



Addressing Racial/Ethnic Inequities in Maternal Health Through Community-Based Social Support Services: A Mixed Methods Study

Rebecca West^{1,2} · Amanda DiMeo² · Ana Langer³ · Neel Shah^{2,4} · Rose L. Molina^{2,4} 

Accepted: 9 December 2021 / Published online: 4 January 2022

© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2021

Abstract

Introduction In the US, there are striking inequities in maternal health outcomes between racial and ethnic groups. Community-based organizations (CBOs) provide social support services that are critical in addressing the needs of clients of color during and after pregnancy.

Methods We conducted a descriptive, cross-sectional mixed methods study of CBOs in Greater Boston that provide social support services to pregnant and postpartum clients. In May–August 2020, we administered an online survey about organizational characteristics, client population, and services offered. In July–August 2020, we conducted semi-structured interviews focused on services provided, gaps in services, and the impact of structural racism on clients. We used descriptive statistics to characterize CBOs and services and used thematic analysis to extract themes from the qualitative data.

Results A total of 21 unique CBOs participated with 17 CBOs completing the survey and 14 participating in interviews. CBOs served between 10 and 35,000 pregnant and postpartum clients per year (median = 200), and about half (n = 8) focused their programming on pregnant and postpartum clients. The most significant gaps in social support services were housing and childcare. Respondents identified racism and lack of coordination among organizations as the two primary barriers to accessing social support.

Discussion CBOs face multiple challenges to providing social support to pregnant and postpartum clients of color, and significant gaps exist in the types of services currently provided. Improved coordination among CBOs and advocacy efforts to develop community-informed solutions are needed to reduce barriers to social support.

Keywords Social support · Maternal health · Racism · Community-based organizations

✉ Rose L. Molina
rmolina@bidmc.harvard.edu

Rebecca West
rlwest@bu.edu

Amanda DiMeo
adimeo@ariadnelabs.org

Ana Langer
alanger@hsph.harvard.edu

Neel Shah
nshah@ariadnelabs.org

¹ Boston University School of Public Health, Boston, MA, USA

² Ariadne Labs at Brigham and Women's Hospital and Harvard T.H. Chan School of Public Health, Boston, MA, USA

³ Women and Health Initiative, Department of Global Health and Population, Harvard T.H. Chan School of Public Health, Harvard University, Boston, MA, USA

⁴ Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center, Boston, MA, USA

Significance

What is already known on this subject?

People of color in the United States experience maternal morbidity and mortality at higher rates than their white counterparts. Social support services during and after pregnancy are essential for maternal health. Community-based organizations (CBOs) are a critical source of social support services and play an important role in reaching groups at risk for worse outcomes.

What does this study add?

This study illustrates the pervasive challenges CBOs face in providing social support services for maternal health, including structural racism and lack of coordination among CBOs. Housing and childcare are two areas of social support that require increased attention and funding.

Introduction

In the United States, there are striking inequities in maternal health between racial and ethnic groups¹: non-Hispanic Black birthing people experience maternal deaths at a rate 3–4 times that of non-Hispanic white birthing people even after accounting for other social and medical factors (Petersen et al., 2019). Inequities in obstetric care delivery have been documented in multiple settings across the United States (Grobman et al., 2015, 2018; MacDorman et al., 2017; Singh, 2010). While the public health community has long been aware of these persistent racial and ethnic inequities (Howell, 2018), there is increased public attention due to the disparate impact of the COVID-19 pandemic on people of color² (Poulson et al., 2021).

Solutions that explicitly address inequities in maternal health outcomes should be prioritized.

Community-based social support plays an important role in mitigating the health disparities experienced by people of color (Howell et al., 2018; Ndugga & Artiga, 2021; NIMHD Research Framework, 2017). Social support is defined as “a network of family, friends, neighbors and community members that is available in times of need to give psychological, physical and financial help” and has been categorized into instrumental support (provision of tangible aid or services to a person in need), informational support (provision of suggestions and information to address problems), and emotional support (provision of empathy or love) (Glanz et al., 2008). Social support may provide a buffering mechanism between maternal stress and outcomes such as preterm birth (Hetherington et al., 2015), and lack thereof can negatively impact exclusive breastfeeding (Laugen et al., 2016) and infant birth weight (Lee et al., 2019).

Community-based organizations (CBOs) and allied organizations (e.g., health care delivery) have an important role in providing critical social support services to clients during pregnancy and the transition to parenthood by addressing community and family-level drivers of racial and ethnic inequities (Howell, 2018). While there are many CBOs working to provide social support at the intersection of maternal health and racial equity, there is a lack of information about the gaps in services and challenges

CBOs face in meeting the needs of communities of color most impacted by structural racism (defined as “differential access to goods, services, and opportunities of society by race” (Jones, 2000)), particularly during the critical periods of pregnancy and first year after childbirth. To address this gap in the literature, we conducted a mixed-methods study with the following research aims: (1) identify gaps in social support services and challenges faced in service provision among CBOs for clients of color during pregnancy through one year after childbirth, and (2) identify CBO assets, resources, programs, and networks to fill the gaps identified in social support services.

Methods

We conducted a descriptive cross-sectional mixed methods study among CBOs serving Boston and surrounding cities in Massachusetts. Inclusion criteria were being an employee of an identified CBO whereby the Executive Director had given permission to participate in the study and the ability to read and/or speak English. Individuals less than 18 years old were excluded. Potential participants (CBOs) were recruited to take the online survey using convenience sampling. The study team developed a preliminary list of CBOs in Greater Boston from web searches and professional networks, then expanded it using snowball sampling of key informant connections. The Executive Directors of 102 CBOs were emailed invitations to complete the survey themselves or delegate the survey to an employee of their CBO who would be best suited to answer the questions on the survey. The respondent answered as a surrogate for their respective organization. We invited survey respondents and CBO Executive Directors who indicated willingness to participate in follow-up interviews about their organization’s experience in providing social support services to pregnant and postpartum clients.

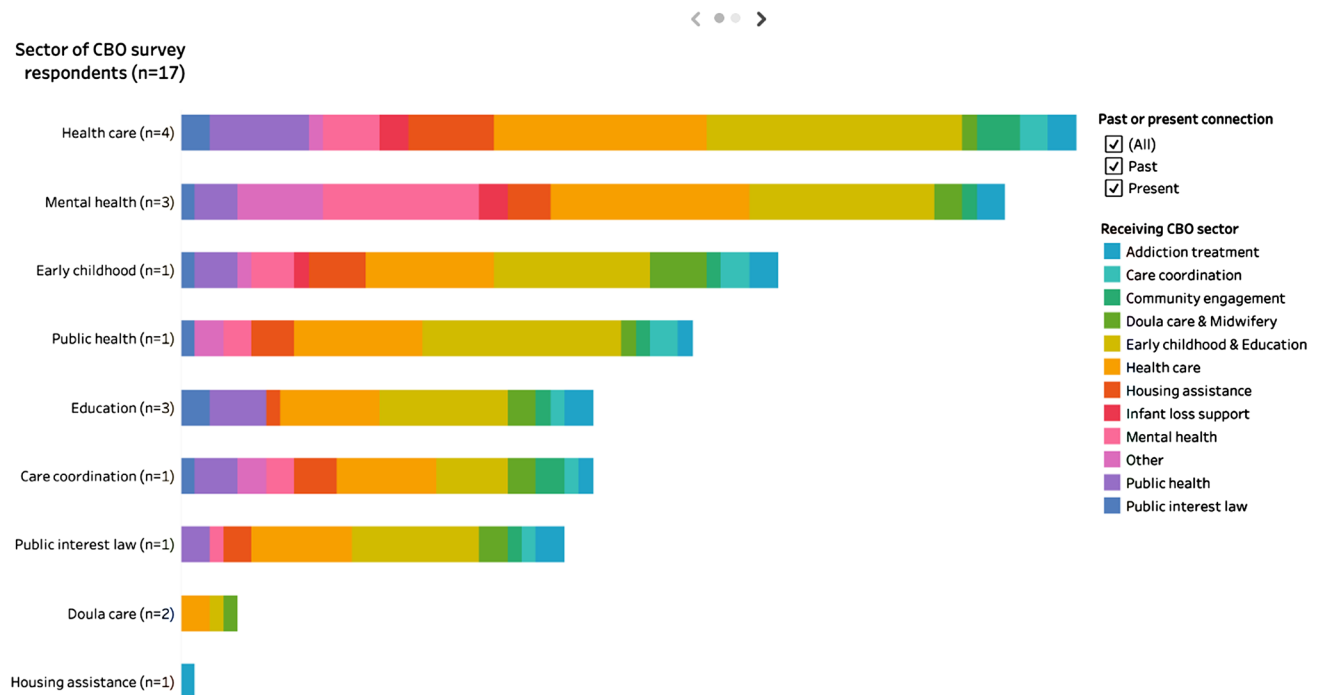
Data Collection

We administered the survey via Qualtrics from May–August 2020, which consisted of 41 primarily closed-ended questions on CBOs’ organizational characteristics, client population, social support services offered, and the impact of the COVID-19 pandemic on operations. Respondents were asked to estimate percentages of clients and employees identifying as people of color, identifying as Black/African American, and preferring to speak a language other than English. We asked CBO respondents to identify organizations in their professional networks providing social support services to pregnant and postpartum clients. The survey also contained open-ended questions asking respondents to describe challenges and required resources.

¹ We acknowledge the term “maternal” as a gendered one and recognize the spectrum of gender identities that birthing people hold. The use of this term is not intended to be exclusive of other gender identities. We aim to use gender-neutral terminology in this manuscript whenever possible.

² We include the term “people of color” as encompassing those individuals who identify as Black or African American, Asian or Pacific Islander, Native American, Hispanic or Latinx, but recognize that the data show disparities in maternal outcomes are particularly severe for individuals identifying as Black and Native American.

Where do CBOs in Boston refer clients?



^cFor the purposes of this study, we defined collaboration as a relationship whereby a CBO refers or accepts clients from an organization, or works together with this organization to improve programs and/or share resources.

Fig. 1 This figure represents connections between CBOs. Bars connect the sectors of the survey respondent CBOs to their reported network of CBOs by sector on the right. Each bar represents a sector-

sector connection, and the thickness of the bar shows the number of connections between those sectors

We conducted in-depth interviews via Zoom from July–August 2020 using a semi-structured guide. Topics included services provided, gaps in services, challenges providing services, and the impact of structural racism on service provision and access. Interviews were recorded and transcribed for subsequent analysis.

Data Analysis

We conducted analysis in STATA (StataCorp, 2011). We identified gaps in social support when respondents reported facing challenges in connecting clients to services often or almost always *and* when respondents reported experiencing excess demand for services often or almost always were *higher* than the percent of CBO respondents who reported somewhat or significant underutilization of services.

Study staff analyzed qualitative data using thematic analysis in Dedoose (SocioCultural Research Consultants LLC, 2018). Study staff created a codebook using an inductive approach to identify themes and added a deductive set of codes aligning with social support categories used in the online survey. Study staff double coded the first transcript and achieved high interrater reliability (Pooled Cohen's

Kappa between $r=0.75$ and $r=0.92$) and met weekly to reach consensus on any disagreements in coding.

Survey data about collaborative relationships between CBOs were prepared for analysis using RStudio. The team designed a visualization using Tableau Public with bars connecting the sectors of the survey respondent CBOs to their reported network of CBOs by sector (Fig. 1). Each bar represented a sector-sector connection, and the thickness of the bar showed the number of connections between those sectors.

We describe results from this study using the weaving approach of integrating mixed methods data, in which quantitative and qualitative findings are presented in the narrative on a theme-by-theme basis (Fetters et al., 2013). First, we discuss organizational characteristics and resources required by CBOs. We then present gaps in social support services identified by CBOs, followed by CBOs' descriptions of the most significant challenges they face in providing social support services to pregnant and postpartum clients of color.

We obtained ethical approval for this study from the Institutional Review Board at Harvard T.H. Chan School of Public Health. CBO Executive Directors gave permission for employees of their organization to participate. Respondents

were given consent forms and allowed to skip questions or end the survey/interview at any time. Interviewees were compensated \$30.

Results

Of 29 CBOs with permission from their Executive Director to participate, 17 CBOs completed the online survey and 14 CBO employees participated in interviews; 10 of which participated in both. A total of 21 unique CBOs participated (Table 1).

Organizational Characteristics

CBOs served between 10 and 35,000 pregnant and postpartum clients per year, with a median of 200 clients. About half of the CBOs ($n = 8$) focused most of their programming on providing services to pregnant and postpartum clients. Most CBOs prioritized the following antiracist practices: hiring employees of diverse backgrounds; collecting racial, ethnic and linguistic data; providing linguistic access for clients with limited English proficiency; and using funding to support programs disproportionately needed among clients of color.

Resources Needed by CBOs

Respondents described required resources and/or solutions to address existing challenges, including additional funding for programming; opportunities and support to recruit more diverse staff; and opportunities to build partnerships and enhance collaboration across CBOs. Multiple respondents discussed a desire to develop a cross-sector collaborative, using a shared citywide dataset or by partnering with hospital systems to automatically refer clients to services and streamline the referral process. They also expressed interest in creating more centralized and unified systems that offered services physically located in one place to better meet clients' needs.

Gaps in Social Support

All social support services provided by CBOs surveyed are listed in Table 2. Housing and childcare emerged as the two most significant gaps in social support services, which were exacerbated by the COVID-19 pandemic. Other gaps in social support services identified through the survey and interviews were mental health services and food (instrumental); community engagement, programming for fathers, support groups or other resources for clients who experienced infant loss, and housing assistance (informational); and couple or family support and counseling (emotional) (Table 3).

Table 1 Study participants from community-based organizations and allied health organizations

Number	Survey	Interview	Sector	Service area
1	X	X	Mental health	Greater Boston area
2	X	X	Public health	Greater Boston area
3	X	X	Public health	Greater Boston area
4	X	X	Mental health	Massachusetts
5	X		Healthcare	Greater Boston area
6	X	X	Doula care	Greater Boston area
7	X	X	Public health	National
8	X		Public health	Massachusetts
9	X	X	Mental health	Massachusetts
10 ^a	X	X	Public interest law	Massachusetts
11	X		Public health	Greater Boston area
12	X		Public health	Greater Boston area
13	X	X	Public health	Greater Boston area
14	X	X	Healthcare	Greater Boston area
15	X		Public health	Greater Boston area
16	X		Public health	Greater Boston area
17	X		Doula care	Greater Boston area
18		X	Material assistance	Greater Boston area
19		X	Public health	Greater Boston area
20		X	Public health	Massachusetts
21		X	Healthcare	Greater Boston Area

^aFilled out the survey twice for two different programs within the same CBO

Challenges Providing Social Supports

The two primary challenges respondents identified to providing social support services were the impact of racism on clients and lack of coordination among CBOs. These are described in order of thematic saturation.

Table 2 Social support services offered by CBOs

Gap	CBO offers the service % (n)	Faced challenges connecting clients to service (almost always or often) % (n)	Experienced excess demand (almost always or often) % (n)	Service somewhat or significantly underutilized % (n)
<i>Instrumental support services</i>				
Health education	77.8% (14)	21.4% (3)	28.6% (4)	35.7% (5)
Mental health	72.2% (13)	38.5% (5)	46.2% (6)	30.8% (4)
Family programs	72.2% (13)	25.0% (3)	41.7% (5)	41.7% (5)
Material assistance	61.6% (11)	18.2% (2)	36.4% (4)	0.0% (0)
Food	55.6% (10)	20.0% (2)	40.0% (4)	10.0% (1)
Health insurance enrollment support	50.0% (9)	0.0% (0)	11.1% (1)	11.1% (1)
Transportation	50.0% (9)	22.2% (2)	0.0% (0)	11.1% (1)
Language assistance	44.4% (8)	12.5% (1)	25.0% (2)	12.5% (1)
Housing	33.3% (6)	100% (6)	50.0% (3)	0.0% (0)
Childcare	27.8% (5)	80.0% (4)	80.0% (4)	20.0% (1)
Financial services	22.2% (4)	0.0% (0)	50.0% (2)	25.0% (1)
Legal services	22.2% (4)	25.0% (1)	50.0% (2)	25.0% (1)
Disability services	16.7% (3)	0.0% (0)	33.3% (1)	0.0% (0)
Energy or fuel assistance	16.7% (3)	0.0% (0)	66.7% (2)	0.0% (0)
Job readiness or placement programming	16.7% (3)	0.0% (0)	0.0% (0)	33.3% (1)
<i>Informational support services</i>				
Language-appropriate services	88.9% (16)	18.8% (3)	31.3% (5)	25.0% (4)
Culturally concordant services	72.2% (13)	23.1% (3)	23.1% (3)	30.1% (4)
Mental health counseling services	61.1% (11)	27.3% (3)	18.2% (2)	54.5% (6)
Childbirth and breastfeeding classes or support	61.1% (11)	18.2% (2)	18.2% (2)	27.3% (3)
Newborn care, parenting support and childhood development programs	61.1% (11)	9.1% (1)	27.3% (3)	27.3% (3)
Community engagement opportunities for pregnant and parenting families	55.6% (10)	20.0% (2)	30.0% (3)	10.01% (1)
Programming for fathers	38.9% (7)	28.6% (2)	28.6% (2)	14.3% (1)
Support groups/ resources for clients who have experienced infant loss, stillbirth, miscarriage	38.9% (7)	71.4% (5)	57.1% (4)	0.0% (0)
Legal assistance	33.3% (6)	33.3% (2)	33.3% (2)	16.2% (1)
Job training, benefit enrollment assistance, financial aid	33.3% (6)	33.3% (2)	50.0% (3)	66.6% (4)
Housing assistance	33.3% (6)	50.0% (3)	83.3% (5)	33.3% (2)
<i>Emotional support services</i>				
Community support group meetings (s)	55.6% (10)	30.0% (3)	30.0% (3)	30.0% (3)
New or experienced parents group meeting(s)	55.6% (10)	30.0% (3)	40.0% (4)	30.0% (3)
Mental health counseling	44.4% (8)	25.0% (2)	37.5% (3)	37.5% (3)
Couple and/or family support counseling	22.4% (4)	50.0% (2)	50.0% (2)	25.0% (1)
Substance use disorder counseling	22.2% (4)	25.0% (1)	50.0% (2)	25.0% (1)

Table 3 Gaps in social supports, quantitative and qualitative findings

Gap	CBO offers the service % (n)	Faced challenges connecting clients to service (almost always or often) % (n)	Experienced excess demand (almost always or often) % (n)	Service somewhat or significantly underutilized (%) n	Illustrative quote
<i>Instrumental support services</i>					
Housing	33.3% (6)	100% (6)	50.0% (3)	0.0% (0)	“[Housing] is a pervasive issue for every resident of Boston that is low income or even middle income.” (IDI 14)
Childcare	27.8% (5)	80.0% (4)	80.0% (4)	20.0% (1)	“We know the layout of Boston as a city and I would definitely say that our families of color are more likely to not have a sufficient income. They are much more likely to have concerns around affording childcare or having to settle for childcare that may not be the best because it’s cheaper.” (IDI 7)
Mental Health Services	72.2% (13)	38.5% (5)	46.2% (6)	30.8% (4)	“You look at the community health centers in Boston, some have behavioral health, some don’t... Whether they are screening for an issue I do not know. Screening data has been very difficult to come by.” (IDI 3)
Food	55.6% (10)	20.0% (2)	40.0% (4)	10.0% (1)	“...Not only food security, but like cultural competence around food and just being realistic about what’s going to work for this particular family, but also providing the support around being able to integrate those various recommendations for folks I think would be really helpful too.” (IDI 10)
<i>Informational support services^a</i>					
Community engagement opportunities for pregnant and parenting families	55.6% (10)	20.0% (2)	30.0% (3)	10.01% (1)	“...Whether it’s virtual meetings or in-person meetings, [we need] more community support with other parents.” (IDI 4)
Programming for fathers	38.9% (7)	28.6% (2)	28.6% (2)	14.3% (1)	“I would love to offer a new dad’s group. Specifically for new fathers. I don’t think that there’s a lot available in the community for dads specifically.” (IDI 8)

Table 3 (continued)

Gap	CBO offers the service % (n)	Faced challenges connecting clients to service (almost always or often) % (n)	Experienced excess demand (almost always or often) % (n)	Service somewhat or significantly underutilized (%) n	Illustrative quote
Support groups/resources for clients who have experienced infant loss, stillbirth, miscarriage	38.9% (7)	71.4% (5)	57.1% (4)	0.0% (0)	“...I see a huge gap in social support services for women who lose their babies. There’s a lot of focus on preventing that from happening, and using social support as a tool to prevent that from happening, but we fail. Infant mortality is not all that great still, and there’s really not much going on to support those women.” (IDI 1)
Housing assistance	33.3% (6)	50.0% (3)	83.3% (5)	33.3% (2)	“People need the basic help of filling out that- Boston Metro Housing list is like 14 pages long. I did it myself, for myself and I just couldn’t imagine...Can you imagine if anybody else was trying to get through that?” (IDI 5)
<i>Emotional support services</i>					
Couple and/or family support counseling	22.4% (4)	50.0% (2)	50.0% (2)	25.0% (1)	“That’s the other feedback that we got from groups is [the] importance of the family structure, grandparents and siblings and including more members of the family in care, engaging fathers more...” (IDI 17)

^aLegal assistance was also identified as a gap in the survey data, but did not emerge in qualitative interviews

Impact of Racism

Structural Racism Within the CBO

Respondents highlighted the impact of racism within their own organizations, including lack of leadership of color and lack of staff of color overall. For example:

...One of the big challenges is that within the leadership team, I am the only person of color. I think it has been challenging to engage the team as allies for the issues of people of color...there's been a lot of revolving door of various members of our team of people of color. (IDI 02)

In a few cases, respondents described witnessing differential treatment of clients depending on their race/ethnicity and instances of conflict among staff when discussing racism. As one respondent said:

I had a woman of color that was kicked out of a treatment program for her drinking an energy drink because it broke the rules. I'm like, would that have happened if she was white? Maybe, but I don't know. (IDI 17)

Generally, respondents noted a discrepancy between the numbers of clients and employees of color in their organizations. Respondents expressed a desire for more diverse staff to better reflect and meet the needs of their client population, give clients the opportunity to see a provider who shared their cultural and/or ethnic background, and inform program development. Lack of language capacity was cited as a significant challenge to providing social support, particularly in Haitian Creole and Spanish. This need was highlighted by CBOs' shift to virtual services and telehealth during the COVID-19 pandemic with limited language capacity.

Respondents shared strategies to dismantle structural racism and promote diversity within their organizations, including hiring an anti-racism consultant and creating staff reflection groups; formalizing diversity, equity, and inclusion efforts within the organization; and creating a working group to review materials for inclusivity. Respondents also emphasized the importance of engaging community members in development of programs, from identifying appropriate times and locations for services, to providing input on culturally appropriate recommendations for food and expert input on content.

Structural Racism in Boston

Respondents described how redlining in Boston led to generational poverty and lack of resources within communities

of color, creating significant barriers to accessing social support services. As one person stated:

[We have to] keep in mind things like redlining where families of color were disenfranchised from being able to access the property ladder and thus accumulate the sort of wealth that many white families have always had access to, and bear in mind that was not very long ago, but we are very much still feeling the effects of this. We know that just looking at a child's zip code is enough to predict so much about their access to education... (IDI 08)

Several respondents described the lack of grocery stores with healthy foods in neighborhoods of color as compared to gentrifying areas of Boston as a significant challenge. Lack of transportation, poor air quality, lack of access to early education, and less investment in neighborhoods (particularly Roxbury, Dorchester, and Mattapan) were also cited as impacts of redlining.

Racism Among Clients' Healthcare Providers

Respondents described instances of providers who did not fully listen to or acknowledge the needs of clients of color, and shared stories of clients experiencing discrimination. One respondent described attending a doctor's appointment with a Black client in which the doctor routinely addressed questions to the CBO staff member instead of the client:

...I [had a] family that is headed by a single mother. The family is Black... I was asked to join the family at a doctor's visit. The physician who was attending them was also white, and I just remember the entire time the physician was just asking me all these questions about the child. I physically had to turn myself and stop the conversation to redirect it to the child's mother. It's things like that. If you have experiences like that, is that going to make you more likely to seek care or further resources for your child or family? No, it's not. (IDI 08)

Another respondent reported experiences in which Latinx clients were not offered comprehensive birth control options and were told which family planning method to choose with minimal education from their provider:

[We were told] through our clients that they really were not being offered many [family planning] options. They were being told what they needed to do and when they needed to do it without really having a good understanding of the impact of some of these things in their body. (IDI 15/16)

Implicit bias in screening for social determinants of health and mental health services was also identified as a recurring

problem. Respondents also shared that their clients reported a significant amount of anticipatory fear about giving birth in a hospital, and how this fear was a deterrent to seeking medical care.

Lack of Coordination Among CBOs

Respondents highlighted the fragmentation among CBOs in Greater Boston, leading to duplication of some services and leaving gaps in others. Barriers with completing paperwork, meeting differing eligibility requirements, and traveling to and from disparately located services were also seen as manifestations of this fragmentation. Respondents discussed the importance of networking and building relationships, which was challenging due to constrained schedules and budgets, a culture of siloing, and competition for funding among CBOs in Boston.

Despite these challenges, some respondents discussed building partnerships with community health centers and other health and social support providers. Referrals were most common coming from healthcare and mental health sectors as compared to other sectors (Fig. 1). The early childhood and education sector received a relatively high number of referrals from each of the different sectors. Connections with the doula community and housing assistance were particularly lacking, indicating a need to improve linking clients to these services.

Discussion

This study highlights significant challenges in connecting pregnant and postpartum clients of color to social support services in Greater Boston. Our findings illustrate the need to reduce barriers to accessing these services, from the internal workings of organizations themselves, to city governance, to advocacy and policy efforts.

CBOs themselves require structural change to ensure leadership and staff better match their clientele. Enhanced racial and ethnic diversity among CBO employees is needed to design and provide services that are culturally appropriate and responsive to clients' needs. CBOs would benefit from revising recruitment and hiring processes, supporting professional development opportunities for staff of color, and setting benchmarks to measure their progress toward equitable hiring and retention practices. Offering clients opportunities to participate in program development is another mechanism for meaningful and sustained engagement within communities. Organizations may also benefit from strategic planning efforts to create diversity, equity, and inclusion initiatives, starting with agency-wide trainings. The health and education fields have demonstrated that such trainings can increase self-efficacy around these topics

(Booker et al., 2016; O'Connor et al., 2019) and promote awareness of language and personal impact of one's actions on others (Booker et al., 2016). Similarly, within medical education, anti-oppression and antiracism curricula have been shown to enhance health professionals' confidence in addressing inequities in health care (Wu et al., 2019) and deepen understanding of the impact of racism and social determinants of health on their patients (Neff et al., 2020).

Within cities, relevant institutions should plan and deliver services to meet communities where they are. Co-located services could eliminate the transportation and time barriers many clients face. Streamlining paperwork and application processes across CBOs could facilitate timely and effective linkage to services. There is a need for more models of wrap-around medical, health and social services that ensure families, clinicians and key members of the family's social support network can function as a team (Bruns & Walker, 2010). City governments can also push for increased capacity for data-sharing and information dissemination to leverage CBOs' assets and expertise, such as community information exchanges that share client data across social service agencies (Health & Exchange, 2020; Johnson et al., 2018).

Our research underscores the importance of directly engaging both CBO leadership and front-line service providers in the design and delivery of social support services. Funding community engagement efforts should be prioritized to ensure that local voices are incorporated into programming, and that individuals are appropriately compensated for their time and efforts. CBOs should be involved in identifying not only the problems, but also the solutions. For this project, CBOs and other stakeholders were invited to engage in a series of design thinking workshops with our team to react to and interpret the data reported in this manuscript, as well as co-create potential solutions to address the challenges identified by our respondents (findings to be published separately).

We acknowledge several study limitations. There is potential for selection bias in our sample due to recruitment through our team's professional networks; however, the interviews were conducted by study staff unknown to participants. Some CBOs provided services only to pregnant people and/or postpartum people, while others served additional clients. We included all these CBOs in our analysis and acknowledge that they may face unique challenges that may not apply to all other CBOs. We did not collect data on respondents' gender identity or race and ethnicity for reporting in this manuscript. We initially aimed to survey between 40 and 50 CBOs, but our final sample size was much smaller, which may have led to response bias across CBO characteristics or sector. Due to our small sample size, it is possible that we did not reach thematic saturation of all themes; however full thematic saturation was not critical for this work as the aim was to generate

solutions to explore in the subsequent design workshops. Lastly, these findings may not be generalizable outside of Greater Boston.

This study highlights the need for increased social support services for communities of color in Greater Boston, most urgently in housing, childcare, and mental health support. CBOs would benefit from coordination of their services to better leverage their assets and meet clients' whole-person needs. CBOs, community advocates, health care providers, academics, and policymakers can use these findings to better develop, integrate, and evaluate services to fill these gaps and address inequities in maternal health.

Acknowledgements We thank Obiageli Okafor for assisting with background research and support in drafting data collection tools. We send our appreciation to Leigh Graham and Ayotomiwa Ojo for their insights on community engagement in this project. We thank Ami Karlage for her support in developing this manuscript. Finally, we thank Elodie Paquette, Kate Miller and Griffith Bell for their support in the execution of a network analysis and their guidance in interpretation of the results.

Author Contributions RW contributed to acquisition, analysis, and interpretation of data; drafted the manuscript; and provided substantive revisions and approval of the final manuscript. AD contributed to acquisition, analysis, and interpretation of data; and provided substantive revisions and approval of the final manuscript. AL contributed to the design of the work; acquisition, analysis, and interpretation of data; and provided substantive revisions and approval of the final manuscript. NS contributed to the design of the work; acquisition, analysis, and interpretation of data; and provided substantive revisions and approval of the final manuscript. RLM contributed to the design of the work; acquisition, analysis, and interpretation of data; and provided substantive revisions and approval of the final manuscript.

Funding The Boston Foundation (Grant G2019-0034).

Data Availability N/A.

Code Availability Available upon reasonable request.

Declarations

Conflict of interest The authors have no conflicts of interest to disclose.

Consent to Participate All participants provided written consent to participate in the study.

Consent for Publication N/A.

Ethical Statement All procedures performed in studies involving human participants were in accordance with the ethical standards of the relevant institutional and national research committees and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Approval for this research was provided by the Harvard T.H. Chan School of Public Health Institutional Review Board record IRB20-0193.

Informed Consent Informed consent was obtained from all individual participants included in the study.

References

- Booker, K. C., Merriweather, L., & Campbell-Whately, G. (2016). The effects of diversity training on faculty and students' classroom experiences. *International Journal for the Scholarship of Teaching and Learning*. <https://doi.org/10.20429/ijstol.2016.100103>
- Bruns, E. J., & Walker, J. S. (2010). Defining practice: Flexibility, legitimacy, and the nature of systems of care and wraparound. *Evaluation and Program Planning*, 33(1), 45–48. <https://doi.org/10.1016/j.evalprogplan.2009.05.013>
- Camden Coalition Information Health Exchange. (2020). <https://camdenhealth.org/connecting-data/hie/>. Accessed October 27, 2020.
- Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving integration in mixed methods designs-principles and practices. *Health Services Research*, 48(6), 2134–2156. <https://doi.org/10.1111/1475-6773.12117>
- Glanz, K., Rimer, B., & Viswanath, K. (2008). *Health behavior and health education: Theory, research, and practice* (4th ed.). Jossey-Bass.
- Grobman, W. A., Bailit, J. L., Rice, M. M., et al. (2015). Racial and ethnic disparities in maternal morbidity and obstetric care. *Obstetrics and Gynecology*, 125(6), 1460–1467. <https://doi.org/10.1097/AOG.0000000000000735>
- Grobman, W. A., Parker, C. B., Willinger, M., et al. (2018). Racial disparities in adverse pregnancy outcomes and psychosocial stress. *Obstetrics and Gynecology*, 131(2), 328–335. <https://doi.org/10.1097/AOG.0000000000002441>
- Hetherington, E., Doktorchik, C., Premji, S., McDonald, S., Tough, S., & Suave, R. (2015). Preterm birth and social support during pregnancy: A systematic review and meta-analysis. *Paediatric and Perinatal Epidemiology*, 29(6), 523–535.
- Howell, E. A. (2018). Reducing disparities in severe maternal morbidity and mortality. *Clinical Obstetrics and Gynecology*, 61(2), 387–399. <https://doi.org/10.1097/GRF.0000000000000349>
- Howell, E. A., Brown, H., Brumley, J., et al. (2018). Reduction of peripartum racial and ethnic disparities: A conceptual framework and maternal safety consensus bundle. *Obstetrics and Gynecology*, 131(5), 770–782. <https://doi.org/10.1097/AOG.0000000000002475>
- Johnson, B., Grounds, K., Christenson, C. (2018). Webinar 1: Introduction to CIE and Toolkit Overview. In.
- Jones, C. P. (2000). Levels of racism: A theoretic framework and a gardener's tale. *American Journal of Public Health*, 90(8), 1212–1215. <https://doi.org/10.2105/AJPH.90.8.1212>
- Laugen, C. M., Islam, N., & Janssen, P. A. (2016). Social support and exclusive breast feeding among Canadian women. *Paediatric and Perinatal Epidemiology*, 30(5), 430–438. <https://doi.org/10.1111/ppe.12303>
- Lee, H.-Y., Oh, J., Perkins, J. M., Heo, J., & Subramanian, S. V. (2019). Associations between maternal social capital and infant birth weight in three developing countries: A cross-sectional multi-level analysis of Young Lives data. *British Medical Journal Open*, 9(10), e024769. <https://doi.org/10.1136/bmjopen-2018-024769>
- MacDorman, M. F., Declercq, E., & Thoma, M. E. (2017). Trends in maternal mortality by sociodemographic characteristics and cause of death in 27 states and the district of Columbia. *Obstetrics and Gynecology*, 129(5), 811–818. <https://doi.org/10.1097/AOG.0000000000001968>
- NIMHD Research Framework. (2017). National Institute on Minority Health and Health Disparities. Accessed July 25, 2021. <https://www.nimhd.nih.gov/about/overview/research-framework/nimhd-framework.html>.
- Ndugga, N., Artiga, S. (2021). *Disparities in Health and Health Care: 5 Key Questions and Answers*. Kaiser Family Foundation. Accessed July 25, 2021. <https://www.kff.org/>

- [racial-equity-and-health-policy/issue-brief/disparities-in-health-and-health-care-5-key-question-and-answers/](#).
- Neff, J., Holmes, S. M., Knight, K. R., et al. (2020). Structural competency: Curriculum for medical students, residents, and Inter-professional teams on the structural factors that produce health disparities. *MedEdPORTAL.*, 16(1), 10888. https://doi.org/10.15766/mep_2374-8265.10888
- O'Connor, M. R., Barrington, W. E., Buchanan, D. T., et al. (2019). Short-term outcomes of a diversity, equity, and inclusion institute for nursing faculty. *Journal of Nursing Education*, 58(11), 633–640. <https://doi.org/10.3928/01484834-20191021-04>
- Petersen, E. E., Davis, N. L., Goodman, D., et al. (2019). Racial/ethnic disparities in pregnancy-related deaths: United States, 2007–2016. *MMWR. Morbidity and Mortality Weekly Report*, 68(35), 762–765. <https://doi.org/10.15585/mmwr.mm6835a3>
- Poulson, M., Geary, A., Annesi, C., et al. (2021). National disparities in COVID-19 outcomes between Black and White Americans. *Journal of the National Medical Association*, 113(2), 125–132. <https://doi.org/10.1016/j.jnma.2020.07.009>
- Singh, G. K. (2010). *Maternal Mortality in the United States, 1935–2007: Substantial Racial/Ethnic, Socioeconomic and Geographic Disparities Persist*. U.S. Department of Health and Human Services, Maternal and Child Health Bureau, 9
- Wu, D., Saint-Hilaire, L., Pineda, A., et al. (2019). The efficacy of an antioppression curriculum for health professionals. *Family Medicine*, 51(1), 22–30. <https://doi.org/10.22454/FamMed.2018.227415>

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.