JOURNAL OF SCHOOL HEALTH

American SCHOOL HEALTH Association
Connecting Health & Learning
www.ashaweb.org

RESEARCH ARTICLE

Maryland School Health partners' Perspectives on the Impact of COVID-19 on School Health Services for Grades K-12

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ABSTRACT

BACKGROUND: The COVID-19 pandemic disrupted routine school operations, including school health programs. This study aims to describe the pandemic's impact on school health service delivery from the perspective of Maryland school health partners.

METHODS: We conducted semi-structured interviews with health service representatives from public schools (K-12) between July and December 2021. Interviews were recorded, transcribed, and coded through an iterative process to develop analytic themes.

RESULTS: Twenty school health partners from 15 Maryland school districts participated. Participants identified key impacts of COVID-19 on school health: (1) COVID-19 disrupted delivery of services such as dental, mental health, and preventative care, (2) COVID-19 necessitated changes in service delivery platforms, (3) COVID-19 affected school health staff through increased responsibilities and staffing shortages, and (4) COVID-19 prompted schools to become hubs for community outreach and health education.

IMPLICATIONS FOR SCHOOL HEALTH POLICY, PRACTICE, AND EQUITY: Consideration of school health service disruptions and the increased demands on service providers may inform future priorities for school administrators, health departments, and policymakers.

CONCLUSIONS: COVID-19 impacted the timing and method of service delivery as well as the roles of school health staff and schools themselves in public health and education.

Keywords: school health; COVID-19; health access; school health staff; qualitative.

Citation: Ambrosino C, Beharry K, Kallem M, Johnson SB, Connor KA, Collins ME. Maryland school health partners' perspectives on the impact of COVID-19 on school health services for grades K-12. J Sch Health. 2024; 94: 529-538. https://doi.org/10.1111/josh.13453.

Received on April 24, 2023
Accepted on March 19, 2024

School health programs serve as 1 important way for children to access health services directly in schools. Often varying based on district or school resources and needs, school health programs encompass a range of services. *Required school health services* typically include medication administration and school health screenings, while *school-based health centers* (SBHCs) often provide expanded services such as primary care, mental health, and dental services. *Enhanced school health services* are extensions of required school health

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The authors would like to acknowledge Azka Tariq for helping to coordinate qualitative interview scheduling and gift card compensation.

services and are frequently provided in collaboration with partner organizations. During the 2020-2021 academic year, Maryland Kindergarten (K)-grade 12 public schools faced temporary building closures due to the COVID-19 pandemic.[1] These closures impacted the operation of school health programs.

School closures frequently impacted operations of school health programs, with over three-quarters of SBHCs experiencing temporary shut-downs during the spring of 2020.[2] A growing number of reports have documented variations in school-based health service provision[3-6] and changes in the health and wellness needs of school-age children.[7-9] A subset of studies has examined COVID-19's impact on school health services from the perspective of school health professionals. Notably, a 2023 report by Marraccini et al. described school mental health professionals' perspectives regarding the implementation of school-based mental health services during COVID-19 and the implications for future service provision.[10] In California, Unger et al. examined school staff's perspectives about COVID-19 testing in schools.[11] The perspective of school health specialists, such as occupational therapists and speech-language pathologists, has also been documented. Hermes et al. described the barriers and facilitators of telehealth within a rural, mid-central state from health specialists' perspectives[12] while Sylvan et al. recorded speech-language pathologists' challenges of care delivery during COVID-19.[13] Each of these reports utilizes the viewpoint of school health professionals to provide key insights about service delivery and to inform responses in the event of future public health crises. Many of these studies focus on specific subsets of school health services. Across the state of Maryland, public K-12 schools have a broad range of school health service programs, ranging from required health service provision, to enhanced health service provision and SBHCs. Our present study aims to contribute to the literature by describing the effects of COVID-19 on the variety of school health services available in Maryland from the perspective of school health professionals.

METHODS

Participants

A list of representatives (n = 52) from departments of health and education was created for 21 of Maryland's 24 school districts. Three school districts were excluded due to regulations restricting research. Representatives included individuals involved in required or enhanced school health services, as well as SBHCs. Individuals were contacted via email about study participation beginning in June 2021. Non-respondents were additionally contacted via telephone.

Instrumentation

A semi-structured interview guide included questions regarding: (1) accessibility of pre-pandemic and mid-pandemic school health services, especially in relation to schools' abilities to meet the health needs of their students, (2) changes in school health service delivery methods during the pandemic, and (3) perceptions of COVID-19's impact on other domains of school health services, such as staffing, finances, or administration.

Procedure

Interviews were conducted via telephone or Zoom (Version 5.8.3, San Jose, CA) between July and December 2021. This timing represented the period of Alpha and Delta COVID-19 variant circulation. Participants provided verbal consent for study participation and audio recording. Interview audio was transcribed through TranscribeMe (San Francisco, CA).

Data Analysis

A codebook was developed through an inductive thematic approach.[14,15] This approach involved careful review of the transcript documents, followed by identification of themes through an iterative process. Key themes were then reviewed, and the codebook was finalized. Two researchers utilized Dedoose software (Version 9.0.46, Manhattan Beach, CA) to apply the codebook to interview transcripts, linking segments of each transcript with specified themes. A kappa coefficient measured an interrater reliability of 0.83 between researchers.

RESULTS

Twenty school health partners representing 15 Maryland school districts participated in interviews. The majority (n = 14, 70%) were involved in required school health services; fewer participants (n = 6, 30%) reported working in SBHCs or enhanced school health services. Participant roles included school nursing (n = 2, 10%), general school health administration (n = 10, 50%), dental care (n = 1, 5%), mental health (n = 3, 15%), and SBHC administration (n = 4, 20%).

Participants discussed 4 major themes (Table 1): (1) COVID-19 impacted school health service delivery, (2) COVID-19 necessitated changes in health service access and delivery platforms, (3) COVID-19 affected school health staff, and (4) schools became hubs for community outreach during COVID-19. Themes and subthemes are discussed below.

COVID-19 Impacted School Health Services Delivery

Routine care was delayed during COVID-19. Participants described delays in preventative care such as well-child visits, immunizations, and vision and

Table 1. **Overview of Themes and Quotations**

Theme 1: COVID-19 impacted school health service delivery
1.1 Routine care was delayed during COVID-19
We certainly noticed a decrease in regular preventive medical care for children, for everyone across the board. So things like immunizations and regular well checks were not taking place with regularity as far as the medical piece of it
The hard thing is vaccines kind of shut down for a lot of the kids because . . . our vaccine program shut down. Or even the kids who did have providers, they were on a delay getting those vaccines . . . I'm imagining when I reopen my clinic in the fall, we're probably going to have a lot of catch-up vaccines to do for kids or families who didn't have maybe a provider to go to in the community. So I know there was definitely a delay and things that were lacking in terms of that care
There are other ways the schools were impacted by COVID . . . things like our CPR got backlog, put on the back burner. Training everyone on Narcan got put on the back burner. Stop the Bleed program got put on the back burner. The anaphylactic allergy asthma care training program for the coaches didn't happen. So there was a lot more interference with education and annual training
I know for a fact that we have four and five-year-olds that didn't make it to their wellness appointments. We have seventh graders or sixth graders getting ready to go in seventh grade this year that are absolutely behind in their seventh-grade Tdap and meningitis vaccine that is required for seventh grade entry, right? So we know that. The data shows us that.
[W]ith the nurses kind of charged with doing contact tracing within the school, monitoring kids for symptoms, sending them home—we also offered testing COVID testing in our school health rooms—the vision screening just didn't happen last year.
[W]e have kids who are going to need catchup [vision and hearing] screenings this year. We'll have to do our typical grades plus the next grade to make sure we catch all those kids.
Dental was really hard because nobody wants to look in people's mouths in the middle of a respiratory pandemic. So . . . we just stopped services. And even this year, we're kind of struggling on do we go back to the toothbrushing in class or is that going to be too much risk, increasing the risk of exposure? So we're going to probably hold off on that.
[T]he dental program, the people who did the dental program . . . were not able to coordinate visits to our schools because of COVID. So there was no dental program offered.
I know just listening to dental, a lot of children have increased dental needs due to the pandemic and I guess not being in school and not receiving the services as they have in the past and being almost 12, 18 months . . . So I know they're seeing a lot of dental needs.
I did not go back into the school [to deliver school-based dental care] until February 2nd of 2021 . . . [W]hen I went back in February, I had kids that I was seeing that they had not been seen for dental services since 2019, which is heartbreaking because a lot of those kids are kids that when I did see them in 2019 needed fillings, needed to go for a possible extraction, just needed a dental exam in general.
Management of asthmatic and diabetic care, for the most part, that is something that should start from home with the family and the primary care physician. But during the school year, often the nurses will manage their treatment plan and educate the families and work with the physician. So that piece was missing
1.2 COVID-19 increased some health needs and exacerbated barriers to care
Behavioral health is going to be huge into the next school year. We saw a little bit of it at the end of last school year, just kids who've been home who haven't been in school and readjusting to coming back to school in person, in a mask, with some different rules, and in a different way of learning, all because COVID has changed all of that. And so, just resources for kids and families who may have a hard time, who may have lost loved ones to COVID, who are still kind of in the midst of the pandemic, who may have lost their jobs, who may have lost their homes . . . just making sure you have the resources available.
[W]e've seen an awful lot of aggression and violence and activity from our students that has been compounded during the pandemic, and more specialized behavioral or mental health services would be excellent to offer to our students
[W]e had a handful of kids that the parents did bring them in, but there are so many—I mean, a lot of them don't have transportation.
As far as our school-based health centers, they obviously were not operational during that time, which was sad because they do provide a safety net. Even though I think it's fairly easy to access physical healthcare in our community, we still have families who struggle with transportation, and so they are sort of our safety net. So we worried about those kids
[F]or the most part, the higher-needs students, like the diabetics, remained virtual for the school year. Because of their risk to contract COVID, a lot of those parents just kept the student at home
I do think that probably even with our health check-ins or—I think probably a lot of health things were let go and not attended to. And they may have been minor, but if they don't have access to go somewhere without having to pay that full price—plus, things weren't easily available during COVID
[I]nternet access in this county is a huge problem as well. Not everybody has access
We don't have space to allow folks to log on [for virtual mental health appointments] with the frequency they would need to, and we can't always trust that they'll be able to access [the internet] or will log on at home
Theme 2: COVID-19 necessitated changes in health service access and delivery platforms
2.1 School building logistics affected access to school health services
We were not able to get into the school-based health center because schools were actually closed and because schools are closed, we're not allowed into the building, so kind of everything came to a standstill
There's no free space in our schools that's, say, HIPAA-compliant for children to log on to receive telehealth during the school day because everyone's spread out. So much of our available space is being used to social distance that we just don't have the space. And we don't have the manpower for folks to oversee or kind of facilitate a space where students can log on for telehealth. So although that's always an option, [telehealth] is not functional in our schools right now
We weren't able to bring back dental services until either very late in the school year or not at all . . . and lots of factors played in: comfort level, safety, space. Because when they did bring kids back, and they were socially distancing them, and they had to be six feet apart, it basically took all the space in the school, so there was no space for us
We were only really opening the health room to those who were genuinely sick because we were trying to limit potential exposure and spread of disease
2.2 Hybrid and virtual learning affected access to school health services
We were able to screen those students who were face to face, but there were a lot of students who were not screened [for vision and hearing] because they were virtual

Table 1. **Continued**

The school system provides the dental sealants and exam. Because kids were out, I don't think any was provided at all

[I]t made it very difficult for folks to identify students that were in need [of mental health services]. I'll say that during the initial closure, there was such little direct contact between staff and students . . . and there was certainly a drastic drop in identification and referrals for—whether it be school-based or community-based mental health support

Obviously, we didn't have anybody referring kids for tobacco cessation

2.3 Telehealth was frequently adopted or expanded

[Telehealth] made [mental health services] more accessible to our students. So people were not confined to either participating in school-based mental health or having someone drive them to a session. So it allowed some students the ability to access mental health treatment more easily. And it also afforded the opportunity . . . for folks who were extremely anxious to be able to connect with a clinician without having to go out and about

Pretty immediately when schools closed down, telehealth became available to anybody that was receiving school-based mental health and anybody that was referred

[W]e were told, "Hey, we're going to do teledental." And at first, we were all kind of like, "How in the world are we going to do that?" But it works. I mean, on the doctor's schedule, they'll have a column in there, patients that they're seeing in the clinic, and then we've got a teledental column. And we still have those patients that they're doing a call with and diagnosing. And the dentist will ask them, "Hey, if you can pull your mouth open or point to the tooth so I can see it." And that way, like I said, it starts them with the process. Maybe if it's an antibiotic that they need to get on, they're on the antibiotic regimen. So that way, when they finally come into the clinic, we don't have to wait for them to be on an antibiotic for four days before we can start the procedure

The only thing I can say that may be a positive is that telehealth for mental health services may work better for some kids. They may open up a little better. I don't know that they're the majority, but for those kids where it works or for those kids who want more services during school breaks when they can't get to the school, at least it gives us an option to serve them. And our therapists work all summer. But if a kid can't get to the school, it can be a bust. But if they're willing to do telehealth, it does give us an option to serve them and to provide a more adequate service during those school break times.

COVID really opened our eyes to—telehealth has always been out there. It's been out there for many years, but it's not really been utilized enough

When COVID hit, we did switch into telehealth fairly quickly. I mean, we had some work to do with setting up a platform and that kind of thing, but there was still a lot of phone contact with kids who were already being followed by their therapist. So we were able to switch into telehealth, which, of course, isn't the same. Some kids prefer it, but there were a lot who really didn't, or they didn't want to be on screen, which is really interesting to me

[A] challenge [with telehealth] is that it's difficult to, I think, provide consistent care or accurate care. And the one benefit has been it's another avenue for parents to help their children access medical care. But it's just very difficult to determine what's going on over telehealth. You can't really do a well-child check because you really need to physically see the student

[F]or us . . . one of the key challenges, and I think for a lot of public health entities, is how do you upgrade or get a new electronic health record system that offers telehealth services? So that is a huge challenge and was a challenge for us. We've been able to overcome that with some other funding that we were able to receive to upgrade our electronic health record that provides telehealth services. But up until that, my health record system did not provide telehealth. So it wasn't an option. And so that certainly has changed. Now we've been able to actually do telehealth here through our family planning and STI clinics. And so again, just changing your health record system for a public health entity was a challenge

Theme 3: COVID-19 affected school health staff

3.1 Staffing shortages worsened during COVID-19

We cannot get fully staffed. I mean, we were never fully staffed prior to this. It's worse now. Private duty nursing. We just can't find private duty nurses to care for those students that need that. It's just staffing, not having enough staff to give the services that are required or that are mandated

Our program has had 39% of our staff leave last year, so it's been massive filling our vacancies . . . nursing is a really tough field, and there's a big shortage right now

[S]ince the pandemic, we have had an extreme difficulty keeping [mental health] clinicians in our buildings . . . and there just aren't even community supports. We can't connect the students on a waitlist to even outpatient supports because they have waitlists that are months long, whereas our school-based mental health wait list might not be quite as long. So there are children that are in need of mental health support, and we do not have enough providers

We weren't able to bring back dental services until either very late in the school year or not at all . . . and lots of factors played in: comfort level, safety, space . . . And then, also, just our ability to hire and keep staffing

3.2 Staff experienced an increased workload with expanded scope of services

[T]here are so many expectations of the nurses with the COVID contact tracing, follow-up calls, referring to testing, managing every case from day to day . . . I don't think it's realistic to sustain this level of COVID care in the school while also being expected to offer daily routine care

[W]e started with the phone bank that was answering citizens' questions, helping providers get PPE, stuff like that. And then we moved into outbreak team, and some of us did contact tracing as well

[T]he health department, they were really requiring help. And it was nice to be able to say, yeah, I've got 70 nurses who can help you out . . . And there were days where we did 1500 or 1600 [COVID-19] vaccinations

Almost all of the nurses took the contact tracing class from Hopkins . . . [T]he amount of credits, the CEUs our nurses got this year is, like, unbelievable

[School nurses] did a lot of health education during this time. Almost all of them created a virtual health suite where you could go on and click different things, and it would take you to a handwashing video or whatever. And almost all of them had some kind of newsletter that allowed them to speak with their families and students about health topics, not just COVID

[E]very time the state changed their guidance, we had to change and retrain our staff. So we held tons of virtual meetings where we would go over with the staff, "Okay, now here's what you're going to do," . . . So if a child comes in sick and it's coming displaying with these symptoms, you have to do XYZ. And they kept changing what XYZ was and the list of the symptoms

3.3 Staff experienced burnout

School nurses were redeployed for COVID . . . they had to work in not the optimal working conditions. Whenever you're swabbing outside and you have no heat and it's in December . . . it was not an optimal work environment

[W]hat we're finding now is with the quarantine and isolation phone calls that we have to make, we have a lot of pretty angry people at us . . . We're not used to people yelling at us

[Parents] would call with questions [about why] they changed the guidance . . . So communication with parents—and, I mean, they did a really good job with it, but it was still very stressful for them

It's a longer day because the contact tracing has to go into the evening time, and we are salaried employees. So that's a whole'nother issue I'm trying to resolve, because [they're] not getting paid any more money for the amount of work that they're doing

Table 1. **Continued**

Theme 4: Schools became hubs for community outreach during COVID-19
4.1 Schools had an increased role in public health events
[During COVID], I think the drive to health education was really good. I think the drive to be public health kind of advocates was good. And I think our staff, especially our staff who saw us vaccinating, saw us in a whole different light. And we were staffing clinics every day and using our schools to do it, which was really nice being able to use schools because schools are so big and they have great big parking lots. And we were able to use their gyms and their cafeterias and space everybody out and learn how to do a community-based vaccination clinic. And the nurses really took a big role in that
[W]e've been very much the COVID testers, and then, the COVID vaccinators in our counties that we work in alongside of our friends at the health department. And so, again, using the power of schools to communicate and to connect with education has been a real win for us
4.2 Schools served as trusted community sources of health information
[W]hat we have learned as part of the pandemic is that schools are a safe place for families. It's where they are comfortable getting information. It's a good way to provide safe, relevant, culturally competent education. You have resources of communication like calling home, newsletters. And during the pandemic, from a testing and a vaccination perspective, we have found using the school and the school-based health centers as a conduit for all of that has been really successful. So we recognize, and actually neighboring jurisdictions who don't have school-based health centers recognize, that that's kind of a link to community health that's really important to have. And so, while some people knew before the pandemic, this was another kind of COVID lesson, is that using the schools for those functions have been really a successful way of connecting with families and people in the community

hearing screenings. Some participants identified the need for ''catch-up'' services for children who were unable to access services during COVID-19.

> *[W]e have kids who are going to need catchup [vision and hearing] screenings this year. We'll have to do our typical grades plus the next grade to make sure we catch all those kids.*

> *The hard thing is vaccines kind of shut down for a lot of the kids . . . we're probably going to have a lot of catch-up vaccines.*

COVID-19 increased some health needs and exacerbated barriers to care. Participants observed that children's health needs had increased across multiple domains, including dental care, during the pandemic.

> *With COVID . . . I had kids . . . that had not been seen for dental services since 2019, which is heartbreaking because a lot of those kids are kids that when I did see them . . . needed fillings, needed to go for a possible extraction, just needed a dental exam in general.*

Participants also reflected on the causes for increased mental health and social support needs.

> *[We need] resources for kids and families who may have a hard time, who may have lost loved ones to COVID, who are still kind of in the midst of the pandemic, who may have lost their jobs, [or] who may have lost their homes.*

Families with pre-pandemic barriers to care may have been particularly impacted by disruptions in school health services.

> *School-based health centers, they obviously were not operational during that time, which was sad because they do provide a safety net . . . we still have families who struggle with transportation . . . [and] worried about those kids.*

School nurses' ability to manage chronic health conditions may have been disrupted during COVID-19.

> *[Regarding the] management of asthmatic and diabetic care . . . during the school year, often the nurses will manage their treatment plan and educate the families and work with the physician. So that piece was missing.*

COVID-19 Necessitated Changes in Health Services Access and Delivery Platforms

School building logistics affected access to school health programs. Participants shared how school building closures, space restrictions, and COVID-19 safety concerns made it more difficult to identify suitable locations for health service provision.

> *We were not able to get into the school-based health center because schools were actually closed and because schools are closed, we're not allowed into the building, so kind of everything came to a standstill.*

> *[W]hen they did bring kids back, and they were socially distancing . . . it basically took all the space in the school, so there was no space for us.*

Some participants reported having to triage use of their space based on presenting symptoms.

> *We were only really opening the health room to those who were genuinely sick because we were trying to limit potential exposure and spread of disease.*

Space restrictions also complicated the delivery of telehealth in schools.

> *[T]here's no free space in our schools that's, say, HIPAA-compliant for children to log on to receive telehealth during the school day because everyone's spread out.*

Hybrid and virtual learning affected access to school health services. Altered school schedules with both virtual and hybrid learning impacted ability to

provide multiple services, including vision and hearing screenings, school-based dental services, and mental health services. Participants experienced difficulty serving students who were learning remotely.

We were able to screen those students who were face to face, but there were a lot of students who were not screened [for vision and hearing] because they were virtual.

The school system provides the dental sealants and exam. Because kids were out, I don't think any was provided at all.

Remote learning complicated identification of children needing mental health services.

[T]here was such little direct contact between staff and students . . . there was certainly a drastic drop in identification and referrals for . . . mental health support.

Telehealth was frequently adopted or expanded. Participants described how virtual platforms allowed for continued service provision during school closures, even for enhanced school health services.

[W]e were told, ''Hey, we're going to do teledental.'' And at first, we were all kind of like, ''How in the world are we going to do that?'' But it works.

Utilization of telehealth for provision of mental health services appeared to offer specific benefits. Specifically, some children were more comfortable in the virtual setting and could receive continuous services, even when schools were closed.

[T]elehealth for mental health services may work better for some kids. They may open up a little better. [Telehealth is also helpful] for those kids who want more services during school breaks when they can't get to the school.

There were telehealth challenges, such as conducting well-child exams virtually, or having the requisite technology infrastructure.

It's just very difficult to determine what's going on over telehealth. You can't really do a well-child check because you really need to physically see the student.

[F]or us . . . one of the key challenges, and I think for a lot of public health entities, is how do you upgrade or get a new electronic health record system that offers telehealth services?

Reliable internet access was a common barrier to telehealth.

Internet access in this county is a huge problem as well. Not everybody has access.

In some cases, space for internet access was also difficult for schools.

We don't have space to allow folks to log on [for telehealth appointments] with the frequency they would need to.

COVID-19 Affected School Health Staff

Staffing shortages worsened during COVID-19. While nursing and school health staffing shortages pre-dated the pandemic, they worsened during the pandemic. One participant stated:

[W]e were never fully staffed prior to this. It's worse now . . . We just can't find . . . enough staff to give the services that are required or that are mandated.

While staffing shortages were problematic for required school health services, they also impacted enhanced school health services.

[S]ince the pandemic, we have had an extreme difficulty keeping [mental health] clinicians . . . and there just aren't even community supports . . . there are children that are in need of mental health support, and we do not have enough providers.

Staff experienced an increased and changing workload. Participants discussed how the roles of school health staff expanded to include many COVID-related duties and the pressure they often felt to complete this expanded scope of work. One respondent noted:

[T]here are so many expectations of the nurses with the COVID contact tracing, follow-up calls, referring to testing, managing every case from day to day . . . I don't think it's realistic to sustain this level of COVID care in the school while also being expected to offer daily routine care.

Especially in the early COVID-19 response, some school health staff were redeployed outside schools to support COVID-19 mitigation efforts. This redeployment encompassed a range of activities, varying from health education, to contact tracing, to vaccine administration.

[W]e started with the phone bank that was answering citizens' questions, helping providers get PPE, stuff like that. And then we moved into outbreak team, and some of us did contact tracing as well.

There were days where we did 1500 or 1600 [COVID-19] vaccinations.

In response to changing responsibilities, many school health staff were required to complete additional training.

Almost all of the nurses took the contact tracing class from Hopkins . . . [T]he amount of credits, the CEUs our nurses got this year is, like, unbelievable.

Nurses also had an expanded role in health education during COVID-19.

[School nurses] did a lot of health education during this time. Almost all of them created a virtual health suite . . . And almost all of them had some kind of newsletter that allowed them to speak with their families and students about health topics, not just COVID.

Staff experienced burnout. With the increased workload, participants described the physical and emotional demands of their jobs. Some staff worked in difficult conditions during redeployment posts.

School nurses were redeployed for COVID . . . they had to work in not the optimal working conditions. Whenever you're swabbing outside and you have no heat and it's in December . . . it was not an optimal work environment.

School health roles became more stressful, particularly in communication responsibilities.

[W] hat we're finding now is with the quarantine and isolation phone calls that we have to make, we have a lot of pretty angry people at us . . . We're not used to people yelling at us.

[Parents] would call with questions [about why] they changed the guidance . . . So communication with parents—and, I mean, they did a really good job with it, but it was still very stressful for them.

Increased work demands were not associated with commensurate financial compensation.

It's a longer day because the contact tracing has to go into the evening time, and we are salaried employees. So that's a whole'nother issue I'm trying to resolve, because [they're] not getting paid any more money for the amount of work that they're doing.

Schools Became Hubs for Community Outreach During COVID-19

Schools had an increased role in public health events. Participants discussed the growing role of schools in public health and health education activities.

[During COVID], I think the drive to health education was really good. I think the drive to be public health kind of advocates was good.

[W]e've been very much the COVID testers, and then, the COVID vaccinators in our counties that we work in alongside of our friends at the health department. And so, again, using the power of schools to communicate and to connect with education has been a real win for us.

One participant described how schools served as convenient sites for risk mitigation efforts, including large-scale vaccination events.

[W]e were staffing clinics every day and using our schools to do it, which was really nice being able to use schools because schools are so big and they have great big parking lots. And we were able to use their gyms and their cafeterias and space everybody out and learn how to do a community-based vaccination clinic.

Schools served as trusted community sources of health information. One participant attributed the success of schools' health outreach to their community's trust in schools.

[W]hat we have learned as part of the pandemic is that schools are a safe place for families. It's where they are comfortable getting information. It's a good way to provide safe, relevant, culturally competent education. You have resources of communication like calling home, newsletters. And during the pandemic, from a testing and a vaccination perspective, we have found using the school and the school-based health centers as a conduit for all of that has been really successful. So we recognize, and actually neighboring jurisdictions who don't have school-based health centers recognize, that that's kind of a link to community health that's really important to have. And so, while some people knew before the pandemic, this was another kind of COVID lesson, is that using the schools for those functions have been really a successful way of connecting with families and people in the community.

DISCUSSION

This study aimed to describe perspectives on school health service delivery during COVID-19 through qualitative interviews with Maryland school health representatives. Participants discussed the broad impacts of COVID-19 on school health programs in Maryland. As compared to the pre-pandemic era of school health program delivery, COVID-19 impacted children's health needs, school health service delivery, and the entities responsible for service provision, prompting changes in the roles of school health staff and schools themselves.

Participants described an increased need for health services across multiple domains, including dental, mental health, and chronic condition management. Nationally, dental health care was frequently restricted during COVID-19 due to aerosolization risks.[16] A 2021 survey of Virginia schools reported that dental screening and dental services experienced the largest declines among a range of school health services during COVID-19.[5] Together with Maryland participants' reports of dental service disruption, it appears that COVID-19 prompted a multi-state decrease in access to school-based dental care.

Participants reported a concurrent increase in demand for mental health services and decrease in available school-based providers. This pattern was similarly described during a National Listening Session

hosted by the School-Based Health Alliance; SBHC representatives across the United States described students' increased anxiety, grief, and loneliness during COVID-19, as well as a lack of available mental health providers.[17] These school-based reports add further context to the well-documented psychological effects of COVID-19 for children,[18] suggesting that disruptions in school-based avenues for service connection may have delayed or prevented care for growing mental health concerns.

For children with chronic health conditions, such as diabetes or asthma, our results suggested that fewer school-based health management services were available during COVID-19. The pandemic also appeared to delay preventative well-child visits, immunizations, and health screenings. Available literature suggests that these concerns are shared across national school health programs. A national survey of SBHC operations showed that well-child visits were frequently disrupted during 2020, especially when school buildings closed.[2] Regarding vaccination provision, a study of Virginia elementary schools noted a significant decrease in delivery of routine childhood immunizations during COVID-19.[5] Mixed data exists regarding vision and hearing screenings during COVID-19. Within Virginia elementary schools, screening services appeared to continue at high rates during COVID-19, with no change in vision screening operations and only a 2.5% decline in hearing screenings by spring of 2021.[5] A national survey of vision screening mandates, however, suggests that over half of states either waived or modified their regulations.[19,20] Overall, many preventative health services were disrupted during COVID-19, with variation in the degree of disruption due to state mandates, availability of in-person instruction, and individual school resources.

Participants discussed how COVID-19 may have disproportionately impacted vulnerable children who most rely on school health services and worsened pre-existing disparities. Additional support and resources will be needed to address children's unmet health needs following the pandemic, especially for students with pre-existing barriers to care.

For some places, telehealth represented a key change in the delivery of school health services during COVID-19. Nationally, telehealth was widely implemented in both SBHC and non-SBHC school health services, especially for mental health.[17,21] In Maryland, telehealth and virtual communications enabled many school districts to continue to offer school health services during school building closures and hybrid instruction. Despite this utility, participants discussed challenges and limitations in telehealth implementation. Key difficulties included (1) limitations of the telehealth platform for conducting physical exams, (2) inadequate dedicated space for children to confidentially access telehealth during school, (3) limited internet or device access at home, and (4) lack of funding for telehealth programming. These obstacles may have lowered the effectiveness of telehealth service delivery at some schools and for vulnerable student populations. Addressing these barriers to implementation and access may increase the impact of future school-based telehealth services.

COVID-19 led to an expansion of many school health staff members' scope of work to include contact tracing, increased health education communications, and COVID-19 testing and vaccination. These added responsibilities were associated with increased physical and emotional demands of work and increased shortages of Maryland school health staff. Similarly, the National Association of School Nurses and the National Education Association noted that ''retirements and resignations tied to burnout'' and a ''heavy COVID workload'' contributed to national workforce shortages.[22,23] Despite these increased responsibilities, financial compensation for school health staff was not reported to increase. National average salaries for school nurses ranged from $63,944 to $66,973 in 2010 and 2013[24] and $60,470 to $62,080 in 2022,[25] with wide variation by state. Given school nurses' increased workload during COVID-19, the issue of compensation is particularly urgent to address. School administrators and policymakers may work to alleviate the stressors on school health staff by ensuring compensation commensurate with skill level and scope of work, providing mental health support, and promoting efforts to hire additional staff, when needed, to meet increased work responsibilities.

COVID-19 impacted the role of schools within local communities. Traditionally, school health has focused on providing in-school pediatric services.[26] During COVID-19, however, Maryland schools appeared to expand their roles as public health actors and communicators. In a politically and socially divisive time, schools may represent particularly effective sources of services and information for the public. A study by the Pew Research Foundation showed that United States citizens view schools as particularly trusted organizations, with 80% of people surveyed expressing confidence that school leaders would ''act in the best interests of the public.''[27] Looking forward, the utility of schools in community health outreach and communication may extend beyond the pandemic. With continued support of school health efforts, partnerships with SBHCs or federally qualified health centers may build the capacity of schools to respond to health needs of students, families, and greater communities.

Limitations

This study has several limitations. Generalizability is limited, as participation in this qualitative study

was limited to available school health partners within 15 Maryland school districts. The recruitment process may have resulted in selection bias, as school health offices that were more active in 2021 and had greater resources may have been more likely to respond to study outreach. As participants were asked about school health services across a range of time periods, interviews may have resulted in recall bias. Given the qualitative design, this study was unable to quantify the effects of COVID-19 on school health services or examine differential impact by service type. As interviews were conducted between July and December of 2021, these findings represent only the time periods before and during COVID-19 Alpha and Delta variant circulation. During subsequent stages of the COVID-19 pandemic, respondents may have provided different information based on changing needs and resource availability.

IMPLICATIONS FOR SCHOOL HEALTH

This qualitative study of Maryland school health services has several implications for policymakers, health departments, and school administrators. First, these findings contribute to the growing evidence about school health service disruptions during COVID-19 and emerging health needs, especially related to mental health, dental health, and preventative care services. As observed in Maryland and nationally,[6,12,28] telehealth was frequently implemented as a strategy to increase students' access to services. Some school health programs, however, experienced barriers to telehealth implementation and student utilization.[29] With a return to in-person learning, there may be benefits of continued telehealth programs, especially for certain service types (eg, mental health, sick visits) or to increase parent engagement. In the wake of COVID-19, addressing student mental health needs represents a persistent challenge for some school health programs, especially in combination with staffing shortages.[30] Additional external partnerships, school-based interventions, and funding resources will be necessary to support school programs in addressing ongoing mental health and behavioral health needs of students. In addition, education and public health leadership should recognize the impact of COVID-19 on school health staff. Given the increase in school health staff's workplace responsibilities, stress, and burnout,[31] providing additional resources and compensation for school health staff should be a priority in the era of COVID-19 recovery. Finally, schools emerged as key public health actors during COVID-19, particularly in hosting vaccination events and engaging in health communication. Future community health initiatives may consider leveraging schools to serve in health and education roles.

Conclusions

Maryland school health staff report that COVID-19 affected multiple domains of school health programs. As school health programs, funding organizations, and health departments consider priorities in the COVID-19 recovery period, particular emphasis should be placed on school health services most impacted during the pandemic and support for school health staff. Further research is needed to understand the evolution of children's needs as communities continue to recover from the pandemic.

Human Subjects Approval Statement

This study was reviewed and approved by the Johns Hopkins University School of Medicine Institutional Review Board prior to implementation and maintained approval through study completion.

Conflict of Interest. The authors have no potential conflicts of interest to report.

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