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most attention, has been the COVID-19 pandemic. Since its appearance in Wuhan, China in late 2019, the pandemic has resulted in 85 million people who have tested positive for the coronavirus and over 1.8 million deaths worldwide [1]. In the United States, there were 20.5 million confirmed cases and 350,775 deaths attributed to the coronavirus as of 4 January 2021. The pandemic has led to widespread disruption of social and economic life as nations have struggled to contain the spread of the coronavirus through preventive efforts such as social distancing, closure of certain sectors of the economy, and restriction of public gatherings. Unemployment rates rose dramatically during the first few months of the pandemic to levels not seen since the Great Depression of the 1930s [2] and have yet to return to pre-pandemic levels as nations experience subsequent waves of infections [3].

The second crisis has been a marked increase in the frequency and severity of disasters due to acute weather events such as hurricanes. With a total of 30 named tropical storms, 2020 now holds the record for the most named storms, the most active hurricane season on record. The previous record was 28 storms in 2005. One of these storms (Iota) developed into a Category 5 hurricane, four storms (Laura, Teddy, Delta, and Eta) developed into Category 4 hurricanes, and eight other storms developed into Category 1–3 hurricanes [4]. Since May 16 (earlier than the usual start of the season, which is June 1), these events have resulted in over $40 billion in damages and 362 deaths [5].

2. Methods

2.1. Setting

The Community Resilience Learning Collaborative and Research Network (C-LEARN) (NCT03977844) is a community partnered research trial that aims to determine best practices and intervention approaches to build and support disaster-prone communities in Louisiana [23]. The trial was developed based on experience in services implementation and research in disaster response in Louisiana, particularly with a focus on mental health and community engagement, as well as on work in addressing mental health and disaster preparedness and response in Los Angeles [24–31]. C-LEARN was designed to be conducted in two phases. In Phase 1, key informant interviews with community stakeholders throughout southeast Louisiana were conducted to identify emergent themes in community strengths, weaknesses, and priority areas as related to mental health and disaster. Results from Phase 1 informed activities in Phase 2. Phase 2 is a two-tiered, randomized trial of two interventions at each tier. In Tier 1, participating agencies, providers, and administrators were randomized to either (a) technical assistance (TA) in support for finances, housing, and disaster response, or (b) Community Engagement and Planning (CEP) for multi-sector coalition support + TA. In Tier 2: clients of agencies that participated in Tier 1 were randomized to receive one of two text message-based interventions: (a) a Community Resources (CR) guide and (b) the CR guide and a text message-administered Cognitive Behavioral Therapy-based mental health intervention (CR + eCBT) [23,24].

The C-LEARN study completed Phase 1 [32,33], agency recruitment for Phase 2, and intervention training and implementation. Participant recruitment was initiated, but the onset of the COVID-19 pandemic interrupted individual participant recruitment shortly after being initiated. This substantially shifted health care, community agency, and community members' needs and priorities. Following the primary aim of C-LEARN to build and support disaster-prone communities in Louisiana, with input from participating communities and study investigators, the primary goal and design of this study was redirected to conduct a rapid qualitative assessment of community priorities, strengths, and needs as a result of the COVID-19 pandemic and its intersection with potential concerns about climate events such as hurricanes that were pending as the pandemic was occurring. The academic and community stakeholders had participated post-Katrina in applying the Rapid Assessment Procedure (RAP) to inform future intervention efforts [25], and selected the expanded version, Rapid Assessment Procedure-Informed Community Ethnography (RAPICE) for the new study framework [34].

Consistent with the principles and practice of Community Partnered Participatory Research (CPPR) [26], both the C-LEARN project and the framing of the RAPICE phase [34] were performed through a community–academic partnered approach with extensive involvement of community stakeholders in New Orleans, Baton Rouge, and two predominately rural parishes (St. Bernard and St. John the Baptist) in southeastern Louisiana. A description of stakeholder involvement in participant recruitment, data collection, and data analysis is provided below.

2.2. Participants

Eligible participants for individual interviews were required to be English speaking, aged 18 years old or older, and identified as a community leader or employed by a CBO. Participant recruitment began with individuals who previously completed interviews in C-LEARN Part 1. Additional participants were identified and contacted potentially eligible community leaders not previously affiliated with C-LEARN through snowball sampling using contact lists provided by Part 1 interviewees and/or C-LEARN Leadership Council members. Snowball sampling was selected as a purposive sampling strategy for use in this study because the high level of network linkages among disaster-related CBOs previously identified in the study region [23] would ensure a representative sample for qualitative research [35]. Potential participants were then contacted via email using the LSU Health Sciences Center—New Orleans IRB-approved participant invitation letter, or by phone

Table 2. Pre-disaster services provided included community education and webinars, training of volunteers and first responders in disaster preparedness and response training, evacuation support (resident registration, development of evacuation plans), assisting other CBOs in preparation and implementation of disaster preparedness plans, distribution of emergency supplies, fundraising and financial support, and environmental risk management. Post-disaster services provided included material assistance to disaster survivors (food, water, supplies, financial), post-disaster debris removal, delivery of mental health service, rescue and recovery of survivors, emergency health care support, fundraising, and follow up with evacuees.

Table 2.

Table 3. *Cont.*

Theme	No. of Participants	Illustrative Quote
Shift in funding priorities for COVID response	2	"So yeah, the answer to that is absolutely because funding's dried up. So in order to . . . what's happened is, and this is, I think why you're going to see mission creep for a lot of organizations, is because money is very specific towards COVID and then of course local funding, or local money, has also dried up. So, you could look at foundation money, is going to very . . . any foundation money is primarily looking at COVID. Any kind of business money from the private sector, well they don't have any money so what COVID has done from a non-profit perspective has been the do or die kind of thing, so now everybody's in the COVID business" (Participant 17).
Difficulty assisting community in preparing for disasters	1	"I don't think we've specifically shared anything for hurricane preparedness right now. A lot of information that we are putting out, we're basically just using social media, has been focused around COVID relief and just trying to maintain every day now. So just making sure we're just repeating ourselve0(h-248(you'rcs's)-250o A41 0 0 1h0(COVID)-250(business8(up.)-31

Table 4. *Cont.*

Theme	No. of Participants	Illustrative Quote
		Resources
Connecting survivors to resources	4	"In other cases, we'd find out about people in the 2016 flood who'd been living in mold for months. So, connecting them to resources, getting them out of that situation and getting them healthcare is a critical type of coordination. So, all of that is to say, although COVID certainly looks different than those other disasters, we followed the same protocol, and immediately began trying to get our staff and others safe gathering together with the stakeholders and starting to put into place funding and programs that we thought would be most impactful on the ground" (Participant 17).
Increased confidence in ability to respond	4	"Well, I think all the work we've done prior to COVID-19, from Katrina particularly, up until this time has gotten the community to better understand that term resilience. It's not a new term, or the definition of it is not new. People are using it more often, but people are feeling more confident that they can deal with certain challenges. And in those challenges, they're feeling more confident that we can get through this" (Participant 1).
Information sharing	2	"I think when it comes to storm related issues or anything else, that may be coming up. We share the same information, like once we hear something that we put out what's needed to be done in order to maintain, in order to stay safe and how you need to prepare for what's getting ready to occur. We just share this all, right now, is just this day by day" (Participant 6).
Importance of assessing community needs	2	"I think it helped us realize that we can't just jump in and provide what we think is necessary. Everybody after a disaster, Oh, great, let's do such and such, but they're not asking the people on the ground that are in need. So, it helped us to start asking questions of the people around us, what is it that you need? What could we help? Would it be useful if we did things? And before we actually jumped in and started doing them. And it was a little bit easier, I think, getting coordinated, getting people to work together" (Participant 9).
Avoid mission creep	2	"So, for us it became very obvious we have to stay in our lane and then be clearly defined on that and so again with the city and the city trying to . . . and I'm not saying who's right or who's wrong. I mean everybody's right and everybody's wrong in that and so it just causes some misunderstandings to happen and so in a relationship that needs to be built on trust, there was some challenges with that in the past and so for us, my lesson was stay in your damn lane and do that, do it well. Know what you do, own what you do and do it to the best of your ability and just do that. Again, you can add programs, widen your scope, no one's against that but it's one of these things where I don't think people should be chasing money all the time, these one off and these organizations . . . I'm going to use a national organization, the American Red Cross, not the south east, I'm not talking about here, but the American Red Cross, they're infamous for mission creep, infamous for that. Just look at what they do,

Table 4. *Cont.*

Theme	No. of Participants	Illustrative Quote
		Resources
Mental health self-care	1	"Yes. Because lots of our consumers who've experienced Katrina, when COVID came in, they knew they had to take their medications, they knew they had to keep in contact with their resources, like case managers, social workers. And we also knew, if you've been through Katrina, the number one, a must thing, is to take care of your mental health, whether that is to stay inside, make sure you have groceries, make sure your medicines are stocked up from the pharmacy and make sure you have a phone. They have outer contact with somebody, to have contact, while you're going through the COVID-19 in quarantine" (Participant 3).
Staying connected to clients	1	"And so, having had those experiences, I do think that each of the local programs have adjusted their ability to stay connected to the children they're assigned, regardless of what else may be going on in the world. Because that was their experience with Katrina, they lost touch. They lost that connection, and so they've all set up systems that will allow them to maintain contact with their volunteers, and the volunteers with the children, regardless of what else is going on in the world around them. And that has helped children" (Participant 20).
How to recover in an under-resourced community	1	"So, I think South Louisiana is very unique in the diversity of disasters we've had. Hurricanes are predictable in New Orleans, flooding happens. We have perpetual work around those two areas. But things like a oil spill or obviously, tornadoes are hard to prepare for because they just kind of pop down and we have to respond to those, COVID. As far as the community impact of those, we know that there's data that backs up the fact that 53% of our community are either at or below poverty or one single disaster away from slipping into poverty. Meaning that could be in blue skies, a car breaking down, a big bill falling in their lap, a big expense and a disaster we know that's a flood at home, big expense. Interviewee: You know that's losing your income, hurt your pocketbook and COVID. So, the trick I think with COVID is the tale of this disaster is going to be longer than we would like to have to see. With a tornado or something more tangible and physical we can sort of control response around a weather event. Controlling response around a mix of a health and economic disaster is a lot harder to predict the long-term arc of so we usually say in a disaster, there's short term, mid-term, long term and then mitigation. Ideally, mitigation happens before any of that stuff and the cycle. And so how we recover is one variable for our community that are already highly under-resourced and then how we would mitigate going forward. So how we would prevent a similar event in the future from having a disastrous effect on our economy or our workforce, on our businesses is a whole another conversation to have but it's a lot more complicated than building, a levee building a flood wall, clearing the storm drains and those tangible components. Interviewee: It's really a lot of from the ground up rethinking what a healthy, equitable economy looks like for all people. Much like we're having a conversation about what a healthy equitable police force or security would look like for our community. So, there's a lot of those conversations which are overlapping and kind of inter playing off of each other. But we constantly think about what each disaster brings, recognizing that it affects all people, but it affects people in different ways. If you have a cushion or insurance or if you don't because you never have those resources to even plan and prepare to begin with how that affects different people in our community differently, recognizing the entire community is affected. Because we lose our workforce, people have to evacuate and not come back, and we lose students which affects the school system and on and on and on" (Participant 7).

Another resource used by the community-based agencies and organizations during the pandemic has been access to training webinars that are specific to the pandemic. Agencies also used pre-COVID training experiences to address pandemic-related issues such as mental health. Six participants reported applying pre-COVID training through the C-LEARN collaborative in their responses to their pandemic; another six participants reported receiving COVID-relevant disaster preparedness training from other sources.

Delivery of mental health services to clients and community members who had experienced natural disasters since Katrina is another resource that community-based organizations engaged in disaster preparedness and response have contributed during the pandemic. Prior experience with natural disasters also enabled certain agencies to develop a reputation as a source of information for a lot of people, and to earn trust of the community. Two participants mentioned that their role in disaster preparedness and response also provided them with an ability to respond to the pandemic faster than CBOs in other parts of the country with little experience in natural disasters. One participant mentioned that this role also provided them with a healthy donor base needed to begin delivering services such as food and mask distribution.

In addition to resources, the experience of preparing for and/or responding to natural disasters provided several agencies with important lessons that were being applied in responding to the pandemic. The most important lesson learned from prior experiences with natural disasters has been the ability to bring people together for a common purpose. This was cited by six participants. Past experiences with natural disasters also provided an increased confidence in the ability to respond to the pandemic, to coordinate activities with other agencies and communities, and to connect pandemic survivors with necessary resources including food and financial assistance. Other lessons learned from past disasters included the importance of keeping on top of disseminating information, assessing community needs, avoiding mission creep (i.e., taking on responsibilities that exceed agency capability or mission scope), upgrading technology, taking care of one's own mental health, and staying connected to clients. Finally, one participant noted that communities and community residents especially vulnerable to natural disasters and their impacts were also those especially vulnerable to the impacts of the pandemic, suggesting that prior experience in helping these communities to respond to hurricanes and floods taught them how to respond to the pandemic in an under-resourced community.

4. Discussion

The aim of this study was to determine how the COVID-19 pandemic impacted disaster preparedness and recovery in Louisiana and how the state's past experience with disasters has impacted its response to the pandemic. The results suggested that the pandemic has imposed constraints on other forms of disaster preparedness and response, in particular in relation to the context for this study, climate events such as hurricanes. The respondents appeared to be evenly divided between those expressing confidence in being able to execute disaster preparedness and recovery services for events such as hurricanes even in a pandemic, and those who raised concerns about the form and function of planning for disaster preparedness and response activities during the pandemic (such as future evacuations), making it harder to plan for evacuations in the event of a hurricane. Respondents also expressed concerns about being able to see people and meet them in person as they have in the past, which is likely to be impacted by COVID social distancing guidelines, providing food and other resources to residents who shelter in place, and finding volunteers to assist in food distribution and other forms of disaster response. These responses were provided by participants with direct experience in providing disaster-related services and personally experiencing disasters, prior to the pandemic.

In assessing the impact of experience with prior disasters on responding to the pandemic, two sets of strengths and resources were identified by the study participants—those possessed by the community-based organizations (CBOs), and those possessed by the community at large. With respect to the former, several strengths of CBOs based on disas-

ter preparedness experience and capabilities were identified. For instance, prior disaster preparedness experience and planning resources have provided a framework for how to respond and adapt to COVID, enabling some agencies to be proactive, plan ahead, and coordinate volunteers. However, some participants stated that this prior experience provided no preparation from COVID because it is so different. One of the lessons learned from prior disasters has been the need for transportable technology and the use of online platforms and social media for communication and delivery of mental health services [42–46]. For the overwhelming majority of agencies, however, the use of virtual platforms for telehealth or other forms of services is an entirely new experience. Some agencies have integrated COVID response into their normal disaster preparedness activities, especially with respect to dissemination of COVID-related information. For other agencies, prior disaster preparedness activities have provided a healthy donor base needed to fund new COVID-related programs. Perhaps the greatest strength that CBOs bring to bear in addressing the COVID pandemic is their engagement in partnerships with other CBOs—which may have been enhanced by the recently completed intervention trainings for the original design for C-LEARN, that for some agencies explicitly promoted partnerships across diverse types of health care and community-based agencies. Most importantly, almost all agencies reported being connected to a network of CBOs providing mental health services, food, housing, and other social services. The experience of prior disasters such as Hurricane Katrina and the Deepwater Horizon Oil Spill has demonstrated the importance of such networks in promoting individual and community resilience post-disaster [47,48], and has been identified as a key resource in responding to the COVIDp19 pandemic [49].

Several strengths and resources of the broader community served by CBOs were also identified by study participants. Past experiences with disasters and other forms of adversity have provided evidence that people can recover from disaster and made clear that skills can be acquired during disaster response and recovery, as in the instances of efforts to rebuild neighborhoods after Katrina [50]. Lei and Klopack [51] note that there is considerable evidence that prior trauma experience with natural disasters may influence the ways in which individuals respond to risks of other hazards, including the COVID-19 pandemic, by enabling them to anticipate trauma and allow them to engage coping mechanisms more effectively. Disasters and other forms of adversity can also enhance the community's sense of self-efficacy, reflected in the willingness of residents to participate in community response efforts, such as volunteering to assist with service delivery (e.g., food distribution) [52–54].

However, the pandemic is also creating new challenges to preparing for and responding to natural disasters. These challenges for example include new barriers to developing evacuation plans and providing for needs of disaster victims while risking a surge in COVID-19 infections due to social distancing constraints; competing for funds to support disaster-related activities; developing new support infrastructures; and focusing on equity in disaster preparedness. Schultz and colleagues [17,55,56] have pointed to the incompatibility of simultaneously bringing people together for evacuation and sheltering during a natural disaster and keeping them apart during the pandemic. A survey of local government readiness to weather-related disasters found that small, resource-poor governments will not be able to respond well during the pandemic, leading to an increase in social inequities [49]. Thus, while CBOs have benefited from disaster preparedness training and planning and their experiences with prior disasters, the pandemic has created new and unanticipated challenges that must be addressed immediately, even in communities highly experienced in disaster response, including with community engagement strategies [23,24]. The strain on the disaster preparedness and response infrastructure caused by the pandemic could place communities vulnerable to natural disasters in particular jeopardy [57]. As noted in a recently published study of the impact of the pandemic on emergency first responders in Poland [58], addressing these challenges will require broader "out of the box" solutions that may at times deviate from standard disaster response practices and procedures.

4.1. Implications

As this study was conducted in the context of an ongoing community partnered research trial that aims to determine best practices and intervention approaches to build and support in disaster-prone communities in Louisiana, the findings have important

Conflicts of Interest: The authors declare no conflict of interest.

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