REVIEW ARTICLE

Mental health in Kindergarten to Grade 12 schools during the COVID-19 crisis: Literature review and survey suggesting multi-tiered support systems

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ABSTRACT

Background: As a result of the COVID-19 pandemic, educational systems worldwide were disrupted. Students, educators, and parents faced challenges from the rapid switch to distance learning with attendant social isolation and limited teacher or peer interaction, along with excessive demand and worries from the lasting pandemic. It exacerbated preexisting mental health crises within school communities. Amidst such challenges, psychiatrists prescribed tailored medication regimens to manage individual mental health in the time of crisis, ensuring continuity of care and support for those affected.

Methods: A scoping review was conducted to identify studies of Kindergarten to 12th grade school members' mental health and mental health support programs offered by schools and institutions during the COVID-19 pandemic. We also conducted a survey to examine mental health concerns faced by grade 6 to 12 teachers, school staff, children, and parents in Connecticut, United States.

Results: While publication bias may be extant, we found well-documented studies of exacerbation and the emergence of mental health problems among parents, teaching staff, and students during the COVID-19 pandemic. Based on our comprehensive review of relevant literature and analysis of survey results, we have identified four key themes pertaining to the mental health challenges encountered by parents, teaching and non-teaching staff, and students in Kindergarten through 12th grade (K-12). Moreover, upon examining pertinent mental health interventions and models, we have identified the multi-tiered systems of support as an effective approach to address these difficulties, with explanations on how to utilize the framework during a crisis. This system is designed with tiers that provide various levels of interventions aimed at helping schools effectively manage the psychological well-being of their members during a crisis.

Conclusions: Drawing on findings from literature reviews and surveys, this study sheds light on the difficulties surrounding mental health in schools during times of crisis such as the COVID-19 pandemic. Moreover, it puts forward a recommendation for employing multi-tiered support strategies to address these challenges and promote psychological well-being within

educational settings amidst crisis. By adopting a multi-tiered systems of support framework that integrates various interventions tailored to individual needs, schools can effectively manage mental health concerns among their members. The study underscores the critical role of psychiatry in providing specialized care and medication management to support mental health in educational environments, particularly during times of crisis, with important implications to address the urgent mental health demands in Kindergarten to 12th grade schools.

1. Introduction

The worldwide COVID-19 pandemic has significantly disrupted educational systems, requiring a switch from traditional classroom instruction to online instruction or restrictive learning environments, posing several difficulties for students, instructors, and parents.[1] School closures had negative implications on education, social, psychological, and inclusive practices. While there is an alarming increasing burden among parents and teachers as a result of their new duties and the uncertainties brought on by the changes and disruptions in school operation, there are many negative consequences among pupils during distance learning, indicating an absence of some components of their school routine.[2]

The global health crisis also resulted in heightened and additional concerns and feelings of uncertainty.[3] With school operations disrupted, students were deprived of classroom resources, seeing friends, and extracurricular activities including sports, arts, music, and school clubs.[4] In order to protect children's safety, wellbeing, and educational opportunities in the wake of the COVID-19 epidemic, school reopening methods must be carefully considered. This calls for a deliberate synthesis of disease control measures and mental health assistance.[5] In the United States alone, approximately 55 million students aged 5-18 were distanced from teachers and school-based mental health providers -- a beneficial resource in enhancing self-perception, managing emotional responses, and effectively dealing with distressing experiences.[6,7]

Adolescents facing famine and parental job loss exhibit a higher likelihood of poor mental health, rendering them more susceptible to suicidal tendencies.[8] Anxiety symptoms directly correlate with mid-pandemic loneliness during a 12-month follow-up. Researchers also note that pre-pandemic depressed and aggressive symptoms predict early pandemic loneliness within a 6-month follow-up.[9] Addressing loneliness becomes crucial for maintaining adolescent mental health during crises. Crises like the COVID-19 pandemic, school or community violence, and natural disasters can place

students, families, and school employees in vulnerable positions due to crisis turmoil and a loss of access to teachers, counselors, and to school-based mental health and social service providers (the latter in short supply to begin with). The purpose of our study was to examine the challenges and severity of mental health problems among school staff, parents, and students in the United States. during the pandemic, suggesting approaches to prepare, prevent, and manage mental health problems during current and future crises. The study has important implications to guide Kindergarten to 12th grade schools and government agencies on how to effectively support the psychological well-being of their members during times of crisis. The study has important implications to guide Kindergarten to 12th grade schools and government agencies on how to effectively support the psychological well-being of their members during times of crisis. Psychiatrists provide specialized care and medication management to mitigate the impact of such crises on mental health.

2. Methods

In this study, we used multiple sources of information to outline the challenges and proposed a potential solution for better psychological well-being within Kindergarten to 12th grade school systems. This study was conducted among private schools affiliated with the Connecticut Association of Independent Schools (CAIS) in Connecticut, United States. First, we conducted a scoping review and extracted key themes from studies related to Kindergarten to 12th grade school mental health challenges (Section III-A). Second, we used survey tools to investigate mental health status and concerns for members of the Connecticut Independent Schools during the pandemic (Section III-B). Third, we integrated the results from the scoping review and findings from the survey to outline Kindergarten to 12th grade mental health challenges and proposed multi-tiered systems of support framework as an interventional construct in helping schools enrich psychological and mental well-being (Section III-C). Below are the detailed methods employed in each of the three parts of the study:

A. SCOPING REVIEW

We conducted a scoping review on Kindergarten to 12th grade schools in the United States. whose protocol details have been published previously.[5] This evaluates in depth effects of school closures and reopenings due to COVID-19 on Kindergarten to 12th grade institutions, taking into account all stakeholders—students, parents, staff, teachers, COVID-19 coordinators, and school nurses.[10] Articles related to school mental health were identified and key results and themes were summarized. First, we focused on and outlined mental health challenges among students (Section IV-Challenge I) and school staff (Section IV-Challenge II). In addition, we reviewed existing school-based mental health models and selected the multi-tiered systems of support model as our interventional construct (Section V).

B. SURVEY STUDY

B.1 Participant and Context The survey respondents were the parents, teaching staff, and students in grades 6-12 from private schools that are members of the Connecticut Association of Independent Schools (CAIS). The survey was conducted from October 2020 to April 2021. The following are the inclusion criteria for the student respondents: (1) English-speaking; (2) having consent/assent for study participation and; (3) ages older than 11 years. To ensure ethical considerations and privacy, parents could opt out on behalf of their children, and students could also opt out even if their parents had permitted them to participate. We administered separate surveys to adults both staff/staff and parents regarding the COVID-19 community response with open-ended questions inspired by the Reach, Effectiveness, Adoption, Implementation, and Maintenance framework (RE-AIM) framework. These survey tools were emailed to eligible participants using Qualtrics® software to ensure anonymity and data privacy. Investigators have private access to data via encrypted drives. The study was approved by Yale School Public Health's Institutional Review Board (#2000028873).

B.2 Survey Instruments Our surveys used the Coronavirus Safety Behaviors Scale and the Preventive COVID-19 Behavior Scale. Adult measures were drawn from the Johns Hopkins University COVID-19 Community Response Survey. The survey questions and responses are presented in Table 1-6. We also included open-ended questions for respondents to submit their concerns and comments.

B.3 Survey Administrations and Enrollment These survey tools were emailed to eligible participants using Qualtrics® software to ensure anonymity and data privacy. In order to examine the shifts in students' attitudes and behaviors during the progression of the pandemic, we undertook two rounds of surveys. The initial survey round was administered between October and November 2020, while data for the second round was collected in January 2021. A total of 6,816 students were invited to participate in this study. Out of these participants, 75 responded to survey round one whereas survey round two received responses from only 47 individuals, possibly due to COVID fatigue. We conducted three rounds of surveys for faculties. The initial survey round was administered between October and November 2020, while data for the second round was collected in January 2021, and the final round was conducted in April, 2021. 309, 22, 15 faculties responded to survey rounds one, two, and three, respectively. The demographics information of the student and staff survey participants are presented in Appendix II and III.

B.4 Quantitative Analysis We used descriptive statistics to describe the basic features of the data collected. We analyzed the distribution, central tendency, dispersion, and pattern of each variable. For descriptive purposes, we expressed categorical variables as proportions and continuous variables as means, medians, and standard deviations (SD). We made comparisons between answers in surveys that were administered at different time points, and between parent and staff surveys, using χ^2 and fisher's exact test, as appropriate, with statistical significance defined as $p < 0.05$ (2-tailed). We similarly summarized respondents' characteristics using descriptive statistics.

B.5 Qualitative Analysis The responses to open-ended questions were reviewed and coded using Microsoft Word® to determine patterns and constructs through thematic analysis. This analysis is guided by the following steps according to Guest et. al., (2012): (1) familiarization, and organization of responses; (2) identification of themes; (3) review and analysis of themes to determine structures or constructs and; (4) construction of the theoretical model vis-à-vis new data. It sought to unpack constructs[11] of the Reach, Effectiveness, Adoption, Implementation, and Maintenance framework framework that is contextualized at private schools' issues and approaches towards managing mental health amid COVID-19.

C. INTEGRATION OF THE RESULTS

First, we integrated the results of both the scoping review and the survey and outlined in detail the mental health challenges faced by kindergarten to 12th grade school staff and students. Subsequently,

to find a solution to the challenges, we reviewed existing school-based mental health models and interventions. We selected the multi-tiered systems of support framework to address the challenges because of its comprehensiveness, adaptability, and multifaceted approach.

We will first present the mental health challenges among students and staff in the result section. We will then dive into how the Multi-tiered System of Supports can be applied during the crisis to provide support and resources for addressing these challenges. Furthermore, we will discuss the implications for school health.

3. Results

We present an integration of our survey and scoping review findings:

CHALLENGE I: MENTAL HEALTH PROBLEMS AMONG STUDENTS

The COVID-19 pandemic has spawned a host of societal malfunctions. Beginning in March 2020 over 90% of students faced school closures and disruptions.[12] This abrupt change presented students with multiple adverse stressors that posed threats to their mental well-being.

U.S. schools experienced a shift from in-person learning to online/hybrid education in March-June 2020, and some for much longer periods. Our scoping review and our student surveys confirmed that students were upset at being deprived of physical proximity to their friends.[13] In-person school attendance and school connectedness serve as protective factors for children's mental health.[14] Conversely, restricted social connections can increase the risk of anxiety disorders.[15] Students exposed only to the online curriculum during the pandemic were found to encounter various maladjustments, such as reduced motivation for studies, feelings of isolation and loneliness, and poor concentration in class.[16]

In addition to the lack of social connections, the COVID-19 pandemic was reported to have disrupted healthy routines. Despite financial gaps and racial injustices, social connectedness among families in lower-income regions reveals decreased closeness across numerous parts of their life and offers insights to promote connectivity and combat social isolation.[17] With reduced physical activity and increased sedentary behaviors due to distance learning, both the physical and mental health of children and adolescents were undermined, including muscular fitness and psychosocial well-being.[18] Due to the loss of daily routines and peer support, students needed to learn and manage life independently, an additional challenge particularly when home circumstances were suboptimal (e.g., poor internet and/or computer, noisy and/or crowded).

Fear of adverse circumstances that could befall a family during the pandemic was expressed concerns of students, including job loss and the illness or death of family members. Since youth were spending more time at home, they were more likely to be deeply involved in this family stress. Caregivers who used to be an important pillar in the student's support system were less available to help students alleviate their stress. Rates of child abuse and domestic violence increased after the COVID-19 pandemic began.[19,20] The threat of the pandemic through sensational news also increased students' anxiety about food shortages, economic pressures, and family health (Cao et al., 2020).[15]

These additional stressors brought about by the pandemic threatened students' mental health. In a study conducted by YoungMinds with 2111 youth participants nationwide, 83% of participants indicated that the pandemic worsened their pre-existing mental health conditions.[21] A review of 156 studies on youth mental health and COVID-19 found increased depressive symptoms, heightened anxiety, higher levels of stress, increased externalizing behaviors, interpersonal aggression, and increased suicidal ideation among youth after the pandemic.[22]

Concurrent with the increased mental health need, most students lacked access to external therapeutic support.[14] Mental health services have been largely reduced or reorganized, some of which only offered provisional care to avoid COVID-19 infection spreading among the providers and students.[19] A recent study with a sample size of around 2800 young adults demonstrated the low care utilization during the crisis. Among young adults who displayed mental health symptoms, only a third received treatment and 36% reported unmet needs for counseling services.[23]

Our survey of Grade 6-12 school members in Connecticut revealed similar results as the existing literature. Only half of the 118 responding students reported having regular activity routines during the early phase of the pandemic (Table 1).

Table 1. Grade 6-12 Student Routine during COVID-19

	Student 1		Student 2		P-Value
I kept a morning routine (that is, I did the same thing each morning). (n1= 81; n2 = 118)					**0.0072**
Answer	**%**	**Count**	**%**	**Count**	
Never	2.47%	2	0.85%	1	
Rarely	11.11%	9	5.08%	6	
Occasionally	29.63%	24	14.41%	17	
Frequently	29.63%	24	49.15%	58	
Very frequently	27.16%	22	30.51%	36	
I kept a bedtime routine (that is, I usually did the same thing each night before bed). (n1 = 81; n2 = 118)					**0.32**
Answer	**%**	**Count**	**%**	**Count**	
Never	2.47%	2	3.39%	4	
Rarely	16.05%	13	13.56%	16	
Occasionally	37.04%	30	24.58%	29	
Frequently	29.63%	24	40.68%	48	
Very frequently	14.81%	12	17.8%	21	
I participated in family activities (if you live at school, think about your dorm family/activities). (n1 = 81; n2 = 118)					**0.43**
Answer	**%**	**Count**	**%**	**Count**	
Never	2.47%	2	3.39%	4	
Rarely	8.64%	7	11.86%	14	
Occasionally	22.22%	18	30.51%	36	
Frequently	46.91%	38	33.9%	40	
Very frequently	19.75%	16	20.34%	24	
I had regular meals. (n1 = 81; n2 = 117)					**0.74**
Answer	**%**	**Count**	**%**	**Count**	
Never	1.23%	1	3.42%	4	
Rarely	8.64%	7	11.11%	13	
Occasionally	14.81%	12	18.8%	22	
Frequently	32.1%	26	29.91%	35	
Very frequently	43.21%	35	36.75%	43	
I did outdoor activities. (n1 = 81; n2 = 117)					**0.63**
Answer	**%**	**Count**	**%**	**Count**	
Never	3.70%	3	0.85%	1	
Rarely	7.41%	6	8.55%	10	
Occasionally	20.99%	17	20.51%	24	
Frequently	35.80%	29	31.62%	37	
Very frequently	32.10%	26	38.46%	45	
I worried that my family would not have enough money to pay for necessities like clothing or bills. (n1 = 81; n2 = 118)					**0.096**
Answer	**%**	**Count**	**%**	**Count**	
Never	46.91%	38	54.24%	64	
Rarely	38.27%	31	22.03%	26	
Occasionally	8.64%	7	16.1%	19	
Frequently	4.94%	4	4.24%	5	
Very frequently	1.23%	1	3.39%	4	
I witnessed racism or discrimination in relation to coronavirus. (n1 = 80; n2 = 118)					**0.18**
Answer	**%**	**Count**	**%**	**Count**	
Never	51.25%	41	35.59%	42	
Rarely	18.75%	15	22.03%	26	
Occasionally	21.25%	17	25.42%	30	
Frequently	6.25%	5	14.41%	17	
Very frequently	2.5%	2	2.54%	3	
I experienced racism or discrimination in relation to coronavirus. (n1 = 81; n2 = 118)					**0.41**
Answer	**%**	**Count**	**%**	**Count**	
Never	83.95%	68	77.97%	92	
Rarely	9.88%	8	12.71%	15	
Occasionally	3.7%	3	8.47%	10	
Frequently	1.23%	1	0%	0	
Very frequently	1.23%	1	0.85%	1	

Similarly, only half of the responding students reported participating in family or dorm activities. Over 90% of 7-12 grade students reported that their lives have changed as a result of COVID-19. Over 60% of them reported being moderately to extremely worried about COVID-19. A similar percentage of students reported feeling stressed about the uncertainty of the COVID-19 crisis. They believe that they are more concerned about COVID-19 than others around them (Table 2).

Table 2. Grade 6-12 Student feelings about the coronavirus pandemic.

	Student 1		Student 2		P-value
How worried have you been about coronavirus (COVID-19)? (n1 = 80; n2 = 117)					0.21
Answer	**%**	**Count**	**%**	**Count**	
Not at all	6.25%	5	13.6%8	16	
Slightly	30%	24	27.35%	32	
Moderately	31.25%	25	34.19%	40	
Very	28.75%	23	17.95%	21	
Extremely	3.75%	3	6.84%	8	
How worried have others around you seemed to be about coronavirus (COVID-19)? (n1 = 80; n2 = 117)					0.37
Answer	**%**	**Count**	**%**	**Count**	
Not at all	7.5%	6	11.97%	14	
Slightly	23.75%	19	29.91%	35	
Moderately	46.25%	37	35.9%	42	
Very	21.25%	17	17.95%	21	
Extremely	1.25%	1	4.27%	5	
How much do you think your life has changed (for better or worse) due to coronavirus (COVID-19)? (n1 = 80; n2 = 117)					0.35
Answer	**%**	**Count**	**%**	**Count**	
Not at all	1.25%	1	0%	0	
Slightly	7.5%	6	5.13%	6	
Moderately	21.25%	17	26.5%	31	
Very	47.5%	38	38.46%	45	
Extremely	22.5%	18	29.91%	35	
How hopeful are you that the coronavirus/COVID-19 crisis in your area will end soon? (n1 = 80; n2 = 117)					0.0033
Answer	**%**	**Count**	**%**	**Count**	
Not at all	15%	12	8.55%	10	
Slightly	30%	24	11.97%	14	
Moderately	15%	12	29.91%	35	
Very	16.25%	13	24.79%	29	
Extremely	23.75%	19	24.79%	29	
COVID-19 presents a lot of uncertainty about the future. In the past 7 days, including today, how stressful have you found this uncertainty to be? (n1 = 80; n2 = 117)					0.26
Answer	**%**	**Count**	**%**	**Count**	
Not at all	5%	4	13.68%	16	
Slightly	35%	28	26.5%	31	
Moderately	32.5%	26	31.62%	37	
Very	18.75%	15	16.24%	19	
Extremely	8.75%	7	11.97%	14	

We also found that home-based distance learning with limited support from school staff and peers was an additional stressor for students. Majority of the students reported feeling unable to control the important things (schools, relationships, etc.) in life. Over 60% of students felt things were only sometimes or never going well. More than half of the students reported that difficulties/problems were so numerous that they could not overcome them in the past month (Table 3).

Table 3. Grade 6-12 Student Thoughts and Feelings in the Last Month

	Student 1		Student 2		P-value
In the last month, how often have you felt that you were unable to control the important things (school, relationships, etc.) in your life? (n1 = 79; n2 = 111)					**0.65**
Answer	**%**	**Count**	**%**	**Count**	
Never	6.33%	5	7.21%	8	
Almost never	21.52%	17	13.51%	15	
Sometimes	34.18%	27	34.23%	38	
Fairly often	24.05%	19	30.63%	34	
Very often	13.92%	11	14.41%	16	
In the last month, how often have you felt confident about your ability to handle your personal problems? (n1 = 79; n2 = 110)					**0.10**
Answer	**%**	**Count**	**%**	**Count**	
Never	2.53%	2	3.64%	4	
Almost never	8.86%	7	12.73%	14	
Sometimes	29.11%	23	39.09%	43	
Fairly often	46.84%	37	27.27%	30	
Very often	12.66%	10	17.27%	19	
In the last month, how often have you felt that things were going your way/going well? (n1 = 79; n2 = 110)					**0.89**
Answer	**%**	**Count**	**%**	**Count**	
Never	2.53%	2	3.64%	4	
Almost never	15.19%	12	15.45%	17	
Sometimes	44.3%	35	49.09%	54	
Fairly often	30.38%	24	23.64%	26	
Very often	7.59%	6	8.18%	9	
In the last month, how often have you felt difficulties/problems were piled up so high that you could not overcome them? (n1 = 79; n2 = 110)					**0.36**
Answer	**%**	**Count**	**%**	**Count**	
Never	8.86%	7	5.45%	6	
Almost never	36.71%	29	25.45%	28	
Sometimes	27.85%	22	32.73%	36	
Fairly often	17.72%	14	24.55%	27	
Very often	8.86%	7	11.82%	13	

Both teachers and students reported that the pandemic has brought challenges to students' mental health related to difficulties feeling connected to peers. As one student wrote in the survey response, "I think emotionally, my classmates and I are having a hard time because we can't really connect over online school." One teacher stated:

"When we went remote last year, we had a lot of …students seeking mental health support. We're dealing with kids who were having difficulty with isolation and masking and all the constraints, the loss of their school experience, the loss of graduation, the loss of social connections."

Students in our survey sample also recommended more mental health resources, including, "Give lessons/workshops to stay productive and happy because it is very easy to become depressed during a pandemic," and "I hope there will be an opportunity to discuss stress."

CHALLENGE II: MENTAL HEALTH PROBLEMS AMONG SCHOOL STAFF

There is increasing concern that school staff suffer from poor mental health due to COVID-19. 46% of staff in our survey felt nervous, anxious, or on edge more than three days per week during the early stages of the pandemic (Table 5).

Table 4. Grade 6-12 Student Feelings After a Stressful Event

	Student 1		Student 2		P-value
Do you think about it even when you don't mean to? (n1 = 78; n2 = 105)					**0.15**
Answer	**%**	**Count**	**%**	**Count**	
Not at all	25.64%	20	15.24%	16	
Rarely	25.64%	20	32.38%	34	
Sometimes	41.03%	32	37.14%	39	
Often	7.69%	6	15.24%	16	

	Student 1		Student 2		P-value
Do you try to remove it from your memory? (n1 = 78; n2 = 106)					**0.33**
Answer	**%**	**Count**	**%**	**Count**	
Not at all	48.72%	38	43.4%	46	
Rarely	28.21%	22	21.7%	23	
Sometimes	19.23%	15	26.42%	28	
Often	3.85%	3	8.49%	9	
Do you have waves of strong feelings about it? (n1= 78; n2 = 106)					**0.021**
Answer	**%**	**Count**	**%**	**Count**	
Not at all	17.95%	14	20.75%	22	
Rarely	43.59%	34	22.64%	24	
Sometimes	29.49%	23	39.62%	42	
Often	8.97%	7	16.98%	18	
Do you stay away from reminders of it (e.g. places or situations)? (n1 = 78; n2 = 105)					**0.058**
Answer	**%**	**Count**	**%**	**Count**	
Not at all	46.15%	36	39.05%	41	
Rarely	28.21%	22	26.67%	28	
Sometimes	21.79%	17	18.1%	19	
Often	3.85%	3	16.19%	17	
Do you try not to talk about it? (n1 = 77; n2 = 106)					**0.34**
Answer	**%**	**Count**	**%**	**Count**	**P-value**
Not at all	49.35%	38	39.62%	42	
Rarely	22.08%	17	18.87%	20	
Sometimes	16.88%	13	26.42%	28	
Often	11.69%	9	15.09%	16	
Do pictures of it pop into your mind? (n1 = 77; n2 = 106)					**0.29**
Answer	**%**	**Count**	**%**	**Count**	
Not at all	44.16%	34	40.57%	43	
Rarely	24.68%	19	26.42%	28	
Sometimes	28.57%	22	23.58%	25	
Often	2.6%	2	9.43%	10	
Do other things keep making you think about it? (n1 = 77; n2 = 106)					**0.018**
Answer	**%**	**Count**	**%**	**Count**	
Not at all	23.38%	18	32.08%	34	
Rarely	32.47%	25	13.21%	14	
Sometimes	27.27%	21	36.79%	39	
Often	16.88%	13	17.92%	19	
Do you try not to think about it? (n1 = 77; n2 = 106)					**0.20**
Answer	**%**	**Count**	**%**	**Count**	
Not at all	33.77%	26	31.13%	33	
Rarely	35.06%	27	24.53%	26	
Sometimes	25.97%	20	32.08%	34	
Often	5.19%	4	12.26%	13	
I felt angry or frustrated (n1 = 77; n2 = 106)					**0.20**
Answer	**%**	**Count**	**%**	**Count**	
Not at all	22.08%	17	17.92%	19	

	Student 1		Student 2		P-value
Rarely	16.88%	13	16.98%	18	
Sometimes	35.06%	27	49.06%	52	
Often	25.97%	20	16.04%	17	

Table 5. Thoughts and Feelings

	Staff 1		Staff 2		Staff 3		P-value
Have you felt nervous, anxious, or on edge? (n1 = 374; n2 = 23; n3 = 31)							**0.0059**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	
Not at all or less than 1 day	23.26%	87	30.43%	7	41.94%	13	
1-2 days	30.75%	115	47.83%	11	48.39%	15	
3-4 days	22.73%	85	13.04%	3	6.45%	2	
5-7 days	23.26%	87	8.7%	2	3.23%	1	
	Staff 1		**Staff 2**		**Staff 3**		**P-value**
Have you felt depressed? (n1 = 374; n2 = 23; n3 = 31)							**0.0012**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	
Not at all or less than 1 day	51.87%	194	65.22%	15	64.52%	20	
1-2 days	24.87%	93	17.39%	4	29.03%	9	
3-4 days	10.7%	40	8.7%	2	6.45%	2	
5-7 days	12.57%	47	8.7%	2	0%	0	
	Staff 1		**Staff 2**		**Staff 3**		**P-value**
Have you felt lonely? (n1 = 373; n2 = 23; n3 = 31)							**0.94**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	
Not at all or less than 1 day	60.59%	226	56.52%	13	58.06%	18	
1-2 days	20.64%	77	26.09%	6	29.03%	9	
3-4 days	9.38%	35	8.7%	2	6.45%	2	
5-7 days	9.38%	35	8.7%	2	6.45%	2	
	Staff 1		**Staff 2**		**Staff 3**		**P-value**
Have you felt hopeful about the future? (n1 = 374; n2 = 23; n3 = 31)							**0.011**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	
Not at all or less than 1 day	13.1%	49	13.04%	3	25.81%	8	
1-2 days	39.3%	147	17.39%	4	19.35%	6	
3-4 days	26.47%	99	34.78%	8	16.13%	5	
5-7 days	21.12%	79	34.78%	8	38.71%	12	
	Staff 1		**Staff 2**		**Staff 3**		**P-value**
Have you had physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart, when thinking about your experience with the novel coronavirus (COVID-19) pandemic? (n1 = 374; n2 = 22; n3 = 31)							**0.71**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	
Not at all or less than 1 day	78.61%	294	86.36%	19	93.55%	29	
1-2 days	14.44%	54	9.09%	2	6.45%	2	
3-4 days	4.28%	16	4.55%	1	0%	0	
5-7 days	2.67%	10	0%	0	0%	0	

Nearly half (45%) of teachers reported being worried about COVID-19. 69% of them were concerned that their family or friends may contract COVID-19. More than half (57%) of the teachers were very worried about giving someone else COVID-19. COVID-19 caused 29% of respondents to have difficulty concentrating, feel anxious, and/or feel overwhelmed (Table 6).

Table 6. Staff Feelings about COVID-19

	Staff 1		Staff 2		Staff 3		P-value
I am very worried about getting the coronavirus. (n1 = 372; n2 = 22; n3 = 31)							**0.067**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	
Strongly disagree	9.41%	35	9.09%	2	25.81%	8	
Disagree	22.58%	84	31.82%	7	35.48%	11	
Neither agree nor disagree	23.66%	88	22.73%	5	19.35%	6	
Agree	33.6%	125	27.27%	6	16.13%	5	
Strongly agree	10.75%	40	9.09%	2	3.23%	1	
	Staff 1		Staff 2		Staff 3		P-value
I am very worried about my family/friends getting the coronavirus. (n1 = 372; n2 = 22; n3 = 31)							**0.0043**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	
Strongly disagree	3.49%	13	4.55%	1	19.35%	6	
Disagree	13.71%	51	18.18%	4	22.58%	7	
Neither agree nor disagree	13.44%	50	18.18%	4	9.68%	3	
Agree	38.98%	145	36.36%	8	38.71%	12	
Strongly agree	30.38%	113	22.73%	5	9.68%	3	
	Staff 1		Staff 2		Staff 3		
I am very worried about giving someone else the coronavirus. (n1 = 372; n2 = 22; n3 = 31)							**7.03E-05**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	**P-value**
Strongly disagree	5.11%	19	4.55%	1	16.13%	5	
Disagree	16.4%	61	18.18%	4	45.16%	14	
Neither agree nor disagree	21.77%	81	40.91%	9	9.68%	3	
Agree	34.14%	127	9.09%	2	19.35%	6	
Strongly agree	22.58%	84	27.27%	6	9.68%	3	
	Staff 1		Staff 2		Staff 3		P-value
I have a hard time sleeping because I'm thinking about the coronavirus. (n1 = 373; n2 = 22; n3 = 31)							**0.087**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	
Strongly disagree	35.66%	133	45.45%	10	61.29%	19	
Disagree	30.03%	112	31.82%	7	32.26%	10	
Neither agree nor disagree	17.96%	67	13.64%	3	6.45%	2	
Agree	12.6%	47	9.09%	2	0%	0	
Strongly agree	3.75%	14	0%	0	0%	0	
	Staff 1		Staff 2		Staff 3		P-value
I have had difficulties concentrating because of the coronavirus. (n1 = 371; n2 = 22; n3 = 31)							**0.019**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	
Strongly disagree	26.42%	98	45.45%	10	54.84%	17	
Disagree	25.88%	96	27.27%	6	25.81%	8	
Neither agree nor disagree	18.33%	68	13.64%	3	12.9%	4	
Agree	22.91%	85	13.64%	3	3.23%	1	
Strongly agree	6.47%	24	0%	0	3.23%	1	
	Staff 1		Staff 2		Staff 3		P-value
Thinking about the coronavirus makes me very anxious. (n1 = 372; n2 = 21; n3 = 31)							**0.037**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	
Strongly disagree	15.86%	59	23.81%	5	35.48%	11	
Disagree	16.94%	63	23.81%	5	29.03%	9	
Neither agree nor disagree	26.61%	99	14.29%	3	16.13%	5	
Agree	28.23%	105	33.33%	7	16.13%	5	
Strongly agree	12.37%	46	4.76%	1	3.23%	1	
	Staff 1		Staff 2		Staff 3		P-value
I am feeling overwhelmed by the coronavirus. (n1 = 371; n2 = 22; n3 = 30)							**0.037**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	
Strongly disagree	17.52%	65	36.36%	8	36.67%	11	
Disagree	20.22%	75	13.64%	3	26.67%	8	
Neither agree nor disagree	24.8%	92	22.73%	5	16.67%	5	
Agree	26.42%	98	27.27%	6	20%	6	
Strongly agree	11.05%	41	0%	0	0%	0	

	Staff 1		Staff 2		Staff 3		P–value
I am losing pay because of the coronavirus. (n1 = 371; n2 = 22; n3 = 31)							**0.37**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	
Strongly disagree	42.86%	159	50%	11	54.84%	17	
Disagree	25.34%	94	22.73%	5	25.81%	8	
Neither agree nor disagree	7.82%	29	0%	0	12.9%	4	
Agree	14.56%	54	13.64%	3	6.45%	2	
Strongly agree	9.43%	35	13.64%	3	0%	0	
	Staff 1		**Staff 2**		**Staff 3**		**P-value**
I am worried about having enough food because of the coronavirus. (n1 = 370; n2 = 21; n3 = 31)							**0.029**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	
Strongly disagree	47.03%	174	57.14%	12	61.29%	19	
Disagree	35.14%	130	14.29%	3	35.48%	11	
Neither agree nor disagree	9.19%	34	14.29%	3	0%	0	
Agree	7.84%	29	4.76%	1	3.23%	1	
Strongly agree	0.81%	3	9.52%	2	0%	0	
	Staff 1		**Staff 2**		**Staff 3**		**P-value**
I am worried about loss of income if I get sick from the coronavirus. (n1 = 370; n2 = 22; n3 = 31)							**0.25**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	
Strongly disagree	32.16%	119	40.91%	9	45.16%	14	
Disagree	29.73%	110	9.09%	2	25.81%	8	
Neither agree nor disagree	10.81%	40	4.55%	1	12.9%	4	
Agree	17.3%	64	31.82%	7	9.68%	3	
Strongly agree	10%	37	13.64%	3	6.45%	2	
	Staff 1		**Staff 2**		**Staff 3**		**P-value**
I am spending more money because of the coronavirus. (n1 = 369; n2 = 22; n3 = 31)							**0.10**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	
Strongly disagree	21.14%	78	4.55%	1	29.03%	9	
Disagree	24.66%	91	31.82%	7	35.48%	11	
Neither agree nor disagree	19.24%	71	13.64%	3	6.45%	2	
Agree	24.93%	92	27.27%	6	25.81%	8	
Strongly agree	10.03%	37	22.73%	5	3.23%	1	
	Staff 1		**Staff 2**		**Staff 3**		**P-value**
I am worried about medical bills if I get sick from the coronavirus. (n1 = 370; n2 = 22; n3 = 31)							**0.17**
Answer	**%**	**Count**	**%**	**Count**	**%**	**Count**	
Strongly disagree	19.46%	72	18.18%	4	25.81%	8	
Disagree	23.24%	86	22.73%	5	32.26%	10	
Neither agree nor disagree	15.68%	58	13.64%	3	12.9%	4	
Agree	25.95%	96	9.09%	2	22.58%	7	
Strongly agree	15.68%	58	36.36%	8	6.45%	2	

State of Connecticut (as with most other states) pandemic policy forced all teachers to quickly move their classes online in March 2020. Teachers had to become skillful in technology and new tools for adapting to online teaching. In addition to the change in teaching format, teachers faced the challenge of how to motivate and interact with students online.[24] Some teachers stated that this had been a challenge even before the pandemic for those courses with online elements. Many teachers found distance learning complicated by their lack of knowledge concerning technical and didactic skills in an online platform,[25] and the unequal distribution of resources.[24] Some schools and students in lower socioeconomic and rural areas could not keep up with online learning through technology, resulting in breaks in communication between teachers and students. As some schools transitioned to a hybrid online/in-person model of instruction, teachers had to prepare and provide teaching materials for both modalities with consequent expanded workloads.

Apart from pandemic stresses, heavier workloads at work and home are likely to have had a significant negative impact on some teachers' mental health,[24] especially for women who typically bear a heavier homework load than men.[25] Comparative research in the U.S. has shown that women were more likely than males to have sadness and anxiety symptoms due to COVID-19.[26] Our survey confirmed that female teachers took on extra responsibilities not only for teaching but also for taking care of the family with limited social support, especially notably with toddlers and elders in the household. Child-rearing stress can be exacerbated by depression and anxiety symptoms.[27] The bond between private and work

life in a fixed space could elicit negative emotions and behaviors leading to a worse relationship quality and relationship satisfaction.[27]

With increasing pressure from the government, school districts, and parents, teachers were required to return to reopened schools and physical classrooms in late 2020 and 2021, though residual coronavirus concerns were evident. A large majority of teachers wanted to teach students in person, but some worried that if they contracted the virus, their families would be infected by their return home.[28] These negative emotions from work, the strain of hybrid models, childcare responsibilities, and societal expectations and pressures exacerbated mental health concerns for school staff.[27]

4. Discussion

We considered both our scoping review and our survey results in crafting an approach to respond to mental health needs during a crisis. After reviewing existing school-based mental health models, the multi-tiered systems of support were selected. The Multi-tiered System of Supports framework is a valuable construct in addressing both academic[29] and behavioral concerns.[30] The Multi-tiered System of Supports framework can help provide proactive, evidence-based, and high-quality prevention and intervention for both students and school staff during crisis. The model is conceptualized as three layers of interventions starting from universal prevention (Tier 1), targeted prevention or early prevention (Tier 2), and individualized intervention (Tier 3), aiming to provide adequate services for the full spectrum of mental health needs. The placement of students or teachers at a certain tier is intended to be dynamic, shifting based on circumstances and individuals (Figure 1).
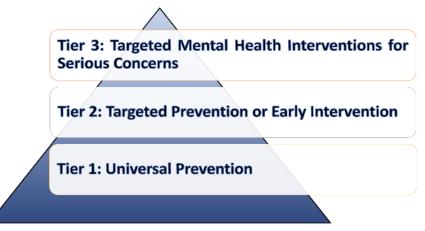

Figure 1. Multi-Tiered Systems of Support Framework

TIER 1: UNIVERSAL PREVENTION
Universal prevention is directed at the whole school population that has not been categorized based on individual risks.[31] Everyone in that group will be exposed to the intervention seeking to decrease the risk of mental illness. To identify appropriate strategies to support students' learning (e.g., peer tutoring, peer coaching, group discussion[32]; a universal screening protocol is recommended for Tier-1. Data collected within the universal screening process will help identify students' and school personnel's risk status and the behavioral and mental health areas that need preventive interventions.[33] In terms of the screening assessment method, technology support can enable screening to be presented in a variety of formats, including some that are game-like. Instead of formal questions and scales, an ideal assessment would be an efficient and accurate measurement of mental health status in a fun, non-stigmatizing way. Games can be tailored for different age groups (including

adults) and can be administered repetitively, as needed. Screening games enable improved knowledge of true mental health states by reducing selection and participant biases.

Within the first tier, all students and school staff receive a comprehensive core training engagement regarding wellness techniques and skills they can use to reduce stress in school life, ideally provided by trained school or school district mental health professionals.[32] This may take the form of online training, workshops, reading materials, and/or discussion groups. To ensure that students and school staff have sufficient opportunities to internalize important preventive tools and strategies, a well-implemented core training program/workshops at tier 1 is designed to assist in reducing the number of students and school staff who need future interventions. To address the varied needs of the students and school staff, mental health trainers

may need to supplement or adapt the core training topics with additional techniques.[32]

COVID-19 experiences suggest the increasing need to orient students towards crisis-related mental health literacy. Building capacity in crisis-related mental health can prevent mental health problems, such as depression and anxiety, from getting worse and/or delaying treatment.[34] Many school staff and students suffered from pandemic-induced stress but lacked awareness of coping skills. School members can receive anticipatory guidance as to how to manage social isolation, time management at home to study or work efficiently, stress reduction when not studying or working with peers, and grief from the death of a friend or relative. During the pandemic, many individuals' social networks were limited to their family members and others at home, requiring them to adapt their communication styles to avoid relationship dissatisfaction, obtaining and giving needed support. Going forward, it will be necessary to adopt a combined clinical and system of care strategy that involves recognizing and addressing the unique needs of children and adolescents, putting preventative and treatments that promote resilience into practice within clinical services, schools, families, and the community.[35]

Tier 1 interventions may be based on theories nested within cognitive-behavioral therapy (CBT), seeking to change our attribution of personal behaviors, identifying what keeps persons "stuck" so that they can modify the way they think and behave in order to improve mood.[36] Core training can include mental health literacy, common behavior shaping techniques (CBT; e.g., communication skills, time management, social support), mindfulness and stress reduction, the grief of death, pandemic/crisis-related social isolation, and other concerns raised by school community members in their screening assessments.

TIER 2: TARGETED PREVENTION OR EARLY INTERVENTION
In universal school screening or teachers' referral, schools may identify students with more serious mental health concerns, including depression, severe anxiety, or others. More targeted assessments and interventions should be provided to this subset of students. In Tier 2 activities, school counselors or other psychiatric professionals conduct more specialized assessments based on students' symptoms. For example, the Children's Depression Inventory (CDI)[37] and the Children's Depression Inventory – Shortform (CDI-S)[38] are suitable for more thoroughly evaluating students at risk for depression. The Multidimensional Anxiety Scale for Children[39] can be used to assess children's and adolescents' anxiety symptoms. Tier 2 is mainly targeted at students, while school staff who need extra mental health support are considered within a Tier 3 construct.

Small-group interventions facilitated by school counselors can be beneficial for students who are less responsive to the universal training program and/or need extra support. Counselors may group students based on their common needs (e.g., conflict resolution) or stressors (e.g., grief) and provide the corresponding skill training. The targeted intervention is especially necessary for a school's mental health support system during a pandemic season or crisis. Despite a shared pandemic context, students' lives face different challenges due to diverse life stressors and background mental health status. An example is the disruption of routines that can frustrate students with autism spectrum disorder[40]; counselors can support these students by providing stress management and time management skills training.

Students whose family members passed away from SARS-CoV-2 infection often need help with grief coping strategies. In some cases, bereavement can worsen a child's school performance, exacerbate mental health vulnerabilities, and even increase suicide risk; the pandemic resulted in 200,000 children experiencing the loss of a parent or grandparent in the United States.[41] Targeted grief support groups can encourage peer support, create a safe space for students to share their feelings, and train them towards useful coping skills. Small-group interventions allow individual students to receive more attention from school professionals and more intense skills training compared to the universal training of Tier 1.[42]

Complementary to group interventions, school counselors can provide individualized support for students at risk for mental health concerns. Counselors pay close attention to individual students' mental health conditions and needs, providing one-on-one intervention; this may include behavior therapy, cognitive-behavioral therapy, interpersonal therapy, psychoeducation, mindfulness, and social skills training.[43] Access to professional counseling within the school helps buffer potential mental health threats that the pandemic may pose to students.

School counselors collaborate with other stakeholders (e.g., teachers, guardians) to support students, if necessary, based on assessments of students' mental health conditions. For example, counselors can ask for students' daily self-reports, teachers' reports, and students' guardians' reports

to track students' behaviors in school and at home, monitoring the effects of intervention.[42] School counselors also identify students' social, emotional, behavioral, and academic needs and map resources within the school such as meditation events or academic mentoring programs.

School mental health professionals can maintain up-to-date information about community-based health resources (e.g., counseling services, primary healthcare providers). If students' symptoms are not alleviated or worsen, school counselors may need to refer them to more specialized interventions, proceeding to the last tier of Multi-tiered System of Supports. Clearly, higher budgets for such services are more available in well-endowed school districts or private schools.

TIER 3: TARGETED MENTAL HEALTH INTERVENTIONS FOR SERIOUS CONCERNS

Tier 3 will provide support and interventions for students whose mental health needs exceed the support provided by Tier 1 and 2. To ensure the smooth execution of treatment, a protocol for identification, assessment, referral, treatment, and support maintenance should be developed in advance for students suffering from more severe mental illness. Students who exhibit risky and destructive behaviors as well as those identified through universal and targeted Tier 1 and 2 screenings should be referred to and assessed by qualified mental health staff who may not be available at the school level. Criteria and referral procedures must be established with documentation of all conversations and assessments. The school must establish relationships in advance of crises with therapists, social workers, psychologists, psychiatrists, and local hospitals to ensure expedited intake processes into higher-level care. The Tier 3 program is dedicated to solving the problems of the whole child, including academic, social-emotional, behavioral, personal, and medical needs. To facilitate the treatment process, the family-healthcare-school triad can benefit from regular meetings to discuss the vulnerable student's needs, establish family support, and organize school accommodations. School staff can be trained in varying accommodation approaches, with consistency and communication across different levels of support.

To protect the confidentiality of school students and/or staff, there should be a healthy boundary between personal and professional lives. If a staff member's mental health needs fall outside the scope of Tier 1, then the staff member should have access to professionals in the community who can provide care without breaching confidentiality within the school environment.

Our recommendations are theoretical in the face of mental health staff shortages, so common in United States schools (See Implications for School Heath). Hence, social service providers or school counselors may fill some of these roles. It is an urgent United States educational and health workforce priority to build the mental health staff capacity to cope with school demands.

STRENGTHS AND LIMITATIONS

The proximity of our survey to the times of peak crisis may reduce recall bias. Our scoping review and our integration of survey findings proved to be a productive mixed methods approach. Our research stands out due to its distinctive approach: we aim to analyze the obstacles and suggest a practical resolution for addressing these problems. Our study is limited by a low survey participation rate, potentially limiting the generalizability of its results. The low survey participation rate is potentially due to COVID fatigue. Nonetheless, our results are consistent with current data on student mental health[14–16] that offer valuable insights into preparing and managing mental health problems during a crisis. A second limitation is that our Multi-tiered System of Supports framework has not been tested during COVID-19; however, it has been implemented numerous times in school settings.[29] The model we propose is based on the mental health problems among school students and staff exposed during the COVID-19 pandemic. Further research is needed to assess the implementation and effectiveness of our modified Multi-tiered System of Supports model in different crises (e.g., another pandemic, natural disasters, school violence, or other crises). Despite the difficulty of implementing a new intervention model of care, a Multi-tiered System of Supports framework guides the development and strengthening of programs.

IMPLICATIONS FOR SCHOOL POLICIES

Due to the COVID-19 crisis, there is a high demand for mental health services in schools, both among students and staff. The importance of school-based mental health support cannot be overstated, as embedded care providers, including counselors, nurses, social workers, physicians, and psychologists, are frequently serving as first responders to youth who are sick, stressed, or traumatized. They are also often the first to see potential issues, as well as those who behave disruptively in the classroom or cause harm to themselves or others. A child is 21 times more likely to seek treatment at a school-based health center than anywhere else and schools with sufficient school-based mental health resources

can yield improved student outcomes and positive school culture.[44]

The return on investment of school-based mental health providers is not widely appreciated; more care is associated with higher attendance rates, fewer suspensions and other disciplinary incidents, lower expulsion rates, improved academic achievement, improved career preparation, and higher graduation rates.[45] The COVID-19 pandemic has revealed a serious shortage of school-based mental health services, however. Before the pandemic, 90% of public schools did not meet recommended standards for supporting student mental health; the National Association of School Psychologists suggests a maximum of 500-700 students per school psychologist. In contrast, United States federal data indicates that the average ratio is 1,526 students per psychologist. About 80% of youth in need of mental health services in the United States do not receive them.[46]

The lack of school-based mental health resources disproportionately impacts the most vulnerable students. Students from structurally marginalized backgrounds, such as students of color and low-income students, typically attend schools with fewer resources and support due to schools being funded typically by local property taxes.[5] Because teachers and staff at these schools face additional responsibilities and lack professional support, they are often unprepared to deal with students' mental health needs during times of community crisis.

The Multi-tiered System of Supports framework helps organize the provision of school mental health services along the entire spectrum, from screening to intervention. Students and school staff with different levels of mental health concerns can receive the interventions that they need at any given time. Under the Multi-tiered System of Supports framework, school resources are integrated into a more extensive system composed of the school, the family, and the community, which facilitates collaboration across multiple stakeholders. The Multi-tiered System of Supports also provides a full chain of support across different stages of interventions, from raising awareness of mental well-being to creating an open community, preventing mental illnesses, and offering clinical interventions. Anticipatory screening elements (tier 1) can build on resources that already exist in school, incorporated into regular school activities.

Multi-tiered System of Supports can improve mental health in schools during a crisis through three approaches. First, based on universal prevention principles to target prevention or early intervention, the Multi-tiered System of Supports seeks to empower students and school staff with the emotional coping skills necessary to maintain mental health. Social and emotional learning teaches students and school staff how to manage negative emotions, how to find the right attribution of behaviors or events, and how to actively engage in class and school activities, nurturing healthy emotional development. Second, the Multi-tiered System of Supports aims to help ensure the mental health of school staff and students and thus foster a peaceful and vibrant school community. Youth are easily influenced by their peers and surroundings because their judgment abilities are not yet fully developed. Better and earlier interventions could reduce bullying, suicide, depression, or anxiety among students and school staff, reduce stress in the wider school community, and improve academic performance. Third, schools affect families. With the knowledge of social and emotional learning, students and school staff could have closer connections fostered with their family members, such as communication with parents, spouses/partners, and siblings. With supportive, communicative families, negative emotions at school are lessened.

Conclusion

With a scoping review, student and school surveys, and framework-based policy review, we have highlighted challenges in mental health within the United States schools during crisis situations, notably pandemics, violent events, or natural disasters. We propose a multi-tiered system of support framework to prepare, prevent, respond to, and manage mental health problems. As the Kindergarten to 12th grade school system will confront future crises, COVID-19 provides lessons learned towards the implementation of more robust school mental health systems. Integrating psychiatry into the Multi-tiered System of Supports framework can further enhance the effectiveness of mental health support systems in schools, ensuring timely access to specialized care and medication management for those in need.

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