

# **Alcohol in Pregnancy: a qualitative content analysis of online forum topics**

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# Alcohol in Pregnancy: a qualitative content analysis of online forum topics

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## Abstract

**Background:** Prenatal alcohol exposure represents a significant public health concern as it may lead to several detrimental outcomes, including fetal alcohol spectrum disorder (FASD). Although UK national guidance recommends abstaining from drinking alcohol in pregnancy, evidence suggests that confusion remains on this topic among members of the public and little is known about what questions people have regarding alcohol in pregnancy.

**Objective:** This study aims to assess what questions and topics are raised concerning alcohol in pregnancy on an online, UK-based parenting forum. A second aim is to explore how, if at all, these correspond to official public health guidelines with respect to two critical events: the implementation of revised UK Chief Medical Officers' (CMO) low-risk drinking guidelines (2016) and the first COVID-19 lockdown (2020).

**Methods:** All social media posts mentioning alcohol in the 'Pregnancy' topic were collected from Mumsnet.com for the period 2002-2022 and analysed using qualitative content analysis. Descriptive statistics were used to characterise the number and proportion of posts for each topic over the whole study time period and for the periods corresponding to the change in CMO guidance and the COVID-19 pandemic.

**Results:** Topics discussed on Mumsnet regarding alcohol in pregnancy remained similar between 2002 and 2022. Key topics included 'Asking for advice on whether it is safe to consume alcohol or on 'safe limits', 'Consumed alcohol before knowing about pregnancy', and 'Research, guidelines, and official information about alcohol in pregnancy'. The relative proportion of each of these topics changed over time. Posts about having consumed alcohol during pregnancy were more common before the introduction of the revised CMOs' guidance than in the later time periods.

**Conclusions:** The findings suggest that mothers and expecting mothers use Mumsnet to seek reassurance and information regarding alcohol in pregnancy from others in similar situations. The results also indicate that there may be less confusion about guidelines and research about alcohol in pregnancy in more recent years.

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## Original Manuscript

# **Alcohol in Pregnancy: a qualitative content analysis of online forum topics**

## **Abstract**

## **Background**

Prenatal alcohol exposure represents a significant public health concern as it may lead to detrimental outcomes, including pregnancy complications and fetal alcohol spectrum disorder (FASD). Although UK national guidance recommends abstaining from alcohol if pregnant or planning a pregnancy, evidence suggests that confusion remains on this topic among members of the public, and little is known about what questions people have about alcohol in pregnancy outside of healthcare settings.

## **Objective**

This study aimed to assess what questions and topics are raised on alcohol in pregnancy on an online UK-based parenting forum and how these correspond to official public health guidelines with respect to two critical events: the implementation of revised UK Chief Medical Officers' (CMO) low-risk drinking guidelines (2016) and the first COVID-19 lockdown (2020).

## **Methods**

All social media posts mentioning alcohol in the 'Pregnancy' topic were collected from Mumsnet.com for the period 2002-2022 and analysed using qualitative content analysis. Descriptive statistics were used to characterise the number and proportion of posts for each topic over the whole study time-period and for the periods corresponding to the change in CMO guidance and the COVID-19 pandemic.

## **Results**

Key topics included 'Asking for advice on whether it is safe to consume alcohol' or on 'safe limits' and concern about having consumed alcohol before being aware of a pregnancy. Mumsnet posts also included discussions and information-seeking on 'Research, guidelines, and official information about alcohol in pregnancy'. Topics discussed on Mumsnet regarding alcohol in pregnancy remained broadly similar between 2002 – 2022, although posts disclosing prenatal alcohol use were more common before the introduction of the revised CMOs' guidance than in later time periods.

## **Conclusion**

Online discussions within a UK parenting forum indicated that users were often unclear on guidance and risks associated with prenatal alcohol use, and that they used this platform to seek information and reassurance from peers.

## Keywords

Social Media, Online Forum, Alcohol, Pregnancy, Prenatal Health, Prenatal Alcohol Exposure

## Introduction

## Background

Prenatal alcohol exposure (PAE) can lead to several detrimental outcomes, such as Fetal Alcohol Spectrum Disorder (FASD) [1] and developmental effects on both physical [2] and mental health [3]. In addition, those with FASD have a higher risk of experiencing problems in school, getting into trouble with the law and having problems with alcohol and illicit drug use [4]. FASD has been mentioned in research since the early 1970s [5], and it is a complex diagnosis with a high rate of comorbidity [6], usually requiring a multidisciplinary team to diagnose it [7]. Estimates have shown that, on average, 9.8% of women worldwide consume alcohol in pregnancy, and in the UK, 40.1% of women report consuming alcohol in pregnancy, ranking the UK as having the 4<sup>th</sup> highest prevalence of prenatal alcohol exposure in the world [8]. It has been shown that around 8 in 1000 individuals have FASD in the general population globally, with the European region having a prevalence of around 20 in 1000, with around one in 13 children being born with FASD after prenatal alcohol exposure [9]. For fetal alcohol syndrome (FAS; the dysmorphic subtype of FASD), estimates show that one in 67 pregnant women consuming alcohol gives birth to a child with FAS [8]. While there is strong evidence that high levels of PAE can be harmful, evidence on the effects of low-moderate PAE has been less conclusive. Uncertainties surrounding the risk of harm at low levels of PAE, coupled with conflicting messages from health professionals on low-moderate PAE, have been cited as reasons why some people choose not to abstain and for ongoing confusion about the risks of PAE [10]. Nevertheless, studies that have used robust methods to support causal inference have found that

low-moderate levels of PAE can lead to adverse perinatal, physical [11], and developmental outcomes [12] [13] and that apparent null/protective effects of PAE are likely due to residual confounding. Consequently, a recent review concluded that 'any amount of prenatal alcohol... exposure appeared to risk healthy child development'[14].

Previously, there was a consensus that UK guidelines on alcohol in pregnancy could be confusing since there was no clear recommendation [15]. In earlier guidelines, NICE (National Institute for Health and Care Excellence) stated that pregnant women should avoid alcohol in the first three months of pregnancy, and if they choose to drink, they should not drink more than 1-2 units twice per week [16]. In 2016, the UK Chief Medical Officers (CMOs) changed to advise 'if you are pregnant or planning a pregnancy, the safest approach is not to drink alcohol at all' [17]. This change of guidelines caused much debate. While some welcomed the introduction of the revised guidelines [18], others claimed that the new guidelines would lead to women having feelings such as guilt and anxiety if they were consuming alcohol during pregnancy [19]. Pregnant women feel there are too many guidelines to follow, arguably leading to increased stress [20]. It has also been expressed that pregnancy can lead to a perceived lack of agency and control [21] in this context; the abstinence guideline can be perceived as 'policing women' [22]. A study conducted in Denmark, a country with similar estimates of prenatal alcohol exposure as the UK, evaluated both knowledge and attitudes towards alcohol in pregnancy before and after their guidelines changed to advising women not to drink during pregnancy and showed no changes in either knowledge or attitudes [23].

Furthermore, the concept of abstaining from alcohol during pregnancy is not always clear, with some women experiencing confusion about, for example, if food containing alcohol is safe or if it is acceptable to consume so-called 'NoLo' (no- or low alcohol) products [20].



There is little research on the experiences and attitudes towards alcohol in pregnancy among the UK general population. This is particularly true for research on conversations in more informal and ‘naturalistic’ settings, such as those on social media platforms. Within the context of the changed guidelines on alcohol in pregnancy and ongoing debates, a gap emerged in understanding informal dialogues, notably during events like the COVID-19 pandemic. As concerns heightened regarding increased alcohol intake during pregnancy amid the lockdown, the need for research on the correlation between COVID-19-related anxieties and evolving attitudes towards alcohol post-lockdown became apparent. In March 2020, the UK experienced its first lockdown [24]. This led to millions of people having to change how they lived, with everything from how to visit the midwife to having to give birth without their partners and loved ones present [25]. There was also the worry that people with alcohol dependence would not get the help they needed whilst the society was shut down [26]. Additionally, there was a concern surrounding a potential increase in the level of alcohol consumption during pregnancy due to the stress and anxiety that lockdown brought to many people [27]. Research has suggested that the shifts in drinking habits during the COVID-19 pandemic could have lasting effects on alcohol-related harm in the future for the general population in England [28]. However, to this date, there has been limited evidence supporting any relationship between COVID-19 concerns and increased alcohol consumption during pregnancy [29]. Therefore, more research is needed to examine the potential change in attitudes towards alcohol in pregnancy after the COVID-19 lockdown.

Many pregnant women use the internet to search for information related to their pregnancy [30]. A recent study showed that as many as 44% of new mothers used social media to keep in contact and communicate with others in the same situation [31]. Mumsnet (<https://www.mumsnet.com/>) was founded in early 2000 and is one of the most prominent online forums for parents in the United Kingdom, with around 7 million monthly visitors [32]. Mumsnet was initially created as an online

space where people could ask for and give advice and share knowledge to make parents' lives easier [32]. While Mumsnet is open to anyone, it has previously been described as having a majority of middle-class and university-educated users [33]. Since many people use social media and the internet to seek health information [34] and to find support during pregnancy [30], Mumsnet presents an excellent opportunity for researchers to capture the unmediated opinions and thoughts about alcohol in during pregnancy. The forum has previously been used to address topics such as breastfeeding [35], regretting motherhood [36] and maternal feelings [37]. Therefore, with the use of Mumsnet posts, this study will explore what topics related to alcohol in during pregnancy are discussed and if the nature of them has changed since the start of Mumsnet in 2002, with the change of CMO guidelines in 2016 and the COVID-19 pandemic as key time points for comparison.

## Aims and objectives

Given that social media and the internet can be used by those seeking to gain real-time insight into people's behaviours and attitudes as well as identify how people perceive public health messages [38], this study aims to explore what issues and topics are raised with regards to alcohol use in pregnancy in online parenting forums. It also seeks to explore if there has been a change in the different issues and topics with respect to three time points: before the implementation of the current CMO low-risk drinking guidelines, after the implementation of the CMO guidelines, and after the first COVID-19 lockdown.

The specific research questions in this study were:

- What topics relating to alcohol in pregnancy are raised on online parenting forums?
- Have these topics changed in content, and, or volume with respect to three time points: before

the implementation of the current CMO guidelines, after the implementation of the CMO guidelines, and after the first COVID-19 lockdown?

## Methods

### Data source

Mumsnet allows forum members to post anonymously in different sub-forums (e.g., the ‘pregnancy’ subforum). Users are identified by unique usernames. The forum is open for everyone to view; however, users must be registered to post content.

### Ethical Approval

This study followed ethical guidelines for internet-mediated research. Ethical considerations for research using social media data differ from traditional research [39], and it is essential to distinguish between public and private data [40]. Since Mumsnet does not require users to log in to read the forum, and is available to the public, it was considered public data and informed consent was not required [41]. To support anonymity in our study, we have not included usernames and endeavoured to remove personally identifiable information from the data during the cleaning process. We excluded posts in which the user stated that they were under the age of 18. In line with British Psychological Society guidance [42], direct quotes were not reproduced in this study, and all have been paraphrased.

A favourable ethical opinion was obtained from the School of Psychological Science Research Ethics Committee at the University of Bristol in August 2023 (Ethics approval code 14455).

## Search Strategy

Data was collected through web scraping code by the authors NFF and YM. The data was collected from the 'Pregnancy' topic in the 'Talk' part of Mumsnet.com and included original posts ('thread starts') that mentioned alcohol in the title or text. Duplicate posts, and threads unrelated to alcohol use during pregnancy were removed manually. After web scraping, thread starts were stored in an Excel file with information on the username, date and time of the posts and the post itself.

## Data analysis

Thread starts were analysed in three groups, according to the time and date in which they were posted; 'Pre-CMO recommendation update', before the introduction of revised low-risk drinking guidelines in 2016 (24 August 2002-7 January 2016), 'Post-CMO recommendation update', after the change of guidelines (8 January 2016-22 March 2020) and 'Post-COVID Lockdown', from the first lockdown in the UK up until the last date of the data collection (23 March 2020-12 November 2022). A content analysis was conducted, following the steps described by Elo and Kyngäs [43]. This approach was appropriate since the aim of the study was to map the landscape of discussions on alcohol in pregnancy on Mumsnet, including patterns and time trends in people's views and experiences.

NFF read the thread starts, became familiarised with the data and applied preliminary code labels to organise the data. An inductive approach was used since little is known about how mothers use online forums to discuss alcohol and pregnancy. Categories were generated after finding patterns among the codes to better understand the data [43]. Throughout the process, the categories were reviewed and refined. During each step of the analysis, both codes and categories were discussed among the researchers NFF, JB, AA, LZ, and CM, and refined accordingly. We used descriptive statistics to describe the proportion of posts for each category for each of the pre-specified time

periods. The analysis workflow, based on the process outlined by Elo and Kyngäs [43], is described in Table 1 below.

Table 1 Workflow.

<b>Phase</b>	<b>Process</b>
<i>Decision on the unit of analysis</i>	NFF became familiarised with Mumsnet to decide what data should be downloaded and analysed.
<i>Web scraping</i>	NFF and YM used a web scraping technique to download the data.
<i>Data Familiarisation</i>	NFF read and re-read the data multiple times, made notes about initial impressions, and removed data irrelevant to the study. JB supported in reading the data to make any notes of insights.
<i>Open coding</i>	NFF coded the data and discussed the codes and their meaning with JB.
<i>Grouping of codes</i>	NFF started grouping the codes if they shared the same meaning.
<i>Formulating categories</i>	NFF started forming categories from the coded data, which involved JB reviewing the codes and categories.
<i>Refining and defining categories</i>	NFF, JB, AA, LZ, and CM reviewed the categories and their related codes and discussed their definitions.
<i>Writing up the study</i>	NFF wrote the draft for the paper with JB, AA, LZ, and CM, who all provided critical feedback and contributed to the review and editing.

## Results

The web scraping resulted in 803 posts, which, after eliminating duplicates and irrelevant posts, resulted in 416 thread starts that mentioned alcohol in pregnancy. Table 2 provides an overview of the nine categories and each code within them, together with the number of times the categories appear in each time-period. Even though the categories are presented separately, some overlap does exist.

Table 2. Table of included categories. Note: Percentages report the proportion of thread starts that fall within each time period for each category.

Categories	Time period			Paraphrased quotes illustrative of the Category
	Pre-CMO recommendation update N=228 thread starts	Post-CMO recommendation update N=107 thread starts	Post-COVID Lockdown N=81 thread starts	
<b>Asking for advice on whether it is safe to consume alcohol or on safe limits.</b>	18.4% (42)	15.0% (16)	13.6% (11)	'Is it ok to eat Tiramisu? I know that it contains alcohol, but it is so good!'
Wants to know if it is okay to eat food or dessert with alcohol in it.	Y	Y	Y	'I'm in my second trimester and it is my birthday, can I have a glass of wine to celebrate or is that stupid?'
Wants to know if it is safe to use hand sanitiser or mouthwash.	Y			'I am so worried that alcohol-free isn't really alcohol-free. Can someone please help without calling me stupid?'
Wants to know if it is safe to consume low or no-alcohol products.	Y	Y	Y	
Wants to know if there is a safe limit of alcohol to consume.	Y	Y		
Wants to know if it is okay to consume alcohol because of celebrations.	Y	Y		
<b>Consumed alcohol before knowing about pregnancy.</b>	16.7% (38)	37.4% (40)	42.0% (34)	'I am panicking, I just found out that I was pregnant and had a couple of drinks the other day. Have I hurt my baby? What if it gets [fetal alcohol syndrome] FAS? I want the baby but maybe it is better to have an abortion'
Consumed alcohol before knowing about pregnancy, worried.	Y	Y	Y	
Consumed alcohol before knowing about pregnancy, talked to a professional, but still worried.	Y	Y	Y	'I cannot believe that

Consumed alcohol before knowing about pregnancy, mentioning termination.	Y	Y	Y	
Consumed alcohol before knowing about pregnancy, had a baby with problems.		Y		
Consumed alcohol before knowing about pregnancy, and had a miscarriage, wants to know if it is their fault.			Y	
<b>Research, guidelines and official information about alcohol in pregnancy.</b>	16.7% (38)	4.7% (5)	4.9% (4)	
Research, guidelines, and information about alcohol in pregnancy is confusing, conflicting or not trustworthy.	Y	Y	Y	'I am reading so many scary things online that I am stressing and having so much anxiety and I don't know what to think anymore, please help.'
There is not enough research on alcohol in pregnancy	Y			'Why do different countries have different recommendations for drinking during pregnancy?'
Sharing information or research to start discussion.	Y			'What have you guys been advised about alcohol from your midwife, I feel like everyone is told different things?'
Sharing information or research on that it is okay to consume small amounts.	Y			
Wants to know the guidelines or more information.	Y			'So what do you guys think? Back in the days everyone drank and they still do in other countries.'
Wants to know what others think about the guidelines.	Y			

There are too many restrictions.	Y			
Confused about guidelines vs what is feasible in real life.		Y		Y
There is no evidence that small amounts of alcohol have a negative effect.		Y		Y
Professionals gave impression that it is okay to consume alcohol..				Y
<b>No or low-alcohol ('NoLo') products</b>	14.5% (33)	9.4% (10)	11.1% (9)	<p>'Any ideas on drinks that are nice for Christmas whilst everyone else is drinking alcohol?'</p> <p>'I am so worried that alcohol-free isn't really alcohol-free, can someone please help without calling me stupid?'</p> <p>'Still such early days but how do I hide not drinking from my friends and family? I cannot blame driving since we do not have a car. Please help as I don't want to tell people yet!'</p>
Giving recommendations on low or no-alcohol products.	Y	Y		
Wants recommendations on low or no-alcohol beers.	Y	Y	Y	
Wants recommendations on low or no-alcohol drinks (for example: spirits & cocktails).	Y	Y	Y	
Wants recommendations on low or no-alcohol wine.	Y	Y	Y	
<b>How to hide not consuming alcohol to conceal pregnancy</b>	9.2% (21)	15.0% (16)	4.9% (4)	
Wants recommendations on how to hide that they are not consuming alcohol.	Y	Y	Y	
Wants to know if consuming small amounts of alcohol to hide pregnancy is okay.		Y		



Covid-19 makes it harder to hide that they are not consuming alcohol.			Y	
Covid makes it easier to hide that they are not consuming alcohol.			Y	
<b>Have been consuming alcohol during pregnancy but now worried</b>	6.1% (14)	1.9% (2)	1.2% (1)	'Just had like two sips of a drink and was so judged by my friend that it made me worried, what do you guys think? Should I be worried?'
Have been consuming alcohol during pregnancy but now worried.	Y	Y		
Have been consuming alcohol during pregnancy but now worried because of change of guidelines.	Y			
Consumed alcohol in secret but now worried.		Y	Y	
<b>Are consuming alcohol during pregnancy, not worried about PAE<sup>1</sup>.</b>	6.6% (15)	2.8% (3)	0	'I have a glass of wine once in a while even if I know it's not good for the baby.'
Will be consuming alcohol during pregnancy.	Y			
Had a drink but it made them feel sick.	Y			'I am now in my second trimester and can finally start having a drink once in a while.'
Consuming alcohol and wants reassurance that it is okay.	Y			
Relaxed later in pregnancy when it comes to consuming alcohol or in second pregnancy.	Y			
Does not feel like		Y		

they are allowed to do anything.					
Had a drink but was judged for it.			Y		
<b>Consumed alcohol by mistake</b>	1.8% (4)		8.4% (9)	14.8% (12)	
Have been consuming no- or low alcohol product and now worried.	Y		Y	Y	'I just had the most amazing dessert but then I realised that it has alcohol in it, have I done something really bad that has hurt the baby?'
Consumed alcohol by mistake and now worried.	Y		Y	Y	
Had food or dessert with alcohol and now worried.			Y	Y	'I am crying so much, had a couple of non-alcohol beers and now I realised that they are 0.05%! What if I have hurt my baby?'
Used hand sanitizer or mouthwash and now worried.			Y	Y	
Wants to know if alcohol can transfer from others.				Y	
<b>It is hard to not consume alcohol during pregnancy.</b>	4.0% (9)		2.8% (3)	4.9% (4)	
Miss drinking.	Y		Y	Y	I really want a nice cold pint in this hot weather, is anyone else struggling with not drinking?'
Wants to consume alcohol but not doing it.				Y	

<sup>1</sup> Prenatal Alcohol Exposure

The results show that while the categories of Mumsnet posts relevant to alcohol use in pregnancy remained broadly similar over time, there were some changes in the relative prevalence of different topics over time. Category headings, frequencies over time and illustrative quotes are presented in Table 2. The categories are presented in more detail below.

### **Asking for advice on whether it is safe to consume alcohol or on safe limits.**

Looking at the questions raised within this category, it became apparent that the people posting on Mumsnet felt insecure about whether if it is safe to consume during pregnancy or if it is safe to have a glass or two on a special occasion such as weddings or birthday celebrations:

*'I am 30 weeks pregnant and haven't had a single drink but it is my friend's wedding and I really want to have a glass of champagne, is this ok?'*

Posts in this category also addressed the issue of not knowing whether it is safe to eat certain foods or desserts since they contain alcohol, for example, a tiramisu or red wine sauce:

*'Is it ok to eat dessert that has alcohol in it? I am in my third trimester.'*

There was uncertainty around no or low alcohol options, with questions raised about whether 0.5% is safe to consume during pregnancy or not:

*'Is it okay to drink none alcoholic ciders? This might be a stupid question but it does say 0.5% so is there still alcohol in there that can hurt my baby?'*

This category saw a slight decrease in the percentage of posts asking about safe limits to drink over time. Many of the thread starts in the first time period, Pre-CMO recommendation update, mentioned the timing of the pregnancy, which could be a result from the change in

guidelines.

## Consumed alcohol before knowing about pregnancy

The majority of the thread starts within this category showed some expression of worry or anxiety that the thread posters had consumed alcohol before they found out about their pregnancy. They also sought reassurance from others who have been in a similar situation:

*'I've just found out I'm pregnant after weeks of unknowingly consuming alcohol and indulging in partying. I'm feeling guilty and concerned about any potential harm to my baby. Can anyone share their experiences if they have been in a similar situation?'*

Moreover, many thread posters mentioned that they were usually not heavy drinkers. Still, due to situations such as birthday parties or Christmas celebrations, their alcohol intake had been higher than usual:

*'I am freaking out please help. Just found out that I am 6 weeks pregnant and have been drinking so much, especially because of Christmas celebrations, I promise I am usually not a heavy drinker. What should I do? Could not live with myself if something happens to the baby!'*

Some thread starters were asking if they should consider having an abortion following unintended prenatal alcohol exposure, even if the baby is wanted:

*'Need advice since I am worrying myself sick! I am pregnant and have been drinking because I was on holiday (usually only have a glass of wine once a month). Has anyone else experienced this and their baby turned out fine? Should I just have an abortion even if I really want this baby? How could I be this stupid!'*

Throughout the different time periods, there is a notable increase in the percentage of thread starts regarding the worry that they may have harmed their baby; this worry is expressed more frequently after the revised CMO low-risk guidelines were introduced in 2016.

## Research, guidelines and official information about alcohol in pregnancy.

The threads that started in this category were all related to research, guidelines, and information from official sources (e.g., NHS) about alcohol in pregnancy. Thread starters throughout all time periods expressed that they found this information confusing, conflicting, or untrustworthy :

*'It's a bit puzzling to me. The NHS advises against it, and I've come across articles saying the same, yet in my real-life circle, many pregnant women I know enjoy the occasional drink, even if it's just a glass. It got me thinking if there's a significant gap between official recommendations and what's happening in practice?'*

In the first time period, thread starters were asking what others think about the guidelines and also sharing information on how it is acceptable to consume small amounts during pregnancy:

*'To be completely honest, there is no research showing that it is really bad for the baby!'*

Some scepticism towards the guidelines can be seen in how thread starters express that there is no evidence that small amounts of alcohol in pregnancy have an adverse effect. Those who posted in the later time periods also expressed that the guidelines are not feasible for 'real people' and that they are too strict whilst contending that most people do not follow them:

*'The internet just gives you information about that you shouldn't drink and that no amount is safe but surely this is not how real people see it. I think they are just trying to scare us with all of these rules!'*

Closer to 17% of the thread starts in the first time period (pre-CMO updated guidance) were related to research, guidelines and information about alcohol use in pregnancy, but this was less frequent in the later time periods with 4.7% of thread starts in the Post-CMO

recommendation update and 4.9% in the Post-COVID Lockdown.

### **No or low-alcohol ('NoLo') products.**

This category covered conversations about the consumption of no or low-alcohol products during pregnancy. Reasons for seeking no or low-alcohol alternatives included not feeling left out in a group that is consuming alcohol and also because some missed the taste of alcohol. The need for this type of product appeared greater during celebrations such as Christmas and weddings:

*'I don't want to feel left out at the wedding so do you have any recommendations of what I can drink instead of champagne?'*

There were also thread starters who had been consuming no or low alcoholic options during pregnancy, assuming that these were completely alcohol-free (i.e. 0.0% alcohol by volume [ABV]) and later realised that they contained some alcohol. This was associated with a worry that this alcohol level might have harmed their babies, and they were seeking reassurance from others on Mumsnet:

*'I am crying so much, had a couple of none-alcohol beers and now I realised that they are 0.05%! What if I have hurt my baby?'*

All three of the time periods included conversations about alternative products to alcohol to drink during pregnancy, and the proportions of these remained relatively stable over time.

### **How to hide not consuming alcohol to conceal pregnancy**

This category reflected the worry thread starters felt regarding how to conceal them not consuming alcohol. This was of particular concern when they were invited to social situations

where alcohol would be present: *'How can I hide that I am not drinking when we go to the pub? With table service it's going to be so much harder!'*

Yet, this category saw a decrease in posts discussing how to hide not consuming alcohol in pregnancy during the Post-COVID-Lockdown time period.

### **Have been consuming alcohol during pregnancy but now worried**

The thread starts within this category mainly addresses the issue of wanting reassurance that the baby will be fine even though they have been consuming alcohol during pregnancy:

*'I am in my third trimester and had two drinks yesterday and now I am thinking that I might have hurt my baby, can someone tell me that this is fine?'*

Some thread starters mention that they have been consuming alcohol but later on, read information about how alcohol can affect the baby and, therefore regret the decision to drink:

*'I have just had a few glasses of wine here and there and haven't really thought of it but now I started reading about FAS and I am terrified. I cannot have an abortion since it is too late, but what should I do?'*

There were no mentions of alcohol having been consumed during pregnancy and being worried in the Post-COVID lockdown time period.

### **Are consuming alcohol during pregnancy, not worried about PAE.**

Some of the thread starters in this category were seeking reassurance from others on Mumsnet in which they were seeking affirmation that consuming alcohol does not make them a bad person or mother:

*'I am going for a nice meal to celebrate, but I am worried that people will judge me if I have a drink.'*

All of the thread starts in this category appear in the first and second time periods.

## Consumed alcohol by mistake

This category covers those who have consumed alcohol by mistake in situations such as eating a dessert, or consuming non-alcoholic beers, or being served alcohol without realising and being worried about that:

*'I went to the pub with my friends and ordered a non-alcohol option but after drinking most of it I realised that it was alcohol! Will I be ok? Freaking out!'*

There was also a worry that using other products containing alcohol, for example, mouthwash or hand sanitiser, could also have harmed their baby:

*'I have been using mouthwash throughout my whole pregnancy but it has alcohol in it, what have I done? So scared right now!'*

The highest percentage of thread starts in this category occurred in the Post-COVID Lockdown period.

## It is hard not to consume alcohol during pregnancy

Although a smaller category, this category expressed a sadness or emptiness about having to give up alcohol during the pregnancy. Some suggest that this could be a reflection of the life changes that come with having a child and also feeling left out from social situations:

*'I feel sad about not drinking, or maybe it's about my life changing so much with this new baby on its way, am I the only one with these thoughts?'*

The proportion of this category remained stable during the different time periods.



## Discussion

### Principal results

This study sought to explore the topics relating to alcohol in pregnancy, that are raised on an online parenting forum. Moreover, it sought to explore if these topics had changed in content or volume, both after the change of CMO guidelines in 2016 (changing from advising women to abstain for the first trimester and not drinking more than 1-2 units per week to advising complete abstinence if pregnant, or planning a pregnancy) and after the first COVID-19 lockdown in 2020. Through our content analysis of thread starts on Mumsnet, the UK's leading parenting online forum, it was possible to evaluate what topics were commonly raised in regard to alcohol in pregnancy and if and how these topics had changed over time. Important to note is that the time periods span 16, 4 and 2 years, respectively.

Much of the discussion on Mumsnet was around seeking reassurance and wanting to know if others had been in the same situation. For example, thread starters seeking reassurance that they have not harmed their babies by consuming alcohol before knowing about the pregnancy and asking if others had experienced something similar. It was evident that thread starters were not only seeking reassurance but also wanting to obtain information about alcohol in pregnancy both by asking for guidelines or wanting to know if such a thing as a safe limit exists. This brings up the risk of inaccurate information being shared amongst posters. According to WHO [44], too much information and false information could lead to worsening outcomes in terms of health. Further research is required to investigate if this is true for the information sharing on Mumsnet. In many categories, the results showed how thread starters were confused or worried about safe limits, including whether it is safe or not to consume products that may contain traces of alcohol. This is in line with previous research,

showing that the concept of abstinence is not always clear, with confusion about, for example, if food containing alcohol is safe or if it is acceptable to consume non-alcohol options during pregnancy [20].

It was evident that there was a concern amongst the thread posters about having consumed alcohol before they found out that they were pregnant and that this caused stress and anxiety for some. There is no known safe limit for alcohol consumption during pregnancy. Some studies have shown that there was no relationship between consuming alcohol during the early days of pregnancy and outcomes such as low birth weight and spontaneous preterm birth [45], while others have suggested that alcohol consumption during the first trimester of pregnancy can increase the risk of spontaneous abortion [46, 47]. Many of the thread posters had discussed the consumption of alcohol with their midwives or other professionals, but the concern remained. Previous research has shown that there is a lack of a standardised approach to how midwives approach the topic of alcohol consumption during pregnancy [16]. This could indicate that there is a need for professionals to give accurate information and at the same time being able to reduce any anxiety and stress that alcohol consumption could have caused. It has been suggested that midwives should be offered training in communication skills and in delivering alcohol interventions [16]. Reducing stress during pregnancy is especially important since it has been reported that stress can lead to outcomes such as low birth weight [48] and obesity in the offspring [49]. Research has shown that there exists a social pressure to consume alcohol, which causes a challenge when someone wishes to conceal their pregnancy [50]. This was also prevalent in the discussions on Mumsnet, where thread starters wanted advice on hiding that they were not consuming alcohol due to their pregnancy.

Our study demonstrated that the proportion of posts being brought up regarding alcohol consumption has changed over time. These temporal changes were most evident in the categories ‘Research, guidelines, and official information about alcohol in pregnancy’, as well as the two categories addressing consuming alcohol during pregnancy. The former contains topics such as not believing in the research carried out about alcohol in pregnancy or sharing information on how small amounts of alcohol are not harmful, with these all disappearing in the later time periods. One topic that appeared in all time periods was how confusing or conflicting the research or guidelines on alcohol in pregnancy were. This is in line with previous research, showing how conflicting advice can cause stress in pregnancy and the need for reliable information [51]. Those who posted threads on Mumsnet were also expressing how the guidelines and research were not clear, and quotes illustrated that some felt that no ‘real people’ could follow all the rules. This is in line with previous research about how women feel like there are too many guidelines [20] and how the abstinence message can be perceived as policing women [22]. Interestingly, posts asking for the guidelines or asking for more information were only observed before the introduction of the updated CMOs' low-risk drinking guidance on alcohol in pregnancy [17]. This may indicate that the updated CMO guidance has made the recommendation to avoid alcohol in during pregnancy clearer and easier to understand. The latter categories, addressing consuming alcohol during pregnancy, show that expressing that one is consuming alcohol during pregnancy online was more common before the introduction of the revised CMOs’ guidance than in the later time periods. This could indicate that the actual prevalence of alcohol consumption during pregnancy has gone down. However, research suggests that the prevalence still remains high [8]. It could also indicate that it has become less socially acceptable to disclose alcohol use during pregnancy. Furthermore, no thread started during the COVID-19 period expressed any alcohol consumption due to the lockdown. This is in line with previous research showing that

reported rates of alcohol consumption during pregnancy were lower post-pandemic than before the pandemic [29].

Moreover, many of the thread starts in the category 'Asking for advice on whether it is safe to consume alcohol or on safe limits'; during the first time period, mentioned the timing of the pregnancy, which could have been a result from the change in guidelines. The change in guidelines was that the previous NICE guidelines suggested that pregnant women should avoid alcohol in the first three months of pregnancy and if they chose to drink, they should not consume more than 1-2 units twice per week [16]. However, a 2020 survey by the National Organisation for FASD showed that awareness of the current CMOs guidance that the safest approach is not to consume alcohol at all if pregnant or if you could become pregnant remains low among some population subgroups, particularly young people (aged 18-25 years) [52]. This shows how important it is to communicate research in a way that is acceptable, understandable, and accessible for all. Our study showed that some Mumsnet users missed drinking alcohol while pregnant and wanted to know if others agreed that a glass of alcohol was acceptable, particularly on special occasions such as weddings or birthday celebrations. It was also evident that some of the forum users were trying to minimise the potential risks of consuming alcohol by referring to how previous generations had been consuming alcohol without clear adverse outcomes or how other countries have less strict guidelines. This was most apparent in content posted before the introduction of updated CMO low-risk drinking guidance in 2016.

The categories identified in this study highlight the importance of providing reliable and trustworthy information about alcohol in pregnancy. This is relevant for scholars, professionals, and organisations, such as midwives and the Public Health of England. The study highlights the interactive nature of online forums, demonstrating an endeavour to

establish social connections and seek peer reassurance. For future research, it is essential to investigate how these threads starts are replied to and how people manage their worries through interactions with others. It will also be important to investigate how conversations on social media can be used to identify knowledge gaps and preferences for the nature and format of prenatal health messaging and to explore the measurable impact of key public health and policy events on outcomes related to prenatal alcohol exposure.

## Strengths and Limitations

This study retrieved all available data related to alcohol in pregnancy from the largest dedicated online parenting forum in the United Kingdom. Moreover, to our knowledge, it is the first study to provide insight into the nature of online conversations on alcohol use in the United Kingdom and how the trends in these have changed over time in relation to key policy and public health events. Moreover, these findings are relevant to policymakers. This includes the current 2023 consultation [53] on No or Low alcohol products. The consultation intended to set out if the ABV that can be deemed 'no or low-alcohol products' should be increased. The findings in this study suggest that increasing the threshold for ABV from 0.05% to 0.5% could exacerbate concerns among pregnant people who report having mistakenly consumed alcohol and also increase the uncertainties about the safe limits of these products. In addition, time trends in conversations are significant as they reveal uncertainties amongst pregnant people regarding topics such as the current CMO guidance and can offer valuable priorities to inform improved communication, reach, and preference for prenatal health information.

The choice to specifically search for mentions of 'alcohol' within the 'Pregnancy' topic on Mumsnet was made to ensure that only posts relevant to alcohol consumption during

pregnancy were included, thereby excluding discussions unrelated to this specific context (such as threads discussing alcohol consumption while breastfeeding). This may have resulted in some critical thread starts being excluded. In 2021, it was reported that around 20,000 posts were created daily on Mumsnet [54]. Given the number of daily posts, collecting all of them and manually going through them was not feasible. Furthermore, since not everyone has the same access to the digital space, the voices heard on Mumsnet might not be representative of the UK, which could have led to some potential bias in the data. This is especially true since the demographics of Mumsnet have previously been described as middle-class and university-educated [33], thus omitting other socio-economic groups from this analysis. It is important to note that previous research has shown that one predictor of alcohol consumption during pregnancy is higher education [55], which could limit the relevance of the findings to some subgroups of the general population. Previous research has also shown that social media use is more common among those in a higher socioeconomic group [56].

## Conclusion

This study provides insight into how mothers and expecting mothers use Mumsnet to raise topics that are important to them regarding alcohol in pregnancy and illustrates how these topics have changed since the start of Mumsnet. The findings suggest that mothers and expecting mothers use Mumsnet primarily to seek reassurance and information from others in similar situations. Our findings also suggest that the topics and the proportion of posts relating to each topic have changed over time, with results indicating less confusion about the current guidelines and research about alcohol in pregnancy in more recent times. The study also provides insight into the worries and anxiety that pregnant women report experiencing if they had consumed alcohol before finding out about the pregnancy and the importance of

seeking advice and reassurance from peers on how to manage that worry. These findings suggest that innovative interventions, such as peer-support initiatives, may offer a promising approach to prenatal alcohol prevention, warranting further investigation.

## **Declarations**

## **Ethics Approval**

Ethics approval was obtained from the School of Psychological Science Research Ethics Committee at the University of Bristol in August 2023, ethics approval code 14455.

## **Consent for publication**

Not applicable

## **Availability of data and materials**

Due to the site contents are copyright of Mumsnet, publishing a dataset collecting posts/threads is not possible (see 'Copyright', <https://www.mumsnet.com/i/terms-of-use>). Instead, the summary statistics/analysis results will be published via data.bris.

## **Competing interests**

The study investigators have no known conflicts of interest to declare.

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## **Authors' contributions**

NFF designed the study with JB, AA, LZ and CM all contributing to the development of it. NFF and YM web scraped the data. NFF coded and analysed the data and reviewed it together with JB, AA, LZ and CM. NFF wrote the draft for the paper with JB, AA, LZ and CM all providing critical feedback and contributed to reviewing and editing.

## **Acknowledgment**

Not applicable.

## **List of abbreviations**

ABV Alcohol By Volume

FASD Fetal Alcohol Spectrum Disorders

FAS Fetal Alcohol Syndrome

CMO Chief Medical Officer

NHS National Health Service

NICE National Institute for Health and Care Excellence

NoLo No- or Low Alcohol

PAE Prenatal Alcohol Exposure



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