(International Print/Online Journal)

SJIF IMPACT FACTOR: 5.565
PUBMED-National Library of Medicine ID-101739732

ISSN (Print): 2209-2870
ISSN (Online): 2209-2862

International Journal of Medical Science and Current Research (IJMSCR)
Available online at: www.ijmscr.com
Volume 4, Issue 6, Page No: 617-627
November-December 2021

IJMSCR

E-Learning Education System and Mental Health Status of Undergraduate College Students during Lockdown of Covid-19 Pandemic – A Cross Sectional Survey

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Type of Publication: Original Research Paper
Conflicts of Interest: Nil

Abstract

Background: The COVID-19 has resulted in the closure of colleges all around the world. Around 1.2 billion students are out of classrooms around the world. With emergence of e-learning, where teaching is carried out remotely and on digital platforms; teaching and learning process has undergone considerable changes. Research studies indicate that online learning improves data retention and takes less time, implying that the changes brought on by the coronavirus are here to stay. In the general population, mental problems are becoming an increasingly serious public health issue. Therefore, investigation of the determinants and state of mental health of those who will be the future pillars of the world are to be assessed and justified while implementing any new technique.

Methods: A cross-sectional study was carried out among college students at 1-3-years (N = 380) with a self-administered questionnaire that included standardized items on demographic data, online education, mental health status and its consequences. Descriptive statistics and chi-square was done using SPSS ver-25.

Results: In this study, majority of study participants were males with the mean age of 19.81, minimum age of 18yrs and maximum age of 22 years. Most of the students faced problems such as, head ache, eye strain, and unfavorable environment and thus were not able to concentrate for a long time. Depression is a common mental health illness. There was a strong correlation observed between problems faced by the students and mental health illness (p-value 0.000).

Conclusion: This study showed students prefer online education but they should be trained before implementing it. Majority of them faced depression as mental health illness and head ache, eye strain and family environment is a major problem due to online classes

Keywords: e-learning, college students, depression, mental health illness

Introduction

In India, the first COVID-19 positive case was registered on 30 January 2020. India is currently experiencing growth in COVID-19 cases. India reported 160,384 active cases, 194,324 recovered cases, and 12,237 deaths as of 18 June 2020(1). Several strategies to monitor the spread of the disease

have been introduced by the Government of India along with different State governments. India has observed four phases of national lockdown since 25 March, which was extended to 31 May 2020. During the lockout time of the new 2019 coronavirus disease (COVID-19), the entire educational system from elementary to tertiary level has collapsed not only in India but around the globe. COVID-19 pandemic has resulted in a worldwide closure of colleges. About 1.2 billion students are out of classrooms around the world. With emergence of e-learning, where teaching is carried out remotely and on digital platforms; teaching and learning process has undergone considerable changes. Research studies indicate that online learning improves data retention and takes less time, implying that the changes brought on by the coronavirus are here to stay. Teachers are advised to teach through online learning platforms during the lockdown (2). The COVID-19 outbreak leads to online lectures, teleconferencing, digital open books, online review, engagement in virtual environments and the digital transformation in the higher education system(3).As of today's scene, in the midst of the COVID-19 outbreak, it is almost impossible to attend classes in regular mode in which preserving social distancing is of paramount importance. Thus, undoubtedly, online education mode became a necessity that has unfreezed organizations, students and teachers. Children and young people are mainly impacted by the closure of educational institutions (4). During this unprecedented situation, online classes have been found to as an alternative to institutional closure. However, both students and teachers face various obstacles and difficulties, including psychological issues, as a result of an insufficient learning strategy(5).The successful implementation of e-learning programmes depends on how students and instructors execute the programme(6).While one of the promising alternatives to the physical classroom is online education, students show a negative perception to online learning behavior(7).In addition, in COVID-19 times, online teaching mode offers the feeling of psychological protection to the learning population. The second step is to adjust the mechanism in which two choices are open; either to introduce a new online mode followed in other organizations or to innovate one's own. The analysis is always for a better model that can be applied (8).However, there are obstacles to be tackled. Some students fail to engage in digital learning without reliable internet connectivity and/or technology. This situation is seen across countries and across income brackets within nations.

This research is an overview of the online learning modes adopted for learning process and subsequent semester exams among college students. It also looks forward to an intellectually enhanced chance for more future academic decision-making during any adversity. The goal of this paper is to address the mental health status and necessary essentials of online learning in education during COVID-19 pandemic and how existing resources of educational institutions can effectively turn formal education into online education with the aid of virtual classes and other main online tools in this constantly changing educational landscape. Mixed study design was used in this research. The goal of this paper is to provide a mental health holistic image of the ongoing online learning activities during the lockdown period, including the relation between the process of change management and the online teaching-learning process in the education system in the midst of the COVID-19 outbreak, in order to resolve the ongoing academic disruption and thus ensure that the educational activities are resumed.

Methods

Conceptual framework and development of hypotheses

The conceptual research model and the respective hypotheses were established based on the literature and online focus group discussion (FGD) with the target group of students by explaining the relationships between exogenous and indigenous variables and/or between them.

Online learning/education

1. H-1:Knowledge and access to internet
2. H-2: Mental health illness
3. H-3: Academic performance

Surprisingly, students using new technology or novice students suffer from multiple stressors (9). Many students acquire knowledge prominently; some do not. This knowledge acquiring procedure depends on how they are treated by resource availability or access to learning tools. Due to social and economic

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dividends, many students suffer from access to new technology resources. At the same time, a lack of IT knowledge was identified as a significant impediment to non-technical instructors. Moreover, the nature of e-Learning (limited time, interpretation, and assessment methods) compared to traditional classroom methods, makes student dissatisfied. In this technological world, around 25% of teens from lower-income families do not have a home computer (10) and internet access (11).

H1: There is a significant relationship between "online education" and student's knowledge on computer and internet access

H2: Online classes has a considerable impact on the student's mental health illness

H3: There is a significant association on student's academic performance and online education

Subjects

This is an online survey-based study of the 380 undergraduate students studying in various colleges and universities of Tamilnadu.

Data collection and procedure

An online survey was conducted from June to December 2020 to collect the data. Institutional ethical committee clearance was obtained to conduct this study. A pre-tested structural questionnaire was prepared and the link was sent through 'Google form' through WhatsApp and E-mail. After giving the online consent only, students will be able to fill up the "Google form".

Data analysis

Descriptive statistics were carried out to understand the distribution of study participants. Simple percentage distribution was estimated to assess the learning status, mode of learning, and opinion on online educational, mental health illnesses and problems related to study due to the lockdown. Chi-square test was used to compare the data. All the analyses were performed using the Statistical Package for Social Science (SPSS Version: 25).

Results

Totally, 381 students were enrolled to this study. Of which majority of them were girls (51%) in the age group of 19 years. Around 58% of them were living in urban area and 51% were from government colleges, 86% of them are science students.(Table-1)

Table-1: Participant's characteristics

Variables	Frequency	Percentage
Age distribution(yrs)		
18	43	10.8
19	121	30.3
20	109	27.3
21	81	20.3
22	27	6.8
Gender		
Boys	176	44.1
Girls	205	51.4
Place of living		
Urban	234	58.6
Rural	147	36.8

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Type of college		
Government	176	44.1
Private	205	51.4
Stream of course		
Arts	69	61
Science	165	86

Table-2: Knowledge on computer and internet access

Questions	Frequency	Percent
Knowledge on computer and internet		
Yes	340	85.2
No	41	10.0
Mode of learning		
e-learning	311	77.9
Text book	4	1.0
Both	67	16.8
Do you have your own lap/computer or mobile?		
Yes	334	87.7
No	47	12.3
Do you have access to internet?		
Yes	329	86.4
No	12	3.1
Not getting continuously	40	10.5

Around 85% had knowledge on computer and internet. During lockdown 78% learnt through online by using mobile phones (87%). Majority of the students said they had access to internet and only 10% said internet connectivity is irregular.(Table-2)

It is found that the students were using various platforms for e-lectures, study material sharing and learning evaluation, such as the Zoom app, YouTube, Skype, Google meets, Google classroom, WhatsApp, etc.(Table-3). The results also show that most of the respondents (32%) used the Zoom app for attending online classes, followed by Google classroom (28%) and YouTube live (14.7%). The learners also followed many platforms for getting study materials

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during this lockdown period. It is observed that students were more likely to study through shared study materials than attending online lectures mainly due to poor internet connectivity. The majority of the respondents (39.4%) used the WhatsApp group for getting study the materials from teachers and as well as friends and 31.8% of students used Google Classroom for this purpose. However, fewer learners followed institutions/teachers' website and YouTube lives for study materials. Teachers used many platforms not only for digital teaching and learning but also for learning-evaluation very quickly through WhatsApp group, Google classroom, Google form, and so on. The learning of the respondents mostly evaluated through the youtube (39%) email(4%) WhatsApp group (37%), Google classroom (19%).

Table-3: Management of online education by students

Questions	**Frequency**	**Percent**
Have you attended online classes before lockdown?		
Yes	27	7.1
No	354	92.9
Platform for online classes		
Zoom app	123	32.3
Skype	119	31.2
Google classroom	106	27.8
You tube	25	6.6
Google meet	8	2.1
Have you been trained in how to attend online classes by your institution?		
Yes	60	15.7
No	321	84.3

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Sharing of study material by teachers		
Email	14	3.7
Whats app	147	38.6
You tube	148	38.8
Google classroom	72	18.9
How long will you attend online class?		
3 hrs	15	3.9
3-5 hrs	191	50.1
5-8hrs	175	45.9
How long do you able to concentrate the class?		
2hr	106	27.8
3hr	133	34.9
4hr	69	18.1
5hr	73	19.2
>5 hrs	106	27.8
Mode of learning		
e-learning	311	81.6
Text book	4	1
Both	66	17.3
Syllabus covered		

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Yes	369	96.9
No	12	3.1

Around 50% said they can able to attend online classes only 3-5 hours and 46% said 5-8hours. 35% said they can able concentrate 3hrs and 29% said more than 5hours.Around 81% of the study participants studied through e-learning during lockdown and 17% studied through both online and text book. But 97% of syllabus was covered to the students. (Table-3)

Table-4: Major Problems in online classes

Problems faced during online classes	Frequency	Percent
Not able to concentrate continuously	97	25.5
Head ache	13	3.4
Financial burden to get net pack	61	16.0
Not able to clarify doubts/understand subject	58	15.2
Family environment is not favorable	88	23.1
Eye strain/head ache	64	16.8

Most of the students had problems while attending online classes such as, not able to concentrate continuously for long time (26%), financial burden (16%) irregular internet connectivity and absence of a favorable environment to study at home (23%). Headache and eye strain are the general health issues suffered by students. (Table-4)

Most of the students had Mental health illness such as depression, schizophrenia, stress, and anxiety. (Chart-1)

Chart-1: Distribution of mental health illness

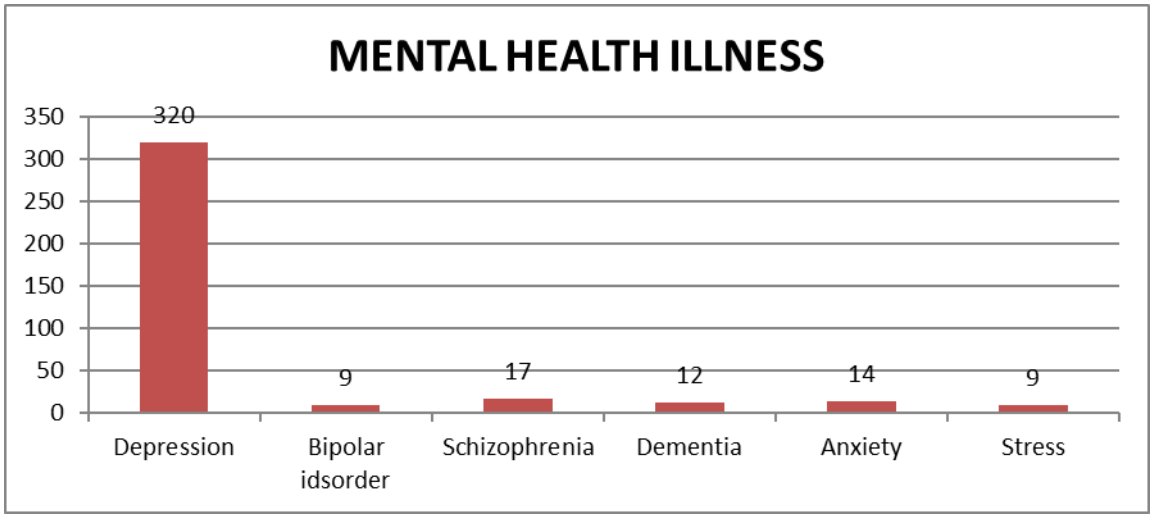

Table-5: Comparison of problems faced during e-learning and mental health illness

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The above table-5 shows that there was a strong association between problems faced during online classes and mental health status (p-value 0.000)

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Table-6: Students opinion about online learning

Problems faced during online class	Mental health illness						Total	p-value
	Depression	Bipolar disorder	Schizophrenia	Dementia	Anxiety	Stress		
Not able to concentrate continuously	89	5	0	1	1	1	97	0.000
Head ache	4	1	3	4	1	0	13	
Financial burden to get net pack	44	0	7	4	5	1	61	
Not able to clarify doubts/understand subject	42	3	1	0	7	5	58	
Family environment is not favarouble	81	0	4	2	0	1	88	
Eye strain with head ache	60	0	2	1	0	1	64	

Do you like online education system?	**Frequency**	**Percent**
Yes	**352**	**88.2**
No	**29**	**7.3**
Total	**381**	**95.5**

Though the students faced lot of problems and mental health illnesses, around 88% of the students like the online education system.(Table-6)

Table-7: Academic performance

Academic performance	**Frequency**	**Percentage**
Very good	280	74
Good	49	13
Average	40	10
Poor	12	3

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During lockdown, online education system followed to the students everywhere. While assessing the academic performance, 74% of scored very good marks followed which 13% of them secured good marks and 10% were average and only 3% of them were poor. This shows that online education doesn't affect the student's academic performance.

Discussion

This is a first study conducted to assess the mental health status of the students who attending online classes during covid-19 pandemic. In academic operations, the lockout in the middle of COVID-19 has produced major disturbances. During this pandemic, the present study compared the mental health status and online learning of undergraduate students. Although a significant proportion of students use digital learning tools, many of them face immense online learning challenges. In this study depression is a major mental health illness during online learning and student's complaint that they were not able to concentrate continuously more than 3-5 hours and unfavorable family environment. Students are willing to learn through online education system though they faced a lot of problems. But as we know from previous evidences, most e-learning projects have failed because they were not efficiently designed and operated by regulatory and government agencies (12). In online education system, many students tend to adopt certain behavioral patterns that can lead to negative health issues such as depression and stress. A prospective cohort study conducted in Malaysia, found that depression and anxiety significantly increased in students by the end of the academic year during lockdown (13). In turn, Aragon, Johnson, and Shaik did not find significant differences in the level of anxiety during TL and OL (14). There were no many researches available to compare these study findings.

Conclusion

It is clear that this pandemic has completely wrecked the system of education. Instead of focusing on skills such as critical thinking and adaptability, which would be more essential for future success, colleges prefer to concentrate on conventional academic skills and rote learning. Will the shift to online learning pave the way for a more modern and productive approach to student education? In order to create a resilient education system in the state that will ensure the production of skills for employability and the competitiveness of young minds, vital multi-prolonged strategies are urgently needed. A standardized academic plan for universities and colleges should be developed and a proper education plan should also be implemented to continue the learning process during this pandemic. Infrastructural facilities should be used by educational institutions which, during future health emergencies, can monitor the digital learning process. There is a need to ensure sufficient funding for the advancement of the education system and to provide the stakeholders of higher education institutions with training in capacity growth. A targeted approach should be used to create a supportive space for research among students from disadvantaged sectors of society.

Acknowledgement: We thank all the students who actively participated in this study

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