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Research Article

Education in a pandemic, learning to guarantee inclusive education from an approach psychosocial

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ABSTRACT

This paper pretends to investigate the effectiveness of distance education during the COVID-19 pandemic time. Its objective was to analyze variables that impacted the results of emergency distance education, the challenges that arise for teacher training and comprehensive and inclusive education during and after pandemic periods. It corresponds to a documentary investigation, uses qualitative content analysis, and is framed in a stage of initial results on peer-reviewed academic articles from the Web of Science and websites of institutions relevant to the topic studied. The total sample was 70 articles. The results identify variables mostly studied in the scientific literature that affected distance learning, related to socio-emotional, motivational, self-regulation and executive skills of the students, along with those coming from particular family and social contexts and the organization of schools. It is expected that the conclusions will contribute to educational policy decisions on teacher training and intersectoral actions to face future emergencies that involve school closures and constitute a set of evidence of the main barriers and facilitators of educational work in a period of health emergency available to the educational community, useful for the design of improvements in educational quality for the diversity of students in different scenarios.

Keywords: distance learning; emotions; motivation; self-regulation; information technologies; educational policy

1. Introduction

Schools around the world developed unexpected and rapid shifts to emergency distance learning (EDE) due to the COVID-19 outbreak, especially during its onset. School authorities, mothers, fathers, students and teachers faced unexpected challenges, impacting education around the world. Global estimates from the United Nations International Children's Emergency Fund (UNICEF)[1] from more than 100 countries show that while the majority of the world's students would have had access to online remote learning programs during school closures due to COVID-19, approximately 30% would not have been reached by them.

Despite the advances in the world in technology and the Internet and previous international commitments to advance their implementation and strengthen educational inclusion, important gaps were evident between countries, with negative effects that have widened previously existing educational inequalities[2]. Those who faced the greatest barriers to accessing distance education corresponded to people living in poverty and rural areas, students with disabilities, linguistic minorities and, in some countries, the girls[1].

The aim of this research was to analyze the main variables identified in recent scientific articles that impacted the processes and results of the EDE during COVID-19 in regular basic and secondary education establishments in urban sectors, achieved by the EDE with incorporation of the information and communication technologies (ICT) and the challenges that arise for teacher training and the development of public policies that aim at the quality of the comprehensive training of the diversity of students during and after the health emergency period.

It corresponds to a documentary investigation, using qualitative content analysis, on peer-reviewed academic articles from the Web of Science (WoS) and from websites of institutions relevant to the topic under study.

Its results are expected to contribute to decision-making both in public education policies on teacher training and use of ICT, and in intersectoral policies to generate social conditions of equity for teachers and students who face the need to eliminate barriers of educational participation in contexts of health threat. At the same time as making available to the school community a set of scientific evidence of educational work during the health emergency, the aforementioned barriers and facilitators of access to learning useful for the design of improvements in the quality of the educational response for the diversity of students. With special attention to the sectors that present the greatest risk of seeing their right to education violated and thereby increasing social gaps and inequalities.

2. Background regarding distance learning without emergency context

Research usually contextualizes the differences between EDE mediated by ICT, whose use has not been originally planned, its application being stressed by external and unexpected circumstances, such as, for example, a pandemic or disasters. natural, and online teaching planned from its origins with the use of ICT[3].

Within the latter, one of the best known has been "homeschooling", used through the internet by a growing group of families since before COVID-19, with legal regulations existing in some countries, such as the United States, both in educational aspects as well as in prevention of violation of rights[3].

Students who have used it have been shown to be able to reach academic achievement comparable to those who have experienced regular classroom instruction[4]. The conditions of implementation have been associated with the quality of their educational results, better achievements have been related to conditions of family and peer support, to the level of organization of teaching by teachers and to teaching quality[5], the level of structuring of teaching being especially relevant, observing that groups of students who received structured home education comparatively outperformed their peers from face-to-face schools in all subjects, and those who received unstructured home education showed a statistically significant reduced performance compared to those in in-person schools[6]. In the socio-emotional field, students in homeschooling, prior to the COVID-19 pandemic, have shown that they participate in more extracurricular social activities than those in public school[7].

Another teaching strategy with the use of the Internet applied prior to the current pandemic has been known as "Hole-in-the-Wall", used in students from low socioeconomic levels, from places far from urban centers, not mediated by a teacher by profession, where the work is structured based on questions that cause navigation through materials and web pages on a computer, whose choice is based on decisions of the students themselves, without being directly asked to learn something, demonstrating comparatively favorable results of curricular learning in relation to other students who attend regular state schools in the same locations; and by incorporating a non-teaching mediator for motivational support, they have shown results equal to their peers who attend urban private schools with privileged quality of teachers[8].

Experiences in Latin America on planned distance education with the use of ICT, support its favorable implementation in countries of the region prior to COVID-19 in English and mathematics subjects[9–11].

A relevant area of research in internet-mediated distance education has been its effectiveness[12], which has typically been measured based on parameters associated with learning outcomes, attitudes toward learning, and satisfaction[13]. Several studies conducted before the COVID-19 pandemic concluded that there were no significant differences in effectiveness between online and offline learning[14,15]. However, the rapid and widespread adoption of online modalities during the recent health emergency by groups of teachers and students with little to no prior experience, limited resources, and preparation has raised concerns and scientific interest[12,16].

3. Materials and methods

This constitutes a documentary research utilizing qualitative content analysis, representing the initial phase of a more extensive study. The investigation relies on peer-reviewed academic articles in both English and Spanish, encompassing a total of 55 publications spanning from January 2020 to March 2022. These articles were sourced from the Web of Science Core Collection, focusing on the subject of study. Additionally, a manual bibliography search was conducted on the websites of pertinent institutions related to the studied topic.

3.1. Search strategy

To respond to the research objective, a search strategy was intentionally developed that would allow for the inclusion of a variety of research designs and thus capture as many of the variables studied as possible.

To guarantee the quality of the selected research, the Web of Science (WoS) was used as a database, which has high-impact and quality journals, as well as websites of the United Nations Educational, Scientific and Cultural Organization. Culture (UNESCO) and UNICEF, collecting only peer-reviewed scientific articles.

The search in WoS was initiated using Boolean operators and keywords (students or school) and (COVID-19 or coronavirus), applying the filters not college—not university—not kindergarten—not preschool, and selecting categories of education, psychology, behavioral sciences, psychiatry, family studies, early access articles, and review articles; the chosen research domain was social sciences, obtaining 6863 articles. These were filtered by research areas according to the selected categories, and 3 research articles on the subject were added from manual searches on the websites of international organizations.

As a whole, they were reviewed, eliminating those that referred to rural schools, specific subjects of chemistry and physics in secondary education, and case studies, leaving 298 items. After ensuring there were no duplicates and compliance with the inclusion and exclusion criteria in **Table 1**, a total of 223 articles were obtained, of which the 70 most recently published were selected to perform qualitative analysis of their results.

Table 1. Eligibility criteria using the PICO framework[17].

	Inclusion criteria	Exclusion criteria
Population	Studies developed in urban basic and secondary education centers during the pandemic period. That describe sampling strategy.	Studies carried out in centers that exclusively serve students in pre-school/infant education or higher education students or come from rural educational centers during the pandemic period. That do not describe sampling strategy.
Intervention	Studies with distance or hybrid teaching strategies (face-to-face and distance).	Studies that only included face-to-face class strategies.
Comparison	Variables associated with distance or hybrid education during the initial pandemic closure or reopening.	Variables that are not directly or indirectly related to distance or hybrid education during the closure or initial reopening in the pandemic.

Outcomes	Variables related to learning processes and achievements in distance or hybrid education during COVID-19.	Variables without impact on educational processes and learning during distance or hybrid education in the COVID-19 pandemic.

The qualitative content analysis strategy was used to identify main categories[18] as the basis for the analysis in relation to the research objective, initially proceeding to an inductive categorization as the reading proceeded of the selected scientific articles.

The coded categories of analysis were: socioeconomic level of the family and/or country; gender differences, executive functions; socio-motivational and motivational resources of the students; sleep disorders; family support; hours of study at home; age/age group; organization of the school's educational response during school closure and initial reopening in terms of teaching skills, collaborative work and school leadership; technological resources and skills of students, teachers and family, neurodevelopmental disorders/special educational needs.

3.2. Reliability

To ensure the reliability of the results, the researcher triangulation method was used in making coding, analysis, and interpretation decisions[19].

4. Results

The results are structured to begin with a broad examination of distance teaching experiences in a non-emergency context. Subsequently, the analysis progresses to emergency distance teaching, incorporating ICT and highlighting the main variables identified as influencing outcomes during the closure of schools in the context of COVID-19. The presentation concludes by addressing the primary challenges identified for educational communities during the transition back to face-to-face instruction.

4.1. Emergency distance learning

Various investigations have shown negative effects in its implementation associated with school closures, both in the past due to climatic situations and other epidemics[20], and due to COVID-19[2].

Although the latter arrived at a time when, though there were advances in connectivity and material access to technological devices such as tablets, cell phones and computers in the world, it also revealed important gaps between countries and their effects on expand previously existing educational inequalities[2].

Evidence of the existence of difficulties in the pace of progress of the commitments acquired by the States Parties of the United Nations Educational, Scientific and Cultural Organization (UNESCO) in the Qingdao Declaration[21] referring to the implementation of solutions based on ICT to guarantee that in a period following a conflict or natural disaster that destroys schools or universities, or makes their normal functioning impossible, the right to education for the diversity of students continues to be guaranteed.

In this Declaration, States recognize that the application of ICT is essential to fulfill the Incheon Declaration, committing from the moment of its promulgation "to guarantee that all girls and boys have access to connected digital devices and a digital learning environment adapted and responsive to their needs by 2030, regardless of their disability, social or economic condition, or geographic location"[21]; recommending that States "recognize enrollment in online courses of certified quality as an alternative or complementary modality to face-to-face teaching programs"[21]; and establishing the commitment to provide teachers with "support for the use of ICT in teaching, encourage them to innovate, and establish networks and platforms that allow them to share experiences and approaches that could be useful"[21], adding that "to successfully integrate ICT into

teaching and learning, it is essential to rethink the role of teachers"[21], which implies not only the development of skills, but also how these are integrated into the identity of the teaching profession. and institutional culture.

UNICEF estimates in more than 100 countries show that, although a majority managed to implement online or hybrid classes (in-person and online), 30% of the world's students were not reached by remote learning programs during the lockdown schools due to COVID-19[1]. Another UNICEF-UNESCO study found that students who were not reached by any remote, online, television or radio learning modality came mainly from rural areas (76%) and belonged to low-income families (72%), leaving to said group at greater risk of dropping out of school; gaps are also evident between the countries that developed online learning, about the level of monitoring of their emergency remote teaching programs and methods in relation to their contribution to learning[2]; thus only 3% of high-income countries reported that teachers did not monitor their students' learning, while in low-income and lower-middle-income countries, the proportions were 25% and 27%[22].

Regarding the most frequently studied variables that favored or hindered emergency distance learning during COVID-19 with the use of ICT, it is possible to distinguish the following:

- Socio-emotional and motivational resources of the students.

A study with 276 students between 6th and 9th grade from public schools in Paris showed that higher self-motivation positively predicted more time spent on math homework at home and that having been deprived of the regular study environment and social interaction with peers and teachers particularly affected students with low levels of motivation evidenced in the time spent studying mathematics[23].

The greater motivation with school activities at home was associated by mothers and fathers with the development of collaborative activities proposed by the school; however, said motivation was negatively mediated when there was a greater need to share spaces at home and technological tools[24].

Boys and girls who were placed to work in online classes in small groups where they did not like their peers reported less emotional motivation with schoolwork, which was associated with negative effects on their results[25]. Highlighting the importance of the school climate and the emotional and motivational aspects associated with synchronous remote learning.

- Family support.

Successful perception in the development of learning at home by the students was directly associated with the level of family support, having a quiet place to learn, along with other variables such as appropriate technological equipment and experiences of school joy prior to the pandemic, and specifically in adolescents, a direct relationship is described between positive family climate and learning development[26].

Mothers and fathers who trust their ability to use technology tended to provide more support to their sons and daughters in its use during formal educational practices[27].

The stress level of mothers and fathers would have affected the way the students experienced the new learning environment: the more stressed their parents felt, the more negatively they perceived distance learning, and the less stressed they felt, the more positive the experience was and more preferred distance learning to regular classroom instruction[28]; those who had been experiencing psychological stress for two years before the pandemic and had to support sons and daughters between 6 and 8 years of age in their remote learning, said stress levels negatively interfered with their support skills[29]; higher levels of stress in mothers and fathers were positively related to an increase in problematic behavior in their sons and daughters and a negative impact on their general well-being[30].

Among the factors associated with less stress, exhaustion and overload in parental roles, greater

satisfaction was found with the characteristics of the online education provided by the school[31], having more pieces at home, access to a private garden in this and digital means to contact peers[32], having achieved better organization of salaried work functions and support for remote learning[33].

Between the factors associated with greater stress, exhaustion and overload in parental roles during the confinement period is having to transfer paid work to the home while supporting their sons and daughters who were attending online classes, especially in mothers[34]; valuation of an individualistic culture with a greater emphasis on self-improvement, where the increase in the demand for child care could be perceived as an interference with the achievement of work or personal goals, proving particularly stressful for those who value these goals highly[32]; and belonging to a low socioeconomic level[35].

- Development of executive functions associated with self-regulation capacity, autonomy, maintenance of academic effort and adaptability.

Students who experienced emergency distance learning more positively and preferred it over regular classroom instruction corresponded to those who were able to learn more autonomously[28]. Greater self-organization skills were identified as one of the most strongly predictive variables of academic effort and intrinsic motivation towards it[36]; better levels of self-regulation in the development of learning in middle school were associated with a lower intention to drop out of high school[37]; Adaptability was significantly associated with higher online learning self-efficacy and gains in academic performance[38].

Studies on the association of executive functions with the motivational component, basic academic skills and their ability to influence distance learning processes in a pandemic, have shown that the ability to learn autonomously and be motivated would have been crucial for academic performance[39]; the will to strive, better reading skills, and willingness to maintain effort in their learning were associated with better coping with the new learning situation at home[40]; Students who manage to feel competent would be more likely to report greater intrinsic motivation during distance education in the pandemic and those who had greater self-organization skills were more strongly intrinsically motivated during it[36].

Having been constantly exposed to a noisy home significantly negatively affected performance on tasks involving executive functions[41].

- Socioeconomic level of the family.

Lower performance was observed in students, who generally came from lower-income countries and families[42]. Factors studied that would be associated with said performance correspond to: monetary limitations of the family in access to technological materials[24], sharing devices with other members of the family[43], within the group of adolescents identified living in homes that are too full of other people[44].

A study in 19 countries showed that socioeconomic level was a significant predictor of the level of family support for learning, showing that families with a higher socioeconomic status provided more educational support to their sons and daughters[27]. In turn, a positive association was observed between a higher social position and more time invested by students in activities that their parents considered productive from an educational point of view, implementing reading, creative and sports activities more frequently than those of more low social position[45].

Lower family socioeconomic status was associated with higher levels of parental stress, prior to and during the pandemic, and lower self-reported abilities to support online teaching[29].

All of which highlights the role of school support structures to compensate students from disadvantaged social backgrounds with little family support to avoid being negatively affected by school closures[46].

- Age of each student.

In general, as the age of the students grew, the family provided less educational support[27], which is consistent with what was found prior to the pandemic about the changes in family support strategies between primary and secondary school as students become more autonomous[47]. Demonstrating the importance of school family support in the initial courses.

- Gender.

While some research describes a positive effect on the learning process in the period of school closures associated with the female gender, observing that female students were more involved than their male peers[24] and showed better performance in skills self-regulation in tasks involved in online learning[48]; others have concluded that female students reported greater psychological difficulties coping with school closures and distance learning than male students[23].

- Hours of study invested by each student.

A greater number of study hours was associated with better learning achievements during the online class period. Thus, students who had weak external or self-regulation support, who spent fewer hours studying at home, had lower academic results[49].

- Digital resources and skills.

Technological skills and the quality of training developed by institutions for their members were described as important elements for the effectiveness of online teaching[50].

Students who did not have adequate devices or had to share them with other family members felt less motivated by distance learning[43].

Digital skills had to be given by both parties to be effective (teachers and students)[51].

- Organization of the school's educational response to emergency online learning.

Although the short preparation time available to teachers and schools for the emergency remote learning situation generally affected the quality of instruction and learning opportunities for students[52,53], those schools that developed a better and faster adaptation of the educational response, aimed at the ability to develop well-structured learning, virtual exchanges during classes and had the support of school authorities and the family, achieved a positive relationship with the level of learning development, the perception of self-efficacy and the achievement of objectives in students[46].

Specific characteristics of the teachers, such as educational commitment prior to the pandemic and technological skills deployed during online teaching, were shown to be factors strongly valued by mothers and fathers regarding education in this period[31].

A professional identity associated with collective work, strong, positive relationships and a sense of belonging to the educational center would have allowed them to face the COVID-19 crisis with a more positive perspective than teachers with a more individual professional identity, with this latter group showing more tendency towards lack of engagement, motivation and resilience during COVID-19 school closures[54].

Regarding the level of expectations, teachers who expected high academic performance in distance learning obtained a higher average result for their course, the greater the achievements gained, the more positive their students' collective perception of distance learning was, while students enrolled in a class with a teacher who maintained lower expectations, the results were similar to what occurs in regular classroom instruction, negatively impacting learning[28].

● Students with special educational support requirements associated with neurodevelopmental disorders.

Teachers and interdisciplinary teams had to address the diversity of support requirements of their students in teaching planning, in diverse physical and family contexts and access to digital media.

Limitations on access to technological means and the Internet affected this group in the same way as the rest of the students if they came from families of low socioeconomic status[55]; where such means existed, teachers described that the technological applications were not sufficient to cover all the diversity of needs, and the level of knowledge that families had about said technologies and other support materials was inadequate or insufficient[56].

Regarding specific characteristics of this group of students, it was generally found that they had more difficulties attending online classes and studying, they missed their classmates less, they were scolded more frequently, and they were perceived by their parents as more anxious[57]; those with more complex physical needs, depending on adapted equipment and specific professional supports usually available at school, would be one of the groups most negatively affected by EDE[58].

About the role of the family, they would have been supported by their mothers and fathers for more than twice as many hours with their schoolwork as neurotypical students (5 vs. 11 h per week)[59]; mothers and fathers with a very low educational level in digital skills would not have been able to help them with learning at home[55].

With respect to the teaching role, a study carried out in Germany in a sample of 96 teachers from inclusive schools and special schools, showed that the perception of self-efficacy and its positive effects on motivation and academic performance was decreased in teachers belonging to both types of schools establishments during the remote class period[60]; showing variability in the level of their technological skills[55], and perception of the resource room as having much more support means to develop motor, thinking and memory skills than in distance learning[55].

In relation to the evaluation of mothers and fathers on teaching methods, research has confirmed, on the one hand, that task-based and teacher-directed methods were rated as less effective if their sons and daughters had developmental disorders in relation to those with typical development, both in primary and secondary education, being even less effective for secondary school students[61]; while others have found that the use of more directed teaching methods, such as live online lessons or recorded lessons, where there was coordination between course teachers, and greater autonomous motivation on the part of students, would have improved learning experiences and outcomes results[61].

Concerning their mental health, frequent changes in sleep patterns associated with a decrease in quality of life and high levels of depression were described[62]; more frequent use of devices with electronic screens than before the pandemic, compared to students without special educational needs during learning from home[63]; studies on those who did not have mental health problems did not show more behavioral problems during school closures than other students[63]. In the case of establishments with closures of one semester or less, students who had developed mental health problems associated with said closure returned to previous levels when returning to in-person classes[64].

Several studies specifically investigated students with Autism Spectrum Disorder (ASD), confirming variability in the perception of parents about the impact of confinement and remote teaching. An investigation by Simpson and Adams[65] describes that 48% frequently perceive it as negative, however, in line with the fact that the diagnosis corresponds to a spectrum, 26% report only positive impacts, 12% a mixture of negative and positive, and 9% a small or no impact.

The disruption of routines was identified as the greatest stressor in this group of students, associated with an increase in crisis behaviors of emotional and behavioral dysregulation, sensory problems and stimulating behaviors, which has been linked to mechanisms to cope with anxiety in the face of changes[66], who during the quarantine period were able to maintain some routines showed lower levels of anxiety and stress than those who were not able to do so[67]. Regarding the parents' perception of the achievement of therapeutic and educational goals, these were identified as not satisfied in the virtual scenario[66].

On the other hand, students with ASD were identified as much less stressed by loneliness in relation to their friendships than neurotypicals, their parents reported positive emotions during the pandemic more highly than neurotypicals[66].

4.2. Reopening of educational schools

In countries that began reopening educational centers in the second half of 2020, most of their educational systems opted for blended learning, dividing the school into cohorts and offering a combination of in-person learning in the classroom and at home to mitigate the risk of potential temporary closure due to internal and local outbreaks[68].

A study carried out during the school closures, with 27,046 school staff members in Indonesia that evaluated their positions for when schools reopened with the pandemic still present, using survey methods combined with focus groups and interviews, concluded that 95% of teachers preferred to have blended learning or continue using full distance learning and that 76% of teachers were concerned about health risks as successive waves of COVID-19 outbreaks continue[69].

One of the central topics in the reopening of the centers was the evaluation process to plan the recovery of learning. The World Bank, based on results of previous research on school closures due to regular vacations, emergencies and social crises, developed guidelines regarding the importance that countries consider within their educational policies that during the return to face-to-face there will be a high probability of large variations around the average learning loss, being mostly negative in families with fewer opportunities to participate in the learning process at home due to the impact of the digital divide, lack of learning resources at home or limited parental involvement to support the learning distance learning process; at the same time, it warns that during the return to face-to-face teaching, the health and socio-emotional well-being of students must be guaranteed before implementing any learning evaluation in the classroom, so that it allows real curricular competencies to be verified[70].

UNESCO, UNICEF, the World Bank and the World Food Program[22] recommended countries consider learning assessment activities as part of a flexible and potentially multimodal instructional strategy of in-person and remote teaching while intermittent closures persisted.

Regarding the delay or loss of learning, UNICEF suggested that States have special concern for fundamental skills, which would be "the most difficult to recover and can result in significant damage to the learning and opportunities of boys and girls"[2], along with damages to the economic progress of countries, especially for those with the lowest incomes[2,71].

These fundamental skills would refer to reading (ability to read the words of a story, literal understanding, inferential understanding) and arithmetic (number reading, numerical discrimination, addition, pattern recognition and completion), warning States about the return in person to classes that "the pandemic has shown that remote learning is here to stay and can achieve ambitious goals if implemented with the necessary support; countries that fail to develop and implement a quality offer focused on the principles of innovation and equity run the risk of being left behind"[2].

The continuity of learning during the reopening of establishments supported by computer educational programs could be very useful, in view of the diversity of learning levels of students in the face-to-face return. The use of computer educational programs has been previously suggested by the Organization for Economic Cooperation and Development (OECD), especially for developing countries, where there is a high heterogeneity in the skills of the student body, allowing training adapted to the level of each one[72].

Some basic aspects that have been considered in the implementation of ICT to strengthen inclusive education would be:

a) Teaching competencies to integrate pedagogical and disciplinary skills with ICT use skills[9].
b) Establishment of school organizational structures of collaborative work with the incorporation of ICT to address barriers to learning that require interdisciplinary solutions and innovation in educational practices to guarantee no student is left behind or does not have access to quality education[73].
c) Computer security and the importance of people's control over their personal data[74].
d) Evaluate the way and time in which students use the Internet in their daily lives, investigating the existence and risks of its extreme use (more than 6 h a day outside school hours) with displacement of healthy activities such as physical exercise[75].

The results of the PISA study show that extreme Internet use is associated with worse school results and lower satisfaction with life, even when controlling for socioeconomic background[76]; which is common among young people in OECD countries, on average 24% of 15-year-olds spend more than 6 hours a day on the Internet on weekends, a figure that reaches 43% in Chile[76].

The level of parental educational attainment appears to be associated with extreme Internet use, being less likely in sons and daughters of parents with a high educational level in most countries, with the exception of Chile, Latvia, Mexico and Lithuania, where it is more common among boys and girls with parents with a high level of education[75].

5. Discussion and conclusion

The results show a broad consensus on the widening of the educational gap between social classes and among rich and poor countries, associated with the conditions and manner in which the EDE was carried out, fundamentally due to lack of preparation and unequal access to ICT, despite the international commitments signed in 2015 by the UNESCO member countries in the Qingdao Declaration on its implementation to strengthen inclusive education.

In relation to the most affected groups, they generally correspond to students who come from families belonging to lower socioeconomic strata, who, without in-person assistance, are more likely to experience loss or delay in their learning, accompanied by the consequences on projection of educational and economic indicators of the countries that include the highest percentage of people in a situation of economic poverty. Other groups where barriers were found in accessing distance education corresponded to students with disabilities, linguistic minorities, those who live in rural areas and, in some countries, girls.

Regarding the specific variables that would have affected the conditions for the development of distance learning, the following were found: the motivational and socio-emotional variables of the students; the organization of the school's educational response based on the teaching characteristics related to educational commitment, professional identity, appreciation of collective work, expectations of its students, ability to structure learning tasks and technological skills, together with the level of support from the family and school leadership; the level of development of the students' executive functions expressed in self-regulation, autonomy, academic effort and capacity for adaptability; socio-emotional, organizational conditions, access to

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media and technological skills of the family; housing conditions; hours of study invested; age; gender and specific conditions of students identified with neurodevelopmental disorders.

The understanding of how these variables function as barriers or facilitators of learning during the EDE and of the groups negatively affected, coupled with the prioritization of foundational curricular learning, should guide the planning of States from the reopening of educational centers and in the preparation for future emergencies that require the closure of educational centers, in order to ensure access to the necessary support to guarantee the quality of distance education for the diversity of students, preventing those who are in a situation of economic disadvantage and other groups in conditions disadvantaged, have in-person attendance as the only alternative to access their right to education in an emergency that may threaten their right to health.

The results suggest that educational centers should not completely move away from remote school work with the use of ICT, which could allow them to continue developing skills for its pedagogical use, be better prepared to face new closures of schools of different origin, attend students educationally with temporary mobility constraints, and have experienced professionals in diversification of means of access and expression of learning using ICT to eliminate barriers to educational participation of the diversity of students, in compliance with the international commitments of the Qingdao Declaration[21].

At the same time, they should advance in the development of socio-emotional, motivational and self-regulation skills, given the sufficient evidence to mediate cognitive and school learning processes and interfere with adaptation to the environment[77,78].

Preventive protocols should consider special care for students and families with pre-existing risk illnesses, including those in the mental health field, maintaining respect for privacy and confidence that said information was made known; at the same time, consider the opportunities offered to the system by those students where remote learning is not detrimental to them or favors them. The latter could make it possible to reduce the density of students per room in a hybrid strategy (mixing in-person and remote classes), with preventive effects on the health of the educational community, the continuity of classes during health emergencies, focusing resources and teaching time towards demands more complex of certain groups in various emergency conditions, favoring guaranteeing equity of access to education for all students.

The States Parties to the United Nations need to move forward with greater urgency in fulfilling international commitments related to ICT in inclusive education. Central aspects to achieve this would refer to strengthening initial teacher training and professional practice with the educational use of ICT in a transversal way to pedagogical and disciplinary aspects; strengthen collaborative work skills in their educational application among colleagues, interdisciplinary teams and family; constructively channel implications in the teaching identity related to its use; and the installation of competencies in the institutional leadership of schools to manage, monitor and support the quality of distance teaching processes.

At the same time, install an intersectoral approach in variables associated with social conditions identified as access barriers during the EDE due to COVID-19, that allow progress in labor policies so that mothers and fathers of students in initial education, with neurodevelopmental disorders or a situation of disabilities, who require more time for support during learning in emergency situations at home, they can count on these without differences in socioeconomic classes; in housing policies for the equity of adequate spaces for study activities; mental health support for adults in charge; access to appropriate technological equipment and internet connectivity.

Limitations of the study: the information obtained from various investigations was only through the perception of fathers and mothers; variability of the school closure period by country, some studies cover one wave of COVID-19, others more than one; online activities differ in their organization between establishments,

within them and between subjects in the same course; the number of studies on students and families with better adaptation to online classes and better learning achievements was smaller; different types of sampling; the collection of information was mostly through technological means and internet connection, and there may be biases in the representation of families without these services; the studies analyzed do not consider information from students who dropped out of the educational system. Finally, there is another limitation. The role of educators and the families were not studied in depth.

Author contributions

Conceptualization, AMT and SS; methodology, AMT and SS; software, AMT and SS; validation, AMT and SS; formal analysis, AMT and SS; investigation, AMT and SS; resources, AMT and SS; data curation, AMT and SS; writing—original draft preparation, AMT and SS; writing—review and editing, AMT and SS; visualization, AMT and SS; supervision, AMT and SS. All authors have read and agreed to the published version of the manuscript.

Conflict of interest

The authors declare no conflict of interest.

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