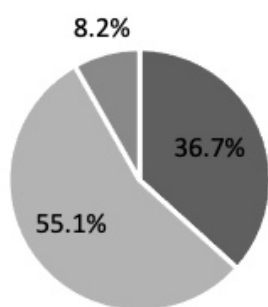
Table II: Institutional modifications reported by faculty during the COVID19 pandemic

Institutional modifications (N = 49)		n (%)
Has previous experience teaching online courses	Yes	12 (24.5)
Way of delivering the material	Lectures covered by Live sessions	5 (10.2)
	Lectures with voice over PowerPoint (VOPP)	7 (14.3)
	Lectures with VOPP followed by live sessions	37 (75.5)
Time allotted for the transition of course materials to a remote learning setting	Fewer than seven days	25 (51)
	Fewer than 14 days	14 (28.6)
	14 days or more	7 (14.3)
	Not applicable	3 (6.1)
Amount of time spent adapting coursework to an online format (hours)	0 – 10	17 (34.7)
	11 – 20	17 (34.7)
	21 or more	14 (28.6)
	Not applicable	1 (2)
Average current weekly length of time spent preparing and delivering classes online (hours)	0 – 10	12 (24.5)
	11 – 20	27 (55.1)
	21 or more	10 (20.4)
Average weekly time spent on other faculty and/or administrative responsibilities (mentoring, precepting, meetings, etc.)	0 – 10	31 (63.3)
	11 – 20	12 (24.5)
	21 or more	6 (12.2)
Average weekly time dedicated to the administration of assessments (tests, quizzes, practical sessions, etc.)	0 – 10	30 (61.2)
	11 – 20	12 (24.5)
	21 or more	6 (12.2)
	Not applicable	1 (2)

in the preceding decade. In this study, the authors found that less than one-quarter of the faculty members had a previous experience with teaching online courses, and that the majority allotted fewer than seven days for the transition of course materials to a remote learning setting. The results showed an acceptable perception around remote learning as demonstrated by greater than half of the participants being above the median of the perception score. Greater than half of the faculty members perceived remote learning as similar to standard traditional learning, being with neither better nor worse outcomes. Younger faculty members, Pharm.D. holders, having a junior academic rank, having a non-administrative position, and working in Beirut or remote campuses appeared to have better perception towards remote learning. The data from this study resonates with recent findings by Alzubaidi and colleagues (2021), who reported that although the pandemic imposed drastic changes on pharmacy education, institutions were somewhat able to support faculty members, who were subsequently satisfied with such support and therefore had overall positive perceptions of the transition to online education.
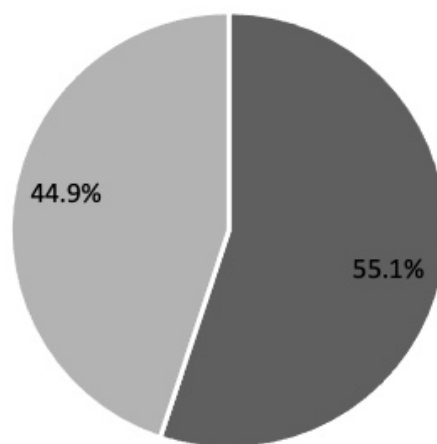
The authors found that the majority of faculty members did not have previous experience with teaching online courses. This is justified as that remote learning is a relatively new concept in pharmacy education in Lebanon,

Figure 1: How well do faculty members believe their students are learning during lockdown and faculty perception score

Table III: The bivariate associations between the faculty perception score expressed as above versus below the median and the demographic characteristics

Categories		Faculty perception score n(%)		
		Below the median	Above the median	*p*-value
Gender	Male	7 (58.3)	5 (41.7)	0.3
	Female	15 (40.5)	22 (59.5)	
Age * n (Mean ± Standard Deviation)		22 (39 ± 8.9)	27 (34.8 ± 6.9)	**0.04**
Place of living	City	9 (36)	16 (64)	0.4
	Town	7 (58.3)	5 (41.7)	
	Village or rural area	6 (50)	6 (50)	
Marital status	Single	7 (41.2)	10 (58.8)	0.7
	Married	15 (46.9)	17 (53.1)	
Household size	Two persons	0	2 (100)	0.5
	Three to five	13 (43.3)	17 (56.7)	
	Six or more	9 (52.9)	8 (47.1)	
Educational level	B.Pharm	1 (100)	0	**0.003**
	B.Pharm & Master	1 (50)	1 (50)	
	B.Pharm & Ph.D.	1 (100)	0	
	Pharm.D.	4 (22.2)	14 (77.8)	
	Pharm.D. & Master	4 (40)	6 (60)	
	Master	0	3 (100)	
	Ph.D.	10 (83.3)	2 (16.7)	
Rank	Lab assistant	1 (100)	0	**0.02**
	Instructor OR Clinical instructor	8 (30.8)	18 (69.2)	
	Assistant professor OR Clinical assistant professor	4 (36.4)	7 (63.6)	
	Associate professor OR Clinical associate professor	6 (75)	2 (25)	
	Professor	3 (100)	0	
Institutional position	Administration	8 (88.9)	1 (11.1)	**0.004**
	Faculty	11 (31.4)	24 (68.6)	
	Others	3 (60)	2 (40)	
Employment status	Part time	14 (38.9)	22 (61.1)	**0.2**
	Full time	8 (61.5)	5 (38.5)	
Campus	Bekaa	8 (80)	2 (20)	**0.01**
	Beirut &/or remote	14 (35.9)	25 (64.1)	

B.Pharm, Bachelor of Pharmacy; Ph.D., Doctor of Philosophy; Pharm.D., Doctor of Pharmacy

* All values within the table are represented as n (%) except for age that is a continuous variable and is represented as n (Mean ± Standard Deviation)

as it was broadly adopted for the first time in 2020 during the initial lockdown due to the pandemic (Azhari, 2020). On the other hand, the number of higher education institutions in the United States of America reporting that online education is crucial to their long-term strategic success has steadily increased since 2002, with more than 70% of academic leaders currently expressing this sentiment (Felege & Olson, 2015). Although the concept is new to Lebanese pharmacy educators, this study's results

showed that it took the majority of faculty members between around only one week to transition the course material into a remote learning setting.

A literature review on faculty support for online education is variable. According to some surveys, faculty support was low with just around 30% of chief academic officers saying that their institutions' faculty members acknowledged the validity and usefulness of online education (Allen & Seaman, 2013); although other research reported that faculty support for online education was as high as 75% (Bolliger & Wasilik, 2009). The present study found a satisfactory perception of faculty members on remote learning, as greater than half of the participants (55.1%) had a higher perception score than the median.

Furthermore, the results from the present study showed that the majority of faculty members perceived that online learning was at least as similar as traditional learning or even better. These results are consistent with other findings that reported a high perception from academic leaders on remote learning to be as effective or even better than traditional instruction (Allen & Seaman, 2013). Nonetheless, the current study also found a high percentage of faculty members who considered online learning inferior to traditional education.

Olson and Wisher (2002) examined the learning outcomes of remote learning in comparison to face-to-face teaching. They reported increased learning outcomes by remote learners or at least no significant difference (T.M. Olson & Wisher, 2002). The authors didn't evaluate the learning outcomes of remote instruction in comparison to traditional education as it was beyond the scope of this research. However, future work is suggested in this context to understand the impact of remote education on the learning outcomes, especially given that the available data were variable and could be outdated (Fishman *et al.*, 2013; Hart, 2012; Means *et al.*, 2009).

Areas around a negative perception regarding online teaching could be related to content delivery and time consumption. The methods of content delivery complicated the picture as they ranged from synchronous to asynchronous and may be a blend of both, depending on the course being examined. The authors found that the majority of the faculty members had adopted a blended approach of synchronous and asynchronous delivery of the course content. This could be primarily justified by the current severe socioeconomic crisis that is affecting Lebanon and deteriorating all fundamental and societal necessities in the country, and resulting in significant shortages in the availability of the electricity and internet connectivity (The World Bank, 2021; World Bank Group:

Middle East and North Africa Region, 2021). Consequently, Lebanese pharmacy educators are forced to provide a combination of online learning strategies to ensure that the course material is available and accessible to everyone according to the availability of digital resources. Additional areas of time consumption appear to be related to material updating, recording, and uploading material to the virtual classroom platform, as well as scheduling live sessions for live interactions and discussions.

Additionally, these results illustrated that the average weekly time spent to prepare and deliver online classes ranged between 11 to 20 hours. This time is much greater than the time required for traditional learning, and this finding supports existing research, which has reported that online courses preparation and delivery is more time consuming (Cavanaugh, 2005; Hartman *et al.*, 2000). The authors findings add to the literature that online course delivery remains demanding and lengthy, in spite of advances in curricular delivery methods, and upgrades in technology infrastructures and platforms. Although comparing time requirements for course preparation by faculty pre- and post-online teaching was not addressed in this study, this remains an interesting area that warrants further investigation, as it resonates with faculty perceptions and challenges in online education.

The authors bivariate association had shown that younger faculty members have better perception towards remote learning. This could be due to the fact that younger millennial educators, among other younger generations, might have a better digital literacy and are more interested in digitalising their classrooms and shifting to remote learning (Au-Yong-Oliveira *et al*., 2018). This finding also explained another association between the level of education and the perception score on remote learning, as it was found that Pharm.D. holders had a better perception compared to Ph.D. holders. A close look into the SOP at LIU staffing shows that that PhD holders are older senior faculty members who still prefer traditional classrooms over digital remote ones. Nonetheless, this result is specific to LIU, should be examined carefully, and cannot be generalised as it appeared to be confounded by a larger number of Pharm.D. holders compared to Ph.D. holders in the authors sample.

Also, it is noticeable in these findings that junior faculty members with lower academic rank had better perceptions about online teaching. This could be explained together with another important finding of this study that faculty members without an administrative position also had a better perception regarding online teaching. In fact, LIU SOP faculty with higher academic ranks are also the older faculty members, as this

institution requires a six-years residency period for promotion across different ranks, in addition to other requirements. Also, LIU SOP faculty who hold administrative tasks within the school governance are also senior faculty with higher academic ranks. As such, and during the initial COVID19 lockdown and while shifting towards remote learning, these administrator faculty members had additional tasks to assess the most suitable online learning approaches, and to orient junior faculty members about them. Felege and Olson (2015) described that the time spent on administrative tasks is greater for remote learning than on campus, and the increased effort and time requirements seem to be related to responding to individual emails, monitoring students evaluations, and backing up data on cloud servers. Taken together, these data indicate that, in this study, older faculty, those with higher academic ranks, and those who held administrative assignments found the remote shift more demanding, resulting in less favourable perceptions.

The authors's results also showed that faculty members in Beirut and remote campuses have better perception regarding remote learning. It is not fully understood if these educators are more interested in online learning as a newly adopted experience in pharmacy education in Lebanon, or because of the flexibility that online teaching provides to work conveniently from home (Mehta, 2021).

This study has several limitations. First, the cross-sectional design cannot confirm temporality. The relatively small sample size also did not allow to perform a multivariable analysis and therefore potential confounders of results cannot be precluded. The sample included relatively young faculty members with the majority being females, thus, this could minimise the generalisability of the authors findings. In addition, a possible risk of reporting bias cannot be excluded as the survey in this research was self-administered. Finally, this study didn't evaluate the impact of personal stress and mental wellbeing amid difficult times, as during the pandemic, on the level of faculty perception. Future work will determine the mediator role of mental health on online learning acceptance and satisfaction.

Conclusion

This study represents the first investigation in the authors country, Lebanon, about pharmacy faculty perceptions towards the shift to online education. Although the majority of surveyed faculty had no previous experience with online education prior to COVID19, they were able to adapt to the sudden shift and had overall positive

perceptions regarding the new format of teaching. Better faculty perceptions were associated with younger age, Pharm.D. education, lower academic rank, and fewer institutional duties. As education gradually overcomes the effects of the pandemic and new norms arise, the depth and breadth of faculty satisfaction with online learning remains an interesting area to explore. Further focus is needed on pharmacy faculty training, mental health, and comparison of online methods with traditional education.

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Conflict of Interest

The authors declare no conflict of interest.

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