

Online education amid COVID-19 pandemic and its opportunities, challenges and psychological impacts among students and teachers: a systematic review

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Abstract

Purpose – The global spread of the COVID-19 pandemic resulted in the complete lockdown of almost every part of the world, including all educational institutions, resulting in the prompt implementation of online education to facilitate the students to carry on their learning. These conditions made the researchers study the experiences of online education among students and teachers. The influences of online teaching-learning during the COVID-19 pandemic undoubtedly offered numerous opportunities besides raising some challenges which impacted the overall psychology of students and teachers. So, this paper aims to conduct a systematic review of the research papers focussing on opportunities, challenges and psychological impacts raised due to the sudden shift to online education among students and teachers during the COVID-19 pandemic.

Design/methodology/approach – To conduct this systematic review, 19 articles published between July 2020 and May 2021 were considered and reported by following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).

Findings – It was found that online education influenced the interests and experiences of the students and teachers and has immensely impacted their overall psychology. So, for the effective implementation of online and blended education, psychological well-being of students and teachers should be taken care of with properly designed instructions, adequate infrastructure or resources and satisfactory technological skills.

Research limitations/implications – In the present study, the students were not categorised according to their subjects or streams, i.e. science, commerce, humanities, medical, dental, postgraduate or undergraduate. All the students were categorised into two categories only: (1) college students and (2) school students. And also, teachers were not categorised and were presented as a whole, as school, college or university teachers.

Practical implications – The current research identified the abrupt implementation of online education during the COVID-19 pandemic, which raised various challenges and psychological impacts among students and teachers besides offering them many opportunities in times of crisis.

Social implications – Students and teachers constitute the educational community of society. They should get ample opportunities to develop skills for online education; challenges faced during online education should be identified and tackled, and the issues concerning the psychological well-being during online education for both teachers and students should be addressed to achieve sustained development of online education-blended learning environments.

Originality/value – The paper is the original research work based on the systematic review and concludes with suggestions for the future of online and blended pedagogy while taking care of the psychological needs of students and teachers in online and blended learning environments.

Keywords COVID-19 pandemic, Online education, Opportunities, Challenges, Psychological impacts, Systematic review

Paper type Critical literature review



Introduction

The global spread of the COVID-19 pandemic resulted in the complete lockdown of almost every part of the world, including all educational institutions in order to minimise and limit the gatherings/physical contacts in educational institutions to control the spread of the COVID-19 infection. This sudden outbreak of the COVID-19 pandemic and the subsequent lockdown confined everyone within the four walls of home for a long time, which became a major challenge to the whole educational community (UNESCO, 2020) in their educational endeavours, which resulted in the sudden start of online delivery of instruction, in order to facilitate and continue the learning process during the COVID-19 pandemic. It consequently reduced the physical activity and increased the inactive behaviour (Yarınkaya and Esentürk, 2020) of students as well as teachers which induced serious impacts on the overall quality of life, education, teaching-learning schedules and their psychological well-being.

Although online learning has been a ubiquitous part of our education, before the onset of the COVID-19, pandemic students and teachers had relied more on traditional forms of education. However, during the lockdown of the COVID-19 pandemic, students and teachers had to experience complete online teaching-learning with no other options. Almost all the educational institutions took only a little time in switching to entirely online, distance or remote teaching-learning with whatever possible resources and infrastructure they had in order to control and minimise the educational loss of the students during the pandemic. Thus, such a situation has resulted to influence the overall psychology. It was the very first time for the students and teachers to involve in the complete online, distance or remote teaching-learning experience. In the educational scenario prior to the COVID-19 pandemic, most of the students were familiar with the conventional classroom or face-to-face system of education, and online, distance or remote education was just an alternate and assistive tool for all the students. Therefore, these conditions made researchers all around the world conduct various research studies to study the experiences of online education among students and teachers. The influences of the online teaching-learning environment during the COVID-19 pandemic on the one hand offered numerous opportunities, while on the other hand, it posed some challenges which impacted the overall psychology of students and teachers. So, the present paper systematically reviews the research papers focussing on opportunities, challenges and psychological impacts raised due to the sudden shift to online education among students and teachers during the COVID-19 pandemic.

Online education and the COVID-19 pandemic

Technological interventions in education have impacted the whole educational system. Technological advancements have made it possible to connect online globally. Online education offers the flexibility of time, pace and place for education to students (Huang, 1997; Jindal and Chahal, 2018), and acceptance of online education increased with its acceptability in the instructional transactions in no time (Huang, 1997; Jindal and Chahal, 2018). Technological advancements, Internet penetration, sustainable utilisation of resources by saving time and money, providing flexibility and conveniences to study (Huang, 1997; Livingstone and Bober, 2004), support from the authorities like institutions and government and development of skills were the prospects that online education promoted (Jindal and Chahal, 2018). However, online education had many challenges (Mäkelä *et al.*, 2020) when it came to its implementation which includes insufficient digital infrastructure such as lack of availability of digital devices and low accessibility with poor technological skills (Jindal and Chahal, 2018). Online education requires to be accessed from the home, office or a single quiet place to facilitate learning with concentration and without the physical presence of any facilitator or instructor, which ultimately creates a situation of isolation or limited social interaction (Rakes and Dunn, 2010; Yarınkaya and Esentürk, 2020) and that may

consequently lead to inactivity (Yarmkaya and Esentürk, 2020) and low motivation and decreased self-regulation among students (Rakes and Dunn, 2010).

Technical issues may also cause frustration (Rakes and Dunn, 2010). Also, to some extent, credibility of degrees or certificates earned online was looked upon since it did not get institutional acceptance and authoritative support for their implementation (Jindal and Chahal, 2018). But, over time this issue has been tackled (University Grant Commission, 2022). Online education was earlier considered to play supportive and assistive roles (Huang, 1997; Jindal and Chahal, 2018), and the COVID-19 pandemic forced the students and teachers to deal with fully online teaching-learning methods and experiences. The sudden adoption of online education made the students and teachers face various challenges and developed a situation of psychological distress. Therefore, the present systematic review attempts to report the opportunities that online education offered during the COVID-19 pandemic, the challenges that hindered the way to the successful and easy adoption of online education and the subsequent psychological impacts developed among students and teachers.

Objectives

The sudden spread of the infectious COVID-19 pandemic and the rapid shift to the online education and its subsequent impacts on students and teachers has made the scholars around the globe to research over it. Many studies have been observed in the literature that reported the various opportunities, challenges and the psychological impacts. However, no study that combinedly reported the opportunities, challenges and psychological impacts that raised due to online education during COVID-19 was observed. The present systematic review aims to study the impact of online education amid the COVID-19 pandemic among students and teachers, in respect to opportunities, challenges and the psychological impacts that have been reported in the literature and attempts to present the results by collating them altogether. The whole scenario of online education amid the COVID-19 pandemic neither offered opportunities only nor posed challenges and psychological impacts alone, but it all occurred simultaneously. Thus, the objectives of the present systematic review are

- (1) to study the opportunities, mentioned in the literature, that online education during the COVID-19 pandemic created for students and teachers.
- (2) to study the challenges, described in the literature, that students and teachers faced in the rapid implementation of online education during the COVID-19 pandemic.
- (3) to study the psychological impacts, reported in the literature, raised among students and teachers while switching rapidly to completely online education amid COVID-19 pandemic.

Methodology

Review protocol

This systematic review article follows the quality reporting guidelines set out by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Page *et al.*, 2021) to ensure clarity and transparency of review reporting.

Sources and search strings: The search process started in May 2021, by consulting the following sources: PubMed, ScienceDirect and Wiley Online Library.

The following search strings were applied to the titles, abstracts and keywords of the articles for the automatic search of research papers in the mentioned digital databases or sources:

- (1) “Opportunities and Challenges” AND “online education” AND (“teachers” OR “students”) AND “COVID-19”
- (2) “Psychological impacts” AND “online education” AND (“teachers” OR “students”) AND “COVID-19”

Also, the following keywords were used to identify the required literature:

Psychological impacts of COVID-19”; “Psychological impacts of COVID-19 on students”; and “psychological impacts of COVID-19 on teachers.

Selection criteria. The research papers were searched through the application of the abovementioned keywords and search strings.

Exclusion criteria. The published research papers were characterised and excluded by the following exclusion criteria (ECs).

EC1: Papers that are found common in all the searched databases (removal of duplicates).

EC2: Generally explained psychological impacts of the COVID-19 pandemic.

EC3: Research papers that include impacts of online teaching-learning but do not include psychological impacts due to online teaching-learning during the COVID-19 pandemic.

EC4: Reports not retrieved

EC5: R1 = Research papers that do not include psychological impacts on students and/or teachers

R2 = Research papers that have no direct linkage with online learning, that is, which do not explicitly describe the psychological impacts of online teaching-learning

R3 = Research papers that do not fit well in the criteria/pattern of the present systematic review (it was either a qualitative study or a comparative study of two countries, conducted on various groups altogether, etc.)

Inclusion criteria

The inclusion criterion (IC) for the selection of the research papers for the present systematic review was limited to only those research articles that explicitly explained psychological impacts related to online teaching-learning on either teachers or students during the COVID-19 pandemic, and some studies were used for extracting opportunities and challenges raised due to the sudden shift to online teaching-learning, published from July 2020 to May 2021.

Data analysis

The studies for the systematic review were identified online through three databases (PubMed, ScienceDirect and Wiley Online Library) and random online searches. Then an analysis was conducted by inspecting each article’s title, abstract and keywords. Further, after the application of all ECs (EC1, EC2, EC3, EC4 and EC5), only 53 reports were found which were further taken for full-paper review. The whole process of data analysis was done manually with the utmost care, and no software was used for analysing the content of the selected studies for the systematic review. Thus, a total of 19 studies were identified after the application of IC and ECs as presented in [Figure 1](#). The research papers included in this systematic review were identified, screened and included by following the PRISMA guidelines ([Page et al., 2021](#)).

The finally identified research studies were carefully analysed, and it was observed that the research studies were focused on the broader categories of students and teachers.

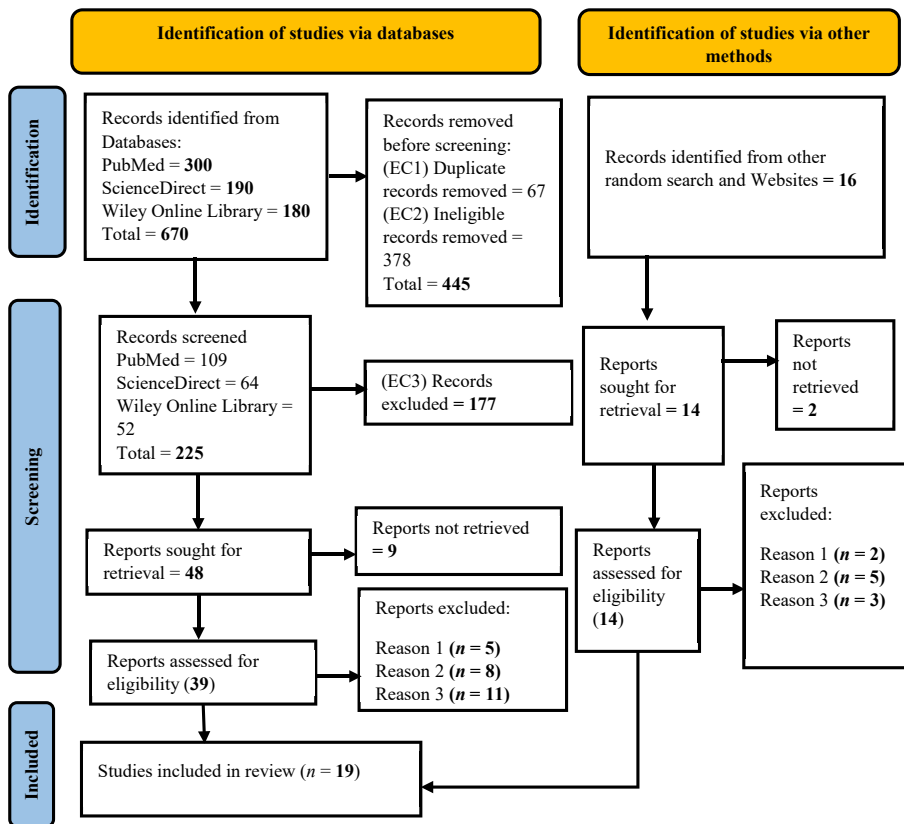


Figure 1. Selection process undertaken for the application of ECs and IC for data analysis

Note(s): PRISMA 2020 flow diagram for new systematic reviews which included searches of databases, registers and other sources, Page *et al.*, 2021

On further analysis, the selected research studies on students were found to be in sufficient numbers to be categorised as college students and school students. However, the studies on teachers were not found in sufficient numbers to make more categories, and so, the teachers were put in one category altogether.

In the present study, the students were not categorised according to their subjects or streams that is science, commerce, humanities, medical, dental, postgraduate or undergraduate, etc. All the students were categorised into two categories only: (1) college students and (2) school students. And here, teachers were taken and presented all together in one category, may it be of school, college or university teachers.

Thus, the present systematic review was carried out by categorising the sample into three categories, *viz.*, college students, school students and teachers, to study the opportunities, challenges and subsequent psychological impacts that were developed by the sudden shift to online teaching-learning during the COVID-19 pandemic.

Results

The selected research papers were analysed to identify the psychological impacts of online teaching-learning, as well as the opportunities and challenges posed by the rapid shift to

online teaching-learning amidst the COVID-19 pandemic among college students, school students and teachers which are presented and discussed below according to the group/sample mentioned in that particular research study. The results of the present study have been discussed below as per the objectives of the present study.

- (1) The opportunities, mentioned in the literature, that online education during COVID-19 pandemic created for students and teachers

The data provided in [Table 1](#) present the identified opportunities that online education offered to the students and teachers during the COVID-19 pandemic.

During the COVID-19 pandemic, online learning came up as an alternative ([Qanash et al., 2020](#); [Haider and Al-Salman, 2020](#); [Hasan and Bao, 2020](#)) which helped in adopting secure lockdown and controlling infections during the COVID-19 pandemic ([Hossain et al., 2021](#); [Khawar et al., 2021](#); [Akour et al., 2020](#); [Chaturvedi et al., 2021](#)) and, as well as in implementing “social-distancing” along with the continuation of learning ([Shrivastava et al., 2021](#)), in such a critical time. The online teaching-learning process during the COVID-19 pandemic promoted students’ engagement in learning ([Unger and Meiran, 2020](#)) with satisfaction ([Ma et al., 2021](#)). It also led to development of innovative ways ([Cuschieri and Agius, 2020](#)) for learning, acquisition of new skills ([Cuschieri and Agius, 2020](#)), and options for good communication among teachers and students for better student-teacher relationship ([Truzoli et al., 2021](#); [Stachteas and Stachteas, 2020](#); [Ma et al., 2021](#)) that enhanced the whole educational process. The COVID-19 pandemic enforced adoption to new educational technology environments which would act as a catalyst for new changes in education ([Nishimura et al., 2021](#); [Chaturvedi et al., 2021](#)) in future.

Also, educators, as a professional group, were predominantly possessed by optimism about the outcome of the COVID-19 pandemic, which was prevalent, and the unprecedented emergency implementation of distance learning did not cause them particular concern ([Stachteas and Stachteas, 2020](#)). However, it was observed that students were found interested in online examinations as well as in both online with face-to-face examinations ([Dhahri et al., 2020](#)).

Thus, online education during the COVID-19 pandemic provides opportunities to rethink new approaches to solve the problems, creating a sense of competence, relief and reflectiveness heading for a positive model, while allowing flexibility and freedom to be creative ([Kim and Asbury, 2020](#)).

- (2) The challenges, described in the literature, that students and teachers faced in the rapid implementation of online education during the COVID-19 pandemic.

The rapid implementation of online education posed various challenges to all the stakeholders. Most of the students were inexperienced and new to distance and online learning ([Ma et al., 2021](#); [Qanash et al., 2020](#)); due to pandemic-forced online learning, emergency preparedness ([AlAzzam et al., 2021](#); [Unger and Meiran, 2020](#)); use of same curricula as of face-to-face teaching during prompt implementation of remote and online classes ([Sundarasan et al., 2020](#); [Stachteas and Stachteas, 2020](#); [Nishimura et al., 2021](#); [Chaturvedi et al., 2021](#); [AlAzzam et al., 2021](#)); inadequate learning approach that posed challenges; e-learning content costs were significantly associated variables for more serious psychological distress ([Hasan and Bao, 2020](#)); changed instructional delivery and uncertainty ([Browning et al., 2021](#); [Cuschieri and Agius, 2020](#)); lack of necessary technological and financial support in developing nations ([Hossain et al. \(2021\)](#); [Stachteas and Stachteas, 2020](#)) to buy necessary technological tools ([Haider and Al-Salman, 2020](#); [Kim and Asbury, 2020](#)); lack of concentration, issues of audibility during online sessions, etc. ([Shrivastava et al., 2021](#)); familiarity with digital gadgets, type and quality of Internet connection and socio-economic status ([Khawar et al., 2021](#); [Stachteas and Stachteas, 2020](#)) were quite challenging. Also, it

Category	Authors of research papers	Type of opportunity	Description
College students	Dhahri et al. (2020)	Online examinations	Few students were found interested in online examinations and in both online with face-to-face
	Hasan and Bao (2020)	Alternative methods	Alternative to institutional closure during such an unprecedented time
	Qanash et al. (2020)	Acceptable alternative	The acceptable alternative in unavoidable circumstances like the COVID-19 pandemic; students with normal psychological assessments preferred distance learning
	Sundarasan et al. (2020)	Prompt online classes	Most of the universities promptly implemented remote online classes
	Hossain et al. (2021)	Controlling infections	Helped in adopting secure lockdown and controlling measures for infections
	Cuschieri and Agius (2020)	Developing innovative	Opportunity to develop innovative ways for collaborative skills, self-teaching as well as resilience and life skills; teaching material developed can be used for future as well and provided the students flexibility and self-pace
	Shrivastava et al. (2021)	Opportunity for academic continuation	Continuation of learning
	Haider and Al-Salman (2020)	Implementing social distancing	Alternative; implemented social distancing
	Khawar et al. (2021)	Reducing the transmission of disease	Successful attempt to reduce the COVID-19 pandemic transmission; continuation of education
	Nishimura et al. (2021)	Catalysing new changes	Adaptation to new educational environments could offer opportunities for future
School students	Unger and Meiran (2020)	Offering opportunities for students' engagement	Online learning technologies offer much potential for student engagement
	Chaturvedi et al. (2021)	Prevention for interruptions of studies	Online learning prevents interruptions to studies along with the spread of the virus; leads to new teaching methods for online delivery of education
	Ma et al. (2021)	New education system	Online education, as a new system of education, was found efficient in gaining knowledge and improving practical and communications skills, and students were found satisfied
Teachers	Kim and Asbury (2020)	Adaptation to new changes	Rethinking for new approaches to solve the problems created a sense of competence, relief and reflectiveness heading towards a positive model. Allowing flexibility and freedom to be creative
	Truzoli et al. (2021)	Acquiring new skills	Acquisition of new skills, having maintained the relationship with the students during the time of the pandemic, despite difficulties, online teaching is gaining skills
	Akour et al. (2020)	Controlling viral spread	Helped in implementing control measures to halt the viral spread and continuation of education by shifting to remote teaching
	Stachteas and Stachteas (2020)	Catering the needs of students and learning	Helped in maintaining the need of students' contact with the educational process; also, educators as a professional group were predominantly possessed by optimism

Table 1.
Identified opportunities from selected research papers

took more time to design online instruction than the traditional material, and millennial students were found to be more comfortable although the older faculty members faced many challenges in designing instructions and in the assessment process due to their lack of practice of digital tools. Challenges during the COVID-19 pandemic situation were probing troubles to manage the educational needs by both teachers and students.

The data presented in [Table 2](#) show the identified challenges the students and teachers face due to the sudden and abrupt shift to complete online education during the COVID-19 pandemic.

COVID-19 pandemic lockdown made the educational institutions implement online learning abruptly ([Kim and Asbury, 2020](#); [Stachteas and Stachteas, 2020](#); [Sundarasan et al., 2020](#)) with a limited resource ([Hossain et al., 2021](#)), with little planning ([Sundarasan et al., 2020](#); [Dhahri et al., 2020](#)) and without designing proper online instructions ([Cuschieri and Agius, 2020](#)). This also resulted in a delay in the start of online teaching, leading to an unsatisfactory setup for online teaching ([Dhahri et al., 2020](#)).

Thus, online education had been implemented as a control measure worldwide, but the quality of online instruction could vary ([Ma et al., 2021](#)) among different countries, that is, developing and developed, and among different areas, that is, rural and urban. Teachers also felt a lack of face-to-face interaction with students, with some sort of lack of sufficient technological skills, getting doubtful of knowing how and what to do during any online session or regarding online teaching with respect to students' assessment, follow-up and interaction with students ([Truzoli et al., 2021](#)). Besides this, online education poses challenges such as low-quality Internet, lack of digital skills, reduced interaction, ineffective communication with large groups of students or teachers, violation of privacy, unfair behaviours such as cheating in online assessment, lack effective tools and digital platforms for instruction and assessment ([Akour et al., 2020](#)).

- (3) To study the psychological impacts, reported in the literature, that were raised among students and teachers while switching rapidly to completely online education amid the COVID-19 pandemic.

The data presented in [Table 3](#) show the identified psychological impacts developed among the students and teachers due to various challenges in adapting to the abrupt shift to complete online education during the COVID-19 pandemic.

The data presented in [Table 4](#) show the empirical evaluations of psychological impacts due to online learning during the COVID-19 pandemic among students and teachers that were presented in the selected studies for this systematic review.

Thus, difficulties in online education were one of the significant predictors of depression and anxiety. Closure of institutions and delayed or abrupt online teaching raised depressive symptoms and overwhelming experience of uncertainty among students' confidence ([Dhahri et al., 2020](#)). It was observed that the majority of students were reported to have severe to mild psychological distress which was due to the challenges they faced. Students were found to have concerns about the negative impacts of the COVID-19 pandemic on their future and career prospects ([Nishimura et al., 2021](#)). The reasons for these concerns included the belief that online education may not be as effective as on-site education, anxiety about finding online learning more time-consuming and consequently slow retention in learning online ([Unger and Meiran, 2020](#)); lack of satisfaction ([Truzoli et al., 2021](#)); the possible resurgence of the COVID-19 pandemic outbreak leading to a sudden change in the curriculum and decreased clinical exposure and technical support for online education ([Nishimura et al., 2021](#)); decreased income ([Browning et al., 2021](#)); low quality of Internet service ([Akour et al., 2020](#)); lack of study area that has a conducive environment for learning, retention of information through online learning and loss of direct contact with teachers; lack of regular and routine activities ([Hossain et al., 2021](#)) and a desire to return to the previous methods of work ([Stachteas and Stachteas, 2020](#)) were the significant challenges which made it more

Category	Authors of research papers	Type of challenge	Description
College students	<i>Dhahri et al.</i> (2020)	Institutional preparedness	Delay in the start of the online teaching; unsatisfactory setup of online teaching
	<i>Hasan and Bao</i> (2020)	Inequality of resources among students	An inadequate learning approach that posed challenges in online class registration procedures, tiny performance appraisal systems, one-way instructor support and e-learning content costs
	<i>Qanash et al.</i> (2020)	Inexperienced in online learning	Less than half of the total students had experienced distance/online learning in the past prior to its implementation the school
	<i>Sundarasan et al.</i> (2020)	Prompt implementation of remote online classes	Use of the same curricula as of F2F teaching during the prompt implementation of remote online classes in the universities
	<i>Browning et al.</i> (2021)	Changed scenarios and concerned about the uncertainty	Changed delivery and uncertainty of education, technological challenges of online courses
	<i>Hossain et al.</i> (2021)	Lack of technological and financial support	Lack of necessary technological and financial support for developing nations such as Bangladesh
	<i>Cuschieri and Agius</i> (2020)	Rapid shift and inexperienced students and faculty	Designing online instruction was considered a time-taking procedure; only millennial students were found comfortable; older faculties faced many challenges in designing instructions and in the assessment process; rapid shift posed challenges for the administrative staff, academics and students alike and a fear of the unknown future premonitions
	<i>Shrivastava et al.</i> (2021)	Lack of resources	Internet connectivity issues during the online lectures; limited time, lack of concentration, issues of audibility in online sessions, etc.
	<i>Haider and Al-Salman</i> (2020)	Lack of resources	Majority of students could not afford to buy all the necessary digital tools
	<i>Khawar et al.</i> (2021)	Lack of resources/economic support	Lack of familiarity with digital gadgets, type/quality of Internet connection, socioeconomic status resulted as the major predictors of stress, besides gender and educational level
<i>Nishimura et al.</i> (2021)	Forced implementation with lack of proper resources	Pandemic forced implementation of distance/remote e-learning, rapid change in the system and environment, lack of technical support (digital gadgets and Internet), sudden shift to online learning, lack of knowledge of the effectiveness of online learning, sudden change in curriculum	
<i>Unger and Meiran</i> (2020)	Rapid shift	Emergency preparedness made online learning not conveniently acceptable	

Table 2.
Identified challenges
from selected research
papers

(continued)

Category	Authors of research papers	Type of challenge	Description
School students	Chaturvedi <i>et al.</i> (2021)	Lack of sufficient infrastructure and skills	Lack of sufficient digital infrastructure and digital skillset for both students and teachers
	AlAzzam <i>et al.</i> (2021)	Lack of preparedness	Not well established online and distance teaching with a lack of facilities and Internet access, probing troubles to manage the educational needs while performing the daily routines which made impractical to attend online classes regularly
	Ma <i>et al.</i> (2021)	Sudden switch to the new form of learning with no sophisticated preparation	Implemented as a universal control measure although quality and intensity variations among different provinces, and between rural and urban areas; students were found uncomfortable considering online education as a new form of learning
Teachers	Kim and Asbury (2020)	Lack of sufficient resources	Many families had limited access to the technology required for online learning despite the government's promises for laptops etc.
	Kim and Asbury (2020)	Change in working practices	Abrupt change to practice remote teaching within only two days' short notice
	Truzoli <i>et al.</i> (2021)	lack of sufficient technological skills	Lack of face-to-face interaction with students, with some sort of lack of sufficient technological skills, getting doubtful of knowing how and what to do during/regarding online teaching with respect to students' assessment, to follow-up and interact with students
	Akour <i>et al.</i> (2020)	Lack of effective tools for instruction, assessment, etc	Low-quality Internet, lack of digital skills, reduced interaction, ineffective communication with large groups, violation of privacy, unfair behaviours in online assessment, lack of effective tools for instruction and assessment
	Stachteas and Stachteas (2020)	Lack of resources and unpreparedness	Adapting the abrupt implementation of online education with limited resources and without preparation

Table 2.

stressful. Teachers also felt distressed for being unable to help their students, faced hard times rethinking their approach to engaging the students; consequently, they felt isolated and complained about an imbalance between work and home and dismay about their professional identity in online interactions (Kim and Asbury, 2020) was also observed. Despite teachers' best efforts, the students continuously experienced increased levels of distress due to uncertainties (AlAzzam *et al.*, 2021), and psychosomatic disorders were also significantly observed (Haider and Al-Salman, 2020) among teachers also.

Discussion

The COVID-19 pandemic had been a period that highlighted all these aspects of online education *viz.*, opportunities, challenges and psychological impacts simultaneously. From the

Category	Authors of research papers	Type of psychological impact	Description
College students	Dhahri et al. (2020)	Depressive symptoms, feeling of intimidation, low confidence	Closure of institutions and delayed online teaching raised depressive symptoms, sadness, boredom, nervousness, stress, feeling of intimidation and low confidence among medical and dental students
	Hasan and Bao (2020)	Psychological distress-anxiety and stress	Students showed a higher level of anxiety due to e-learning crack-up; lack of interpersonal communication increased anxiety; fear of academic loss; psychological distress had a positive association with the perception of e-learning crack-up
	Qanash et al. (2020)	Anxiety; depression	Younger aged and females had higher anxiety or depression
	Sundarasan et al. (2020)	Major stressors	Anxiety due to financial constraints; prompt implementation of remote online learning and assessments added tremendous stress and anxiety, the uncertainty of academic performance and future career prospects; feeling of burden and complicated emotions due to lockdown and isolation created frustration, anger, resentment and anxiety
	Browning et al. (2021)	Depressive symptoms	Increased stress levels and anxiety and depressive symptoms among students, due to changed delivery; concerns about uncertainty; technological challenges of online courses, increased screen time, social distancing, isolation, decreased income
	Hossain et al. (2021)	Change in routine	Lack of regular and routine activities psychologically affected the students, and academics induced a higher rate of anxiety and stress
	Cuschieri and Agius (2020)	Concern for the education	More than three-fourth of the students showed concern about the effect of the COVID-19 pandemic on their education
	Shrivastava et al. (2021)	Depressive symptoms	Headache, depression, anxiety and loneliness were significant
	Haider and Al-Salman (2020)	Psychosomatic disorders	Lack of concentration, distractions, disturbed sleeping habits, tiredness, exhausting lethargy, laziness boredom nervousness, tension, confusion, frustration
	Khawar et al. (2021)	Psychological distress	More than half of the university students were not satisfied with online classes, which was due to the challenges they faced. The majority of students were reported to have severe to mild psychological distress. Moreover, there was found a negative correlation between psychological distress and satisfaction from online classes
Nishimura et al. (2021)	Psychological Distress	Concerns about the negative impacts of the COVID-19 pandemic on their future career formation, relationship with teachers due to sudden shift to online education, change in curriculum, decreased clinical exposure and lack of technical support	
Unger and Meiran (2020)	Rapid shift and lack of resources	Feeling anxiety and negative feelings towards online learning; anxiety towards sudden shifting to completely online learning off campus; more time consuming, slow retention in learning and lack of resources and space made it more stressful	

Table 3.
Identified
psychological impacts
from selected research
papers

(continued)

Category	Authors of research papers	Type of psychological impact	Description
School students	Chaturvedi <i>et al.</i> (2021)	Lack of satisfaction and motivation	Time spent by the students did not comply with the guidelines by the Ministry of Human Resource Development (MHRD), limited class interaction and inefficient time table affected the students' satisfaction and motivation
	AlAzzam <i>et al.</i> (2021)	predictors of depression and anxiety	Difficulties in online education were one of the significant predictors of depression and anxiety; despite teachers' best efforts, students still experienced increased levels of distress due to uncertainties
	Ma <i>et al.</i> (2021)	Post-traumatic stress disorder (PTSD) and depression	Students being confined at home with a worry of infection, economic losses to families and education. Also, students were found to have post-traumatic stress disorder (PTSD) along with depression symptoms
Teachers	Kim and Asbury (2020)	Negative emotions	Initial reactions involved negative emotions and an overwhelming experience of uncertainty; teachers felt distressed for being unable to answer pupils' questions; faced hard times rethinking their approach to engaging the students; felt isolated and complained about an imbalance between work and home; concerns for vulnerable pupils generated anxiety and sadness in teachers; disrupted social relationships; dismayed about their professional identity in online interactions
	Truzoli <i>et al.</i> (2021)	Lack of satisfaction	The most relevant risk factors related to online teaching satisfaction were found as stress, depression and low mood; areas of dissatisfaction such as lack of direct interaction, assessment criteria, impact on mood and distress
	Akour <i>et al.</i> (2020)	Distress due to lack of motivation	Anxiety about the quality of the Internet and low motivation for distance/online education had suffered from moderate to severe distress
	Stachteas and Stachteas (2020)		Concerns/worry about distance learning, with stress and a feeling of fear and depression and a desire to return to the previous methods of work

Table 3.

present systematic review, it has been observed that online education alone has undoubtedly offered opportunities at all times; however, the challenges were only due to poor planning, inexperienced or unskilled handling and lack of resources and insufficient authoritative support, which ultimately has an adverse effect on the mental health. However, a well-planned and properly designed integration of digital technologies will foster learning activities (Sevillano-García and Vázquez-Cano, 2015), thereby suggesting and supporting the idea of blended learning in our education system as blended learning can fill the gaps that face-to-face and online education cannot accomplish alone (Owston, 2018). Therefore, in view of the present systematic review, the present study suggests adopting blended learning methodologies at various levels of education, in order to provide a healthy and well-planned balance of digital and face-to-face or in-person interactions (Wycoff, 2018) as blended learning methodologies offer various models that can be used to cater to the learning needs of a learner while taking care of the psychological well-being and social-emotional support of students (Wycoff, 2018), thus offering the balanced essence of online/distance/remote and face-to-face or in-person education. However, it needs to be explored further and deeper through research.

Category	Authors of research papers	Empirical evaluation instrument used	Outcome
College students	Dhahri et al. (2020)	Rating scale; multivariate regression analysis	59.9% of participants wanted a delay in exit exams due to intimidation. 17.7% were sad, 22.6% were bored and 20.3% were nervous. 10.4% were annoyed. 63.4% felt isolated, 32.9% had a lack of enjoyment, 41.5% had trouble sleeping, and 26.2% had hopelessness about the future
	Hasan and Bao (2020)	Kessler's Psychological Distress Scale to evaluate stress symptoms	A large proportion of variance is accounted for mental stress, that is, 43% for fear of loss of the academic year and 99% for psychological distress
	Qanash et al. (2020)	Patient Health Questionnaire (PHQ4) for Anxiety and Depression	Approx. 25% had an anxiety score ≥ 3 ; around 35% had a depression score ≥ 3 , and 6.7% found a severe anxiety score in the PHQ4
	Sundarasan et al. (2020)	Zung's Self-Rating Anxiety Scale	20.4%, 6.6% and 2.8% of the students experienced minimal to moderate, marked to severe and most extreme anxiety levels, respectively
	Browning et al. (2021)	Factor analysis	Profile analysis of sample students showed that 45%, 40% and 14% had high, moderate and low (respectively) levels of psychological impacts 21.5% of students felt unmotivated, unproductive, problems with concentration and procrastination; 17.4% felt anxious; 14.6% felt stressful and overwhelmed; 13.3% felt lonely; only 1% felt flexible/adjustable to new situations; 21.1% felt social distancing; 15.7% felt change in education and 12.9% felt less outings as a major cause of their change behaviours/psychological impacts
	Hossain et al. (2021)	Zung's Self-Rating Anxiety Scale	85.86% of students reported more than usual anxiety due to uncertainty about the continuation of their studies, and 65.61% reported their anxiety regarding internship and career-related issues
	Cuschieri and Agius (2020)	GAD-7 (General Anxiety Disorder) assessment tool	A high proportion of the students reported that their studying patterns (73.3%), as well as their well-being (58.7%), were affected by the shift to remote teaching
	Shrivastava et al. (2021)	Mann-Whitney test	On comparison of females and males, females experienced a severe level of headache ($p = 0.713$); however, males experienced more strain on eyes ($p = 0.405$), body posture ($p = 0.198$), depression ($p = 0.286$), loneliness ($p = 0.194$) and anxiety ($p = 0.679$)
	Haider and Al-Salman (2020)	Likert scale	Lack of concentration, distractions in e-learning during the COVID-19 pandemic (36% and 26.3%); excessive use of digital devices for e-learning affected their sleeping habits (53.7% and 27%) and caused students' isolation (46.8% and 28.4%); tiring and exhausting (70.2% and 21.4%) and induced lethargy and laziness (60.9% and 24.6%); boredom, nervousness and tension (54.7% and 33.9%); volume of assignments via e-learning led to confusion, frustration and poor performance (55.5% and 27.9%); online quizzes and exams from home-made the university students uncomfortable and nervous (41.35% and 24%)

Table 4.
Empirical evaluation of psychological impacts in the selected studies

(continued)

Category	Authors of research papers	Empirical evaluation instrument used	Outcome
School students	Khawar <i>et al.</i> (2021)	The Kessler Psychological Distress Scale (K10) (2003) and student satisfaction scale	29% of students were the victim of moderate psychological distress, and 17.6% were facing mild psychological distress. About 70% of students were reported to have severe (41.5%) to mild (29%) psychological distress. Also, there was found a negative correlation between psychological distress and satisfaction from online classes
	Nishimura <i>et al.</i> (2021)	Regression analyses	(15.9%) had PHQ-9 scores of 10 or more, and 34 (7.2%) had GAD-7 scores of 10 or more. College students having concerns about the shift towards online education were found significantly depressed
	Unger and Meiran (2020) Chaturvedi <i>et al.</i> (2021)	Likert scale A survey questionnaire constituted of MCQs and Likert scale to study assessment of online learning and health of students in educational institutions	75.6% of students expressed anxiety towards the sudden transition to strictly online/distance learning and moving off campus 51.4% reported not utilising their time during the lockdown. Sleeping habits, daily fitness routines and social interaction significantly affected their health
Teachers	AlAzzam <i>et al.</i> (2021)	Patient Health Questionnaire (PHQ)-9; Generalised Anxiety Disorder (GAD) Questionnaire (Spitzer <i>et al.</i> , 1999)	72.4% represented mild to severe depression. 74.9% represented mild to severe anxiety, and 16.7% reported having severe anxiety. The multiple standardised regression analysis showed that experiencing difficulties was one of the significant predictors of anxiety and depression
	Ma <i>et al.</i> (2021)	Impact of Events Scale-Revised (IES-R)	20.7 and 7.16% children experienced PTSD and depression symptoms, respectively
	Truzoli <i>et al.</i> (2021) Akour <i>et al.</i> (2020) Stachteas and Stachteas (2020)	CES-D scale; BAI questionnaire Kessler Distress Scale χ^2 test	26.1% were in the 22–60 range (moderate to severe depression). 8 males (21.1%) and 10 females (14.5%) are in the 16–25 range (moderate anxiety); and 2 males (5.3%) and 7 females (10.1%) have a score ≥ 26 (severe anxiety) Indicated that the younger the age, the more likely to possess more psychological distress Woman teachers were observed prevailing in the two higher classes (54.5% over 30.1%) with respect to their depression. There was found a significant correlation between worrying over the implementation of distance learning. 8% of teachers exhibit severe depressive emotions

Table 4.

The research studies selected for the present systematic review were found to have been conducted in different scenarios and contexts of various countries of the world, which are presented in Table 5. It revealed that most of the countries were developing nations (Dhahri *et al.*, 2020; Hossain *et al.*, 2021; Shrivastava *et al.*, 2021) with limited resources, struggling

Table 5.
Identified countries
from the selected
studies

Category	Studies	Country	
College students	Dhahri <i>et al.</i> (2020)	Pakistan	
	Qanash <i>et al.</i> (2020)	Saudi Arabia	
	Sundarasan <i>et al.</i> (2020)	Malaysia	
	Browning <i>et al.</i> (2021)	United States	
	Hossain <i>et al.</i> (2021)	Bangladesh	
	Cuschieri and Agius (2020)	Malta	
	Shrivastava <i>et al.</i> (2021)	India	
	Hasan and Bao (2020)	Bangladesh	
	Haider and Al-Salman (2020)	Jordan	
	Khawar <i>et al.</i> (2021)	Pakistan	
	Nishimura <i>et al.</i> (2021)	Japan	
	Unger and Meiran (2020)	United States	
	School students	Chaturvedi <i>et al.</i> (2021)	India
		AlAzzam <i>et al.</i> (2021)	Jordan
		Ma <i>et al.</i> (2021)	China
Teachers	Kim and Asbury (2020)	U.K.	
	Truzoli <i>et al.</i> (2021)	Italy	
	Akour <i>et al.</i> (2020)	Jordan	
	Stachteas and Stachteas (2020)	Greece	

with basic infrastructural issues, and comparatively a larger population with heterogeneity in their geographical and demographic situations. In addition to this, a major concern for such developing nations had been the socioeconomic circumstances such as larger families, low income and other such issues. Also, a few studies were identified from the developed nations (Unger and Meiran, 2020; Kim and Asbury, 2020; Truzoli *et al.*, 2021; Nishimura *et al.*, 2021; Ma *et al.*, 2021). However, the single common component among the developed and developing nations that influenced the psychological impacts of the students and teachers was that adapting to a complete online learning environment had been a new challenge for all and everywhere, although online learning has been always there, but in a supporting and assistive role. And, many research studies identified/suggested that students and teachers would be more comfortable when online learning will be provided with some assistance or in-person training.

The major findings with respect to the opportunities, challenges and psychological impacts due to sudden online education amidst the COVID-19 pandemic are comprehensively presented in Table 6.

Thus, the present study also revealed that the students demanded the physical presence or proper personalised interactions of teachers and peer students for an improved and enhanced learning environment, which suggests blended learning environments (König *et al.*, 2020) by combining various educational design patterns, mobile technologies and software tools (Milrad *et al.*, 2013). However, a well-planned and healthy balance between digital and in-person interactions purposefully implemented (Wycoff, 2018) seems beneficial for the students to deal with the mental health crisis in the technologically dependent scenarios in the educational world.

Conclusion

The education system throughout the globe implemented online education during the COVID-19 pandemic. The COVID-19 pandemic had been a global crisis; it posed various challenges and caused numerous psychological impacts, but like the famous saying of Albert Einstein, “*in the midst of every crisis, lies great opportunity*”, it all made the stakeholders

Opportunities	<ul style="list-style-type: none"> • Acceptable alternative to closure of institutions • Controlling infections in unavoidable situations • Following authority guidelines of social distancing during the global crisis • Opportunity for academic continuation in unprecedented times • Feasibility of implementing very promptly • Offered interesting ways of teaching-learning and assessments • Opportunity to develop innovative ways for collaborative skills, self-teaching, resilience, life skills, etc. • Teaching material developed for online education can be used in the future as well • Provided the students flexibility, self-paced and more engaging learning environment • Catalysing innovations in education • Paving the path for the new education system • Rethinking new approaches for a positive educational model • Strengthening the problem-solving, self-competence and reflectiveness • Maintaining the teacher–student relationships in difficulties • Acquisition of new skills and optimism
Challenges	<ul style="list-style-type: none"> • Prompt implementation • Institutional unpreparedness and unsatisfactory setup • Inequality/lack of resources (lack of electricity, Internet, digital devices, etc.) • Inexperienced in online education • New form of education for many • Lack of technological, financial support and digital skills • Designing, developing and delivering the educational material through online, as well as attendance in online sessions and assessments • Lack of effective tools and software • Limited time, lack of concentration, issues of connectivity and audibility • Unplanned curriculum • Managing work–life balance
Psychological impacts	<ul style="list-style-type: none"> • Depressive symptoms, feeling of intimidation, low confidence, sadness, boredom, nervousness and stress due to closure of institutions and academic delay • Anxiety due to financial constraints, prompt implementation, lack of interpersonal communication • Psychological distress due to academic loss and changed delivery of instruction • Stress and fear due to assessments and academic performance and future career prospects • Feeling of burden and complicated emotions due to lockdown and isolation created frustration, anger, resentment and anxiety • Lack of satisfaction, concentration, motivation, etc. due to the changed curriculum • Psychosomatic disorders induced due to disturbed routine and sleeping habits; tiredness due to increased screen time; exhausting lethargy, laziness due to inactivity, isolation, frustration, etc.

Table 6.
Rapid implementation
of online education
amid COVID-19

familiarise with the new innovative and advanced approaches to education and acquisition of new skills. In today's world, when inculcating 21st-century skills in the students is ever demanded (National Education Policy, 2020), this motive cannot be fulfilled without online education and digital skills. The influences of the online teaching-learning environment during the COVID-19 pandemic offered opportunities and challenges simultaneously which impacted the overall psychology of students as well as teachers. The current research identified the abrupt implementation of online education during the COVID-19 pandemic and raised various challenges and psychological impacts among students and teachers besides offering them many opportunities in a time of crisis. Teaching-learning requirements differ in relation to the degree/course, physical education, sport, gender, socioeconomic factors, etc. Therefore, it is suggested to adopt the ways for better learning and teaching for the students and teachers, respectively, and most importantly keeping the psychological well-being of the

students and teachers. Thus, the present systematic review study concluded that the quality of online education should be enhanced and must be student-centred to meet their educational requirements. Furthermore, there is a need for regular counselling and other measures to enhance the students' experiences which would be free from psychological stresses. Students and teachers constitute the educational community of society. They should get ample opportunities to develop their skills; their challenges should be tackled, and the issues harming their psychological well-being should be addressed to achieve sustained development. Moreover, it is suggested that the blended learning methodologies should be considered as it offers strategies and models that allow the students to become a part of a resilient education system in a comfortable manner that does not exert excess stress on a monotonous learning environment. Furthermore, it is recommended for the future of online and blended pedagogy to take care of the psychological well-being of both students and teachers in the teaching-learning process. It is suggested that future research may be undertaken by categorising the students and teachers according to different streams or subjects; also, teachers could be further categorised as school teachers and college or university teachers to know their opinions and situations of psychological well-being so that this aspect could also be considered while making policies and designing curriculum for students.

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