

The Effect of COVID-19 on Education

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Introduction

All ages of students' education have changed as a result of COVID-19. Preliminary data confirm the increased anxiety and sadness brought on by the modifications and estimate educational losses at various levels, but there are no data yet on long-term results. Quickly developed guidelines from oversight groups addressing the security and effectiveness of new educational delivery modes have been developed. The widening of socioeconomic and educational gaps for exceptional learners is not surprising. Other professions that train through progressively graduated internships, like medicine, are also negatively impacted and have had to make significant changes.

Background

Children and young adults who are students in elementary, middle, high, college, and professional schools may experience negative educational changes as a result of the switch to an online education during the coronavirus illness 2019 (COVID-19) pandemic. Age, level of maturity, and socioeconomic class can all affect the outcomes. We don't currently have a lot of information on the results, but several oversight organisations have sought to set standards, voiced their worries, and extrapolated from past events.

General educational losses and disparities

To help make up for any losses caused by this epidemic and to better prepare for future pandemics, many studies are looking at how the changing environment impacts learners' mental, physical, and social health. There is currently a lack of information, although some researchers have extrapolated from prior school closures caused by hurricanes and other natural catastrophes.

Inclement weather closures are estimated in some studies to lower middle school math grades by 0.013 to 0.039 standard deviations and natural disaster closures by up to 0.10 standard deviation decreases in overall achievement scores. The data from inclement weather closures did show a more significant decrease for children dependent on school meals, but generally the data were not stratified by socioeconomic differences. Math scores are impacted overall more negatively by school absences than English language scores for all school closures.

The Northwest Evaluation Association is a global nonprofit organization that provides research-based assessments and professional development for educators. A team of researchers at Stanford University evaluated Northwest Evaluation Association test scores for students in 17 states

and the District of Columbia in the Fall of 2020 and estimated that the average student had lost one-third of a year to a full year's worth of learning in reading, and about three-quarters of a year to more than 1 year in math since schools closed in March 2020.

Families are also dealing with new strains as school attendance has transitioned from traditional attendance at a school building to attendance online. It is becoming more and more obvious that families relied on schools for much more than just reading and math. Children and adolescents, as well as their parents or guardians, depend on schools to provide for their housing, food, health care, and social well-being.

Many families have been impacted negatively by the loss of wages, leading to food insecurity and housing insecurity; some of loss this is a consequence of the need for parents to be at home with young children who cannot attend in-person school. There is evidence that this economic instability is leading to an increase in depression and anxiety. In 1 survey, 34.71% of parents reported behavioral problems in their children that they attributed to the pandemic and virtual schooling.

Children have been infected with and affected by coronavirus. In the United States, 93,605 students tested positive for COVID-19, and it was reported that 42% were Hispanic/Latino, 32% were non-Hispanic White, and 17% were non-Hispanic Black, emphasizing a disproportionate effect for children of color¹. COVID infection itself is not the only issue that affects children's health during the pandemic. School-based health care and school-based meals are lost when school goes virtual and children of lower socioeconomic class are more severely affected by these losses. Although some districts were able to deliver school meals, school-based health care is a primary source of health care for

many children and has left some chronic conditions unchecked during the pandemic.

Many families report that the stress of the pandemic has led to a poorer diet in children with an increase in the consumption of sweet and fried foods. There is growing evidence in both animal and human models that diets high in sugar and fat can play a detrimental role in cognition and should be of increased concern in light of the pandemic.

The family stress elicited by the COVID-19 shutdown is a particular concern because of compiled evidence that adverse life experiences at an early age are associated with an increased likelihood of mental health issues as an adult. Here is early evidence that children ages 6 to 18 years of age experienced a significant increase in their expression of "clinginess, irritability, and fear" during the early pandemic school shutdowns. These emotions associated with anxiety may have a negative impact on the family unit, which was already stressed owing to the pandemic.

Another major concern is the length of isolation many children have had to endure since the pandemic began and what effects it might have on their ability to socialize. The school, for many children, is the agent for forming their social connections as well as where early social development occurs. Noting that academic performance is also declining the pandemic may be creating a snowball effect, setting back children without access to resources from which they may never recover, even into adulthood.

Predictions from data analysis of school absenteeism, summer breaks, and natural disaster occurrences are imperfect for the current situation, but all indications are that we should not expect all children and adolescents to be affected equally. Although some children and adolescents will likely suffer no long-term consequences, COVID-19 is expected to widen the already existing educational gap from socioeconomic differences, and children with learning differences are expected to suffer more losses than neurotypical children.

Special education and the COVID-19 pandemic

Although COVID-19 has affected all levels of education reception and delivery, children with special needs have been more profoundly impacted. Children in the United States who have special needs have legal protection for appropriate education by the Individuals with Disabilities Education Act and Section 504 of the Rehabilitation Act of 1973.

Children with autism usually have applied behavioral analysis (ABA) as part of their individualized educational plan. ABA therapists for autism use a technique of discrete trial training that shapes and rewards incremental changes toward new behaviors. Discrete trial training involves breaking behaviors into small steps and

repetition of rewards for small advances in the steps toward those behaviors. It is an intensive one-on-one therapy that puts a child and therapist in close contact for many hours at a time, often 20 to 40 hours a week. This therapy works best when initiated at a young age in children with autism and is often initiated in the home.

Because ABA workers were considered essential workers from the early days of the pandemic, organizations providing this service had the responsibility and the freedom to develop safety protocols for delivery of this necessary service and did so in conjunction with certifying boards.

Early in the pandemic, there were interruptions in ABA followed by virtual visits, and finally by in-home therapy with COVID-19 isolation precautions. Although the efficacy of virtual visits for ABA therapy would empirically seem to be inferior, there are few outcomes data available. The balance of safety versus efficacy quite early turned to in-home services with interruptions owing to illness and decreased therapist availability owing to the pandemic. An overarching concern for children with autism is the possible loss of a window of opportunity to intervene early. Families of children and adolescents with autism spectrum disorder report increased stress compared with families of children with other disabilities before the pandemic, and during the pandemic this burden has increased with the added responsibility of monitoring in-home schooling.

Early data on virtual schooling children with attention deficit disorder (ADD) and attention deficit with hyperactivity (ADHD) shows that adolescents with ADD/ADHD found the switch to virtual learning more anxiety producing and more challenging than their peers. However, according to a study in Ireland, younger children with ADD/ADHD and no other neurologic or psychiatric diagnoses who were stable on medication tended to report less anxiety with at-home schooling and their parents and caregivers reported improved behavior during the pandemic.

Much of the available literature is anticipatory guidance for in-home schooling of children with disabilities rather than data about schooling during the pandemic. The American Academy of Pediatrics published guidance advising that, because 70% of students with ADHD have other conditions, such as learning differences, oppositional defiant disorder, or depression, they may have very different responses to in-home schooling which are a result of the non-ADHD diagnosis, for example, refusal to attempt work for children with oppositional defiant disorder, severe anxiety for those with depression and or anxiety disorders, and anxiety and perseveration for children with autism. Children and families already stressed with learning differences have had

substantial challenges during the COVID-19 school closures.

(A) High school, depression, and COVID-19

High schoolers have lost a great deal during this pandemic. What should have been a time of establishing more independence has been hampered by shelter-in-place recommendations. Graduations, proms, athletic events, college visits, and many other social and educational events have been altered or lost and cannot be recaptured.

Adolescents reported higher rates of depression and anxiety associated with the pandemic, and in 1 study 14.4% of teenagers report post-traumatic stress disorder, whereas 40.4% report having depression and anxiety². In another survey adolescent boys reported a significant decrease in life satisfaction from 92% before COVID to 72% during lockdown conditions. For adolescent girls, the decrease in life satisfaction was from 81% before COVID to 62% during the pandemic, with the oldest teenage girls reporting the lowest life satisfaction values during COVID-19 restrictions³.

A survey of 24,155 residents of Michigan projected an escalation of suicide risk for lesbian, gay, bisexual, transgender youth as well as those youth questioning their sexual orientation (LGBTQ) associated with increased social isolation. There was also a 66% increase in domestic violence for LGBTQ youth during shelter in place⁴.

Increased social media use during COVID-19, along with traditional forms of education moving to digital platforms, has led to the majority of adolescents spending significantly more time in front of screens. Excessive screen time is well-known to be associated with poor sleep, sedentary habits, mental health problems, and physical health issues. With decreased access to physical activity, especially in crowded inner-city areas, and increased dependence on screen time for schooling, it is more difficult to craft easy solutions to the screen time issue.

During these times, it is more important than ever for pediatricians to check in on the mental health of patients with queries about how school is going, how patients are keeping contact with peers, and how are they processing social issues related to violence. Queries to families about the need for assistance with food insecurity, housing insecurity, and access to mental health services are necessary during this time of public emergency.

(B) Medical school and COVID-19

Although medical school is an adult schooling experience, it affects not only the medical profession and our junior colleagues, but, by extrapolation, all education that requires hands-on experience or interning, and has been included for those reasons.

In the new COVID-19 era, medical schools have been forced to make drastic and quick changes to

multiple levels of their curriculum to ensure both student and patient safety during the pandemic. Students entering their clinical rotations have had the most drastic alteration to their experience.

COVID-19 has led to some of the same changes high schools and colleges have adopted, specifically, replacement of large in-person lectures with small group activities small group discussion and virtual lectures. The transition to an online format for medical education has been rapid and impacted both students and faculty. Although there are no pre-COVID-19 data for comparison, it is expected that the COVID-19 changes will lead to increased insecurity and feelings of poor preparation for clinical work.

Since the start of the pandemic, medical schools have had to find new and innovative ways to continue teaching and exposing students to clinical settings. The use of electronic conferencing services has been critical to continuing education. One approach has been to turn to online applications like Google Hangouts, which come at no cost and offer a wide variety of tools to form an integrative learning environment. Schools have also adopted a hybrid model of teaching where lectures can be prerecorded then viewed by the student asynchronously on their own time followed by live virtual lectures where faculty can offer question-and-answer sessions related to the material. By offering this new format, students have been given more flexibility in terms of creating a schedule that suits their needs and may decrease stress⁵.

Although these changes can be a hurdle to students and faculty, it might prove to be beneficial for the future of medical training in some ways. Telemedicine is a growing field, and the American Medical Association and other programs have endorsed its value. Telemedicine visits can still be used to take a history, conduct a basic visual physical examination, and build rapport, as well as performing other aspects of the clinical examination during a pandemic, and will continue to be useful for patients unable to attend regular visits at remote locations. Learning effectively now how to communicate professionally and carry out telemedicine visits may better prepare students for a future where telemedicine is an expectation and allow students to learn the limitations as well as the advantages of this modality.

We need to accept and prepare for the fact that medial students as well as other learners who require in-person training may lack some skills when they enter their profession. These skills will have to be acquired during a later phase of training. We may have less skilled entry-level resident physicians and nurses in our hospitals and in other clinical professions as well.

Summary

The COVID-19 epidemic has and will continue to have an impact on how information and skills are

taught at all educational levels. Some children and adults will find it difficult to adjust to the new modalities, even though many will probably make up for the disruption of the traditional educational offerings. The gap between those whose families can afford the teaching and supervision of education required for in-home schooling but lack the time and skills necessary to do so is growing for those whose families cannot absorb it. The COVID-19 epidemic school closures will have the greatest impact on individuals who are already at a disadvantage due to socioeconomic class, language, and special needs, and they will have the most difficulty adjusting.

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