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Social pediatrics internship students' perspectives on the Covid-19 pandemic's effects on children

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ABSTRACT

Objective: Social pediatrics evaluates children's health within the context of society, environment, education, and family, employing a global, holistic, and multidisciplinary approach to child health. Our study aimed to explore the viewpoints and attitudes of fifth-year medical students who completed the Social Pediatrics Internship Education Program regarding the effects of the COVID-19 pandemic on children.

Material and Methods: We asked medical students to write about the most common effects of the COVID-19 pandemic on children from their perspective using a Google Form. Subsequently, we employed both quantitative and qualitative methodologies to analyze the responses provided by the medical students.

Results: Overall, 246 students voluntarily participated in the study and wrote a total of 1722 items. The medical students predominantly addressed the impact of the COVID-19 pandemic on various facets of children's well-being, including development, physical activity, community/social dynamics, physical health, mental health, safety, healthcare access and provision, and infectious diseases.

Conclusion: This study highlights the ability of medical students who undertook the Social Pediatrics programme to demonstrate empathy and adopt a social pediatrics perspective when examining the impact of COVID-19 on children.

Keywords: Children, COVID-19 pandemic, education, medical students, pediatrics

Introduction

The coronavirus disease 2019 (COVID-19), declared by the World Health Organization in March 2020, has affected more than 216 countries worldwide (1). Although children were not considered the main actors in the pandemic because severe disease was not usually observed in them, the pandemic has profoundly affected children's health worldwide, with vulnerable populations disproportionately bearing the burden (2,3). Besides the catastrophic socioeconomic impacts, the fear of infection, strict social quarantine measures, and closure of schools and other public places have had negative effects on children's health (2,3).

In Türkiye, as in many parts of the World, countermeasures including stay-at-home orders, social distancing, school closures, and mask requirements were implemented to combat the pandemic (4).

Research indicates that regulations such as school closures may reduce the spread of infections during pandemics (5). However, in the long term, prolonged disruptions to physical activity, socialization, and stress may exacerbate cardiovascular and metabolic risk factors in children and adolescents (6,7). A systematic review reported that anxiety, depression, irritability, boredom, inattention, and fear of COVID-19 were predominant new-onset psychological problems in children during the COVID-19 pandemic. It has also been reported that existing behavioral problems, such as autism and attention-deficit hyperactivity disorder, may also exacerbate. This highlights the need for targeted interventions that consider social determinants of health, including economic stability, education, neighborhood conditions, psychosocial context, and healthcare access (2, 8,9). There are many studies on the impact of COVID-19 that have focused primarily on the well-being and experiences

of children, parents, and healthcare providers (2, 3, 10-12). To our knowledge, no published study has investigated future physicians' perspectives on the challenges children will face due to global crises.

This study aimed to explore the perceptions of medical students who completed the Social Pediatrics Internship Program regarding the effects of the COVID-19 pandemic on children. The findings will contribute to the literature by highlighting the awareness medical students gain about child health problems during social pediatrics training. Additionally, they will help institutions evaluate and enhance programs to better prepare future physicians for disaster periods, ensuring they can effectively address the unique needs of the most vulnerable populations.

Materials and Methods

The study was conducted between February 1 and June 30, 2024, and included fifth-year medical students who had completed the two-week Social Pediatrics Internship Education Program within the 2022-2023 academic year.

Structure of the social pediatrics internship program

Social pediatrics adopts a holistic, multidisciplinary approach to child health, focusing on the interplay of physical, mental, and social well-being within societal, environmental, and familial contexts. It addresses child health problems linked to social determinants, emphasizing prevention, early diagnosis, and quality-of-life enhancement. Countries such as Türkiye and the Netherlands recognize social pediatrics as a subspecialty of Pediatrics (13). Social Pediatrics lectures are taught during the fifth year of the six-year education at Hacettepe University, Faculty of Medicine. Medical students undertake a two-week internship program in social pediatrics during the fifth academic year. They also rotate through pediatric clinics to gain experience in pediatrics, in addition to theoretical courses.

The content of the lectures given by Social Pediatricians are not specifically related to COVID-19 infection or the pandemic, but due to its relevance at the time of the study, topics such as transmission routes, prevention, clinical features, and treatment methods are discussed, particularly in the courses "Control and management of communicable diseases" and "Integrated management of childhood illnesses."

Study design

Before conducting the main study, a pilot investigation with 20 medical students revealed key perceived effects of the COVID-19 pandemic on children's health. Based on these preliminary findings, a Google Form survey was developed and shared through WhatsApp groups coordinated by student representatives. After providing online informed consent, participants were asked to respond to the open-ended exploratory question: "What are the effects of the COVID-19 pandemic on children's health? Please list and elucidate the most significant topics for you."

All participants were fifth-year medical students completing their mandatory two-week Social Pediatrics Internship at Hacettepe University Faculty of Medicine. This internship integrates theoretical courses and clinical practice in Adolescent Health, Developmental Pediatrics, and Pediatric Genetics. As confirmed by the university registry, all students in this cohort were aged 23-25 years, making additional demographic collection unnecessary and preventing potential identification.

Statistical analysis

Data were analyzed using a qualitative and quantitative method. Responses were transcribed, coded, and analyzed using MAXQDA 2024 software. One researcher wrote down all the text. Then, two researchers independently analyzed, coded, and generated preliminary themes. A qualitative research expert supervised the process and resolved any discrepancies between coders. The researchers established different codes during the analysis, grouping them into thematic sections under a specific category. The topics discussed by the students were grouped under seven headings based on their similarities, and the emphasis on these items was also calculated as a percentage.

Triangulation and Analytical Rigor

To enhance the credibility and validity of the findings, a triangulation strategy was adopted, consistent with Denzin's theory of triangulation, which emphasizes the integration of multiple perspectives to strengthen research trustworthiness(14, 15). In this study, researcher triangulation was ensured by having two researchers independently code and interpret the data, while a third researcher with expertise in qualitative methods served as a supervisor to resolve disagreements and provide analytical oversight. In addition, method triangulation was applied by complementing qualitative thematic analysis with descriptive quantitative calculations of theme frequency. This combined approach enabled a more comprehensive interpretation of students' perceptions, enhancing the transparency, rigor, and interpretive depth of the findings (14, 15).

Results

Among the 246 subjects who participated in the study, 135 (54.9) were male. The medical students wrote an average of 7 items (range: 6-9), totaling 1.722 items.

We classified the students' perspectives on the most common impacts of the COVID-19 pandemic on children into seven categories according to the issues, with the most commonly reported effects presented as follows: 1. Effects on development, 2. Effects on health supervision and provision, 3. Effects on physical health, 4. Effects on infectious diseases. 5. Effects on mental health, 6. Effects on safety, and 7. Effects on community/ social structure.

The percentage distribution of the effects reported by medical students is shown in Table I. Within the analyzed data framework, statements of medical students are given in Tables II-VI.

Table I: Distribution of COVID-19 pandemic effects on children reported by medical students (n=246)

Effects on development	
Socialization problems	169 (68.7)
Retardation in social development	101 (41.1)
Retardation in motor development	49 (19.9)
Retardation in cognitive development	40 (16.3)
Retardation in neurological development	37 (15.0)
Reduction in playing games	37 (15.0)
Separation from healthcare worker parents	20 (8.1)
Retardation in language development	10 (4.1)
Loss of communication skills due to mask	4 (1.6)
Effects on health supervision and provision	
Disruptions in vaccination	70 (28.5)
Decrease in hospital admissions	61 (24.8)
Interruption in medical check-ups	54 (22.0)
Delay in hospital admission	54 (22.0)
Disruption in child health follow-up	50 (20.3)
Disruption in antenatal care and follow-up, an increase in birth complications	18 (7.3)
Increased infant mortality	13 (5.3)
Effects on physical health	
Decrease in physical activity /playing outside	167 (67.8)
Increased risk of metabolic diseases	131 (53.2)
Undernutrition and growth retardation	80 (32.5)
Vitamin D deficiency	25 (10.2)
Decreased exposure to sunlight	27 (11.0)
Increased disorders of muscle, joint, spine, and posture	18 (7.4)
Increase in allergic diseases	9 (3.6)
Staying away from unhealthy foods outside*	2 (0.8)
Effects on infectious diseases	
Risk of contracting the COVID-19	77 (31.3)
Risk of acute complications of COVID-19	53 (21.5)
Risk of long-term effects of COVID-19	30 (12.2)
Increase in HIV infection in children	12 (4.9)
An increase in hygiene awareness*	7 (2.8)
Decrease in other infectious diseases *	6 (2.4)
Insufficient development of microbiota	3 (1.2)
Effects on mental health	
Increase in mental/psychological disorders	125 (50.8)
Increased anxiety	70 (28.5)
Increased depression	64 (25.5)
Trauma due to illness or loss of a family member	64 (25.5)
Internet addiction	35 (14.2)
Sleep disorders	27 (11.0)
Increased stress and HPA axis overactivation	25 (10.2)
Increase in eating disorders	22 (8.9)
Increase in ADHD	13 (5.3)
Increased suicide rates among adolescents	9 (3.7)
Relief from school/exam stress*	1 (0.4)
Effects on safety	
Exposure to abuse-neglect	92 (37.4)
Exposure to domestic violence	82 (33.3)
Increase in child marriage	14 (5.7)
Increase in child labor	7 (2.8)
Increase in home accidents	9 (3.7)
Disruption of child protection programs	2 (0.8)
Effects on The Community /Social Structure	
Disruption in education	163 (66.3)
Economic problems (unemployment)	97 (39.4)
Spending more time with parents and family *	19 (7.7)
Increase in hygiene awareness *	7 (2.8)
Decrease in the resources allocated for pediatric diseases	3 (1.2)
Acquiring new interests and hobbies *	2 (0.8)
Increase in plastic pollution	2 (0.8)
Decrease in air pollution*	1 (0.4)

***:** *Protective effects*

Effects on development

Medical students' comments regarding the pandemic's effects on the socialization and social development of infants, children, and adolescents were more prominent than other issues (Table I). The most frequently noted issues included socialization difficulties and limitations in the surrounding environment (68.7%), and retardation in social development (41.1%). Additional concerns regarding social development included reduced participation in games (15.0%), and separation from healthcare worker parents (8.0%). Developmental concerns were retardations in motor (19.9%), cognitive (16.3%), neurological (15.1%), and language development (4.1%) (Table I).

The students discussed the COVID-19 pandemic's effects on children's development; the harms of increased screen time; the difficulties faced by children with special needs; sustainable developmental goals; and the importance of play and peer communication (Table II).

"We must consider the child's health as a whole. When we look at it from this perspective, a pandemic affects children's health and development both physically, psychologically, and socially" (Medical student).

"The normal development of children confined to home for long periods has been greatly affected. Children were negatively affected, especially considering the importance of interacting with their friends at these ages" (Medical student).

Effects on health supervision and provision

This issue raised concerns, including disruptions in childhood vaccination schedules (28.5%), reduced hospital admissions and limited access to healthcare services (24.8%), interruptions in the routine check-ups of chronically ill children (22.0%), delays in hospital admissions (22.0%), and disruption in child health follow-up (20.3%) (Table I).

The students noted their concerns about disruptions to follow-ups and vaccinations, delays in prevention and management, avoidance of hospitals, and increases in child mortality during the pandemic (Table III).

"There has been a significant decrease in routine health services that children and pregnant women receive, such as immunization and antenatal care. This can increase mortality rates in the long run" (Medical student).

Table II: Statements about the children's development

Developmental areas
"We must consider the child's health as a whole. When we look at it from this perspective, a pandemic affects children's health and development both physically, psychologically, and socially."
"Since children do not spend time with their friends and cannot socialize, there may be difficulties in social integration and a predisposition to asociality."
"The normal development of children confined to home for long periods has been greatly affected. Children were negatively affected, especially considering the importance of interacting with their friends at these ages."
Harms of increased screen exposure
"Sedentary lifestyle and screen exposure increased. Increased screen exposure is a risk factor for a child's cognitive, social, and other developmental areas."
"Confining children to the home may cause communication difficulties due to the restriction of children's motor skills in the development process and their social communication with their peers."
Difficulties of children with special needs
"Since children who need special education cannot go to special education, their development has been adversely affected."
Sustainable developmental goals
"Delay in implementing sustainable development goals will negatively affect children's education, development, and mental health in the long run"
Importance of playing and communicating with peers
"Play is an important factor in the development of children's imagination. I think that kindergarten children who cannot go to school are socially affected worse".
"Children learn better in communication with their peers while playing. I think language development is affected especially in children between 3 and 5."

Table III: Statements about the children's health supervision and provision

Disruption of follow-ups, and vaccinations
"Perinatal screening and vaccination services have been disrupted due to the overload on the health system."
"There has been a significant decrease in routine health services that children and pregnant women receive, such as immunization and antenatal care. This can increase mortality rates in the long run."
"The children whose vaccination schedules were delayed because their parents were afraid to go to the hospital are at risk of infectious diseases. The infections can affect the brain, cause developmental delay, and serious complications."
"Children have been deprived of the health care they need. The disruption in the follow-up of children with chronic diseases caused delays in vaccination schedules and growth-development follow-ups."
Delay in prevention and management
"There were problems related to being unable to determine treatment arrangements."
"During the pandemic, depending on the decrease in the frequency of visits to the hospital, there may be delays in the follow-up of children starting from the neonatal period. This may have led to the failure to prevent health problems."
Avoidance from hospitals
"With the pandemic, hospitals have become risky areas. Children with chronic diseases may have health problems due to the avoidance of hospitals with a fear of COVID-19."
Increase in child mortality
"Child mortality rates will likely rise in the long run, especially with the avoidance in access to immunization and antenatal health care."

Effects on physical health

During the pandemic, most medical students (67.8%) reported a significant reduction in children's physical activities and outdoor play. Over half (53.2%) highlighted an increased risk of obesity, diabetes, and secondary atherosclerosis. Other concerns included undernutrition and growth retardation (32.5%); reduced sunlight exposure (11.0%); vitamin D deficiency (10.2%); and increased musculoskeletal disorders (7.4%). A positive impact was staying away from unhealthy foods outside (0.8%) (Table I).

The students' main concerns were increased obesity, malnutrition, and disruption of breastfeeding (Table IV).

"Deterioration of nutrition and inability to play active games increased body mass index and obesity in children" (Medical student.)

"Malnutrition may develop due to the poor diet of children whose families were dismissed due to the economic problems caused by the pandemic"(Medical student).

Effects on infectious diseases

The risks of children contracting COVID-19 (31.3%), acute complications (21.5%), and the long-term effects of the disease (12.2%) were reported as significant negative effects. However, a decrease in other infectious diseases due to mask use (2.4%) and increased hygiene awareness (2.8%) were reported as positive effects (Table I).

The students mainly reported concerns regarding COVID-19 morbidity, mortality, and complications, as well as the positive effects of increased hand hygiene and mask use (Table IV).

"Children have a longer life expectancy, and even if they survive the COVID-19 infection, there is a risk of morbidity in all affected organs, especially the lungs" (Medical student).

Effects on mental health

About half (50.8%) of medical students reported an increase in mental health disorders among children and adolescents. Most frequently cited issues were increases in anxiety, depression,

Table IV: Statements about the children's physical health and infectious diseases

Physical Health
Increase in obesity
"Deterioration of nutrition and inability to play active games increased body mass index and obesity in children."
Malnutrition
"Malnutrition may develop due to the poor diet of children whose families were dismissed due to the economic problems caused by the pandemic."
Disruption of breastfeeding
"Due to fears of contagion and separation from their children, COVID-19-positive mothers were unable to breastfeed regularly. We do not know how the lack of mother's milk affects children in the long term."
"During the pandemic, without regular access to breast milk, infants may be more susceptible to illnesses and other health issues. Additionally, the emotional bond between mother and child formed through breastfeeding can benefit the child's psychological development."
Increase in allergic and autoimmune diseases
"Excessive use of hand sanitizers may cause allergic dermatitis on children's hands, excessive use of surface disinfectants in public areas may increase the risk of allergic diseases and asthma in children."
Infectious diseases
Morbidity, mortality, and complications of COVID-19
"Children have a longer life expectancy, and even if they survive the COVID-19 infection, there is a risk of morbidity in all affected organs, especially the lungs."
"COVID-19 usually does not cause severe illness in children. However, children with COVID may develop multisystem inflammatory syndrome and atypical Kawasaki disease."
Prevention of infections by increased hand hygiene practices and mask use
"Many infections in children, including respiratory and gastrointestinal infections, will be prevented via the settled handwashing habits and the widespread use of masks."

and trauma due to illness or loss of a family member (25.5%), internet addiction (14.2%), sleep disorders (11.0%), and stress linked to HPA axis overactivation (10.2%). Higher rates of eating disorders, particularly overeating (8.9%), ADHD (5.3%), and suicide among adolescents were also noted. A small positive effect (0.4%) regarding relief from school and exam stress was reported (Table I).

The students mentioned increased stress because of financial problems, school closures, and socialization-psychological problems; increased screen time and internet addiction; adolescents' mental health; cleaning obsession; decreased self-esteem; and burnout syndrome in parents. In addition, they noted increased family bonds and decreased exposure to bullying as positive effects (Table V).

"Considering the effects of the COVID-19 pandemic on children's health, first of all, psychiatric problems come to mind. As the adults around the child have anxiety and struggle with financial difficulties, the child becomes nervous as the parents are nervous."(Medical student).

Effects on safety

Medical students reported exposure to abuse/neglect (37.4%) and domestic violence (33.3%) as the most typical effects (Table I). Others included increased child marriage (5.7%), child labor (2.8%), home accidents (3.7%), and disruption of child protection programs (0.8%) (Table I, Table VI).

"Stress caused by other individuals in the house can cause violence, neglect, and abuse to increase. Unemployment and economic problems may cause the child's needs not to be met" (Medical student).

Effects on the community/social structure

The medical students highlighted primarily the disruption to education resulting in inequality of opportunity due to school closures (66.3%), and economic problems stemming from rising unemployment (39.4%) (Table I). Positive effects were spending more time with family (7.7%), increased hygiene awareness (2.8%), and the development of new hobbies (0.8%) (Table I).

The students reported that inequality in educational opportunities, working parents, health and education disparities among disadvantaged children, and school closures were their primary concerns (Table VI).

"The pandemic has exacerbated the disadvantage faced by poor children. Families in poverty are more likely to have insecure income sources, less access to health services, and concomitant diseases" (Medical student).

"Children in vulnerable groups, such as those living in refugee camps or orphanages and children with disabilities, require face-to-face education and home health services more than others "(Medical student).

Discussion

This study examined how medical students who completed a Social Pediatrics Internship interpreted the effects of the COVID-19 pandemic on children's health using a social determinants perspective. The students' evaluations reflected the pandemic's multidimensional effects on children, consistent with global findings, and highlighted the importance of integrating social pediatrics into undergraduate medical education to improve crisis preparedness for child health.

Developmental consequences

Medical students emphasized that the COVID-19 pandemic disrupted children's play, peer interaction, and exploration, leading to developmental delays in motor, cognitive, and social domains. They also noted that these effects were

Table V: Statements about the children's mental health

Increased stress because of financial problems *"Considering the effects of the COVID-19 pandemic on children's health, first of all, psychiatric problems come to mind. As the adults around the child have anxiety and struggle with financial difficulties, the child becomes nervous as the parents are nervous."* *"With parents losing their jobs, many families are unable to provide the same level of support as before, leading to an increased risk of poverty and deprivation. This can put an immense psychological burden on children, as well as leaving them without access to the basic resources they need for their development."* *"A significant increase in unemployment and financial uncertainty has resulted in children experiencing anxiety and stress. In addition, their fundamental rightstonutrition, shelter, and living conditions are adversely affected."* *"Due to acute stress of the pandemic, the hypothalamic-pituitary axis is activated and causes glucocorticoid release. This disrupts proinflammatory and anti-inflammatory regulation. Eating disorders and excess weight gain due to a sedentary life can cause anxiety in children."*
School closures and socialization-psychological problems *"Schools are places where children socialize. With the closure of schools, children experienced psychological problems such as loneliness and depression, and their suicidal tendencies increased."*
Increased screen time and internet addiction *"Children's attendance on computers and tablets for education, as well as long-term quarantines, have increased children's screen exposure and internet addiction risk."*
Adolescents' mental health *"Personality development in adolescents may be disrupted. There may be an increase in mental health problems such as depression and suicide attempts."* *"During the adolescent years, problems such as arguments with parents, identity crises, a decrease in motivation for lessons, and anxiety due to the need for social interaction increased due to theexpansionin time spent at home during pandemic restrictions, but its poor quality"* *"With parents working at home, their presence and attention to their children have been limited. This has led adolescents to feel a sense of disconnection from their parents. As a result, they have felt more isolated, anxious, and have struggled with their lives."*
Obsession with cleaning *"The frequent use of disinfectants may give children unrealistic expectations of hygiene, leading them to believe that their environment must always be pristine. This can lead to an obsession with cleaning and a fear of germs, which can lead to anxiety and other psychological issues."*
Decreased self-esteem *"Children are becoming more dependent on their families due to the lack of peer interaction. This will decrease the development of self-esteem, which will help in getting future responsibilities and making decisions."*
Burnout syndrome in parents *"Since children are spending more time with their families, Burnout syndrome has become more prevalent among caregivers."*
Increased family bonds *"By working fewer hours and spending more time together, families can bond and create a stronger sense of connection and harmony that can reduce stress levels.*
Decreased exposure to bullying *"Educating children at home provides them with a safe and secure learning environment that can help to protect them from stressors such as bullying."*

more severe for children with special needs who lost access to early intervention and education. Their observations align with studies reporting decreased physical activity, increased sedentary behaviors, and impaired motor and socio-emotional development associated with prolonged screen time, limited environmental exposure, and disrupted daily routines (2,3,16,17). Research also highlights that stress, reduced educational opportunities, and exposure to economic hardship pose risks to long-term developmental trajectories (11,16,18,19). The students' recognition of these broader consequences reflects an understanding of how societal disruptions can hinder children's sustainable development, signaling an awareness beyond individual clinical symptoms.

Importantly, the students framed these developmental effects as multidimensional—physiological, psychosocial, and environmental—demonstrating a holistic interpretation consistent with the core principles of social pediatrics. Their focus on vulnerable groups and early childhood needs suggests that social pediatrics training enables future physicians to identify inequities early, advocate for preventive action, and integrate developmental surveillance with social determinant-based care. Thus, this study contributes to medical education by showing that structured social pediatrics instruction helps students conceptualize child development not only as a clinical issue but as a socially mediated outcome that requires interdisciplinary and policy-driven solutions.

Medical students' awareness of these issues may stem from attending the lecture "Following up and supporting early childhood development".

Health supervision and provision

Medical students emphasized that the COVID-19 pandemic disrupted routine child health services, including vaccinations, developmental screening, and follow-ups. They linked these disruptions to reduced healthcare utilization, delayed diagnoses, and increased vulnerability to vaccine-preventable infections. Similar declines in child vaccinations and preventive care have been documented worldwide, including Türkiye, where service cancellations and socioeconomic hardships have contributed to delayed access, particularly among underserved populations (20, 21). These reflect that child health outcomes depend not only

Table VI: Statements about children's safety, community or social structure

Safety

Child abuse, neglect, and domestic violence

"Stress caused by other individuals in the house can cause *violence, neglect, and abuse to increase. Unemployment and economic problems may cause the child's needs not to be met."*

"Children are most frequently subjected to violence by their caregivers. Quarantine measures make it difficult to detect violence and abuse."

"Since children are spending more time with their families, Burnout syndrome has become more prevalent among caregivers, and this can cause increased abuse risk."

Early marriage and child labor

"Without the safe space of schools for a prolonged time, children became more vulnerable to exploitation. This was especially true for children from poorer backgrounds, who faced higher risks of being forced into early marriage or labor. Furthermore, parental lack of education made it harder to detect signs of abuse, worsening the problem."

"Schools' closing has resulted in the early marriage of girls, the presence of adolescent pregnancies, and the poor level of education of mothers."

Home accidents

"Children's obligation to stay at home has come with the curfew, and especially younger children whose families are at work, and reach sharp objects, etc., and may face home accidents more."

Community/ Social Structure

Inequality in opportunity for education

"The schools are closed. Children are more likely to rely on their families, rather than peer interaction, for guidance and advice. This can lead to them not having the experience of making their own decisions or solving problems, which can cause issues as they become independent adults."

"Children's right to education has been violated. Not all children have the same rights in Türkiye. There is great socioeconomic inequality. When the schools closed, some children could not access online education."

"As far as social mobilization and social development are concerned, disruption of education is also a leading factor when considering pandemics' long-term effects."

Working parents

"Due to the closure of kindergartens and schools, working parents had to take care of their school-going children at home or leave them with caregivers."

Disparity in health and education of disadvantaged children

"*The pandemic has exacerbated the disadvantage faced by poor children. Families in poverty are more likely to have insecure income sources, less access to health services, and concomitant diseases."*

"Children in vulnerable groups, such as those living in refugee camps or orphanages and children with disabilities, require face-to-face education and home health services more than others."

"With the decrease in job opportunities, many immigrants and refugees faced a higher unemployment risk. This has made it more difficult for them to access healthcare, food, and housing."

"Increased poverty, the lack of access to resources, such as qualified education, health services, and even necessities, has caused health and educational disparity."

Results of the school closures

"Due to the closure of schools, children in poor economic circumstances are forced to drop out of school and work as child laborers. This puts these vulnerable populations at greater risk, decreasing access to health services."

"Children have been unable to attend school because of the restrictions. I believe that a lost generation has been created."

Positive effects of the pandemic

"It can be said that children have the opportunity to spend more time with their families, and stay away from unhealthy food outside. Use of masks and hand hygiene may reduce infection rates, and air pollution may decrease."

"Due to the pandemic, home accidents have occurred because children stay home and remain alone in the house."

on clinical care but also on equitable access to healthcare systems.

The students' ability to interpret health supervision failures as structural rather than isolated events suggests that social pediatrics training helps future physicians recognize systemic barriers in child health. By identifying how economic instability, healthcare interruptions, and geographic disparities shape preventive care, students demonstrated competencies aligned with social pediatrics principles: protecting vulnerable groups through equitable service delivery and advocacy. Thus, this study shows that integrating social pediatrics into medical education supports the development of physicians who can critically evaluate child healthcare systems, particularly during crises.

Medical students probably gained awareness of this issue through lectures on "The State and Determinants of Childhood Health in the World and Türkiye" and "Child Health Supervision."

Physical health

Medical students identified that the pandemic heightened both obesity and undernutrition risks, reflecting how opposing nutritional problems can coexist during crises due to lifestyle changes and socioeconomic disparities. They linked increased screen time, reduced outdoor activity, sedentary behaviors, and food insecurity to metabolic disorders, vitamin D deficiency, and unhealthy dietary patterns. These concerns are consistent with global reports showing a rise in childhood obesity, reduced physical activity, poor dietary quality, and increased mortality related to undernutrition, particularly in resource-limited families (10, 22-26). Students also noted that disruptions in breastfeeding and excessive hygiene practices may negatively influence immune development, highlighting awareness of early-life determinants of health.

The students' interpretation of physical health impacts demonstrates their ability to connect biological outcomes with structural drivers such as poverty, food insecurity, and unequal access to health. This perspective is central to social pediatrics, as it recognizes that physical growth and metabolic outcomes are shaped by social conditions rather than solely individual behaviors. The findings suggest that social pediatrics training enables students to evaluate child health through preventive and equity-oriented frameworks, strengthening their capacity to advocate for nutrition-sensitive policies and early-life interventions during public health crises.

Medical students' comments on the issue were related to the lectures "Prevention of adult diseases during childhood period", "Complementary Feeding", and "The Psychosocial Assessment of Adolescents (IHEADSS=Home, Education/employment, peer group Activities, Drugs, Sexuality, and. Suicide/depression)." within the scope of the education program.

Infectious diseases

Medical students highlighted the significant impact of the COVID-19 pandemic on children, including risks of infection and complications such as multisystem inflammatory syndrome and atypical Kawasaki disease. Students suggested that preventive measures, such as mask-wearing, hand hygiene, and social distancing, reduced the spread of infectious diseases, including COVID-19, among children. Kanda et al. (27) from Japan, found that while the incidence of upper respiratory tract infections, bacterial pneumonia, gastrointestinal and urinary tract infections decreased, sexually transmitted infections increased significantly. Another study reported a decrease in the frequency of nearly all infections, except for COVID-19, particularly for airborne diseases, which may be due to reduced disease notifications during the pandemic (28).

Still, concerns arose about increased HIV infections due to reduced hospital visits and maternal-infant HIV screenings in high-risk regions. These issues were addressed in the internship program's "Control and Management of Communicable Diseases" course.

Mental health

Medical students emphasized that the pandemic substantially affected children's mental health, linking increased anxiety, depression, suicidal tendencies, sleep and eating disturbances, and digital addiction to prolonged isolation, parental stress, financial hardship, and bereavement. These interpretations are consistent with international findings showing that quarantine, school closures, and socioeconomic instability contribute to heightened emotional distress and behavioral disorders among children and adolescents (11, 18, 29-34). The students also recognized positive aspects, such as strengthened family bonds, indicating a balanced understanding of psychosocial dynamics. Their ability to attribute mental health outcomes to relational and economic stressors—rather than to individual symptoms alone—reflects a social determinants perspective central to social pediatrics. Instead of viewing mental distress as a purely clinical diagnosis, students demonstrated awareness of contextual risk factors such as unemployment, household strain, and reduced support systems. This suggests that social pediatrics training fosters competency in recognizing how structural environments shape children's mental health. Strengthening such training in medical education may help future physicians engage in preventive interventions, family-centered counseling, and advocacy for mental health resources during crises.

The similar concerns noted by the students were mainly addressed in the lecture "Adolescent Psychosocial Assessment (IHEADSS)" of Social Pediatrics.

Safety

Medical students identified safety concerns as a significant issue during the COVID-19 pandemic, emphasizing the heightened risk of violence, abuse, exploitation, and neglect faced by children during global crises. They attributed the rise in abuse and domestic violence to prolonged home confinement during lockdowns, being away from school and community safeguards. They highlighted that reduced access to adults capable of identifying and responding to abuse, coupled with amplified gender inequities and school closures, increased risks such as early marriage, teen pregnancy, hazardous child labor, and human trafficking. Additionally, the rise in home accidents was linked to children being left alone while parents worked during the pandemic.

Children in resource-limited settings were particularly vulnerable due to already-constrained child protection services, which became even less accessible during the pandemic (35). These challenges underline the critical need for strengthened child protection mechanisms during such crises.

A lecture on this issue, "Child Abuse and Neglect: Prevention and Management," was also given during the internship program.

The Community/Social Structure

Medical students emphasized that the pandemic disrupted children's social environments by closing schools and kindergartens, reducing peer interaction, and shifting families toward insular, home-based support systems. They associated these changes with widening socioeconomic inequalities, as unequal access to digital learning, unstable household income, and limited community services disproportionately affected vulnerable groups such as refugees, low-income families, children with disabilities, and institutionalized children. These concerns align with global data indicating that the pandemic exacerbated poverty, educational disparities, child marriage and child labor, and barriers to essential services, particularly in marginalized populations (12,30,36-38). Students' reflections demonstrate an ability to connect child well-being with broader community systems rather than viewing health outcomes as isolated individual events. By recognizing that social protection, educational access, and economic stability directly influence children's health trajectories, they displayed competencies aligned with social pediatrics principles. This suggests that structured training helps medical students adopt a

population-level perspective, preparing them not only as clinicians but also as advocates for equity-driven policies, community support mechanisms, and child protection systems during public health crises.

Medical students' comments on this issue were covered mainly in parallel with the lectures on "Social pediatrics" and "The state and determinants of childhood health in the world and Türkiye".

This study utilized an online qualitative survey design, which facilitated a higher response rate among medical students compared with traditional face-to-face approaches and supported open expression without time pressure or social desirability concerns. The use of a single open-ended exploratory question enabled focused yet rich and holistic insights into how students conceptualized the impact of the COVID-19 pandemic on children's health. Allowing students to freely articulate their opinions encouraged critical reflection on the curriculum and generated valuable suggestions regarding training needs. The findings highlight the essential role of integrating a social pediatrics perspective into medical education to better prepare future physicians for protecting child health in epidemics, disasters, and other public health crises.

What does this study add ?

Existing research on the pandemic's impact has primarily focused on the well-being and experiences of children, parents, and practicing healthcare professionals, while largely overlooking the perspectives of future physicians. Our study addresses a significant gap in the current literature by examining medical students' perceptions within the field of social pediatrics during the COVID-19 pandemic and provides unique evidence on how medical education—especially when delivered during a global health emergency—shapes students' understanding of childhood vulnerability and the social determinants of health.

Limitations

The present study is subject to several limitations. First, students' perceptions were assessed only after completing the Social Pediatrics Internship, which restricts the ability to identify changes attributable specifically to the training. A pre- and post-internship assessment could provide clearer evidence regarding the internship's impact on students' knowledge and perspectives. Second, the survey did not collect individual information regarding personal COVID-19 experiences (e.g., family illness, psychosocial impact), which may have influenced students' interpretations and introduced potential subjective bias. Third, although participants were recruited from four separate internship groups, data were collected from a single institution. This reflects a methodological decision rather than a sampling limitation, as this university provides the only structured Social Pediatrics Internship program of its kind in Türkiye; nonetheless, the single-site design may limit generalizability to other medical curricula. Finally, the cross-sectional nature of the study restricts time triangulation, preventing longitudinal comparisons.

Conclusions

This study demonstrates that social pediatrics training enables medical students to critically evaluate child vulnerabilities during global crises through a social determinants lens. By revealing how students connect pandemic-related consequences with preventive care, inequities, and systems-based challenges, this research highlights the value of integrating structured social pediatrics curricula in undergraduate education. These findings suggest that social pediatrics education equips future physicians with competencies needed to protect vulnerable child populations and to inform policy and disaster planning.

Ethics committee approval

This study was conducted in accordance with the Helsinki Declaration Principles. The study was approved by Hacettepe University (06.02.2024, reference number: SBA 23/323).

Contribution of the authors

Study conception and design: SSY; data collection: MC, BEK; analysis and interpretation of results: SSY; draft manuscript preparation: MC, BEK. All authors reviewed the results and approved the final version of the article.

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Conflict of interest

The authors declare that there is no conflict of interest.

References

1. Organization WH. World Health Organization (WHO). WHO characterizes COVID-19 as a pandemic [Internet] 2020. Available at https://www.who.int/emergencies/diseases/novel-coronavir us-2019/events-as-they-happen (Accessed on 2025 June 11,2025).
2. de Figueiredo CS, Sandre PC, Portugal LCL, et al. COVID-19 pandemic impact on children and adolescents' mental health: Biological, environmental, and social factors. Prog Neuropsychopharmacol Biol Psychiatry. 2021;106:110171. https://doi.org/10.1016/j.pnpbp.2020.110171
3. Panda PK, Gupta J, Chowdhury SR, et al. Psychological and Behavioral Impact of Lockdown and Quarantine Measures for COVID-19 Pandemic on Children, Adolescents and Caregivers: A Systematic Review and Meta-Analysis. J Trop Pediatr. 2021;67(1): fmaa122. https://doi.org/10.1093/tropej/fmaa122
4. Kinsey EW, Hecht AA, Dunn CG, et al. School Closures During COVID-19: Opportunities for Innovation in Meal Service. Am J Public Health. 2020;110(11):1635-43. https://doi.org/10.2105/AJPH.2020.305875
5. Viner RM, Russell SJ, Croker H, et al. School closure and management practices during coronavirus outbreaks including COVID-19: a rapid systematic review. Lancet Child Adolesc Health. 2020;4(5):397-404. https://doi.org/10.1016/S2352-4642(20)30095-X
6. Sharfstein J, Morphew C. The Urgency and Challenge of Opening K-12 Schools in the Fall of 2020. JAMA. 2020;324(2):133-4. https://doi.org/10.1001/jama.2020.10175
7. Donohue JM, Miller E. COVID-19 and School Closures. JAMA. 2020;324(9):845-7. https://doi.org/10.1001/jama.2020.13092
8. Chmielewska B, Barratt I, Townsend R, et al. Effects of the COVID-19 pandemic on maternal and perinatal outcomes: a systematic review and meta-analysis. Lancet Glob Health. 2021;9(6):e759-e772. https://doi.org/10.1016/S2214-109X(21)00079-6

9. Wang C, Pan R, Wan X, et al. A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. Brain Behav Immun. 2020;87:40-8. https://doi.org/10.1016/j.bbi.2020.04.028
10. Xiang M, Zhang Z, Kuwahara K. Impact of COVID-19 pandemic on children and adolescents' lifestyle behavior larger than expected. Prog Cardiovasc Dis. 2020;63(4):531-2. https://doi.org/10.1016/j.pcad.2020.04.013
11. Penna AL, Aquino C, Nogueira Pinheiro MS, et al. Impact of the COVID-19 pandemic on maternal mental health, early childhood development, and parental practices: a global scoping review. BMC Public Health. 2023;23(1):388. https://doi.org/10.1186/s12889-023-15003-4
12. Irwin M, Lazarevic B, Soled D, Adesman A. The COVID-19 pandemic and its potential enduring impact on children. Curr Opin Pediatr. 2022;34(1):107-15. https://doi.org/10.1097/MOP.0000000000001097
13. Spencer N, Colomer C, Alperstein G, et al. Social paediatrics. J Epidemiol Community Health. 2005;59(2):106-8. https://doi.org/10.1136/jech.2003.017681
14. Carter N, Bryant-Lukosius D, DiCenso A, Blythe J, Neville AJ. The use of triangulation in qualitative research. Oncol Nurs Forum. 2014;41(5):545-7. https://doi.org/10.1188/14.ONF.545-547
15. Arias Valencia MM. Principles, Scope, and Limitations of the Methodological Triangulation. Invest Educ Enferm. 2022;40(2):e03. https://doi.org/10.17533/udea.iee.v40n2e03.
16. Dunton GF, Do B, Wang SD. Early effects of the COVID-19 pandemic on physical activity and sedentary behavior in children living in the U.S. BMC Public Health. 2020;20(1):1351. https://doi.org/10.1186/s12889-020-09429-3
17. Tarro G. The new coronavirus from the Chinese city of Wuhan. Int J Recent Sci Res. 2020;11(01):36901-2. http://dx.doi.org/10.24327/ijrsr.2020.1101.5021
18. Araújo LA, Veloso CF, Souza MC, Azevedo JMC, Tarro G. The potential impact of the COVID-19 pandemic on child growth and development: a systematic review. J Pediatr (Rio J). 2021;97(4):369-77. https://doi.org/10.1016/j.jped.2020.08.008
19. Jones M, Walker J, Jones E. Impact of COVID-19 on Child Development: A systematic review. 2024:1-07. https://doi.org/10.20944/preprints202309.0241.v1
20. Ployhart RE, Shepherd WJ, Strizver SD. The COVID-19 pandemic and new hire engagement: Relationships with unemployment rates, state restrictions, and organizational tenure. J Appl Psychol. 2021;106(4):518-29. https://doi.org/10.1037/apl0000917
21. Santoli JM, Lindley MC, DeSilva MB, et al. Effects of the COVID-19 Pandemic on Routine Pediatric Vaccine Ordering and Administration - United States, 2020. Mmwr-Morbid Mortal W. 2020;69(19):591-3. https://doi.org/10.15585/mmwr.mm6919e2
22. Roberton T, Carter ED, Chou VB, et al. Early estimates of the indirect effects of the COVID-19 pandemic on maternal and child mortality in low-income and middle-income countries: a modelling study. Lancet Glob Health. 2020;8(7):e901-e908. https://doi.org/10.1016/S2214-109X(20)30229-1
23. Mayra ST, Kandiah J, McIntosh CE. COVID-19 and health in children and adolescents in the US: A narrative systematic review. Psychol Sch. 2022; 29:10.1002/pits.22723. https://doi.org/10.1002/pits.22723
24. Gonzalez-Monroy C, Gomez-Gomez I, Olarte-Sanchez CM, Motrico E. Eating Behaviour Changes during the COVID-19 Pandemic: A Systematic Review of Longitudinal Studies. Int J Environ Res Public Health. 2021;18(21):11130. https://doi.org/10.3390/ijerph182111130
25. Dunn CG, Kenney E, Fleischhacker SE, Bleich SN. Feeding Low-Income Children during the Covid-19 Pandemic. N Engl J Med. 2020;382(18):e40. https://doi.org/10.1056/NEJMp2005638
26. Gadermann A, Thomson K, Gill R, et al. Early Adolescents' Experiences During the COVID-19 Pandemic and Changes in Their Well-Being. Front Public Health. 2022;10:823303. https://doi.org/10.3389/fpubh.2022.823303
27. Kanda N, Hashimoto H, Imai T, et al. Indirect impact of the COVID-19 pandemic on the incidence of non-COVID-19 infectious diseases: a region-wide, patient-based database study in Japan. Public Health. 2023;214:20-4. https://doi.org/10.1016/j.puhe.2022.10.018
28. Contarino F, Bella F, Pietro E, Randazzo C, Contrino M. Impact of the COVID-19 pandemic on infectious diseases reporting. Journal of preventive medicine and hygiene. 2024;65:E145-E153. https://doi.org/10.54103/2282-0930/24148
29. Xie X, Xue Q, Zhou Y, et al. Mental Health Status Among Children in Home Confinement During the Coronavirus Disease 2019 Outbreak in Hubei Province, China. JAMA Pediatrics. 2020;174(9):898-900. https://doi.org/10.1001/jamapediatrics.2020.1619
30. Brooks S, Webster R, Smith L, et al. The Psychological Impact of Quarantine and How to Reduce It: Rapid Review of the Evidence. SSRN Electronic Journal. 2020;395(10227): 912-20. https://doi.org/10.2139/ssrn.3532534
31. Saulle R, De Sario M, Bena A, et al. School closures and mental health, wellbeing and health behaviours among children and adolescents during the second COVID-19 wave: a systematic review of the literature. Epidemiol Prev 2022;46(5-6):333-52. https://doi.org/10.19191/EP22.5-6.A542.089
32. Kieling C, Baker-Henningham H, Belfer M, et al. Child and adolescent mental health worldwide: evidence for action. Lancet. 2011;378(9801):1515-25. https://doi.org/10.1016/S0140-6736(11)60827-1
33. Meherali S, Punjani N, Louie-Poon S, et al. Mental Health of Children and Adolescents Amidst COVID-19 and Past Pandemics: A Rapid Systematic Review. Int J Environ Res Public Health. 2021;18(7):3432. https://doi.org/10.20944/preprints202103.0149.v1
34. Nobari H, Fashi M, Eskandari A, Villafaina S, Murillo-Garcia A, Perez-Gomez J. Effect of COVID-19 on Health-Related Quality of Life in Adolescents and Children: A Systematic Review. Int J Environ Res Public Health. 2021;18(9):4563. https://doi.org/10.3390/ijerph18094563
35. Jud A, Orban E, Kaman A, et al. The effects of COVID-19 on the development of reported incidents of child maltreatment over time: A systematic literature review. Child Abuse Negl. 2024;157:107071. https://doi.org/10.1016/j.chiabu.2024.107071
36. Espitia Segura OM, Pinilla-Roncancio M. Disability, poverty and health-service accessibility in the context of the COVID-19 pandemic: a population-based repeated cross-sectional study in Colombia. BMJ Open. 2024;14(10):e088605. https://doi.org/10.1136/bmjopen-2024-088605
37. Kanatli MC, Yalcin SS. Social Determinants Screening with Social History: Pediatrician and Resident Perspectives from a Middle-Income Country. Matern Child Health J. 2021;25(9):1426-36. https://doi.org/10.1007/s10995-021-03191-7
38. Brooks-Gunn J, Duncan GJ. The effects of poverty on children. Future Child. 1997;7(2):55-71. https://doi.org/10.2307/1602387