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Emergency preparedness is a healthcare issue: COVID-19 pandemic's influence on attitudes and behaviors among a national sample of parents



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ABSTRACT

Background: Improving household emergency preparedness (EP) is a public health priority, yet little is known about what influence the COVID-19 pandemic had on families' EP. This study aimed to explore current EP attitudes and behaviors.

Methods: We conducted online focus groups in Winter 2022 with a nationwide sample of parents of adolescents. We held six 90-min focus groups of 9–15 participants using a semi-structured interview script that elicited parental knowledge and attitudes related to household EP. Two researchers conducted qualitative content analysis on focus group transcripts. First-level coding within and across scripts was used to identify broad categories or themes regarding EP. The process was reviewed continuously to verify data and coding procedures. Three investigators independently verified the final themes that emerged.

Results: Participants ($N = 64$) were mostly female ($n = 54, 84.3\%$), white ($n = 46, 71.9\%$), and college-educated ($n = 49, 76.6\%$). Major themes included: 1) Expanded awareness and behavioral change related to EP due to the COVID-19 pandemic, 2) Reconceptualization of planning for family health as part of EP, 3) Changing perspectives related to vaccination as a component of EP, and 4) Perspectives related to discussing EP with their health care provider.

Conclusions: EP was described as a healthcare issue and healthcare providers were identified as trusted sources of EP information. Interventions to support providers' ability to assist with individual EP health action plans, including discussing vaccination as part of preparedness are needed.

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Background

The coronavirus disease 2019 (COVID-19) pandemic has dominated the world's attention since it emerged from Wuhan, China in late 2019. As of February 2023, 6.8 million confirmed deaths and 758 million cases have been reported worldwide (World Health Organization, 2022). In the United States (U.S.), over 1.1 million lives have been lost and nearly 103 million cases of COVID-19 have been recorded (Center for Disease Control and Prevention, 2023). During this same period, natural disasters, such as severe storms, floods, wildfires, and extreme temperatures, threatened the health and safety of populations around the world. In 2020, 389 natural disasters affected 98.4 million people worldwide and wrought \$171.3 billion in damages. A greater number of storms and floods occurred in 2020 than the annual average of the previous

two decades (2000–2019) (Centre for Research on the Epidemiology of Disasters, 2022). The year was also the hottest on record since 2016 (National Oceanic and Atmospheric Administration, 2021).

Disasters are described as sudden, calamitous events that seriously disrupt the functioning of a community, and result in losses that exceed the community's ability to cope using its resources (International Federation of Red Cross and Red Crescent Societies, 2022). Disasters are often categorized as natural disasters, such as earthquakes, extreme temperatures, flooding, wildfires, or epidemics; or technological disasters, such as transportation or industrial accidents, explosions, etc. (Centre for Research on the Epidemiology of Disasters, 2022). Disasters cause deaths and multiple injuries, resulting in overwhelming surges in demand for healthcare and social services (Federal Emergency Management Agency, 2022). The surge in demand for services strains health systems during these emergencies and also results in the disruption or delay of critical health care services, even those not directly related to the disaster event. The COVID-19 pandemic exerted similar pressures on healthcare systems worldwide. For example, during the

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COVID-19 pandemic surgical care interventions, including life-saving emergent, critical, and elective surgeries were disrupted in many countries (World Health Organization, 2021).

Individual and community emergency preparedness (EP) is a national health priority. The federal government's Healthy People 2030 initiative includes the goal of ensuring individuals, communities, and organizations are prepared for disasters, disease outbreaks, and medical emergencies. Specific objectives listed under this goal include increasing the proportion of parents/guardians with emergency plans and increasing the proportion of people prepared for disease outbreaks, including obtaining recommended vaccines for themselves and their children (Healthy People 2030, 2022). The Federal Emergency Management Agency (FEMA) recommends families prepare for emergencies by stockpiling life-sustaining supplies (food, water, medicines, and medical supplies), and developing a family emergency plan that includes how to communicate with each other, how to evacuate, and how to safely shelter for many days. Since 2020, the Centers for Disease Control and Prevention (CDC) has also recommended people include additional items to their EP supplies to help prevent the spread of COVID-19, other novel viruses, and the flu (Centers for Disease Control and Prevention, 2022; Ready.gov, 2022a, 2022b). Studies before the pandemic found U.S. households to be unprepared for emergencies, lacking basic supplies (food, water, medicines) or evacuation plans (Ferguson et al., 2020; Hamann et al., 2016; Ryan et al., 2018; Zamboni & Martin, 2020). Few households were found to be prepared for a pandemic emergency at the start of the COVID-19 outbreak, lacking thermometers, masks, or other medical supplies. This was especially pronounced in ethnic minority groups (Buenconsejo-Lum et al., 2021; Dela Cruz et al., 2021; Palafox et al., 2021; Palakiko et al., 2021). The pandemic has emphasized the crucial role that vaccinations play in mitigating the spread of infectious disease during epidemic emergencies. Therefore, the purpose of this study was to explore how the COVID-19 pandemic may have changed people's perspectives and behaviors related to household EP. Specific focus is placed on the extent to which EP is perceived as a health issue, and whether vaccinations are considered an element of a family's EP actions.

Methods

Study sample

A national sample of parents of adolescents ages 11–17 was recruited to participate in online focus groups that were held in February and March 2022. The sample included only parents of adolescents, as this study was part of a larger investigation exploring the influence of social media on routinely recommended adolescent vaccines. Eligibility criteria included: 1) parent of an 11–17-year-old adolescent; 2) U.S. resident; 3) able to read English; and 4) having access to a computer and internet access. While gender was not a criterion for eligibility, recruitment efforts were focused on mothers/female caregivers because they often serve as a family's primary decision-maker for children's health care. Six focus groups were conducted in total, with 9–15 participants per group. Participants were recruited by InsideHeads, LLC, an experienced market research company, from their U.S. national panels of >100,000 potential participants. Insideheads verified participants' eligibility, provided consent materials, obtained initial consent, and provided instructions and reminders for how to attend their assigned focus group (e.g., date, time, login).

Data collection and measures

All focus groups were conducted using a secure virtual web platform. As participants logged in to the discussion platform from their personal computers, they were automatically assigned screen name pseudonyms. Immediately when joining the platform participants were welcomed by the moderator and were provided an external link

to an online demographic survey (via Qualtrics®). The survey landing page provided consent materials, and after study consent was obtained electronically participants were instructed to complete a brief demographic survey and then were linked back to the discussion platform. The text-based discussions were moderated by the principal investigator, who led each group, and two other study team members took field notes, noted important aspects of the discussion, and provided suggestions to the moderator for additional probing questions. The participants typed responses and made comments to others' posts, engaging in a real-time group discussion. Each focus group lasted 60–90 min and InsideHeads remunerated study participants \$75.

Focus group discussions were guided by a semi-structured script. Questions elicited parental knowledge, beliefs, and attitudes related to household EP, including participants' perspectives of vaccines as a component of EP. We also sought to uncover whether EP behaviors had changed in response to the COVID-19 pandemic. Finally, parents were queried about their thoughts related to receiving EP information from their healthcare provider. Probing questions were used to enhance clarity when needed and help participants expand on their thoughts. Example questions are noted in Table 1. Demographic data included age, race/ethnicity, gender, U.S. region, and level of education, as well as employment, health insurance, and relationship status. All study data were non-identifiable and anonymous. Study protocols and procedures were approved by the University Institutional Review Board, in June 2021.

Data analysis

Quantitative data were downloaded to Microsoft Excel (Microsoft Excel (16.63.1), 2022) for management and analysis. Descriptive analyses included mean and standard deviations for continuous variables and percentages for nominal data. Qualitative text data were provided to the study team in Microsoft Word format. The data were prepared and organized in both Microsoft Word and Microsoft Excel for analysis. Investigators read and reread each focus group script along with any field notes for overall orientation. Exact sentences, phrases, and words from the scripts served as units of in vivo coding. The first-level coding within and across scripts was used to identify broad categories or themes that began to highlight the parent's knowledge, attitudes, and behaviors regarding EP. The process was reviewed continuously to verify data and coding procedures. Three investigators independently verified the final themes that emerged (Cresswell, 1998; Graneheim & Lundman, 2004; Sandelowski, 2000).

Findings

Sample demographics

A national sample of ($N = 64$) of U.S. parents (primarily female caregivers, 84.3%) of adolescent children ages 11–17 years

Table 1
Focus group questions.

When you hear the term 'emergency preparedness' what do you think that means for you and your family?
Thinking about your family's preparedness for emergencies... In what ways does your family prepare? Please describe. Example Probe: If your family has an action plan for emergencies, what does that plan include?
Have your views or actions related to emergency preparedness changed or shifted since the start of the COVID-19 pandemic? Please describe. Example Probes: Have you ever thought about preparedness as a health care issue? If yes, how so? Where would you want to get information about EP? Would you want to get information from your health care provider?
Does being prepared for emergencies now include ensuring that your child has obtained routine vaccines (like for flu) and other vaccines (like for COVID-19)? Please describe your thoughts related to vaccines in relation to EP?

participated. The participants' mean age was 47 years. The majority were married/partnered (84.3%), identified as White (71.9%), and had a college education (76.5%). See Table 2 for participant sociodemographic characteristics.

Qualitative results

Four overarching themes emerged from the qualitative data. These included: 1) Expanded awareness and behavioral change related to EP due to the COVID-19 pandemic, 2) Reconceptualization of planning for family health as part of EP, 3) Perspectives related to discussing emergency preparedness with their healthcare provider, and 4) Changing perspectives related to vaccination as a component of EP. Themes and subthemes are discussed below with illustrative quotes. Additional quotes supporting emergent themes are listed in Table 3.

Theme 1: Expanded awareness and behavioral change related to EP due to the COVID-19 pandemic

Participants described heightened awareness and behavioral changes related to the way their families prepare for emergencies since the start of the COVID-19 pandemic. For example, parents explained that the way they stocked up on supplies shifted. The scarcity of supplies available in stores caused shock or panic, prompting participants to stock general supplies, such as food, water, and cleaning supplies, as well as over-the-counter medications. Being better prepared for such situations was a common theme. One participant explained:

“This is the first time I saw something like this when store shelves were empty, and no water, food or bread, or eggs were available. [I now] plan to stock up beforehand... food especially, and medicines. There was also a reevaluation of how long to prepare for, and what types of events to prepare for: “I stock up more on things needed in case we have to quarantine.”

When asked whether new items, such as personal protective equipment (PPE) and masks were now included in their families' EP supplies, participants overwhelmingly responded affirmatively. For example: “Not until last year, now we've stocked up on [masks], just in case. It's good to have [masks] on hand, but we do so more now.”

A few participants also explained how COVID-19 prompted deeper engagement in community-level EP. Participants either began to volunteer or increased their volunteerism with local emergency response activities. One participant commented: “We volunteer more in the community. We help create community and county emergency plans.”

Theme 2: Reconceptualization of planning for family health as part of EP

The COVID-19 pandemic prompted families to develop or reconsider family EP, to better prepare for health issues that arise during emergencies. Parents discussed emergencies and plans with their children: “We talk about what's going on and what possible situations could come with our kids. We make plans on what to do.” Individuals with children or other family members with chronic conditions or special health needs commented on concerns that influenced their preparedness planning. Maintaining access to medications during emergencies was commonly remarked upon: “My son who has asthma and [we] would need extra inhalers on hand.” Another participant remarked: “Medications for my mom are definitely an issue. As her caregiver that could be a concern.”

Participants indicated that an important aspect of EP is maintaining general health. Comments reflected beliefs about the importance of being proactive about health by receiving annual health checks and trying to avoid becoming sick by practicing handwashing, social distancing, and taking other health precautions. One participant explained: “[EP] means I have a plan to maintain the health of myself and family from the inside out.”

When prompted to answer whether they considered EP a healthcare issue, most participants responded affirmatively ($n = 43$). Commonly, participants noted that, during an emergency, the inability to access medicines or medical supplies would impact health status. For some, the connection between health and EP was formed due to the pandemic: “I haven't thought of [EP as a healthcare issue before] but I think it is a healthcare issue that all citizens should do.”

Theme 3: Changing perspectives related to vaccination as a component of EP

When asked whether EP now includes obtaining vaccinations (routine and COVID-19) for themselves and their children, most participants responded affirmatively ($n = 43$). Participants also provided a range of opinions that reflected evolving perspectives. Some participants explained that they believed vaccinations should now be incorporated into their EP in some way: “[My family prepares for emergencies] by getting the vaccine for COVID.” Some examples included how they keep their vaccination records and COVID-19 vaccination cards, adding them to their EP supplies, or keeping them on hand: “I carry my COVID vac [COVID-19 vaccination] cards with me always and know where my handwritten copy of other shots is located.” One participant expressed how the pandemic changed where they get their shots: “I used to get shots in the doctor's office but then finding a record of that was hard. The local health dept. is better for gathering that info readily.”

For other participants, vaccinations were and continued to be routine. These participants did not view vaccination as an element of household EP, commenting that vaccinations were a routine health

Table 2
Sociodemographic characteristics of the sample ($N = 64$).

Sociodemographic characteristic	N (%)
Age in years	Mean (SD) 47.1 (7.9)
Gender	
Female	54 (84.3)
Male	10 (15.6)
Race	
White	46 (71.9)
Black	8 (12.5)
Asian	4 (6.3)
Other/Multiple	5 (7.8)
Missing	1 (1.6)
Hispanic ethnicity	
Yes	22 (34.4)
No	40 (62.5)
Missing	2 (3.1)
United States Region	
Northeast	20 (31.2)
Midwest	7 (11.0)
Southeast	22 (34.3)
Southwest	7 (11.0)
West	8 (12.5)
Type of Insurance	
Private	42 (65.6)
Public	19 (29.7)
None	2 (3.1)
Missing	1 (1.6)
Education	
High School graduate	5 (7.8)
Some college	9 (14.1)
College graduate or higher	49 (76.6)
Missing	1 (1.6)
Employment status	
Full time employed	46 (71.8)
Full-time caregiver	8 (12.5)
Full-time student	1 (1.6)
Part-time employed	8 (12.5)
Retired	1 (1.6)
Relationship Status	
Married/Partnered	54 (84.3)
Single/Divorced/Separated	9 (14.1)
Missing	1 (1.6)

Table 3
Themes, categories, and illustrative quotes.

Themes and categories	Illustrative quotes
Theme 1 Changes in patterns related to 'stocking up'	<p>Expanded awareness and behavioral change related to EP due to the COVID-19 pandemic</p> <p>Food & General supplies</p> <p>When there were warnings about food and people buying out everything at the store, we stocked up on the necessities.</p> <p>In March of 2020, seeing how little was available in stores startled me</p> <p>When items were hard to get, I started realizing what I didn't have</p> <p>We're definitely stocking up on things we didn't before.</p> <p>When you couldn't get into the grocery store safely that was a shock.</p> <p>I have realized that I was not as prepared as I initially thought.</p> <p>I think we can all learn from the shortages and PPE</p> <p>EP means being prepared with medicine, food, supplies, etc. in an emergency. For many it means hurricanes. But it can now mean shutdowns.</p> <p>Being ready for a hurricane or tornado. Having emergency supplies handy. Lately, I have been thinking that we should figure out how to prepare for cyber-attacks.</p> <p>I continue to stay well-stocked in paper supplies and cleaning</p> <p>We have stocked up more on cleaning supplies even more than we already had before.</p> <p>we have stocked up on a few cleaning supplies</p> <p>I bought more cleaning supplies more over than last 2 years</p> <p>I keep more sanitation supplies in the house.</p> <p>Medications</p> <p>always have ibuprofen and Aleve</p> <p>yes, I try to keep a good supply of over-the-counter meds and try to get ahead with refills by filling as soon as I can</p> <p>I always stock up on all meds.</p> <p>I make sure to have over-the-counter meds such as pain relievers always stocked in the house.</p> <p>PPE/Masks</p> <p>I will keep a small supply of sanitizers and masks and continue to do more remotely and online</p> <p>We have masks for ages and disinfectant spray</p> <p>masks now I buy in bulk and cleaning supplies I keep on hand</p> <p>We definitely have masks, which we have never had before. I've always kept disinfecting wipes around.</p> <p>I have enough masks and still wear them indoors if needed for the time being.</p> <p>I have masks stuffed everywhere, in every vehicle and purse.</p> <p>We order masks online now. Got some from Kroger recently. We switched from medical masks and cute ETSY masks to Kn95s recently. Remember we live in a CDC neighborhood. We're not taking chances. Still mask up indoors.</p>
Increased community participation EP	<p>[I] even joined my state's emergency medical corps as a volunteer</p> <p>I also [now] have a neighborhood alert with community action</p>
Theme 2 Deeper planning for family health during emergencies	<p>Reconceptualization of planning for family health as part of emergency preparedness</p> <p>[EP means] talking to my child about what to do in an emergency. Having an earthquake kit and first aid supplies.</p> <p>We have extra water and meds in the house when possible.</p> <p>We have a special needs kid. Have to plan.</p> <p>Not [thought of EP as a healthcare issue] so much unless there is a pre-existing condition</p> <p>I think in terms of being able to have access to needed medications ahead of time.</p> <p>We ordered from CVS during the height of the pandemic before we were vaccinated, and they mailed her prescriptions here to the house.</p>
Maintaining general health	<p>I guess lack of access to doctors if chronic illness</p> <p>annual checkups, be healthy, build immunity</p> <p>Only in terms of being proactive about my health</p> <p>We follow our routine. We wear masks, are vaccinated and boosted, and take all necessary precautions.</p> <p>just preparedness in the sense of having supplies and acting safely about touching and breathing things</p> <p>not really until the pandemic, but we are way more aware of handwashing and distancing</p> <p>Yes, because I do not like to get sick, I try to take all precautions.</p>
Reconsideration of EP as a healthcare issue	<p>Not until the pandemic [had I thought of EP as a healthcare issue] I started to notice that it was harder to find certain items.</p> <p>Yes, as a healthcare issue. What meds I would need</p> <p>In the pandemic, being prepared with masks has been a healthcare issue. In the first year of the pandemic, no one in my family had colds, which I attributed to distancing and masks</p>
Theme 3: Vaccination is now a component of EP	<p>Changing perspectives related to vaccination as a component of EP</p> <p>[My family prepares for emergencies] by getting vaccinated</p> <p>[My family prepares for emergencies by being] Up to date on vaccines, [having] enough supply on hand at home for food/water</p> <p>vaccines, flu shots, emergency kits for home and school</p> <p>names and addresses and phone numbers of family away from where we live, a supply of meds, vaccine cards on our person</p> <p>Yes, I suppose because there are restrictions if you don't have them</p> <p>I guess. Never thought about it like that before this discussion.</p> <p>yes. I sometimes procrastinate for a flu shot but it's so important to be proactive before getting sick</p>
Vaccines are and continue to be routine	<p>[vaccination] that was our norm</p> <p>I think of those things as routine.</p> <p>Most vaccines are required for my children to attend school, so I don't tend to think about it in that way</p> <p>Vaccines have always been a part of life.</p> <p>I have not associated vaccines with preparedness</p> <p>[vaccines] are all par for the course</p>
Theme 4	<p>Perspectives related to discussing emergency preparedness with their healthcare provider</p> <p>If the health care provider gave me the information, I may look at it with more interest just as I do with weather emergencies.</p> <p>Having information beforehand would've been helpful</p> <p>Yes, a guide would be helpful</p>

(continued on next page)

Table 3 (continued)

Themes and categories	Illustrative quotes
	It would be helpful if they had it
	Sure. I believe in being prepared as best as possible.
	I think it would be interesting to hear a health care worker's advice for emergency preparedness
	I would not be opposed to that. Seeing things through the eyes of a physician would be helpful
	that would be helpful in case I missed something
	not necessarily, but it wouldn't hurt
	Yes, I trust my doctor
	Yes, but also from health dept.
	Also, at community settings
	I would rather get info from people like Fauci
	all this is giving me anxiety

behavior and the pandemic had not changed this. Reasons given for this perspective were that vaccinations were required for school enrollment or were described as just a normal part of life. Among persons who held this perspective, the COVID-19 vaccination had been incorporated into their routine vaccination behaviors: "I always make sure to get vaccinated, and [that] includes my whole family... COVID is now in our routine vaccines."

Theme 4: Perspectives related to discussing EP with their healthcare provider

When asked if they would want to receive EP information from their healthcare providers, nearly all participants ($n = 50$) responded positively. Comments indicated a willingness to learn from healthcare providers as role models: "I'd ask [my doctor], 'What have you done to prepare?' and copy him." Some participants provided suggestions on tools that health care providers could use that would be helpful for their families: "[An EP] checklist at annual checkups would help." Some comments explained how providers were viewed as credible and influential sources of information on EP: "Health care provider is a trusted source and carries weight." Few were unsure if their health care provider was the appropriate source of EP information or preferred receiving EP information from other sources: "I'm just not sure [the] Dr. is the right source unless it's for disease stuff."

Discussion

The COVID-19 pandemic has opened a window of opportunity to educate and intervene with families regarding EP in new ways. Health care providers can capitalize on this moment to work towards increasing the proportion of people who have emergency and evacuation plans (for both home and school) and are prepared to protect themselves and their families against disease outbreaks, meeting the goals of Healthy People 2030 (Healthy People 2030, 2022). Findings from this study uncovered shifting perspectives regarding EP among parents of adolescent children in light of the COVID-19 pandemic. Families made changes to the composition of their emergency supplies and adapted plans in ways that protect and maintain health before and during emergencies. Findings also make clear that vaccines, for many, are perceived as an important component of household EP, and that parents consider health care providers as important sources of EP information.

For many, the pandemic has served as a reflection point for deepening engagement with household EP. This is an encouraging development since many studies have found that large proportions of U.S. households are not prepared for disasters, lacking emergency supplies, evacuation plans, or both (Burke et al., 2010; McNeill et al., 2018; Strid et al., 2021). In March 2020, just as COVID-19 began to spread globally, most households considered themselves unprepared for a disaster or pandemic (Brown, 2020). Our study indicated that parents made adaptations to how they prepare for emergencies based on their experiences of the COVID-19 pandemic, such as stockpiling PPE, hand sanitizer, and medications (including prescription medications), and considered ways

to and plans for sustaining their households through pandemic lockdowns. Further, public health preventive measures, such as frequent handwashing, social distancing, wearing face masks, and vaccination, were commonplace and described by parents as routine. This represents a major shift in this country. Before the pandemic, the U.S. public was largely unfamiliar with public health measures deployed to prevent the rapid spread of disease (Gershon et al., 2018).

Findings from this study make it clear that vaccinations are viewed by parents as an important component of household EP. The COVID-19 pandemic has resulted in an enhanced public awareness of the importance of vaccination as a way of protecting individual and community health. Health care providers can capitalize on this heightened awareness and utilize EP in their communication strategies to continue to improve the uptake of influenza, COVID-19 boosters, and other routinely recommended vaccines. As providers continue to engage or re-engage with patients it is important to understand parental shifts in vaccination beliefs or behaviors as an outcome of the pandemic. Strong positive vaccination recommendation has been the number one predictor of vaccine acceptance (Nguyen et al., 2021; Opel et al., 2015) and parents in this study continue to seek health provider guidance. Preventive health services, such as routine childhood vaccinations, were halted in the initial pandemic response period, leading to such services initially being missed or delayed (DeSilva et al., 2022; Santoli et al., 2020). Recently, there has since been a rebound of routinely recommended vaccines for adolescents (Pingali et al., 2022), but it will be imperative to monitor trends in vaccinations over time.

Parents in this study also expressed a renewed emphasis on maintaining timely receipt of other preventive health services for both them and their children. This finding is important in light of the interruption in healthcare services many families experienced during the pandemic. Encouraging parents to stay up to date with routine preventive care for their children may help to avoid situations where care is missed or delayed when services are unavailable for an extended period, as was the case during the pandemic. The American Academy of Pediatrics provides recommendations for health care providers for providing families with anticipatory guidance to help prepare parents and children before disasters as an element of ongoing preventive care (Krug et al., 2015). Parents in our study shared that they had children with chronic conditions or special needs and needed stockpiles of necessary prescription medication. The CDC estimates that >40% of school-aged children and adolescents in the U.S. have at least one chronic health condition, such as asthma or diabetes (Centers for Disease Control and Prevention, 2022). Maintaining regular care for these vulnerable children is vitally important, as a gap in care may result in amplified poor health outcomes. How children with chronic conditions fared during the pandemic as families experienced disruptions in routine care is still underreported and needs further exploration.

Changing perspectives regarding preparedness for disasters and disease outbreaks considering the pandemic have provided health care providers with an excellent opportunity to engage parents to discuss broadened preparedness for future disease outbreaks. Health care providers were identified as trusted sources of information for EP, a finding

consistent with the literature (Kahan et al., 2003; Redlener et al., 2007). Parents described their willingness to receive information about EP from health care providers, and even mentioned that they would emulate their health care providers' EP behaviors. Evidence suggests that families who have discussed preparedness with their health care provider were more likely to follow through with national recommendations for disaster preparedness (McNeill et al., 2018; Olympia et al., 2010). The types of emergencies that U.S. families are facing are evolving, and how families prepare for these situations must also evolve with the shifting environment of threats. Changing climate patterns resulting in severe weather and extreme temperatures, the emergence or reemergence of epidemic and pandemic diseases, and the rising incidence of school-related violence, all call for greater vigilance from parents to protect themselves and their loved ones. Health care providers can help parents by guiding them in developing action plans to prevent family separation and protect health and safety.

Future research

Greater understanding of gaps in preparedness for emergencies, especially among parents with young or adolescent children, can help inform efforts to bolster EP and contribute to national EP goals. Children are considered a vulnerable population with unique physiological, developmental, and emotional health needs that need to be considered when planning for emergencies, yet are often overlooked (Goodhue et al., 2012; Krug et al., 2015). Further research that determines factors motivating household members to prepare for emergencies is still needed. Differences have been observed in ways that minority groups prepare for or perceive their ability to prepare for disasters (Cong & Chen, 2022; Rivera, 2022). This suggests that factors influencing preparedness behaviors vary between and within groups, and preparedness interventions may need to be culturally tailored to certain populations. Such research can be utilized to inform the development of interventions targeting improved household EP. Integrating household EP guidance into regular provider visits is one example. Another promising intervention strategy is the implementation of technology-based tools capable of providing individually personalized family emergency preparedness guidelines. A recent review uncovered hundreds of smartphone applications related to bolstering household EP, demonstrating the growing interest in such tools (McAtee et al., 2022).

Limitations and strengths

This study relied upon online focus groups designed to quickly convene a wide range of parents across the U.S. to elicit knowledge and opinions regarding household EP. As this was a convenience sample that had limited racial/ethnic and socioeconomic diversity, findings may not be fully applicable to other parental groups. Additionally, the online focus group format may have limited discussion as it may be difficult for participants who are less comfortable with computer engagement, and some may limit text-based responses or be more comfortable with oral discourse; however, this format facilitates equity in the engagement by providing the opportunity for each member of the group to answer questions plus it prevents domination of the conversation by one or few members of the group. The sample was limited to people who had access to the internet and were generally technology-literate, which may not be representative of all parents of adolescents in the country. Finally, this study was limited to a national sample and future research should explore EP in other countries. Despite this study's limitations, findings bring to light important insight regarding shifting perspectives and behaviors related to EP, evidence regarding linking vaccination as part of EP in health care discussions, and support to develop EP interventions disseminated via primary care health providers.

Conclusion

Improving household EP is a major health priority for the U.S. Greater understanding of how parents perceive EP considering their experiences during the COVID-19 pandemic is critical for informing interventions and health communications strategies designed to motivate people to take action on EP behaviors. The COVID-19 pandemic has catalyzed changing how parents think about and prepare for emergencies. Health care providers can use this information to engage the populations they serve in new conversations to promote behaviors related to EP, vaccination, and overall health promotion.

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CREDIT Statement

Gary Gluberman: Conceptualization, Validation, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing, Visualization. **Gregory Zimet:** Validation, Investigation, Writing – review & editing. **Alexandra Michel:** Validation, Investigation, Data curation, Writing – review & editing, Visualization. **Holly B. Fontenot:** Conceptualization, Methodology, Validation, Formal analysis, Investigation, Resources, Data curation, Writing – original draft, Writing – review & editing, Visualization, Supervision, Project administration, Funding acquisition.

Data availability

The datasets used and/or analyses during the current study are available from the corresponding author upon reasonable request.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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