

COVID-19 SPECIAL COLLECTION

RESEARCH ARTICLE

A survey of student perception and feedback during the COVID-19 lockdown

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Abstract

Objectives: The purpose of this study was to investigate students' thought processes during this extended COVID-19 lockdown and to ascertain their views about online education, their main current apprehensions and worries, their stress levels, and their view of an eventual post-COVID-19 return to college. **Methods:** An online survey was conducted on 300 plus students of the PSG College of Pharmacy, India. The survey was split gender-wise and across senior-junior years. **Results:** Three out of the four groups showed an overall desire to return to college and resume normal operations with reasonable social distancing norms. All the student groups surveyed were extremely keen on resuming practical labs but showed mixed feelings towards resuming traditional examination methods. All the groups showed stress and uncertainty regarding the lockdown. **Conclusion:** A reasonable picture could be obtained from student feedback and thoughts pertaining to during and after the COVID-19 lockdown. These preliminary findings may help educators formulate appropriate policies to address students' issues.

Introduction

COVID-19 is a highly infectious viral disease, originating in Wuhan, China, and is caused by the coronavirus 2 (SARS-CoV-2). It causes acute respiratory syndrome and may even lead to death. The infection has spread rapidly and has now become a global pandemic (Remuzzi & Remuzzi, 2020). One of the most effective strategies used worldwide to contain the spread of this virus is the lockdown of an entire affected territory (De Brouwer, Raimondi & Moreau, 2020). Educational institutions too, have come under the precincts of this lockdown. Therefore, student outlook in this COVID-19 lockdown

becomes an important factor as the novel COVID-19 virus has introduced unprecedented challenges in the realm of higher education and research (The LANCET, 2020; UNESCO, 2020). In India, the COVID-19 lockdown has been conducted in phases, beginning 25th March 2020, and to date, educational institutions are yet to reopen for students. Prior to COVID-19, the teaching at higher educational institutions worldwide was imparted mainly by traditional blackboard lectures, MS PowerPoint presentations, and other face-to-face methods governed by a strict timetable of teaching hours based on the course syllabus. Online teaching played a very minimal

part in the pre-COVID-19 environment even though it was already promising to play a significant part in coming years due to the information-based societies and economy (König, Jäger-Biela, & Glutsch, 2020). The COVID-19 lockdown has now fast-forwarded this process and has brought online education strongly into focus even though there have already been instances in the past where natural disasters have compelled the use of online education by educational institutions (Ayebi-Arthur, 2017; Dhawan, 2020). Consequently, digital tools are now needed in this COVID-19 lockdown to implement the online teaching and learning process, and both teachers and students have to keep updated in this regard. Pharmacy educational institutions have also been affected in this regard (Ahmed, Allaf & Elgazhaly, 2020; Pharmacy Times, 2020). The conduct of examinations has also been disrupted (Rajhans et al., 2020). The use of online theory classes has been stretched to its available maximum capabilities to compensate for the lack of face-to-face education; however, there is still room for improvement (Roberts, Newman & Schwarzstein, 2020; Theoret & Ming, 2020). Even though other reports have indicated that online education will create new dimensions in teaching and learning, this might be inadequate (Chauhan, 2017). Latest computer technology and hardware may not necessarily translate into better student learning outcomes (Li & Ma, 2020). Also, the above-mentioned report by Dhawa outlines the advantages and drawbacks regarding online education (Dhawan, 2020). The advantages are listed as time and location flexibility, a wider audience and course content, and rapid feedback. The drawbacks are listed as technical problems, learner ability, and confidence, time management, and distractions (both mental and physical). In this context, it was, therefore, decided to conduct an online survey with PSG College of Pharmacy students to gauge their attitudes and feedback regarding the online classes that are currently being conducted. A secondary aim was to determine their immediate apprehensions regarding the COVID-19 lockdown. The authors were interested to know how their students felt about the online education they were receiving and their keenness in and main motivation for returning to the college. Other questions covered their concerns regarding missing lab work and the traditional format of examinations. The survey also asked them about their reading habits and employment status during the lockdown. Questions concerning their stress levels and their satisfaction with the measures taken by the government were also included in this survey. Also, the survey wanted to find out what kind of restrictions they look forward to after their eventual return post-COVID-19.

The responses would then give the authors an idea regarding the formulation of future policies that would strive for an optimum balance between effective student learning and their health and wellbeing.

Method

An online survey of eleven questions was given to the students through Google Forms after getting their informed consent to answer the survey. The CHERRIES checklist for the conduct of online surveys was used for this survey (Eysenbach, 2004).

Survey design and sample

This was an online survey of students studying at the PSG College of Pharmacy. The college is located in the city of Coimbatore, which in turn is located in the southern Indian state of Tamil Nadu. The PSG College, founded in the year 2001, is an accredited institution, nationally functioning under the umbrella organisation of the 80-year-old PSG Trust. It is one of the premier pharmacy colleges in this part of the world and is affiliated to the Tamil Nadu Dr MGR Medical University, Chennai, India. The questions asked in this survey were formulated in consultation with the Principal of the College, Dr Muthiah Ramanathan and also a fellow staff member from the Department of Pharmacology, Mr Tamil Selvan. The target audience of the survey included only the current students of the PSG College of Pharmacy. College staff, Ph.D. research scholars, and those who did not belong to the college were excluded from the survey. All surveyed students were of the local South-Asian demography native to the states of Southern India. Their gender and seniority distribution, covered by this survey, are given in Table I. The survey audience was divided into the following groups: Senior Girls, Junior Girls, Senior Boys, and Junior Boys. Students studying first-year, second-year, and third-year B.Pharm. and first-year, second-year, and third-year Pharm.D. were classified as juniors. The remainder of the students (fourth-year B.Pharm., fourth-year and fifth-year Pharm.D.), including the postgraduate M.Pharm. students and those doing clinical internships (sixth-year Pharm.D.) were classified as seniors. Human ethics approval for ethical conduction of the survey was processed, and informed consent of the students was also obtained with complete assurance of privacy of data and data protection (Ref No. PSG/IHEC/2020/Appr/Exp/254, Project No. 20/253). Only the students' responses were recorded in the survey without recording or revealing any of their identities.

Development and testing

A pilot informal survey was done of students in their second-year B.Pharm. before rolling out the formal survey to all the students at the college. This also gave the authors an opportunity to finetune the questionnaire and gauge students' initial response and enthusiasm in participating in the survey.

Recruitment process

The survey was available to only those who were provided with the link to the Google Form. Four links were generated, one for each of the four groups. The announcement was made through a college notification. The link applicable to each class was provided by each class staff coordinators via their online Google classrooms. The contact mode to the respective student class representatives was by phone, e-mail, Whatsapp, or the online Google Classroom. Students were also strictly instructed not to share the link with anyone else.

Survey administration

Survey administration was done through e-mail and Google classroom. Each participant could click on the given Google Form link and answer the 11 questions. Before that, they had to answer a question that asked for their consent to answering the survey. Their responses were automatically captured and collated by the form. Participation in the survey was not mandatory (but the authors found that students were very keen to participate as it gave them an opportunity to communicate their thoughts). No incentives of any form were given to the students to participate in the survey, and the participants were given a deadline of four days to complete the survey. Also, the survey would only collect the students' responses and not their identity. Consequently, it was not possible to know how an individual student had answered the questions of the survey. There were two screens of questions. No question was mandatory to be answered. Students could answer the questions they wanted. The survey links were disabled after the completion of the deadline.

Prevention of multiple entries from the same individual

Each individual could submit the answers to the survey from his e-mail only once. Once his/her responses were submitted, the participants could not edit their answers. Students were also strictly notified that they could not answer the survey more than once, and the compliance was complete in this regard.

Analysis

The completed questions were recorded for their cumulative responses over the different groups. The responses were automatically recorded by Google Forms. The tabulated responses of these groups to the survey were then analysed (Table I). A visual qualitative analysis of the percentage responses as well as a statistical chi-square analysis were performed for the data in consultation with the Department of Statistics, PSG College of Arts and Sciences.

Results**Response rate**

Out of the total of 512 students at the college across all courses (excluding Ph.D. students), 336 students answered the survey, giving a response rate of 65.63%.

Regarding student views on online education, there are mixed views with only the girls reporting a close to 50% satisfaction, whereas the boys seem more unsatisfied (Table I). From the table, the authors can also see clearly that the students really miss the practical labs. At the same time, the results reveal that students still have mixed feelings about the prospect of coming back to the college and doing the labs during the lockdown. However, the girls seem more eager than the boys to return to college as well as to do the labs and so are the juniors in comparison to the seniors. All the groups are keen for some level of restrictions to be in place when normal operations eventually resume post-COVID-19.

When asked about what their predominant reason was to return to college, the girls predominantly list studies as their main reason. About the lack of traditional exams, the juniors of both genders showed greater concern than seniors.

On the question of being employed during this lockdown, a great percentage across all the groups showed their interest in getting a job. A significant percentage across all the groups was also happy to not work in this period. Of those working during the lockdown, the boys showed a much higher percentage than the girls, especially in working in Pharmacy-unrelated jobs. When it comes to their reading habits during this lockdown, all groups show the highest percentage in reading just their syllabus and, surprisingly, there is also a good percentage of them reporting not undertaking any reading at all.

Across all the groups, there is a high percentage of not being satisfied with the current government measures

Table I: Responses of the students (percentages & absolute numbers) to the various COVID-19 queries concerning their education (189 girls:147 boys) (152 seniors:184 juniors) (Total = 336)

Questions	Responses for each question	Senior Girls (79)	Junior Girls (110)	Senior Boys (73)	Junior Boys (74)	Overall % (336)	X ² (Degrees of freedom, N=336)	chi ² stats value and p value (Confidence val = 0.05)
Q1. Readiness to return to college	Highly ready	26.6% (21)	24.5% (27)	19.2% (14)	29.7% (22)	25.0%	9	45.61002 p<0.00001 Null hypothesis rejected [G:B* p=0.0003 S:J ^a p=0.0009]
	Ready	25.3% (20)	34.5% (38)	21.9% (16)	29.7% (22)	28.8%		
	Neutral	39.2% (31)	34.5% (38)	20.5% (15)	31.1% (23)	32.1%		
	Unready	8.9% (7)	6.4% (7)	38.4% (28)	9.5% (7)	14.1%		
Q2. Main motivation to return	Studies	75.9% (60)	70.9% (78)	55.6% (41)	66.2% (49)	67.9%	6	9.7075 p=0.877716 Null hypothesis [G:B p=0.3360 S:J p=0.2609]
	Social	17.72% (14)	24.5% (27)	34.7% (25)	23.0% (17)	24.7%		
	Other	5.6% (5)	4.5% (5)	9.7% (7)	10.8% (8)	7.4%		
Q3. Satisfaction with online education	Highly satisfied	2.5% (2)	4.5% (5)	1.4% (1)	4.1% (3)	3.3%	9	11.3169 p=0.2546 Null hypothesis [G:B p=0.2790 S:J p=0.1031]
	Satisfied	51.9% (41)	48.2% (53)	39.2% (29)	41.9% (31)	45.8%		
	Not satisfied	27.8% (22)	40.0% (44)	39.2% (29)	38.2% (29)	36.9%		
	Highly unsatisfied	17.7% (14)	7.3% (8)	18.9% (14)	14.9% (11)	14.0%		
Q4. Lack of labs hindering development	Yes	91.1% (72)	91.8% (101)	83.6% (61)	90.5% (67)	89.6%	6	5.1346 p = 0.5255 Null hypothesis [G:B p=0.4098 S:J p=0.2710]
	No	2.5% (2)	4.5% (5)	6.8% (5)	5.4% (4)	5.4%		
	Uncertain	6.3% (5)	3.6% (4)	9.6% (7)	4.1% (3)	5.0%		
Q5. Interest in doing labs	Yes	49.4% (39)	64.5% (71)	38.4% (28)	50.0% (37)	52.1%	6	23.1255 p = 0.000756 Null hypothesis rejected [G:B p=0.0140 S:J p=0.0003]
	Maybe	44.3% (35)	31.8% (35)	43.8% (32)	45.9% (34)	40.5%		
	No	6.3% (5)	3.6% (4)	17.8% (13)	4.1% (3)	7.0%		
Q6. Resuming normal operations post-COVID regarding levels of social norms	Reasonable	49.3% (39)	49.1% (54)	34.2% (25)	54.1% (40)	47.0%	9	10.4067 p=0.1085 Null hypothesis [G:B p=0.1623 S:J p=0.2586]
	Strict	36.7% (29)	40.0% (44)	45.2% (33)	27.0% (20)	37.5%		
	None	13.9% (11)	10.9% (12)	20.5% (15)	18.9% (14)	15.5%		
Q7. Lack of traditional exams hindering academics	Yes	38.0% (30)	58.2% (64)	30.1% (22)	55.4% (41)	46.7%	6	32.8155 p=0.000011 Null hypothesis rejected [G:B p=0.0104 S:J p<0.00001]
	No	27.8% (22)	12.7% (14)	46.6% (34)	20.3% (15)	25.3%		
	Unsure	34.2% (27)	29.1% (32)	23.3% (17)	24.3% (18)	28.0%		
Q8. Employment status during lockdown	Love to work	49.4% (39)	60.9% (67)	38.4% (28)	47.3% (35)	50.3%	9	40.3533 p<0.00001 Null hypothesis rejected [G:B p = 0.0001 S:J p=0.0595 ^a]
	Pharmacy-related job	7.7% (6)	3.6% (4)	4.1% (3)	2.7% (2)	4.5%		
	Pharmacy-unrelated job	2.6% (2)	5.5% (6)	21.9% (16)	28.4% (21)	13.4%		
	Happy not working	41% (32)	30.0% (33)	35.6% (26)	21.6% (16)	31.8%		
Q9. Reading habits during lockdown	Just syllabus	48.1% (38)	57.3% (63)	46.6% (34)	51.4% (38)	51.5%	6	7.8176 p=0.25177 Null hypothesis [G:B p=0.0672 S:J p=0.3590]]
	More than syllabus	26.6% (21)	25.5% (28)	21.9% (16)	17.6% (13)	23.2%		
	Neither	25.6% (20)	17.3% (19)	31.5% (23)	31.1% (23)	25.3%		
Q10. Satisfaction with government measures during lockdown	No	45.6% (36)	51.8% (57)	45.2% (33)	45.9% (34)	47.6%	6	5.6038 p=0.460996 Null hypothesis [G:B p = 0.1131 S:J p = 0.6853]
	Yes	29.1% (23)	26.4% (29)	35.6% (26)	39.2% (29)	31.8%		
	Unsure	25.3% (20)	21.8% (24)	19.2% (14)	14.9% (11)	20.5%		
Q11. Stress due to uncertainty due to the lockdown	High stress	13.9% (11)	10.0% (11)	20.5% (15)	9.5% (7)	13.1%	9	18.7050 p = 0.027821 Null hypothesis rejected [G:B p=0.2520 ^b S:J p=0.0153]
	Strong stress	15.2% (12)	7.3% (8)	17.8% (13)	12.2% (9)	12.5%		
	Slight stress	46.8% (37)	39.1% (43)	26.0% (19)	39.2% (29)	38.1%		
	No stress	24.1% (19)	43.6% (48)	35.6% (26)	39.2% (29)	36.3%		

*= p-value for total Girls and Boys += p-value for total Seniors and Juniors

a= the S:G chi² did not agree with the overall chi² for Q8

b= the G:B chi² did not agree with the overall chi² for Q11

against the virus, and a good percentage of students are also unsure about the government measures. A majority of students across all the groups showed at least some uncertainty and stress levels during this lockdown.

Discussion

Student feedback regarding satisfaction with online learning has been mixed in this survey. One of the main reasons for this could be due to those students who live in poor Internet connectivity areas (Sharma, 2020). India, being a developing nation, is still struggling to provide uniform broadband and Internet connectivity in its rural areas. There is a major urban-rural divide in this aspect, and one of the main reasons is poor network infrastructure in India's rural areas. In many areas of the country, other than the metropolitan areas, the connectivity is very poor, resulting in increased download times of media. The broadband speed is also poor. Also, many poor students are unable to afford quality smartphones, laptops, or PCs to effectively participate in online classrooms, and this has now become a major challenge. Interestingly, a survey on online education in neighbouring Pakistan has shown negative feedback, while there has been positive feedback from another survey conducted in India (Abbasi et al., 2020; Muthuprasad et al., 2020). The chi-square analysis shows no association of the groups with the responses.

A report from the USA states that students were eager to return to campus, whereas the students in this study are more tempered in this regard (Marris, 2020). The chi-square analysis for this question shows an association with the surveyed groups in this survey with the girls showing more eagerness to return than the boys, and the juniors show more interested than the seniors. The potential of catching COVID-19 could be affecting them, and this could be their apprehension and that of their families regarding the virus. Consequently, this could be reflecting on their preference for social distancing norms once college resumes. There are also reports that even their parents have reservations regarding their eventual return to normal studies (Craven, 2020). A sports-bubble type solution on the lines of the National Basketball Association (NBA) could be considered for handling the eventual return of students (Terlep, 2020). This solution was implemented by the NBA to protect its 2019-20 season. The bubble is a protocol where the players of its various constituent teams could return to their teams on a voluntary basis and be ready to undergo tests for the COVID-19 virus at regular intervals. They were then

allowed to mix in groups in a phased manner. The players were also precluded to visiting each other's rooms in their living quarters which was effectively 'in-absolutely-necessary-minimum' contact mode with the outside world. Also, no food or drinks and other recreational activities outside the bubble were permitted. Masks and social distancing had to be maintained at all times, and any player who broke any of these rules without approval had to mandatorily go through a ten-day quarantine period before he could get back into the bubble. Also, a COVID-19 screening exit test was performed on all players, associated staff, and personnel at the conclusion of their tournament engagements. In this manner, the NBA successfully ran the 2019-20 season with zero incidences of the virus (Bay-Cheng, 2020; Silver, 2020). Some key aspects of this bubble model could be considered for the eventual post-COVID-19 return of the students. Also, this survey has shown education and studies as the predominant reason for the students to wish for a return to the college post-COVID-19. The chi-square analysis shows no association of the percentages with the groups.

Regarding an eventual post-COVID-19 return, the students prefer some level of social norms. Reports have shown that social distancing norms are a very important aspect from a student point of view (Andrews, Foulkes & Blakemore, 2020). Studies have shown that social distancing effectively reduces the chances of infection with COVID-19 (Mishra & Majumdar, 2020). The chi-square analysis on the level of social norms post-COVID-19 shows no association with the groups surveyed.

The authors' study has shown that the juniors across both genders were concerned about the lack of traditional exams. The chi-square analysis shows an association of the results with the groups. Another study reports that these concerns about examinations could be addressed by creative approaches (George, 2020). Regarding student study habits during the lockdown, other reports in agreement with this study state that student reading has increased during COVID-19 (Elmer, Mepham & Stadfeld 2020; Parikh, Vyas & Parikh 2020). However, there is also a significant overall percentage of students (25.4%) in this study who require motivation in this direction. The chi-square analysis shows no association of the results with the groups,

Students working in jobs to fund their studies are not as common in India as in the West (Bolumole, 2020). Most students are funded in full by their parents (Sanghvi, 2018). This survey shows that the COVID-19 lockdown has

given students more opportunities to work both in and outside their field. However, apprehensions regarding the virus may discourage them from seeking to work outside their homes (Gigante, Brenner & Downie, 2020; Sharma, 2020). The chi-square analysis shows an association of the percentages with the categories.

Students also showed dissatisfaction with the measures taken by the government during the lockdown. This observation is in line with other reports in this regard (HE Thinking, 2020; Vegas, 2020). The chi-square analysis shows no association of the percentages with the categories.

Student concerns for the lack of practical labs need to be addressed because, as of now, the university does not have the technology to do these practical labs online. In areas like Pharmaceuticals, the students need to make the dosage forms themselves and get hands-on experience. Virtual practical labs could be one solution for this (Vasiliadou, 2020). Virtual labs cannot become a substitute for the actual traditional lab. However, virtual labs could offer unlimited chances to repeat, practice, and hone tough experimental techniques, have no actual time limitations, possess great flexibility and creativity potential, and could also provide a completely safe environment, especially when it comes to simulating potentially hazardous real-world experiments. At the same time, one needs to have access to quality computer infrastructure to provide such leading-edge facilities. Quality training for the teachers and lab technicians to operate these technologies must also be provided. The chi-square analysis of their unanimous concern for lack of practical labs shows no association across the surveyed groups, whereas the chi-square of the actual interest of the students to do the labs shows association across the categories with girls and juniors showing more interest than the boys and the seniors, respectively.

There are concerns about increasing suicide rates because of uncertainty during this lockdown which must not be overlooked (Sher, 2020). Among the four groups, the authors find the senior boys showing the highest percentage of high stress. This could be interpreted as caused by uncertainty over the end of their degree programs, exams, and their future employment prospects. Other studies have also discussed the increased stress for students in this lockdown and have outlined suggestions to deal with it (AlAteeq, 2020; Benjet, 2020; Husky, 2020; Islam, 2020). Student stress has become a very important factor in modern education, given the levels of competition and high expectations placed on them, and

this has become an even more significant factor in this lockdown. A strong and clear two-way communication must be established with students to address their concerns, stress, anxiety levels, and uncertainty. Virtual counselling facilities could be set up in this regard where students could freely express themselves in this regard. The chi-square values for this question shows an association of the percentages with the categories. This indicates that the gender and age of the student could become a factor in as to how they react to stress induced by the lockdown.

Limitations

Regardless of the potentially promising nature of this study, it has its limitations. Firstly, the survey was conducted online, which has its own advantages and limitations (Wright, 2006). Secondly, the response rate was only 65% from an already modest sample base of around 500 plus students. Therefore, any results from this survey must be treated with caution and may not be generalised. The college could have mandated compulsory participation and achieved a 100% survey participation rate. However, the authors reckoned that this could result in inaccurate responses from reluctant participants. Thirdly, the targeted survey audience is predominantly Southern Indian. Whether the results of this survey could be extended to educational systems outside of India is moot. However, the COVID-19 challenge seems to be a common problem transcending international borders and cultures. So, some aspects of the survey could apply to other countries.

Conclusion

The COVID-19 virus has created a huge paradigm shift in the teaching and learning processes worldwide. The consequential lockdown and the need for social distancing have expedited the greater role of online teaching in educational institutions, and, in all probabilities, this role for online education is here to stay even beyond the course of this pandemic. While the strengths and weaknesses of online teaching, or for that matter any mode of teaching, are a given constant, educators must also look for opportunities that are created by online education and meet their associated challenges. Online education provides great scope for innovation and is highly flexible, facilely crosses international geographical boundaries, and can reach an audience of any age group, gender, class, ethnicity etc.

But these opportunities can only be met with the right amount and quality of infrastructure and delivery of education. This is especially true for countries like India where there is a perceptible digital ignorance and divide amongst a significant percentage of its populace. Also, for countries like India, the cost of the latest technology must be affordable. In this juncture, it is also crucial to note the feedback of the students in order to gauge their level of comfort and acceptance of the current educational scenario. The survey conducted in this report was done precisely for this purpose. Regardless of the limitations of sample size and region, the survey hopefully gives a snapshot of what students are thinking with regards to online education, their thoughts on exams and practical labs, their reading and employment during this lockdown, their expectations post-COVID-19, their satisfaction with government measures, and their stress levels. Educators could take these student viewpoints into account to formulate the best way forward through this lockdown and beyond.

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