BMC Primary Care

RESEARCH Open Access

Reflections of rural primary care physicians on the impact of the COVID-19 pandemic: a qualitative study

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Abstract

Background Rural physicians tend to develop deep relationships with their patients and communities; however, few studies have evaluated the impact of the COVID-19 pandemic on relationships of physicians working in rural primary care clinics. We aimed to collect reflections of primary care physicians to understand their experiences during the pandemic and the impact on their relationships with patients, other physicians, clinic staff, and their communities.

Methods Interviews with primary care physicians practicing in rural Wisconsin used open-ended questions about experiences during the pandemic and the impact of the pandemic on their work and relationships, coping and well-being, and resources of their rural clinics. Interviews were recorded, transcribed, and de-identified for thematic qualitative analysis.

Results Twelve physicians were interviewed between October 3, 2022 and April 7, 2023. Experiences varied by the phase of the pandemic, especially changes in the work of physicians (e.g., working in the hospital), adapting to telemedicine, implementing mitigation strategies, and addressing vaccine hesitancy. These experiences impacted physicians' relationships with patients and their communities, especially when addressing vaccine hesitancy, mitigation strategies (e.g., masking), and misinformation. Some relationships were strengthened by shared experiences, such as clinic staff working together to meet challenges. Other relationships, however, were strained by social distancing and many physicians reported a loss of camaraderie with colleagues attributed to isolation and virtual meetings replacing in-person activities. Challenges for rural clinics included lack of resources (e.g., staff shortages), limited broadband access, and difficulties transferring patients to tertiary care centers.

Conclusions Physicians working in rural primary care clinics described a myriad of experiences during the pandemic. Difficulties in addressing vaccine hesitancy and misinformation about the pandemic were consistently identified as negatively affecting relationships with patients and some staff. Fewer in-person interactions with colleagues negatively impacted relationships, although the ability to connect with others through virtual methods was viewed positively. Future work could address the loss of collegiality and increasing isolation among clinicians attributed to continued use of virtual tools and increased remote work.

Keywords Clinicians, Family medicine, Rural medicine, COVID-19 pandemic

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Background

The COVID-19 pandemic has had far-reaching effects on the health care system and may have disproportionally affected rural communities in the US [1, 2]. Although some reports have addressed the impact of the pandemic on rural primary care physicians, many studies were conducted outside the US, including Canada [3, 4], Japan [5], Brazil [6], and other countries [7, 8]. Available literature describes burnout among healthcare workers and negative aspects of the pandemic [3, 9–11] with fewer reports on the impact of the pandemic on physicians' relationships with patients, colleagues, clinic staff, and communities [12]. Rural clinicians are often deeply connected to their patients and communities and build these relationships over time by fostering trust, respect, and understanding between themselves, their patients, and community members [13–16]. Rural primary care physicians serve as integral and trusted members of their communities, and may expand their roles beyond their clinics to serve as medical advisors to schools, businesses, and community organizations to foster overall well-being of the people they serve [15, 16].

Given the roles of physicians working in rural communities, the pandemic presented unique challenges in dealing with a deadly disease with limited resources as well as misinformation or lack of information about the coronavirus and vaccines [3, 17]. Changes during the pandemic including implementation of telemedicine, social/physical isolation, and masking strained physicians' relationships; however, factors such as camaraderie built by working with colleagues through a difficult time and staying connected with others virtually had a positive impact on some relationships [3, 12]. Although not unique to healthcare in rural areas, clinic disruptions during the pandemic including nursing staff leaving the workforce, being furloughed, needing sick time for COVID-related illness, financial stressors, and remote work likely contributed to increased physician stress and reduced sense of well-being [1, 10–12, 18–21].

This project was a qualitative assessment of the experiences of rural physicians working in Wisconsin during the pandemic. Overall, the study aimed to use reflections of primary care physicians to understand the impact of their experiences during the COVID-19 pandemic on relationships with patients, other physicians, clinic staff, and their communities.

Methods

Specific aims were to: (1) Learn about the experiences of rural family physicians during the COVID-19 pandemic and how it affected their relationships; (2) Explore coping mechanisms that physicians used during the pandemic; and (3) Investigate the impact of the pandemic on resources and clinic staffing. A conceptual framework of phenomenology, the study of lived experiences, was used [22, 23].

Primary care physicians practicing in rural areas of Wisconsin during the COVID-19 pandemic (i.e., since March 2020) were eligible to participate. Potentially eligible physicians identified through the Wisconsin Research and Education Network (WREN) were invited to participate by email. Information about the study was included in the WREN monthly newsletter to facilitate recruitment. The Wisconsin Urban-Rural Classification (WURC) System was used to confirm rurality of practice locations [24]. Physicians practicing in urban areas were excluded from the study. The project was reviewed by the University of Wisconsin-Madison Institutional Review Board's (IRB).

Virtual or in-person semi-structured interviews with physicians were conducted between October 2022 and April 2023. Using open-ended questions, primary care physicians were asked to discuss the impact of pandemic experiences on their relationships with their patients, colleagues, and communities (Additional file 1). Participants were asked about the impact of the pandemic on relationships and strategies that helped them and their clinic staff cope with the pandemic. Interview questions did not mention burnout or stress, but physicians were asked about their well-being. Each interview was to last approximately one hour.

Interviews were recorded, transcribed, and de-identified. Two independent coders (MFH, KM) read the transcripts line-by-line and created draft codebooks using iterative thematic analysis. The independently-created codebooks were reviewed and discussed by the two coders. The codebooks were condensed and edited to create a main codebook (Additional file 2) that was used to code transcripts for thematic analysis using NVivo software (version 14; Lumivero, Denver, CO). We defined thematic saturation as the point at which no new themes were observed. Quotes could be assigned to more than one code.

Results

Twelve physicians were interviewed (nine women, three men; Table 1). Eleven interviews were virtual and one was in person. Although we used semi-structured interviews, all participants provided answers to every question. Physicians practiced in ten counties in rural Wisconsin. Despite the small number of semi-structured interviews, we believe we reached thematic saturation within the first ten interviews given the lack of emergence of new themes.

Table 1 Characteristics of participants, *N* = 12

Characteristic	Results
Female, n (%)	9 (75%)
Male, n (%)	3 (25%)
Years in practice since residency	
5 to 10 years, n (%)	3 (25%)
>10 to 20 years, n (%)	5 (42%)
>20 years, n (%)	4 (33%)
Practice location by WURC by zip code	
R1 (communities of 2,500 or less, outside urban areas)	5 (42%)
R2/R1 (R1 and communities of 2,500-9,999 outside urban areas)	5 (42%)
R3/R1 (R1 and all or part of a community of 10,000–49,999 outside urban areas)	2 (17%)
Self-reported description of clinic type	
Clinic in a large health system	9 (75%)
Clinic in a rural health system	1 (8%)
Clinic is an independently-owned Federally Qualified Health Center	1 (8%)
Clinic is an independently-owned practice	1 (8%)

Experiences and relationships (Aim 1)

Theme 1: the work of rural primary care physicians changed quickly and dramatically

Experiences varied by different phases of the pandemic

The early pandemic was experienced by some physicians as a time of clinic closures and a slowdown in work. The initial lack of knowledge about SARS-CoV-2 was associated with fear, anxiety, and uncertainty. As patients in their communities became infected with the coronavirus, physicians described the situation as a "war zone" and a time of a rapid-fire and steep learning curve for themselves and their staff. Perceptions of healthcare workers changed during the pandemic, from being perceived as heroes to being viewed negatively. As coronavirus vaccines become more available, the focus shifted from addressing patients who were vaccine eager to those who were vaccine hesitant. Once clinics returned to in-person visits, physicians observed how decreases in preventative care due to patients not being seen in clinics led to worse patient outcomes.

> *"…the first time in my career where actually we didn't do what we're supposed to do, which is take care of people." (Participant #3).*
> *"The beginning of the pandemic was like, adrenaline all the time." (Participant #10).*
> *"All of a sudden, in a matter of 2 or 3 days, we had to learn how to provide telehealth with video. We had to try to interface with our patients where it was very difficult for them at that time." (Participant #9).*
> *"…At one point, I was a hero. People would come and just clap. And then we got to the point where we were 'assaulting' them when we asked to have them have a covid swab. We had people calling the cops on us." (Participant #3).*
> *"And then it became very, very busy in the hospital because (A), we didn't know how to treat it, (B), we weren't vaccinated yet, and (C), obviously, there was a surge with a lot of people getting it." (Participant #9).*

Shifting work from clinics to hospitals increased the burden on primary care physicians

As rates of coronavirus infections increased, many physicians shifted work from clinics to hospitals. Some needed to re-gain comfort with in-patient care and be re-trained on use of ventilators. Some physicians were outside of their comfort zone when working in a COVID-19 unit. Many took on more shifts/work during coronavirus surges. Working in a Covid unit carried the fear of bringing the disease back to their families, especially during initial surges when less was known about how the virus was spread and before vaccines were available.

> *"In order to keep everything staffed fully, some people had to take a lot more call and I was one of those people." (Participant #6).*
> *"…definitely a change. I would say, probably worked maybe double the shifts that I usually work in the hospital, compared to normal." (Participant #7).*
> *"Whenever I had an exposure to someone with COVID, like someone in the hospital, I was always so worried about am I going to bring this home to my kids." (Participant #11).*

Implementing mitigation strategies presented challenges

Difficulties with patient, colleague, and community acceptance of mitigation strategies were reported. The acceptance or lack of acceptance of mitigation strategies overlapped across several topics, such as relationships with schools and clinic staff. The impressions of mitigation strategies by patients and communities varied with the phase of pandemic. For example, access to coronavirus vaccines was initially challenging, but the situation evolved as early adapters were vaccinated and attention shifted to patients who were vaccine hesitant. Recommendations for quarantine and social isolation had a negative impact on relationships. Schools changing to virtual learning was disruptive, especially for physicians with children of school age who continued to work in clinics during the pandemic. Some physicians served as medical advisors for school districts in their communities. Although some had positive experiences, other physicians reported that school administrators disregarded medical advice about mitigation practices. Patients and

community members had mixed responses to mask mandates, but some clinic staff recognized the value of continuing to wear masks even after the pandemic. Wearing masks, however, contributed to feelings of isolation and access to sufficient resources, e.g., personal protective equipment (PPE), required time and effort by clinic staff.

> *"At first, our rate of vaccination for our at-risk population was extremely high…It was one of the higher in the state and then there is a community just north of us and their rate was like red. We were green and they were red… And because of our clinic, our vaccination rate was extremely, extremely high." (Participant #10).*
> *"Obviously there were struggles with virtual school and online learning." (Participant #8).*
> *"There were two years where I didn't see people's faces. I had so many patients who were new to me, who I had never seen their face. And we just got to take our masks off two weeks ago, and I didn't stop smiling all day. And I was so happy to see people's faces again." (Participant #12).*

Table 2 Positive and negative perceptions of telemedicine

Positive perceptions and benefits	Selected Quotes
• Increased options for patients to connect with their physician • Saves driving to clinic or further travels to see a specialist • Built relationship with patient when patients saw the physician working from home • Sustainability of telehealth after the pandemic	*"We did telehealth from the very beginning… And that's fundamentally changed how we do medicine. A lot of my patients now, who need a follow up for their depression medication or something like that, have the option of doing telehealth and it's pretty cool because I've even seen people in their factory uniforms in a break room doing a telehealth visit with me."* (Participant #10)
Negative perceptions and challenges • Clunky roll-out and lack of experience with telehealth • Challenges when best care would have been to examine the patient • Lack of reliable internet in rural areas limits ability of patients to use telehealth • Not all patients were interested in telehealth • Some patients in rural areas wanted in-person visits because they did not believe in the pandemic • Some had to choose between home schooling and telehealth visits • Loss of collegiality	*"One of the things our group always prided itself with was collegiality. I think it really took a hit because all of a sudden, we started doing everything, virtually which there's just something different about a virtual environment. Even though I can appreciate that you didn't have to drive up here today or I didn't have to drive down there, all the casual conversations went away."* (Participant #3) *"This pervasive belief that if you just pay enough money, you can get fast enough Internet. I think I'm going to lose it if I have somebody else told me that again…I could probably walk to her house [one of my partners] from the clinic in 5 minutes and she could not get Internet fast enough to support video visits."* (Participant #6)

Experiences with telemedicine were mixed

Experiences with telemedicine were mixed with both positive and negative impressions (Table 2). Despite challenges in adapting to telemedicine, physicians recognized the value of telemedicine and acknowledged that this technology would continue to be embedded in their practices.

Addressing vaccine hesitancy was difficult and exhausting

Addressing vaccine hesitancy was described as difficult, time-consuming, exhausting, and emotionally draining. Physicians tended to change their approach to discussions about coronavirus vaccines over time with some physicians eventually spending less effort with patients deemed not likely to get vaccinated. The theme of vaccine hesitancy overlapped with politics and misinformation.

> *"I feel like I'm fighting a battle all the time to talk to people about vaccines." (Participant #7).*
> *"…one of the other things that still is really pervasive is vaccine hesitancy and those conversations continue to go on, on a daily basis, in clinic. And are emotionally exhausting and frustrating." (Participant #5).*
> *"I assume certain patients of mine that may be hard line in their politics…This person is probably not going to want to get a vaccine today. Then I asked them and they say, 'Well, what do you recommend, doc.' And they're willing to do it. We have to try to just be as patient centered as we can despite feeling that emotional exhaustion." (Participant #5).*
> *"Dane county is highly, highly vaccinated, and those physicians are maybe not having to have that conversation quite as often. But when you look at us in a rural community,…my appointments just took forever during the heat of the pandemic when the vaccines are coming out because you're constantly addressing misinformation and constantly trying to help patients to feel like they have an understanding of what's going on." (Participant #7).*

Theme 2: beliefs about and implementation of mitigation strategies had a strong impact on relationships

Many relationships were strained although some were maintained or strengthened

Multiple factors were mentioned as having an impact, either positive or negative, on relationships. Vaccine hesitancy, misinformation about the pandemic, mitigation strategies, and political views were reported as straining or negatively impacting relationships, especially relationships with patients. Views on virtual tools were mixed as virtual meetings helped maintain connections both professionally and personally; however, virtual meetings and

the inability to meet in person were reported to contribute to loss of connectivity in relationships and feelings of being more socially isolated (Table 3). Some relationships with staff were strengthened by working through difficult times together. Physicians found ways to connect with colleagues and family/friends despite physical distancing (e.g., virtual meetings or creating text groups).

Pandemic misinformation or disbeliefs caused disconnection

Physicians had to deal with patients, colleagues, and community members who believed misinformation about the pandemic and/or did not believe that the pandemic was real. These views were reported as being linked to politics and many physicians felt that there was little that they could do to change patients' beliefs.

"Even when some of the folks, who pushed back against that in a very public way, died of Covid, it was amazing to see that there were still people in that part of the community and those people's families that didn't identify with the fact that they died from Covid…That part was mind blowing." (Participant #12).

"It really divided my patients in my mind into the believers and the non-believers." (Participant #1).

"Just those disconnects in the community that I serve where it didn't seem like people were taking it seriously, were so anti-mask, and you were just fighting this rhetoric constantly. It was exhausting." (Participant #5).

"I remember having to talk to his daughter on the phone several times and how this was really traumatic for her. They were saying, 'why can't we give him ivermectin.' It was a trying experience for them." (Participant #8).

"We did our best we always tried, but you left that that situation feeling like, just totally defeated as a physician. How do you help that patient when they don't believe what you're saying?" (Participant #7).

Coping mechanisms (Aim 2)

Theme 3: despite challenges, rural physicians adapted to do what needed to be done for their patients

Physicians exhibited resilience and commitment to care for their patients, even though their well-being suffered

The pandemic was a time when the spirit of service was important as physicians continued to do their best to care for patients, even when it was uncomfortable. They had support from colleagues and, conversely, developed new ways to support and stay in touch with colleagues.

> *"Colleagues that I asked to do things that they hadn't done before – and they did it. I mean, they just stepped up and they did it. And they may not have wanted to and I'm certainly sure they weren't comfortable with it, but they did it." (Participant #3).*

The well-being of physicians suffered during the pandemic, although they may not have realized the impact of the pandemic at the time given the focus on caring for patients in a time of crisis. Some reported that they felt that they were not always able to give great care, which negatively impacted their well-being. Being there for patients was important to well-being and not always knowing the answers about the pandemic was stressful. Because of the pandemic, some physicians re-examined their priorities around work-life balance.

> *"…this is third-world medicine now. That's a comment my partners and I have made to each other on several occasions. Like we are giving worse care than what we had been giving. I think most people feel like that. It's probably been worse care because of access and because of those kind of issues." (Participant #12).*
>
> *"It's interesting, I think reflecting back on how we've really come a long way in getting back to doing preventative medicine after a long time where patients weren't getting cancer screenings. We weren't doing so much of what we consider primary care to be: evidence-based medicine." (Participant #5).*

Multiple coping strategies were mentioned including:

- Using virtual platforms to connect with others, despite drawbacks of virtual communications.
- Venting with colleagues.
- Taking advantage of outdoors in rural areas.
- Support from family; although family members increased stress if they accepted misinformation.
- Scheduling mental health days.
- Exercise and usual coping mechanisms.

> *"There was a lot of commiserating with other physicians and nurses. I think, thank God, in the rural setting, there's a much tighter sense of community." (Participant #12).*

The experiences during the pandemic were profound

Experiences with patients highlighted profound effects on physicians interviewed.

> *"It's the first time I've had patients die at home because they wouldn't come get medical care. I have a patient that I'm helping him through his grief, because his spouse stayed at home for 3 days with her chest pain and she died. It just, it breaks my heart." (Participant #3).*
>
> *"I spent a lot of time talking to him about what my thoughts were about the vaccine and why he should actually get the vaccine…And he said, 'well, you*

Table 3 Sub-themes pertaining to relationships

Relationship	Themes	Sample Quotes
Patients	Difficult conversations with patients (e.g., vaccines, misinformation, political views) strained relationships	*"I'm thinking of one person that stuck out in my mind in particular but there are lots of patients like this; I've had a relationship with them for 20 years and they've always trusted me to provide health care and provide advice and now they did not trust what I was telling them. And it was frustrating and disheartening and kind of made me really feel sad about our relationship with some of these people that if I saw him on the soccer field, would spend time chatting with and 'how are the grandkids?' and now they didn't believe the advice I was giving them."* (Participant #1)
	Physicians felt out of touch with patients	*"I think the main thing was just that gap, that distance, that feeling you weren't available to them (patients) in the way that you wanted to be."* (Participant #5)
	Changing perceptions of some patients based on patient beliefs about the pandemic	"*I've learned so many things about people I wish I didn't know, like patients I felt really kind of close to and it was so disappointing to find out that they didn't believe this* [masking for the pandemic] *was a concern and didn't feel that they had a role in protecting other people even if they didn't want to do things themselves….It was pretty disheartening."* (Participant #1)
	Physicians described feelings about losing patients to COVID	*"I definitely remember a patient where he and I weren't really seeing eye on eye to eye on how to best protect ourselves against covid and getting vaccinated and he was really high risk. And I remember having some back and forth conversations that I knew I wasn't going to win. And then he ended up on a ventilator for a few weeks, and then he ended up dying from COVID."* (Participant #8)
Staff	Physicians had stronger relationships, working through difficult times together	"*I feel like we're a much stronger, more cohesive group than we were pre pandemic. So my story had a happy ending."* (Participant #10)
	Physicians were proud of staff for complying with mitigations strategies and taking care of people	*"I'm very proud of the staff that that came through and put PAPRs on and put masks on and took care of people, and we sent them home and yet they came back and they're still working and they're still taking care of patients."* (Participant #3)
	Differences in views of vaccines and mitigation efforts as well as misinformation caused friction in relationships	*"There have been several times in the clinic where I will walk into a room and hear some discussion happening and had to just confront misinformation that was being floated around the clinic. So, I think there's some degree our relationship got a little strange because I was pushing back on a lot of kind of, again, misinformation that we're speculating, but I think it was important that I did that.* (Participant #7) *"Our clinic director is a nurse practitioner and we have always seen eye to eye on stuff, and our relationship has really, really changed because of pandemic for the worse. So she does not believe in the vaccine, and she doesn't encourage students to give the vaccine and she has repeatedly tried to show me research that she's done on why the vaccine can be harmful. She will be like, here's a binder of stuff…I'm not even interested in wasting my time reading it. And so that's been really frustrating."* (Participant #11)
	Physicians experienced loss of connectivity of in-person communications (e.g., people staying in their offices, no team building activities)	*"We do have our own offices. So primarily we stayed in our own offices and for the meetings we had, it was all pretty much zoom based; Even now"* (Participant #11)
	Work from home option offered to some staff but not others, creating tension	*"My nurses had to do things, they had to come to work. They couldn't do their job remotely."* (Participant #6) *"Our MAs and our nurses weren't able to work from home. So, even though they sent the physicians home, the nurses and the MAs still came in the clinic pretty much for the majority of the pandemic. And I think that resulted in a little bit of resentment. You know, 'why can you work from home? But we have to be here?' And I think part of that was the organization's mitigation efforts are trying to reduce the number of people in a building but, they essentially didn't let our MAs, nurses, or schedulers, work from home very much. So there was a little bit resentment surrounding that."* (Participant #7)
Colleagues	Different ways of communicating and keeping in touch were developed	*"…the group text that that we have going with my primary care partners, the family docs and nurse practitioner that I mentioned was really, really helpful…initially it [the pandemic] changed so quickly that it was just felt overwhelming to just try and keep up with things… And then just, you know, what are you guys doing to stay sane?"* (Participant #1)
	Relationships suffered from not meeting in person and feeling disconnected	*"That suffered; the relationship with colleagues is much more distant now and less personal and that's because of the way that the pandemic kind of pulled us apart and put us into our little silos. And I don't know that we're going to get back together again. That's kind of a bummer. It's become less personal and collegial than it was before the pandemic."* (Participant #10)
	Teams protected other physicians (e.g., older or pregnant physicians)	*"We have some older physicians, and we really tried to keep them safe and maybe not have them see patients as much as some of us who are younger. We had a pregnant physician. We didn't want her going into isolation rooms when it first, when the pandemic was super bad. So we all worked really well together and we're all on the same page and everybody was happy to help as much as they could."* (Participant #11)

Table 3 (continued)

Relationship	Themes	Sample Quotes
Communities	Some positives with community appreciating work of clinicians, including testing	*"If testing became available to us that we could offer it to our patients. All of that was very important for us to continue to be a community resource throughout the pandemic."* (Participant #4)
	Some businesses and schools did not follow guidelines	*"There were a lot of businesses that were not going to enforce the mask mandates…I actually called one of the community leaders…'I'm reaching out to you as a community leader if you could step up in this really important public health crisis…and have your employees mask.' He said, 'I can't make my employees mask 'and was having none of it."* (Participant #1)
	Politics shaped community responses and relationships	*"In general, it probably hurt it a little bit because most of our political leaders and civic leaders, they thought it was all bunch of crap. It was hurting their business. And anybody who didn't subscribe to their political agenda was wrong."* (Participant #9) *"It made us aware of those political ideological differences. I think in some ways, I learned a lot more about how certain organizations in the community function and how they really stepped up during the pandemic and, you know, honestly met a lot more staff that work at public health and, different spaces. So, in some ways, I think brought us closer."* (Participant #5)
Family	Virtual tools helped stay connected to family	*"We were still able to communicate with family and friends virtually."* (Participant #8)
	Staying at home with family	*"I had a lot of support at home with my wife and kids and, ironically, we had a lot more time with each other, with lock down and people at home. So, that was kind of foundational to keep the stress down."* (Participant #8)
	Worry about ensuring safety of family	*"When you get home, you're going to change your clothes in the garage, and then go and shower and sleep in a separate room. One of our friends—his wife made him stay at a hotel for a month at the start of the pandemic, because she was so worried about him getting their kids sick."* (Participant #5)
	Different experiences vs. family/friends in jobs that slowed down	*I was trying to I was trying to participate to be an empathetic family member, but really, at the time I was, I was living a totally different experience than what they were living because I felt like I was barely sleeping because I was trying to do so many things and I just didn't have enough hours in the day. I was trying to still be a doctor and do all these other things. So it was it was weird.* (Participant #10)
	Challenges with childcare and virtual learning for children	*"There were struggles with virtual school and online learning and kind of a hybrid schedule and you know, the, our kids had some variable experiences with that."* (Participant #8)
	Family members not believing in the pandemic disrupted relationships	*"They found out I had Covid and I say this matter of factly, they don't bring soup. They don't offer to help with the kids. They offer to bring me some of their secret stash of ivermectin"* (Participant #2)
Schools	Schools not taking medical advice strained relationships	*"I became so frustrated with that [School Advisor role] that I stopped because they continue to ask my advice, but then not follow it."* (Participant #11)
	Failures of at-home schooling impacted views of physicians	*"There's kind of that love hate relationship, because we were the ones who told people in the school board to mask, and send people home…And, of course, now kids are struggling because there was no internet or it didn't work well, or they didn't get whatever they need…. So, I think rural communities are reeling a bit.* (Participant #3)

know what? You're my doctor. You think it's a good idea. I'm going to'... So he got his vaccine. Then I saw him in clinic at a follow up... And he said 'I am the only living member of my family. Everyone else in my family got Covid and died.' So all of his siblings had COVID and died. His parents were dead, and he was now the only living member of his family and he 100% attributed it to getting the vaccine." (Participant #7).

Participants were able to identify silver linings

When asked about silver linings of the pandemic, telehealth was often mentioned as providing flexibility for both clinicians and patients, and in allowing work from home. Some other mitigation strategies were continued after the pandemic, such as masking to reduce risk of respiratory infections by clinic staff. Some physicians mentioned that relationships were closer as colleagues faced the struggles of the pandemic together. Hospitals and clinics were willing to step up to care for patients, despite demanding conditions. Another silver lining reported was that learning from this pandemic could help prepare for the next one.

Resources and clinic staffing (Aim 3)

Theme 4: physicians reported that rural clinics had fewer resources and were given lower priority than their urban counterparts

Participants identified factors unique to rural practices

Some physicians indicated that they returned to clinics faster than their urban counterparts noting that their

patients in rural communities expected their clinic to meet all of their medical needs. Many patients in rural areas had longstanding relationships with their clinics and were not comfortable traveling to urban areas for care, which was another reason for re-opening faster than in urban areas.

Limits on resources were noted as being unique to rural clinics, e.g., rural clinics did not seem to get vaccines as fast as urban areas. Rural areas have challenges with telehealth because of limited internet access and bandwidth, which was problematic for clinics and physicians working from home. Clinic closures and high demands during disease spikes strained rural areas that already had limited resources. Hospital beds in rural areas are limited, which caused stress during coronavirus infection surges. Physicians expended energy and time to overcome challenges with transfers of seriously ill patients from their rural clinics. The limited resources in rural areas were reported to widen disparities between rural and urban health care.

"We couldn't get them anywhere. I remember one time we had to call like 26 hospitals to find a bed for these patients." (Participant #11).

"This frustration of having a patient that takes all of your time, when you're the only clinician in the hospital, and then spending that time and spending the hospital resources calling 17 facilities to try to get them to go somewhere. Or have the ER call you about a patient that you know you shouldn't be accepting in your facility, because of the resources you don't have. But they've called 30 hospitals in a four-state radius, and they can't get anybody to take the patient." (Participant #12).

Rural clinics were impacted by staff turnover, shortages, and retirements

Some staff turnover was related to mitigation strategies (i.e., not wanting to be vaccinated). Some clinics had loyal staff who came back after layoffs. The impact of staff retirements was mixed with some staff retiring early and some postponing retirement because they were needed during the pandemic.

> *"We didn't have staff and so now we're already tasked overloaded in medicine anyway…We've had ads running for months and months and haven't had anybody apply." (Participant #3).*
>
> *"Now the biggest issue is that we're understaffed. Our volumes in the outpatient clinics certainly went down during Covid, but now they're back where they were before and then some. We are really busy in our clinics as an outpatient clinic and those patients are sicker, the demand is higher." (Participant #7).*
>
> *"I remember one of my partners coming to me and just sitting in my chair and saying, 'I did everything you asked. I helped with this. I did that. I did this. I did that. Now, I'm going to retire. Yeah, we're through the pandemic. I'm done.' " (Participant #3).*

Discussion

Physicians who practice in rural settings have been described as being deeply connected to their patients and communities, with strong physician-patient relationships cited as a motivator to serve rural communities [13–16]. Relationships between physicians and rural residents are built over time through trust, respect, and understanding [25]. Rural physicians are important community members through leadership in fostering wellness and involvement in community affairs [16, 26]. Providing the medical care needed by their community despite being pushed to the limits of their usual scope of practice has been defined as a component of clinical courage of rural physicians [7, 27].

The COVID-19 pandemic caused widespread disruptions in health care as well as daily life. Through semi-structured interviews, we collected reflections on the COVID-19 pandemic by primary care physicians working in rural Wisconsin to better understand their experiences and impact on relationships. We used the framework of phenomenology and applied qualitative methods to analyze interview transcripts and identify themes that represent the core meaning of the reported lived experiences [22, 23]. As with other investigations, experiences varied by phases of the pandemic with the onset of the pandemic described as caring for patients in a time of uncertainty, fear, and anxiety [4, 8, 12]. These results are not unique to physicians as nursing professionals, pharmacists, and other healthcare professionals report similar experiences [11, 28, 29]. Changes with progression of the pandemic included adapting to virtual technologies, implementing mitigation strategies, working in hospitals to manage surges of SARS-CoV-2 infections, and addressing coronavirus vaccine hesitancy.

Effects of increased workload, infection risk, limited resources, and strained personal relationships on the mental health of rural physicians during the pandemic have previously been reported [3, 4, 8]. Addressing vaccine hesitancy and misinformation about the pandemic was emotionally draining and negatively impacted relationships with patients and some clinic staff. Similar findings in urban areas indicate that vaccine hesitancy has increased clinician workloads and contributed to burden of care [30]. Another public health challenge is that rural residents have been observed to be less likely than urban residents to have complied with mitigation strategies, such as masking, working from home, or avoided dining at restaurants or bars [31], which may be linked to support for politicians who downplayed the severity of the pandemic [32]. Participants in our study reported

that some relationships with staff and colleagues were strengthened by a sense of working together to meet challenges. Previous work shows that strong relationships with their colleagues and communities and collegial support were integral in addressing challenges of the pandemic [7, 8]. Despite positive effects on some relationships with colleagues, the pandemic was also associated with decreased feelings of camaraderie among physicians and increased feelings of isolation at work due to physical distancing, remote work, and fewer in-person meetings [12].

Negative and positive aspects of telehealth were described such as lack of internet access, limited bandwidth in rural areas, and convenience in terms of less travel for telehealth visits. For example, acceptance of telehealth by patients in a rural Midwestern family medicine clinic was poor and patients indicated that telehealth was less effective for relationship building [33]. New initiatives and legislative policies are needed to improve broadband access and support telehealth within rural Wisconsin [18, 34].

Forty-six of 72 Wisconsin counties are considered to be rural with rural residents accounting for approximately 30% of the population of Wisconsin [35, 36]. Lack of resources [1, 2], staffing shortages, and challenges in patient transfers during surges in coronavirus infections were reported as particularly challenging in rural environments. Our participants reported that rural clinics reopened faster than their urban counterparts in order to serve their patients who expected their clinic to meet al.l of their medical needs. Many patients in rural areas had longstanding relationships with their clinics and were not comfortable traveling to urban areas, especially during the pandemic. The need for rural residents to travel farther to clinics and closures of rural hospitals, including those in Wisconsin, continue to be barriers to access to care [36, 37]. Funding and policy changes are needed to address shortages of resources and access to health care experienced by rural communities [38].

Limitations

These results are reflections of the lived experiences of a small number of physicians who practiced in rural Wisconsin during the pandemic. Despite the small sample size, we believe thematic saturation was reached as determined by the use of NVivo coding to recognize the lack of new themes or insights emerging from analysis of transcripts. The interviews were conducted approximately two and a half years after the onset of the pandemic, which may have limited recall on events and experiences. Furthermore, the structure and sequence of our questions may have prompted recall on certain topics leaving other topics unaddressed. The participants worked in ten counties across Wisconsin and although many similarities in experiences during the pandemic were observed, local differences among communities may not have been recognized. Clinicians in individual practices or smaller rural health care systems had more autonomy to make decisions, but may have had fewer resources than clinics within larger health care systems. Our results from Wisconsin physicians may not be generalizable to rural areas of other states. Furthermore, our cohort had more women than men, which may have indicated a participation bias as female physicians have been historically been less likely to practice in rural areas than men [39].

Conclusions

Overall, our results highlight the commitment of primary care physicians to care for their patients in the face of unprecedented challenges. This work expands our understanding of the far-reaching impact of the pandemic on physicians practicing in rural areas. Physician-patient relationships were often affected by patient and community members' beliefs about mitigation strategies, especially negative views of the coronavirus vaccine and masking. Despite challenges, changes implemented during the pandemic, such as the use of telemedicine, were viewed as silver linings. Future work may address the loss of camaraderie and increasing isolation among clinicians attributed to the use of virtual tools and increased remote work.

Abbreviations

WREN	Wisconsin Research and Education Network
WURC	Wisconsin urban-rural classification
IRB	Institutional review board's
PPE	personal protective equipment

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12875-025-02868-0.

Supplementary Material 1

Supplementary Material 2

Acknowledgements

The authors would like to thank the participants, without whom this work would not be possible, the WREN Advisory Council members who provided ideas and input for the project, Ms. Denise Grossman for providing administrative support, and the UW-Madison Department of Family Medicine and Community Health, which provided funding for the project.

Author contributions

MFH: Conceptualization, Methodology, Investigation, Data analysis, Writing Original draft, Review & Editing, Project administration. KM: Methodology, Data analysis, Review & Editing; SS: Conceptualization, Writing, Review & Editing, Supervision.

Funding

This project was supported by the University of Wisconsin-Madison Department of Family Medicine and Community Health.

Data availability
The data that support the findings of this study are not openly available due to reasons of sensitivity and are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate
The project was reviewed by the University of Wisconsin-Madison IRB. All methods were carried out in accordance with relevant guidelines and regulations and informed consent was obtained from all participants.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

Received: 14 June 2024 / Accepted: 1 May 2025
Published online: 14 May 2025

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