

# Students' Awareness as an Underlying Factor for Satisfaction and Compliance

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## Abstract

**Introduction:** As soon as the WHO declared COVID-19 a pandemic, many higher education facilities had to change their educational and teaching strategies to cope with the lockdown. Some medical schools decided to rely on online teaching while others depended on students' self-learning abilities. Methods of assessment also changed as some medical schools implemented pass/fail exams, online examinations, and research projects while others postponed their final exams. In Egypt, medical schools started delivering their lectures online and changed the assessment criteria of the preclinical academic years to depend mainly on research and online exams while postponed the clinical rotations and final exams of the clinical years. **Aim:** This study assesses medical students' awareness of the current situation regarding the safety guidelines and their satisfaction with the solutions provided by their schools for the plans to continue their learning and the new assessment methods and criteria. **Methodology:** The method used for data collection is an online survey filled by medical students from around Egypt. Moreover, data were statistically analyzed using IBM statistical package SPSS for doing a Chi-squared test on two variables. **Results:** After collecting the data and analyzing responses, we found that 66.2% of students who answered the survey do not think that the safety measures taken by their universities after the return back will be enough. **Conclusion:** This shows that the basic knowledge of COVID-19 among medical students is average and there is a need to start programs for infection control practices against COVID-19 for all medical students and professionals.

**Keywords:** Communication, learning, student engagement, student life, teaching

## INTRODUCTION

With the suspension of educational institutions worldwide due to the COVID-19 pandemic, universities have the responsibility to continue delivering education as the lockdown and restrictions may be extended for a longer period. Medical education cannot be suspended; therefore, a long-term plan is needed.

This situation drives the accelerated utilization of online modalities as video conferencing, polls, surveys, and WhatsApp messages. Institutions are becoming more interested in engaging their students and delivering quality content.<sup>[1]</sup> Universities focus on including various learning domains as the cognitive thinking domain using CBL and the psychomotor domain using virtual models and illustrative videos.<sup>[2]</sup>

However, not all faculties conduct a remote learning model as many of these methods are implemented for the first time in Egyptian universities. In addition, the higher education system lacks digital readiness. Furthermore, courses that require in-person training and practice impose major challenges.

With the increasing levels of anxiety, more pressure is added on medical students. They are concerned that conducting clinical exams/ objective-structured clinical examination (OSCE) on-campus or hospitals will jeopardize their and their families' well-being and increase their risk of contracting the infection. Many teaching hospitals and students' housing turned into isolation facilities. Furthermore, the majority of students use public transportation.

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The study aims to assess medical and dentistry students' awareness of the correct COVID-19 safety measures and their satisfaction with their educational institution performance during the current situation in terms of academics and safety measures explained for them to be taken after the return back.

## METHODS

A cross-sectional study was conducted among Egyptian medical students. One hundred forty-eight Students from different universities were asked to complete a questionnaire about COVID-19 safety measures awareness and students' satisfaction with the measures taken by their universities. The survey was distributed among medical students all over Egypt through some faculty members and students' unions.

The questionnaire was designed by a group of university experts and face validated through a mock performed on ten random students. The sample is a stratified random sample calculated using an online sample calculator called SurveySystem. The questionnaire is divided into four sections; the first section is a five-question section about students' universities, academic year, the online education strategies used by universities, and students' satisfaction with them. The first two questions are single-choice questions, the third one is multiple-choice, and the last two are Likert-scale questions.

The second section consists of three questions that assess students' satisfaction with the performance of their educational institutions regarding their roles in the current situation. All three questions are Likert-scale questions.

The third section tests students' awareness of the protective guidelines against COVID-19. It consists of three questions. The first two questions are single-choice, and the third question is a Likert-scale question.

The fourth and last section of the survey is for assessing the effects of the lockdown on the medical students' physical and mental health and academic performance. It consists of six questions. The first, third, and fifth questions are Likert-scale and the second, fourth, and sixth questions are long-answer questions.

Data were analyzed using Microsoft Excel 356 and IBM statistical package SPSS, version 25 by (IBM, Chicago, USA). Comparisons between groups were done using a Chi-squared test for comparing all questions against a pivot variable related to acceptance of the degree of awareness offered by schools regarding safety measures taken. Values of  $P < 0.05$  were considered statistically significant.

## Ethical Approval

The work was approved by Ain Shams University, Faculty of Medicine IRB committee under number 000017585.

## RESULTS

One hundred and forty-eight students from 8 governmental (126 students, 85.1%) and 3 private (19 students, 12.8%) medical (124 students, 83.8%) and dentistry (21 students, 14.2%) schools all over Egypt have responded to the online questionnaire and 3 students (2.0%) did not specify their educational institutions. Seventy-one students (48.0%) are from the fourth year, 31 students (20.9%) from the third year, 22 students (14.9%) from the fifth year, 20 students (13.5%) from the second year, and 4 students (2.7%) from the first year.

When asked about the assessment methods used by their universities, 68 of students (45.9%) chose online examination as the selected prospective pathway for their evaluation as opposes to other methods such as offline examinations (51 students, 34.5%), research (30 students, 20.9%), assignment/project submission (5 students, 3.4%), and undecided (9 students, 6.1%).

Table 1 shows students' opinion regarding continuing OSCE and practical online, their satisfaction about the remote teaching model adopted by their universities, and whether they think their universities did their role in explaining the safety measures necessary after the return back, whether these safety measures will be enough or not, if their universities have a clear vision in dealing with the current situation, and if the lockdown affected their mental health, physical health, and academic performance.

Table 2 shows students' responses to the next two questions, which assess students' awareness of the correct recommendations and safety measures through asking them

**Table 1: Students' satisfaction with their universities and education and how the lockdown affected their lives**

	Agree (%)	Neutral (%)	Disagree (%)
Would you prefer to continue OSCE and practical online?	64 (43.2)	30 (20.3)	54 (36.5)
Are you satisfied with the remote teaching model adopted by your university?	52 (35.1)	33 (22.3)	63 (42.6)
Do you think your university did its role in explaining the safety measures to students necessary after the return back?	31 (21.0)	35 (23.7)	82 (55.4)
Do you believe the safety measures taken by your university after the return will be enough to protect you?	21 (14.19)	29 (19.59)	98 (66.2)
Do you think your university has a clear vision regarding dealing with the current situation?	31 (21.0)	33 (22.3)	84 (56.8)
Do you think lockdown affected your mental health?	81 (54.7)	26 (17.6)	41 (27.7)
Do you think the lockdown affected your physical health?	82 (55.4)	41 (27.7)	25 (16.9)
Do you think the lockdown affected your physical health?	86 (58.1)	32 (21.6)	30 (20.3)

OSCE: Objective-structured clinical examination

how often they have been in a public gathering place during the past 2 weeks, whether they know the correct recommendation of the CDC regarding how long they should wash their hands, and whether they think wearing a face mask will be protective against COVID-19.

Tables 3-5 show a Chi-squared significance test done with the question asking students whether they think their universities did their role in explaining to students the safety measures necessary after the return back as a pivot and comparing responses to all other questions against it.

**Table 2: Students' awareness of the correct recommendations and safety measures for protection against COVID-19**

Question	Choices	Count (%)
How many times have you been in a public gathering during the last two weeks?	Have never been	84 (56)
	<3 times	43 (29.1)
	3-5 times	9 (6.1)
	<10 times	6 (4.1)
	Daily	6 (4.1)
For how long should you wash your hands according to the CDC recommendations?	<10 s	3 (2.0)
	At least 20 s	103 (69.6)
	>1 min	20 (13.5)
	Does not matter if I am using the right techniques	15 (10.1)
	I do not know	7 (4.7)
Wearing a face mask will be protective against COVID-19	Agree	73 (49.3)
	Neutral	47 (31.8)
	Disagree	28 (18.9)

CDC: Centers for disease control and prevention

**Table 3: A Chi-squared significance test comparing students' responses on questions regarding teaching and assessment based on the degree of acceptance of the roles performed by their universities in explaining the safety measures**

	Do you think your university did its role in explaining the safety measures to students necessary after the return back?			Significance test		
	Disagree, count (%)	Neutral, count (%)	Agree, count (%)	Value	P	Significance
Faculty						
Governmental	72 (90.0)	31 (91.2)	23 (74.2)	5.617	0.060	NS
Private	8 (10.0)	3 (8.8)	8 (25.8)			
Medicine	70 (87.5)	32 (94.1)	22 (71.0)	7.583	0.023	S
Dentistry	10 (12.5)	2 (5.9)	9 (29.0)			
What is your academic year?						
1	0 (0.0)	3 (8.6)	1 (3.2)	29.850	0.000	S
2	6 (7.3)	7 (20.0)	7 (22.6)			
3	10 (12.2)	13 (37.1)	8 (25.8)			
4	49 (59.8)	10 (28.6)	12 (38.7)			
5	17 (20.7)	2 (5.7)	3 (9.7)			
What assessment method (s) is used by your university in response to the current situation?						
Online exams	25 (30.5)	24 (68.6)	19 (61.3)	18.043	0.000	S
Research	16 (19.5)	6 (17.1)	9 (29.0)	1.632	0.442	NS
Offline exams	39 (47.6)	7 (20.0)	5 (16.1)	14.084	0.001	S
Assignment/project submission	3 (3.7)	0 (0.0)	2 (6.5)	2.140	0.343	NS
Didn't decide yet	7 (8.5)	1 (2.9)	1 (3.2)	1.945	0.378	NS
Would you prefer to continue OSCE and practical online?						
Disagree	35 (42.7)	9 (25.7)	10 (32.3)	4.324	0.364	NS
Neutral	13 (15.9)	10 (28.6)	7 (22.6)			
Agree	34 (41.5)	16 (45.7)	14 (45.2)			
Are you satisfied with the remote teaching model adopted by your university?						
Disagree	47 (57.3)	11 (31.4)	5 (16.1)	23.897	0.000	S
Neutral	19 (23.2)	6 (17.1)	8 (25.8)			
Agree	16 (19.5)	18 (51.4)	18 (58.1)			

S: Significant, NS: Not significant, OSCE: Objective-structured clinical examination

**Table 4: A Chi-squared significance test comparing students' responses on questions regarding safety measures and awareness based on the degree of acceptance of the roles performed by their universities in explaining the safety measures**

	Do you think your university did its role in explaining the safety measures to students necessary after the return back?			Significance test		
	Disagree, count (%)	Neutral, count (%)	Agree, count (%)	Value	P	Significance
Do you believe the safety measures taken by your university after the return will be enough to protect you?						
Disagree	69 (84.1)	21 (60.0)	8 (25.8)	63.136	0.000	S
Neutral	11 (13.4)	12 (34.3)	6 (19.4)			
Agree	2 (2.4)	2 (5.7)	17 (54.8)			
Do you think your university has a clear vision regarding dealing with the current situation?						
Disagree	63 (76.8)	17 (48.6)	4 (12.9)	51.958	0.000	S
Neutral	14 (17.1)	11 (31.4)	8 (25.8)			
Agree	5 (6.1)	7 (20.0)	19 (61.3)			
How many times have you been in a public gathering during the last two weeks?						
Have never been	47 (57.3)	18 (51.4)	19 (61.3)	5.960	0.652	NS
<3 times	25 (30.5)	10 (28.6)	8 (25.8)			
3-5 times	6 (7.3)	1 (2.9)	2 (6.5)			
>10 times	2 (2.4)	3 (8.6)	1 (3.2)			
Daily	2 (2.4)	3 (8.6)	1 (3.2)			
For how long should you wash your hands according to the CDC recommendations? (Categorized)						
I do not know	2 (2.4)	4 (11.4)	1 (3.2)	12.800	0.120	NS
Correct	55 (67.1)	20 (57.1)	28 (90.3)			
Wrong	25 (30.5)	11 (31.4)	2 (6.5)			
Wearing a face mask will be protective against COVID-19						
Disagree	20 (24.4)	6 (17.1)	2 (6.5)	5.294	0.258	NS
Neutral	26 (31.7)	10 (28.6)	11 (35.5)			
Agree	36 (43.9)	19 (54.3)	18 (58.1)			

S: Significant, NS: Not significant, CDC: Centers for disease control and prevention

**Table 5: A Chi-squared significance test comparing students' responses on questions regarding the effect of the lockdown on their lives based on the degree of acceptance of the roles performed by their universities in explaining the safety measures**

	Do you think your university did its role in explaining the safety measures to students necessary after the return back?			Significance test		
	Disagree, count (%)	Neutral, count (%)	Agree, count (%)	Value	P	Significance
Do you think lockdown affected your mental health?						
Disagree	21 (25.6)	11 (31.4)	9 (29.0)	5.301	0.258	NS
Neutral	10 (12.2)	8 (22.9)	8 (25.8)			
Agree	51 (62.2)	16 (45.7)	14 (45.2)			
Do you think lockdown affected your physical health?						
Disagree	15 (18.3)	5 (14.3)	5 (16.1)	0.324	0.988	NS
Neutral	22 (26.8)	10 (28.6)	9 (29.0)			
Agree	45 (54.9)	20 (57.1)	17 (54.8)			
Do you think lockdown affected your academic performance?						
Disagree	14 (17.1)	7 (20.0)	9 (29.0)	9.584	0.048	NS
Neutral	13 (15.9)	13 (37.1)	6 (19.4)			
Agree	55 (67.1)	15 (42.9)	16 (51.6)			

S: Significant, NS: Not significant

## DISCUSSION

Education during the COVID-19 in Egypt has been a challenge. Online learning is being used widely for the first in governmental institutions. Such an event highlights the importance of investing in the infrastructure for E-learning.

### Structure of questionnaire respondents and its implication

According to the results, 48.0% of responses were from the fourth-year students, accounting for the highest participation, and 2.7% were from the first-year students, accounting for the lowest participation. Fourth-year students' participation reflects their frustrations with the current situation as no definitive method for assessment is announced, and they are expected to show up for offline examinations with no timing decided yet. They are also at a transitional stage to clinical teaching with less familiarity with the subjects. The limited contribution in responding to the survey from the first year and second year is more likely because these students were not going to sit for an exam because of the COVID-19 crisis, but instead, the ministry of higher education had already decided that their evaluation was going to happen through submitted assignments. No responses were received from sixth-year students and the interns. This could be explained by the fact that sixth-year students were too worried about their future and the outcome of their exams and interns were too engaged as the first line with residents in the COVID-19 crisis.

### Choice of assessment method made by universities

The assessment methods used by universities in response to the current situation were explored in this survey. About 45.9% of the students chose online examinations, 34.5% of the students chose offline examinations and 20.9% chose research. However, students from similar institutions and academic year responded differently to the question. Some students' answers were based on the preferred method of assessment, even the question intends to ask about the methods used by their universities. As a result, the validity of their responses is questioned. This reflects the degree of their disorientation to the situation in their universities and the proposed solution. Students in many of these cases have been left unaware of the future steps.

### Awareness with safety measures and their implication

Awareness of the students with the CDC recommended time for handwashing is evident. (69.6% expressing understanding of handwashing guidelines). About 56.8% of the students have never been in a public gathering during the past 2 weeks. These results show that the students are adherent to social distancing to reduce their risk of infection. About 49.3% of the students think wearing a face mask will be protective. A face mask will reduce the rate of transmission and infectivity.<sup>[3]</sup> Hence, students need to know more about the use of PPE, and the sequence of putting them if they continue learning in a clinical setting. The degree of students' awareness of the rules and guidelines for infection control in this era is satisfactory, yet there remains a lack of acceptance of the measures taken by

universities to eradicate this infection in order to make plans that are acceptable for students' assessment (56.8% of students do not think their universities have a clear vision regarding dealing with the current situation) [Table 1].

This could be attributed to the lack of both communication and knowledge of the assessment process. Students mistrust their administrations due to the absence of transparency in their decision making. Students are more likely to have less confidence and understanding in them.<sup>[4]</sup> As most of the decisions are made without involving students in the decision-making process and these decisions are usually changing without clear reasons or justifications, all of this cumulated in an obvious mistrust and dissatisfactions from students toward their administrations.

### Degree of students' awareness with imposed safety measures by their schools

Students who think their universities did not do their role in explaining the safety measures to students necessary after the return back are in medical schools (70 students, 87.5%), were more likely to be unsatisfied with the remote teaching model adopted by their universities (47 students, 57.3%), think the safety measures taken by their universities after the return back will not be enough (69 students, 84.1%), and disagree that their universities have a clear vision for dealing with the current situation (63 students, 76.8%) [Tables 3 and 4]. In almost all responses offered by students there existed a nonsignificant difference between them based on the degree of acceptance of the roles of the schools except in areas like their acceptance of the online teaching format. This is a highly unusual finding that shows that the students' concerns at the current time is not with administration educational decisions but are rather focused on other areas.

### Degree of students' trust in their universities

Another aspect highlighted in this study is whether the students think their universities did the role of explaining the safety measures to them necessary after the return back. About 55.4% of the students disagree with the above statement. About 84.1% of these students even do not trust that the safety measures taken by their universities will be enough to protect them. Due to the uncertainty, their universities produce in dealing with the current situation. As demonstrated by the results of the survey, 56.76% of those who disagree with the question if their universities fulfilled its role in explaining the safety measures agree that their universities do not have a clear vision till now. Educational institutions must communicate with their students.<sup>[5]</sup> There should be a plan for forming an online platform to conduct examination and assignments and as a form of communication between all parties. Inspection and monitoring that infection control programs and safety measures are implemented effectively are necessary to help address students' concerns.

Students who think their universities did their role in explaining the safety measures to students necessary after the return back are in medical schools (22 students,



71.0%), are fourth-year students (12 students, 38.7%), their institutions used online exams (19 students, 61.3%) more than offline examinations (5 students, 16.1%), were more likely to be satisfied with the remote teaching model adopted by their universities (18 students, 58.1%), think the safety measures taken by their universities after the return back will be enough (17 students, 54.8%), and agree that their universities have a clear vision for dealing with the current situation (19 students, 61.3%) [Tables 3 and 4].

This shows a clear inclination toward mistrusting the university decisions solely on the fact that not enough was done to reassure the students regarding the safety measures involve. This is in coherence with the findings of Louis<sup>[6]</sup> and it is just another signal to the importance of opening communication channels with students to accommodate further acceptance of efforts done by the schools to continue the learning process.

Students' results, when compared based on this factor, showed a great deal of significant variation in most of the questions answered by students. These areas were reflective of their stand regarding teaching methods used and assessment methods of choice. The results show clearly that students' concerns at the moment are focused on their own safety rather than their trust in educational decisions.

### **Effect of the lockdown on students and its implications on their degree of satisfaction with educational decisions**

In addition, the academic delays, frustrations, and lifestyle changes during this pandemic influence the students. The survey indicates that lockdown affects 54.7% of the students' mental health. They express depressive thoughts, fear, anxiety, and sleep disturbance.<sup>[7]</sup> A student in our study mentioned "depression and anxiety from fearing of going to the university in this pandemic for traditional exams" and another mentioned, "It provoked an attack of acute depression and suicidal thoughts." Their physical and academic performances are also affected. After an analysis of the responses, answers are similar to weight gain and decrease productivity as common issues among students. Loss of interest, motivation to study, and the ability to concentrate are all drawbacks of the current state as manifested in one of the replies "Due to mood disturbance and not having a plan for final exams, I cannot concentrate on my study and also the lack of communication of the doctors with us."

Students are not in the general physical or emotional condition that will allow for a guided decision making or acceptance of efforts exerted by the schools.<sup>[8]</sup> Conventional methods of communication are not sufficient to reach students neither in raising awareness nor in inflicting understanding and acceptance. A more holistic approach to student care is needed that will allow understanding of the student's physical and psychological state.

Universities should consider the psychological impact of this pandemic on their students' well-being. Mentorships and mental support for the students should also be considered.

Authorities should pay attention to all the following challenges that students face when declaring the final decisions.

## **CONCLUSION**

The basic knowledge of COVID-19 among medical students is average. This study shows that there is a need to start programs for infection control practices against COVID-19 for all medical students and professionals.

The transition to online teaching is received by doubt. Accordingly, the authorities should announce a strategic plan from the start of the academic year. The plan should address all the educational challenges and assessment methods and consider various scenarios as the possibility of prolonged lockdown. These strategies are needed to ensure the continuity of medical teaching. Last, having an open form of communication between students, faculty members and the ministry of higher education will facilitate consensus among all.

## **Limitations**

The survey was distributed online, so only students who have access to the internet were able to respond.

## **Recommendations**

More emphasis should be placed on students' awareness of the requirements of the era. Student support centers at this difficult time should be generating and executing plans to reach out to students with information, reassurance, and a communication strategy that allows for acceptance and understanding.

## **Highlights**

- Communication between educational institutions and their students is a must
- It is very important to make an early plan and vision for addressing the educational challenges and assessment methods for the new academic year
- Universities have to explain the safety measures and infection control practices to their students and staff members before the return back
- More than 50% of the students responded that the lockdown affected their mental, physical, and academic performance and the majority of them stated that the affection was so negative which led to depression, anxiety, weight gain, and loss of motivation which affected their academic performance
- Students' awareness was evident regarding handwashing and maintaining social distancing.

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There are no conflicts of interest.

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