



Embedded Maternal Mental Health Care in a Pediatric Primary Care Clinic: A Qualitative Exploration of Mothers' Experiences

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The authors have no conflicts of interest to disclose.

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Received for publication March 22, 2019; accepted August 5, 2019.

ABSTRACT

OBJECTIVE: The American Academy of Pediatrics recommends screening parents for postpartum depression during pediatric primary care visits. Unfortunately, many women who screen positive do not obtain treatment. Providing mental health services for women in the same location as their children's primary care may facilitate treatment, but few such clinics exist. We designed a qualitative study to evaluate women's perceptions and experiences with receiving mental health services from psychiatrists embedded in a safety-net pediatric primary care clinic.

METHODS: Semistructured interviews were conducted with women receiving mental health care from embedded psychiatrists in a safety-net pediatric clinic. Data were analyzed using an inductive approach.

RESULTS: Twenty women participated. Five major themes emerged: 1) barriers to maternal mental health care, including psychiatric symptoms impairing access, stigma, and fear of

Child Protective Services; 2) benefits of embedded care, including convenience, low barrier to entry and trust; 3) motherhood as facilitator to care, with early motherhood described as a time of vulnerability to relapse; 4) focus on parenting, including appreciation for parenting skills and normalization of the mothering experience; 5) treatment modality preferences, including concerns about medications and a preference for psychotherapy.

CONCLUSIONS: Postpartum women face many barriers to psychiatric care. Mental health care embedded within the pediatric setting lowers barriers to care during this critical period. These insights should inform further collaboration between adult psychiatrists and pediatric care providers.

KEYWORDS: behavioral health; health services; maternal child health; postpartum depression; primary care pediatrics

ACADEMIC PEDIATRICS 2019;19:934–941

WHAT'S NEW

Embedding adult psychiatrists into a primary care pediatrics clinic represents a novel approach to treating maternal psychiatric disorders. This study demonstrates that mothers found this embedded care model to be acceptable, convenient and beneficial.

DEFINED AS DEPRESSION onset within 1 year after childbirth, postpartum depression (PPD) affects 12% of all mothers and negatively impacts children's health and development.^{1,2} Children of depressed mothers are less likely to be breastfed, more likely to require nonroutine pediatric visits during the first year of life, and have decreased odds of attending routine well child visits and receiving scheduled vaccinations in the first 3 years of life.^{3–5} Maternal depression can impact attachment and

bonding with potential adverse consequences for infant cognitive, social, and emotional development.^{6,7} Poverty, low social support, and racial/ethnic minority status are associated with increased risk of maternal depressive symptoms.^{8,9}

Depression is treatable with medications and/or psychotherapy.¹⁰ Remission of the mother's depression has been associated with improvements in child measures of psychiatric symptoms and problematic behaviors.^{11,12} Because of the risks associated with untreated maternal depression and the benefits of intervention, the American Academy of Pediatrics recommends that all mothers receive screening for depression regularly until 6 months postpartum.⁶ Similar recommendations have been endorsed by the United States Preventive Services Task Force and the Centers for Medicare and Medicaid.^{10,13} The recommendations do not identify a preferred screening method, but the Edinburgh Postnatal Depression Scale

(EPDS) and the Patient Health Questionnaire are commonly employed.¹⁴

Despite such recommendations, rates of identification and treatment of PPD remain low, with one review estimating only 3% of all women with PPD reach symptom remission.¹⁵ Detection and treatment of mental illness are particularly low among racial/ethnic minority individuals.¹⁶ One method of addressing this service gap involves embedding mental health services into primary care settings. Evidence for this type of model is strongest within family medicine, obstetrics or gynecology, and family health centers, with limited data for pediatric primary care.^{14,17–19} The majority of programs targeting PPD consist of screening, psychoeducation, and referral either to a clinic social worker or adult care provider off-site, and do not directly involve a psychiatrist, but reviews suggest that such models are insufficient to cause meaningful improvements in outcomes.^{17,19} One significant flaw with such models is that referral to off-site mental health practitioners results in significant attrition. For example, a retrospective chart review found that of women bringing infants for a 2-month well child checkup who screened positive for depression and were referred for mental health services, only 12% actually obtained such services.²⁰

An innovative solution is integrating adult psychiatric services into the pediatric setting, which is best described as either embedded or co-located care. Of note, such a model is particularly suited for a clinic that serves women at high risk for mental health issues, who require such specialized psychiatric care. One exploratory study of this type of model demonstrated improvements in child health outcomes compared to outcomes for older siblings from the same mother when she was not receiving on-site mental health support, though the sample size was small and the study design had limitations.²¹

The Kempe Behavioral Health Partnership (KBHP) was created in 2012 at the Zuckerberg San Francisco General Hospital (ZSFG), a safety net academic institution serving a low-income, publicly insured, population that is racially and ethnically diverse. KBHP is embedded in a half-day per week pediatric primary care clinic called the Kempe Clinic that is staffed by pediatric residents and attendings. KBHP provides mothers of Kempe Clinic patients with enhanced support from a multidisciplinary team that includes a psychologist specializing in infant mental health, 2 social workers trained in parent support, a domestic violence counselor, and 2 adult psychiatrists specializing in women's mental health. All women receiving care from the adult psychiatrists are publicly insured through Medicaid or a San Francisco-sponsored health plan and the funding for the psychiatrists' time comes from a private foundation grant. The Kempe Clinic accepts referrals of families with social risk factors including maternal mental health disorders, maternal substance use, child protective services involvement, intimate partner violence, and young parental age. These referrals come from other ZSFG primary care clinics, the neonatal intensive care unit and well baby nursery, and other community clinics. Given this referral system, the prevalence of mental illness in the clinic is higher than it

would be in a comparable general pediatrics clinic at the same hospital. To our knowledge, this type of embedded, intergenerational model of care within primary care pediatrics has been described in the literature only once before.²¹ No studies to date have attempted to understand women's perspectives on receiving mental health services in this type of setting. To that end, we used qualitative methodology to assess women's perceptions of and experiences with receiving services from an adult psychiatrist embedded within a pediatric primary care clinic.

METHODS

CLINIC DESIGN

At each well child visit in the Kempe Clinic, all women with children under 1 year complete the EPDS to screen for PPD. The EPDS is a 10-item self-report scale widely used to screen for PPD in the outpatient setting, which has subsequently been validated for use in any woman with children.²² The questionnaire asks about depression, anxiety, and thoughts of self-harm. A score of 10 or greater was considered a positive screen, as is customary in such screening programs.¹⁷ The EPDS is provided by medical assistants, filled out via self-report, and reviewed by the pediatrician or social worker.

At the first pediatric visit in the Kempe Clinic, every family is assigned to a clinic social worker or psychologist. Women are additionally encouraged to meet with the adult psychiatrist if the EPDS is elevated or if there is current use of psychotropic medications or a history of serious mental illness. The multidisciplinary team works together to create an individualized plan for each parent-child dyad based on their needs and preferences. Appointments are scheduled in such a way that any women agreeing to psychiatric evaluation are nearly always seen for psychiatric intake on the same day as their child's pediatric clinic visit.

After the initial meeting with the adult psychiatrist, women can follow-up during their child's next pediatric visit or schedule a follow-up outside of a pediatric appointment for an unlimited number of appointments at a frequency that is mutually agreeable. Intakes with the psychiatrist generally last about 20–45 minutes and follow-ups range from 10 to 40 minutes. Women are offered psychotropic medications, if indicated, and time-limited, supportive therapy. Women and children may also be referred to other ZSFG services or community partners for specialized or intensive therapy (eg, infant-parent psychotherapy, child-parent psychotherapy, or trauma-focused therapy). All of the clinic providers, including the adult psychiatrists, discuss patient care in a multidisciplinary huddle prior to each weekly clinic.

STUDY ELIGIBILITY AND RECRUITMENT

All English and Spanish-speaking women who completed an intake and 1 follow-up visit with an adult psychiatrist in KBHP were eligible to participate in the

semistructured interview. Since its inception in 2012 until the time study enrollment closed, KBHP served 89 women. Of these, 64 (72%) of women had completed at least 1 follow-up visit and were therefore eligible for study participation. Participants were contacted in waves, prioritizing those who had been seen in clinic more recently, until thematic saturation was reached (no new themes emerging).²³ Monolingual Spanish speakers were prioritized toward the end of the project in order to increase the number of Spanish-speaking participants to be more reflective of clinic demographics.

Participants were recruited by a member of the study team during a regularly scheduled clinic visit or via phone by a research assistant if they had no upcoming appointment. If a participant was unable to attend an in-person interview, the research assistants offered a telephone interview. Informed consent was obtained by a member of the study team at the time of recruitment or just prior to the interview. The study was approved by the University of California, San Francisco Institutional Review Board and a representative at ZSFG.

STUDY PROCEDURES

The interview guide was developed by the research team, including 3 general pediatricians, 3 psychiatrists, and 1 psychologist, all with direct clinical experience working in this clinic or similar settings. Participants were asked about their relationship with their child, facilitators, and barriers to psychiatric care, the pros and cons of receiving psychiatric care during their child's pediatric visits, how mental health services had impacted their experience as a mother, their experiences with the clinic psychiatrist, and suggestions to improve the clinic (see [Table 1](#) for a summary of specific prompts). The interviewers prefaced the interviews by asking mothers to specifically focus on their experiences receiving care from the adult psychiatrist. The interview guide was translated into Spanish by a member of the research team (G.C.), who is a native Spanish speaker. Per common practice in inductive methodology, we reviewed the first 5 interviews in detail after they were completed and made appropriate

revisions to the interview guide to systematically explore emergent themes. In this revision, we added questions related to the experience of being referred to the clinic psychiatrist, skills or tools gained through participation in the clinic, and participant attitudes toward psychotropic medications. Sociodemographic data and diagnoses were collected from the participants' medical charts. Race/ethnicity was assessed during the clinical intake interview based on patient self-report.

Interviews were conducted in a private room in the hospital or over the phone and averaged 41 minutes (range 15–84 minutes). Four research assistants (RA), each of whom had undergone training sessions with the primary author, completed the interviews separately. Two bilingual RAs completed the interviews in Spanish. RAs, who had variable levels of experience in qualitative research methodology, were trained to conduct the semi-structured interviews by the first author (C.Y.), under direction of co-last author A.L.B., who is an experienced qualitative researcher. The RAs were trained to use the interview guide, but also to ask appropriate follow-up questions as needed for clarification and depth. All interviews were reviewed by the first author and feedback was given to RAs about interviewing techniques. A subset of interviews was reviewed by co-last author A.L.B. for the same purpose. Interviews were audiotaped and subsequently transcribed for analysis. Spanish interviews were transcribed and translated to English via an interpretation service. Participants received a \$50 Target gift card as compensation.

DATA ANALYSIS

Descriptive statistics were used to summarize the demographic data. The manuscripts were analyzed using a general inductive approach.²⁴ Atlas.ti software was used to assist with coding. Two researchers (C.Y. and H.B.) read each manuscript to identify discrete codes and emergent themes relevant to the study objectives along with illustrative quotes. Coders met regularly through this process to compare codes, themes and quotes. Differences were resolved through discussion and consensus. As new

Table 1. Summary of Semistructured Interview Prompts

To get started, can you tell me a little about your child/children?
What is it like for you to be a mother to [child's name]?
Tell me something that you have learned about yourself since coming to this clinic.
Tell me something that you have learned about [child's name] recently.
Do you think that being in this clinic has helped you to improve your relationship with [child's name]?
Are there any particular skills or tools you have learned in clinic that have helped you as a parent?
What is it like to receive mental health services for yourself in the same clinic where your child sees his/her pediatrician?
What support do you have to help you with being a mother?
Are there other types of support the clinic could offer that would be helpful?
I understand that you have seen Dr. ____ in the clinic for your own care. What is Dr. ____ helping you with?
How did you get connected to Dr. ____?
Tell me about your experience seeing Dr. ____.
What has been your experience receiving medications in this clinic?
Prior to seeing Dr. ____, did you ever see a psychiatrist in another location?
If you did not receive care here for your [diagnosis], would you be able to access care somewhere else?
What additional services related to treatment for your [diagnosis] would you like to see from this clinic?
Is there anything that I haven't asked you that you would like to share with us about your experience being in this clinic?

themes emerged, previous transcripts were read and recoded. A group of co-authors met regularly to read a smaller selection of transcripts. Four authors (A.L.B., H.B., M.T., and C.Y.) then met to discuss and finalize the themes. After the coding scheme was finalized, the authors examined the themes and representative quotes to see if there were any major differences between English and Spanish-speaking participants. For data reporting for this manuscript, we selected the most representative quotes for each theme. Authors C.Y. and H.B., who completed the coding, were involved in patient care as psychiatrist and pediatrician, respectively, for a subset of participants. The RAs conducting the interviews were not involved in patient care or clinic procedures.

RESULTS

We conducted 20 interviews between December 2017 and October 2018. Six participants were monolingual Spanish speakers. Participant ages ranged from 25 to 49 years (Table 2). Initial intake with the adult psychiatrist had occurred between March 2013 and May 2018. Nearly half of participants were active patients at the time of interview (ie, intending to attend upcoming follow-up appointment with clinic psychiatrist), while the other half had ceased receiving care for various reasons (eg, symptoms remitted, no longer interested in using psychotropic medications, receiving mental health or pediatric services elsewhere, moved out of the area). We identified 5 primary themes and 12 subthemes related to participants' experiences of receiving psychiatric care at their child's pediatric clinic, as described below. Representative quotes are presented in Table 3.

BARRIERS TO MATERNAL MENTAL HEALTH CARE

Participants identified a variety of barriers to addressing their own mental health needs. These barriers included their

own psychiatric symptoms limiting consistent appointment attendance, awareness of stigma against those with mental health issues, and fear of retribution from Child Protective Services if identified as struggling with a mental health disorder.

BENEFITS OF THE EMBEDDED MODEL

The participants described a number of benefits of the embedded model. Many participants mentioned the convenience of having their psychiatrist present at the same location where their children receive care so they could meet their own needs and their child's needs simultaneously. They voiced appreciation that the psychiatrist was readily available and that services were proactively offered rather than needing to seek out a provider in the community. Participants noted that they had developed trust in the clinic as a whole because their children had received good care there and this had facilitated their acceptance of the offered services.

MOTHERHOOD AS A FACILITATOR TO PSYCHIATRIC CARE

Participants identified early motherhood as a stressful period in which they felt vulnerable to psychiatric decompensation including a recurrence of depressive symptoms or a relapse in substance use. They also credited the psychiatrist with helping them recognize the interconnectedness of their own mental health with their children's wellbeing.

FOCUS ON PARENTING

Participants expressed appreciation for the psychiatrist teaching concrete skills to manage the emotional challenges of being a parent and normalizing the experience of parenting.

TREATMENT MODALITY PREFERENCES

Participants expressed concerns about using psychotropic medications specifically because of their roles as mothers (eg, contamination of breast milk and sedation interfering with parental duties) and expressed a desire for greater access to psychotherapy, potentially through the addition of a clinic therapist who could provide long-term, intensive therapy rather than time-limited, supportive therapy that is currently offered by the embedded psychiatrist. Of note, this theme was exclusively seen in English-speaking participants, representing the only difference noted in the subgroup analysis by language.

DISCUSSION AND CONCLUSIONS

Our study is the first to assess the experiences and perceptions of women receiving mental health services from an adult psychiatrist embedded in their child's primary care pediatrics clinic. Our findings demonstrate that participants found this model to be acceptable, convenient, and beneficial. Our study suggests that an embedded care model facilitated access to care for women with PPD and other mental health conditions, who may not have otherwise sought

Table 2. Demographics of Participants

Demographic Characteristic	Number of Patients (%)
Language	
English (monolingual)	9 (45)
Spanish and English (bilingual)	5 (25)
Spanish (monolingual)	6 (30)
Race/Ethnicity	
Non-Hispanic White	4 (20)
Hispanic White	12 (60)
Black	3 (15)
Mixed	1 (5)
Primary diagnosis	
Adjustment disorder	1 (5)
Anxiety	1 (5)
Bipolar	1 (5)
Major depressive disorder	16 (80)
Post-traumatic stress disorder	1 (5)
Active* patient	
Yes	9 (45)
No	11 (55)

*As defined by intent to attend a future appointment with a KBHP clinic psychiatrist.

Table 3. Major Themes, Subthemes, and Representative Quotes

Theme	Subtheme	Quotes
1) Barriers to maternal mental health care	Psychiatric symptoms impairing ability to access care	<i>"Just getting to the damn appointments, because usually, she likes to see me right around my nap time ... I need that all-day nap. I take, like, five-hour naps."</i>
	Mental health stigma	<i>"It was difficult for me to accept that [I should see a psychiatrist] because, in our country, those who go to a psychiatrist are crazy. And I thought, 'I'm not crazy. I don't need it.' And [the social worker] told me, 'Not only crazy people need a psychiatrist, necessarily. In your case, you need it.'"</i>
	Fear of Child Protective Services	<i>"My son's father at the time wasn't very supportive ... and he was like, 'Why do you need to go see a psychiatrist? You're not crazy.' And then ... he would tell me, 'If you go in there acting crazy like you are right now, they're gonna lock you up and they're gonna give you all sorts of medicine and then they're gonna take [your child] away from you. What are you gonna do then?'"</i>
2) Benefits of embedded model	Convenience of embedded services	<i>"[The psychiatrist] asked me if I wanted to make an appointment with her, or if it was better when I came with the baby, so I told her that every time I came with the baby, so that they could do the appointment at the same time."</i> <i>"While I'm at the kids' appointments, I'm actually getting myself help through this program. I think it's awesome"</i>
	Low barrier to entry	<i>"It was nice that somebody approached me about it instead of – because a lot of times, I won't ask for help but the fact that somebody asked me was convenient and kind of inviting."</i> <i>"Well, I went to my son's appointment, and my son's doctor asked me if I had a psychiatrist, and so I told her I did have one, but that she couldn't see me anymore. So, she asked me if I wanted someone to see me there. So, [the psychiatrist] said she was going to be my doctor, that she would give me the medications."</i>
	Trust in clinic providers	<i>"It's like family, almost. You know what I mean? It's somewhere where you already feel comfortable. It's like your kid is getting great care, so you're going to get great care too."</i> <i>"I am adapted to coming here, to the treatment here ... And here, I haven't received any evil eye from anyone, or from the doctors who have seen my daughters. I have a good concept of all of them."</i>
3) Motherhood as facilitator to psychiatric care	Increased vulnerability to psychiatric decompensation during early motherhood	<i>"If I never spoke about [my symptoms], it could have led to a depression. ... I could have started using [drugs] again. I don't even want to think about what could have happened if I didn't talk about it."</i> <i>"I think that the clinic has helped me a lot during [my baby's] birth because she was a premature baby. They helped me a lot in the psychological aspect. I think that it was one of the nicest stories and the most difficult experience I had to live in my life."</i>
	Realization of interconnectedness between mother's mental health and child's functioning	<i>"Because, if I continued being negative, and I wouldn't have come to get medical assistance with a psychiatrist, I wouldn't be a good mom for my children ... I was mistreating my daughters. I would scream at them, and my husband, too, and I didn't care, 'I'm already crazy anyway, why would they care about me?' And they would hug me and say, 'No, I wasn't crazy.'"</i> <i>"Well, I've learned ...well, he's really attached to me, so he kind of feels it, I guess, when I'm feeling a little bit down."</i> <i>"When I first came, it's like I'm just taking care of my daughter, but then when they're asking me if there's anything that I need – [I realized] that it's not just about me. If I can't take care of myself, then how am I going to be able to actually take care of my daughter? It was good."</i>
	Parenting skills gained during psychiatric visits	<i>"She did tell me that when she's crying ... to just put her in her crib and let her cry it out. That was great because I didn't have her on my hands to the point where I was really stressed out and not know what to do and do some crazy stuff. I was just grateful to have that tool."</i> <i>"The skill I have perhaps been taught here is more than anything else is to be patient with myself and with the baby ... it has helped me learn to be more calm, to lose my fear, my panic."</i>

(continued on next page)

Table 3 (Continued)

Theme	Subtheme	Quotes
	Psychiatrist normalizing mothering experience	<p>"I feel so wrong for feeling it, but there are times where I just want to throw her. [The psychiatrist] said that's normal. 'Women go through that after having a baby, and that's normal.' That was a big relief because I felt like the worst person in the world for that feeling. I didn't tell anyone else what I was feeling."</p> <p>"And I was just like, 'Is this normal for me to feel like I don't know what to do? Like, he's a baby.' And she told me like, 'That's perfectly normal.'"</p> <p>"We were talking about everything that was going on with my son and the psychiatrist was telling me, 'It's normal. That can happen. It's all new for the baby, too. It's not like all the babies aren't going to [burp] and be super easy to handle or they will know what to do.' I felt a little relieved."</p>
5) Treatment modality preferences	Concerns about psychiatric medications	<p>"I'm kind of suspicious of that kind of medicine. I mean, I shouldn't be, I guess, but I am kind of skeptical. And plus I'm nursing."</p>
	Preference for greater access to therapy	<p>"I don't need pills. I'm good ... because I have a kid so I'm a parent so I can't be on drugs. I can't do it."</p> <p>"I felt like it was always cut short, and there wasn't enough time. Like when you go to a therapist, it's like 45 minutes to an hour or something like that. I just feel like – when I saw the psychiatrist, it was like so rushed."</p> <p>"It would be cool if there was a therapist that was tied in to [the psychiatrist] to where they could have a close connection."</p>

psychiatric care due to the burden of their mental health symptoms, the logistical challenges of attending visits for their own care, mental health stigma or fears of Child Protective Services. Such barriers have been described previously in qualitative studies and large surveys.^{25–29}

In our study, participants noted that trusting the clinic staff and recognizing the interconnectedness of their mental health and child's wellbeing were 2 primary factors potentially facilitating their acceptance of psychiatric services. Two prior qualitative studies similarly documented perspectives that the pediatric practice is an appropriate place to discuss mental health concerns and that women understand the interconnectedness of mothers' and infants' wellbeing.^{26,27} We identified a related theme of the postpartum period as a particularly vulnerable time for women, thus emphasizing the importance of providing easily accessible mental health services during this critical period in the location where mothers of young children most frequently contact the health care system.¹⁸

Participants spoke enthusiastically about the opportunity to receive mental health services from an adult psychiatrist in the same place where their children receive care, consistently noting convenience and low barrier to entry as important benefits. This suggests that making psychiatric care easily accessible may be key to acceptance of services by new mothers. One review of 8 programs designed to identify and manage PPD in primary care settings identified the ability to provide the majority of care within the screening practice as 1 of 2 factors that appear to differentiate successful and unsuccessful programs.¹⁷

Our participants also appreciated the focus on the parent-child relationship, specifically that the psychiatrist provided feedback about parenting, taught concrete parenting skills, and normalized the challenges of mothering. In the KBPH model, the emphasis on parenting is enhanced by the embedded model, which allows the psychiatrist to observe the mother and baby interacting and to work collaboratively with the pediatrician. A preliminary study of a similar model with an embedded adult psychiatrist in pediatrics showed that participants found the model acceptable based on good retention and follow-up, with half of the women seen by the psychiatrists 4 or more times in 6 months.²¹

Participants' primary suggestion for how to improve the clinic involved more availability of therapy and less focus on medications. This is consistent with a review of qualitative work about barriers and facilitators to seeking care for PPD, which identified frequent concerns about psychotropic medications among breastfeeding women and noted that the most desired treatment was talk therapy.³⁰ While the KBHP psychiatrists offer brief, time-limited therapy, they are not able to offer the long-term, intensive therapy. As noted, monolingual Spanish-speaking participants did not discuss this theme. We cannot conclude from our data whether monolingual Spanish-speaking participants do not share this preference for talk therapy, or whether they did not feel comfortable offering critiques of the clinic. Regardless, in future iterations of the KBHP model, enhanced psychotherapy services could be provided by

trained peer supports, clinical social workers, mental health nurses, or adult psychologists. Alternatively such services could be offered in the form of group therapy.³¹

Our study design has several limitations. Only women who returned for at least 1 follow-up visit with a psychiatrist were eligible to participate, thereby limiting our sample to women more likely to report positive experiences and perceptions. In addition, while the interview focused on services received from the psychiatrist, participants' comments may have been influenced by their interactions with other providers in the clinic. A subset of participants were current patients of the authors C.Y. or H.B., who conducted the coding, which may have biased participants toward responding positively in the interview. However, the RAs conducting the interviews were not affiliated with the clinic and efforts were made to encourage women to provide unbiased feedback by emphasizing that the information would be used to improve clinic services. Furthermore, our study is constrained by a small sample size in a single geographic location in which universal insurance access is provided through a county-sponsored program, thereby limiting generalizability.

The model itself has several limitations. First, our clinic is unique in being a referral site for children of women with identified behavioral health concerns, resulting in enrichment of mental illness in our maternal population. This exact model may not be as beneficial or feasible in clinics with a lower prevalence of such concerns. Second, this model was grant-funded, obviating the need to seek reimbursement from insurance companies. Each individual clinic would need to determine how to fund such a model. According to a review published in 2016, no data were available on reimbursement strategies for PPD programs in pediatric settings.¹⁴

Cost-effectiveness analyses of this particular model have not been conducted. Collaborative care or stepped care models, which are commonly employed in adult primary care settings to manage behavioral health conditions, may be more cost effective and could be equally or more efficacious.¹⁸ In collaborative care models, a depression care manager serves as the patient's primary contact, monitoring outcomes, following up between visits, and collaborating with the primary care provider, while a psychiatrist performs panel management and only sees complex cases in person. In stepped care, different levels of care are administered based on severity. Realistically, nonphysicians could perform a majority of the services currently offered by the embedded adult psychiatrists in our clinic. For example, in maternal and child health clinics in Finland, short courses of cognitive behavioral therapy and treatment with antidepressant medications delivered by an experienced mental health nurse showed promise, with 50% of participants achieving symptom resolution in 1 or 2 sessions.³¹ As the health care system increasingly emphasizes value-based care, the costs associated with this type of model may in fact be justified given the high morbidity and mortality associated with PPD and its impacts on child development. Associated societal costs were recently estimated at \$35,000 for each untreated

perinatal mood and anxiety disorder per mother-child pair, or \$2.4 billion in California in 2017.³²

Despite these limitations, there are several implications of our results. Namely, women reported positive experiences with and perceptions of working with the embedded psychiatrist, citing convenience and trust as important benefits that broke down barriers to care. We believe that our study validates continued exploration of this innovative model of care, likely with modifications to rely more on nonphysician providers, to reach women in safety net settings who may be both at increased risk for PPD and also less likely to have their symptoms recognized or adequately treated. While more research on such approaches is needed, this study represents an important step toward understanding benefits of integrating maternal mental health care into pediatric settings.

ACKNOWLEDGMENTS

Gabriela Diaz, a peer educator at the Homeless Prenatal Program, and Kate Dube, a San Francisco Solid Start employee, conducted the Spanish interviews. Kempe Clinic social workers Katherine Mason, Liliana Ramos and Nelly Pino helped review the interview guide and support KBHP patients and families. This project was supported by the National Institute of Mental Health (grant R25 MH060482 (PI's Voglmaier and Reus). Dr Beck was supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development 1K23HD080876-01A1. Dr Thomas was supported by a UCSF Hellman Fellows Award for Early-Career Faculty and by UCSF Clinical and Translational Science Institute (UCSF-CTSI) grant KL2RR024130 from the National Institutes of Health (NIH). The funding sources had no involvement in study design; data collection, analysis and interpretation; the writing of the report; or the decision to submit for publication.

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