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Qualitative Research

Clinic staff attitudes towards the use of mHealth technology to conduct perinatal depression screenings: a qualitative study

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Abstract

Background. The use of mHealth technology is an innovative approach for screening low-income mothers for depression. Past studies show that the use of technology removes barriers such as literacy issues, language challenges, concerns about privacy and lack of transportation and can also increase reliability. However, little is known about staff attitudes and perceptions towards using mHealth technology for screening low-income women for depression in clinics.

Methods. Four focus groups were conducted with staff members in a supplemental nutrition program for women, infants and children located in a public health clinic. A semi-structured focus group interview guide was used to examine staff perceptions related to depression screening with tablet technology. All interviews were audio recorded and transcribed verbatim. Thematic analysis was used to analyse all focus group data.

Results. Three major benefits and two major barriers were found. The benefits of using technology for perinatal depression screenings were reduction of literacy and language barriers, reduction of redundancy and errors and increased privacy for clients. The barriers were increased network issues and responsibility for technology, which included fear of the devices being lost, stolen or broken.

Implications. Before implementing mHealth tablet technology for depression screening in a public health clinic, it is important to address the concerns of staff members to make the transition more effective. This study provides timely information on staff-perceived benefits and barriers when implementing mHealth technology in a public health setting.

Key words: Depression screening, mHealth technology, perinatal, public health clinic, WIC.

Introduction

Perinatal depression, which can occur during pregnancy and up to 1 year after delivery, is a global public health concern with prevalence between 7% and 20% (1,2). However, depression occurring during this critical period often is either undetected or untreated by public health care providers (2–4). Perinatal depression affects not only mothers, but their infants as well. If left untreated, this common mental disorder can cause long-lasting detrimental effects such as disability in the mother as well as developmental, cognitive, social, behavioural and attachment problems in the infant (5–7). Perinatal depression is further complicated when socioeconomic status and ethnicity are taken into account. For example, research shows that 41.7% of low-income women in the USA have shown depressive symptoms during the antenatal period (8), and Black and Asian women have a higher prevalence of antenatal depression compared

to their White counterparts (9). Postpartum depression (PPD) is also experienced in higher rates among high-risk, disadvantaged, low socioeconomic status and minority women (2,4,6,10,11). Hobfoll *et al*. indicated that the prevalence of PPD among low-income women was ~30% compared to 15% among middle-class women (8). A more recent study found similar results indicating that ~20% of low-income women who were part of the Women, Infants and Children (WIC) supplemental nutrition program experienced PPD (11).

Given the high prevalence of perinatal depression, it is important to screen women for depressive symptoms in order to identify those at risk for depressive episodes. Because pregnant and postpartum women are in contact with health care professionals on a frequent basis, the perinatal period is viewed as an optimal time for screening, diagnosis and treatment of depression (1,4,6). Despite the research evidence for integrating mental health care in medical settings, proper assessment and monitoring of mental health remains a significant barrier (6,12). One approach to improving detection of perinatal depression by health care clinicians is through the use of mHealth (mobile health) technology (13–15). The term mHealth refers to the use of mobile electronic devices such as cell phones, computer tablets and personal digital assistants to assist in health care provisions and management (16–18). This approach is being used with increasing frequency in health care settings. The use of mHealth in clinic settings has the potential to support better service delivery to clients accessing treatment (4,14,15,17,19).

Although much is known about the feasibility of mHealth technology, little is known about attitudes towards the technology among health care providers, especially those caring for pregnant and postpartum clients. Before implementing a new technology into an organization, it is important to conduct a sociotechnical evaluation, which consists of investigating the ways in which human factors and technology influence one another over time (20). Another component of sociotechnical evaluation is to identify some of the potential outcomes of introducing technology in settings such as healthcare organizations. The aim of this qualitative study is to explore the attitudes and perceptions staff members towards incorporating mHealth technology in a public health clinic to screen for depression.

Methods

Study setting

The Champaign-Urbana Public Health District serves low-income pregnant and postpartum women in Champaign County, IL. In 2012, the organization had a monthly average caseload of 3179 women and administered 3116 depression screenings. This public health clinic is funded by the Champaign County Public Health Department Board of Health and offers different services to Champaign County residents to support dental health, planning and education, family health, environmental health and prevention and management of sexually transmitted infections. As part of the family health program, the clinic provides free and low-cost services to at-risk mothers living in Champaign County. Services include family case management, perinatal home visits, immunizations, and lactation and nutrition counselling. Home visits in antepartum and postpartum periods are mandatory for all at-risk perinatal clients. Providers from the maternal and child health (MCH) division screen for depressive symptoms during pregnancy and also during the postpartum period. Providers follow a strict safety and referral procedure for all positive depression screens.

Sample

Staff members from the MCH division of the Champaign-Urbana Public Health District were invited to participate in the study. Participants were recruited at a monthly staff meeting by a general announcement outlining the purpose of the focus groups. Subsequently, an invitation letter was emailed to all MCH clinic staff to solicit voluntary participation. A total of 25 staff members took part in the focus groups. Each group had from five to seven participants drawn from multiple disciplines. The sample included seven nutritionists, five nurses, three case managers, three administrative assistants, three intake specialists (who are in charge of checking and organizing all the paperwork required by the WIC program and ensures that the mother meets all the eligibility criteria) and four program coordinators. All participants provided written informed consent to participate in the study. All procedures were approved by the University of Illinois Institutional Review Board.

Data collection and data analysis

Four focus groups were conducted with staff members from the MCH division during December 2012. Data were collected using a semi-structured focus group interview guide that asked questions about staff perception of the use of tablet technology to screen women for depression. The same semi-structured interview format was used for all focus groups; however, different probes and follow-up questions were used depending on the topics brought up by the participants (Box 1). The focus group interviews lasted from 50 to 60 minutes. They were recorded and then transcribed verbatim. Following transcription, the data were analysed using thematic analysis. First, all focus groups were analysed and basic themes were identified until saturation was reached. After the basic themes were identified, they were organized into potential categories and then coded and organized into global themes (21). All data were systematically analysed and reviewed separately by the authors (MP-L, KMT, HS and HH) in order to determine level of agreement. All investigators had experience working with public health staff members, and this could have influenced the way in which data were interpreted. However, caution was used during the analysis and interpretation of the data in order to ensure objectivity. The four investigators analysed the data separately and then came together to discuss potential categories. If there was disagreement, patterns and quotes were reviewed until an agreement on the theme was reached. The codes that were identified included information regarding the benefits and barriers that clinic staff members felt were important to consider if tablet technology were to be implemented to screen clients for depression.

Results

From the focus group interviews, five major themes were identified based on the clinic staffs' perspectives on the implementation of mHealth technology for depression screenings. The health care providers identified three major benefits and two major barriers to introducing

Box 1. Example of questions asked to clinic staff members

(1) What are clinics doing to address perinatal mood disorders? What are examples?
(2) What should providers do to address perinatal mood disorders?
(3) Can technology better assist in screening for perinatal mood disorders in the public health clinic? How so?

the technology in a clinic setting. The following section examines each theme and provides illustrative quotes from the focus group interviews.

Benefits

Reduction of literacy and language barriers

One of the main themes identified was the potential for mHealth technology to reduce language barriers with clients since the tablet offers the opportunity to have depression screenings offered in multiple languages. As part of the supplemental and nutrition program, the public health clinic currently offers depression screenings only in English and Spanish.

> Case manager, social worker: 'It would just be very user-friendly for clients, it would be in different languages that we would need, that is written so that they understand in their language, it would be sensitive to their cultures.' (Focus group 1)
> Nutritionist: 'I think it would help break down some [language] barriers, and the mom would feel more comfortable instead of looking at it in English and worrying that she's going to misinterpret something and answer wrong.' (Focus group 3)

Multiple participants also mentioned that providing more language options would allow clients to select which language they feel most comfortable completing the screening in, which in turn would provide the staff with the most accurate scores.

Literacy issues were identified among English speakers as well as among non-English speakers. Providers pointed to illiteracy as a consistent problem in the clinic and as a barrier to providing services. One way this barrier could be addressed would be by using voice-assisted technology to read the depression screening questions out loud to clients.

> Case manager, nurse: 'I think that's a good option to have for people who can't read English but can understand spoken, that might help with some of those situations.' (Focus group 2)

Participants also indicated that literacy issues could be addressed with tablet technology because clients would be able to listen to the depressive symptom questionnaire and select their response by touching the screen.

> Nutritionist: 'And then the case manager can say, "Here, these are your options for this, it can be read to you, you can read it yourself," you know, that kind of thing when they give it to them, and then they'd be comfortable.' (Focus group 3)

Reduction of redundancy and errors

Tablet technology could help reduce redundancy and writing errors. It was suggested that having the depression screen on the tablet and being able to print a hard copy to save in the clients' records would be highly beneficial. Providers would not have to enter the responses and the scores manually on the computer, which would diminish redundancy and save time.

> Case manager, nurse: '… have all of our documentation done in one place, rather than double-documenting.' (Focus group 2)
> Administrative assistant: 'There is a lot of time spent in repetition, doing things in one place and then having to do them in another, and then like paper, Cornerstone, EMR. So, I know that's really time-consuming for the managers, at least.' (Focus group 3)

It was noted that this technology would reduce errors because information would be entered directly into the system and they would only need to print it out. Moreover, health providers mentioned that they would be able to correctly identify the clients who are taking the screen and properly assign the screenings to the clients' records, thereby reducing the chance of identification errors.

> Program coordinator: 'A lot of times, those paper ones, they are not filled out correctly on the top. We can't identify the client, the names aren't legible.' (Focus group 3)
> Administrative assistant: '… so the [screenings] don't get lost, you know. If we can't read the name, at least it would be linked to them in a computer system, hopefully, so that if we needed to refer back to it we could' (Focus group 3)

Increased privacy for clients

Another important theme involved the issue of privacy. For instance, by using mHealth technology, clients would have more privacy during the screening process and may be more likely to respond honestly because they would not fear that their answers would be seen by somebody else.

> Program coordinator: 'The nice thing about [tablets], is once you answer a question, it goes away, so even if you're in a waiting room with a lot of people, they can't look back and see your answers to the other questions, whereas if it's a paper, they're looking at everything you've circled if they're sitting next to you and reading the questions, so it does offer a little bit more privacy in that respect.' (Focus group 3)
> Nurse: 'Without them feeling like whether it's the case manager, the nutritionist, or whoever… without the client feeling like they're staring at them waiting for them to finish' (Focus group 3)

Also, it was felt that technology could protect clients from having to share their responses with their partners, which could lead female clients to answer the screening questions more honestly. Participants indicated that using mHealth would allow clients to respond without having to have their partners translate because the screenings would be available in multiple languages.

> Intake specialist: 'I would say the one thing that I've noticed… is if the husband's sitting right there with them, a lot of our cultures, they come in together, and I feel the woman probably doesn't answer as honest as she would, because her husband's looking over her shoulder.' (Focus group 4)
> Case manager: '… moms that don't speak English, but they're here with English-speaking dad who wants to do it for them. That happens a lot.' (Focus group 3)

Barriers

Increased network issues

Network bandwidth and connectivity arose as a main theme. Introducing tablet technology could further complicate network connectivity, which is already a problem that exists in the clinic. Staff members would welcome the use of mHealth technology only if it did not introduce more connectivity problems in the clinic.

> Nutritionist: 'But if they would get a system that would stay up and not go down once or twice a day, sometimes all day, then I think it would be easier for everybody.' (Focus group 2)
> Case manager, nurse: 'That's the other issue. If it becomes a technological, another piece of equipment to wait to boot up, or, you know, to go down, or that sort of thing.' (Focus group)

Responsibility for technology

A final main theme identified by the participants as a barrier to incorporating mHealth technology was the fear that devices such as a tablet could be broken, lost or stolen.

> Case manager, nurse: 'Actually, I'd be afraid it would get lost, or dropped, or messed up out there somewhere.' (Focus group 1)

Parents who visit public health clinics typically come with their infants or small children, and the staff members were concerned that the young children might grab the tablet from the parent and would damage it.

> Nurse: 'I'm not even worried about them leaving with it, I'm worried about kids! Like, "Oh, fun!"' (Focus group 4)

Also, participants pointed out the high cost of the tablet and expressed concern that it might get lost or stolen, which could be highly problematic.

> Intake specialist: 'My concern is our tablets. I think it's just me, but with something that expensive, it's not going to come back to the front desk.' (Focus group 2)

Discussion

This study aimed to uncover the attitudes of staff members towards the implementation of mHealth for perinatal depression screening into a public health clinic. Potential benefits of incorporating mHealth technology include the reduction of literacy barriers, writing errors and redundancy, as well as an increased sense of privacy for the clients. Major concerns expressed by providers included connectivity issues and liability for the devices. These findings suggest that before incorporating mHealth technology in a health care setting, it is important to address the concerns that emerged in our interviews. For example, in order to prevent the tablets from being stolen, clients could be asked to complete the depression screens inside the exam rooms with the health providers. To alleviate concerns about network issues, it would prove beneficial if staff received training on how to store electronic responses on the tablets during the times where there are network connectivity issues. If perceived barriers are addressed in advance, incorporation of mHealth into clinics might be more feasible and could increase buy-in from the staff members, which in turn would allow health care providers to better screen and detect perinatal depression.

Although perinatal depression is a global public health concern (6), many health care professionals do not routinely screen for depression due to lack of time, lack of established policies for care and/or lack of referral networks (1,2,22). Furthermore, qualitative studies find that many providers do not feel comfortable screening for depression because of a lack of familiarity with existing tools, uncertainty about which types of assessment to use or lack of training (23–25). By introducing and using technology in a public health care setting, many of the barriers to screening for perinatal depression could be addressed.

Another problem faced when trying to identify depressive symptoms during the perinatal period is lack of disclosure (1). Even when clients disclose, only 30% of women worldwide ever report their depressive symptoms due to the stigma surrounding mental health, and <7% receive full treatment for perinatal depression (1,26). Health-related applications on smartphones, appointment reminders sent via text messages and use of tablets for screenings are all examples of ways in which mHealth technology has improved the delivery of services and has provided better access to care (14,15,19,27). With better established policies and the necessary technology, health care clinics could identify perinatal depression earlier and link these women to resources to receive proper treatment (14,16,19,28).

Past research shows that mHealth technology is a cost-effective, responsive, reliable and feasible method for delivering services for a number of health concerns, including depression, cancer, alcohol abuse and anxiety (14–16,19,27,28). The use of mHealth technology is also becoming more popular, more available and more accessible to the medical profession treating underserved populations (14,15,18). Furthermore, using mHealth technology to deliver screening tools can provide immediate feedback and interpretation, which is beneficial to both clients and providers. The technology can also be used to reduce barriers in providing care, such as lack of transportation, low literacy and privacy (3,4).

However, the positive findings of mHealth technology should be tempered by those of a recent systematic review of 42 trials of mHealth in clinic settings. In some instances, the use of mHealth increased the time needed to make clinical diagnoses or created errors in the data (29). Despite these negative effects of mHealth delivery in clinics, this review also found positive benefits such as enhanced communication between providers and clients (29).

While some health care providers in our sample questioned the reception of clients towards incorporating mHealth into the clinic, past studies have shown that many different age groups have a favourable attitude towards the implementation of technology in receiving care and find it easy and enjoyable to use (17,27,28). This technology has also been found to be received positively by women, regardless of their previous experiences with technology, their age or their socioeconomic status (28). Furthermore, the use of mHealth technology to conduct health screenings has been effective in reducing language barriers and problems resulting from low literacy (3,4,14,28). Overall, mHealth technology has been found to be a feasible screening method particularly for low-income and low socioeconomic status mothers and it has been shown that providers also welcome its implementation (28).

Strengths and limitations

One strength of our study is that it takes a unique approach by exploring providers' perceptions of mHealth technology, rather than client attitudes and satisfaction. While previous studies have focused on clients, we were able to include staff members from a variety of educational fields and backgrounds, thus providing us with a rich understanding of interdisciplinary opinions regarding the implementation of mHealth technology. A potential limitation of our study is that physicians, physician's assistants and nurse practitioners were not in the focus groups, making it difficult to generalize to other clinics where health care providers serve low-income populations. Another possible limitation of the study is the potential for social desirability. During two of the focus group interviews, a supervisor was present, which could have had an impact on the barriers that were brought up by the staff members. We attempted to address this issue by reminding participants that the content of the focus group would remain fully confidential and would not be discussed outside the group.

Conclusion

This qualitative study identified a range of health care provider perceptions towards incorporating mHealth technology into depression screening of low-income mothers. Perceived benefits of using this technology included reduction of literacy and language barriers, reduction of errors and increased privacy for clients, while barriers included increased network connectivity needs and liability for the tablet devices. Our findings may help inform public health clinics implementing mHealth technology for depression screening to

identify potential essential elements for training clinic staff in low-resource settings.

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