Putting Out Fires: The Experiences of Wisconsin Rural Health Officers During the COVID-19 Pandemic

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ABSTRACT

Introduction: The COVID-19 pandemic created significant challenges for public health systems, which were exacerbated in rural settings due to chronic issues of resource allocation, underfunding, and politicization. Differences in attitudes about governmental roles have resulted in differences in acceptance of public health interventions, such as masking mandates and COVID-19 vaccinations. This study explored contemporaneously the pandemic's impact through the lens of Wisconsin rural health officers (RHOs).

Methods: We conducted semistructured key informant interviews with RHOs in 13 rural Wisconsin counties to explore the breadth and depth of their lived experiences during the COVID-19 pandemic. We applied directed content analysis to interview transcripts.

Results: RHOs identified numerous challenges faced during the pandemic, including lack of adequate resources and workforce capacity, inconsistent communication from state health officials, lack of support from their communities and local political leaders, misinformation and disinformation, strained personal relationships, and threats of physical violence. These challenges caused mental anguish and burnout among health officers and their colleagues. RHOs also identified successes, including strengthened partnerships with local health care organizations, school administrators, and businesses.

Conclusions: Health officers in rural Wisconsin faced significant challenges throughout the COVID-19 pandemic that impeded their ability to address COVID-19 and other health needs in their communities. Allocating resources such as increased funding for public health infrastructure, ensuring protections for public health employees, and supporting improved communication channels between state and local health departments could help RHOs mitigate effects of COVID-19 and successfully address the health of rural communities.

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INTRODUCTION

The COVID-19 pandemic has claimed the lives of more than 1.1 million people in the United States (US) since 2020[1] and highlighted myriad structural shortcomings of US public health and health care systems. While the COVID-19 virus has spread to rural and urban communities alike, rural communities experience disparate outcomes related to morbidity and mortality.[2] For example, as of October 2021, the cumulative mortality rate of COVID-19 in urban counties was 201 per 100 000 compared to 247 per 100 000 in rural counties, with the highest mortality rates in rural farming communities.[3]

In Wisconsin, where agriculture is a primary industry, nearly 1.5 million people live in a rural county.[4] As of January 2023, there were more than 15 900 deaths and 1.97 million COVID cases reported in Wisconsin.[5] Wisconsin's nonmetropolitan counties were disproportionately burdened with an additional 82 deaths per 100 000 compared to metropolitan counties. Similarly, counties designated as rural by the National Center for Health Statistics classification had an additional 98 deaths per 100 000 than large metro areas. In addition to the direct health consequences of the virus, Wisconsin has faced numerous challenges apparent throughout the US, including strains on the local economy, overburdened public health infrastructure, and increasing political divisiveness[6-8]—hardships that have disproportionately affected rural communities.[9]

People living in rural communities experience a range of persistent disparities in sociostructural determinants of health and

health care. Compared to those living in nonrural communities, populations residing in the rural US have higher poverty rates, poorer insurance coverage, fewer physicians, and limited access to public transportation and broadband internet.[10] In 2019, all 10 of the major causes of mortality were highest in rural areas, and the death rate was 20% higher than that of urban areas.[11] These factors made rural communities especially vulnerable to the challenges brought on by the pandemic.[2,9,12]

Health officers have a unique perspective that can enhance our understanding of this unprecedented public health crisis. Rural health departments are more likely to be underfunded and understaffed than health departments in urban areas.[13] Due to staff and funding constraints, rural health officers (RHOs) often assume multiple rules, such as local nurse, vaccine and testing coordinator, fiscal agent, and customer service representative. Existing evidence highlights the disparate impact of COVID-19 on rural areas,[11-13] but no studies to our knowledge have examined the unique experiences of and sought insight of RHOs during the pandemic. Such information could help inform how best to allocate resources to mitigate the effects of this and future pandemics.

The purpose of this study was to document the experiences of RHOs working on the frontline during the COVID-19 pandemic. RHOs have firsthand knowledge that is critical to understanding the successes and challenges unique to rural Wisconsin, as well as those commonly experienced across the country.

METHODS

Sampling

This study was undertaken through a partnership between the University of Wisconsin–Madison Department of Family Medicine and Community Health, the Wisconsin Office of Rural Health, and the University of Wisconsin–La Crosse Graduate Department of Public Health and Community Health Education. The UW-Madison Health Sciences Institutional Review Board categorized this work as quality improvement and deemed it exempt. To recruit participants, the lead author (SC) sent an email invitation to each health officer in all 32 Wisconsin counties that are designated as rural as defined by the Wisconsin Office of Rural Health (WORH).[14] The recruitment email included the purpose of the study, expectations of participants, and the semistructured interview guide. Participants were eligible if they had served in the health officer role in a rural county for at least 6 months.

Data Collection

The study team created an interview guide comprising 13 questions to explore RHOs' successes, challenges, and personal experiences during the COVID-19 pandemic (Box). SC obtained oral consent and conducted interviews via Zoom.

Data Analysis

Audio files were transcribed verbatim using Otter.ai software (Otter.ai, Inc,) and checked for accuracy by the interviewer. Clean transcripts were uploaded into NVivo (NVivo, Release 1.0; QSR International). Under the guidance of a researcher with expertise in mixed methods (SH), 2 coders (SC, HB) applied directed content analysis to transcripts by developing codes reflective of interview transcripts and RHOs' own words.[15] Together, the 3 analysts reviewed transcripts and developed a start list of deductive codes reflective of common successes, challenges, and personal experiences RHOs expressed. In an iterative process that included discussing the start list among the full study team and testing the start list across a subset of interviews, the team developed a near-final codebook for review across the full study team. SC and HB applied the final codebook to all transcripts. To promote coding reliability, coders both coded a subset of 4 (31%) of interviews. Discrepancies were resolved at weekly analyst check-in meetings. All authors participated in discussions about the analytic processes and emerging findings, thus ensuring continuing comprehensive review and commentary. The authors collaboratively selected illustrative quotes for inclusion in the manuscript and ensured that quotes originated from the range of participants. Due to the small sample size, the divisiveness of COVID-19 public health measures, the safety of health officers, and the potential for participants to be identified, identification numbers are not included in the manuscript.

Box. Interview Guide

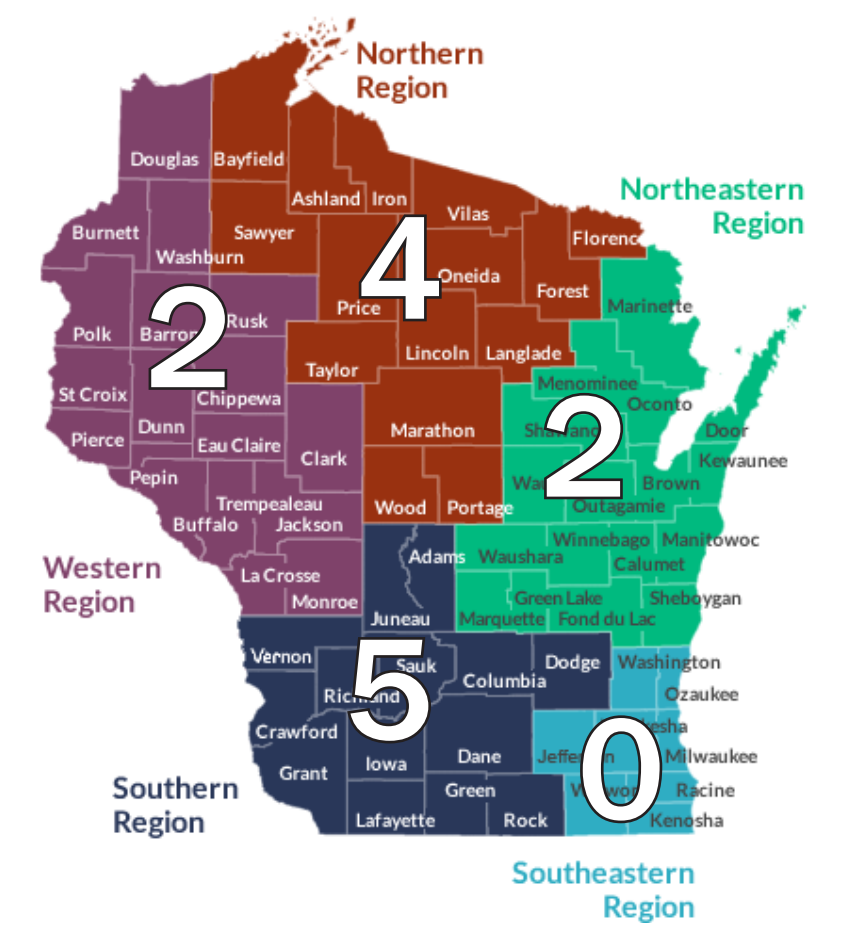
1. How would you describe your role as a health officer in a rural setting?
2. Overall, what was the impact of the COVID-19 pandemic on your community?
3. Tell me about your experiences as a rural health officer during the COVID-19 pandemic (successes? challenges?)
4. How did your community respond to COVID-19 mitigation strategies?
5. Were there any policies (local, state, and/or federal) that enhanced your role during the pandemic?
6. Any policies (local, state, and/or federal) that hindered your role?
7. Thinking over the past 2.5 years, what are some of the best things about your position?
8. What are some of the worst?
9. What are your key lessons learned over the past 2.5 years?
10. What do you think should be the next steps for greater preparation regarding disease prevention and control in the future?
11. Are there any policies that you suggest could support your work in the future?
12. Have you been involved in any innovative community-based programs I should note?
13. Is there anything else that is of importance that we did not cover today?

RESULTS

During May and June 2022, 13 RHOs (41% of those invited) participated in semistructured interviews that lasted 30 to 60 minutes. At least 1 county from each of the Wisconsin Public Health Regions was represented (Figure), with the exception of the Southeastern Region, as there are no counties in that region designated as rural by WORH.[14] We grouped emergent themes

into 10 overarching categories: (1) professional partnerships, (2) public health workforce and capacity, (3) personal impact on RHOs, (4) politicization of COVID-19, (5) personal relationships, (6) misinformation and disinformation, (7) lack of capacity for other programs, (8) inconsistent communication, (9) unique rural considerations, (10) key insights and policy recommendations.

Figure. Representation of Rural Health Officer Participation Across Wisconsin Public Health Regions, Including the Number of Individual Health Officers From Each Region That Participated in Qualitative Interviews



No counties in the Southeastern Region are designated rural by the Wisconsin Office of Rural Health (Source: Wisconsin Department of Health Services[16])

Professional Partnerships

Many RHOs emphasized the strengthened partnerships they developed with other organizations and stakeholders in their communities as one of the few positive outcomes of the pandemic. Although many of these partnerships existed before the pandemic, RHOs said the pandemic provided opportunities to work more closely and align priorities—an outcome they suggested would positively influence future collaborations. They also described new partnerships that emerged among stakeholders who historically may not have focused on public health efforts and said this cooperation was imperative for successfully addressing COVID in their communities, as illustrated by these comments:

> *"The positive piece of COVID is within 4 months, I probably made the connections in the community that would have taken me 4 years to have developed. So there is positive that has come out. I work very closely with the schools. I meet with all the superintendents. We'll continue to meet with all the superintendents, they like that that's a connection piece. So we don't just have to talk about COVID. We talk about all other things that might be impacting them."*

> *"Our long-term-care facilities, we've established, we know each other's first names. When they have a turnover, I know that. Our schools, I have all the superintendents' cell phones, they have mine, we talk regularly. So it has strengthened a lot of our relationships, especially with entities and business too. … I think any time that you know people personally, now we can call each other when there's a situation and just talk through things. I think that's going to help in the future for everything related to public health."*

Public Health Workforce and Capacity

RHOs recalled working countless hours, week after week, month after month throughout the pandemic. Many noted that overtime was not compensated adequately, contributing to high turnover in their offices. RHOs also almost unanimously described insufficient workforce capacity related to staffing, basic financial resources, or both. Some said these factors were unique to rural areas and exacerbated by the pandemic, where staff sizes were already small and teams were working within thin margins when the pandemic began. Several RHOs explained that even prior to the pandemic, a single RHO often assumed multiple roles. When the pandemic emerged, they said they had little choice but to redirect their efforts nearly entirely to COVID-19 mitigation. Consequently, they said childhood immunizations and programs such as the Women, Infants, and Children supplemental nutrition program and childhood lead screening programs were necessarily neglected. Their comments included:

> *"We only have 6 staff here. So I am not only the supervisor, but a lot of time, I'm also a nurse. I also did a lot of the actual work as far as COVID went. I would take calls on questions, do testing, vaccines, in addition to kind of trying to work with community partners to set things up, like testing and vaccines, and just over-*

all manage the response. [I am] the fiscal agent too, just making sure our grants and everything are covering our hours."

"We got grants, so we had plenty of money, but finding any workers… for shots and testing…was hard because they were already overwhelmed at their job. So it's kind of the first time in history that I remember that we had more money than people. It's usually the other way around."

Personal Impact on Rural Health Officers

RHOs said that the pandemic and its sequelae took a significant toll on their mental health. Interviewees detailed mental anguish suffered while trying to keep their communities safe. One RHO observed that staff members who answered phone calls from community members and read the comments on their social media pages seemed to experience the most burnout. Another recalled leaving a county board meeting and not knowing whether they were going to return to work the next day because of how defeated they felt. They said:

"What happens when you're burned out and you are under high stress for 2 years is that it affects your brain. It affects your memory, …your ability to handle stress, …your efficiency. And I think that is what we're seeing, especially with the people that have been in COVID nonstop. It's difficult to remember, it's difficult to be motivated. My staff that didn't work in COVID, as much, you know, they were pulled in when we had huge surges, or they were pulled in when we were doing mass vaccination clinics. But it wasn't nonstop. They are not feeling the same. They don't have the same burnout. Myself. I am burned out."

"I had staff who had to come every single day. And when you're making dozens and dozens and dozens of calls related to contact tracing, at some point during that day, you're going to have an encounter with somebody who is verbally abusive, who is literally screaming at you, because you're the devil, and you're imposing things on them. I mean, it's verbally abusive. And so when you deal with that every single day, for months and months on end… My kids had to go to school. And, you know, they faced a lot of comments and backlash from their friends."

Politicization of COVID-19

Many of RHOs' efforts were further complicated by lack of support from their local county boards, law enforcement, and other community members. RHOs noted that these challenges were driven largely by politics. They described having to make difficult decisions about heeding guidance from state and national public health officials and responding to resistance from community members that ranged from simply refusing to follow masking orders to actively threatening RHOs with physical violence and death. Their comments included:

"My judge in our area didn't like all the stuff that we were doing. So he took on with the Tavern League to sue me in order to get to the state. So I tried to change an ordinance and I had 500 people showing up at my HHS (Health and Human Services) meeting. It was, you know, there were times when I wasn't feeling so safe."

"I wish we had an enforceable communicable disease ordinance…It would have been difficult, I will admit it, and part of not having an ordinance—it took the decision of whether or not to put a masking order in place out of my hands. So in a way, it was one less stress, because I know if I would have put a masking order in place, I would have been crucified."

"We're gonna have years of fallout from this with the polarization—not just public health, the country."

Personal Relationships

Most RHOs said that managing this divisiveness did not stop when they left their office for the day. They described having endured scrutiny from family and friends, in person and online. They said many of their personal relationships were damaged due to deeply held beliefs about the COVID-19 pandemic, as exemplified by these RHOs:

"Think about the personal implication. You go home and you get beat up on Facebook, and you're, again, this terrible person on Facebook. Or you try to have a conversation with extended family members. And, you know, these things get very personal and relationships get harmed, and they dissolve because of differing opinions and just not understanding. So those things have all contributed to the mental anguish."

"My little brother, for a while, actually called me the COVID Nazi. So as much as some of those relationships, you know, are really cool and really good, there is the complete opposite, where some relationships basically no longer exist. Because I'm just trying to do my job and people take it personally. Yeah, my little brother doesn't talk to me anymore."

Misinformation and Disinformation

Many RHOs said rampant misinformation and disinformation spreading in their communities—especially early in the pandemic—challenged their work to address COVID-19. They explained that lack of accurate public education, combined with rapidly changing guidance from state and national officials, led some community members to believe the public health department was deceiving them. These RHOs said:

"I think one [challenge] was just so much misinformation or disinformation out there. And some of that stemmed from, it's a pandemic, it's changing. We didn't know a lot. And then as we learned things, people took that as we were lying to them. Things would change so often, and that was hard to combat."

"You can put out as much information as you want. People don't read. They don't read good sources, they don't watch the news. …You can have a personal conversation and, you know, you might sway them to your side, but you just don't have enough time to do 45000 personal conversations."

Lack of Capacity for Other Programs

Because very few employees generally staff rural health departments, RHOs explained that nearly every person in their department had to work on pandemic response. All other public health programming was scaled back significantly or even stopped due to lack of capacity, as described by these RHOs:

> *"All other programming went on the back burner. Like with WIC, we're trying to get our families back in here. I know they can still do it virtually. But just even the first time we have a client maybe meet us, so they can form a bond, form some trust--trust us enough to be a resource. We are going to start doing more home visits…One of the biggest gaps we had is not being able to reach out to our community and to our children."*

> *"When the pandemic hit, everything else just kind of flew to the wayside, right. We had to focus on just communicable disease and trying to prevent that spread."*

Inconsistent Communication

RHOs explained that constantly evolving information and lack of concrete guidance from the state and national levels made it increasingly difficult for RHOs. Some recalled instances in which they received a phone call from a community member about a new vaccine or masking policy the governor announced on TV about which RHOs themselves had not received prior notice. They said they had to react quickly to implement new guidance, and their reputations were often harmed in the process. For example:

> *"That information flow, even bad information flow, whatever kind of information flow can happen so quickly. And I would have people that would call me up the minute the governor said something that we were not forewarned on, and they would call me up and say, 'Oh, okay, it says we can do this now. So it's happening tomorrow?' And I'd be like, 'I don't even know about it,' which always made us look stupid, much less."*

> *"The complexity of implementing any decision or guidance always had lots of lots of gray; it seemed like even with contact tracing, there was so much gray on quarantine periods and definitions. And we would ask for more clarity from [Department of Health Services], and it wouldn't come timely. So we had to just make a decision. And those things hindered operations a lot and created a lot of frustration. As I said, because we were forced to make a decision, we had to make a decision, we couldn't wait 3 days for [Department of Health Services] to weigh in. We had to give guidance."*

Unique Rural Considerations

RHOs also described challenges they perceived as unique to rural Wisconsin. For example, they recalled that the first COVID-19 cases were documented in urban counties Wisconsin and led to statewide masking and stay-at-home orders, despite no documented cases in the northern, rural counties. This led to mitigation strategy fatigue by the time COVID-19 was detected in rural areas. Furthermore, they said that rural areas are often more conservative and have significantly fewer staff and financial resources than urban health departments. One RHO said:

> *"I sometimes, looking back, question if the stay-at-home order actually did hinder us in the long run, because we cracked down so fast. And like in our little county, there wasn't any COVID here and probably wasn't any COVID here for a long time. So I think people got tired of it."*

Key Insights and Policy Recommendations

RHOs shared key insights about their experiences working on the frontlines of this unprecedented health crisis that they perceived would benefit other health officers, such as the need for RHOs to practice self-care to mitigate the burnout they could experience serving in this role and a need to direct resources to strengthen public health infrastructure in rural Wisconsin specifically. These RHOs said:

> *"Self-care. I think that is the biggest lesson that all of us learned is the burnout. It was bad. And I think the biggest lesson is self-care and your family comes first. You know, you can be replaced as an employee, but you need to take care of yourself, and you need to take care of your family."*

> *"It's super important to acknowledge how mentally exhausting it is and physically exhausting. And so I just think it's really important that we don't lose sight of that, because we've got a lot of work to do in public health infrastructure and building a public health infrastructure that's actually adequate. Because it's not—especially in the state of Wisconsin."*

RHOs collectively described several policy recommendations they perceived would improve the ability of RHOs and public health departments in general to respond to crises like pandemics and to address community health more broadly. For example, they suggested that establishing communication protocols between state and local health departments could facilitate more efficient implementation of guidelines and consequently may improve community members' perceptions of local public health entities. Some RHOs said that having the autonomy to enact local public health ordinances, such as mask mandates, would enable them to respond to their community's specific needs. They also emphasized a need to extend protections of health care workers from harassment to public health workers and to support a national health care system so community members could access care, regardless of their geographic location. These RHOs explained:

> *"The governor did come out with protection for health care workers, but it doesn't protect us. Public health was left out. So if you're a nurse, you're protected. But say if I wasn't a nurse, as a health officer, the law that protects health care workers from abuse or harassment wouldn't necessarily apply to me."*

> *"When I think about greater preparation regarding commu-*

nicable disease or pandemics, or whatever next new emerging infection, or really addressing any health issue in a community, it just cannot be overstated how much work needs to be done on the public health infrastructure, and I'm talking people. You cannot have a health department at a local level with such a small staff…There's no opportunity for true engagement in your community, because you are literally just putting out fires."

DISCUSSION

Across key informant interviews with 13 RHOs in Wisconsin, consistent themes emerged on experiences though the COVID-19 pandemic. The unique circumstances imposed by rurality–limited resources and capacity, need for multitasking, and differential time scales for illness burden–resulted in difficult, challenging, and protracted public health responses. The pandemic was devastating in terms of the emotional toll on RHOs and their staff and further resulted in significant effects on their mental health, strain on personal and professional relationships, increased workforce disruptions, and displaced duties. Some notable benefits were realized, however, in terms of new and strengthened partnerships and collaborative efforts. Important considerations pertaining to enhanced resources, workforce development, preparedness, protection, and embargoing of new communication arose through these interviews.

This study was the first to our knowledge to explore the experiences of RHOs during the COVID-19 pandemic using a rigorous qualitative methodology that resulted in theoretical saturation, the point at which no new data emerged. Prior to, during, and beyond the COVID-19 pandemic, health officers in rural Wisconsin have been positioned uniquely as members of their communities tasked with implementing lifesaving, yet often controversial, public health mitigation strategies in the midst of constantly evolving information. For this reason, these RHOs were able to provide an invaluable perspective on this unprecedented public health crisis. While their specific experiences varied from county to county, the overarching themes of being overworked, underresourced, and frequently undermined were consistent throughout each interview.

A recurring theme of a strained workforce was central throughout interviews. Combined effects of individuals leaving the workforce,[17] difficulty filling positions,[18] and inability to tend to other core public health measures have been noted elsewhere. This constant strain has been referred to as the "shadow epidemic" of mental health effects in public health workers[19] and was compounded in rural areas by pandemic-related staff attrition and limited budgets.

Our interviewees stressed the mental health consequences and burnout associated with caring for communities while being attacked for their efforts. Isolation, a common factor in rural health offices, has been related to anxiety, depression, posttraumatic stress disorder, and suicidal ideation in a recent survey of state and local public health workers.[20] Moreover, the severity of poor mental health has been associated with long work hours and amount of time committed to COVID-19 response efforts.[21] Especially in rural areas, isolation—from community and, sometimes, from family members—was often a consequence of the high politicization of COVID-19 mitigation efforts, such as masking and vaccination.[22] Our interviewees noted lack of support from elected officials and feeling that they were caught between two opposing forces. Accordingly, sentiments about the lack of statutory protections for public health workers were recorded–especially as workplace violence became more pronounced through the pandemic.[23]

The rapid spread of misinformation and disinformation,[24] noted by our interviewees, was amplified by the constantly shifting target of a newly emerged pathogen. Because federal and state public health recommendations evolved in response to emerging evidence, negativity expanded in social media and elsewhere, resulting in altered public perception.[25] Our interviewees also noted that new information or recommendations often were released at the state level prior to notification of county health officers, causing communication delays, inconsistency, public hesitancy, and/or suspicion. Similarly, others have noted that communication strategies need to consider wording, timing, and channel.[25] Finally, significant differences have been reported in disruptions of daily living among rural and urban areas in the upper Midwest.[26] Our respondents noted that differences in the timing of COVID-19 burden between Wisconsin urban centers and rural communities often resulted in a mismatch between statewide public health guidance and local conditions.

This study had several important limitations. First, it captured the impressions of a limited number of individuals in rural counties of 1 upper midwestern state. Although individuals came from multiple counties across all state public health regions, the generalizability may be constrained. Second, biases could be imposed by the study sampling frame. Participation was limited to those who were willing to be interviewed and who had been in their position for at least 6 months; we were not able to capture the impressions of the many health officers who left their positions. Further, this study captured impressions during a single time period across a very dynamic pandemic. Responses in June 2022 reflect only the sentiments of participants at that time. Lastly, the interviews were conducted virtually, a platform that could allow the researcher to miss out on some nonverbal cues.

This study also had numerous strengths. First, we used a robust methodology to capture and evaluate RHOs' qualitative responses. Moreover, the respondents tended to provide extensive content during interviews. We also attained a wide geographical sampling across Wisconsin with significant diversity in the counties and populations served. Our purposive sample consisted of just under half of the health officers in rural Wisconsin. The timing of these interviews, in Summer 2022, occurred as health officers were still

managing issues related to the pandemic, and the use of open-ended questions allowed for unconstrained responses and latitude. Additionally, the interviewer was a medical student with a Master of Public Health degree. Similarities in training and perspectives and lack of power differential supported open and honest interactions. Finally, we noted a very high degree of consistency among interviewees. The reported effects of the pandemic and other challenges in rural settings derived from this research could be more fully explored and potentially mitigated through prioritized efforts in rural areas, to include support from the newly established Centers for Disease Control and Prevention Office of Rural Health.[27]

CONCLUSIONS

The first 30 months of the COVID-19 pandemic exacted an enormous toll on RHOs in Wisconsin. Constraints unique to rural settings—inadequate finances and resources, limited personnel, routine multitasking, influences from political leanings, misinformation and disinformation, and indirect communication from state and federal sources—and differences in epidemiological features of this virus in concentrated versus dispersed populations, affected mental health and led to extensive burnout, altered personal relationships, and disruption of core public health duties. Through these trials, however, health offices created new and collaborative partnerships and—through their words and stories—provide key recommendations for enhanced communication, opportunities for greater coordinated collaboration, improved infrastructure, preparation, and statutory protections for public health workers.

Financial disclosures: None declared.

Funding/support: This work received support from the University of Wisconsin (UW) School of Medicine and Public Health Department of Family Medicine and Community Health Summer Research and Clinical Assistantship.

Acknowledgements: The authors would like to thank the rural health officers who participated in this study, as well as the UW School of Medicine and Public Health Department of Family Medicine and Community Health, UW-La Crosse Department of Public Health and Community Health Education, and the Wisconsin Office of Rural Health.

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