Pregnant Women's Attitudes Towards Alcohol Consumption During Pregnancy: A Systematic Review and Meta-Synthesis

This thesis is submitted in partial fulfilment of the degree of Master of Psychology (Health)

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Declaration

This report contains no material which has been accepted for the award of any other degree or diploma in any University, and, to the best of my knowledge, this report contains no materials previously published except where due reference is made.

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STATEMENT OF CONTRIBUTION

In writing this thesis, my supervisor conceptualised the initial idea and research aims, before I refined the final research question. Following the development of the research question, my supervisor and I worked together to develop a preliminary search grid, which I subsequently refined. I then conducted the searches and downloaded to the EndNote database. After I removed duplicates, my supervisor and I co-screened a portion of studies, before jointly assessing their quality to improve inter-rater reliability. I conducted the data extraction, before conducting the synthesis of findings. I conducted the synthesis in consultation with my supervisor, seeking advice on occasions when preliminary ideas required further refinement. I selected the extracts to be included in the final results and wrote all parts of the thesis.

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Key words: Pregnancy, women, alcohol drinking, systematic review, health promotion

Author note: This article will be submitted to the Health Promotion Journal of Australia. The journal guidelines specify that review articles should be no longer than 4000 words including quotes, excluding tables, figures and references. At present, the article has been written according to the thesis requirements of 6,000 - 8,000 words but will be edited to be no longer than 4000 words prior to submission to the Health Promotion Journal of Australia.

Abstract

Issue addressed: Alcohol consumption during pregnancy is associated with significant risks for the unborn child, including Fetal Alcohol Spectrum Disorders, physical deformities and cognitive deficits. Though considerable efforts to minimise alcohol consumption by pregnant women have been made, many women globally continue to consume alcohol while pregnant. As such, there remains a need to understand women's attitudes towards alcohol use in pregnancy. This study aims to investigate pregnant women's attitudes towards the consumption of alcohol during pregnancy.

Methods: A meta-synthesis using a meta-aggregative approach was employed. Seven databases (CINAHL, EMBASE, PubMed, PsychINFO, Scopus, Sociological Abstracts and Web of Science) were searched from database inception until mid-May 2021. Potentially eligible articles underwent a quality appraisal before being synthesised.

Results: 21 studies met inclusion criteria. Critical appraisals revealed that the reporting quality of included studies was generally high. Three synthesised findings describe the complexities of navigating health advice, implications of abstaining from alcohol during pregnancy, and questions of bodily autonomy.

Conclusions: Women receive confusing and contradictory advice regarding the consumption of alcohol in pregnancy. Decisions to consume alcohol in pregnancy are complex, nuanced, and socially situated. Therefore, those offering health advice to pregnant women must consider these complexities.

So what? Health campaigns and health professionals must offer consistent health advice with a clear rationale for recommendations to avoid alcohol in pregnancy. Interventions that seek to improve pregnant women's self-efficacy and involve their support networks are also likely reduce alcohol consumption in pregnancy.

Introduction

Alcohol consumption during pregnancy is associated with significant risks for the unborn child (Schölin et al., 2018). Indeed, pre-natal alcohol exposure increases the risk of several adverse outcomes, including impaired fetal growth, physical deformities, low birth weight and cognitive deficits resulting in learning disabilities and behavioural problems (Skagerstrom et al., 2011; DeJong et al., 2019). In addition, in severe cases, maternal alcohol consumption during pregnancy can result in Fetal Alcohol Spectrum Disorder (FASD; Bell et al., 2016).

FASD is an umbrella term used to describe disorders caused by women consuming alcohol while pregnant (Mukherjee et al., 2006). Disorders encompassed by FASD include Fetal Alcohol Syndrome (FAS), partial FAS, and alcohol-related neurodevelopmental disorder (Chudley et al., 2005; Popova et al., 2016). This spectrum of disorders is characterised by a range of adverse developmental outcomes, including facial abnormalities, growth deficits and neurocognitive deficits that result in difficulties with communication, affect regulation and executive function (Bell et al., 2016: Chudley et al., 2005). In addition, adults with FASD are disproportionately affected by attention deficit hyperactivity disorder, mood disorders such as depression and anxiety, and are also at high risk for suicide and developing addictions (Pei et al., 2011). Therefore, reducing alcohol use during pregnancy remains a public health priority (Schölin et al., 2018).

The design of public health campaigns that seek to enhance understandings of the risks associated with alcohol consumption during pregnancy is complicated by the lack of an established 'safe' threshold for alcohol use during pregnancy (Holland et al., 2016). Indeed, the critical period for exposure and the amount or pattern of pre-natal alcohol use associated with measurable adverse outcomes remains unknown (Muggli et al., 2017; Lim et al., 2019). As a result, the official recommendations in Australia take a precautionary approach in

advocating that pregnant people completely abstain from alcohol use throughout their pregnancy (Australian Government Department of Health, 2020). Similar precautionary recommendations are offered in several other countries. For example, the official recommendations in the United Kingdom (UK; National Health Service [NHS], 2020) and the United States of America (Centers for Disease Control and Prevention [CDC], 2020) respectively are complete abstention from alcohol during pregnancy.

Despite widespread official recommendations advising abstention from alcohol in pregnancy, as well as a growing body of empirical evidence demonstrating the risks of adverse outcomes associated with alcohol use during pregnancy, a significant number of women choose to continue to consume alcohol throughout pregnancy (Skagerstrom et al., 2011). Globally, an estimated 10% of women continue to drink alcohol while pregnant (Popova et al., 2017). The UK and Australia have some of the highest prevalence rates of alcohol consumption in pregnancy globally, with an estimated 41.3% and 35.6% of pregnant women in the UK and Australia respectively continuing to consume alcohol throughout pregnancy (Popova et al., 2017). In an effort to better understand such findings, there is a growing body of empirical evidence seeking to investigate women's perspectives of alcohol use during pregnancy. Still, the public health significance of the adverse outcomes associated with pre-natal alcohol exposure demands a greater understanding of pregnant women's attitudes towards alcohol use in pregnancy.

The current study aims to explore pregnant women's attitudes towards alcohol consumption in pregnancy through a meta-synthesis. In turn, this study aims to develop evidence-informed recommendations for those offering health advice relating to alcohol use in pregnancy in clinical settings and within public health campaigns.

Method

Search Strategy

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Page et al., 2021; See Figure 1) guidelines were used for search approaches, and the Enhancing Transparency in Reporting the Synthesis of Qualitative Research (ENTREQ) guidelines were followed in reporting this study (Tong et al., 2012; Appendix A: Supplementary Table 1). Additionally, this meta-synthesis was preregistered (removed for blind review). Seven electronic databases (CINAHL, EMBASE, PubMed, PsychINFO, Scopus, Sociological Abstracts and Web of Science) were searched, from database inception until mid-May 2021, to identify studies that examined pregnant women's attitudes to consuming alcohol during pregnancy.

[INSERT FIGURE 1 ABOUT HERE]

The search terms were adapted to the indexing system of each database and included terms such as 'pregnancy', 'alcohol consumption', 'alcohol use', 'alcohol misuse', 'attitude', 'qualitative' and other relevant variants. In addition, a specialised research librarian reviewed the search terms to maximise accuracy, and the reference lists of included articles and relevant systematic reviews were manually searched for other potentially eligible articles that may not have been identified in the initial search.

Eligibility criteria and study selection

Studies were included if they (i) reported primary data concerning pregnant women's attitudes towards alcohol consumption during pregnancy, (ii) data were collected and analysed using qualitative research methods (i.e., collected via focus groups, interviews, open responses etc and analysed via thematic analysis, content analysis etc), (iii) and the research was published in English in a peer-reviewed journal. Mixed method studies that reported qualitative data separately and in detail were also eligible for inclusion. Studies that reported

data from pregnant women and women trying to conceive were eligible for inclusion if data for pregnant women was reported separately for pregnant women and in sufficient detail to analyse.

Studies were excluded if they (i) investigated attitudes towards alcohol consumption during pregnancy among non-pregnant women, men, or health professionals, (ii) did not report primary data (i.e., opinion pieces, book reviews, systematic reviews, meta-analyses) or full data (i.e., conference abstracts, brief reports), (iii) reported only quantitative data or (iii) were published in a language other than English.

The initial search yielded 6591 studies that were imported into Endnote for screening. Duplicate removal left 3232 studies for screening. After duplicate removal, the author and second researcher co-screened a randomly selected sample of 325 potentially eligible articles (10%) to limit data-selection bias. Interrater agreement was high (99%, K=.95, $p<.05$), with any discrepancies resolved through consensus discussion. Following title and abstract screening, 295 potentially eligible studies remained for full-text review; 270 studies were excluded due to not meeting the inclusion criteria. Therefore, 25 eligible studies were assessed for methodological reporting quality.

Appraisal of methodological reporting quality

Evaluating the quality of evidence through critical appraisal is a fundamental element of meta-aggregation and is thus central to conducting a systematic review and meta-synthesis (Lockwood et al., 2015; Pearson, 2004). Indeed, the quality of any synthesis is directly impacted by the inclusion and exclusion of studies as guided by the critical appraisal of primary studies (Lockwood et al., 2015). Here, the quality of each eligible paper was appraised by the lead researcher (removed for marking) and a second researcher (removed for marking) using the 10-item QualSyst Quality Assessment Checklist (Kmet et al., 2004).

The QualSyst checklist assesses study quality and rigour relevant to internal validity (Kmet et al., 2004). The issues of quality and rigour, within the QualSyst checklist, are assessed under the following categories: (1) question/objective; (2) study design; (3) context; (4) theoretical framework; (5) sampling strategy; (6) data collection; (7) data analysis; (8) verification procedure; (9) conclusion and; (10) reflexivity.

The appraisal of included studies involved assigning a score ("yes" = 2, "partial" = 1, "no" = 0) for each of the 10 items detailed above, representing the extent to which each study met those criteria. Following this, a summary score for each study was calculated by adding each assessment item score. This number was then divided by the total possible score (20) to give a final score of 0-1. A higher final score indicates a paper that was assessed as being of higher quality.

The author and a second researcher independently undertook quality appraisal, with any discrepancies resolved by consensus discussion. Though Kmet et al. (2004) suggest a liberal cut-off score of .55 and a conservative score of .75, the current meta-synthesis implemented a cut-off score of 0.75 to maintain the highest possible quality of evidence included in the review. As such, four studies were excluded, based on their quality appraisal score, leaving 21 studies for inclusion in the subsequent synthesis. The quality scores for studies included in the present meta-synthesis ranged between 0.75 and 1.0 (Table 1 and Appendix B: Supplementary Table 2).

Data extraction and synthesis

Data were extracted from eligible articles and recorded on a study-specific data extraction sheet. The data extracted included: sample demographics (i.e., age, ethnicity, education), study location, reproductive history (i.e., pregnancy gestation, prior number of pregnancies), alcohol use (i.e., frequency of use, amount of consumption) and verbatim reports of attitudes towards alcohol consumption during pregnancy. In addition, attempts

were made to contact four authors of the primary studies to clarify and seek additional data as necessary. Two authors replied with sufficient information to be included in the meta-synthesis, while the remaining two were unable to be contacted.

Data were synthesised using a meta-aggregative approach (Hannes & Pearson, 2012; Lockwood et al., 2015) to develop an overview of pregnant women's attitudes towards alcohol use during pregnancy. This approach allows for the systematic identification and interpretation of patterns and insights across the existing qualitative research literature. The primary goal of meta-syntheses that employ a meta-aggregative approach is to produce findings that can inform health theory at a practice level, or in other words, to deliver lines of action applicable to healthcare policy or practice (Hannes & Lockwood, 2011; Korhonen et al., 2013; Lockwood et al., 2015). In short, meta-aggregation seeks to produce recommendations to guide practitioners and policymakers (Hannes & Lockwood, 2011; Hannes & Pearson, 2012).

In this study, the approach was consistent with accepted standards for meta-syntheses (see Korhonen et al., 2013; Lockwood et al., 2015; Munn et al., 2021), wherein findings are coded into categories based on their similarity in meaning, and then subsequently combined into synthesised findings according to their similarity. In line with the procedure outlined by Lockwood et al. (2015) and Munn et al. (2021), findings were, where possible, extracted verbatim according to the analytic interpretation of the authors of the primary studies. Finally, extracts to illustrate the findings were collected.

Results

Study characteristics

The key characteristics of the 21 included studies are provided in Table 1. The studies were published between 2001 and 2020 and originated from different countries. Studies were most frequently conducted in Australia (*Nstudies* = 6), but were also undertaken in the

Netherlands ($N_{studies}$ = 2), the United States of America (USA; $N_{studies}$ = 2), the UK ($N_{studies}$ = 4), Switzerland ($N_{studies}$ = 4) and South Africa ($N_{studies}$ = 3). Qualitative data were collected via interviews ($N_{studies}$ = 14), focus groups ($N_{studies}$ =3), a self-report questionnaire which included open response ($N_{studies}$ = 1) and a self-report screening tool which included open response ($N_{studies}$ = 1). In two studies, data were collected using a combination of interviews and focus groups/group discussions ($N_{studies}$ = 2).

Most data were analysed using thematic analysis ($N_{studies}$ = 15). One study utilised a combination of thematic analysis and constant comparison in analysing their data ($N_{studies}$ = 1). The remaining studies utilised content analysis ($N_{studies}$ =2), thematic decomposition analysis ($N_{studies}$ = 1) and analytic induction ($N_{studies}$ = 1). The analytic method of a further single study was not stated ($N_{studies}$ = 1).

[INSERT TABLE 1 ABOUT HERE]

Participant characteristics

The sample comprised 426 pregnant women ($N_{studies}$ = 20). Despite attempts to contact authors, the number of pregnant participants in a single study was unable to be clarified ($N_{studies}$ = 1). Participants were aged between 23 and 41 years, based on 142 participants ($N_{studies}$ = 13). Parity varied, with 95 participants expecting their first child and 58 participants expecting second or subsequent children ($N_{studies}$ = 8). The week of pregnancy also varied significantly between participants, with a range of 8-40 weeks represented across 122 participants ($N_{studies}$ = 9). Most participants were partnered with 203 women reporting that they were in a relationship at the time of data collection, while 37 participants were single ($N_{studies}$ = 9). Information about participant demographic characteristics is reported in Table 2.

[INSERT TABLE 2 ABOUT HERE]

Methodological reporting of quality appraisal

The 21 included studies were of high quality, with quality appraisal scores which ranged from 0.75 to 1.0 on the QualSyst Quality Assessment Checklist (Kmet et al., 2004; See Table 1 and Appendix B: Supplementary Table 2). All 21 included studies described their study design, study context, theoretical framework, data collection methods, and conclusions (*Items 2, 3, 4, 6 and 9*; 100% fulfilled). Most studies gave an overview of the research question/objective and justified the chosen sampling strategy (*Items 1 and 5*; 95%). A number of studies provided detail on their chosen approach to data analysis (Item 7; 52% fulfilled). Most studies provided an overview of their verification procedures (Item 8, 62% fulfilled). However, few included studies made explicit reference to reflexivity (*Item 10*; 5% fulfilled).

Synthesised findings

The analysis resulted in three synthesised findings relating to (See Table 3): (1) the complexities of navigating health advice; (2) the implications of abstaining from alcohol during pregnancy; and (3) questions of bodily autonomy.

[INSERT TABLE 3 ABOUT HERE]

The complexities of navigating health advice: The meta-synthesis of women's descriptions of complexities of navigating frequently confusing and contradictory health advice relating to alcohol consumption during pregnancy was derived from 14 studies grouped into two categories and five sub-categories (Table 3) to provide the overall synthesised finding: *"Pregnant women describe the guidance from public health messaging and health professionals concerning drinking during pregnancy as confusing and inconsistent, requiring them to make their own choices based on a combination of expert and lay advice."*

Individuals reported struggling with navigating health choices regarding alcohol consumption during pregnancy due to inconsistent and frequently contradictory health advice and public health messaging (Baron et al., 2017; Crawford-Williams et al., 2015; Howlett et al., 2017; Raymond et al., 2009; van der Wulp et al., 2013). This contradictory information left some women unable to feel confident in the choices they made during their pregnancy: *"It's very difficult to feel very reassured with any of the advice because everything conflicts so much. So... it has been very difficult"* (Raymond et al., 2009, p. 5). Others described the information they received about alcohol use during pregnancy as vague or insufficient and described a need for more clear information for pregnant women: *"The info given to women in the big pack of info, when you go to your first visit, maybe that should be a little more clear"* (Raymond et al., 2009, p. 5).

The confusing and contradictory nature of the advice offered to women about drinking alcohol during pregnancy was particularly evident amongst information offered by health professionals. Specifically, several women reported that while some health professionals recommended that drinking during pregnancy is appropriate in small doses, others recommended complete abstinence (Branco & Katsukas, 2001; Crawford-Williams et al., 2015; Gibson et al., 2020; Gouihlers et al., 2019; Hammer & Inglin, 2014; Jones et al., 2011; Raymond et al., 2009; van der Wulp et al., 2013). There were often, for example, contradictions in the advice women were given by health professionals involved in their care: *"The midwife told me it is better not to drink alcohol at all. However, I once visited my GP and we discussed alcohol use in pregnancy. He said: 'you can enjoy a glass of wine every now and then'"* (van der Wulp et al., 2013, p. 95). Some women reported that their health professionals even advised alcohol consumption in certain circumstances. One woman recounted being advised that a glass of wine in the early stages of labour was good for relaxation (Branco & Kaskutas, 2001). Others yet reported that their health professionals

explicitly acknowledged the contradictory nature of recommendations regarding alcohol use in pregnancy: *"He [the obstetrician] said that there's conflicting views out there and some say that one or two [drinks] is okay*" (Gibson et al., 2020, p. 6).

Pregnant women across the included studies also frequently reported that while they understood that consuming alcohol during pregnancy was not advised, they were unclear on the specific risks associated with drinking (Baron et al., 2017; Crawford-Williams et al., 2015; Gibson et al., 2020; Howlett et al., 2017; Jones et al., 2011; Jones & Telenta, 2012; Raymond et al., 2009; van der Wulp et al., 2013). Some women, while aware of potential developmental and health effects associated with alcohol consumption, remained unable to name potential adverse outcomes: *"I generally know that you're not meant to drink, but the exact health effects and development of the foetus...I'm not sure exactly what it affects...other than you're not meant to drink"* (Crawford-Williams et al., 2015, p. 4). This lack of clarity regarding the specific risks associated with alcohol consumption during pregnancy was an important factor for health professionals to consider in the views of the women included across the studies. In particular, many noted that for health professionals to simply state that alcohol was not advised during pregnancy was insufficient (Baron et al., 2017: Crawford-Williams et al., 2015; Baron et al., 2017; Raymond et al., 2009; van Der Wulp et al., 2013). Rather, such statements needed to be substantiated by explanations of the exact risks associated with drinking during pregnancy: *"The midwife's alcohol advice can be improved. She can give an indication of the risks. What happens when you use alcohol. How risky is it when you drink one glass or when you drink five glasses. She can give more elaborate information instead of just stating that alcohol is not good"* (van der Wulp et al., 2013, p. 95).

The confusing nature of the advice regarding alcohol consumption during pregnancy was compounded by the notion held by women that data on the impacts of drinking during pregnancy are inconclusive (Crawford-Williams et al., 2015; Gibson et al., 2020). One

woman accounted for this stance by explaining: "*When it comes to alcohol in pregnancy my understanding is that there hasn't been enough research, and there never will be enough research to say this is the safe level stay below it"* (Crawford-Williams et al., 2015, p. 5).

Across the studies included in this meta-synthesis, women described relying on various sources of information to make decisions about drinking during pregnancy. Many women described being guided by information gathered from lay sources (Branco & Kaskutas, 2001; Coathup et al., 2017; Gibson et al., 2020). For some women, the Internet, in particular, was a useful source of information and a platform through which they could exchange information with other mothers: *"Probably the Internet. I'd probably look up research myself and I'm part of a couple of mums' groups online as well, so I'd probably to talk to them about it and see where they would think is a good place to get information as well"* (Gibson et al., 2020, p. 7). Others described relying on the advice of those in their immediate social networks to guide their drinking decisions during pregnancy. For example, the following woman described being wary of public health fads, which in turn led her to seek advice from her mother: **"***Also my mum, because I felt comparing 30 or 40 years of difference in guidance was a good way to contrast. So have they always said it? Or is it another new fad, new thing that people are saying but actually in five years' time they will change again. So I really valued her opinion as well on some of the topics*" (Coathup et al., 2017, p. 30).

The advice and information women received from lay sources was frequently informed by anecdotal evidence. A recurrent theme across women's accounts of seeking advice from lay sources was that anecdotal evidence from their social networks' pregnancy experiences led them to believe that there were limited risks associated with low level or infrequent drinking during pregnancy (Burton-Jeangros, 2011; Gibson et al., 2020; Hammer & Inglin, 2014; Raymond et al., 2009). For example, many women described how previous

generations engaged in alcohol consumption during pregnancy and suffered no ill effects as a result: *"My grandmother drank one glass of red wine each day with my uncles, and yet they turned out perfectly fine"* (Gibson et al., 2020, p. 7). Other women described lay advice from friends, informed by anecdotal evidence from their own experiences as evidence for the notion that drinking alcohol during pregnancy is associated with only limited risk, when done in moderation: *'Several of my friends were saying "I drank 2 or 3 glasses and nobody died"* (Burton-Jeangros, 2011, p. 425). Some women even cited their own experiences in previous pregnancies as anecdotal evidence for the lack of risk associated with low-level drinking during pregnancy: *"I drank a little bit with my first child and I carried on doing that with my second and third pregnancies. My first child is absolutely fine"* (Raymond et al., 2009, p. 4).

However, like the advice received from health professionals and public health messaging, the information women received from lay sources was also frequently inconsistent and confusing. Women indicated that a vast number of opinions regarding drinking alcohol during pregnancy existed, and that a range of social factors shaped those opinions: *"Say I have access to a diverse group of mothers*, *whether it be from nationality, cultural, age group, and everybody has their own opinion on it"* (Gibson et al., 2020, p. 7). Others described that their experience of seeking information from lay sources on the Internet offered little clarity due to the array of opinions they encountered ranging from *"everything and its opposite"* (Gouihlers et al., 2019, p. 761).

The implications of abstaining from alcohol during pregnancy: The meta-synthesis of the implications of abstaining from alcohol consumption during pregnancy was derived from 10 studies grouped into two categories and four sub-categories (Table 3) to provide the overall synthesised finding: *"The decision to abstain from alcohol during pregnancy is associated with several implications for pregnant women's social lives and lifestyle."*

Abstaining from alcohol during pregnancy represented a significant constraint on women's social lives (Branco & Katsukas, 2001; Crawford-Williams et al., 2015; Gouihlers et al., 2019; Grant et al., 2019; van der Wulp 2013*).* For many women across the included studies, abstaining from alcohol limited their enjoyment from social situations: *"For me, wine and dinner go hand in hand. It's a pleasure.... After a while you're disconnected from the party.... It's excluding a little bit.... I miss drinking a lot*" (Gouihlers et al., 2019, p. 761). Other women similarly described a sense of loss due to being unable to participate in the social activity of drinking alcohol as a result of deciding to abstain during pregnancy: *"I miss the social aspect of that obviously you can't drink when you're pregnant, you can't do a lot of things when you're pregnant"* (Grant et al., 2019, p. 10). For some women, not only did abstaining from alcohol reduce their enjoyment of social situations in itself, being sober amongst others consuming alcohol had other implications. Specifically, pregnant women who abstained were described by some women as having to take responsibility for other intoxicated adults: *"Any person who is pregnant, they become a designated driver"* and *"You become an adult babysitter"* (Branco et al., 2001, p. 338).

Throughout the studies, women also described that abstaining from alcohol while pregnant could cause isolation from their social networks (Gibson et al., 2020; Jones et al., 2011; Jones & Telenta, 2012; Watt et al., 2014). Indeed, as shown by one woman, the consequences of not consuming alcohol while pregnant included that others might perceive them as antisocial: *"if you're not drinking it's almost as though you're being antisocial"* (Jones & Telenta, 2012, p. 71). Others described withdrawing from the social networks they socialised with before pregnancy due to the drinking behaviours occurring within those circles: *"I feel more pressure not to be around certain friends because I'm the odd one out not smoking and drinking while I'm pregnant. I don't want to be around them"* (Crawford-Williams et al., 2015, p. 6). For some women, the possibility of social exclusion as a result of

not consuming alcohol offered one possible explanation for why some pregnant women were unable or unwilling to abstain from drinking: "*Just say that they have a partner, and they see them drink, then they feel like drinking because they don't want to be left out*" (Gibson et al., 2020, p. 9).

Also, as a result of abstaining from alcohol during early pregnancy, women found it difficult to hide early pregnancies due to societal expectations about drinking in social situations (Gibson, 2020; France et al., 2013; Gouihlers et al., 2019; Jones & Telenta, 2012). One woman shared, for example: "*It's tough when [the pregnancy] is secret! There is really a social pressure regarding alcohol. It's crazy!*" (Gouihlers et al., 2019, p. 761).

Additionally, abstaining from alcohol during pregnancy limited women's ability to engage in pleasurable lifestyle activities (Burton-Jeangros 2011; Crawford-Williams et al., 2015; Gouihlers et al., 2019; Grant et al., 2019; Hammer & Inglin, 2014; Van der Wulp et al., 2013). For many women, drinking alcohol was viewed as a treat. As such, abstaining during pregnancy meant that they missed out on this pleasurable activity: *"I miss drinking a little glass of wine, it's a treat that I had"* (Gouihlers et al., 2019, p. 762). Others described the discomfort experienced and willpower required to abstain from alcohol in social situations in which they would usually consume alcohol: *"Oh I'd love one. (When we go on the hen night) It will kill me watching my mother with a bottle of wine, I'll be there with my glass of coke"* (Grant et al., 2019, p. 11).

Consistent with the notion that alcohol is a pleasurable treat that many women found difficult to sacrifice, women varied in their willingness to restrict or give up their alcohol consumption. Alcohol was widely experienced as a pleasurable indulgence for many women (Branco & Kaskutas, 2001; Burton-Jeangros, 2011; Crawford-Williams et al., 2015; Gouihlers et al., 2019; Grant et al., 2019; van der Wulp 2013). Though some women missed consuming alcohol during their pregnancy, it was a conscious decision to do so: *"I like to*

drink wine very much and I really miss it during my pregnancy, but I consciously decided to restrict my wine consumption" (van der Wulp et al., 2013, p. 95). Conversely, others felt that the recommended lifestyle changes, including abstaining from alcohol, were unnecessarily restrictive *"At the beginning, I was a bit disgusted by all these constraints associated to the pregnancy, I have to stop smoking, I have to stop drinking, I have to…"* (Burton-Jeangros, 2011, p. 424).

Questions of bodily autonomy: The meta-synthesis of women's negotiation of issues of alcohol consumption in pregnancy in the context of individualism, bodily autonomy and social accountability was derived from 15 studies grouped into three categories and six sub-categories (Table 3) to provide the overall synthesised finding: *"Pregnant women's attitudes towards drinking during pregnancy are not uniform, rather women describe the choice to drink during pregnancy both as a matter of individual choice and bodily autonomy, and also as a social issue and matter up for discussion within their broader community".*

Throughout the included studies, women's descriptions of attitudes towards alcohol consumption during pregnancy as an individual choice were complex and nuanced. Some women described drinking during pregnancy as an individual choice (Baxter et al., 2004; Burton-Jeangros 2011; Crawford-Williams et al., 2015; Gibson et al., 2020; Gouihlers et al., 2019; Grant et al., 2019; Jones & Telenta, 2012; Raymond et al., 2009; Watt et al., 2016). One woman argued, for example, that *"I think it has to be everyone's individual decision certainly."* (Raymond et al., 2009, p. 5). Another suggested that drinking or abstaining must be a personal choice and is *"not a black and white thing for me"* since individual circumstances vary so widely in life and indeed in pregnancy (Crawford-Williams et al., 2015, p. 5). Some women described a reluctance to judge other women for their drinking choices during pregnancy, even in describing their own decision to abstain from consuming alcohol while pregnant *"I don't know, I don't sort of take into account other people, I don't*

like to condemn anyone for anything they do or decisions they make. I think I just made a personal choice that I just feel too guilty" (Jones & Telenta 2012, p. 70).

Across the included studies, women frequently expressed that pregnant women should have the right to make choices about their health and bodies, including about consuming alcohol during pregnancy (Baxter, 2004; Burton-Jeangros, 2011; Crawford-Williams et al., 2015; Gibson et al., 2020, Gouihlers et al., 2019; Grant et al., 2019; Jones & Telenta, 2012; Raymond et al., 2009; Watt et al., 2016). For the following participant, her attitudes to another pregnant woman consuming alcohol could be summarised as *"I would tell her it was, it is her choice, because it is her body"* (Baxter et al., 2004, p. 241). Others similarly endorsed the notion that it is a pregnant woman's fundamental right to make health decisions for herself, as illustrated by one woman describing her experience of drinking while pregnant: *"I poured my share and made the point of drinking it all because it's my baby and my pregnancy yeah"* (Grant et al., 2019, p. 10). For some women, it was important that pregnant woman can make informed decisions about consuming alcohol during pregnancy (Crawford-Williams et al., 2015; Howlett et al., 2017; Raymond et al., 2009). For those women, the issue of central importance is not the decision to drink or abstain itself, but rather the right of women to weigh the available information and then to make their own decisions: *"I generally feel that women should be given the information about... what is known, and the risks etc. and then left for them to make up their own minds"* (Raymond et al., 2009, p. 5).

Another recurrent notion across the included studies was that the choice to engage in or abstain from drinking during pregnancy depends on women's individual circumstances (Baxter et al., 2004; Crawford-Williams et al., 2015; Gibson et al., 2020; Raymond et al., 2009; Watt et al., 2016). Drinking behaviour then is not a clear-cut issue, but rather a decision to be made by women depending on their circumstances: "*I think it's very individual. Some people, some of my girlfriends, have had the occasional drink at a wedding*

or something and I wasn't too concerned about it" (Gibson et al., 2020. p. 9). Some participants offered examples where the perceived benefits possibly outweigh the risks of consuming alcohol during pregnancy. For instance, *"I've got a sister-in-law who would have 5 or 6 glasses of wine quite often, and she's about 32 weeks pregnant. But she is a really anxious, stressed-out sort of person, so I think if you can balance out, if you are in a bad mental state or you need a drink that helps you relax I think it's better for you to be relaxed than for you to be really tense and anxious"* (Crawford-Williams et al., 2015, p. 7).

In contrast to the attitudes noted above, many women expressed that pregnant women's choices regarding alcohol consumption during pregnancy are, in many ways, treated as a matter for discussion by other members of their community (Baxter et al., 2004; Burton-Jeangros, 2011; Coathup et al., 2017; Crawford-Williams et al., 2015; France et al., 2013; Gibson et al., 2020; Watt et al., 2014; Watt et al., 2016). As one woman noted, women were viewed as *'accountable to lots of people'* regarding their choices about alcohol consumption during pregnancy (Burton-Jeangros, 2011, p. 432). Many women described, for example, being conscious of others' opinions regarding drinking during pregnancy: *"You sort of think, yeah I'd love to have a glass of champers for a special occasion or something, but there's always someone that is going to say something"* (Crawford-Williams et al., 2015, p. 6). For some women, others' perceived judgement extended beyond drinking into any activities that might be associated with drinking, and which included socialising outside of the home at night time: *"I wasn't even drinking but I felt people were judging me...because I was out at night"* (Crawford-Williams et al., 2015, p. 6).

Women also frequently expressed the opinion that drinking during pregnancy is highly stigmatised (Burton-Jeangros, 2011; Crawford-Williams et al., 2015; France et al., 2013; Howlett et al., 2017): *"Yeah I think there's definitely a level of stigma, going into the bottle shop when you look like this…"* (Crawford-Williams et al., 2015, p. 6). For others, the

pervasive societal stigma against drinking alcohol during pregnancy was a particular concern as it meant that some women in need would be left unable or unwilling to seek necessary support: *"alcohol during pregnancy is demonised and many women feel like they cannot speak out or get the support they need"* (Howlett et al., 2017, p. 625).

Many women expressed the attitude that social networks are of great significance in shaping women's drinking behaviours during pregnancy (Coathup et al., 2017; Crawford-Williams et al., 2015; France et al., 2013; Gibson et al., 2020, Gouihlers et al., 2019; Grant et al., 2019; Hotham et al., 2016; Kelly & Ward, 2018; Watt et al., 2014; Watt et al., 2016). Indeed, women frequently reported being influenced by the opinions expressed within their social networks regarding alcohol consumption during pregnancy: "*Yeah, definitely benchmarked [what I do] against my mum and the rest of my family. If they were against it I don't, I don't see how I could have drunk alcohol because it just would have felt wrong"* (Coathup et al., 2017, p. 30).

Interestingly, women described their social networks as actively encouraging and discouraging women from abstaining from alcohol during pregnancy (Baxter et al., 2004; Crawford-Williams et al., 2015; Coathup et al., 2017; France et al., 2013; Gibson et al., 2020; Grant et al., 2019; Gouihlers et al., 2019; Hotham et al., 2016; Kelly & Ward, 2018; Watt et al., 2014; Watt et al., 2016). That is, women reported being encouraged to abstain from drinking by their social networks: *"Well, she would ask—she asked in my last pregnancy if I drank, and I said no, I stopped doing that. And she was glad."* (Baxter et al., 2004, p. 235). Conversely, women also reported being discouraged from abstaining from drinking alcohol while pregnant: *"My mum, when I'm stressed, says 'it's okay if you have one'"* (Gibson et al., 2020, p. 8).

Pregnant women's partners also were reported to play a significant role in shaping women's drinking behaviours during pregnancy. For some women, the decision to drink or

abstain was not for the woman to make alone but rather a decision to be made between the expecting couple (Crawford-Williams et al., 2015; van der Wulp et al., 2013): *"it's a family decision; it's not just about me"* (Crawford-Williams et al., 2015, p. 6). As with the influence of broader social networks reported above however, partners encouraged and discouraged abstaining from alcohol during pregnancy (Burton-Jeangros, 2011; Crawford-Williams et al., 2015; Grant et al., 2019; van der Wulp et al., 2013). Some partners expressed a strong preference that women not consume alcohol while pregnant: *"My partner insisted that I reduce my alcohol consumption"* (Burton-Jeangros, 2011, p. 431). Other partners, however, encouraged occasional drinking at low doses: *"I am sure, you can like (husband) has said oh I am sure it will be fine, just half a glass of wine"* (Grant et al., 2019, p. 10).

In some cases, the negotiation of responsibility for making the choice to drink or abstain became a point of tension in the relationship (Burton-Jeangros, 2011; Gouihlers et al., 2019; Hammer, 2019). For some women, a sense of being policed about their drinking resulted in resentment towards their partner: *"It really gets on my nerves ... it's as if I were a bit irresponsible, I don't find that respectful"* (Gouihlers et al., 2019, p. 761). Contrastingly, others felt that their partner should take equal responsibility for them abstaining from alcohol, and the possible consequences of choosing *not* to abstain: *"I reproached him a lot for not keeping me from drinking on that day, since I then felt very responsible if our child was going to have a malformation and I wanted him to share the blame"* (Burton-Jeangros, 2011, p. 429).

Discussion

Pregnancy is a unique time during which women make several choices concerning their health, particularly the decision to abstain from, engage in, or limit drinking behaviours. Alcohol consumption during pregnancy is a complex decision that involves considering biological, psychological and social factors. To the author's knowledge, this meta-synthesis

is the first to examine pregnant women's attitudes towards consuming alcohol during pregnancy. Findings from the included studies were aggregated into seven categories, ten sub-categories and three synthesised findings related to pregnant women's attitudes towards consuming alcohol during pregnancy. Guidelines for health professionals caring for pregnant women and those who develop health promotion initiatives directed at improving the health behaviours of pregnant women are offered below (See Table 4).

[INSERT TABLE 4 ABOUT HERE]

It is critically important to consider how information regarding the risks of alcohol use in pregnancy is relayed in clinical settings by health professionals and within public health campaigns. The need to reconsider how this information is conveyed is particularly evident in the findings of this study which demonstrated widespread confusion regarding alcohol use in pregnancy. Specifically, many participants across the included studies described receiving inconsistent and contradictory health advice from the health professionals involved in their pregnancy care, ranging from total abstinence to the acceptability of low-level consumption. This contradictory advice adds to the difficulties women face in making informed decisions for themselves and their unborn children.

It is perhaps unsurprising then that given the conflicting health advice women receive and their resulting ambivalence about the need to abstain from alcohol while pregnant, women in this study had either consumed alcohol themselves or been aware of social acquaintances consuming alcohol during pregnancy. These findings are consistent with studies demonstrating that approximately 41.3% and 35.6% of women use alcohol during pregnancy in the UK and Australia, respectively (Popova et al., 2017).

Additionally, the current analysis produced several recurrent themes in women's explanations for their choice to continue drinking. For example, many women described alcohol consumption as a means of managing stress. Similarly, women reported that

abstaining from alcohol can have significant adverse impacts on women's ability to enjoy social interactions. This impact led many women to disregard the recommendations to cease consuming alcohol during pregnancy. However, others ceased their use but struggled to manage their stress or find enjoyment in their lives and social lives in other ways. In this sense, reducing alcohol use in pregnancy resulted in negative outcomes for some women. Thus, simply providing medical statistics regarding the risk of adverse outcomes from consuming alcohol during pregnancy in the pursuit of advocating a zero-alcohol approach is also unlikely to be sufficient in promoting behaviour change for many pregnant women. Rather, discussions around harm minimisation should be reframed in the context of promoting health and cognitive outcomes for unborn children.

The current findings have important implications for the perceived credibility of health campaigns and the advice offered by health professionals. While some women are unclear on the specific risks associated with alcohol consumption during pregnancy, many women know significant risks exist. However, many women are also aware that there is a lack of evidence regarding harms associated with low or occasional alcohol use in pregnancy. Indeed, the negative outcomes associated with abstinence detailed above and the perception that consuming small amounts of alcohol is safe resulted in a pervasive ambivalence concerning the risks of alcohol consumption. This ambivalence is significant as ambivalence reduction is a factor widely understood to be an antecedent to health behaviour change (Miller & Rollnick, 1991; France et al., 2013). While the scientific evidence regarding the impacts of low levels of alcohol consumption is indeed limited (Henderson et al., 2007; Lees et al., 2020), emerging research does not support this perception of safety; even very small amounts of alcohol appear to have subtle effects on children's facial development (Muggli et al., 2017). In order to enhance the credibility of messages relating to alcohol use in pregnancy and, in turn, promote positive behaviour changes, health campaigns might usefully be

enhanced by explicit acknowledgements of the uncertainties around risk to the fetus in cases of low to moderate alcohol exposure.

It is also important to note that if individual health advice and public health messaging which emphasises the risks of alcohol use is perceived as overstating or sensationalising risks, this could work against the credibility of those messages while simultaneously promoting maladaptive responses to that information (France et al., 2013). As such, health information, in addition to being consistent, must also be offered in a way that bolsters its credibility. As the current findings demonstrate, advice must be transparent in acknowledging gaps in knowledge, take care not to overstate risks, and provide information in a way that moves away from an abstinence-only approach by offering a clear rationale for the recommendation.

It is also important to deliver messages in ways that empower women to make informed choices about their drinking and pregnancies. As others have previously identified, messages targeting alcohol use during pregnancy often utilise a fear appeal approach and frequently focus on increasing the perceived severity of the threat (Cismaru et al., 2010; France et al., 2014). Our recommendations are thus made in line with existing research into the effectiveness of fear-based public health messaging (Tannenbaum et al., 2015). Reviews of such messaging show that it is effective, but with some caveats. Fear messaging is more effective in women than men and is most effective when individuals have a sense of self-efficacy about their behaviour (Tannenbaum et al., 2015). The significance of self-efficacy in shaping responses to fear messaging is perhaps unsurprising given that perceived self-efficacy has long been acknowledged as an important and motivating factor for health behaviour change (Rogers, 1975). In turn, health professionals caring for pregnant women must be prepared to work to aid in building women's health efficacy. For example, health professionals must be prepared to offer healthy and effective alternatives for stress

management during pregnancy. In order to do this, it is also important that health professionals working with pregnant women have conversations regarding alcohol use during pregnancy to identify circumstances where such interventions might be required. It is also critical that health professionals broach and navigate such discussions in a way that is non-judgemental and does not perpetuate the stigma that many women represented in this study reported sensing about alcohol use in pregnancy.

The findings of this study also clearly demonstrate that drinking alcohol during pregnancy is socially situated. That is to say, decisions to engage in or abstain from drinking during pregnancy occur within a broader social context. As such, health professionals must be aware of the complexities of the social contexts within which pregnant women manage their health and pregnancies when offering their health advice. For example, and consistent with the findings of other studies (e.g., Lambert et al., 2010), the current findings demonstrate that pregnancy is a challenging time regarding managing the dilemma of the conflict between the pregnant woman's rights and those of her fetus. Indeed, the women in this study frequently described the importance of being able to make informed decisions about their bodies and pregnancies. As Gibson et al. (2020) note, however, the right to make choices about one's own body concerning drinking during pregnancy conflicts with the consequences for the child, who has no agency in that decision.

It is critically important then for health professionals and those working in health promotion settings to have a comprehensive understanding of the individual circumstances that might present a barrier to abstaining from alcohol during pregnancy. In addition, professionals working in those fields must be cognisant of the various reasons which lead women who are otherwise aware of recommendations around alcohol use to continue consuming alcohol during this time. Our findings, which detail many reasons why women continue to consume alcohol while pregnant, should emphasise how advocating for a zero-

alcohol approach is likely to be insufficient as a means of harm reduction relative to the broader social context and challenges of pregnant women's lives. For example, our findings relating to alcohol use during pregnancy as a form of stress relief are significant in highlighting how women might find themselves unwilling or unable to reduce drinking during pregnancy without suitable stress reduction alternatives. Indeed, the choice to continue drinking was, for many women, the result of a considered cost-benefit analysis in which the risks of high stress levels while pregnant were perceived more significant than the risks of low to moderate levels of alcohol consumption.

Similarly, women who feel unable to engage in enjoyable lifestyle activities (e.g., socialising or enjoying an alcoholic drink as a treat) they did pre-pregnancy might be unwilling or unable to reduce their alcohol use, even with the knowledge that drinking increases risks for their unborn child. Other women still reported being actively encouraged by their partners and social networks to consume alcohol while pregnant. Indeed, consistent with the findings across the academic literature (e.g., France et al., 2013; Raymond et al. 2009; Meurk et al., 2014; Martinelli et al., 2019), our findings emphasise that the baby's health and wellbeing on its own not always sufficient motivation for abstaining from alcohol use. The need for additional motivation and support in abstaining from alcohol consumption is likely to be particularly necessary where women feel that their relative risk of adverse outcomes is low, that the benefits of consuming alcohol outweigh the risks, and where women's social networks do not actively encourage abstinence during pregnancy. For women whose social environment makes abstinence particularly difficult, health professionals can play an important role in supporting and encouraging reduction in consumption (Carson et al., 2010; Breen et al., 2014). Interventions that typically adhere to the '3 As' of 'Assess, Advise and Assist', and which include a focus on strengthening rapport, verbal reinforcement, goal-setting to build confidence and enhance self-efficacy, have been shown

to be particularly useful in such circumstances (Breen et al., 2014; Carson et al., 2010; Gibson et al., 2020).

It is also critical that health advice and future campaigns offer relevant, accurate and consistent information delivered in a way that is likely to be well-received by the relevant parties. As the results of this study show, those parties are not just pregnant women. Rather, pregnant women's social networks, particularly their partners, play an important role in shaping their drinking behaviours. As such, it is also important to expand the sphere of responsibility for alcohol use during pregnancy. Health messaging that promotes a zero-alcohol approach that solely targets pregnant women and does not also address women's social networks is likely insufficient in reducing alcohol use, given the complex and nuanced social reasons that lead women to consume alcohol during pregnancy. While this is particularly true of the partners of pregnant women, friends and family also play an important role in encouraging or discouraging alcohol use. Our findings are consistent with other studies which have previously demonstrated the significance of partners (Peadon et al., 2011; Sanchez et al., 2021) and broader social networks (Meurk et al., 2014; Sanchez et al., 2021) in shaping the pre-natal drinking behaviours of women. Partners of pregnant women and their broader social networks would thus also likely benefit from improved, targeted messaging regarding alcohol use during pregnancy. As such, future health campaigns must be directed at pregnant women, their partners and social networks. Also, pregnant women's partners should be engaged in pre-conception and pre-natal care, such that the decision to drink (or abstain), which is frequently described as a joint decision, is made by two partners who are well-informed about the risk and benefits associated with that decision.

Methodological considerations

Meta-synthesis is a well-validated and rigorous methodology (Leary & Walker, 2018), whose consistency, reliability and generalisability are comparable to quantitative

systematic reviews (Pearson et al., 2011). As with a quantitative systematic review, to bolster the robustness of this meta-synthesis, inclusion criteria were pre-defined, and studies were selected for inclusion according to PRISMA guidelines (Page et al., 2020).

The findings of this study should, however, be considered in light of possible limitations. First, despite a rigorous search strategy, it is possible that not all relevant studies were identified and included in this study. Also, studies published in languages other than English were excluded from the analysis. As a result, it is possible that some relevant studies published in other languages were not represented in this meta-synthesis. Furthermore, the studies included in this meta-analysis were largely conducted within 'Western' cultures. As such, the generalisability of these findings to other populations is limited.

Also, many included studies did not provide demographic information on some factors, including participants' age, number of previous pregnancies, and current drinking status. As such, it was not possible to organise the findings according to factors such as parity (first or subsequent pregnancy), gestation, and age. Future research might usefully investigate the influence of factors such as age, gestation and parity on pregnant women's attitudes to alcohol consumption in pregnancy.

It is also worth noting that the studies which provided information regarding relationship and marital status suggest that single pregnant women are underrepresented in this sample. This apparent underrepresentation is significant given the frequency with which women reported that their romantic partners influenced their drinking behaviours during pregnancy. A potentially fruitful avenue for future research might investigate how single pregnant women report their attitudes towards alcohol consumption during pregnancy.

Future directions

Pregnant women's attitudes towards alcohol consumption during pregnancy are clearly complex and nuanced. Recommendations then, like the attitudes of the women

represented in this study, must also be nuanced. For example, the pregnant woman's right to make health decisions about her body is of central importance. It is equally important to acknowledge that those decisions also significantly affect the fetus, an individual without any agency. As such, it is also critically important that women can access clear, evidence-based guidance to make informed decisions with full awareness of the implications regarding health and developmental implications for their children. As noted above, it is critically important that this information is delivered in a way that enhances its credibility (i.e., it is consistent, does not over-state risks and acknowledges the reasons which might cause women to drink during pregnancy). Finally, health information should be designed and delivered to target pregnant women and their partners and their social networks.

Conclusion

In total, three synthesised findings related to issues of the challenges associated with navigating medical advice, the negative consequences of avoiding alcohol in pregnancy and issues relating to bodily autonomy and ownership were identified from the 21 studies in this meta-synthesis. The analysis revealed several complex and nuanced issues relating to women's consumption of alcohol during pregnancy. Many women described a strong desire to be supported in making informed decisions about their health while simultaneously acknowledging that this was difficult due to conflicting health advice offered by health professionals and within health campaigns. The difficulties associated with avoiding alcohol due to the negative consequences on their lifestyle, in conjunction with confusing health messaging, made it even more difficult for many women to abstain. Consistent advice with a clear rationale for recommendations to avoid alcohol in pregnancy targeted at women and their social networks will be important in reducing alcohol-exposed pregnancies. Interventions that seek to improve pregnant women's self-efficacy and involve their support

networks are also likely to be of value in minimising the risks associated with alcohol consumption in pregnancy.

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Table 1. *Characteristics of Included Studies* ($N_{studies}$ = 21)*

Lead Author (Year)	Country	Sample Size (*n = 424)*	Recruitment Source	Methodology		Quality Score
				Data Collection	Data Analysis	
Baron (2017)	Netherlands	22	Word of mouth; a website for pregnant women; emails to contacts of mother and child centres; posters in health and community centres, primary schools and day care centres.	Semi-structured interview	Thematic analysis and constant comparison	0.90
Baxter (2004)	USA	24*	Four Women, Infants and Children (WIC) clinics in southeast Iowa.	Semi-structured interview	Analytic induction	0.85
Branco (2001)	USA	Not stated	Prenatal clinic staff at an Indian health clinic or a teaching hospital in the Watts section of Los Angeles.	Focus groups	Thematic analysis	0.80
Burton-Jeangros (2011)	Switzerland	50	Research team members' social networks; small posters in private gynaecologists-obstetricians and midwives offices, and commercial centres; Internet sites associated with family issues; snowball sampling.	Semi-focused interviews	Not stated	0.75

Lead Author (Year)	Country	Sample Size (*n = 424)*	Recruitment Source	Data Collection	Data Analysis	Quality Score
Coathup (2017)	UK	6	Antenatal clinics; specialist substance misuse antenatal clinics; social media.	Semi-structured, in-depth interviews	Thematic analysis	0.75
Crawford-Williams (2015)	Australia	8*	Flyers at a Women's and Children's hospital; flyers at a University.	Focus groups	Thematic analysis	0.95
France (2013)	Australia	6*	Community-based groups and events.	Focus groups	Thematic analysis	0.90
Gibson (2020)	Australia	28	Antenatal services at research sites; three public and one private health service in Victoria, Australia, and two Indigenous Australian settings; one remote service in the Northern Territory and one regional service in Victoria.	Individual interviews and group discussions	Inductive content analysis	1.0
Gouihlers (2019)	Switzerland	30#	Obstetrician and midwife networks using snowball sampling.	Semi-directive joint interviews (pregnant women and their partners)	Thematic analysis	0.90

Lead Author (Year)	Country	Sample Size (*n = 424)*	Recruitment Source	Data Collection	Data Analysis	Quality Score
Grant (2019)	UK	10	Research team's social networks; flyers and personal recommendations from staff at mother and baby groups; social media groups aimed at mothers.	Three pre-interview tasks, and three interviews	Thematic analysis	1.0
Hammer (2019)	Switzerland	30[#]	Obstetrician and midwife networks.	Semi-structured interviews	Thematic analysis	0.95
Hammer (2014)	Switzerland	50[#]	Research teams' social networks; small posters in commercial centres, private obstetrician-gynaecologists' and mid-wives' offices; advertisements on web sites associated with family issues; snowball sampling.	Semi-structured interviews	Thematic analysis	0.75
Hotham (2016)	Australia	100	Inpatient and outpatient antenatal services at a Women's and Children's Hospital	Free text answers to a screening tool	Thematic analysis	0.90
Howlett (2017)	UK	71	North Tyneside General Hospital and Wansbeck General Hospital - antenatal clinics; pregnancy assessments units; maternity wards; scanning clinics; substance misuse clinics.	Free text answers to a questionnaire survey	Thematic analysis	0.75

Lead Author (Year)	Country	Sample Size (*n = 424)*	Recruitment Source	Data Collection	Data Analysis	Quality Score
Jones (2011)	Australia	12*#	A midwifery group practice program in a large public hospital in regional NSW, Australia.	Semi-structured interviews	Thematic analysis	0.85
Jones (2012)	Australia	12*#	A midwifery group practice program in a large public hospital in regional NSW, Australia.	Semi-structured interviews	Thematic analysis	0.85
Kelly (2018)	South Africa	5*	The Healthy Mother Healthy Baby (HMHB) programme, implemented by the Foundation for Alcohol Related Research (FARR).	Episodic interview method was used to elicit narrative episodes	Thematic decomposition analysis	0.90
Raymond (2009)	UK	20	A range of community organisations including Sure Start Children Centres, National Child- birth Trust antenatal groups and mother and toddler groups.	Semi-structured interview	Thematic analysis	0.95
van der Wulp (2013)	Netherlands	25	Midwife practices; pregnancy courses; antenatal childbearing classes; pregnancy yoga classes.	Focus groups and joint interviews (pregnant women and their partners)	Qualitative content analysis	0.75
Watt (2014)	South Africa	12	Posters in nine alcohol-serving establishments.	Semi-structured interview	Thematic analysis	0.90

Lead Author (Year)	Country	Sample Size (*n = 424)*	Recruitment Source	Data Collection	Data Analysis	Quality Score
Watt (2016)	South Africa	9	Flyers and word of mouth in alcohol serving venues where the team has previously conducted research.	Semi-structured interview	Thematic analysis	0.75

*Not all studies provided this data for their participants; [a]This number represents the number of pregnant women within the larger sample. [b]Sample represented more than once across different included studies.

Table 2. Characteristics of Participants in Included Studies*

Variable	$N_{Studies}$	$N_{Participants}$	M (SD)	Range
Pregnant women	21	437		
Age*	13			
Week of pregnancy*	9	122		8 - 40 weeks
Parity*				
Expecting 1st child	8	95		
Expecting 2nd or subsequent child	8	58		
Education*				
< Bachelor's degree	5	54		
≥ Bachelor's degree	5	66		
Relationship status*				
Partnered	9	203		
Single	9	37		
Marital status*				
Married	3	24		
Unmarried	3			
Drinking status*				
Drinker	2	23		
Abstainer	2	22		

Note. *N*studies = number of studies; *N*participants = number of participants; *M* = Mean; SD = standard deviation; * not all studies provided this data for their participants.

Table 3. Synthesised Findings and Component Categories of Pregnant Women's Attitudes Towards Alcohol Use During Pregnancy

The complexities of navigating health advice: Pregnant women describe the guidance from public health messaging and health professionals concerning drinking during pregnancy as confusing and inconsistent, requiring them to make their own choices based on a combination of expert and lay advice

- Health advice from public health messaging and health professionals is inconsistent and frequently contradictory, vague and insufficient
  - Some health professionals recommend that drinking during pregnancy is appropriate in small doses, while others recommend complete abstinence
  - Women know there are risks associated with drinking during pregnancy but are unclear on the specifics of those risks
  - Women report a sense that data on the impacts of drinking during pregnancy are inconclusive
- Women rely on various sources of information to make decisions about drinking during pregnancy
  - Women turn to a range of lay sources in order to make their decisions about drinking during pregnancy
  - Lay advice and anecdotal evidence suggest limited risks associated with drinking during pregnancy
  - Information from lay sources can also be inconsistent and confusing

The implications of abstaining from alcohol during pregnancy: The decision to abstain from alcohol during pregnancy was described by women as being associated with several implications for their social lives and lifestyle

- Abstaining from alcohol during pregnancy is a constraint on women's social lives
  - Abstaining from alcohol removes enjoyment from social situations
  - not drinking is anti-social
  - Women find it difficult to hide early pregnancies due to societal expectations about drinking in social situations
- Abstaining from alcohol during pregnancy limits women's ability to engage in pleasurable lifestyle activities

- Recommendations for women during pregnancy are unreasonable, and place too many constraints on women's lifestyle choices

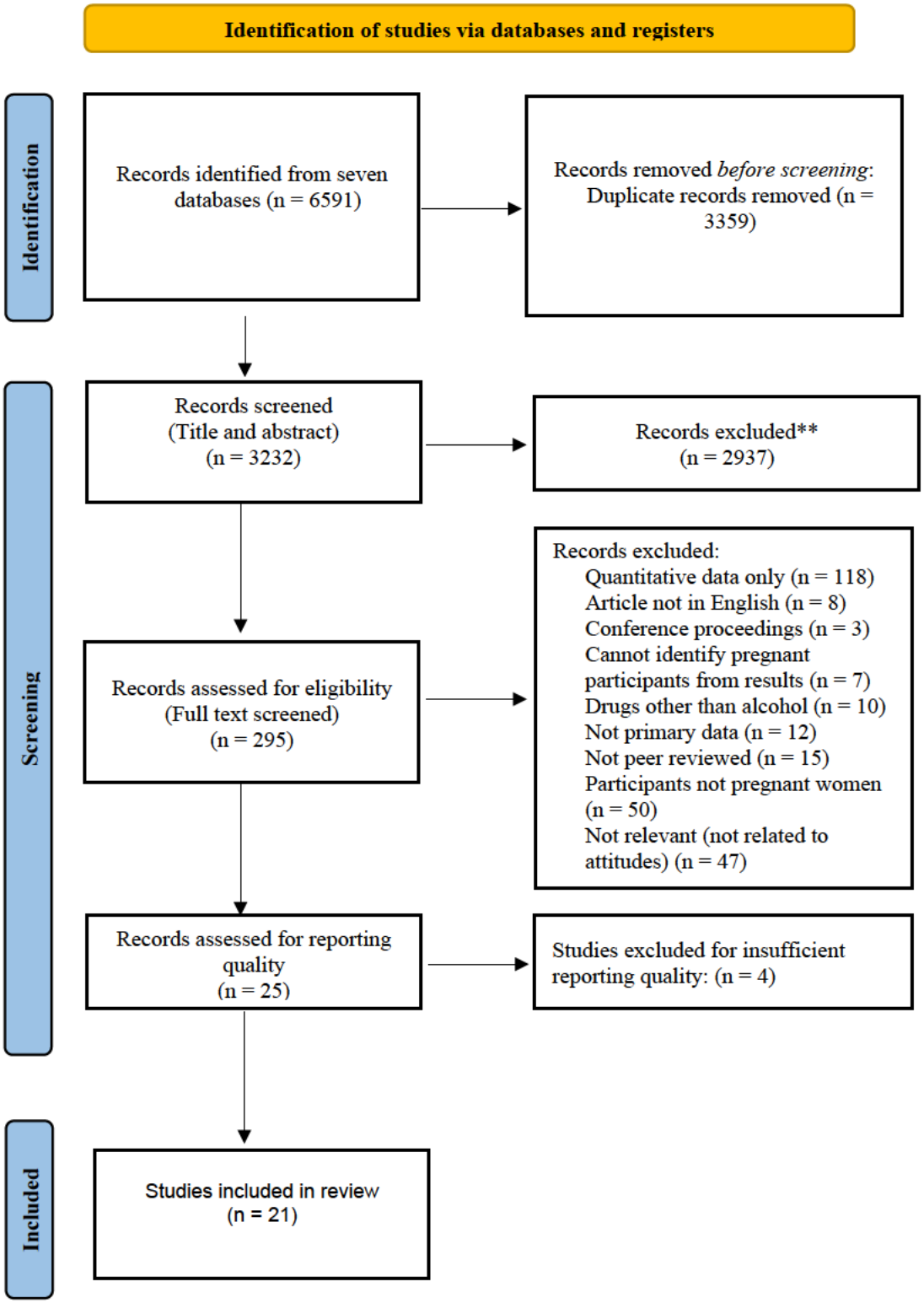
Questions of bodily autonomy: Pregnant women's attitudes towards drinking during pregnancy are not uniform, rather women describe the choice to drink during pregnancy both as a matter of individual choice and bodily autonomy, and also as a social issue and matter up for discussion within the broader community

- Drinking during pregnancy is an individual choice
  - Women have the right to make choices about their own health and bodies
  - Drinking choices during pregnancy should be dependent on women's individual circumstances
- Pregnant women are accountable to others in regard to their choice to drink during pregnancy
  - Women are conscious of others' opinions regarding drinking during pregnancy
  - Drinking during pregnancy is highly stigmatised
- Social networks are of significance in shaping women's drinking behaviours during pregnancy
  - Women's social networks actively offer opinions on choices both to consume and abstain from alcohol during pregnancy
  - Pregnant women's partners play a significant role in shaping women's drinking behaviours during pregnancy

Table 4. Implications for practice and health promotion

1. Discussions around harm minimisation related to alcohol use in pregnancy should be reframed in the context of promoting health and cognitive outcomes for unborn children.
2. Advice offered by health professionals and within health campaigns should be transparent in acknowledging knowledge gaps and take care not to overstate risks. This advice should also provide information in a way that provides a clear rationale for the importance of avoiding alcohol during pregnancy.
3. Health professionals must be prepared to broach and navigate discussions around alcohol use in pregnancy in a non-judgemental manner that avoids perpetuating stigma concerning alcohol use in pregnancy. They must also work to enhance women's self-efficacy to improve their likelihood of positive behaviour change.
4. It is essential for health professionals and those working in health promotion settings to have a comprehensive understanding of the individual circumstances that might present a barrier to women abstaining from alcohol use during pregnancy.
5. Health professionals should actively engage partners of pregnant women in pre-conception and pre-natal care when appropriate.
6. Pregnant women's partners and their broader social networks should be targeted in future health campaigns regarding alcohol use during pregnancy.

Figure 1. *PRISMA flow diagram (Page et al., 2021) demonstrating the article selection and screening process.*



Appendix A

Supplementary Table 1. Enhancing transparency in reporting the synthesis of qualitative research: the ENTREQ statement

No	Item	Guide and description	Reported on Page
1	Aim	State the research question the synthesis addresses	Title, Page 1; Page 6 and; Page 10
2	Synthesis methodology	Identify the synthesis methodology or theoretical framework which underpins the synthesis, describe the rationale for choice of methodology (*e.g. meta-ethnography, thematic synthesis, critical interpretive synthesis, grounded theory, realist synthesis, meta-aggregation, meta-study, framework synthesis*).	Page 6 and; Page 8 and; Page 12
3	Approach to searching	Indicate whether the search was pre-planned (*comprehensive search strategies to seek all available studies)* or iterative (*to seek all available concepts until the theoretical saturation is achieved*)	Page 9 and; Figure 1 on page 54
4	Inclusion criteria	Specify the inclusion/exclusion criteria (*e.g. in terms of population, language, year limits, type of publication, study type*).	Page 9
5	Data sources	Describe the information sources used (*e.g. electronic databases (MEDLINE, EMBASE, CINAHL, PsycINFO, Econlit), grey literature databases (digital thesis, policy reports), relevant organisational websites, experts, information specialists, generic web searches (Google Scholar) hand searching, reference lists*) and when the searches conducted; provide the rationale for using the data sources.	Page 6; and Page 9
6	Electronic search strategy	Describe the literature search (*e.g. provide electronic search strategies with population terms, clinical or health topic terms, experiential or social phenomena related terms, filters for qualitative research and search limits*).	Page 9
7	Study screening methods	Describe the process of study screening and sifting (*e.g. title, abstract and full text review, number of independent reviewers who screened studies*).	Page 10
8	Study characteristics	Present the characteristics of the included studies (*e.g. year of publication, country, population, number of participants, data collection, methodology, analysis, research questions*).	Table 1 on Page 45

9	Study selection results	Identify the number of studies screened and provide reasons for study exclusion (*e.g. for comprehensive searching, provide number of studies screened and reasons for exclusion indicated in a figure/flowchart; for iterative searching describe reasons for study exclusion and inclusion based on modifications to the research question and/or contribution to theory development*).	Page 10 and; Figure 1 on page 54
10	Rationale for appraisal	Describe the rationale and approach used to appraise the included studies or selected findings (e.g. assessment of conduct (*validity and robustness*), assessment of reporting (*transparency*), assessment of content and utility of the findings).	Page 10 and; Table 1 on Page 45 and; Appendix B
11	Appraisal items	State the tools, frameworks and criteria used to appraise the studies or selected findings (*e.g. Existing tools: CASP, QARI, COREQ, May and Pope; reviewer developed tools; describe the domains assessed: research team, study design, data analysis and interpretations, reporting*).	Page 10 and; Table 1 on Page 45 and; Appendix B
12	Appraisal process	Indicate whether the appraisal was conducted independently by more than one reviewer and if consensus was required.	Page 11
13	Appraisal results	Present results of the quality assessment and indicate which articles, if any, were weighted/excluded based on the assessment and give the rationale.	Page 14 and; Table 1 on Page 45 and; Appendix B
14	Data extraction	Indicate which sections of the primary studies were analysed and how were the data extracted from the primary studies? (*e.g. all text under the headings "results/conclusion" were extracted electronically and entered into a computer software*).	Page 11 and; Table 2 on Page 50
15	Software	State the computer software used, if any.	Page 10
16	Number of reviewers	Identify who was involved in coding and analysis.	Page 10
17	Coding	Describe the process for coding of data (*e.g. line by line coding to search for concepts*).	Page 12 and; Table 2 on Page 50
18	Study comparison	Describe how were comparisons made within and across studies (*e.g. subsequent studies were coded into pre-existing concepts, and new concepts were created when deemed necessary*).	Page 12

19	Derivation of themes	Explain whether the process of deriving themes or constructs was inductive or deductive.	Page 12
20	Quotations	Provide quotations from the primary studies to illustrate themes/constructs, and identify whether the quotations were participants quotations of the author's interpretation.	Pages 14-25
21	Synthesis output	Present rich, compelling and useful results that go beyond a summary of the primary studies (*e.g. new interpretation, models of evidence, conceptual models, analytical framework, development of a new theory or construct*).	Pages 14-25 and; Table 2 on Page 50

Appendix B

Supplementary Table 2. Evaluation of the Reporting Quality of Included Studies *($N_{studies}$ = 21)*

	QualSyst Criteria										
Lead Author (Date)	Question/ Objective (1)	Study Design (2)	Context (3)	Theoretical Framework (4)	Sampling Strategy (5)	Data Collection (6)	Data Analysis (7)	Verification Procedure (8)	Conclusion (9)	Reflexivity (10)	**Summary Score**
Baron (2017)	●	●	●	●	●	●	●	●	●	○	0.90
Baxter (2004)	◖	●	●	●	●	●	●	●	●	○	0.85
Branco (2001)	●	●	●	●	◖	●	◖	○	●	◖	0.80
Burton-Jeangros (2011)	●	●	●	●	●	●	◖	○	●	○	0.75
Coathup (2017)	●	●	●	●	●	●	◖	○	●	○	0.75
Crawford-Williams (2015)	●	●	●	●	●	●	●	●	●	◖	0.95
France (2013)	●	●	●	●	●	●	●	●	●	○	0.90
Gibson (2020)	●	●	●	●	●	●	●	●	●	○	0.90
Gouihlers (2019)	●	●	●	●	●	●	●	●	●	○	0.90
Grant (2019)	●	●	●	●	●	●	●	●	●	○	1.0

Hammer (2019)	●	●	●	●	●	●	●	●	●	◖	0.95
Hammer (2014)	●	●	●	●	●	●	◖	○	●	○	0.75
Hotham (2016)	●	●	●	●	●	●	●	○	●	●	0.90
Howlett (2017)	●	●	●	●	●	●	◖	○	●	○	0.75
Jones (2011)	●	●	●	●	●	●	◖	●	●	○	0.85
Jones (2012)	●	●	●	●	●	●	◖	●	●	○	0.85
Kelly (2018)	●	●	●	●	●	●	●	●	●	○	0.90
Raymond (2009)	●	●	●	●	●	●	●	●	●	○	0.95
van der Wulp (2013)	●	●	●	●	●	●	◖	○	●	○	0.75
Watt (2014)	●	●	●	●	●	●	○	●	●	○	0.90
Watt (2016)	●	●	●	●	●	●	◖	○	●	○	0.75

Note. ● = *yes,* ◖ = *partial,* ○ = *no*

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3. New Zealand Food and Grocery Council. The daily intake guide. Wellington: FGC; 2011. Available from: **http://www.fgc.org.nz/daily_intake_works.asp**[Verified 30 May 2011].

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