ORIGINAL ARTICLE e-ISSN: 2349-0659 p-ISSN; 2350-0964

Study the Indicators of Academic Facilities and Academic and Life Difficulties or Challenges of Online Learning/Teaching during COVID-19 Pandemic among School Students in India

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Abstract

Background: The COVID-19 impact was everywhere, which resulted in the closure of schools and other educational institutions. Initially, most governments have decided to temporarily close the schools to reduce the impact of COVID-19. Later, it was reopened for a few grades, which increased the number of infection rates and then closed again. The study was planned to analyze the indicators of academic facilities and academic and life difficulties or challenges of online learning/teaching during COVID-19 pandemic among school students. Survey also looked for to solicit participants' feedback regarding their experience in online education and academic difficulties during the COVID-19 pandemic. **Materials and Methods:** It was a cross-sectional observational study with a convenience sample conducted in a school at India. An online structured questionnaire was developed using Google forms, with a consent form appended to it. In few cases, structured questionnaire was filled offline. The target population comprised undergraduates of school students in class XI–XII standards. The respondents in the target population were sampled by a convenience sample. An analysis of descriptive statistics was conducted to illustrate the demographic and other selected characteristics of the respondents. Categorical data were described by the number (n) and percentage (%) of subjects in each category. All statistical calculations will be performed using the Statistical Package for the Social Sciences, version 21.0. Data will be expressed in *n* (%). **Results:** Male student participants were more in number in comparison to female medical students in 11th and 12th standard classes**.** Majority of the student's participants were staying at city or town areas**.** Uninterrupted internet facility at home was available almost 79–83% cases among participants. Online instructions were used almost 100% cases during lockdown period. Laptops were used mostly commonly by students (53–58%) followed by smart phones (19–25%) for online teaching. On an average 3 h per day, online classes attended by students (53–64%) followed by 4 h/day (23–31%) during lockdown period. Type of online class portal used was more with Zoom (100%) followed by Google meet 11–16%). Google classroom has been used almost 100% cases to share notes, video lectures, online class tests, and other communications. **Conclusion:** Ability to focus on academic work (69–72%) and difficulties with online learning (23–31%) were the most commonly cited issues related to academics. Ability to focus on academic work was also a significant predictor of somatic problems, together with problems in completing assignments and tests. The findings, further, revealed that the COVID-19 pandemic had the greatest impact on the quality of the learning experience and students' mental health.

Keywords: COVID-2019, Academic facilities, Academic difficulties, Online teaching, School students, India

Asian Pac. J. Health Sci., (2022); DOI: 10.21276/apjhs.2022.9.4.64

Introduction

The novel coronavirus (COVID-2019) has spread very rapidly all over China and several other countries, causing an outbreak of acute infectious pneumonia.[1] Several governmental measures have been taken to counteract the risk of disease spreading. These measures include travel restrictions, mandatory quarantines for travelers, social distancing, bans on public gatherings, schools and universities closure, business closures, self-isolation, asking people to work at home, curfews, and lockdown.[2,3] Authorities in several countries worldwide have declared either lockdown or curfew as a measure to break the fast spread of virus infection.[4] These measures have a negative worldwide effect on the business, education, health, and tourism.[5]

The COVID-19 impact was everywhere, which resulted in the closure of schools and other educational institutions. Initially, most governments have decided to temporarily close the schools to reduce the impact of COVID-19. Later, it was reopened for a few grades, which increased the number of infection rates and then closed again. Although schools are closed, students are attending their classes through various education initiatives such as online classrooms and radio programs.[6]

In the absence of any intervention, the learning losses arising from the COVID-19 pandemic are likely to have a long-term compounding negative effect on many children's future well-being. These learning losses could translate into less access to higher education, zlower labor market participation, and lower future earnings.[7]

Mental health issues are the leading impediment to academic success. Mental illness can affect students' motivation, concentration, and social interactions – crucial factors for students to succeed in higher education.[8] However, no detailed study on the mental health status of school and college students facing the epidemic has been conducted to date in Indian setup.

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How to cite this article: Rana RS. Study the Indicators of Academic Facilities and Academic and Life Difficulties or Challenges of Online Learning/Teaching during COVID-19 Pandemic among School Students in India. Asian Pac. J. Health Sci., 2022;9(4):345-349.

Source of support: Nil

Conflicts of interest: None.

Received: 12/03/2022 **Revised:** 17/04/2022 **Accepted:** 17/06/2022

The seven-item generalized anxiety disorder scale (GAD-7) is one of the most widely used instruments for the detection and screening of anxiety disorders to aid the diagnostic process of specific disorders (Toussaint *et al*., 2020).[9] The GAD-7 takes <3 min to complete and easy to score (Budikayanti *et al*., 2019).[10] Today, the GAD- 7 is the most widely used measure of anxiety used in clinical practice and research due to its diagnostic reliability and efficiency (Johnson *et al*., 2019).[11]

This study provided an opportunity to closely examine the potential impacts of study related stress factors on student's psychological distress. Therefore, in the present study, we have investigated and analyzed psychological impact of the COVID-19 pandemic and online teaching on the academic performance of school students in India.

Aims

The aims of this study were to study the indicators of academic facilities, academic and life difficulties, or challenges of online learning/teaching during COVID-19 pandemic among school students in India.

Objectives

Primary

This study was to study the indicators of academic facilities and academic and life difficulties or challenges of online learning/ teaching during COVID-19 pandemic among school students.

Secondary

This study was survey to solicit participants' feedback regarding their experience in online education and academic difficulties during the COVID-19 pandemic.

Materials and Methods

It was a cross-sectional observational study with a convenience sample conducted in a school at India. An online structured questionnaire was developed using Google forms, with a consent form appended to it. In few cases, structured questionnaire was filled offline. The target population comprised undergraduates of school students in class XI–XII standards. The respondents in the target population were sampled by a convenience sample.

The questionnaire was anonymous to ensure the confidentiality and reliability of data. Finally, those who completed the questionnaire were included in the final analysis (based on response rate).

Study Tools

- Structured questionnaire
- Seven-item GAD-7.

An analysis of descriptive statistics was conducted to illustrate the demographic and other selected characteristics of the respondents. Categorical data were described by the number (n) and percentage (%) of subjects in each category. All statistical calculations will be performed using the Statistical Package for Social Sciences, version 21.0. Data will be expressed in *n* (%).

Results

Male student participants were more in number in comparison to female medical students in 11th and 12th standard classes**.** Majority of the student's participants were staying at city or town areas**.** Uninterrupted internet facility at home was available almost 79–83% cases among participants [Table 1].

Online instructions were used almost 100% cases during lockdown period. Laptops were used mostly commonly by students (53–58%) followed by smart phones (19–25%) for online teaching. On an average 3 h per day, online classes attended by students (53–64%) followed by 4h/day (23–31%) during lockdown period. Type of online class portal used was more with Zoom (100%) followed by Google meet 11–16%). Google classroom has been used almost 100% cases to share notes, video lectures, online class tests, and other communications [Table 2].

Ability to focus on academic work (69–72%) and difficulties with online learning (23–31%) were the most commonly cited issues related to academics. Ability to focus on academic work was also a significant predictor of somatic problems, together with problems in completing assignments and tests. COVID-19 pandemic had considerably affected school students' education by (55–60%) followed by moderately affected (23–28%) [Table 3].

Discussion

COVID-19 has affected a large number of students across states, class, caste, gender, and region. The shutting down of schools and the decision of shifting traditional classrooms to digital platforms is not only increasing learning inequality among children, but also pushing a large number of children out of school due to the digital divide. Other than learning, the absence of schooling would also have a long-lasting effect on the health and nutrition of children. The role of the budget in the current situation as well as beyond the pandemic is very crucial to ensure inclusive education for all.[12]

Since the COVID-19 outbreak and lockdown, a few studies have emerged describing higher levels of anxiety and increased risk perception among college students during COVID-19 pandemic.[13-15] We began to witness schools, teachers, and students increasingly adopt E-learning technologies that allow teachers to deliver instruction interactively, share resources seamlessly, and facilitate student collaboration and interaction (Elaish *et al*., 2019; Garcia *et al*., 2018).[16,17] Although the efficacy of online learning has long been acknowledged by the education community (Barrot *et al*., 2020, 2021; Cavanaugh *et al*., 2009),[18-21] evidence on the challenges in its implementation continues to build up (e.g., Boelens *et al*., 2017).[22]

Table 1: Demographic characteristics of study participants/ respondents

Characteristics	*11th Standard (n=100) (%)*	*12th Standard (n=100) (%)*
Gender		
Male	54 (68)	59 (59)
Female	46 (42)	41 (41)
Living		
Metro city	71 (71)	69 (69)
Town	26 (26)	24 (24)
Rural	3 (3)	7 (7)
Uninterrupted internet facility at home		
Yes	83 (83)	79 (79)
No	17 (17)	11 (11)

The current coronavirus (COVID-19) pandemic is having a profound impact, not only on people's health but also on how they learn, work, and live. The most important challenges created by COVID-19 are challenges to adapt a system of education built around physical schools. At its peak, more than 188 countries, encompassing around 91% of enrolled learners worldwide, closed their schools to try to contain the spread of the virus.1

Table 2: Descriptive statistics for observed indicators of academic facilities of online learning/teaching during COVID-19 pandemic

Characteristics	*11th standard (n=100) (%)*	*12th standard (n=100) (%)*
Face-to-face instruction	Nil	Nil
Online instruction	100	100
Facilities		
Laptop	53 (53)	58 (58)
PC	11 (11)	13 (13)
Smart phone	25 (25)	19 (19)
Tablet	10 (10)	8 (8)
Others	2 (2)	2 (2)
Online class/h/day		
1 h/day	2 (2)	1 (1)
2 h/day	11 (11)	5 (5)
3 h/day	64 (64)	53 (53)
4 h/day	23 (23)	31 (31)
5 h/day	0 (0)	0 (0)
More	0 (0)	0 (0)
On-line classes	100 (100)	100 (100)
Educational websites	17 (17)	23 (23)
YouTube videos	37 (37)	44 (44)
E. Books	11 (11)	22 (22)
Educational applications	8 (8)	12 (12)
PDF lectures	92 (92)	100 (100)
Others	22 (22)	11 (11)
Types of online class portal		
Zoom	100 (100)	100 (100)
Microsoft teams	2 (2)	1 (1)
Skype web	0 (0)	0 (0)
Whiteboard	0 (0)	0 (0)
Edmodo	0 (0)	0 (0)
Webex	7 (7)	4 (4)
Google meet	11 (11)	16 (16)
Google classroom	100 (100)	100 (100)
Social networks	0 (0)	0 (0)
WhatsApp (class-based group)	100 (100)	100 (100)
Others	3 (3)	7 (7)

School closures have a very real impact on all students, but especially on the most vulnerable ones who are more likely to face additional barriers.[23] Children and youth from low-income and single-parent families; immigrant, refugee, ethnic minority, and indigenous backgrounds; with diverse gender identities and sexual orientations; and those with special education needs 8 suffer by being deprived of physical learning opportunities, social, and emotional support available in schools and extra services such as school meals.[24]

The first case was officially recorded on January 30, 2020. India went into full lockdown on March 24 with little warning to the general public: at the time, India had just 500 confirmed COVID-19 cases and fewer than 10 deaths. Due to the increasing case numbers, the national lockdown continued till June 2020 and was slowly lifted in a phased manner across the country, even though cases were increasing, due to the economic shutdown that succeeded the public health lockdown. The closures have affected millions of learners across India from pre-primary through secondary levels of schooling. Although a lot of digital content has been generated and transmitted to help children continue to learn from home, there is limited evidence on the extent to which this content is actually reaching children, whether they are engaging with it and the impact, it is having on their participation and learning. The 2020 annual status of education report survey was adapted to a phone survey format that could be conducted in multiple waves, to capture the effects of the pandemic on different aspects of children's education.[25]

A report by Oxfam India indicated that children studying in government schools were hit particularly hard, with more than 80% of government school students in Odisha, Bihar, Jharkhand, Chhattisgarh, and Uttar Pradesh not receiving any educational materials during the lockdown. This was mostly because families did not have access to digital devices and e-learning tools. In homes that had digital access, WhatsApp was the primary mode (75%) for delivering education in both public and private schools, followed by phone calls between teachers and students (38%). However, more than 75% of parents had trouble with WhatsApp lessons due to the lack of an internet connection or the inability to afford it, and sometimes poor internet speed/signal.[26,27]

However, students reported a number of academic and everyday difficulties and high levels of mental health distress. High

Table 3: Descriptive statistics for observed indicators of life difficulties or challenges of online learning/teaching

Characteristics	*11th standard (n=100) (%)*	*12th standard (n=100) (%)*
Over all teaching affected		
Greatly affected (5)	13 (13)	16 (16)
Considerably affected (4)	60 (60)	55 (55)
Moderately affected (3)	23 (23)	28 (28)
Slightly affected (2)	4 (0)	1 (1)
Not affected (1)	0 (0)	0 (0)
Difficulties or challenges faced during online teaching		
Ability to focus on academic work	77 (77)	69 (69)
Completing assignments and tests on time	63 (63)	61 (61)
Difficulties with online mode of learning	23 (23)	31 (31)
Inadequate Wi-Fi/computer access	2 (2)	2 (2)
No academic difficulties	0 (0)	0 (0)
Difficulties in communication	27 (27)	19 (19)
Student assessment	41 (41)	52 (52)
Use of technology tools (access to hardware and software)	29 (29)	21 (21)
Mental health (stress and anxiety)	47 (47)	58 (58)
Time management	38 (38)	32 (32)
Students' evaluations of faculty	33 (33)	28 (28)
Technophobia	37 (37)	16 (16)

levels of depression were associated with difficulties in focusing on academic work. Inability to focus on academic work during lockdown and negative impact of online teaching were more likely to be associated with higher levels of poor academic performance in the Exams.

Cross-sectional, self-report data on psychological distress, and COVID-19 exposure by Kibbey *et al*. revealed that nearly half of the students reported elevated psychological distress, including health anxiety, general anxiety, and depression.[28] Khan *et al*. study revealed that about 28.5% of the respondents had stress, 33.3% anxiety, 46.92% depression from mild to extremely severe, according to DASS 21, and 69.31% had event-specific distress from mild to severe in terms of severity according to IES.[29]

Online teaching tools offer significant benefits such as recording the classes/sessions, sharing voice/text messages, and software's which are available for both recording and editing audios, a tool for creating online spoken assignments (using images and videos), providing feedback to students, and so on. However, trial run version software's are limited to five voice threads such as the file once created cannot be deleted, zooming and other multi-rich presentations for content delivery options are not available, platform for creating websites, blogs, and e-portfolios using drag-and-drop method. A question was framed to know the knowledge of the participants on which tool the online teaching and learning is carried out. Majority of the participants have responded that they are using the Zoom software application to teaching and learning online. About 81.7% of participants were agreed to have best utilization of zoom application and rest of the participants were using other online teaching tools.[30] In higher studies, one course is composed of different subjects such as theoretical, analytical, technical, numerical, management, drawing oriented, and practical/laboratory. In view of above, the participants were asked, in which type of courses was more effective to understand through online. During online classes, it seems more often that many faculties facing problems in teaching some special subjects, in which they need face to face interaction. Paradigm shift from traditional face-to-face teaching method to online teaching poses technical difficulties that affect the efficacy of teaching-learning process. The survey has been conducted with various stake holders of all higher education courses to know the efficacy of teaching-learning process. More than 60% of the students are not ready (due to lack of technical, infrastructural, and high-speed internet access, and power supply, limited network data per day) for the online classes.[30,31]

Our results indicate that school students who are experiencing considerable number of academic and everyday difficulties during the COVID-19 pandemic also report increased levels of mental health burden.

Limitations

This study has several limitations worth noting. The study design is cross-sectional. Therefore, the causality cannot be established, as data represent a single moment in time.

Conclusion

COVID-19 is imposing threat both on physical and mental health since its outbreak. All forms of mental health burden were significantly associated with online learning difficulties. Analyses indicated that economic hardship was the most significant predictor of depression among respondents, followed by difficulties with focusing on academics. Our results indicate that school students who are experiencing considerable number of academic and everyday difficulties during the COVID-19 pandemic also report increased levels of mental health burden. This study will add to the existing body of literature on the impacts of the COVID-19 pandemic, lockdown, and online learning on the social and psychological health of students.

Paradigm shift from traditional face-to-face teaching method to online teaching poses technical difficulties that affect the efficacy of teaching-learning process. More than 60% of the students are not ready (due to lack of technical, infrastructural, and high-speed internet access, and power supply, limited network data per day) for the online classes. Survey indicated that the online sessions of problematic subjects are difficult, but theoretical subjects are easy to understand. Students felt selected portions which are covered during the emergency lockdown period through online, needs to be revised in face-to-face classes after reopening of institutions. The suggestions and recommendations are made to improve the efficacy of online teaching learning process. Further, the precautions to be taken by the schools/colleges/universities to avoid rapid spread of COVID-19 cases are high lightened, if colleges/universities open before vaccinating the individuals (public, staff, and students).

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