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## Chapter 12

# Impact of COVID-19: a particular focus on Indian education system

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### 12.1 Introduction

The word COVID was first discovered in Ontario Cancer Institute in Toronto in 1963. Since then, various mutations were found in different parts of the world, but COVID-19, which was discovered toward the end of 2019, will be written in the history of 2020. The history indicates such incidences every 100 years. Various types of flu infections such as plague (1720), cholera (1817), Spanish flu (1918), and corona virus (2019) have been declared as pandemics. The diagonals of impact or the crater created due to the situation are major concerns today.

The novel corona virus (COVID-19) was declared a pandemic by the World Health Organization (WHO) on March 11, 2020. It is established that this virus influences the aged persons more (Zhou et al., 2020); however, this view was countered (Bhatnagar et al., 2020) and few others have done descriptive and mathematical analysis of COVID spread and made few predictions upon it which are to be observed (Harjule, Kumar, Agarwal, & Poonia, 2020; Kumari et al., 2020; Singh et al., 2020). It has globally impacted many sectors like small and large scale businesses, the world economy, health sector, transportation, wages, industries, education, etc. It is evident by the news reports and other reliable sources that this pandemic has majorly brought adverse consequences. However, it is evident that during the global lockdown, a lot of curricular activities, including regular courses, webinars, faculty development programs, lectures, training, and certification programs, have much flourished when it comes to the education sector.

Where this online facility has made education easier and comfortable, it has its limitations also. Here, we have emphasized the impact of COVID-19 on the education sector. As per the UNESCO report, the worldwide lockdown has affected over 91% of the world's student population (UNESCO, 2019). This estimation predicts that the corona virus will adversely impact over 290 million students across 22 countries. The same report estimates that about 32 crore students are affected in India, including those in schools and colleges.

In this chapter we discuss the impact of COVID-19 with a particular focus on education. This chapter is organized as follows: Section 12.1 is introduction; Section 12.2 throws light on impact of COVID-19 on education, which has two subsections—effect of home confinement on children and teachers, and a multidimensional impact of uncertainty. Section 12.3 describes sustaining the education industry during COVID-19 and conclusions are mentioned in the last section.

## 12.2 Impact of COVID-19 on education

During this pandemic education sector has experienced gross changes such as a shift from regular contact classes to online platforms, modified teaching pedagogy adopted by teachers, conduction of examinations and competitive exams etc. As per the UNESCO report in the education sector, 1,190,287,189 learners have been affected and 150 countrywide closures (UNESCO, 2019). The effect of COVID-19 on the education and mental health of students and academic staff has been explored in the studies (Cao et al., 2020; Sahu, 2020). It presents some challenges due to COVID-19 on education. First, to protect the traditional teaching system, which is entirely shifted to online teaching, which requires teachers' training, strong technical support, and high-speed internet, which is not accessible for everyone. Second, the assessment and evaluation system using an online platform does not provide student performance accuracy because the originality of performance cannot be assured (Ruder, 2019). The students may use some other device to take help while answering the questions asked during the assessment. The third is the research platform, including international travel, cancellation, and postponing conferences and seminars. Other research activities have adversely affected the work (Hutton, Dudley, Horowitz-Kraus, DeWitt, & Holland, 2020). However, many such events have shifted to online platforms based on the possibilities, which has increased the participation and popularity of these events (Cao et al., 2020). The fourth concern is student mental health and career, which is grossly affected due to this outbreak (Sahu, 2020).

Studies have been conducted where the impact of COVID-19 on physicians' education was to be assessed for which they conducted seminars based on self-regulation theory and found significant results (Clark et al., 1998; Ferrel & Ryan, 2020). Ferral and Ahmad discussed the pandemic's impact

due to which some hospitals in the United Kingdom canceled students' internship and observations (Ahmed, Allaf, & Elghazaly, 2020; Ferrel & Ryan, 2020). This was reassured by another study, which concluded that, as a preventive measure, many hospitals are not permitting students in hospitals, which is adversely influencing their education (Burgess & Sievertsen, 2020).

Edgar discussed the effects of COVID-19 on higher secondary education and the impact of using Science Technology Engineering and Mathematics education. In this study, the authors collected data through the telephonic mode from public school teachers, where they found a significant drop in these students' academic performance (Iyer, Aziz, & Ojcius, 2020).

COVID-19 has brought the entire education methods from traditional to online modes. There are various online platforms available for learners and professionals. The students can work with peace of mind while staying at their homes where their time, energy, and money are not wasted traveling. They are not fatigued and hence can invest themselves more in comparison to preCOVID conditions. Studying at home has also provided a more significant benefit to the students being directly monitored by parents. When it comes to theory classes, the online platform has given them a vast chance to excel. However, the practical assignments that the students are supposed to conduct in laboratories and fields have seen a major constraint. This has created a significant limitation of teaching for teachers when they cannot provide the demonstrations to the students in the absence of laboratory instruments and other necessary practical materials.

However, this has led to the timely completion of courses despite the complete lockdown but with incomplete knowledge among students whose courses are more practical. Therefore a combination of these pros and cons has brought the education world to a different level.

Several online platforms are available for lectures, training etc., which have made learning easier (Bambakidis & Tomei, 2020). However, in the absence of contact teaching, a one-to-one discussion between a teacher and students is adversely influenced. The chances of filling this lacuna are also not assured because the students will probably be deprived of contact learning before being promoted to the next level. This again leads to next level difficulties that these students may face shortly soon due to unclear concepts of previous standards/grades (Sintema, 2020). Also, in the absence of a formal class environment, the student's concentration is more likely to be adversely influenced.

Where the online facility has provided the ease of learning through flexi classes, there is no surety that the student himself or herself is attending the class. Due to network troubles, sometimes the teacher and students face many disturbances. Students sometimes get involved in mischievous activities by making fake email IDs, making noises, or giving unnecessary comments etc. The teacher faces difficulty maintaining discipline. However, this

online mode is more appropriate for some disciplines than direct contact teachings, such as web designing, etc., where the practical demonstration can be better understood through online presentation and screen sharing options.

On the other hand, students from the low socio-economic class are getting no chance to experience online learning. This creates a huge and unfair social stratification where learners are left deprived of their legitimate right to education. In developing countries like India, where a huge population belongs to rural backgrounds, people are not so technology friendly. This is another challenge for the Indian education system despite the availability of technological facilities. This difficulty is faced by either or both teacher and student. Teachers who are more apt and comfortable in contact teaching cannot give their 100% through online lectures. A very advantageous and constructive aspect that emerged during the lockdown is that many professionals started throwing free online courses, training programs, workshops, webinars, etc., which have given a good chance to all the learners to update their credentials at no expense. People having busy official schedules who are usually not able to invest time in such programs are now getting a chance to upgrade themselves. On the other hand, young professionals are getting a fair chance to present themselves with more confidence.

When it comes to the physiological and cognitive effects, online education has both advantages and disadvantages. Recently, a study was conducted at Harvard Medical School on digital devices' interference in sleep and creativity. It was found that the use of digital media plays a significant role in making the neural connection for a growing human brain. However, the screen usage of more than the recommended hours can lead to lower brain development. This also leads to the disruption of sleep by undersecretion of the melatonin hormone.

Another major concern is the availability of study resources. Not all the study material is available through online mode. Several offline materials are usually available in the library but not in the online database. A student is being deprived of this material. Furthermore, the educational institutions, which have decided to conduct online examinations, face difficulty in preparing question papers. The question papers are mostly multiple choices that do not give the student a window to write descriptive answers, which are equally crucial for a student to learn. This improves the writing skills of the student.

Where the online conduct of classes and conducting examinations has its challenges, the evaluation, on the other hand, has become more convenient and transparent between the teacher and student, where the students come to know about their performance. There are platforms that allow the faculty to give online assignments and evaluation. Online teaching does not require a large infrastructure for the conduct of classes. Instead, a strong IT team is sufficient to make it workable. In direct contact teaching, the other teaching and stationary materials are required, in the absence of which teaching is

likely to suffer. The online teaching platform has covered up this drawback of direct contact teaching. However, online teaching makes people more digitally dependent by reducing direct and one-to-one social interaction. This is gradually making people more technology addicts.

### 12.2.1 Effect of home confinement on children and teachers

Due to the COVID-19 crisis (in more than 150 countries), all levels of the education system, from preschool to tertiary education, have been affected (Bjorklund & Salvanes, 2011; Vahid, 2020), wherein gradual closure of schools and universities took place. Similar situations prevailed in the past as well, during the pandemics (Klaiman, Kraemer, & Stoto, 2011). Being confined to home or lockdown has impacted lives and livelihood across different spheres and so the education sector too, though have been able to meet the demands ensuring that via “online learning,” “homeschooling,” “virtual learning,” or “E-learning” children’s educational attainment remains undisrupted mainly (IAU, 2020).

At the tertiary level, almost all universities and colleges have offered online courses and switched to virtual lectures, classes, and webinars (Strielkowski, 2020), since digital learning has emerged as a significant aid for education from just an extracurricular facility. Although the contingencies of digital technologies rendition go past a stop-gap solution during the crisis, it has helped answer a new set of questions entirely about what, how, where, and when students shall learn. With the help of technology, students and teachers can ingress resource materials and not limit just to the text books in different formats, styles at their own pace and time by just going online. Besides teachers, smart digital technologies do not just teach only. Instead, it simultaneously observes, monitors how we study, how we learn, what interests us, the tasks that we involve in, the kind of problems that we face and find difficult to solve and adapt accordingly to meet the needs of the learner with more accuracy, specifications as compared to traditional learning within classrooms (Kumar, 2020).

However, the necessary measures taken are highly applaudable; there are various issues that arise due to prolonged school closures and home confinement (Cao et al., 2020) impacting students’ well-being in COVID time wherein students feel physically less active, sleep irregularities, dietary changes marked by weight gain along with low motivation (Wickens, 2011), boredom to getting more anxious, and irritable as well. Abundant research has been carried out, suggesting having adverse effects on physical and psychological health in school-going children and students pursuing higher education at colleges and universities (Liu et al., 2019). Nevertheless, at the tertiary level, the closing of campuses left them with no choice to leave hostels and dormitories and return to their hometown; however, many got stuck too, leaving them helpless and anxious (Grubic, Badovinac, & Johri, 2020).

The switch to online education ensures minimum loss of studies suffered, and progress and attainment are also closely monitored via timely assessment and evaluations. Internal learning evaluation and assessments are considered to have high significance as it demonstrates the students' learning needs and support for taking remedial actions (Pandit, 2020). However, having been shifted to online platforms and accessed remotely, a major concern that emerged was the availability of proper internet facility networks and technology, especially in lower socio-economic zones and strata. In many countries, via online portals, TV and radio channels were started and the concern was addressed by the respective governments (Gyamerah, 2020).

Imparting of average grade points based on the course completion for students pursuing higher studies, deferring the exams till further notice, promotion to the next level using "predictive grade," were announced by few higher education institutions and schools. As per Gonzalez et al. (2020) and Black and Wiliam (2018), the evaluation method and assessment would also change from traditional high stake to small project-based and activity, assignment-based evaluation shortly as the pandemic continues. At higher education institutes, there is a hold on the ongoing research projects and field works. A virtual internship is provided and various scientific research conferences and symposiums have been postponed and canceled (Viner et al., 2020). They have moved online, whereby these virtual conferences have adversely affected networking opportunities and informal communication, creating a wide gap, especially in case of the inequalities prevailed in accessing technology to educational resources and the absence of proper remedial measures (Gjoshi & Kume, 2014).

It is perceived that higher education can be relatively managed with digital learning or remote schooling (Srivastava, 2020). As such, most of the research carried out to study the effect of the COVID-19 pandemic on education discusses the adverse effects in terms of learning and student well-being (Herold, 2017) due to home confinement and digital learning or homeschooling taking place with parental issues and concerns to provide childcare management and guidance required for their distance learning programs, availability of resources, and their socio-economic conditions (Hiremath, Kowshik, Manjunath, & Shettar, 2020).

Despite the ongoing conditions prevailing due to COVID-19, online learning has said to have long-term positive implications that can be expected in comparison to the earlier research studies that suggested that student well-being is affected by the quality of learning (Mahboob, 2020). A recent study sheds light on the significant positive impact of COVID-19 on learning efficiency and performances by adopting online learning strategies. To better understand the teaching and learning process during this crisis, it is imperative to have an education reform made to provide necessary teacher training, making further advancement of the new normal digital learning for functioning smoothly in the future as well (Stephens, Leevore, Coryell, & Pena, 2017).

Furthermore, according to WHO, COVID-19 may never be gone. Instead, people have to learn to live with it. As such, by the policymakers, distance learning is embedded in normal education, so as to help students learn coping skills to deal effectively, minimizing negative impacts in case of crises encountered.

However, as a need of the hour, education shall increasingly embrace online/virtual classrooms, keeping in mind the exposure to students' screen time in a day, planning of activities wherein parental involvement, assistance, and guidance are considered (India Today, 2020). More physical education, music, dance, home gardening along with art integration should be focussed so as to enhance creativity, and affective domains that advertently shall enhance motivation, physical activities (Sprang & Silman, 2013) and in adolescence too, continuous sitting, eye strains (Levy & Ramim, 2017) and issues like cyber bullying, video game addictions and social media browsing can be put under control. Even for university students, through distance learning, they can collaborate with others, watch lectures prerecorded, and have fruitful discussions. The lecturer can be more of a facilitator rather than an instructor. Distance learning can be as effective as a traditional face-to-face mode of learning. Students have more family time; they can engage at their own pace (Simonson, Zvacek, & Smaldino, 2019).

Moreover, there are barriers to distance learning and are unique to every country. However, its use has worldwide benefits that can be counted on, especially educating, imparting training on various focussed topics to general hobbies (Bell et al., 2017). For educators, having been faced with so many challenges to adjust and get accustomed to the distance learning platform, it is highly commendable to have done so effectively. Still, they find it convincing, and a feel-good factor also persists, as work from home has helped manage home, take care of one's self and family as mostly the time is spent on daily commuting, travels to reach the workplace, endless department meetings, colloquia or ongoing discussions on one side, and on the contrary, the research evidence (Goodman, Joshi, Nasim, & Tyler, 2015) demonstrated that parents with a low socio-economic background faced difficulties in providing nutritional meals to their children due to school closures, and also the affordability of extra-school activities compared to more advantaged backgrounds.

Nevertheless, to minimize the challenges experienced due to home confinement and school closures, distance learning should be encouraged. Need for updating with modern technology should be introduced with high-speed internet, continuous power supply, cyber security, as well as proper training to educators and students so as to have skills and competencies to operate electronic devices, along with the necessary knowledge and understanding about the method in which the information is imparted.

Clearly, due to our recent experience with the COVID-19 pandemic, many conventional academic life principles have to be reshaped. However, a common goal is being shared by all the education systems, which is to overcome the learning crisis faced and deal effectively with the COVID-19 pandemic.



While talking about the family environment, it has been observed that many faculties are reporting about online teaching difficulties. Especially in children's cases, it is reported that the families are not cooperating to maintain the class's decorum. The family members keep disturbing the child for one or the other reason, which promotes the child to continue with disturbing and inattentive behavior. The cognitive skills of the parents also have a significant role in understanding and growth of the child. If the academic and the other assignments are better understood by the parents, the children will have a constant source of support whenever needed without any delay or waiting time for the next interaction with the teacher. In this aspect, India is facing much difficulty because a large population is illiterate or less educated to compliment the contemporary educational demands of their children. Hence, the family has a central role in the learning of the child (Moon, Kim, & Moon, 2016).

### 12.2.2 A multidimensional impact of uncertainty

The diagonals of impact or the crater that is created due to the situation is a matter of major concern today. If we see the situation and scenario, we will find that this pandemic problem is not just medical or psychological. However, it encompasses a three-dimensional area, that is the bio-psycho-social domain of health psychology, which explains an interconnection between biology, psychology, and socio-environmental factors. This model plays an important role in defining interaction between humans and the environment and puts light on humans' interaction with their social environment in which we operate within certain domains and norms. When these domains are affected by environmental factors, a lethal combination takes birth. The world is facing the same evidence in the form of various psychological and socio-environmental outcomes, such as financial, mental health, environmental, etc. None of the areas are untouched by the pandemic influences. In the current chapter, the impacts of COVID-19 on education are explained in detail.

Suppose we see the present scenario when uncertainty is prevailing in every sector of society. In that case, it will not be superlative to say that the students of today, despite having their completed degrees, will have a certain and stable career. Such situations are making the students prone to *ruminat-ion*, which means that they are most likely to think about their uncertain future. In the present context, it is in terms of examination outcome and job security. This thought process is likely to affect their overall psyche and, in turn, will lead to a greater rise in major psychological problems.

### 12.3 Sustaining the education industry during COVID-19

This pandemic situation generates many education losses like postponing the board exams, competitive exams, government exams, schools and colleges

closed, etc. To overcome or minimize these losses, the Human Resource Development (HRD) minister released the guideline to all educational institutes to utilize the online platforms for teaching purposes (Di Pietro, Biagi, Costa, Karpiński, & Mazza, 2020). Here, the most popular open-source of online teaching platforms are MS Team, Moodle, Zoom App, Chamilo, Webex, Canvas, Forms, Google Hangouts, and Google Meet. These platforms have helped teachers in online lecture delivery, sharing of notes, assessment, quiz conduction, etc. Several e-learning platforms are also available for students, which offer free certification or audit of the courses. These sources are Coursera, NPTEL, Swayam, edX, WHO, Harvard University, Stanford University, MITs, IITs, NITs, and many more. Therefore, in this situation, students learn at their own pace using digital platforms, while protecting themselves from the corona virus. Hence, the impact of COVID-19 on the education sector is compensated by online teaching platforms (UNESCO, 2020). This online platform also provides teachers and students with various opportunities to interact with experts as per their area of interest without any expenses. Such teaching facilitates students' effective utilization of time and more online learning activities based on their preferences.

The entire chapter can be summarized in the table mentioned below:

S. no	Pros	Cons
1	Flexible and convenient study hours.	Adjustment issues in adopting new pedagogy.
2	Novel pedagogy as a great support for sustaining education sector.	Difficulties in conducting examinations.
3	Maintaining the pace of education.	Lack of technical support and internet facility in rural and remote areas.
4	Saving time energy, resources, and money.	Originality and accuracy of performance is not assured.
5	Good for specific fields like web designing etc.	Lack of practical training resulting in decreased career opportunity.
6	People are learning technology.	No socialized learning environment.
7	Free knowledge through online courses.	Decreasing career opportunity.
8	Opportunities for new professionals.	Cognitive difficulties due to prolonged screen exposure.
9	More time to spend with family.	Physical problems like sleep difficulties, anxiety, and ophthalmological problems.
10	Multiple platforms available for study.	Psychological problems like anxiety, internet addiction etc.
11	Very convenient way of learning.	Learning rate of students affected.
12	Least resourced required for online teaching.	Due to lack of resources students are not able to get practical exposure.
13	Students can learn with own comfort.	Students not able to concentrate during class for more than 20 minutes.

## 12.4 Conclusion

The pandemic situation has adversely affected several sectors, but the education sector has had both advantages and disadvantages. The virus outbreak has negatively influenced other areas; the education sector has been able to sustain and has shown its advantages. Especially when we talk about digital education, it has proved to be a savior of the entire education system. However, it cannot be avoided that this digitalization has come up with its limitations. It has its pros and cons, such as home confinement, blocked socialization etc. Hence, in this epidemic situation, the fulfilment of course requirements is majorly satisfied. However, the quality of learning and outcome is adversely affected in some teaching areas, which further opens the door to more advanced education reformed by policymakers and government. Therefore, a futuristic approach to implementing such an education system needs much planning to provide a better learning platform. However, to get better results, online teaching techniques and traditional pedagogy may produce highly productive results. Therefore it can be concluded that despite having limitations, this COVID-19 pandemic has got a boost through various online platforms.

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