



Addressing the Consequences of School Closure Due to COVID-19 on Children's Physical and Mental Well-Being

Jessica A. Hoffman  and Edward A. Miller 

Prolonged school closures are one of the most disruptive forces in the COVID-19 era. School closures have upended life for children and families, and educators have been forced to determine how to provide distance learning. Schools are also an essential source of nonacademic supports in the way of health and mental health services, food assistance, obesity prevention, and intervention in cases of homelessness and maltreatment. This article focuses on the physical and emotional toll resulting from school closures and the withdrawal of nonacademic supports that students rely on. The COVID-19 pandemic is shining a spotlight on how important schools are for meeting children's nonacademic needs. We argue that when students return to school there will be a more acute and wider-spread need for school-based nonacademic services and supports. Further, we expect that COVID-19 will serve as a focusing event opening a window of opportunity for programmatic and policy change that improves nonacademic services and supports in the future.

KEY WORDS: health, mental health, food assistance, obesity prevention, schools, homelessness, maltreatment, COVID-19

Introduction

Fortunately, children are at low risk for the morbidities and mortalities associated with COVID-19 (CDC COVID-19 Response Team, 2020; Dong et al., 2020). There are exceptions, however, and there is evidence that a rare multisystemic inflammatory syndrome in children (MIS-C) may be related to COVID-19 (Belhadjer et al., 2020). Moreover, even though most children do not seem to have symptoms (Cruz & Zeichner, 2020), they do contract the virus and thus serve as vectors, spreading it throughout the community to individuals who are at higher risk for serious health outcomes, hospitalization, and death. It is especially difficult (some would say impossible) getting young children to practice appropriate hygiene related to hand washing, coughing, and face touching. This challenge combined with the impracticality of social distancing practices due to limited classroom space, congregate lunch practices, and frequent and varied interactions among groups of students makes schools particularly conducive environments for spreading disease during a pandemic, affecting not just students but teachers, custodians, food service workers, and other building staff (Carroll, 2020). For these reasons, schools began to close their doors in March 2020 to reduce the spread of the virus within communities.

With very little advanced notice, school districts informed families that their children would be home for multiple weeks; in some cases, through the end of the academic year. As of April 17, 2020, 43 states; Washington, DC; and the U.S. territories (American Samoa, Guam, Northern Marianas, Puerto Rico, and U.S. Virgin Islands) ordered school closures; closures were recommended in the remaining seven states (Education Week, 2020). In some cases, such as California, mandatory quarantine effectively made the state's recommended school closure compulsory as well. Prolonged school closures impact over 55 million children, attending no less than 124,000 public and private schools in the United States (Education Week, 2020).

Few would argue that school closures are an important and necessary policy action in fighting COVID-19. Indeed, evidence from past epidemics suggests that closing schools can have a significant effect on reducing infection rates and flattening the curve (Ferguson et al., 2006). However, prolonged school closures are one of the most disruptive forces in the COVID-19 era. School closures have up-ended life for children and families, and they left educators forced to determine quickly how to remotely educate students in an equitable manner (Bohl, 2020; Collins, 2020; Robles, 2020; Schwartz, 2020).

The primary mission of schools is to educate children to prepare them to become responsible and productive members of society. There is significant fear about major regression of students' academic skills stemming from COVID-19 school closures (Sparks, 2020). However, schools are also an essential source of health and mental health services and supports, which are a protective factor for students' social, emotional, and physical well-being (National Academies of Sciences, Engineering, and Medicine, 2019). The focus of this article is on the nonacademic supports that schools provide and the physical and emotional toll resulting from the withdrawal of nonacademic supports that students had previously relied on. The COVID-19 pandemic is shining a spotlight on how important schools are for meeting children's nonacademic needs. We argue that when students return to school, there will be a more acute and wider-spread need for school-based nonacademic services and supports. Further, we expect that COVID-19 will serve as a focusing event opening a window of opportunity for programmatic and policy change (Kingdon, 2010) that improves the provision of nonacademic school-based services and supports in the future.

The Role of Schools in Children's Well-Being

Students face a range of health issues and barriers to learning, not least of which include limited access to health care to address such issues as asthma, vision, dental, and hearing problems; untreated mental health and behavioral problems; physical inactivity and obesity; persistent hunger and poor nutrition; and homelessness and abuse and neglect (Gracy et al., 2014; Gracy, Fabian, Roncaglione, Savage, & Redlener, 2017). These challenges pose considerable nonacademic barriers to learning, especially among Blacks, Hispanics, Native Americans, and economically disadvantaged groups where they are more

prevalent. Schools provide a range of services to mitigate the impact of these health issues and barriers to learning.

In the area of access to health care, children face a range of financial, transportation, time, and provider supply barriers to accessing high-quality, coordinated care when needed. In 2018, 5.2 percent of children under age 18 years lacked health insurance coverage and 4.3 percent did not have a usual source of care; in 2017, 7.4 percent did not visit a physician, emergency department, or other provider (National Center for Health Statistics, 2019, n.d.). Schools help to facilitate student access to the health-care system. School nurses provide basic health care to children around the country, administering medications, conducting screening and education, addressing acute conditions, and helping to manage chronic ailments such as asthma and diabetes. Coverage varies, however, with a 2018 survey indicating that nearly 20 percent of schools lack nursing support and about 40 percent of nurses serve three or more buildings, findings which were more prevalent in rural than urban school districts (Willgerodt, Brock, & Maughan, 2018). In addition, there are 2,584 school-based health clinics, which in 2016–17, served 10,629 schools and over 6.3 million students in 48 states; Washington, DC; and Puerto Rico—more than twice the number of centers in 1998 (1,135; Love, Schlitt, Soleimanpour, Panchal, & Behr, 2019). These centers improve access, care continuity, and coordination among primary care, mental health, dental, and other health-care services. They are located predominantly in schools with comparatively high proportions of Black and Hispanic students and students eligible for free or reduced-price lunch.

Starting at a young age, children have multiple mental health needs that are directly addressed by school-based services. Over 17 percent of children ages 2–8 years have a diagnosed mental, behavioral, or developmental disorder, and these rates are higher for children living below the poverty level (Cree et al., 2018). While behavioral problems are more common among children ages 6–11 years, diagnoses of anxiety and depression increase as children enter adolescence (Ghandour et al., 2018). School psychologists and school counselors provide critical mental health supports to children and youth in school settings. Schools are one of the most important institutions that address children's mental health needs, and in some areas, such as rural regions, schools are the only venue where children's mental health services are offered (National Association of School Psychologists, 2016). Schools provide a continuum of vital mental health services to children and youth in the United States, including prevention and intervention for all students, and early identification and targeted or intensive interventions to at-risk students and students with severe and chronic mental health difficulties (National Association of School Psychologists, 2016).

In 2017, more than 12.5 million children, or 17 percent of all children in the United States, lived in food insecure households (Federal Interagency Forum on Child and Family Statistics, 2019). Schools help to address the problem of childhood hunger and food insecurity. In 2018, schools served 20.2 million free school lunches and 1.8 million reduced-price lunches per day as well as 14.7 million breakfasts per day (School Nutrition Association, n.d.). In 2016, Hispanic and Black students (45 and 44 percent, respectively) were much more likely than Asian and

White students (14 and 8 percent) to attend schools in which more than 75 percent of students were eligible for free or reduced-price lunch under the National School Lunch Program (McFarland et al., 2019).

In 2018, 18.1 percent of American children and adolescents ages 2–19 could be categorized as obese (National Center for Health Statistics, 2019). There is an inverse relationship between obesity and income and a higher prevalence among Black and Hispanic youth (Rogers, Eagle, Sheetz, Woodward, & Leibowitz, 2015). Schools play an important role in promoting physical activity and healthful eating in children. Students who participate in both the School Breakfast Program and National School Lunch Program consume up to half of their daily caloric intake in school (Story, 2009). School districts thus contribute in essential ways to nourishing low-income children, in addition to implementing federal and state regulations limiting the availability of high sugar and high fat foods and beverages for all children in school (Cohen & Schwartz, 2020). Schools also provide safe and supervised opportunities for physical activity through recess, physical education, active motor breaks, before/after school programs, and sports (Institute of Medicine, 2013).

Nationally, more than 1.5 million public school students were homeless during 2017–18, up 15 percent from the previous academic year (National Center for Homeless Children and Youth, 2020). Moreover, 9 percent of homeless children were “unaccompanied” by a parent or guardian while 7 percent of homeless children were “unsheltered”—that is, staying in cars, abandoned buildings, or substandard housing. Federal law requires school districts to treat homeless students equitably; they also play a critical role in identifying and linking homeless children to services and supports, as they do with children suffering maltreatment (i.e., physical, sexual, and psychological abuse and neglect; Crosson-Tower, 2003). In 2017, 9.1 per 1,000 children experienced maltreatment (Federal Interagency Forum on Child and Family Statistics, 2019); the most frequent source of child abuse and neglect reporting is from education personnel (U.S. Department of Health and Human Services, 2020).

The Impact of COVID-19 on Children's Well-Being

During this period of school closure, children and adults throughout the United States are experiencing prolonged and collective stress related to myriad societal changes and family events. Salient stressors include the death and illness of family members; social distancing from friends, extended family, teachers, and colleagues; exposure to frightening news information; parental job stress and job loss; and parents being forced into the role of educators while either working from home or providing essential services in the community. Students' health and mental health needs are going to be even more acute in the wake of the pandemic given the social, emotional, and economic stresses that are proceeding concomitantly and are likely to persist for some period of time once the crisis has been resolved.

The widespread stress imposed by school closures resulting from COVID-19 will differentially impact subgroups of children in negative ways. These new COVID-19 stresses compound existing stressors deriving from family and

neighborhood circumstances that already contribute to disparities among low-income Americans and some racial and ethnic minority groups, including Blacks, Hispanics, and Native Americans. Prior to COVID-19, schools serving large numbers of children from economically disadvantaged neighborhoods already had fewer resources (i.e., human, material, and curricular) to meet children's needs (Owens, Reardon, & Jencks, 2016). In this period of school closures, examples of resource limitations disproportionately impacting vulnerable children include students with limited access to technology, including laptops, broadband internet, and data plans; students whose parents/caregivers have limited English language proficiency; and students whose parents/caregivers are less engaged or available to assist with remote learning. In addition, recent data show that Blacks and Native Americans are contracting and dying of COVID-19 at disproportionately higher rates than other Americans (Johnson & Buford, 2020; Stafford, Hoyer, & Morrison, 2020), in part due to higher prevalence of comorbid health conditions such as diabetes, heart disease, and asthma. Therefore, COVID-19 may pose a larger burden on some racial and ethnic minority groups and individuals from economically disadvantaged communities.

Children who are most vulnerable to school closures include children who rely on school-based health and mental health care, children from households that are food insecure and children who are obese, children who are at risk of abuse and neglect at home, and children who are homeless. During this period of school closure, school districts are doing their best in these difficult circumstances to continue to meet the nonacademic needs of students, but their ability to do so is obviously limited.

Children who receive health care from school nurses or through school-based health centers will experience disruptions in their access to care. The same is true for students who receive school-based mental health services. Once schools close, school nurses are generally unavailable to students, though they may provide families with information and stay connected with students with health conditions; reports indicate that many are volunteering with local hospitals and health boards, conducting testing, contact tracing, and direct care (Yates, 2020). In some cases, school-based health centers can coordinate alternative provider locations where students can continue to receive care or use telemedicine to deliver health and mental health services, including answering nonurgent questions, refilling prescriptions, conducting psychiatric appointments, and providing psychotherapy (Anderson & Caseman, 2020; Denver Health, 2020). School psychologists, school counselors, and school social workers can use this technology as well; however, the extent to which this is occurring is unclear. Still, professional associations are issuing resources and guidance on best practices for the provision of school-based mental health services during COVID-19, including telehealth (e.g., National Association of School Psychologists, 2020).

Given what we know about the trajectory of children's summer weight gain compared with weight gain during the school year (Weaver, Beets, & Brazendale, 2018), children may be at added risk for unhealthy weight gain during the extended school closure because of the lack of structure at home, lack of

physical activity, and easy access to snacks. Moreover, unhealthy weight gain may differentially impact food insecure children compared with their food secure peers (Lee, Kubik, & Fulkerson, 2019). Recognizing the persistent problem of food insecurity in students' homes, school districts have established food distribution sites, whereby families can pick up meals. Some states have obtained permission from the United States Department of Agriculture to allow them to provide food for all children under 18 years, not just those who previously qualified for free meals (Action for Healthy Kids, 2020). These school district efforts may help to mitigate the effects of food insecurity on children during the period of school closure; however, they are unlikely to reach everyone in need. Furthermore, the closing of large segments of the economy has resulted in widespread job loss, increasing the need for food assistance as reflected in increasing demand for food from local pantries (Schwab, 2020).

The levels of domestic violence and child abuse and neglect are likely rising during COVID-19 school closures (Abramson, 2020). During this period of high stress, children are home with their primary caregivers nearly all the time. In addition to myriad stresses on parents/caregivers, including loss of control, job insecurity and job loss, and job stress related to being an essential worker, parents are being asked by school districts to take on the role of educators, facilitating instruction that is assigned by teachers. Given the parameters of social distancing, parents are not able to share their childrearing responsibilities with caregivers they previously relied on, including teachers, day care providers, extended family, and babysitters. At the same time, mandated reporters such as school personnel are unable to identify and report signs of abuse and neglect, nor are they able to identify, monitor, and connect homeless youth to necessary services and supports. Furthermore, the number of homeless students is likely to increase in the wake of the pandemic as a result of the economic fallout, which furthers the importance of schools to serve and accommodate larger numbers of homeless children. Together, these factors will likely result in more children returning to school requiring school-based mental health and social service providers to address their social, emotional, and behavioral needs.

A Window of Opportunity to Improve Nonacademic Supports in Schools

Due to prolonged stress during the period of school closures, we expect that students will return to school with more barriers to learning than before COVID-19. The COVID-19 pandemic is shining a spotlight on how important schools are for meeting children's nonacademic needs and the importance of appropriate funding for these services in the wake of this pandemic and on an ongoing basis during regular times. This recognition creates a window of opportunity for programmatic and policy changes (Kingdon, 2010) to implement solutions to better help students in need of nonacademic services and supports, especially disadvantaged youth.

Expanding participation in free meals among children from low-income families is a policy lever to address food insecurity and obesity. As part of the Healthy,

Hunger-Free Kids Act of 2010, states were allowed to directly certify students in the National School Lunch Program through participation in the Supplemental Nutrition Assistance Program, thus eliminating the barrier that required families to complete an additional application for free school meals. In 2016–17, 92 percent of eligible students in the United States were directly certified, up from 87 percent in 2013–14 (U.S. Department of Agriculture, 2018). Despite this progress, cross-state variation remains with direct certification rates ranging from 74 to 100 percent. The decentralized linkage processes in some states likely result in comparable within-state variation as well. Opportunities therefore exist for states to better identify and link eligible students for subsidized school meals through existing data sources. The Healthy Hunger-Free Kids Act also permits the country's highest poverty schools and districts to provide universal free meals for students (U.S. Department of Agriculture, 2019). With economic instability and job loss at historic levels due to COVID-19, the need to fund free school meals will increase.

In addition to funding meals for all students, creating standards around the length of the lunch period (i.e., 30 minutes) would allow children to have more time to get their meal, sit down, and ultimately eat more food at lunch (Cohen et al., 2016). Collaborating with professional chefs and expanding the use of locally sourced ingredients through Farm to School initiatives can help inspire new menu options while improving the appeal of school meals. Enforcement of competitive food and beverage regulations would reduce the availability of high fat and high sugar foods in schools that contribute to obesity. It will be tempting for school districts to further squeeze the already limited availability of physical activity opportunities in light of the academic regression expected subsequent to COVID-19. Retaining and even expanding physical education, recess, and other motor breaks will be critical in helping students to pay attention, behave in the classroom, learn, and achieve healthy weight (e.g., Hillman, Erickson, & Kramer, 2008).

When children return to school, the need for school-based health and mental health professionals will be even greater than before COVID-19. In order for schools to address students' health and mental health challenges upon school reentry they will need to employ enough staff to meet students' needs. School-based health centers serve a limited number of school districts nationwide. This lack of coverage is compounded by personnel shortages in school nurses, as described previously, and mental health personnel. In 2014–15, for example, the ratio of students to school psychologists in the United States was estimated to be 1,381 to 1; far exceeding the recommended ratio of 500 to 700 students to 1 school psychologist (National Association of School Psychologists, 2017). School psychologists, counselors, and social workers provide mental health supports to students who have endured traumatic experiences, including maltreatment and neglect, and children who are homeless. Upon school reentry, it will be important for school mental health providers to collaborate with teachers and other school staff to engage in a range of services including first, identifying students in need of support, and second, providing counseling and collaborating with community-based providers to coordinate appropriate services. The widespread use of telehealth services during the pandemic should facilitate the routine use of telemedicine as another way of connecting with and providing health

and mental health services to children now that the requisite privacy, reimbursement, and licensure issues have been further established. The use of telehealth services should prove particularly important for reaching students in less resourced rural communities. For many communities; however, a prerequisite will be the expansion of broadband Internet technology, without which telehealth is not feasible.

Conclusion

Historically, schools have provided important nonacademic services and supports that reduce barriers to learning. The prolonged school closures due to COVID-19 have upended life for millions of families, including the withdrawal of this critical assistance. In their absence, COVID-19 has thus shined a spotlight on the importance of nonacademic services and supports for children's well-being. Because of the prolonged psychosocial and economic stresses endured by children and families resulting from COVID-19, students will return to school with even greater needs than before. It is incumbent on state and federal policymakers and local government to provide schools with the tools and resources needed, both to meet this forthcoming challenge and to better care for America's youth in the years ahead.

Jessica A. Hoffman, PhD, NCSP, is an associate professor in the Department of Applied Psychology at Northeastern University; she is a licensed psychologist and nationally certified school psychologist.

Edward A. Miller, PhD, MPA, is a professor in the Department of Gerontology, and fellow at the Gerontology Institute within the John W. McCormack Graduate School of Policy and Global Studies at the University of Massachusetts Boston, and adjunct professor in the Department of Health Services, Policy and Practice within the School of Public Health at Brown University.

Notes

Conflicts of interest: None declared.

Corresponding author: Jessica A. Hoffman, j.hoffman@northeastern.edu

References

- Abramson, Ashley. 2020. *How COVID-19 May Increase Domestic Violence and Child Abuse*. Washington, DC: American Psychological Association. <https://www.apa.org/topics/covid-19/domestic-violence-child-abuse>. Accessed April 18, 2020.
- Action for Healthy Kids. 2020. "COVID-19 Resources: School Closures and Food Access." <https://www.actionforhealthykids.org/resources-for-schools-and-families-during-covid-19-coronavirus/>. Accessed April 18, 2020.
- Anderson, Sara, and Kelli Caseman. 2020. "School-Based Health Centers Can Deliver Care to Vulnerable Populations During the COVID-19 Pandemic." *Child Trends* (March 18). <https://www.childtrends.org>.

- org/school-based-health-centers-can-deliver-care-to-vulnerable-populations-during-the-covid-19-pandemic. Accessed April 18, 2020.
- Belhadjer, Zahra, Mathilde Méot, Fanny Bajolle, Diala Kraiche, Antoine Legendre, Samya Abakka, Johanne Auriiau, et al. 2020. "Acute Heart Failure in Multisystem Inflammatory Syndrome in Children (MIS-C) in the Context of Global SARS-CoV-2 Pandemic." *Circulation*, 142, 429–36. <https://doi.org/10.1161/CIRCULATIONAHA.120.048360>
- Bohl, Ryan. 2020. "Opinion: School Closures Force Many Americans to Choose between Their Children's Education and Earning a Paycheck." *Marketwatch* (March 14). <https://www.marketwatch.com/story/school-closures-force-many-americans-to-choose-between-their-childrens-education-and-earning-a-paycheck-2020-03-13>. Accessed April 14, 2020.
- Carroll, Aaron E. 2020. "Is Closing the Schools a Good Idea?" *New York Times* (March 17). <https://www.nytimes.com/2020/03/17/upshot/coronavirus-school-closings.html>. Accessed April 17, 2020.
- CDC COVID-19 Response Team. 2020. "Coronavirus Disease 2019 in Children—United States, February 12–April 2, 2020." *MMWR Morbidity and Mortality Weekly Report* 69 (14): 422–26. https://doi.org/10.15585/mmwr.mm6914e4external_icon
- Cohen, Juliana F. W., Jaquelyn L. Jahn, Scott Richardson, Sarah A. Cluggish, Ellen Parker, and Rimm. 2016. "The Amount of Time to Eat Lunch Is Associated with Children's Selection and Consumption of School Meal Entrée, Fruits, Vegetable, and Milk." *Journal of the Academy of Nutrition and Dietetics* 116 (1): 123–28.
- Cohen, Juliana, and Marlene B. Schwartz. 2020. "Documented Success and Future Potential of the Healthy, Hunger-Free Kids Act." *Journal of the Academy of Nutrition and Dietetics* 120 (3): 359–62. <https://doi.org/10.1016/j.jand.2019.10.021>
- Collins, Cory. 2020. "Teaching Through Coronavirus: What Educators Need Right Now." *Teaching Tolerance* (March 19). <https://www.tolerance.org/magazine/teaching-through-coronavirus-what-educators-need-right-now>. Accessed April 14, 2020.
- Cree, Robyn A., Rebecca H. Bitsko, Lara R. Robinson, Joseph R. Holbrook, Melissa L. Danielson, Camille Smith, Jennifer W. Kaminski, Mary Kay Kenney, and Georgina Peacock. 2018. "Health Care, Family, and Community Factors Associated With Mental, Behavioral, and Developmental Disorders and Poverty among Children Aged 2-8 Years—United States, 2016." *MMWR Morbidity and Mortality Weekly Report* 67 (50): 1377–83. <https://doi.org/10.15585/mmwr.mm6750a1>
- Crosson-Tower, Cynthia. 2003. *The Role of Educators in Preventing and Responding to Child Abuse and Neglect*. Washington, DC: U.S. Department of Health and Human Services. <https://www.childwelfare.gov/pubPDFs/educator.pdf>. Accessed April 18, 2020.
- Cruz, Andrea T., and Steven L. Zeichner. 2020. "COVID-19 in Children: Initial Characterization of the Pediatric Disease." *Pediatrics* 145: e20200834. <https://doi.org/10.1542/peds.2020-0834>
- Denver Health. 2020. "Telehealth Offered at School-Based Health Centers During COVID-19 Outbreak." https://www.denverhealth.org/news/2020/03/school-based-health-centers-affected-by-novel-coronavirus?utm_campaign=coronavirus. Accessed April 18, 2020.
- Dong, Yuanyuan, Xi Mo, Yabin Hu, Xin Qi, Fang Jiang, Zhongyi Jiang, and Shilu Tong. 2020. "Epidemiological Characteristics of 2143 Pediatric Patients with 2019 Coronavirus Disease in China." *Pediatrics* 145: e20200702. <https://pediatrics.aappublications.org/content/pediatrics/145/6/e20200834.full-text.pdf>
- Education Week. 2020. "Map: Coronavirus and School Closures." April 6. <https://www.edweek.org/ew/section/multimedia/map-coronavirus-and-school-closures.html>. Accessed April 17, 2020.
- Federal Interagency Forum on Child and Family Statistics. 2019. *America's Children: Key National Indicators of Well-Being, 2019*. Washington, DC: U.S. Government Printing Office. https://www.childstats.gov/pdf/ac2019/ac_19.pdf. Accessed April 18, 2020.
- Ferguson, Neil M., A. T. Cummings Derek, Christophe Fraser, James C. Cajka, Philip C. Cooley, and Donald S. Burke. 2006. "Strategies for Mitigating an Influenza Pandemic." *Nature* 442 (27): 448–52. <https://doi.org/10.1038/nature04795>
- Ghandour, Reem M., Laura J. Sherman, Catherine J. Vladutiu, Miri M. Ali, Sean Lynch, Rebecca H. Bitsko, and Stephen J. Blumberg. 2018. "Prevalence and Treatment of Depression, Anxiety, and Conduct problems in U.S. Children." *The Journal of Pediatrics* 206: 256–67.

- Gracy, Delaney, Anupa Fabian, Virginia Roncaglione, Katie Savage, and Irwin Redlener. 2017. *Health Barriers to Learning: The Prevalence and Educational Consequences in Disadvantaged Children*. New York, NY: Children's Health Fund. <https://www.childrenshealthfund.org/hbl-literature-review/>. Accessed April 17, 2020.
- Gracy, Delaney, Roy Grant, Griffin Goldsmith, Anupa Fabian, Lori Peek, and Irwin E. Redlener. 2014. "Health Barriers to Learning: A Survey of New York City Public School Leadership." *Sage Open* 4: 215824401352061. <https://doi.org/10.1177/2158244013520613>
- Hillman, C. H., Kirk I. Erickson, and Arthur F. Kramer. 2008. "Be Smart, Exercise Your Heart: Exercise Effects on Brain and Cognition." *Nature Reviews Neuroscience* 9 (1): 58–65.
- Institute of Medicine. 2013. *Educating the Student Body: Taking Physical Activity and Physical Education to School*. Washington, DC: The National Academies Press. <https://www.nap.edu/catalog/18314/educating-the-student-body-taking-physical-activity-and-physical-education>. Accessed April 14, 2020.
- Johnson, Akilah, and Talia Buford. 2020. "Early Data Shows African Americans Have Contracted and Died of Coronavirus at an Alarming Rate." *ProPublica* (April 3). <https://www.propublica.org/article/early-data-shows-african-americans-have-contracted-and-died-of-coronavirus-at-an-alarming-rate>. Accessed April 18, 2020.
- Kingdon, John W. 2010. *Agendas, Alternatives, and Public Policies*. 2nd ed. New York: Longman Classics.
- Lee, Jiwoo, Martha Y. Kubik, and Jayne A. Fulkerson. 2019. "Diet Quality and Fruit, Vegetable, and Sugar-Sweetened Beverage Consumption by Household Food Insecurity Among 8- to 12-Year-Old Children during Summer Months." *Journal of the Academy of Nutrition and Dietetics* 119 (10): 1695–702. <https://doi.org/10.1016/j.jand.2019.03.004>
- Love, Hayley E., John Schlitt, Samira Soleimanpour, Nirmita Panchal, and Caroline Behr. 2019. "Twenty Years of School-Based Health Care Growth and Expansion." *Health Affairs* 39 (4): 755–64.
- McFarland, Joel, Bill Hussar, Jijun Zhang, Ke Wang, Sarah Hein, Melissa Diliberti, Emily Forrest Cataldi, et al. 2019. *The Condition of Education, 2019 (NCES 2019-144)*. Washington, DC: National Center for Education Statistics, U.S. Department of Education. <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2019144>. Accessed April 17, 2020.
- National Academies of Sciences, Engineering, and Medicine. 2019. *Monitoring Educational Equity*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25389>. Accessed April 17, 2020.
- National Association of School Psychologists. 2016. *School-Based Mental Health Services: Improving Student Learning and Well-Being*. Bethesda, MD: National Association of School Psychologists. <https://www.nasponline.org/resources-and-publications/resources-and-podcasts/mental-health/school-psychology-and-mental-health/school-based-mental-health-services>. Accessed April 17, 2020.
- National Association of School Psychologists. 2017. *Shortages in School Psychology: Challenges to Meeting the Growing Needs of U.S. Students and Schools [Research summary]*. Bethesda, MD: National Association of School Psychologists.
- National Association of School Psychologists. 2020. *Virtual Service Delivery in Response to COVID-19 Disruptions*. Bethesda, MD: National Association of School Psychologists. <https://www.nasponline.org/resources-and-publications/resources-and-podcasts/school-climate-safety-and-crisis/health-crisis-resources/virtual-service-delivery-in-response-to-covid-19-disruptions>. Accessed April 18, 2020.
- National Center for Health Statistics. n.d. "Child Health." Hyattsville, MD. <https://www.cdc.gov/nchs/fastats/child-health.htm>. Accessed April 4, 2020.
- National Center for Health Statistics. 2019. "Health, United States, 2018." Hyattsville, MD. <https://www.cdc.gov/nchs/hus/index.htm>. Accessed April 17, 2020.
- National Center for Homeless Children and Youth. 2020. *Federal Data Summary, School Years 2015-16 Through 2017-18, Education for Homeless Children and Youth*. Greensboro, NC. <https://nche.ed.gov/wp-content/uploads/2020/01/Federal-Data-Summary-SY-15.16-to-17.18-Published-1.30.2020.pdf>. Accessed April 17, 2020.
- Owens, Ann, Sean F. Reardon, and Christopher Jencks. 2016. "Income Segregation Between Schools and School Districts." *American Educational Research Journal* 53 (4): 1159–97. <https://doi.org/10.3102/0002831216652722>

- Robles, Yesenia. 2020. "Amid Coronavirus Fears, the CDC Told Schools to Plan for Remote Learning. That's Harder than it Sounds." *Chalkboard Beat* (March 3). <https://chalkbeat.org/posts/us/2020/03/03/amid-coronavirus-fears-the-cdc-told-schools-to-plan-for-remote-learning-thats-harder-than-it-sounds/>. Accessed April 17, 2020.
- Rogers, Robert, Taylor F. Eagle, Anne Sheetz, Alan Woodward, and Robers Leibowitz. 2015. "The Relationship between Childhood Obesity, Low Socioeconomic Status, and Race/Ethnicity: Lessons from Massachusetts." *Childhood Obesity* 11 (6): 691–95. <https://doi.org/10.1089/chi.2015.0029>
- School Nutrition Association. n.d. *School Meal Trends and Stats*. Arlington, VA: School Nutrition Association. <https://schoolnutrition.org/aboutschoolmeals/schoolmealtrendsstats/>. Accessed April 17, 2020.
- Schwab, Kristen. 2020. "Food Pantries Struggling to Provide During COVID-19." *Marketplace* (March 31). <https://www.marketplace.org/2020/03/31/covid-19-food-pantries/>. Accessed April 18, 2020.
- Schwartz, Sarah. 2020. "Teachers Scramble to Make Remote Learning Work: 'It's Very Stressful.'" *Education Week Teacher* (March 18). https://blogs.edweek.org/teachers/teaching_now/2020/03/teachers_scramble_to_make_remote_learning_work_its_very_stressful.html. Accessed April 17, 2020.
- Sparks, Sarah D. 2020. "Academically Speaking, the 'COVID Slide' Could Be a Lot Worse Than You Think." *Education Week* (April 9). https://blogs.edweek.org/edweek/inside-school-research/2020/04/covid_slide_worse_summer_slide_NWEA.html. Accessed April 18, 2020.
- Stafford, Kat, Meghan Hoyer, and Aaron Morrison. 2020. "Racial Toll of Virus Grows Even Starker as More Data Emerges." *apnews.com* (April 18). <https://apnews.com/8a3430dd37e7c44290c7621f5af96d6b>. Accessed April 19, 2020.
- Story, Mary. 2009. "The Third School Nutrition Dietary Assessment Study: Findings and Policy Implications for Improving the Health of US Children." *Journal of the American Dietetic Association* 109 (Suppl): S7–13. <https://doi.org/10.1016/j.jada.2008.11.005>
- U.S. Department of Agriculture. 2018. *Direct Certification in the National School Lunch Program: State Implementation Progress Report to Congress-School Year 2015-2016 & School Year 2016-2017*. Washington, DC. <https://fns-prod.azureedge.net/sites/default/files/resource-files/NSLPDirectCertification2016.pdf>. Accessed April 19, 2020.
- U.S. Department of Agriculture. 2019. "Community Eligibility Provision." <https://www.fns.usda.gov/school-meals/community-eligibility-provision>. Accessed April 19, 2020.
- U.S. Department of Health & Human Services. 2020. *Child Maltreatment 2018*. Washington, DC: U.S. Department of Health & Human Services. <https://www.acf.hhs.gov/cb/research-data-technology/statistics-research/child-maltreatment>. Accessed April 18, 2020.
- Weaver, R. Glenn, Michael W. Beets, and Keith Brazendale. 2018. "Summer Weight Gain and Fitness Loss: Causes and Potential Solutions." *American Journal of Lifestyle Medicine* 13 (2): 116–28, <https://doi.org/10.1177/1559827617750576>
- Willgerodt, Mayumi A., Douglas M. Brock, and Erin D. Maughan. 2018. "Public School Nursing Practice in the United States." *Journal of School Nursing* 34 (3): 232–44.
- Yates, Riley. 2020. "School Nurses Answer the Call, Volunteering on the Front Lines as Coronavirus Cases Surge." *nj.com* (April 6). <https://www.nj.com/coronavirus/2020/04/school-nurses-answer-the-call-volunteering-on-the-front-lines-as-coronavirus-cases-surge.html>. Accessed April 18, 2020.