Women and Birth 32 (2019) e57–e64

Contents lists available at ScienceDirect

Women and Birth

journal homepage: www.elsevier.com/locate/wombi

Reasons for substance use continuation and discontinuation during pregnancy: A qualitative study

Kiri A. Latuskie[a,b], Naomi C.Z. Andrews[c,d], Mary Motz[d,*], Tom Leibson[b], Zubin Austin[a], Shinya Ito[b,**], Debra J. Pepler[c]

[a] University of Toronto, Leslie Dan Faculty of Pharmacy, 144 College Street, Toronto, Ontario, M5S 3M2, Canada
[b] Hospital for Sick Children, Division of Clinical Pharmacology and Toxicology, 555 University Avenue, Toronto, Ontario, M5G 1X8, Canada
[c] York University, Department of Psychology, 4700 Keele Street, Toronto, Ontario, M3J 1P3, Canada
[d] Mothercraft, Early Intervention Department, 860 Richmond Street West, Toronto, Ontario, M6J 1C9, Canada

ARTICLE INFO

Article history:
Received 27 November 2017
Received in revised form 20 March 2018
Accepted 2 April 2018

Keywords:
Intervention
Pregnancy
Substance use
Self-efficacy
Women's health

ABSTRACT

Background: Substance use during pregnancy is a major public health concern, stemming from potential physical and psychosocial harms to both the mother and child.
Purpose: To understand women's experiences using substances during pregnancy and the reasons that women continue and/or discontinue using substances.
Methods: Focus groups were conducted with women who attended an early intervention program for pregnant or parenting women with substance use issues.
Results: Women identified that external and internal stressors, feelings of guilt and low-self efficacy, and a lack of understanding of the scientific and medical consequences of substance use contributed to their continued substance use. Conversely, women highlighted the importance of high self-efficacy and the quality of relationships when trying to make positive changes to their substance use during pregnancy.
Conclusions: Recommendations are proposed for easier access to and more comprehensive services. Healthcare professionals and service providers should offer non-judgmental care by building high-quality relationships with pregnant women with substance use issues, to increase these women's self-efficacy and empower them to discontinue substance use.

Statement of significance

Problem or issue

Substance use during pregnancy is associated with physical and psychosocial harms to both the mother and child. Despite advances in research and treatment, many women continue to use substances throughout pregnancy.

What is already known

Complex, interconnected psychosocial and systemic factors make discontinuation of substances during pregnancy difficult.

What this paper adds

Based on women's first-hand experiences, this study suggests that self-efficacy plays an important role in both the continuation and discontinuation of substance use during pregnancy. Increased access to resources; integrated, comprehensive services; and supportive, non-judgemental relationships with service providers are essential to women's ability to discontinue substance use during pregnancy.

1. Introduction

Substance use during pregnancy is a major public health concern and can lead to physical and psychosocial harms to both

* Corresponding author at: Mothercraft, Breaking the Cycle, 860 Richmond Street West, Suite 100, Toronto, Ontario, M6J 1C9, Canada.
** Corresponding author.
E-mail addresses: klatuski@uwo.ca (K.A. Latuskie), naomi.andrews@mothercraft.org (N.C.Z. Andrews), mmotz@mothercraft.org (M. Motz), tom.leibson@sickkids.ca (T. Leibson), zubin.austin@utoronto.ca (Z. Austin), shinya.ito@sickkids.ca (S. Ito), pepler@yorku.ca (D.J. Pepler).

https://doi.org/10.1016/j.wombi.2018.04.001
1871-5192/

the mother and child.[1–4] Women who use substances during pregnancy often have other interrelated challenges, including poverty, criminal justice involvement, histories of abuse from caregivers and/or partners, and concurrent mental health issues (e.g., Refs. 5,6). Given these complex risks, in conjunction with the substance use itself, many substance-using pregnant women have poor pre-pregnancy health and may not access treatment or prenatal care,[7–9] potentially due to fear of stigmatization.[10] Those who do access prenatal care can experience barriers to obtaining appropriate medical and obstetrical services, including judgement and misinformation from healthcare professionals.[2] Such attitudes need to change, given that substance dependence is a chronic, relapsing brain disease.

Pregnant women may use substances for many interconnected psychosocial and systemic reasons. External stressors, such as financial instability and poverty, can act as barriers to accessing treatment.[11] Women may not be able to afford transportation to access treatment or prenatal care.[8] Financial difficulties can lead to transiency; women often live in shelters or on the street because they cannot afford adequate housing. Many vulnerable women are involved in and earn money through illegal activities associated with the substance using lifestyle, including selling drugs, sex trade activities, and crime.[12,13] As such, continuing substance use during pregnancy may be tied intricately to women's need to maintain financial security.

Stressful interpersonal relationships can also contribute to pregnant women's substance use. Pregnant substance-using women often have histories of familial substance use and/or currently live with a partner who uses substances.[14,15] Substance use is a common health consequence of experiencing violence in relationships (e.g., Refs. 16,17). For women in violent relationships, substance use may be a coping mechanism.

Physical and psychological stresses arising from vulnerable women's lives are linked to continued substance use or relapse.[18] Many women use substances during the first trimester because they are unaware of the pregnancy.[19,20] Guilt associated with this use can lead to a dynamic cycle of substance use during pregnancy: substance use causes guilt, guilt causes stress, and stress causes use.[21] Pregnancy itself can cause stress due to physiological and hormonal changes, as well as the anticipation of a child.[22,2] For substance-dependent women, attempts to discontinue use can be a source of stress, due to withdrawal symptoms and the habitual nature of substance use.[23]

Lastly, societal and systemic factors may play a role in pregnant women's substance use. Pregnancy can be a barrier to accessing support, as some programs exclude pregnant women.[24,25] Lack of childcare can make it difficult and financially unfeasible for some women to access services.[26] In rural areas, services may be unavailable or inaccessible without transportation.[24] Further, there is widespread discrimination and condemnation of substance use during pregnancy.[27,8,25] Thus, women may be reticent to access treatment or prenatal care to avoid judgement and stigmatization. Women may also avoid systems and professionals who might report them to child welfare, for fear of their child being apprehended at birth.

Existing literature is divided on whether or not pregnancy is a window of opportunity for change regarding substance use.[22] Despite complicated circumstances, most pregnant women indicate their desire to discontinue substance use to benefit their unborn child.[2] Supportive relationships with service providers can increase the likelihood of substance use discontinuation. Positive (e.g., judgement-free) client-provider relationships can help to maintain reduction of substance use or sobriety.[28,11] Ebert and Fahy[28] emphasized that regardless of available supports, substance use discontinuation requires personal determination and willpower. We refer to these concepts of self-determination and willpower as self-efficacy: the belief that one can successfully perform behaviors that will achieve one's desired goals.[29] In terms of substance use, self-efficacy refers to a person's belief that she will be able to achieve the goal of reduction of use or sobriety. For example, if a woman has past failed attempts at discontinuing substance use, her self-efficacy regarding reaching abstinence may be low. Conversely, having confidence in one's ability to make a change (high self-efficacy), as well as recognizing the importance of making a change (readiness for change), is essential.[30]

The first aim of the current study was to understand: women's experiences of substance use during pregnancy, why pregnant women continue using substances, and the barriers they experience in accessing support for their substance use problems. As the sample of women in the current study comprised women who had already made positive changes in their substance use, our second aim was to understand why women *discontinue* substance use and identify factors that facilitate access to treatment/support. This understanding is critical to the ability to support reductions in pregnant women's substance use. Our third aim was to examine how service providers can improve support for pregnant women with substance use issues. We gathered first-hand explanations through focus groups with vulnerable women receiving comprehensive parenting and addictions treatment. We expected women to identify complex psychosocial and systemic factors (e.g., self-efficacy, motivation, relationships) that act as barriers and/or facilitators to accessing health care services, and to make recommendations to improve support of pregnant women's discontinuation of substances.

2. Method

2.1. Participants

Women were considered for participation if they were in active service at *Breaking the Cycle* (BTC), a Toronto-based early intervention program for pregnant or parenting women who have substance use issues and their young children.[13] This program aims to address maternal addictions and promote healthy mother-child relationships.[47] Using purposive heterogeneous sampling, BTC clinical staff selected potential focus group participants. Staff considered women who could discuss a variety of experiences, would be comfortable in a group setting and were in an appropriate recovery stage. Sixteen women were invited to participate: five participated in one focus group and six in the other (the remaining five women could not attend at scheduled times). Focus group participants differed from the overall population of women at BTC because they had been in recovery from substances for longer than six months (to reduce the risk of re-traumatization or relapse); however, their histories, relationships, and upbringings were representative of the overall population.

2.2. Procedure and ethics

We used a phenomenological approach to gather and analyze data. This approach encourages participants to discuss and reflect on their own life experiences.[31,32] We aimed to explore how women made sense of their lives and their lived experiences by finding commonalities and describing what was a wide range of experiences by different women. Semi-structured focus groups were conducted at BTC and included two trained researchers and a BTC clinical staff member. Participants were familiar with group settings at BTC and felt comfortable having group discussions. Women completed consent forms for participation, audio-recording, and the collection of demographic and substance use data from their clinical charts. Each focus group lasted approximately

100 min and included a 10-min break. Participants received a $40 gift-card in recognition of their time. Participants were provided with childcare during the focus group and lunch before or after the focus group (as is always the case for women in service at BTC). Ethics approval was obtained from The Hospital for Sick Children, Toronto, Canada.

Focus group methodology was chosen for several reasons. First, women at BTC were familiar with group settings, as several services at BTC are offered in group formats. Women derive support from other women who have been through similar experiences. Based on the clinical judgement from the staff at BTC, it was decided that the quality of information shared would be greater from a focus group compared to an individual interview (particularly because the lead researcher was relatively unknown to participants). Through heterogeneous purposive sampling, women were selected who would be able to provide a diverse range of experiences and opinions to fulfill the needs of the research.

Each focus group began with an introduction to the study. The lead researcher briefly described general trends found regarding patterns of substance use across pregnancy, based on a chart review of women at BTC.[48] Women were encouraged to discuss experiences of substance use continuation and discontinuation during pregnancy in a general sense (so as to assuage discomfort), but many women related the trends and prompts to their own personal experiences. Consistent with a phenomenological approach, facilitators provided open-ended prompts and probes when necessary and verified statements to ensure understanding. After the first focus group, facilitators debriefed among themselves and prompts evolved to capture additional themes not discussed in the first focus group. See Appendix A for the open-ended prompts and probes.

2.3. Data analysis

Focus group audio-recordings were manually transcribed; women's names were removed and replaced with numbers, and any other identifying information (e.g., children's names) were removed. Transcripts were analyzed and a preliminary list of themes for each continuation and discontinuation was compiled. Preliminary themes were discussed among the lead researcher, a BTC clinical staff member (who was present during the focus groups), and a qualitative research expert. Using NVivo 11 software,[33] compiled themes were applied to the transcripts. Through this coding process, themes were revised and statements that did not fit themes were identified. Coded transcripts were reviewed by an external validation committee consisting of one qualitative expert and two quantitative experts. Revised themes were reapplied to the transcripts. The validity of this final theme structure was demonstrated by a meeting with a BTC clinical staff member and through member-checking with two focus group participants (one from each group). After receiving feedback from both groups, the coding and theme structure was minimally amended and finalized to the version presented below. The meaning of each theme was thoroughly reviewed in the literature and applied to the topic of study. Novel themes, concepts, and recommendations were interpreted with the transcripts in mind, to maintain the meaning of women's statements.

3. Results

3.1. Demographic characteristics of focus group participants

Women were 25–42 years old ($M = 33.27$ years, $SD = 6.42$), had been in service at BTC for 4–71 months ($M = 17.18$ months, $SD = 7.00$), and had been in recovery from substances for 6–84 months ($M = 20.91$ months, $SD = 22.69$). All women had at least one child aged six or under and were 17–37 years old at the birth of their first child ($M = 25.22$ years, $SD = 6.24$). Nine percent lived with a partner, 82% had a history of family violence, and 91% had child welfare involvement (of these, 40% were court-ordered; 60% were voluntarily involved).

3.2. Continuation themes

3.2.1. Stressors

Women discussed external and internal stressors associated with their continuing substance use. External stressors (i.e., external to women's own feelings) included societal pressures, partner relationships, and financial strain. One woman discussed the financial stress of her prescribed medication and explained that "pot cookies" (food products infused with cannabis) were more financially sustainable. Another woman discussed the stress of pregnancy; not only did nicotine help with stress, but should she discontinue, she would experience withdrawal symptoms:

> "All my pregnancies were super-high stress...I was happy to be pregnant but so stressed. I was not going to deal with nicotine withdrawals on top."

Several women described partner relationships as stressors. Some partners were described as substance users or involved with gangs, and this lifestyle contributed to the women's own substance use. Women reported that stress associated with abusive and dysfunctional relationships contributed to continuing substance use during pregnancy.

Internal stressors included guilt due to substance use or inability to stop using substances:

> "That was one of my biggest reasons for relapsing. Because I was, like, why can I not get clean? I have this beautiful baby boy and I used to sit there and . . . all I would do was cry."

This woman's comment is representative of the cycle of use: guilt due to using and use due to guilt. Another woman explained discontinuing substance use and relapsing later in pregnancy:

> " . . . the third trimester right before the baby is born. It is one of the most dangerous times for women to relapse. It did actually happen to me, six weeks prior to my daughter being born, I did relapse. And it was probably because of the stress of knowing that she was coming so soon and I wasn't really prepared. It made me use."

3.2.2. Escapism

Women described substance use as a coping strategy. They discussed escaping, numbing, and coping with external and internal stressors:

> "I would use substances to escape . . . as long as I was getting high and numbing myself, I really thought the baby was going to be okay."

Women again discussed guilt and described that they had used substances to numb themselves to the likelihood that their substance use could harm the baby.

3.2.3. Self-efficacy

Women identified that, after previous failed attempts at discontinuing substance use, their self-efficacy regarding reaching abstinence was low. Statements reflected an attitude of giving up, or not attempting to discontinue substance because it was "pointless." One woman revealed that she did not try to quit smoking because she felt it was an unachievable goal.

3.2.4. Public understanding of science (PUS)

PUS is a body of sociological thought and an approach that explores the attitudes and perceptions of the non-scientific public

toward scientific evidence, the scientific community, and scientific experts.[34] PUS emerged as a theme through women's perceptions of risks of using substances during pregnancy. Explanations given for their perceptions stemmed from a general lack of understanding of science. For instance, women made statements confirming the misconception that a substance being *natural* equates to safety:

"I feel that marijuana is the least dangerous out of methadone, cigarettes, alcohol, anything. I feel that that's the least evil of them all."

Another woman stated:

"Opiates are natural! They come from a plant...It's not always harmful in the body. Long-time use, alcohol is worse for the body than steady use of heroin."

Further, women revealed that they were more likely to base health decisions on anecdotal evidence and personal experiences as opposed to medical advice:

"All my sisters, all their mothers smoked weed while they were pregnant. My youngest sisters all seem fine! They are all amazing."

3.3. Discontinuation themes

All women in this sample had discontinued substance use and had been in recovery for at least six months. This gave us the valuable opportunity to explore factors that facilitated discontinuation of substance use.

3.3.1. Negative pressures

Women identified a number of external pressures that – though negative – were factors in discontinuation or reduction of substance use. One woman described that child welfare involvement was stressful, yet indicated that it led to her discontinuation of substance use (though for some, being under surveillance can cause women to hide their substance use). Women described others' negative perceptions of them as motivators to make changes. Women discussed being able to "write their own stories" and "have their own truths". One woman stated:

"I didn't want people to look at me like what they would have expected for me – to lose my son and to not be a good mom."

Women discussed not only wanting to prove to themselves that they could make changes to their lives and substance use habits, but also to prove it to others (including service providers).

3.3.2. Positive relationships with service providers

Women frequently discussed the importance of high quality, supportive relationships, consistently identifying non-judgmental, positive relationships as contributing to their ability to discontinue use. For instance, warm, caring, and supportive service providers enabled women to be honest about their substance use, which allowed them to access and benefit from appropriate counseling and treatment. In a discussion of what service providers can do to help substance-using pregnant women most effectively, participants emphasized empathetic, compassionate, and non-judgmental attitudes. Service providers need to be understanding of women's circumstances and accept setbacks, while still holding them accountable for their actions. One woman described what service providers should do:

"Not judge and like try to come from a place of, even if you can't understand the experience, like a place of understanding her wounds and like the possible reasons behind where she's at and her history. I think that would go a far way to allow her to feel safer to be able to be honest and be able to accept the help rather than have a wall of fear up."

Women also reflected that a positive relationship with a service provider can supply a woman with objective, professional advice, and comfort that is not always available in her personal life. Women talked about other relationships that were embedded within their substance using lifestyles, wherein substance use (and other negative life experiences) was normalized. Positive relationships with service providers provided a necessary counterpoint to those unhealthy relationships:

"It's our norm and then to hear someone say '*No, that's not good though, that's not right*.'"

"Hearing that [from a service provider] '*I'm sorry you've had to go through that.*'"

3.3.3. Positive personal relationships

In addition to positive relationships with service providers, women highlighted the importance of having supportive personal relationships. For one woman, while referring to the stress of guilt as a reason for substance use continuation, she also noted how receiving support from a family member empowered her to stay clean:

"For a long period my sister was being a support for me and making me realize that I have made mistakes in the past but I'll be a good mother...I had been polluting him for a few months and it just made me feel terrible. But my sister was there to help support me, and help me realize that I didn't know. And it did help, it did help me get through it."

3.3.4. Self efficacy

Women identified that having confidence in their ability to achieve their goals was important:

"I wanted to see if I could do it. I just wanted to test myself to see if I could put the pipe down long enough. And you know, 2.5-3 years later here we are. So I think I can."

One woman noted that pregnancy itself gave her a reason to make changes. Another woman was intrinsically motivated and showed her determination through accessing support and recognizing her own self-worth:

"For me, it was the love and respect that I had for myself and sobriety now. I see myself."

Women were clear that self-efficacy was the foundation for changing substance use behavior.

3.3.5. Physiological and visceral responses

Women identified physiological changes during pregnancy that increased their sensitivity. Because of these changes and accompanying nausea, some women discontinued use of some substances immediately.

"For me, as soon as I got pregnant I just naturally felt nauseous. Cigarettes would make me sick so in my first pregnancy I just gave up smoking cigarettes."

Visceral feelings also led to discontinuation. Most commonly, these were conscious, fearful feelings, but women also mentioned vivid hallucination-like states in which they imagined losing the fetus. One woman described:

"I had done a little mushrooms and MDMA that day and I had a hit of nitrous, and then when I had that hit of nitrous I just had this vision of this little bean inside of me and it shriveling up...So I completely stopped everything."

One woman described that her motivation was based on a fear of dying:

"I knew that my heart was very close to giving out. I was scared to die."

Though physiological and visceral responses were not dominant themes, they did constitute an important variable in discontinuation not adequately captured by other themes.

3.4. Recommendations for service providers

Women were asked to discuss their recommendations for improvements to health care supports for pregnant and parenting women with substance use issues. Women identified the need for comprehensive services. They suggested the establishment of inpatient treatment for pregnant women with wraparound programming ranging from detoxification to aftercare. This ideal program would offer essential skills classes, parenting groups, and provision of other instrumental needs.

Women also described a lack of resources available to them during pregnancy. They recommended that resource materials (e.g., pamphlets about services for pregnant women with substance use issues) should be readily available in the community:

> "See I think doctors, family doctors, pediatricians; they should all have this type of information on hand. Whether a mother or a pregnant woman is or isn't using, it is good to throw it out there. Mention it to them. Not only if they have a problem. Maybe give awareness before."

Women emphasized that healthcare professionals should have comprehensive information on the full range of services that pregnant women with substance use problems might need, including detoxification centers, treatment programs, shelters, food banks, pregnancy outreach programs, aftercare services, parenting programs, and child care services.

The final recommendation was for those who work with children and youth to recognize that the cycle of trauma, abuse, and substance use often begins early in life. Women emphasized the importance of listening to children who report abuse:

> "In my experience, talking to women who have been raped [in childhood or adolescence], there was nobody there to listen to them. Nobody believed them...I think if we can try to have a voice for the younger generation we can somewhat break the cycle of it not turning into a 10-year issue of drug use or abuse."

4. Discussion

In this study, we explored reasons for substance use continuation and discontinuation among a highly vulnerable population of pregnant women. As expected, women reported a number of complex, interrelated continuation and discontinuation factors that served as barriers and facilitators to accessing treatment. Learning from women about their reasons for substance use is critical to our ability to appropriately and effectively support vulnerable, substance-using pregnant women.

4.1. Continuation themes

Low self-efficacy[29] played a foundational role in women's substance use, perhaps because other continuation themes (e.g., stressors, escapism) affect self-efficacy. Previous abuse, exposure to violence, and financial strain are often predictive of continued alcohol use or smoking during pregnancy.[35,36] Feeling pressure, guilt, and shame regarding this use decreases self-efficacy. Stressors can cause women to use substances to cope with or escape from reality.[18] The cycle of stress, using substances to cope, and guilt, can accumulate and undermine self-efficacy.

PUS contributed directly to substance use continuation. Interestingly, the literature on substance abuse does not refer to PUS; however, prior literature has assessed risk perceptions and attitudes towards healthcare professionals in relation to substance use during pregnancy. For instance, pregnant women who used alcohol underestimated the risk of alcohol use (though, they overestimated the risk of caffeine[37]). Similarly, women were less likely to discontinue smoking when they reported a lower perceived risk to the fetus.[38] The vulnerable women in the current sample may have low health literacy, which relates to decreased participation in prenatal care.[36] Alternatively, PUS may arise from distrust of professionals and previous negative experiences in systems. For instance, women in the focus groups reported that distrust of healthcare professionals and negative prior experiences (e.g., being made to feel guilt and shame as a result of their substance use) lead them to lie about their substance use. This can result in service providers offering inaccurate information or not connecting women to the appropriate supports. As such, unsupportive relationships with service providers can affect substance use continuation.

4.2. Discontinuation themes

Interestingly, self-efficacy emerged not only as a central theme to substance use *continuation*, but also as a theme to substance use *discontinuation*. As a substance use continuation theme, women spoke about not having confidence in their ability to reduce or discontinue substances, and therefore not attempting to stop. Conversely, women spoke about *high* self-efficacy and positive beliefs in their ability to make changes to their substance use as an important factor in their decision and ability to enact those changes. This parallels research indicating that self-efficacy and self-determination are important determinants of behavior change (e.g., Ref. 39). We found that positive relationships contributed to self-efficacy by empowering women and making them feel worthy of success. Importantly, women discussed positive relationships with service providers as being particularly impactful. Through relationships, women built trust in health and social systems that can further support recovery.

Women revealed that physiological and visceral responses contributed separately but directly to discontinuation of use. Others have noted similar patterns; some pregnant Maori women reported stopping smoking due to nausea.[40] Many women, however, resume smoking after the child's birth, when physiological responses are no longer present.[41] Thus, though physiological and visceral responses may affect women's substance use during pregnancy, positive relationships and increased self-efficacy are more likely to relate to long-term changes in a woman's substance use patterns.

4.3. Implications for practice and/or policy

Women recommended comprehensive services to support pregnant women with substance use issues. When enacted, comprehensive services for pregnant women have shown great success (see Refs. 26,2). Given the role PUS played in substance use continuation, psychoeducational classes on substance use, positive parenting, and trauma-informed approaches would be an important component of a wraparound service for vulnerable pregnant women. Women could also build meaningful relationships with other women who have similar goals of substance discontinuation (though caution should be taken to ensure influences from other women are positive and healthy).

In addition to recommending that additional resource materials be available to them through service providers, women unanimously requested that service providers treat them with compassion and empathy. Previous research at BTC supports these assertions: women identified that mutual, respectful relationships with staff were particularly important for their recovery.[13]

Education for healthcare professionals and service providers on the historical and current trauma experienced by women with substance use issues and on effective trauma-informed approaches would be beneficial (see Ref. 42).

Women discussed the need for service providers to recognize the cycle of trauma and substance use in children. They emphasized the importance of listening to children who report abuse, not only to address potential abuse, but also to ensure the child has a trusted adult and to enhance the child's relationship-building capacity. Education for first responders (e.g., teachers, child welfare workers) is important, but community support is also required. Although such large-scale, structural, societal changes are difficult to implement and measure, they are nonetheless essential to ensure the rights of all children to be safe and grow up to be healthy adults.

4.4. Limitations

The uniqueness of the sample in this study limits the generalizability of the findings to other pregnant women with substance use issues. That is, all participants were attending BTC, seeking support for substance use issues, and had been in recovery for at least six months (to reduce the risk of re-traumatization or relapse). As such, the factors affecting continuation and discontinuation of substances may differ for women who do not access support services or who do not attain recovery from substance use. Further, women in this sample are characterized by polysubstance use, histories of trauma, mental health difficulties, and unstable home lives (as is the broader population at BTC; Motz et al. [13]). Thus, women's reasons for continuation and discontinuation may not generalize to recreational substance-using pregnant women (who often report negligible use of illicit substance other than cannabis and *party drugs*, such as ecstasy[43–45]). Though the sample characteristics may limit generalizability, it also represents a strength of the current study, as these high-risk, vulnerable women are often not included in research. Understanding first-hand perspectives on barriers and facilitators to changes in substance use during pregnancy is essential to provide appropriate support to these vulnerable families.

Given the nature of the focus group methodology, there is a possibility that women were not forthcoming in discussing their experiences of substance use during pregnancy. There may have been lapses in women's memories of their experiences during pregnancy, particularly given the use of psychoactive substances. Further, the lead researcher who ran the focus group discussions was relatively unknown to the women. She was a student with no personal experience with substance abuse, nor was she a mother; thus it is possible that women felt uncomfortable sharing their experiences. She worked, however, in an office at BTC for a period of five months before conducting the focus groups, during which time she did meet and engage in some conversation with participants. Despite not knowing focus group participants well, the lead researcher felt that they showed immense strength and generosity in sharing their stories, experiences, and feelings. In addition, the presence of two clinical staff from BTC who were well known to women, in combination with women's comfort being in group discussions at BTC (as they had all participated in other group-based services at BTC) eases our concerns that women did not feel comfortable sharing their experiences in the focus groups. In fact, women shared openly about using substances during pregnancy, including feelings of shame and guilt around that use, which suggests that they did, in fact, feel comfortable sharing difficult memories and experiences.

When women were asked for recommendations of services for pregnant or parenting women with substance use issues that could be improved, there may have been bias in responses due to BTC staff being present. However, women made recommendations for services both that *were* available at BTC, as well as services that *were not* available at BTC (e.g., in-patient treatment), suggesting that women felt comfortable making recommendations that differed from services BTC offered.

4.5. Conclusion

Despite advances in research and treatment, many women continue to use substances throughout pregnancy.[48] Women in this study highlighted the importance of self-efficacy, in that low self-efficacy contributed to substance use continuation, as well as that high self-efficacy and self-determination contributed to substance use discontinuation. Further, quality relationships facilitate women's efforts by increasing self-efficacy, providing them with tools to manage stressors, and giving them relatable, reliable, and accurate sources of information regarding substance use and available services. Improvement in services for this vulnerable population is needed. These services might include holistic, multi-faceted early intervention services, such as those delivered at BTC, which provides trauma-informed care and focuses on relationships as a foundational component.[13,47] At a societal level, a widespread focus on nurturing environments and relationships has the potential to improve public health.[46] It is essential that health and social service providers adopt this relational focus and offer services in supportive, non-judgmental, and empathetic ways to: reduce women's stressors; increase their confidence; give them accurate, evidence-based information; and provide them with resources and support. This can empower women to succeed in their substance discontinuation goals and to become the mothers that they aspire to be so they can raise healthy children.

Conflicts of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

This work was supported by the Division of Clinical Pharmacology and Toxicology, the Hospital for Sick Children and Mothercraft, Early Intervention Department.

Ethical statement

The study received institutional ethics approval from The Hospital for Sick Children's Research Ethics Board (approval number: 1000052200). The date of approval was December 15, 2015.

Acknowledgements

The authors would like to thank Prateek Lala for his very helpful revisions and suggestions early on in the production of this work. Authors would also like to thank the women who participated in this study for engaging in honest and authentic discussion during the focus groups.

Appendix A. Focus group prompts and probes

Focus group prompts

1. In the first part of the project, we found that the general trend is that women are likely to decrease or discontinue their use of

substances when they discover they are pregnant. Interestingly, we also found that sometimes women feel guilty about use early in their pregnancy and then start using again later in the pregnancy. Finally, we found that late in the pregnancy, very close to birth, there is sometimes a relapse to substances. It is very hard to interpret what this information means without your help. Do you have any thoughts about these results? Do they make sense to you?

2. Why do you think women make changes to their substance use during pregnancy?

a. Probe: Is pregnancy a window for opportunity for making changes in substance use?

b. Reframe: I'm wondering if what you're saying is that pregnancy is a window of opportunity?

3. What helps women to be able to make changes?

a. Probe: Are there any approaches that help women to make changes?

i. For example: people, programs, etc. that supported the change

ii. What helped to make that happen?

iii. If they start with internal, move to external supports

b. Probe: Were there little things that helped support you in making a change?

i. For example: Food support, transportation, other instrumental needs

c. Probe: Hierarchy of needs

4. What makes it harder for women to make changes?

a. Probe: Were there expectations of you or thoughts that you had that made it more difficult to change use of substances?

b. Where there some people/situations that made it harder?

i. Systems, internal features, supports, etc.

5. Do you think there are some substance that are more difficult to change than others? Why?

6. Is it difficult to talk to service providers about substance use in pregnancy?

a. Probe: What was it about working with that person/program/support that made it difficult?

7. When we think about planning for the future, what can service providers do to support women who are seeking help for substance use while pregnant?

a. Probe: What would make it easier to seek support from service providers?

8. Is there anything else you think we should know to better understand our data?

9. What are 3 key things that have enabled you to get where you are today?

References

1. Aghamohammadi A., Zafari M. Crack abuse during pregnancy: maternal, fetal and neonatal complication. *J Matern Fetal Neonatal Med* 2016;**29**(5):795–7. doi:http://dx.doi.org/10.3109/14767058.2015.1018821.
2. Finnegan L. *Licit and illicit drug use during pregnancy: maternal, neonatal and early childhood consequences*. Ottawa, ON: Canadian Centre on Substance Abuse; 2013.
3. Pinto SM, Dodd S, Walkinshaw SA, Siney C, Kakkar P, Mousa HA. Substance abuse during pregnancy: effect on pregnancy outcomes. *Eur J Obstet Gynecol Reprod Biol* 2010;**150**(2):137–41. doi:http://dx.doi.org/10.1016/j.ejogrb.2010.02.026.
4. Public Health Agency of Canada. *Canadian perinatal health report*. Ottawa ON: Public Health Agency of Canada; 2008.
5. Lester BM, Andreozzi L, Appiah L. Substance use during pregnancy: time for policy to catch up with research. *Harm Reduct J* 2004;**1**(5):1–44. doi:http://dx.doi.org/10.1186/1477-7517-1-1.
6. Wong S, Ordean A, Kahan M. Substance use in pregnancy. *Int J Gynecol Obstet* 2011;**114**(2):190–202. doi:http://dx.doi.org/10.1016/j.ijgo.2011.06.001.
7. El-Mohandes A, Herman AA, Nabil El-Khorazaty M, Katta PS, White D, Grylack L. Prenatal care reduces the impact of illicit drug use on perinatal outcomes. *J Perinatol* 2003;**23**(5):354–60. doi:http://dx.doi.org/10.1038/sj.jp.7210933.
8. Roberts SCM, Pies C. Complex calculations: how drug use during pregnancy becomes a barrier to prenatal care. *Matern Child Health J* 2011;**15**(3):333–41. doi:http://dx.doi.org/10.1007/s10995-010-0594-7.
9. Vucinovic M, Roje D, Vučnović Z, Capkun V, Bucat M, Banović I. Maternal and neonatal effects of substance abuse during pregnancy: our ten-year experience. *Yonsei Med J* 2008;**49**(5):705–13. doi:http://dx.doi.org/10.3349/ymj.2008.49.5.705.
10. Finkelstein N. Treatment issues for alcohol- and drug-dependent pregnant and parenting women. *Health Soc Work* 1994;**19**:7–15.
11. Rutman D. Voices of women living with FASD: perspectives on promising approaches in substance use treatment, programs and care. *First Peoples Child Fam Rev* 2013;**8**(1):108–22.
12. Leslie M, editor. *The breaking the cycle compendium Vol. 1: the roots of relationships*. Toronto, ON: The Mothercraft Press; 2011.
13. Motz M, Leslie M, Pepler D, Moore T, Freeman P. Breaking the cycle: measures of progress 1995-2005. *J FAS Int* 2006;**4**:1–134.
14. Amaro H, Fried LE, Cabral H, Zuckerman B. Violence during pregnancy and substance use. *Am J Public Health* 1990;**80**(5):575–9. doi:http://dx.doi.org/10.2105/AJPH.80.5.575.
15. Hutchins E, Dipietro J. Psychosocial risk factors associated with cocaine use during pregnancy: a case-control study. *Obstet Gynecol* 1997;**90**(1):142–7.
16. Mason R, Wolf M, O'Rinn S, Ene G. Making connections across silos: intimate partner violence, mental health, and substance use. *BMC Womens Health* 2017;**17**(29):1–7. doi:http://dx.doi.org/10.1186/s12905-017-0372-4.
17. Salom CL, Williams GM, Najman JM, Alati R. Substance use and mental health disorders are linked to different forms of intimate partner violence victimisation. *Drug Alcohol Depend* 2015;**151**:121–7. doi:http://dx.doi.org/10.1016/j.drugalcdep.2015.03.011.
18. Piazza PV, Le Moal M. The role of stress in drug self-administration. *Trends Pharmacol Sci* 1998;**19**(2):67–71. doi:http://dx.doi.org/10.1016/S0165-6147(97)01115-2.
19. Floyd RL, Decouflé P, Hungerford DW. Alcohol use prior to pregnancy recognition. *Am J Prev Med* 1999;**17**(2):101–7. doi:http://dx.doi.org/10.1016/S0749-3797(99)00059-8.
20. Kost K. *Unintended pregnancy rates at the state level: estimates for 2010 and trends since 2002*. New York, NY: G. Institute; 2015.
21. Flemming K, Graham H, Heirs M, Fox D, Sowden A. Smoking in pregnancy: a systematic review of qualitative research of women who commence pregnancy as smokers. *J Adv Nurs* 2013;**69**(5):1023–36. doi:http://dx.doi.org/10.1111/jan.12066.
22. Daley M, Argeriou M, McCarty D. Substance abuse treatment for pregnant women: a window of opportunity? *Addict Behav* 1998;**23**(2):239–49.
23. Della Grotta S, LaGasse LL, Arria AM, Derauf C, Grant P, Smith LM, et al. Patterns of methamphetamine use during pregnancy: results from the infant development, environment, and lifestyle (IDEAL) study. *Matern Child Health J* 2010;**14**(4):519–27. doi:http://dx.doi.org/10.1007/s10995-009-0491-0.
24. Jackson A, Shannon L. Barriers to receiving substance abuse treatment among rural pregnant women in Kentucky. *Matern Child Health J* 2012;**16**:1762–70. doi:http://dx.doi.org/10.1007/s10995-011-0923-5.
25. Stone R. Pregnant women and substance use: fear, stigma, and barriers to care. *Health Justice* 2015;**3**:1–15. doi:http://dx.doi.org/10.1186/s40352-015-0015-5.
26. Finkelstein N. Treatment programming for alcohol and drug-dependent pregnant women. *Int J Addict* 1993;**28**(13):1275–309. doi:http://dx.doi.org/10.3109/10826089309062189.
27. Eggertson L. Stigma a major barrier to treatment for pregnant women with addictions. *CMAJ* 2013;**185**:1562. doi:http://dx.doi.org/10.1503/cmaj.109-4653.
28. Ebert LM, Fahy K. Why do women continue to smoke in pregnancy? *Women Birth* 2007;**20**:161–8. doi:http://dx.doi.org/10.1016/j.wombi.2007.08.002.
29. Bandura A. Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev* 1977;**84**:191–215. doi:http://dx.doi.org/10.1037/0033-295X.84.2.191.
30. Prochaska JO, DiClemente CC, Norcross JC. In search of how people change: applications to addictive behaviors. *Am Psychol* 1992;**47**:1102–14.
31. Byrne MM. Understanding life experiences through a phenomenological approach to research. *Assoc Oper Room Nurs J* 2001;**73**:830–2. doi:http://dx.doi.org/10.1016/S0001-2092(06)61812-7.
32. Smith JA. *Qualitative psychology: a practical guide to research methods*. Sage Publications; 2015.
33. QSR International. *NVivo qualitative data analysis software*. QSR International Pty Ltd; 2015.
34. The Royal Society. *The public understanding of science*. London, UK: The Council of the Royal Society; 1985.
35. Skagerström J, Chang G, Nilsen P. Predictors of drinking during pregnancy: a systematic review. *J Womens Health* 2011;**20**:901–13. doi:http://dx.doi.org/10.1089/jwh.2010.2216.
36. Smedberg J, Lupattelli A, Mårdby A-C, Nordeng H. Characteristics of women who continue smoking during pregnancy: a cross-sectional study of pregnant women and new mothers in 15 European countries. *BMC Pregnancy Childbirth* 2014;**14**:213. doi:http://dx.doi.org/10.1186/1471-2393-14-213.
37. Meurk CS, Broom A, Adams J, Hall W, Lucke J. Factors influencing women's decisions to drink alcohol during pregnancy: findings of a qualitative study with implications for health communication. *BMC Pregnancy Childbirth* 2014;**14**:246. doi:http://dx.doi.org/10.1186/1471-2393-14-246.
38. Ockene JK, Ma Y, Zapka JG, Pbert LA, Goins KV, Stoddard AM. Spontaneous cessation of smoking and alcohol use among low-income pregnant women. *Am J Prev Med* 2002;**23**:150–9.

39. Cismaru M, Deshpande S, Thurmeier R, Lavack AM, Agrey N. Preventing fetal alcohol spectrum disorders: the role of protection motivation theory. *Health Mark Q* 2010;**27**:66–85. doi:http://dx.doi.org/10.1080/07359680903519776.
40. Glover M, Kira A. Why Māori women continue to smoke while pregnant. *N Z Med J* 2011;**124**:22–31.
41. Pletsch P, Kratz AT. Why do women stop smoking during pregnancy? Cigarettes taste and smell bad. *Health Care Women Int* 2004;**25**:671–9. doi:http://dx.doi.org/10.1080/07399330490458051.
42. Corse SJ, McHugh MK, Gordon SM. Enhancing provider effectiveness in treating pregnant women with addictions. *J Subst Abuse Treat* 1995;**12**:3–12.
43. De Santis M, De Luca C, Mappa I, Quattrocchi T, Angelo L, Cesari E. Smoke, alcohol consumption and illicit drug use in an Italian population of pregnant women. *Eur J Obstet Gynecol Reprod Biol* 2011;**159**(1):106–10. doi:http://dx.doi.org/10.1016/j.ejogrb.2011.07.042.
44. Havens JR, Simmons LA, Shannon LM, Hansen WF. Factors associated with substance use during pregnancy: results from a national sample. *Drug Alcohol Depend* 2009;**99**:89–95. doi:http://dx.doi.org/10.1016/j.drugalcdep.2008.07.010.
45. Hayatbakhsh MR, Kingsbury AM, Flenady V, Gilshenan KS, Hutchinson DM, Najman JM. Illicit drug use before and during pregnancy at a tertiary maternity hospital 2000-2006. *Drug Alcohol Rev* 2011;**30**(2):181–7. doi:http://dx.doi.org/10.1111/j. 1465-3362.2010.00214.x.
46. Biglan A, Flay BR, Embry DD, Sandler IN. The critical role of nurturing environments for promoting human well-being. *Am Psychol* 2009;**67**:257–71. doi:http://dx.doi.org/10.1037/a0026796.
47. Espinet SD, Motz M, Jeong JJ, Jenkins JM, Pepler D. "Breaking the Cycle" of maternal substance use through relationships: A comparison of integrated approaches. *Addict Res Theory* 2016;**24**:375–88. doi:http://dx.doi.org/10.3109/16066359.2016.1140148.
48. Latuskie KA, Leibson T, Andrews NCZ, Motz M, Pepler DJ, Ito S. *Patterns of Substance Use in Pregnancy Among Vulnerable Women Seeking Addiction and Parenting Support*. 2018 (under review).