The COVID-19 Pandemic and the Impact on Child Mental Health: A Socio-Ecological Perspective

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The COVID-19 pandemic has shown its force and far-reaching impact across all areas of daily living: education, business, health care, community, socialization, and simply the way we interact across these spectrums every day. The pandemic has touched the lives of individuals of all ages in varying and disparate ways. Children stand to be the most adversely affected and will bear the long-term public health and socioeconomic impacts of this pandemic.

Before the COVID-19 pandemic, child mental health problems were prevalent across the United States. Of children aged 3 to 17 years, 3.2% are diagnosed with depression, 7.1% with anxiety, and 7.4% with a behavioral problem (Centers for Disease Control and Prevention [CDC], 2020a; Ghandour et al., 2019). It is also common for children to experience a co-occurring mental health issue, especially among children diagnosed with depression who have higher rates of co-occurring anxiety or behavioral problems (Ghandour et al., 2019). Nearly half of children have experienced at least one adverse childhood experience (ACE), with the most common being divorce or separation of parents or guardians and growing up in economic hardship (Sacks & Murphey, 2018).

The COVID-19 pandemic poses an increased threat to the mental and behavioral health of children. There is an increasing prevalence of mental health problems in children, coupled with the variability of access to mental health services and the impact of trauma and adverse childhood experiences (ACEs) on child health. The prolonged duration of the current pandemic put children at increased risk for an even higher rate of mental and behavioral health problems. Prior to the pandemic, the mental health workforce was ill equipped to care for the growing need and demand for child-specific services. As the pandemic continues to invade communities across the nation, it is vital for pediatric nurses to acknowledge COVID-19 as a major disruptor to the typical growth and development of children. The full impact of this COVID-19 pandemic on the mental health for children is uncertain. However, its impact on an already limited child-focused mental health workforce will indeed have a long-lasting impact on the health and well-being of children and their families. The socio-ecological impact of COVID-19 and its duration for those children with known mental health problems and those in whom such challenges will arise has implications for future models of care. Nurses are well-poised to both assess and intervene with mental health problems to reduce the long-term, potentially negative effect of COVID-19 on the health and well-being of children.

Key Words: COVID-19, child mental health, access to care, health disparities, adverse childhood experiences, pandemic.

The experience of trauma and ACE exposure puts children at greater risk for developing physical and mental health problems (Crouch et al., 2019; Porche et al., 2016), as well as increases the potential for engaging in high-risk behaviors (e.g., substance use, risky sexual behaviors) into adolescence and adulthood (Layne et al., 2014). Despite the significant prevalence of problems, half of children with a known mental health diagnosis do not receive any services (Whitney & Peterson, 2019).

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This article seeks to provide a broad overview of the socio-ecological impact of the COVID-19 pandemic on the mental health of children. Through the use of two case studies and using the lens of Bronfenbrenner's (1979) Ecological Systems Theory as a guiding framework, this article will explore the effect of COVID-19 on child mental health. Bronfenbrenner's theory explores child development at four levels: 1) microsystems or the child's immediate environment (e.g., home, school, neighborhood, peer groups), 2) mesosystems or the connections/relations between the microsystems, 3) exosystems or the indirect environment/influencers on development (e.g., local businesses, parent/guardian's workplace, government), and 4) macrosystem or the larger socio-cultural environment (Bronfenbrenner, 1979). It is vital for pediatric nurses to assess, intervene, and support children with exacerbated needs related to pre-existing mental health problems or newly emerging mental health challenges due to the COVID-19 pandemic. Bronfenbrenner's Ecological Systems Theory provides a framework for pediatric nurses to systematically work through identifying the needs of children and families who are experiencing mental health problems.

Case Study – School-Aged Child

Alex is a 9-year-old boy in elementary school who lives in the suburb of a large urban city with his parents. Alex comes from a wealthy family. His dad is a prominent businessman in the community, and his mom stays at home with his younger sister who is 3 years old. Alex was always a very active, energetic, and rambunctious child. As he started school, Alex struggled to maintain the attention and focus necessary for classroom learning. Consequently, his grades declined in reading and math. Alex was impulsive and struggled at times to control his anger. This was especially true when he had trouble with his schoolwork; his anxiety would significantly increase, leading to behavioral outbursts. At the age of 7 years, Alex was diagnosed with attention deficit hyperactivity disorder (ADHD). His parents always made sure he had the services and support

needed to manage his behaviors and do well in school. He currently has an individualized education plan (IEP) for behavioral and emotional support. Alex has private insurance; however, there is a discrepancy in the mental health services covered by his insurance and the supports his family feels are necessary in school and at home. His parents are able to pay out of pocket for Alex's services. He currently has an outpatient provider for psychotherapy, a psychiatric provider for medication management, and a therapist who conducts home visits and family therapy sessions. Prior to the COVID-19 pandemic, Alex was progressing well in treatment and with behavioral management, having fewer outbursts in school and at home.

Case Study – Adolescent

Cristina is a 16-year-old girl in high school who lives in a large urban city with her mother, 11-year-old brother, and 7-year-old sister. Cristina's parents are divorced. She lives with her mother primarily and spends alternating weekends with her father. Both of Cristina's parents are considered essential workers; her mother is a nurse. Cristina has been effectively self-managing her feelings and reactions to her parent's separation and divorce since she was 10 years old and has not required any formal mental health services. Since the divorce, her mother works more to keep up with the household bills and her children's needs. Due to her mother's increased work schedule, Cristina and her siblings spend a lot of time with their maternal grandparents after school and nights/weekends when their mother has to work. Even while navigating the interpersonal issues between her parents, balancing the dynamics of two families, being a role model for her siblings, and sometimes their only consistency, Cristina has continued to maintain her academic success. She is on her school's basketball team and active in her local community as a peer leader in her local youth group.

The Pandemic's Effect on Alex and Cristina

Alex

When the COVID-19 pandemic upended his community, Alex's daily

routine abruptly changed. His school and outpatient mental health clinic closed; he was now home with family without his external support systems. Alex transitioned to online learning for school, and his dad now worked remotely from home. In the wake of losing his in-person mental health services, school support, and alteration of his routines, Alex began to regress. He started having more frequent episodes of aggression, and his parents were struggling to manage his behaviors. They relied heavily on his outpatient, school, and in-home services for behavior management to help, which were now severely reduced because of the pandemic. Alex and his parents were used to having the best services afforded to them by their private insurance and their ability to pay out-of-pocket. The parents' responsibility went from simply assisting with Alex's engagement in treatment to now being responsible for his schooling, telehealth services, and behavioral management. His parents had to establish and re-establish a sense of structure and routine for him in the COVID-19 environment, all this while they managed their own adjustments and that of Alex's sibling.

Despite the loss of his routine mental health services (i.e., outpatient therapy, medication management, and in-home visitation) and transition to telehealth, Alex's parents are able to afford the technology necessary to maintain, to some degree, all of his mental health services at home. However, Alex continued to slowly regress despite his parents' ability to provide adequate access to services. The significant reduction in mental health services and school supports limited Alex's ability to effectively process and manage his behavioral, emotional, and learning needs. He also lost the routine of his medication management appointments where he could talk with his provider and address emerging issues where additional pharmacotherapy support may be needed, such as for increased anxiety or depression.

Coupled with his loss of in-person mental health services, Alex was faced with the abrupt transition to online learning as a result of his school's closure. He lost access to the school nurse, school counselor, and other personnel, who were all a part of his

external support system. Alex also relied on this support system to help manage his daily emotional and behavioral needs to ensure a positive educational experience. Without school, Alex's parents are now challenged with managing him at home with only virtual support. It is not easy to care for a child with ADHD and co-occurring mental health problems. The pandemic also placed increased strain on Alex's parents (e.g., remote work, social isolation, ill family and friends, loss of community activities), which further fractured Alex's relationship with his parents. It is unclear how much Alex will regress as a result of the impact of the pandemic. What is known is that his progress has suffered, and his therapy and routines will need to be re-assessed. Alex's plans of care must be adjusted when he returns to learning in the structured environment of school, having in-person outpatient mental health services, and inter-acting with friends, all of which help Alex to manage his behaviors.

Cristina

The COVID-19 pandemic has had a different impact on Cristina, her family, and community. Cristina's social networks are very important to her as she is actively involved in her school and community. When the pandemic struck, her school and everything in her community closed. Cristina felt her life come to a screeching halt, living in a complicated family situation. Cristina lost her only outlets – friends and family, school, and youth group. Now faced with online learning from home, Cristina has to navigate school alone while also supporting her younger brother and sister. Cristina's mother, a nurse and essential worker, began working even more hours, and when she comes home, she has to physically distance from her children to prevent exposure to coronavirus and potentially contracting COVID-19. Cristina and her siblings were no longer going to her grandparents to minimize the risks of exposure and spread. She was now socially isolated from her family and friends. This combination of unavoidable situations now made Cristina responsible for the household while her mother worked. She was responsible for her own schooling, her siblings' schooling, cooking, and cleaning. Cristina wanted to ease the burden on her

mother, who was always exhausted from her increased work hours and stressed from the added financial necessity to support Cristina's grandparents. Cristina became over-whelmed because she was not only managing her own stress, but also taking on her mother's stress. She began to feel anxious from the enormous responsibility, doubtful that she could manage it all, and hopeless because her grades were slipping. With no end in sight to the pandemic, it only meant more stress and constant change that have already begun to negatively affect Cristina's mental health.

Cristina had never received mental health services in the past despite experiencing parental divorce and subsequent economic hardship, two major ACEs. While Cristina has always experienced challenges at home while navigating the ex-periences of being a teenager, she relied on her basketball team, youth group, and visiting her grandparents as her ways to cope and manage her stress. These outlets served as places where Cristina could be herself, feel connected, and most importantly, feel safe. With all of that lost, Cristina began feeling overwhelmed, anxious, hopeless, and depressed. Cristina needed a mental health professional to talk to, process and validate her feelings, and navigate her new sense of "normal" in a COVID-19 world.

However, despite her recognition and desire, Cristina had trouble accessing services. Her insurance limited the number of providers that she could see, and her mother could not afford out-of-pocket expenses. To get an initial appointment, Cristina waited weeks for the first available opening. Navigating the new "normal" alone and stressed, Cristina is at risk for worsening and increased symptoms. These symptoms that Cristina exhibited could have been identified by teachers and coaches to avoid the mental health crisis she experienced. Cristina developed a suicidal plan and acted on it, requiring acute inpatient services, a potentially avoidable set of circumstances. Upon discharge, Cristina is at risk for ongoing or recurrent exacerbation of her mental health problems due to an overtaxed mental health system. Circumstances beyond Cristina's control threaten her life and further disrupt her family.

Impact of COVID-19

The COVID-19 pandemic has further hampered access to care and increased disparities in mental health services for children. Using Bron-fenbrenner's Ecological Systems Theory, Alex's loss of routine care and Cristina's limited access to care highlight the impact of COVID-19 at both the exosystem and macrosystem levels. In the face of the pandemic, children are one of the most vulnerable populations likely to experience long-term consequences from COVID-19. To protect the public and prevent further spread of the virus, local and state governments in the United States mounted variable response efforts to combat COVID-19. These efforts included stay-at-home orders, travel restrictions, school and non-essential business closures, re-strictive hospital visitation policies, use of face masks, social and physical distancing, limitations to social gatherings, and the sudden reliance on telecommunications (Schuchat, 2020). Many of these measures are still in effect today and recently began to take new shape as a resurgence of COVID-19 starts to sweep around the globe (*New York Times*, 2020). These efforts keep children and families sheltering in their homes in an effort to protect themselves and reduce the spread of COVID-19. There is a continuous need for children to adapt daily to a new sense of "normal" as the pandemic evolves. The COVID-19 experience is different for families with low, middle, and high socioeconomic status, causing an increase in disparities based on a family's ability to access mental health services, adequately support online learning for school, and promote socialization (Fegert et al., 2020). In addition, the combined effects of social isolation, quarantine, economic stress, and ill, dying, and deceased family and friends due to COVID-19, along with current response efforts, are contributing to mental health problems (Pfefferbaum & North, 2020). The COVID-19 pandemic continues to worsen an already prevalent mental health epidemic in the United States.

The pandemic has unveiled long-standing racial inequities and social disparities in the United States. The ever-present systemic racism, a second public health crisis in the United States, and the corollaries of COVID-19 have ignited an already

smoldering movement for racial and social justice. Communities of color in the United States face increasing access challenges to mental and behavioral health services due to the ramifications of the COVID-19 pandemic (Henderson, 2020; Substance Abuse Mental Health Services Administration [SAMHSA], 1010a). Built upon systems of oppression based on the social construct of race, the pandemic has brought greater emphasis to the inequities and marginalization of Black, Indigenous and People of Color (BIPOC), which extends to each subsequent generation. These inequities exist in health care just as they do in the social environment, further denigrating the overall health, inclusive of mental and behavioral health care in these populations and their children. This intersection of the COVID-19 pandemic, systemic racism, and disparities in mental health services, directly and indirectly influence the neuro-cognitive and social development of children. Effects on their physiologic health and the sociopolitical environment that children of color must navigate are clearly defined within the context of Bronfenbrenner's exosystem and macrosystem levels.

Altered Access to Services

Access issues for individuals seeking mental health services or social support existed long before the COVID-19 pandemic. However, due to COVID-19, disparities in access to health care have increased due to the abrupt transition to telehealth and reduced capacity of in-person outpatient services (SAMHSA, 2020a). Children with pre-existing mental health issues are at increased risk for acute exacerbation or worsening of symptoms related to a loss of routine services due to COVID-19 (Fegert et al., 2020). Viewed as an effective means of providing services, telehealth, while extending the reach, still presents barriers and challenges (Cowan et al., 2019). For example, patients and providers express concern about effective relationship development and establishing rapport through telehealth (Cowan et al., 2019). For children, they may not have the ability to participate in a safe environment where they can privately and honestly open up to providers. Children of lower socioeconomic status may not have the same accessibility to telehealth

services due to limited or no resources (Fegert et al., 2020).

For those children, who because of the COVID-19 pandemic and related stressors will develop and identify new mental health needs, there is added stress of attempting to access an already burdened system with a limited capacity to care for the current demand. The scope of the need for additional mental and behavioral health services beginning to emerge due to the impact of the COVID-19 pandemic is unknown and impossible to predict. An increased and well-placed emphasis on ensuring capacity to care for patients with physiologic illness from COVID-19 has limited the capacity of the United States' health care system to appropriately care for patients with mental health needs attributed to COVID-19 (Choi et al., 2020). Mental health providers and facilities are challenged with limited capacity to care for current patients due to COVID-19 and staffing issues. There will undoubtedly be an increased need for mental health services as a result of COVID-19. Current indicators suggest we will not be equipped to meet the new demand for services, particularly the unique needs of children.

School Closures and Community Restrictions

Too often, we take for granted the importance of schools and other important community staples (e.g., churches, community and recreation centers, local non-essential businesses, daycare centers). Although these resources are used by many, the impact of their contribution is not realized until these services are no longer available. However, many communities are void of these services at baseline. This truth may be due to a lack of community investment and the systemic lack of fundamental resources that adversely marginalize underserved communities across this nation. COVID-19 has further highlighted issues of food insecurity, housing insecurity, income inequality, and health disparities that disproportionately affect BIPOC. Schools provide a vital support system as well as access to health care, mental health services, food, and social services that may otherwise be unavailable (National Academies of Sciences, Engineering, and Medicine [NASEM], 2020). Many low-income families in underserved communities rely daily

on these services. Schools play an important role in the social, emotional, mental, and behavioral development of a child. Schools provide a place for learning social and peer interactions, self-regulation, and important life skills, and where students develop a sense of purpose and identity (NASEM, 2020). Students previously relying on therapeutic school servies (e.g., IEPs, mental health counseling) are now receiving reduced services, if any at all.

All of these concerns related to the loss of school are compounded by the overall community restrictions, further limiting access to services and socialization for children.

Effect on the Family and Interpersonal Relationships

The combination of the meso-, exo-, and macrosystem levels described by Bronfenbrenner and its relation to the pandemic presents a great risk, placing significant strain on the family and the child's microsystem. The public health response and mitigation efforts to promote social and physical distancing, limit social gatherings, reduce access to health and social support services, and alter the daily functioning of communities has led to significant family stress (Fegert et al., 2020). Parents/guardians are now burdened with supporting their child's online learning, their own adjustments to changes in their employment and its enactment, limiting contact with high-risk family members, illness, and even death of family or friends. For low-income, underserved BIPOC families, the burden is heightened by additional stressors of lack of childcare for essential workers, variable access to reliable Internet and appropriate devices to support their child's education, and the family's ability to maintain life essentials (e.g., rent/ mortgage, utilities, clothing, and food).

Family stress is compounded by the loss of social support systems (e.g., family and friends, peer groups, church, school) to help alleviate that stress and promote well-being. The presence, amount, and intensity of parental stress and family burden has the potential to heavily impact children. Children are not immune to their parent/guardian's feelings. They can internalize the stress as their own or experience the brunt of its effect. The COVID-19 pandemic presents an

Table 1
Recognizing the Signs of Stress and Potential Mental Health Problems

Children (Age Range 5 to 12 Years)	Adolescents (Age Range 12 to 18 Years)
• Frequent tantrums or irritability. • Excessive crying, fear, worry, or sadness. • Frequent complaints of stomach aches or headaches. • Hyperactivity: Physical and verbal when not distracted by technology. • Sleep disturbances, frequent nightmares, or daytime sleepiness. • Loss of interest in playing with other children or have difficulty making friends. • Poor school performance or school avoidance. • Returning to behaviors they have outgrown (for example, toileting accidents or bedwetting).	• Anhedonia (loss interest/pleasure in normally enjoyable activities). • Decreased energy. • Sleep disturbances, frequent nightmares, or daytime sleepiness. • Withdrawal or isolative from others and avoiding social activities with friends or family. • Engaging in self-injurious behaviors (e.g., cutting or burning their skin). • Suicidal thoughts. • Engaging in substance use (e.g., cigarettes, alcohol, illicit drugs) or other high-risk behaviors (risky sexual behaviors, destructive behaviors). • Increased irritability, mood swings, and acting out behaviors. • Have periods of highly elevated energy and activity, and require much less sleep than usual. • Feelings of paranoia or experiencing delusions, or hallucination (e.g., auditory).

Source: Adapted from Centers for Disease Control and Prevention, 2020b; National Institute of Mental Health, 2019.

increased risk for domestic violence and child maltreatment (SAMHSA, 2020b), which are ACEs that may predispose the development of mental health problems. ACEs have a negative impact on the health and well-being of children (Porche et al., 2016); this is exacerbated by the impact of the pandemic and the overall familial experience with stress.

Collective Impact on the Child

Social isolation, parental stress (e.g., job loss, childcare, financial instability), and the potential for food and housing insecurity due to the pandemic are risk factors for child mental health problems and maltreatment (Lawson et al., 2020; Rosenthal & Thompson, 2020). Children have also experienced increased rates of posttraumatic stress disorder (PTSD) symptoms as a result of pandemics and related quarantine/isolation efforts – a traumatic experience (Sprang & Silman, 2013). Within the United States, in the last year, statistics show 1 in 7 children experienced child maltreatment (i.e., child abuse and neglect), and children of low-socioeconomic status are at significantly higher risk for maltreatment (SAMHSA, 2020b). Because children are no longer interacting with teachers, counselors, and school

nurses, who identify and support children experiencing maltreatment, the number of reports to child protection agencies has decreased, and these signs are going unreported (Campbell, 2020). Child maltreatment and ACEs can negatively impact a child's engagement in school and their educational outcomes (Porche et al., 2016). With the transition to online learning, a child's engagement in school is challenged by navigating school from home with the support of their parents/guardian, sibling(s), or potentially alone. Research suggests that increased screen time, increased use of social media, and the use of smart devices may increase risk for developing mental health problems (Riehm et al., 2019; Twenge et al., 2018). Children now having higher volumes of screen time pose an additional concern for child mental health problems and warrants monitoring.

Strategies for Nursing Intervention

The COVID-19 pandemic presents a barrier to monitoring for child maltreatment, ACEs, and mental health problems in children. Nurses are uniquely poised to assess signs and observe for presenting symptoms

as we navigate the virtual world (see Table 1). Social support systems are vital in preventing child maltreatment. With the loss of these support systems (i.e., schools, churches, community organizations, family), whether completely or partially, children and families still need to feel connected and supported, even if virtually, to help reduce the risk of child maltreatment. Nurses play an important role in this effort.

There are numerous factors to consider regarding child mental health during the COVID-19 pandemic. Children are experiencing multiple risk factors (e.g., quarantine/isolation, parental stress, social isolation) that could increase the exacerbation of current or the emergence of new mental health needs. Alex and Cristina represent just two examples of the impact of COVID-19 on child mental health, which could ultimately be another emerging pandemic. Children are at increased risk to lose all sense of purpose and self-identity because of the loss of school, community activities, and support systems.

The pediatric nurse has a vital role across all specialties and settings to reduce the impact of COVID-19 on child mental health. At every level of the socio-ecological model, nurses

interact with children, their families, and the community, thus allowing them to identify issues early and focus on ways to reduce COVID-19 stressors. At the individual child and microsystem level, nurses must be vigilant and assess for mental health issues in children, especially as it relates to recognition of possible social isolation and increased parental stress. Nurses can support parents through coaching, listening, and encouraging both children and parents/caregivers to maintain social connections that can promote the well-being of both the child and family. For example, nurses from a variety of practice areas (e.g., primary care, school nursing) are using telehealth to conduct outreach, assess health and social needs, coordinate care, and provide health education (Reynolds & Maughan, 2015; Watkins & Neubrander, 2020) to support children and families. Opportunities exist to bridge the micro- and mesosystems through innovative strategies and partnerships in care delivery to promote child health and well-being. At the mesosystem level, nurses can offer improved access to services via telehealth and referrals to primary care and mental health providers. For example, using tele-health, the school nurse can continue to monitor children at home who were identified pre-pandemic to have physical and mental health problems (Reynolds & Maughan, 2015). School nurses are essential to establish and maintain partnerships between the school environment, the family and home, and health care providers to support the child's ongoing health and social needs (Bullard et al., 2020). As schools and communities safely reopen, nurses will be critical frontline support and care providers to screen for risk factors and assess for early illness. The nurse may have an instrumental role in providing reas-surance and comfort in establishing a new sense of "normal" and overall well-being. At the exosystem level, advocacy remains key as nurses and health care providers urge leaders of the local, state, and federal govern-ment to ensure the safe reopening of communities. Collaboration and ad-vocacy as described should work to minimize the adverse effects of the COVID-19 pandemic on children and families in an effort to improve access to and support the provision of

mental health services essential to overall health and well-being. Finally, at the macrosystem level, nurses must be advocates to influence the broader socio-cultural environment by identifying and increasing awareness of social determinants of health, along with pointing out health disparities, inequities, and systemic racism and their effect on short- and long-term health outomes.

Conclusion

Nurses are integral in care delivery and will be essential in recovery following the COVID-19 pandemic. The work of nursing will help identify and potentially minimize the in-evitable impact of the pandemic and related health and social conseq-uences on child mental health. Although this topic is expansive, the COVID-19 pandemic response efforts will continue to evolve, requiring continual and recurring discussions and assessments with and by key stakeholders dedicated to addressing the ever-changing mental health care needs of children and their families during and after this COVID-19 pandemic. ▪

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