

# Barriers and Facilitators of Alcohol Abstinence During Pregnancy - a Qualitative Study in Rural South Africa

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## Research Article

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# Abstract

## Background:

Fetal Alcohol Spectrum Disorders (FASD) is a common, important and under-recognised health burden in South Africa. There is a limited understanding of why pregnant women drink in the South African context. Existing qualitative research leaves significant knowledge gaps regarding pregnant women in rural settings, where prevalence of FASD is highest.

## Objective:

To provide a qualitative assessment of factors that influence drinking in pregnant women in a rural community in the Northern Cape province of South Africa

## Methods:

A descriptive phenomenological approach was undertaken to explore the perceptions and experiences of pregnant women who drink, in a purposive sample of 8 women from a rural ante-natal clinic. A semi-structured interview was conducted with each participant and thematic analysis was conducted.

## Results:

Participants appeared more aware of FASD than described in other study populations. Most reduced drinking after pregnancy recognition, although both recognition and cessation were often delayed. Participants described barriers and facilitators of alcohol abstinence. Barriers included social pressure, life stressors, and cravings and habits. Facilitators included desire to avoid FASD, relationships that were supportive without being stigmatising, availability of other “occupations” especially friendships and relationships not centred on drinking, specific body cues such as nausea, and a sense of personal agency.

## Conclusion:

Various personal and contextual factors can act as barriers or facilitators of alcohol abstinence during pregnancy. Addressing barriers at structural, community and individual levels may aid women in reducing harmful drinking during pregnancy. Facilitators of abstinence should be leveraged to effect change in drinking behaviours, and thereby limit the burden of FASD.

## Background:

Fetal alcohol spectrum disorders (FASD) describes a broad range of adverse neurodevelopmental, behavioural, growth and morphological effects of maternal alcohol consumption during pregnancy.<sup>[1]</sup> The spectrum denotes varying levels of affectation, which roughly correlate with the degree of alcohol consumption during pregnancy.<sup>[2]</sup>

South Africa has the highest rates of FASD in the world<sup>[3, 4]</sup>, likely due to the intersection of risky drinking - usually in a regular, weekend binge pattern - with a range of other risk factors.<sup>[5-7]</sup> Several epidemiological and interventional studies show that these risk factors are most often linked to low socio-economic status, with poor, rural residents of the Western and Northern Cape provinces being at particularly high risk.<sup>[4, 6, 8, 9]</sup> In some communities, FASD may be more prevalent than more recognised public health problems, such as HIV and TB.<sup>[1]</sup>

Qualitative research has the potential to provide rich information regarding the personal experiences, agency and motivations of pregnant women who drink during pregnancy. It also contextualises their choices in a situation where they are often vulnerable, with multiple, cumulative stresses.<sup>[10-14]</sup> It is essential to understand the factors that influence drinking behaviours in mothers, in order to formulate solutions that address their needs.

Internationally, qualitative research regarding FASD has often focused on issues other than the behaviour of drinking during pregnancy. The articles that do examine pregnant women who drink have populations that are substantially different to the South African context.<sup>[15, 16]</sup> Their populations are, on average, more wealthy, with higher levels of education, and lower average levels of alcohol intake than South African populations. This limits transferability between our contexts.

We found seven qualitative studies of drinking behaviour in women in South Africa. Four of these studies took place in urban contexts,<sup>[11–13, 17]</sup> while three were in rural environments.<sup>[10, 14, 18]</sup> Only two studies sampled pregnant women specifically, both by a single research group in a metropolitan area (Watt 2014, Watt 2016).<sup>[12, 13, 17]</sup>

The studies of rural women acknowledged that drinking should be viewed as a social norm created by multiple and overlapping historical, social, cultural and personal factors, and should not be viewed solely through a lens of personal choice. Falletisch<sup>[18]</sup> discussed the historical roles of slavery, peonage and the tot system in creating a sense of learned helplessness that persists to this day for many farm workers. Cloete<sup>[14]</sup>, and Cloete and Ramagundo<sup>[10]</sup> investigated alcohol use as an ‘occupation’, defined as “the everyday activities that people do as individuals, in families and with communities to occupy time and bring meaning and purpose to life”.<sup>[19]</sup> They conducted interviews on residents of a rural town and farm workers, respectively. Their studies characterised drinking as an imposed occupation – an activity that is undertaken not necessarily because of choice but due to historical and structural influences.

The studies in urban areas identified multiple factors that influenced drinking in women; with many findings replicated across the studies. Choi *et al.*<sup>[11]</sup> interviewed women in general, unrelated to pregnancy status. They found that women related their drinking behaviour to life stressors, including, *inter alia*, gender-based violence, poverty, and relationship conflict. In addition, women used alcohol to manage emotions, and to facilitate social engagement and support.

Fletcher *et al.*<sup>[17]</sup>’s study population was predominantly non-pregnant, but investigated drinking behaviour during a previous pregnancy. It found that while many women recognised drinking in pregnancy to be harmful, this was not consistently coupled with abstinence during pregnancy. Factors that influenced this included unplanned pregnancies, social normalisation of alcohol use during pregnancy, and depression.

The two studies by Watt *et al.* (2014 & 2016) studied pregnant and post-partum women. Participants were largely unfamiliar with FASD, often had inaccurate knowledge regarding the effects of fetal alcohol exposure, and frequently did not decrease drinking on pregnancy recognition. Watt *et al.* (2014) enumerated four factors contributing to drinking in pregnancy: addiction, lack of knowledge about FASD, lack of bonding with the pregnancy, and drinking to maintain social connection.<sup>[12]</sup> Watt *et al.* (2016)<sup>[13]</sup> explored attitudes regarding maternal alcohol use. They found that while women received anti-drinking messages from various sources, these were not highly valued and often contradicted social norms. In addition, women felt stigmatised and ambivalent about their drinking behaviour.

In summary, while some South African qualitative research exists regarding reasons for drinking by rural women, and by pregnant women, there is currently none on in-pregnancy drinking by rural women. This is important because these women are at highest risk of having a child with FASD. Therefore, we conducted a qualitative investigation of factors that influence drinking behaviour amongst pregnant women attending an antenatal clinic in small town in the Northern Cape province.

## Methods:

### Setting:

The study took place in Carnarvon, a rural town in the Northern Cape province of South Africa, located about 400 kilometres away from the nearest major town.<sup>[20]</sup> The town is situated within the arid Karoo region and has about 6,600 inhabitants.<sup>[21]</sup>

The most recent Census data describes the population of Carnarvon as being 51% female, 96% Afrikaans-speaking, and 85% reporting their population group as “Coloured” (this census category refers to South Africans of mixed ancestral background).

[21] Less than 20% of persons in Carnarvon have completed secondary schooling.<sup>[22]</sup> The primary employers in the area include agriculture, and government-driven work initiatives.<sup>[22]</sup>

Municipal reports indicate marked inequality, high levels of poverty and unemployment, and low levels of education.<sup>[20, 22]</sup> Most households earn below the South African average, and are often dependent on social grants.<sup>[20, 22]</sup> There are relatively few economic opportunities for locals, and the municipality cites alcohol and drug misuse as a threat to its development.<sup>[20, 22]</sup>

#### Study design:

We utilised a descriptive phenomenological approach within an interpretivist paradigm.<sup>[23]</sup> This posits that reality cannot be objectively determined but that each individual makes an interpretation of reality based on their experiences, culture and biases. A descriptive phenomenological approach was deemed most appropriate as it is primarily concerned with describing how people understand a phenomenon – in this case, drinking during pregnancy.<sup>[24]</sup>

#### Participant flow:

Purposive sampling was performed at the Carnarvon Primary Health Centre. Women were eligible if they were: currently pregnant; 18 years or older; attending antenatal services at this site; and had taken an alcoholic beverage within the last 6 months. Pregnant women in the waiting area were informed about the study. Women who expressed interest received further information in private, due to the focus on drinking behaviour being potentially sensitive.

Consenting women were given an appointment for an interview, which was conducted in a private room in the local public library. All participants were interviewed in person by the principal investigator. One participant requested to leave the interview to attend her consultation with the clinic doctor. However, she made herself available to finish the interview via a text messaging service. Participants received a small gift of baby clothing as compensation for their time.

#### Interviews:

Semi-structured interviews were conducted with an interview guide (Appendix 1), which was developed in consultation between the investigators. The guide was developed with the dual intention of being conducive to participants sharing their experiences, and to encourage responses that would answer the research aims. More sensitive questions were asked later in the interview once rapport had been established. Topics included: the participant's feelings towards her pregnancy; beliefs regarding the effect of alcohol in pregnancy; and factors that affect alcohol use in pregnancy.

#### Trustworthiness:

Several measures were undertaken to improve the trustworthiness of data.<sup>[24-27]</sup> We ensured prolonged engagement with both the community and the data, and checked for referential adequacy as suggested by Braun and Clarke.<sup>[28]</sup> A thick description was provided of the environmental, social and economic factors that influence the community. The research process was clearly detailed, with adherence to conventions on standard reporting. An audit trail was created in the reflexivity journal which details the rationale behind methodological decisions. The reflexivity journal also prompted the principal investigator to reflect on how the content and process of data collection and analysis interacted with his personal values, ideas and ideals. Discussions between investigators on the interpretation and structuring of themes were recorded.

#### Data collection:

Interviews ranged in length from 30 to 75 minutes and took place during two 2-week periods in July and November 2018. A total of 8 interviews were completed and conducted in Afrikaans. Several other women who initially agreed to an interview did not attend their appointments. Attempts to contact these women to arrange new times, or to identify reasons for non-attendance were unsuccessful.

The interviews were audio-recorded, and field notes were made during and after the interviews. These notes highlighted parts of the interview that felt significant, noted body language and tone of voice, and gave preliminary thoughts on the content of the interview. Patient-held maternity care records were used, with the participant's consent, to gather further sociodemographic data.

#### Data processing and analysis:

The audio data was transcribed verbatim by the principal investigator, with care taken to protect the anonymity of participants. Thematic analysis was performed using the qualitative data analysis software ATLAS.ti (version 8), according to the process described by Braun and Clarke.<sup>[28]</sup> The first step involved deep immersion into the dataset during transcription. The transcribed interviews were then read to identify codes. Coding was initially broad and inductive. Codes were arranged into nascent themes. Themes were checked for referential adequacy against the codes that made them up, and against the other themes to ensure that each theme was distinct. Themes were then ordered into hierarchies, links between themes explored, and themes named.<sup>[23, 28]</sup> Quotations presented in this paper were translated into English by the researchers.

#### Reflexivity:

The principal investigator took care to reflexively address issues such as role conflict,<sup>[29–31]</sup> gender sensitivity,<sup>[32, 33]</sup> and power relations<sup>[34, 35]</sup> in a reflexivity journal that he kept during the data collection and analysis phases of the project. This served to make his underlying biases explicit, and made him constantly re-assess how the data affected him.<sup>[36]</sup> This also represents an additional part of the audit trail within the project.<sup>[25, 27]</sup>

## Results:

#### Description of the sample:

The demographic and drinking details of participants are presented in Table 1. All 8 participants were Coloured, Afrikaans-speakers from Carnarvon. Two were married, and the rest were in relationships. The median age was 23 years (range: 19–36). All but one of the pregnancies were unplanned.

All participants had consumed alcohol during their pregnancies, with three drinking only before pregnancy recognition, and five continuing to drink thereafter. Two women who drank after pregnancy recognition were no longer drinking at the time of the interview. Pregnancy recognition usually occurred at two to three months gestation. The latest was at five months in the heaviest drinker. Most women described a pattern of regular binge drinking over weekends. Several described their previous level of alcohol use as not problematic, even when the levels met or exceeded the definition for binge drinking.<sup>[37]</sup>

Table 1  
Participant demographic details

Participant number	Age	Relationship status	Planning of pregnancy	Gestation at interview	Alcohol use before pregnancy recognition	Alcohol use after pregnancy recognition	Employment status and financial support	Plans around alcohol use after pregnancy
1	21	Unmarried, co-habiting	Unplanned	5 months	Regular binge drinking on weekends <sub>1</sub>	Moderate use <sub>2</sub> , followed by cessation	Student (tertiary), supported by her partner	Abstinence until completed breast feeding
2	30	Married	Planned	5 months	Regular binge drinking on weekends	Cessation	Formally employed	Abstinence until completed breast feeding
3	19	Unmarried, co-habiting	Unplanned	4 months	Regular binge drinking on weekends	Decreased frequency, quantity maintained	Unemployed, no explicit indication	Plans to continue drinking after pregnancy
4	33	Unmarried, in a relationship	Unplanned	5 months	Regular binge drinking on weekends	Cessation	Part-time work	Intends complete abstinence after pregnancy
5	25	Married, but not co-habiting <sup>§</sup>	Unplanned	6 months	Regular binge drinking on weekends	Moderate use, followed by cessation	Unemployed, social grants, and financial support from partner	Abstinence until completed breast feeding
6	36	Unmarried, co-habiting	Unplanned	7 months	Daily heavy use	Bingeing most days of the week	Irregular, informal employment	Uncertain
7	20	Unmarried, in a relationship	Unplanned	6 months	Occasional bingeing	Cessation	Unemployed, supported by partner	Would abstain after birth, unsure of duration
8	21	Unmarried, in a relationship	Unplanned	7 months	Regular binge-drinking	Decreased frequency and quantity	Unemployed	Not mentioned

<sup>1</sup>Binge drinking is classified as 4 or more standard drinks in an episode.<sup>[38]</sup>

Themes:

We classified our results into two major themes: barriers to alcohol abstinence, and facilitators of alcohol abstinence. A summary of the themes and subthemes is tabulated below in Table 2.

Table 2  
Themes and subthemes

THEMES	SUBTHEMES
<b>Barriers to alcohol abstinence</b>	<ul style="list-style-type: none"> <li>• Social pressure</li> <li>• Life stressors</li> <li>• Cravings and habits</li> </ul>
<b>Facilitators of alcohol abstinence</b>	<ul style="list-style-type: none"> <li>• Desire to avoid FASD</li> <li>• Supportive interpersonal relationships</li> <li>• Availability of other occupations</li> <li>• Body cues</li> <li>• Sense of agency</li> </ul>

Barriers to alcohol abstinence:

Participants described several reasons why they continued to drink during pregnancy, or challenges that they faced in trying to abstain from alcohol.

**Social pressure:**

The most common barrier to alcohol abstinence identified by the participants was drinking alcohol to feel accepted by their peers. Drinking was described by all participants as a social activity, and often occurred as a weekend leisure activity. Many participants felt peer pressure to continue drinking alcohol during pregnancy, fearing rejection by their friends. Indeed, some participants became estranged from their friends when they decided to abstain from alcohol. The following quotation from Participant 5 illustrates peer pressure to drink:

*So I am alright, but if my friends come to me, and they say, "Don't be so stiff, come let's drink a bit of Castle LITE\*", you know, a person sometimes doesn't want to disappoint the friends, then I'll drink the Castle LITE*

\*refers to a beer that is Low In Total Energy; its alcohol content is about 4% by volume<sup>[39]</sup>

After this incident, Participant 5 told her friends that she intended to remain teetotal for the remainder of her pregnancy. Thereafter, her friends excluded her from social activities:

*You see, now I don't want to drink with (them) so they think, so they aren't going to come sit with me.. and.. I was now for this whole time just alone at home (..) If I can't make my friends happy, then they also don't have any interest in me.*

Even without overt influence, some women found it difficult to abstain when around people who drink. Participant 6 described her experience:

*It's, how can I say, it's very uncomfortable to say it, because it is, (sighing), some days... that.. you feel, you don't actually have a desire to drink.. (...) Now he comes, "come, let's [drink]", I say, "No, I don't have anything". Or maybe he comes with a beer or something, you say "But I'm not going to worry today". Now he comes to sit and drink a beer with me. I think, come on, a little glass is not going to do anything, "Give that one little glass". Now (I've) finished drinking that beer, now I'm going to say, "go buy another beer for us quickly". And so, it will start, then the drinking habit goes on.*

**Life stressors:**

Participants described using alcohol to deal with their everyday social and relational stressors. These included, *inter alia*, poverty; gender-based violence; and financial dependence on partners and social grants.

In addition, participants felt anxious about meeting societal expectations placed on women.

Participant 6, talked about this at length:

*To be a woman is actually not an easy thing, because a woman has to go through many things that men do not have to go through. There's things that women.. must stress about a house, they have to stress about children, they have to stress about food (...) that's all pressure that is put on a woman. And then there are some days, that you feel, you don't feel up to this stress, you aren't going to do anything else for yourself, you are just going to buy a bottle of wine, or a bottle of beer, and you drink, because things become too much for you.*

Relationship problems were noted as strong stressors by a number of participants. Several participants identified relationship problems as the primary reason for their drinking. Participant 3 described how she would drink to avoid conflict with her partner who was a regular drinker:

*If he is drunk, and I am sober, then it doesn't feel right, because it's just an argument. But if we both drank, then it's... nothing like that, we are just happy.*

Participant 6's relationship problems included a partner who used alcohol and drugs, and was physically abusive towards her, especially when under the influence.

*Uh-uh (no), sometimes, like, my boyfriend, he actually uses drugs. That's all the things that make me feel like that. And if he uses alcohol on top of the drugs as well, then it is more stressful things for me, because then we don't understand each other, we argue, we fight amongst ourselves, and it affects the children actually.*

She later clarified that the fighting included violence:

*This is what (partner) causes, or it is what I maybe cause as woman, maybe... He finds fault with me, or maybe me with him, then it causes the arguing, and then... it goes over into violence, and that is how things are.*

Social isolation was also identified as a significant life stressor, and one that may be related to pregnancy. After pregnancy recognition, Participant 3's partner no longer wanted to drink with her. This led to her feeling socially excluded:

*If he goes out (to drink), I have to be at home, so it's... It's not actually good for me. (...)*

*Because I also feel, like, I also want to go out and drink, and so on, and enjoy myself*

She later admitted that she had started drinking at home because of her social isolation:

*The reason for that [drinking alcohol at home] was that my boyfriend was out all the time, and it felt to me like no one wanted anything to do with me.*

### **Cravings and habit:**

Participants also experienced internal barriers to alcohol abstinence such as cravings and drinking out of habit. While some participants experienced cravings for alcohol; they described themselves as largely successful in not acting upon them.

Participant 2 commented:

*There are days that you crave it, "I really want to drink a beer right now", but ok, you have to, let the craving come, and then go again.*

Some participants felt that drinking alcohol had become part of their daily routine, and their continued drinking was 'out of habit'. This is illustrated by the following quote from Participant 6:

*It's a habit for me now (...) It's not like there are actually lots of reasons*

Facilitators of alcohol abstinence:

Participants reported several factors that motivated them to either reduce alcohol intake or to abstain from alcohol including desire to avoid FASD, supportive interpersonal relationships, availability of other occupations, body cues and sense of agency.

#### **Desire to avoid FASD:**

All participants were aware of the potential negative effects of alcohol use during pregnancy. Furthermore, all participants modulated their drinking to reduce the risk of having a child with FASD.

Participant 2 described her motivation to abstain from drinking after pregnancy recognition:

*They talked a lot about these alcohol syndrome babies and such, and it's not something that I want my child to have. Because it's not just a problem with my child, it's a problem for me at the end of the day.*

Participant 6 reduced her drinking frequency from daily use to four times a week; however, she continued to binge with each use. When asked about the reason for her change, she said:

*It's because of my pregnancy that I am drinking a bit less, for my baby's, uh, sake.*

The changes in drinking behaviour, amongst the participants, ranged from complete abstinence after pregnancy recognition, to minor changes in drinking habits. Some participants also changed the type of alcohol they used, moving from higher alcohol content drinks (spirits) to lower content drinks (beer).

#### **Supportive interpersonal relationships:**

Many participants cited their partners and friends as supportive factors in cutting down their drinking. Some participants found ways to remain within their social group, while abstaining from alcohol, such as by drinking non-alcoholic beverages at social events. This allowed participants to maintain their existing support structures. Participant 2 talked in depth about this:

*And they will also make time for me, be by me for a weekend, and.. they will sit by me, and they will enjoy their thing (...) and then they will buy what I want for me.*

She also related how her friends would encourage her to stay abstinent even as they were drinking alcohol:

*They will just tell me, "Uh-uh, no", if I want to, now, then they will say to me, "Uh-uh".*

Participant 2's partner also stopped drinking in solidarity with her, which helped her to maintain the change in behaviour:

*He is also not drinking at the moment. He's left it for now.*

Furthermore, some participants related that their partners requested that they abstain from drinking during pregnancy to safeguard the child against any negative effects of alcohol. As Participant 5 explained:

*And the father feels very strongly about his child, that isn't going to come into this life with alcohol, so.. Then I abstained from alcohol for now.*

A particularly interesting finding was how the reaction from a participant's children towards drinking alcohol during the pregnancy, encouraged her to stop. Participant 5 related the following story:

*It upsets my boy, he's eight. He doesn't like the idea that I drink, because he says then I am more violent, I argue with anyone and anything. And then he also won't stay by me. If he knows that I am drinking, then he stays by his (paternal) grandmother. Then he tells his grandmother, "My mom does this, my mom is too dangerous (...) I don't want to stay with her". So, I think it's*

*better if I just... abstain from... that which might be a pleasure for me, but for my kids, it's not a pleasure to see their mother like that.*

### **Availability of other occupations:**

Those participants who found alternative occupations to replace drinking were all able to abstain during their pregnancy. These alternative occupations involved spending more time with their partners or family. This is illustrated by the following participant responses when asked whether they missed drinking with their friends:

*Uh-uh (no), me and my daughter, she's 14 now, the oldest one, me and her have a very open relationship, so most of the time, I will sit and talk with her about this and that. (Participant 5)*

*No. They (friends) drink too heavily now. That's why sometimes, then I go sit with my boyfriend, then we sit and have cooldrink and chips. (Participant 7)*

In contrast to the above, those participants who made less significant changes to their habits, found it difficult to abstain from drinking alcohol during their pregnancy.

### **Body cues:**

During the pregnancy, participants experienced an increased susceptibility to nausea, especially when using alcohol. This body cue was recognised by several participants and led to decreased drinking, or cessation of drinking. Interestingly, some participants described this phenomenon as part of how they recognised their pregnancies.

This is illustrated by the following quote by Participant 1:

*I began to feel bad (when I drank), and, then I went to the clinic. And first it was.. (they) took my pregnancy test, and.. then the test was positive (...)*

She later elaborated:

*I went out (to drink) a lot, and it was a consistent habit.. and.. then I found out that I was pregnant, then I began to drink a lot less, because my body could not take it (..) I couldn't get it in, it would come out (indicating that she would vomit)*

Participant 2 had a similar experience:

*What made me realise that something isn't right... I drank, and when I drank I felt, no, no I am nauseated, I can't anymore. And that is how I found out that something wasn't right, went to clinic, and they said I am pregnant.*

Another body cue that may influence drinking behaviour is breastfeeding. Several women who abstained during pregnancy considered that their intention to breastfeed would be affected if they resume drinking. When asked about her intention to resume drinking after her pregnancy, Participant 1 replied:

*After the birth, long after the birth. Then I will begin to take again... (...) It will also be when the child is big enough, strong enough.*

Some of the participants were prepared to abstain from alcohol for extended periods, such as participant 2:

*And it's just for nine months.. and another two years as well (laughs) then you can start again.*

Interestingly, most of the women from our sample recognised breastfeeding as a time where alcohol use has potential harms to the child. As mentioned by Participant 5:

*No, you can't, you can't, because, the child drinks through you.*

### **Sense of agency:**

Most of our participants viewed their drinking behaviour as a personal choice. Furthermore, they would describe that reducing alcohol intake was easy for them and resulted from a decision to stop or cut down. Some women in the sample also reported that changing their behaviour simply required the willpower to make that choice. This quote from Participant 2 illustrates this point of view:

*It is very easy to avoid. If you just tell yourself, "I am not going to, and I don't want to". Because I can't just think of myself, I have another person that I need to think about.*

These descriptions often referred to a desire to protect the baby, or to achieve the ideal of being a 'good mother', as related by the following participant responses:

*It's just a decision that... that you have to take, because, at the end of the day, it is your child that you have to do it for. It was not a difficult decision for me.* (Participant 1)

*I just think about my child (...) I can be a good mother for my child one day.* (Participant 8)

## **Discussion:**

All women in the sample were risky drinkers, with significant alcohol exposure during pregnancy. One participant was a daily heavy drinker, six were regular weekend binge drinkers, and one an occasional binge drinker. Only one pregnancy was planned, though this did not preclude alcohol exposure.

The majority of participants stopped drinking after pregnancy recognition, whether immediately or gradually. Those who continued to drink reduced their intake. This corresponds to evidence from quantitative research indicating that South African women often stop or decrease drinking after pregnancy recognition.<sup>[40, 41]</sup> No participants reported increased drinking, or maintained levels of drinking, as was frequently observed in the series of studies of pregnant women in Cape Town.<sup>[12, 13, 17]</sup> Interestingly, some participants became aware of their pregnancy in relation to drinking alcohol, as it seemed to exacerbate their nausea.

Participating women described a range of factors, some well-known and some novel, that may act either as barriers to, or facilitators of, abstinence. Their success in reducing alcohol intake depended on the interaction of a range of social and personal factors, with the equilibrium-point perhaps determining the effect on drinking behaviour.

Each participant had a relatively high awareness of FASD. Participants described this as a strong motivating factor to modulate their drinking behaviour. While awareness of the risks of drinking does not guarantee behaviour change,<sup>[17]</sup> a number of studies show that improving knowledge has a beneficial effect on drinking among pregnant women.<sup>[8, 42, 43]</sup> The level of awareness appears higher than found by earlier qualitative studies.<sup>[12, 13, 17]</sup> We speculate that it relates to increased educational and awareness-raising interventions because the rural Northern Cape is known for high rates of FASD. It may also indicate temporal changes in education, awareness, and even social norms.

Relationships with partners and friends have typically been described as barriers to alcohol abstinence, due to peer pressure or relationship stress.<sup>[6, 12, 13, 44]</sup> This is consistent with the fact that South African women tend to drink in social settings, and seek social engagement and support through drinking.<sup>[10-12]</sup> While some of our participants described interpersonal relationships that promoted drinking, others had relationships with positive effects on drinking behaviour. Participants appeared more likely to stop drinking if their partner stopped in solidarity or if friends continued to spend time with them in non-drinking contexts or while encouraging abstinence. One participant noted the influence of her child's negative reactions to her drinking in facilitating abstinence. The potential positive effects of relationships with partners, children and friends are relatively unexplored in the literature.<sup>[44, 45]</sup>

However, discouragement of drinking by partners and friends was not always experienced as positive, especially where there was a lack of solidarity. Two participants were socially excluded by partners or friends from social occasions related to drinking, and one continued to drink because she felt lonely. Her example illustrates how social stigma towards drinking may be ineffective, and potentially harmful, in isolation.

One participant used alcohol to avoid relationship conflict. This is not a theme previously seen in the literature, though the broader concept of maternal alcohol use being influenced by the partner's drinking status is well known.<sup>[44]</sup> This can be seen as a subtle social influence that may be a barrier to alcohol abstinence.

Use of alcohol as a way to cope with life stressors is widely explored in previous literature.<sup>[10-12, 17]</sup> Women in our sample experienced similar stressors to those outlined by Choi *et al.* – including infidelity, relationship conflict.<sup>[11]</sup> Some stressors were described by our participants as being specific to women. This concept of gendered stress has been explored by Cloete,<sup>[10]</sup> and has been linked to broader societal expectations around the role of women. Stressors include stereotypically 'feminine' activities including cooking, cleaning, and childcare, as well as emulating the 'good mother'.<sup>[46, 47]</sup> This should also be seen in the context of a social climate which disempowers women, and normalises violence and other abusive behaviours.<sup>[48]</sup>

Two personal factors contributing to ongoing drinking were cravings and habitual drinking. Habitual drinking may relate to the entrenched nature of alcohol use in this community, mirroring Cloete's findings where women felt they had limited alternative recreational choices.<sup>[10]</sup>

Cravings for alcohol described by multiple women (which contributed to low levels of ongoing drinking in at least one case), suggests the presence of addiction.<sup>[6]</sup> Addiction has been previously identified as a barrier to abstinence in pregnant South African women,<sup>[12]</sup> though the prevalent weekend binge drinking pattern has not conventionally been considered evidence of physical addiction. However, addiction may be primarily psychological,<sup>[49, 50]</sup> and it may be beneficial to further investigate the psychological aspects of alcohol use especially where it provides a coping mechanism for emotional trauma and stress.

Women who stopped drinking often cited strong feelings of agency about their drinking behaviour, stating they were in control of their drinking. They characterised their change in drinking as self-initiated, and often in response to a desire for a healthful pregnancy, or to conform to a self-perceived ideal of a 'good mother'. In addition, they described the experience of reducing, and eventually abstaining from drinking as easy. This seems to indicate that pregnancy can be leveraged as a time to motivate behaviour change.<sup>[51, 52]</sup> Women who continued drinking did not report the same sense of agency.

Participants who successfully abstained found alternative ways to spend their leisure time, often engaging in positive activities with friends and family. This was less apparent in those who continued to drink. Limited availability of alternative occupations has been identified as a factor that can perpetuate harmful alcohol use.<sup>[10]</sup>

Many women expressed an intention to avoid drinking during breastfeeding. This is significant, given that women who stop drinking in pregnancy usually resume afterwards.<sup>[40]</sup> Most South African women breast-feed, sometimes for extended periods.<sup>[55]</sup> A perceived need to avoid drinking during breast-feeding is consistent with the existing evidence regarding potential harms,<sup>[56]</sup> and can be leveraged to encourage continued abstinence into the puerperium.

Strengths and limitations:

The principal investigator spent a total of two months interacting with community members, half of which was before the conceptualisation of the research project. This prolonged interaction with the community improved our understanding of the culture and norms of the town and added to the authenticity of the analysis.

A specific strength of this investigation is that we interviewed persons directly involved in the phenomenon in question (pregnant women reporting recent alcohol use), limiting recall bias.

There are potential limitations regarding self-reporting of drinking habits. Women may have under-reported their previous or current drinking to avoid stigmatisation, or for other reasons such as poor memory, or as a self-deception - a well-recognised phenomenon in heavy drinkers.<sup>[53, 54]</sup> However, our experience was that women were forthcoming about their drinking practices.

Another limitation of this investigation was that we did not reach saturation within our sample due to logistical constraints related to reaching the remote study site. We believe that the richness of our data compensates for this, allowing a deep understanding into the lives of our participants.

The findings should be seen as descriptive of the views of pregnant women who drink in this community. The findings may be transferable to other small rural towns in the Western and Northern Cape provinces of South Africa. Characteristics that may imply similarity include: rurality, entrenched drinking culture (especially weekend binge drinking), and high levels of social deprivation.

## **Conclusions:**

Our findings closely reflect results in other communities, while also adding new insights and novel facilitators and barriers to alcohol abstinence during pregnancy. The findings suggest some transferability in findings from urban populations to rural ones.

In comparison with previous studies of South African women, our findings suggest changing social norms towards drinking during pregnancy. It was encouraging that women in this high-risk rural setting often stopped drinking in pregnancy, even if abstinence was delayed.

The findings on barriers to cessation of drinking are similar to those described in prior South African qualitative studies, however we reported several facilitators of abstinence that are not well described locally. A key facilitator is that all participants, and often their partners and friends, were aware of FASD and the risks of drinking alcohol in pregnancy. While knowledge alone does not ensure behaviour change, it is an important step towards change. Additional factors were the woman's sense of personal agency, whether she was able to find an alternative meaningful occupation, and whether family and friends supported abstinence in a manner that shows solidarity.

Interventions should aim to address barriers to alcohol abstinence, and to leverage the facilitators for change, at individual level but also at a community and system level.

## **Declarations:**

## **Ethics approval and consent to participate:**

A strong emphasis was put on engaging with the principles of bio-medical ethics,<sup>[57]</sup> including compliance with the international declaration of Helsinki and South African ethical norms and standards.<sup>[58]</sup> Ethics approval was given by Stellenbosch University's Human Research Ethics Council, reference number: U18/04/013.

The template of the informed consent is available on request. The recordings of the interviews will not be made available as they contain direct identifiers.<sup>[59]</sup> De-identified transcripts of the interviews are available on reasonable request to the corresponding author.

## **Consent for publication:**

Written informed consent was obtained from each participant for participation in the research project and publication of its results.

## Availability of data and materials:

The interview transcripts contain multiple indirect identifiers, which precludes public dissemination of the data. The transcripts are available on reasonable request from the corresponding author.

## Competing interests:

The authors declare that they have no financial or non-financial competing interests.

## Funding:

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## Authors contributions:

IR conceptualized the project; produced the study protocol; conducted interviews at the research site; transcribed and analysed data; drafted the initial manuscript.

CS contributed to the design of the study - specifically relating to qualitative research methodology; assisted in the analysis of nascent themes and their grouping into themes.

MU contributed to the conceptualization of the study and interview guide; reviewed versions of the manuscript; facilitated the requests for funding.

All authors have read and approved the final report.

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