Pursuance Of E-Learning In Pandemic Crisis- Evaluation Of Academic Students' Adaptation Of E-Learning And Comparison Of Traditional And Alternative Learning Systems

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Abstract

The main objective of the study is to evaluate the acceptance of pharmacy students towards swiftly turned e-learning systems. The study design is based on a cross-sectional survey that involves questions based on different authentic studies, which evaluates students' perspective towards e-learning, the conducted survey includes pharmacy students from different universities of Karachi. The study is divided into two phases, in which Phase-I evaluates students' preference and attitudes towards e-learning while Phase-II evaluates the status of mental health of students due to e-learning. The study concludes that the general attitude of students towards e-learning is acceptable but consider physical education over the hybrid mode of studies; along with the change in their study, there are many factors that are contributing to their mental health in this current pandemic which is affecting their studies, as they are trying to adapt new normal.

Keywords: E-learning, Pandemic, medical students, and mental health.

Introduction:

E-learning which is known as online learning or electronic learning is referred as the acquirement of knowledge which is done by electronic technologies and media. Normally, E-learning is taken place through internet, where students are able to access the materials they need for learning online at any place(Kiani, 2021).For the institutions of education, e-learning has brought may be the utmost potential used of all. Many of the qualified colleges and universities offering online degree programs and many of them may be will start to do this in up-coming years(Rizun & Strzelecki, 2020). E-learning can be done through MS word documents, PDFs, Slide-shares and by using videos(Rahim, 2020).

The courses provided as online is done through LMS system known as Learning Management System, as it is easier to learn from this site because this allows lectures to be delivered in organized and as in sections/chunks for the students(Furnell & Shah, 2020). Nowadays, the main purpose of E-learning is to provide learning materials to the student during Covid-19 as the sudden outbreak of this deadly disease that has shaken the whole world. The WHO declared this disease as pandemic and this pandemic challenged the education system globally(Dhawan, 2020).

The education systems including schools, colleges and universities all over the world became shut because of the influence of this pandemic (COVID-19)(Rizun & Strzelecki, 2020). Closing of educational organizations because of pandemic have lighted the several issues which was affecting the access of education(Kiani, 2021). The increase in the cases of COVID-19 patients restricted the huge number of students and youth to attend schools and colleges(Marchisio, Rabellino, Spinello, & Torbidone, 2017). It has been reported that education systems are moving towards online

learning because to prevent from the anxiety of students during the pandemic season (Gopal, Singh, & Aggarwal, 2021).

E-learning not only helped the education system survival but it also in current scenariois the safest way to get train in times of worldwide crisis as it allows the trainees to interact virtually by online platform but the sudden shift from physical to online learning is debatable as it is the temporary changes for the people resource or represents workplace of future learning and training(Mitsakis & Karageorgakis, 2020).

So, the purpose of e-learning is to meet the need of students and also other professional workers especially in the pandemic condition when there is high risk if a person go outside from home. E-learning is effectively playing its role but there are some positive and as well as some negative impacts of e-learning(Adnan & Anwar, 2020).

Objective of the study:

The study focuses on the perception and attitude of students towards E-learning specifically in Education of Pharmacy. The study will provide the insights of students' acceptance towards e-learning. As how they view e-learning as a part of teaching their curriculum. The study in second phase also consider their mental health and how sudden shift of educational method towards e-learning had part in it. The study will create a bridge in students' perspective towards e-learning, and its incorporation can benefit students according to perspective.

Literature Review:

E-learning has so many positive impacts on students which includes;

- E-learning saves the time as well as it is affordable for many students who are unable to support their education financially.

- It can be accessed from almost anywhere, and students or learners can study anywhere and even anytime, the apps and the e-learning platforms allows students to take lectures when it's convenient for them (Ikhsan, Saraswati, Muchardie, & Susilo, 2019).
- It also removes the travel costs (saving money) as well the time wasted by travel to educational institutions, it also lessen the costs which are associated for proper running of an educational institutions and offices (Ramírez-Hurtado, Hernández-Díaz, López-Sánchez, & Pérez-León, 2021).
- The teachers or professors can also track their student's performance to check where their students are up to through different tasks and assessments that can also be arranged on e-learning portals and help them if they need extra help, to motivate them to perform better.
- E-learning make the learners or students relaxed who don't feel comfortable in a large group but it is a learner who should tackle the subject by its own pace through interactive sessions and ensures the understanding each module (Cicha, Rizun, Rutecka, & Strzelecki, 2021).
- The self-paced e-learning programs allow students to access their lectures according to their feasibility and they can easily access their all learning and test material anytime.
- E-learning allows students to manage their time of studies and they can also opt for any additional activity that can enhance their skills(Arkorful & Abaidoo, 2015; Radović-Marković, 2010).
- E-learning can bring opportunity for sustainability in education, all types of students irrespective of their age, gender, race, their disability, community or religion can benefit themselves with education and opt any course they wish to study (Ghanem, 2020)

In spite of positive impacts there also many negative impacts on students which includes;

- The self-motivation as well as the self-discipline of the student is required to become successful in the subjects. E-learning can sometimes lead to procrastination in student towards their studies as student lazy out in comfortable environment of learning.
- In case of the students of school the e-learning usually supervised by the teacher, guardian or a parent to ensure that students are committing to their process and to get best results (Rajabalee & Santally, 2021).
- The theoretical subjects of particular disciplines can be learned through E-learning but it cannot provide the practical training of subjects as it requires face to face interactions of teachers with students for example in medical sciences practical training cannot be done virtually or by e-learning which is the major negative impact on students as it affects their knowledge and also make them tensed as they thought they are not learning properly.
- E-learning doesn't provide face to face interaction and many people get motivated through face to face contacts and they get depressed because of this so, in this way e-learning is also negatively impacting the students(Mallow & Rahman, 2021).
- As e-learning requires; electricity and internet availability and we knowunderdeveloped countries faces electricity every other day and even for 12-20 hours in a day. Especially the rural or the small areas of these countries faces electricity as well as internet problems

which don't let the students or learners to learn properly and this also makes them tensed and the might become depressed(Parker, Morris, & Hofmeyr, 2020).

- E-learning can also cause the mental as well as physical distress to students because of spending too much time in front of screens, and by installing the inactive (sedentary) lifestyle can lead to physical health issues as well (Cicha et al., 2021).

- E-learning is affecting negatively the studies of students as it increases the possibility of cheating as teachers cannot supervised the students in a strict way as they can do physically (Radu, Schnakovszky, Herghelegiu, Ciubotariu, & Cristea, 2020).

- Unavailability of technological devices to carry out their classes, exams and assignments smoothly, create a heavy burden on students' mental health

- Students' social interaction reduces through e-learning which in future will not benefit them, on how to interact socially in different scenarios.

- As most parents are not efficient in electronic media, it creates a gap for them to keep a check on the progress of their children (Al Rawashdeh, Mohammed, Al Arab, Alara, & Al-Rawashdeh, 2021).

Methodology:

The designed research study is divided in two phases. The designed study is cross-sectional survey based study which was performed on pharmacy students of different university of Karachi. For this purpose, a questionnaire was designed and circulated using different social media forums.

- **Inclusion Criteria:**

The designed survey includes students between the ages of 18-26 years, studying in faculty of pharmacy and are resident of Karachi; including both genders(Shikwambi & Angula, 2021).

- **Exclusion Criteria:**

The survey excluded individuals below 18 and above the age of 26 years, studying in faculty other than faculty of pharmacy and are not studying in universities of Karachi(Radu et al., 2020).

- **Paper setting:**

The cross-sectional survey is designed by different authentic research articles and investigations from various search engines like: Google scholar, PubMed, Springer, Elsevier, ResearchGate, MEDLINE and EMBASE. Using the data of different research papers basic question were design, that were easy to understand by local population of Karachi (Taneja & Dutt, 2021).

- **Setup:**

The setup of survey was completely based in Karachi, locales selected were from different regions of Karachi. The data was gathered manually and online via Google forms. Different learners from different universities colleges and schools, along with friends, family members, cousins, neighbors, random people in shopping mall, markets, dispensaries, pharmacies, and different societies participated in this study (Radu et al., 2020).

- **Sample size:**

The single sample Z-test was applied on 20 million of population with confidence interval of 85% and considering margin of error 5% for the population of Karachi. The sample size obtained is 208. Randomly students of faculty of Pharmacy were selected for survey of different universities for participation in survey during this pandemic time span.

- **Ethical Approval:**

The study designed is adapted from different authentic researches therefore, does not require ethical approval.

- **Phase-I:**

The Phase-I is further divided in 2 appendices for proper understanding of study:

Appendix-1:The appendix consists of demographic features of participants of the survey, which includes; age, gender, and in which professional they are studying.

Appendix-2: The appendix includes questions, which can predict their attitude towards e-learning(Dutt, Taneja, & Sharma, 2020; Taneja & Dutt, 2021).

- **Statistical analysis:**

The collected data was subjected to SPSS test for evaluation and Chi-square was selected; with P<0.05 was considered significant to differentiate categorical data. The representation of results was mentioned in frequency (N), percentage and P-value.

- **Phase-II:**

This phase considers students' preferred forum of study, which is feasible for them to understand and be more communicative towards their instructors. The phase mainly represents the preferences of mode of study for students of Pharmacy, whether prefer Face to face learning forum or Online learning forums.

- **Statistical analysis:**

The collected data was subjected to SPSS test for evaluation and Chi-square was selected; with P<0.05 was considered significant to differentiate categorical data. The representation of results was mentioned in frequency (N), percentage and P-value.

- **Phase-III:**

The phase-II of the study features on the mental health of participants. The questions included in this phase are general questions to evaluate their emotions in current pandemic and how they are dealing e-learning, how this e-learning is affecting their mental health.

The phase is divided in two parts where division is categorized on the basis of age groups including 18-21 and 22-26 years. The division is done on this basis to differentiate and compare the mental health and stress level of young minds of new students and mature minds of older students(Revilla-Cuesta, Skaf, Varona, & Ortega-López, 2021; Rizun & Strzelecki, 2020).

- **Representation**

The collected data from phase III are expressed in graphs for better understanding. The graphical representation provides better insight and comparative analysis of mental health of students in different age group.

Result:

Phase-I:

We have collected total 201 responses from Karachi Pharmacy academia regarding e-learning. Out of total, 23.38% were male respondents and 76.61% were female respondents in which majority was students and some were graduates. High amount of respondents belong to the age group of (18-23) and some respondents were about age group of (24-30). We have collected data from students of different level undergraduate i.e. (1st to 5th professional) and postgraduate. This demographic data is represented in table 1.

Table 1: Demographic data of respondents (n=201)

DEMOGRAPHIC FEATURE	Percentage	Number

Gender	Male	23.38%	47
	Female	76.62%	154
Education level	Undergraduate	94.53%	190
	Postgraduate students	5.47%	11
Age group	18-23	85.57%	172
	24-30	14.43%	29
Education year	1st year	18.41%	37
	2nd year	34.33%	69
	3rd year	18.41%	37
	4th year	13.43%	27
	5th year	9.95%	20
	Postgraduate students	5.47%	11

In the total 201, majority have already come across by use of electronic media during their study period of Pharmacy education curriculum. About 82.58% solely electronic media learning makes Pharmacy education tougher. Most of them think that electronic media makes interaction with teacher more difficult while other were disagree with this fact. More than half were agreeing with the time aspect of e-learning. As about the aspect of e-learning can effectively participate in making our educational system more efficient, so there were 66.67% were agree with this aspect while others are not satisfied with this aspect. This attitude of respondents towards E-learning is shown in table 2.This table depicts significant 0.0008 p-value of experiencing electronic medium throughout the undergraduate and postgraduate level by the students, and 82% students consider only e-learning in pharmacy education is not enough although it has positive aspects but it should be merged with physical education as well to enhance education aspects with significant p-value that is 0.00005 but still 73.13% of respondents accept the difficulty in communicating with their course instructors encountered as compare to lectures taken physically with p-value=0.004. Another parameter that shows 65.67% respondents considered active learning is more time consuming as compared to e-learning p-value = 0.008 but also admitted that new advancement is necessary for making education system stronger 66.67% p value = 0.0003.

Table 2: Attitude towards E-learning (n=201)

Response	Percentage	Number	Chi square	P-Value
Have you ever come across by use of electronic media throughout the Pharmacy education?				

Yes	74.63%	150	2.89	0.00089
No	25.37%	51		
Do you consider solely e-learning makes Pharmacy education difficult?				
Yes	82.59%	166	2.46	0.00005
No	17.41%	35		
Do you think that learning through E-media is making interaction with your teacher more difficult as compared to live active learning?				
Yes	73.13%	147	5.39	0.0042
No	26.87%	54		
As a pharmacy student, do you agree with time saving aspect of E-Learning?				
Yes	65.67%	132	8.84	0.0087
No	34.33%	69		
Do you agree with the fact that E-learning can effectively participate in making our educational system more efficient?				
Yes	66.67%	134	2.29	0.0003
No	33.33%	67		

Phase-II:

With respect to their preferences, a large no. of respondents preferred face to face lectures 72.64% and some of them preferred online recorded sessions 11.94% and 11.44% online live sessions (p value = 0.0008). About 69% (p value = 0.005) preferred recorded lectures by teachers and minority preferred live sessions like Zoom app, Jitsi app etc. as shown in table 3.

Our study revealed that the all the responses of students related to E-learning knowledge, attitude and preference for lecture understanding and adaptation shows significant results in comparison between E-learning and active learning aspects.

Table 3: preferences in E-learning (n=201)

Preference	Percentage	Number	Chi square	P-Value
Which of the following modes of delivery do you typically prefer for lectures in the pharmacy curriculum?				
Face-to-face lecture	72.64%	146	3.81	0.0008
online recorded sessions	11.94%	24		
online live sessions	11.44%	23		
no preferences	3.98%	8		
What do you prefer to make better understanding of lectures through electronic media?				

Recorded lectures by teachers	69.15%	139		
Live sessions through different apps like zoom app, Jitsi app etc.	30.85%	62	5.60	0.005

Phase-III:

On evaluation of mental health by general analysis in comparison of two age groups (18-21) & (22- 26) it was shown that very minor percentage of respondents in age group of (22-26) seek medical advice for stress few times in a week while most of respondents of group (18-21) claimed to take medical advice most of the time in a week for stress. However, response for not taking any medical advice was more or less similar for both of group as shown in figure 1

Figure 1: Percentage of students seeking for medical advice for stress
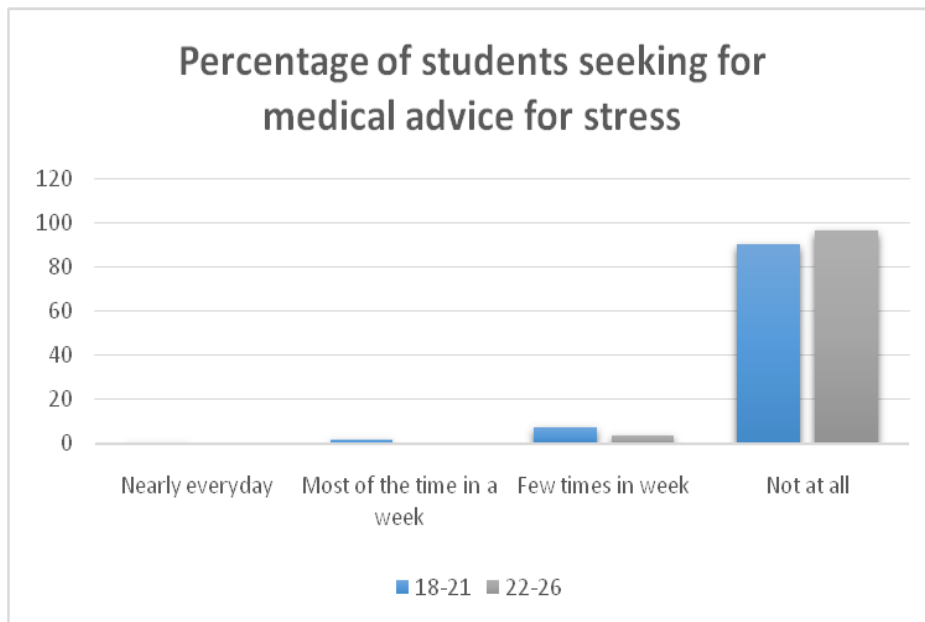
When mental health was evaluated by asking how often they feel regretful. Group (18-21) has high ratio to regretful feeling nearly every day as compare to group (22-26). In contrast group (22- 26) has high percentage to feel regretful in week. However, respondents claiming ratio for not to feel regretful was more or less similar in both age group as shown in figure 2.

Figure 2: Percentage of student's regretful feeling

Regretful feeling

	18-21	22-26
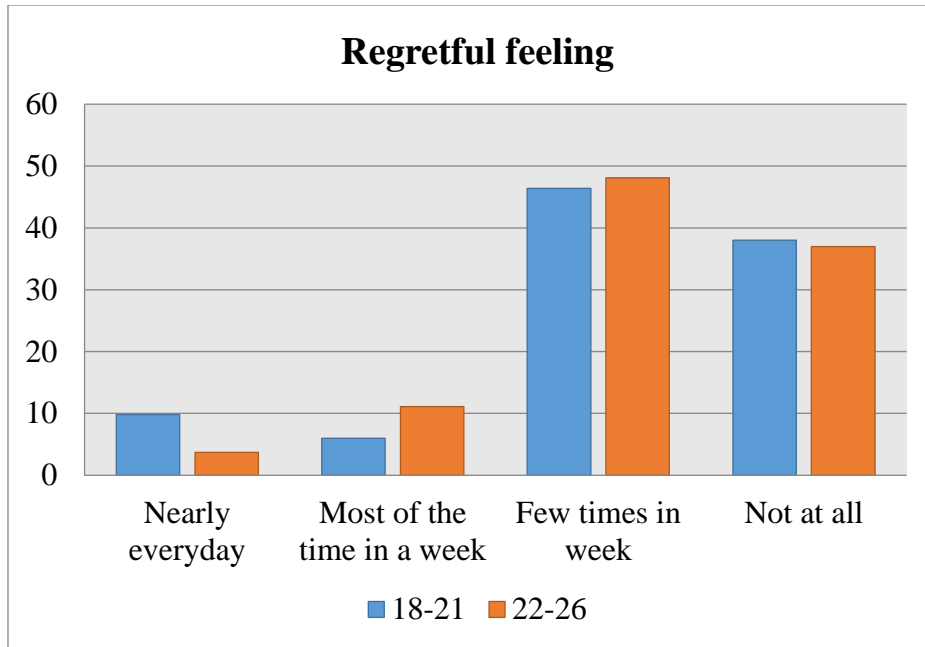
When the percentage of students for feeling worthless themselves was evaluated, most of respondents with more or less similar ratio claimed not to feel worthless however the other respondents in group (22-26) & group (18-21) had high percentage to feel worthless nearly every day & in week respectively as shown in figure 3.
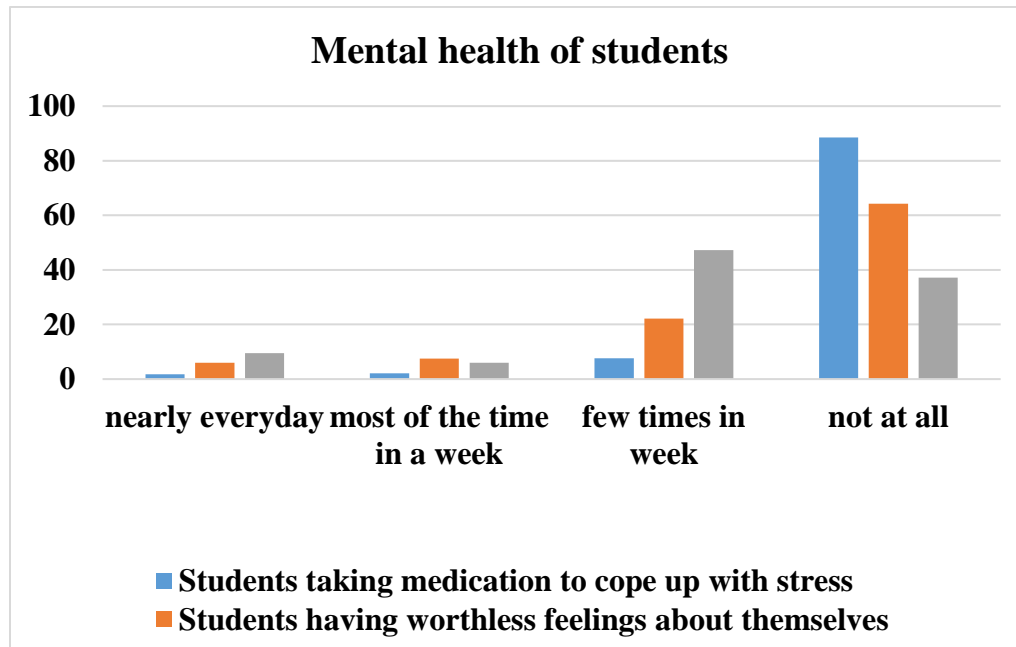
Figure 3: Percentage of Students often consider themselves worthless

Worthless feeling

	18-21	22-26
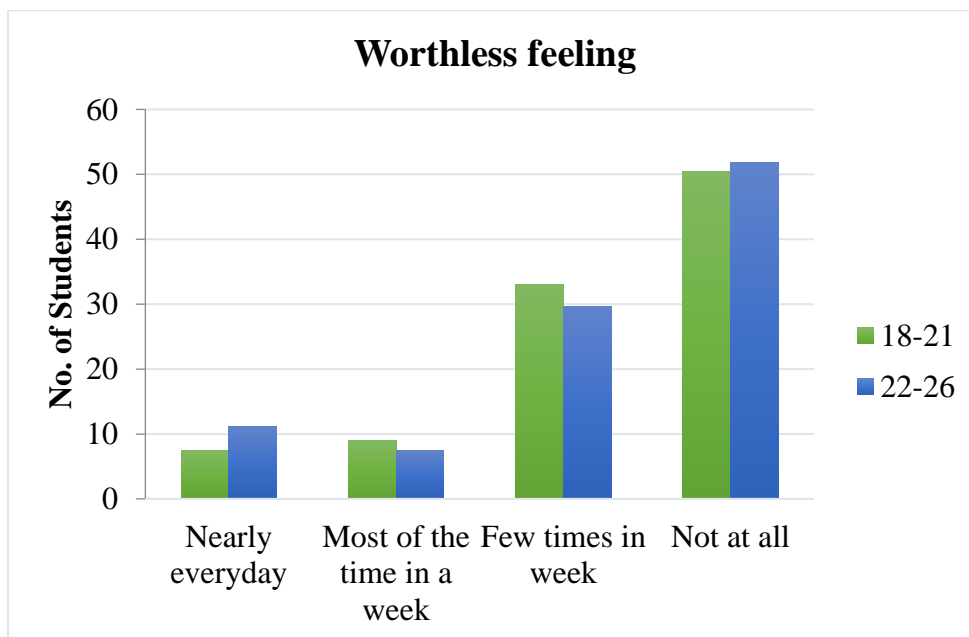
The mental health of students in general conditions, during pandemic and e-learning had shown a rise comparative to before pandemic situation. The results showed that mostly students are often regretful or unhappy about current situation which is contributing in their stress.

Figure 4: The mental health of students with respect to their mood and frequency

Mental health of students

■ Students taking medication to cope up with stress
■ Students having worthless feelings about themselves

Discussion:

This study aimed to explore the opinion & perception of pharmacy students regarding E-learning in current pandemic situation by targeting students of Karachi academia of both gender divided into two age groups 18-23 & 24-30 as mentioned in the table 1. Students from all academic years (1st to 5th) were involved in the study as the respondents. All of this demographic data is represented in table 1.

As the COVID initial cases started to report in Pakistan, all of educational instituted were commanded to close in order to restrict the spread of deadly contagious virus. Sudden change of mode of learning from physical to online has been a great challenge for both academia & students (Esposito & Principi, 2020). Our study was objected to evaluate overall effect of E –learning on the student & their study in this challenging

time period of COVID-19. For this purpose, our study was divided into three phases namely; to assess the attitude of students towards E-learning as represented in table 2, to know the preferences in E-learning as listed in table 3 and to evaluate the effect on mental health of students by E-learning that is demonstrated in figure 1, 2 &3.

During the 1st phase of our study, the attitude of respondents has been explored in which huge number of students up to 82.59% claims that E-learning solely is difficult than the physical learning, summarized in table 2.This attitude is almost similar to a study that was conducted globally in which only 14.3% could guarantee to smoothly conduct their E-learning while the huge number 85.75% student seemed to remain substantially excluded by effectiveness of E-learning (Esposito & Principi, 2020). 73.13% consider that e-learning comparatively to physical learning system makes it difficult to

interact with course instructor while, 65.67% said E-learning is time saving, 67 % agreed E-learning can make their study efficient & easy, listed in table 2. But even after having this positive attitude, student in large number up to 82.59% consider e-learning solely with pharmacy education is not enough there should by proper physical classes with face to face interaction with course instructor to facilitate better understanding and also suggests some changes and implementation of e-learning should be better step to make education more efficient as it was supposed to be. Same opinions as of our study have been shared by many research studies as indicated in a review of E- learning & E-teaching in COVID-19 (Mseleku, 2020).

In the 2nd phase of our study that was aimed to evaluate the preferences. Majority of respondents in our survey preferred face to face learning (72.64%) as mentioned in table 3. This preference is more or less similar to the study in which 78.6% respondents agreed with the fact that face to face learning is necessary (Abbasi et al., 2020). Our study represents that the preferred channel for E-learning in pharmacy student is recorded lectures 69.15% and a less number of students almost 30.85% also preferred apps like zoom & Jitsi for live interaction as mentioned in table 3. This preference contrasts with the study for MBBS & BDS students in which 74.7 % preferred live zoom conference class although both studies targeted the Karachi academia (Saeed et al., 2021). This contrast of preference on app can be due to feasibility of time that is opted by recorded lectures in Pharmacy studies while MBBS, BDS study needs more live session as their study demands more physical and interactive mode. All of the preferences are listed in Table 3.

 The 3rd phase of our study targets on mental health during E-learning. As the COVID-19 spread, the disturbance in mental health like depression, stress, anxiety were reported in all over the world especially in youth (Pavarini, Lyreskog, Manku, Musesengwa, & Singh, 2020). The role of academia or E-learning had the great effect on mental and physical health of students. Our study represents that the majority of students feel regretful and worthless themselves as shown in figure 2 & 3. This distress and anxiety level is also supported by studies that were conducted to evaluate mental health in Pakistani students during the COVID-19 pandemic (Aqeel, Shuja, Abbas, Rehna, & Ziapour, 2020; Baloch et al., 2021).

Our study exclusively shows how mental health is affected by E-learning during the pandemic & students seek for medical advice due to this stress as shown in figure 1 while the other studies also reports to affect other physical health like obesity, eye sight (Noor, Ali, & Husnine, 2020). However this distress also contributes due to the fear of academic year loss in student mind during the lockdown as reported in a study (Hasan & Bao, 2020).

With the various research previously reported and this study showing mental health distress on the students rise a challenge to make our educational system better and efficient. Key finding of this study can help to take measure more finely and accurately as the youth & student are the backbones of any nation. In this regard mental health of them should be a priority. The educational system is the one where concern authorities can take initial steps to bring and scale up mental health.

Conclusion:
The study concludes that medical students had shown positive interest towards E-learning, but majority students prefers physical education more, as they believe practical labs do require face-to-face study. Mostly students in their initial years have thoughts to come university and have proper interaction with teachers. The phase-III study also represents that mental health issues are

rising in students' especially due concomitant stress developing due to pandemic and swiftly changing of educational system to E-learning. Because of which students considered themselves burdened in such conditions.

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