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"It's better for me to drink, at least the stress is going away": Perspectives on alcohol use during pregnancy among South African women attending drinking establishments

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Abstract

The Western Cape of South Africa has one of the highest rates of fetal alcohol spectrum disorders (FASD) globally. Reducing alcohol use during pregnancy is a pressing public health priority for this region, but insight into the experiences of women who drink during pregnancy is lacking. Convenience sampling in alcohol-serving venues was used to identify women who were currently pregnant (n=12) or recently post-partum (n=12) and reported drinking during the pregnancy period. In-depth qualitative interviews were conducted between April and August 2013. Interviews explored drinking narratives, with textual data analyzed for themes related to factors that contributed to drinking during pregnancy. All but one woman reported her pregnancy as unplanned. The majority sustained or increased drinking after pregnancy recognition, with patterns typically including multiple days of binge drinking per week. Analysis of the textual data revealed

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five primary factors that contributed to drinking during pregnancy: 1) women used alcohol as a strategy to cope with stressors and negative emotions, including those associated with pregnancy; 2) women drank as a way to retain social connection, often during a difficult period of life transition; 3) social norms in women's peer groups supported drinking during pregnancy; 4) women lacked attachment to the pregnancy or were resistant to motherhood; and 5) women were driven physiologically by alcohol addiction. Our data suggest that alcohol-serving settings are important sites to identify and target women at risk of drinking during pregnancy. Intervention approaches to reduce alcohol use during pregnancy should include counseling and contraception to prevent unwanted pregnancies, mental health and coping interventions targeting pregnant women, peer-based interventions to change norms around perinatal drinking, and treatment for alcohol dependence during pregnancy. Our findings suggest that innovative interventions that go beyond the boundaries of the health care system are urgently needed to address FASD in this region.

Keywords

South Africa; alcohol; pregnancy; fetal alcohol syndrome

INTRODUCTION

Alcohol exposure in utero is one of the leading preventable causes of poor birth outcomes. Exposure to alcohol during pregnancy puts a child at risk for a range of negative impacts, including premature delivery, neonatal death, low birth weight, birth defects, and neurodevelopmental disorders (American Academy of Pediatrics, 2000; Behnke & Smith, 2013). Together, these outcomes are known as Fetal Alcohol Spectrum Disorders (FASD). The most severe form of FASD is Fetal Alcohol Syndrome (FAS), which represents a unique constellation of physical, behavioral and cognitive symptoms (Jones et al., 1973). FASD can have lifelong effects on a child's cognitive and behavioral functioning (Disney et al., 2008; Riley & McGee, 2005), in turn impacting educational achievement and long-term social outcomes (O'Leary et al., 2013). Drinking during pregnancy therefore has severe consequence not only for a mother and her child, but also for society as a whole.

The Western Cape Province of South Africa has one of the highest rates of FASD globally. Studies using active case ascertainment among children in the Western Cape have found FASD rates ranging from 40.5 to 89.2 per 1,000 youth (May et al., 2000; May et al., 2007; Viljoen et al., 2005). These are strikingly higher than rates in the United States, which are estimated at 0.2 to 1.5 per 1,000 live births (Riley et al., 2011). Data from the Western Cape studies found that while an expected 96% of mothers of children with FASD reported drinking during pregnancy, a further 24% of the mothers with children who did not meet criteria for FASD also reported drinking during pregnancy (May et al., 2007). In this region, drinking patterns typically include hazardous drinking over the weekends (Martinez et al., 2011), and similar patterns of episodic but heavy drinking have been observed among women who consume alcohol during pregnancy (May et al., 2007).

Heavy alcohol use has deep cultural and economic roots in the Western Cape. The province is a popular wine producing region, and manual laborers on these vineyards included both men and women, typically of Coloured race (a South African racial category of historic mixed ancestry). Historically, these workers were given wine as partial payment for their labor, a practice known as the *dop* system. Although this practice was outlawed in the 1960s, high levels of drinking and alcohol dependence remained intact (London, 1999; London et al., 1998). At the same time, race-based legislation under South Africa's apartheid system created densely populated townships with little opportunities for employment and recreation. In these township settings, *shebeens* (informal alcohol-serving establishments) were and remain among the only social outlets for residents. The popularity of these alcohol-serving venues as social settings, and the history of alcohol production in the region, have laid the foundation for elevated use of alcohol, including alcohol use during pregnancy.

In other settings, literature suggests that drinking behavior during pregnancy is most consistently predicted by a woman's drinking behavior in the pre-pregnancy period and by her previous experiences of interpersonal trauma (Ethen et al., 2009; Skagerstrom et al., 2011). Recent research in South Africa has found that women with lifetime trauma histories are indeed more likely to increase consumption or sustain hazardous levels of drinking during pregnancy, compared with women without such traumas (Choi et al., 2014). This is likely explained through an effort to cope with the psychological sequelae of traumatic experiences (Choi et al., 2013; Cooper et al., 1995), which may be exacerbated during the pregnancy period (Choi et al., 2014; Kendall-Tackett, 2007; Tomlinson et al., 2013). Additionally, pregnancy in South Africa may introduce further social and contextual stressors including HIV testing and diagnosis, possible relationship dissolution, depression, and regret around unintended pregnancies (Crankshaw et al., 2014; Harrison & O'Sullivan, 2010; Tomlinson et al., 2013), but the impact of these stressors on drinking during pregnancy has not been fully investigated to date.

In order to prevent FASD in the Western Cape of South Africa, interventions should be guided by an understanding of the full range of social and contextual factors that influence alcohol use in this setting. Typically, interventions to reduce FASD in South Africa have been located in prenatal clinics, and have focused on increasing women's knowledge about the detrimental impact of alcohol on the developing fetus (Stade et al., 2009). However, these efforts may fall short in preventing FASD, because they likely fail to appreciate and address the complex psychosocial and contextual factors that motivate women to drink during the pregnancy period. In addition, such interventions miss women whose attendance to prenatal care is late or irregular, a phenomenon that is much more common among heavy drinkers (Brady et al., 2003). An in-depth understanding of the experiences of women who drink during pregnancy is necessary in order to inform the content and delivery of appropriate interventions, but such data is lacking in South Africa thus far. The current study aimed to fill this gap by qualitatively examining the experiences of a community-based sample of pregnant and postpartum South African women who reported alcohol consumption during pregnancy.

METHODS

Setting

This study was conducted among pregnant and recently post-partum women recruited from Delft, a peri-urban township located approximately 15 miles from the center of Cape Town, South Africa. Delft is unique in that it is a racially integrated township, including both residents who are of Black African (primarily Xhosa-speaking) and Coloured (primarily Afrikaans-speaking) ethnicities. According to South African census data, over half of Delft residents are women, and more than 50% of those are in their childbearing years (ages 15–44). Only 15% of women in Delft have completed a high school education or more, and very few have steady employment (South Africa Census Bureau, 2003).

Sample selection

Pregnant and post-partum women were recruited between April and August 2013, using relationships our study team had developed working in alcohol-serving establishments in the community (e.g., Eaton et al., 2012; Watt et al., 2012; Watt et al., 2014). Recruitment posters were placed in nine alcohol-serving establishments, representing five venues with predominantly Black African patrons and four venues with predominantly Coloured patrons, to recruit female drinkers who were pregnant or within 12 months post-partum. Interested individuals called the study coordinator and were screened over the phone for the following eligibility criteria: age of at least 18 years; currently pregnant or gave birth in the last year; and reported any alcohol consumption during the pregnancy period, including the period prior to pregnancy recognition. Eligible women were scheduled for an in-person appointment with the study coordinator the next business day. We continued recruitment until we reached a target sample of 12 pregnant women and 12 post-partum women.

Data collection

Data collection was conducted by two South African interviewers (one Black, Xhosa-speaking; one Coloured, Afrikaans-speaking). Both had university education and previous experience conducting qualitative interviews, and they each had been trained on qualitative methods by the first author. The interviewer met individually with the eligible woman in a private room at the study office, located in a public space in the community. Written informed consent was obtained prior to commencing the interview.

The in-depth interviews, conducted in either Xhosa or Afrikaans, lasted approximately 60–90 minutes each and were audio-recorded. Interviews followed a semi-structured interview guide (Mack et al., 2005). The guide included opening questions and follow-up probes related to pregnancy recognition, mental and physical health during pregnancy, alcohol use throughout the pregnancy and postpartum period, and the woman's intimate relationships during and after pregnancy. Interviewers were given training prior to data collection on how to follow the open-ended guide and probe on salient themes throughout the interviews. At the conclusion of the interview, all participants were told about the risks of drinking during pregnancy, and were referred to appropriate substance use, mental health and prenatal services in the community. Participants were given a grocery card in the value of 100 Rands (approximately US $10) as compensation for their time. All study procedures were approved

by the ethical review boards of Stellenbosch University, University of Connecticut, and Duke University.

Analysis

Audio-recordings of the interviews were transcribed and simultaneously translated into English. The textual data were then analyzed in two steps. First, analytic memos were written to summarize and organize the content of each transcript into its main themes and to begin to extract meaning from the data (Birks et al., 2008). Each memo was written by one of the authors (MHW, KWC, or JV) and was discussed afterwards by at least two authors to ensure that it accurately captured key details from the original transcript. Relevant quotations were incorporated into the memos to closely reflect participants' own words. Preparing the memos enabled the authors to begin exploring the relationships and themes in the data and to develop a set of codes and proceed to the next step of analysis.

Second, the completed memos were reviewed in depth, and through consensus the authors identified the primary thematic categories related to alcohol consumption during pregnancy. The memos were uploaded to a qualitative analysis software program (NVivo 10), and coded for text related to each of the identified themes. The coded output was again reviewed and discussed among the team. Representative quotations were identified to support each of the primary themes, and the corresponding memos and transcripts for each quote were revisited in order to contextualize participants' words within their overall narratives.

RESULTS

Description of the sample

The sample included nine women who were pregnant at the time of the interview and 15 women who were within 12 months postpartum. The women ranged in ages from 19–43, with a mean age of 26.7 (SD=6.8). The women were either of Black African (9/24, 37.5%) or Coloured (15/24, 62.5%) ethnicities. Education in the sample was low, with only two women reporting that they had completed grade 12. No women had full-time formal employment; three reported part-time employment as domestic workers. Only four women were married, three were separated from a husband, and the remaining 17 were unmarried.

The pregnant women ranged from 12–40 weeks gestational age, with a mean gestational age of 24.8 (SD=11.0). Of the 24 women in the sample, only one woman reported that her pregnancy had been planned and timed, with the remaining indicating either directly or indirectly that their pregnancy was unintentional. The majority of women (16/24) had prior children, ranging from one to four other children.

Description of drinking in the course of pregnancy

Overall, the sample reported very heavy drinking patterns during the pregnancy period. Only two women (both of Black race) reported that they had stopped drinking altogether after learning about their pregnancy, citing efforts to protect the health of the baby, and two other women reported that they had reduced their frequency of drinking (but not the quantity of alcohol per drinking episode). The majority of women (16/24) reported that they drank as

much during pregnancy as they had prior to pregnancy, and four women reported that they increased their consumption of alcohol during pregnancy.

Women spoke about drinking most heavily during weekends, with most women reporting patterns of binge drinking. Women typically consumed about six standard drinks on a day of drinking, and five women reported sometimes drinking up to 12 drinks per day. Beer was the most common alcohol consumed, with some women also drinking alcoholic cider, wine or brandy. The following women illustrate the patterns of heavy drinking in this setting.

> "I never stopped drinking. Even after I discovered that I was pregnant I continued with my drinking habits. Lately I only drink on weekends because I am already 40 weeks pregnant, but I have not stopped drinking. We mostly drink beer. It sometimes gets to be more than a case (12 bottles)." (Coloured woman, 23 years old, 40 weeks pregnant) "We'll drink a case of beer. That's 12 beers. I drink every day. I'll start on a Thursday and drink until Sunday. When I wake up with a hangover I'll start again." (Coloured woman, 25 years old, 12 weeks pregnant)

Early in pregnancy, women typically drank in a venue setting (tavern or *shebeen*), while later in the pregnancy, most women chose to drink at home with friends, due to restrictions of pregnant women in the venue or concerns about safety in the venue. This woman describes how a fear of violence in the bar made her stop going there during her pregnancy.

> "They stabbed my friend. That is why I told you I didn't like the *shebeen*. After that my husband said, `You see what happened to your friend? Do you want that to happen to our baby? Stop going to the *shebeen*. Buy your beers and sit in the house.' So I did that. Otherwise I was going there every day." (Black woman, 26 years old, 13 weeks post-partum)

Factors that explain drinking behavior during pregnancy

There appeared to be a generally shared knowledge about the negative impact that alcohol consumption during pregnancy could have on a baby. Despite this knowledge of the negative repercussions of maternal drinking, the large majority of this sample of women continued to drink at hazardous levels throughout pregnancy. Analysis of the interviews revealed five primary themes that explained women's drinking during the pregnancy period: 1) women used alcohol as a strategy to cope with stressors and negative emotions, including those associated with pregnancy; 2) women drank as a way to retain social connection, often during a difficult period of life transition; 3) social norms in women's peer groups supported drinking during pregnancy; 4) women lacked attachment to the pregnancy or were resistant to motherhood; and 5) women were driven physiologically by alcohol addiction.

1) Coping with stressors and negative emotions: "I drink my problems away"

—Women cited a range of stressors, some unique to pregnancy and others that appeared to be exacerbated by the pregnancy experience. That the pregnancy itself was a stressor was a consistent theme, with women talking about their sense of disappointment or shame about being pregnant. The stress of poverty, unemployment and food insecurity, and the challenges that their economic situation posed for having a new baby was a constant theme throughout and reflected the context of the community where they lived. Four women in the

sample were HIV-infected (one diagnosed during the current pregnancy), which caused significant stress related to managing HIV disclosure, fear about the baby's HIV status, and fear of one's own death. Many women also talked about stressors in their relationships, including the dissolution of a relationship that was caused by the pregnancy, physical abuse in the relationship, and a fear that the partner would not be around to help support the child. Other women discussed problems with parents or other family members, including the family's disapproval of the pregnancy, as well as the stress of taking care of other children while pregnant. The following woman recounted how the multitude of stressors left her feeling frightened and overwhelmed.

> "My life changed a lot [as a result of the pregnancy]. I had to make many decisions. There were lots of things that I had to consider. I was very scared. I was afraid my parents would ask me to leave the house. I was thinking how my first born was given to my parents by the social workers. I didn't have an income and my husband did not support me in any way. I panicked all the time because I did not know where I was going to live with this baby." (Coloured woman, 24 years old, 26 weeks pregnant)

As a result of these stressors, many women reported experiencing negative emotions indicative of depression symptoms during pregnancy, including periods of sadness and crying. Women often said they had no one in their lives with whom they could talk about their feelings, as this woman expressed:

> "There's no one I can speak to. I can't even chat to my mom. I feel that she doesn't take heed of my feelings… If I should speak to (another) woman, I know she will tell her friends." (Coloured woman, 22 years old, 13 weeks pregnant)

In the context of multiple stressors and negative emotions during the pregnancy, drinking served as a way to cope with what appeared to be personally overwhelming situations. When women were asked during the interview why they continued to drink, they typically used words such as "I drink my problems away" or "I'm drinking a lot because of the stress I have". Drinking was described as a way that women emotionally avoided their problems, calmed their anxieties and worries, and suppressed negative feelings. As an example, a woman who was diagnosed with HIV during her pregnancy said that when she thought about her HIV status, she found "it's better for me if I drink, at least the stress is going away." She described how her HIV status, combined with other stressors related to pregnancy, including lack of family support, led her to drink.

> "I was drinking a lot when I was pregnant. I was very stressed, so I would drink 6 beers a day. I was drinking a lot and I was drinking every day. I was scared because it's my first child, and I don't have parents, so I don't know what to do. So every time I think of that I will go and drink." (Black woman, 26 years old, 13 weeks post-partum)

2) Drinking as recreation and social connection: "Just drinking to have fun"— Spending time drinking in the venue served as an established way of socializing, and one of few opportunities for recreation outside the home. Most women reported that they drank with friends, either at a venue or at someone's house. Retaining this connection with friends

during the pregnancy period likely helped women to cope with the pending change in their lives. A postpartum woman talked about how the venue was a key setting for her to meet her needs to socialize with others while pregnant: “I like talking. We always go in a group when going to the *shebeen*. I always see that I have company when I go to a *shebeen*.” Younger women in particular spoke about the drinking environment as a place to dance, meet people, and “be happy.” For many, then, it may have been difficult to give up being part of this social fabric of the venue, and may represent resistance to transitioning to a life of motherhood that is more laden with responsibilities. One pregnant woman talked about how she felt on the precipice between two lives, and chose the previous life that was connected to her friends: “My friends are enjoying themselves so why can't I enjoy myself? If I had to consider my pregnancy I would have stayed home while my friends went out partying.”

The theme of drinking for enjoyment outside of their homes often overlapped with the theme of drinking to deal with stressors and negative emotions, as women reported that spending time at the venue helped them to forget their problems and “have fun”. Some women talked about going to the venue because they “needed to get away from home” in order to escape the stressors they were experiencing in their households. For a few women, increased boredom during pregnancy also seemed to contribute to sustained or increased drinking. One woman had dropped out of school due to her pregnancy, and others had stopped working after becoming pregnant, giving them more opportunity to spend time at the drinking venues. As one pregnant woman said, drinking at the venue “keeps me busy.”

3) Social norms: “In my area, the women who are pregnant, they drink”— Women spoke about how drinking during pregnancy was normative in their communities broadly, and in their social circles specifically. Coloured women spoke about this more universally (i.e., “all” pregnant women drank), while Black women were more likely to talk about this selectively (i.e., “some” pregnant women drank). All the women could identify other women in their community who drank during pregnancy, and several of them had pregnant friends with whom they drank. None of the women in the sample talked about hiding their drinking behaviors from others, implying that their behavior was either accepted or endorsed in their immediate networks. A few women spoke about how “older women” in the community or their families told them that they shouldn't be drinking, but the women appeared to dismiss this critique of their behavior as a generational difference.

Several women spoke about how their friends would encourage and support their drinking behavior, even though the friends were knowledgeable of the pregnancy. The following woman expressed intentions to drink less, but said that her friends would encourage her drink, often up to six beers in a single evening.

> “[My friends] will always encourage me to accompany them to the venue. We'll go to the venue, and we'll finish about six beers. That's all.” (Coloured woman, 22 years old, 13 weeks pregnant)

In some cases, the social norms conflicted with knowledge about maternal drinking that the woman had received from the clinic or older female family members. A woman who reported drinking “six to eight beers a day” admitted to a feeling of guilt for drinking, despite the risk she knows it conveys for her child.

> "My thought as I'm sitting there, is that it's wrong for me to sit there. I'm sitting at this venue, I'm pregnant. I'm not even considering my child. I'm only concerned with my own pleasures." (Coloured woman, 26 years old, weeks of pregnancy unknown)

4) Lack of attachment to the pregnancy: "I'm not even sure I want the baby"— The majority of the sample did not express a strong attachment to their unborn child during the pregnancy period. Only two women expressed feelings of protection and concern about the unborn child. Both of these women spoke of reducing or ceasing their drinking for the sake of the child, as this woman explained: "I must be responsible now for my child and stop drinking and start bonding with my (unborn) child." The more common lack of attachment to pregnancy was largely bound up in the fact that all pregnancies (24/25) were unplanned, and many expressed that at the time of pregnancy they felt no connection or responsibility for the babies they were carrying. Even if women accepted the situation of their pregnancies, they were nevertheless unwilling or unable to make any lifestyle changes to accommodate their new situation. As one woman said: "I didn't want the child. I didn't want to be bound by something I didn't want." Another woman talked explicitly about this lack of attachment to her pregnancy, and how it facilitated her drinking throughout the pregnancy period.

> "It never felt as if I'm pregnant. I continued to go out with my friends and went partying and clubbing and drinking, even during the week. Even now at 40 weeks it does not feel that I am carrying a baby. I disconnected myself from this pregnancy…I have not accepted the pregnancy…I just feel that I am not ready to take care of this baby." (Coloured woman, 23 years old, 40 weeks pregnant)

Two women in the sample took a more extreme response stating that they drank large amounts of liquor in the early period of their pregnancies as an effort to try and abort the pregnancy, as this woman recounts. She was not successful in aborting the pregnancy, and went on to drink heavily throughout the pregnancy period.

> "I drank strong liquor without diluting it because I felt to drink this child out of my womb. I used to tighten my belts tightly around my stomach and choked my stomach every day to get rid of the fetus. I didn't eat. I took headache powders to get rid of the baby." (Coloured woman, 23 years old, 40 weeks pregnant)

5) Addiction: "I drink too much… I never intended to become this way"— Actual acknowledgement of having an alcohol addiction was not well recognized in the sample. However, there were clear signs of alcohol dependence across the majority of interviews. Women talked about choosing to drink alcohol instead of eating; experiencing hangovers; having a drink first thing in the morning; begging in order to get money for alcohol; experiencing guilt about their drinking; and going into labor intoxicated. This woman, who never labeled herself as alcohol dependent, described her drinking behavior:

> "(Giggling) I did not really eat well because I was drinking so much… I am drinking such a lot that I have to force the food down my throat… I am too afraid the alcohol will evaporate if I eat (laughing)." (Coloured woman, 31 years old, post-partum time unknown)

DISCUSSION

This study provides insight into the experiences of South African women who drink at hazardous levels during pregnancy. Although our study inclusion criteria was *any* drinking during pregnancy, we found that the majority of our sample engaged in binge drinking (four or more standard drinks at a time), usually several times per week. This pattern of drinking is particularly concerning, as data suggests that binge drinking may be more detrimental to a developing fetus than the same amount of alcohol consumed over a longer period of time (Conover & Jones, 2012). Analysis of our textual interview data points to the influence of psychological, social and contextual factors in sustaining drinking behavior in this setting, as well as the influence of alcohol dependence in this population.

Most pregnancies in our sample were unintended. This likely contributed to greater pregnancy-related stressors and a lack of attachment to the pregnancy, both factors that sustained alcohol consumption during the pregnancy period. Data from the South African Demographic and Health Survey suggests that a large proportion of pregnancies in the country (61% of all first pregnancies and 46% of all second pregnancies) are unintended (South African Department of Health et al., 2007). Among a cohort of regular female drinkers that we followed in South Africa, about 12% of women became pregnant over a 12-month period, and the large majority of those had previously reported that they were not intending to get pregnant (Choi et al., 2014). Data suggests that when pregnancies are unintended, women typically recognize their pregnancy later in gestation (Cheng et al., 2009), and are less likely to make behavioral changes, such as reducing alcohol consumption, once they recognize they are pregnant (Dott et al., 2010; Ethen et al., 2009; Hellerstedt et al., 1998). Women who drink heavily are more likely to engage in unprotected sex (Kalichman et al., 2007), and women who binge drink are at particularly increased risk of unintended pregnancies (Naimi et al., 2003). Patterns of drinking prior to conception are a strong predictor of drinking during the pregnancy period, making these heavy drinkers far more likely to expose their fetuses to alcohol, compared to more moderate drinkers (Choi et al., 2014; Ethen et al., 2009; Skagerstrom et al., 2011). Interventions to reduce the incidence of FASD would therefore benefit from providing female drinkers with early pregnancy screening and reproductive counseling, such as in the form of brief motivational interviewing (O'Connor et al., 2011; The Project CHOICES Intervention Research Group, 2003), and easy access to appropriate contraceptive choices.

Stressors related to relationships, abuse and poverty contributed greatly to drinking during the pregnancy period. Previous qualitative work has suggested that non-pregnant women in this setting who drink heavily often do so in part as a way to cope with the stressors in their lives (Choi et al., 2013). Pregnancy itself is a psychologically stressful life transition for women, which may further exacerbate existing stressors or bring up the negative impacts of past traumas (Geller, 2004; Rholes et al., 2001). Combined with stressors that are unique to the pregnancy experience itself, such as relationship changes and anticipation of life adjustments, it is not surprising that women may rely even more heavily on previously established maladaptive coping strategies such as drinking. Women may do so in part as a way to avoid confronting these stressors, or as a means to self-medicate the negative emotions they are experiencing (Kaysen et al., 2007; Robinson et al., 2009). In a study of

over 1,000 pregnant women in Cape Town, 37% reported depressed mood, and depressed mood was significantly associated with alcohol use during pregnancy (Tomlinson et al., 2013), highlighting the importance of addressing emotional distress during the pregnancy period.

Although women in our sample did express knowledge of the negative impacts of alcohol consumption during pregnancy, this knowledge was overshadowed by social norms that supported drinking during pregnancy. This was particularly the case among Coloured women, who demonstrated particularly strong social norms around drinking that likely originate from historical economic patterns of living and working in vineyards. Social influence has been demonstrated to have an impact on a variety of health behaviors, including alcohol use among women both domestically and internationally (Davey-Rothwell et al., 2011; Lombardo et al., 2013). Studies conducted with pregnant women of different racial groups in the US and HIV-positive pregnant women in South Africa have shown the influence of certain peer networks on encouraging prenatal alcohol use, both because social groups may encourage pregnant women to attend bar sites and because these groups can create social environments where alcohol use is promoted (Desmond et al., 2012; Rhodes et al., 1994). Conversely, pregnant women who report having peer groups that discourage alcohol use are less likely to drink during their pregnancy (Rhodes et al., 1994). Interventions that incorporate peer or partner support have been proven effective in promoting certain healthy behaviors, including reduced alcohol use among women (McCrady et al., 2009; McCrady et al., 1991) and increased breast-feeding practices among pregnant women (Kaunonen et al., 2012). The successes of these interventions in reducing alcohol use and reaching pregnant women suggest that future interventions incorporating peer support and discussion around social norms could be effective in reducing prenatal drinking.

The study had several limitations related to the sampling approach and data collection methods that are worth nothing. First, study participants were recruited from select alcohol-serving venues in the community, which likely restricted our sample to heavy drinkers and women who had some connection to the study venues. These women may have been very different in their experiences and drinking motivations, compared with women who purchased their alcohol elsewhere, or did not attend the venues. Nevertheless, we believe that using a community-based sample recruited from alcohol-serving venues offers benefits over more typical samples of pregnant and post-partum women recruited from antenatal clinics, because we were able to include women who did not have optimal contact with antenatal services. It is also possible that our established rapport with the study venues and our study location in the community made it easier for women to talk about these sensitive topics. Second, the convenience sampling approach created the possibility that some `snow-ball sampling' may have over-sampled certain networks. Third, our focus on women who drink during pregnancy did not capture the other more adaptive ways that women may deal with stressful events during pregnancy. Fourth, by using a semi-structured qualitative approach, we did not have the same depth of inquiry on topics across all respondents. Interviewers were trained to cover broad topics in all the interviews, but to follow the participant's narrative, which meant that the details of the topics were covered inconsistently. This is a limitation of qualitative approaches more broadly, but is outweighed

by the potential for qualitative research to get nuanced insight into a complex social phenomenon.

CONCLUSION

This study elicited rich in-depth information about the experience of drinking during pregnancy, and offers some clear implications for moving forward. Our ability to use alcohol serving venues to identify women who drink at high levels during pregnancy suggests that these settings are not only appropriate, but also feasible, sites for interventions to reduce FASD. Alcohol-serving venues could be sites to intervene early with women at risk of maternal drinking, by identifying pregnancies in the nascent gestational period and providing targeted and supportive programs to reduce drinking behavior in the most critical period of fetal development (Chen et al., 2003; Floyd et al., 1999; Floyd et al., 2005). Given that many women continue to drink in venues even after they are visibly pregnant, working with alcohol servers in these settings to both educate women and intervene for the prevention of FASD may be a valuable approach (Dresser et al., 2011). Future research should study venue regulars who drank prior to pregnancy and then ceased drinking during the pregnancy period, in order to understand resiliency and identify intervention targets for this setting.

Our data clearly suggests that programs to reduce maternal drinking must go beyond conveying knowledge about FASD to addressing the contextual and social factors that lead women to sustain drinking behavior during pregnancies. Mental health interventions that address distress and develop coping skills, peer-based interventions that change social norms, and income generation programs that alleviate economic hardship are all programs that may address the context of prenatal drinking in this setting. In addition, treatment for alcohol dependence for pregnant women cannot be overlooked. While an integrated approach to perinatal care in South Africa is sorely needed (Tomlinson et al., 2013), our findings suggest that innovative interventions that go beyond the boundaries of the health care system are urgently needed to address the public health problem of FASD in South Africa.

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RESEARCH HIGHLIGHTS

- Drinking during pregnancy is motivated by a variety of social and contextual factors
- Alcohol venues are important sites to target women at risk of drinking in pregnancy
- Interventions beyond the health system are needed to address maternal drinking