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**Citation for published version:**

Vicario, S, Buykx, P, Peacock, M, Hardie, I, De Freitas, L, Bissell, P & Meier, P 2023, 'Women's alcohol consumption in the early parenting period and influences of socio-demographic and domestic circumstances: A scoping review and narrative synthesis', *Drug and alcohol review*.  
<https://doi.org/10.1111/dar.13643>

**Digital Object Identifier (DOI):**

[10.1111/dar.13643](https://doi.org/10.1111/dar.13643)

**Link:**

[Link to publication record in Edinburgh Research Explorer](#)

**Document Version:**

Publisher's PDF, also known as Version of record

**Published In:**

Drug and alcohol review

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# Women's alcohol consumption in the early parenting period and influences of socio-demographic and domestic circumstances: A scoping review and narrative synthesis

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## Abstract

**Issues:** Numerous studies have explored alcohol consumption in pregnancy, but less is known about women's drinking in the early parenting period (EPP, 0–5 years after childbirth). We synthesise research related to three questions: (i) How are women's drinking patterns and trajectories associated with socio-demographic and domestic circumstances?; (ii) What theoretical approaches are used to explain changes in consumption?; (iii) What meanings have been given to mothers' drinking?

**Approach:** Three databases (Ovid-MEDLINE, Ovid-PsycINFO and CINAHL) were systematically searched. Citation tracking was conducted in Web of Science Citation Index and Google Scholar. Eligible papers explored mothers' alcohol consumption during the EPP, focusing on general population rather than clinical samples. Studies were critically appraised and their characteristics, methods and key findings extracted. Thematic narrative synthesis of findings was conducted.

**Key Findings:** Fourteen quantitative and six qualitative studies were identified. The (sub)samples ranged from  $n = 77,137$  to  $n = 21$  women. Mothers' consumption levels were associated with older age, being White and employed, not being in a partnered relationship, higher education and income. Three theoretical approaches were employed to explain these consumption differences: social role, role deprivation, social practice theories. By drinking alcohol, mothers expressed numerous aspects of their identity (e.g., autonomous women and responsible mothers).

**Implications and Conclusion:** Alcohol-related interventions and policies should consider demographic and cultural transformations of motherhood (e.g., delayed motherhood, changes in family structures). Mothers' drinking should be contextualised carefully in relation to socio-economic circumstances and gender inequalities in unpaid labour. The focus on peer-reviewed academic papers in English language may limit the evidence.

## KEYWORDS

alcohol, gender, mothers, parental drinking, scoping review

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## 1 | INTRODUCTION

Women's drinking patterns in relation to reproductive health and the parental role have been the subject of considerable research, often focused on the potentially detrimental consequences of alcohol on foetal and infant development [1]. Following growing evidence on the teratogenic effects of prenatal alcohol exposure [2, 3], numerous studies have investigated the clinical, epidemiological and preventive aspects of alcohol consumption during pregnancy [4–6]. However, little is known about women's drinking patterns in the early parenting period (EPP), defined as the first 5 years after childbirth [7]. This may be considered a transitional life phase, which may lead to a change in alcohol consumption patterns and meanings. As motherhood is a commonly experienced transition, unlike previous reviews [8–11], this review analyses maternal drinking in the EPP without focusing on adverse alcohol consumption outcomes, or on special subgroups of consumers (e.g., individuals selected into the study because of heavy alcohol consumption, alcohol dependence or alcohol use disorders, adolescent mothers, women suffering from depression, clinical samples). It considers, instead, the variety of drinking styles that can be observed in the wider population of parents.

Reviewing the evidence on women's alcohol consumption in the EPP and the influencing factors is important in understanding how ongoing demographic and cultural transformations regarding motherhood are affecting women's drinking. These transformations include the trend towards delayed motherhood [12], the tendency to have fewer children [13] and the social polarisation of motherhood (i.e., the exacerbation of inequalities between socio-economically advantaged and disadvantaged mothers [14, 15]).

In addition, over the last decades, mothers have become increasingly involved in the labour force of Western countries [16]. However, the greater female participation to the labour market and the development of work–family life balance policies have not been accompanied by a significant redistribution of caring and domestic responsibilities between women and men [16, 17]. The extent of this global gender gap has become evident during the coronavirus disease 2019 (COVID-19) pandemic, and its associated increase in women's alcohol consumption observed in some industrialised countries [18, 19]. In light of this, reviewing how the connections amongst mothers' drinking, structural and contextual factors have been theorised is of major importance.

Finally, the EPP is a biographical phase characterised by a rearrangement of daily routines and, potentially, by ambivalent feelings, conflicts around relationships and identities, emotional rewards and experience of physical

and cognitive strain [20, 21]. Motherhood is surrounded by expectations of morality and respectability stemming from gender constructions, which permeate women's lived experience of health, including alcohol consumption [22]. However, the normalisation of women's drinking in industrialised countries and the differences in mothering practices within and between cultures and over time, may influence the meanings mothers attach to their alcohol use [14, 23]. This aspect deserves attention because it is a key driver of consumption [24].

This review aims to synthesise the existing literature regarding women's alcohol consumption patterns in the EPP, focusing on three areas: (i) changes in alcohol consumption patterns occurring with motherhood and the associated socio-demographic and domestic factors; (ii) theoretical perspectives employed to explain such changes; and (iii) lived experience of motherhood and its influence on the meanings attributed to drinking. In addition, practical and theoretical implications of the findings and recommendations for future research are discussed.

## 2 | METHODS

A scoping review and narrative synthesis were conducted [25, 26] (protocol available at: <https://doi.org/10.6084/m9.figshare.22004639.v2>). This approach was considered suitable as the review aimed to assess literature size and nature, and explore patterns and relationships across studies with heterogeneous designs. A systematised literature search and narrative synthesis allowed incorporating all these elements [27]. The reporting was informed by the PRISMA checklist for scoping reviews [28].

### 2.1 | Search strategy, inclusion and exclusion criteria

The search strategy was developed together with an information specialist at the lead authors' institution. A preliminary scoping search was conducted to identify keywords referred to three key concepts: (i) alcohol consumption; (ii) maternal transition to parenthood; and (iii) EPP. An initial search was conducted to identify the most appropriate databases and evaluate the type and amount of information retrieved. The search strategy was progressively refined and, in line with the review questions, papers containing key words associated with problem drinking, illicit drug use, breastfeeding and adverse children's outcomes were excluded. Ovid-MEDLINE, Ovid-PsycINFO and CINAHL databases were systematically searched from the earliest dates available until 1 January 2022. The three databases were selected as they

cover international literature regarding a broad range of health-related sciences, including epidemiology, sociology, psychology and other social sciences. Citation tracking was conducted in the Web of Science Citation Index and Google Scholar. As the review was not focused on the clinical and medical aspects of consumption the database EMBASE, initially considered, was omitted after the preliminary searches stage, as it includes studies from biomedical sciences only. Reference lists of the included papers were also reviewed. Subsequently, the search strategy was refined. For example, the words 'mom' or 'mum' were not included as it was unlikely that these colloquial/informal terms would appear on their own without at least one of our included more formal motherhood or parenthood terms also being mentioned in the abstract, a section where a formal language tends to be used. In line with the research questions, papers containing key words associated with heavy drinking, alcohol dependence, illicit drug use, breastfeeding and adverse children's outcomes were excluded. The final search is presented in Appendix A (Tables A1–A3). Papers employing quantitative and qualitative methods were included if they satisfied the criteria listed in Table 1.

## 2.2 | Screening, data extraction, quality appraisal

Search results were downloaded into a reference management software, and duplicates were removed electronically

and manually. The lead author (Serena Vicario) first screened all citations by title and abstract, excluding clearly irrelevant papers. All remaining full-text articles were accessible through the University accounts of the authors, except for one item, a book obtained with the help of University Library Services. At the stage of eligibility assessment, a selection of 12 papers was screened by three reviewers (Serena Vicario, Loren De Freitas and Penny Buykx) independently to test the proposed inclusion and exclusion criteria and agree the adopted approach. Serena Vicario then read the full text of all remaining papers to determine whether they met the inclusion criteria and reasons for exclusion were recorded. A hierarchy-type exclusion system was employed. At first, papers that were irrelevant were excluded. The remaining papers were checked for sample eligibility (children aged 0–5), then topic focus (e.g., considers maternal and social roles), then alcohol consumption focus. At each stage, those not meeting the eligibility criteria were excluded from further consideration. A 10% random sample of full-text papers was independently double-screened by Loren De Freitas and Penny Buykx with no discrepancies. Two papers for which eligibility was less straightforward were discussed by the team, finally opting for their inclusion. Killingsworth [29] was included because the fieldwork was conducted in a playgroup for pre-school children, from which we could infer that children were in the eligible age range. For Jackson et al. [30], the reviewers decided to contact the author and ascertained that the

**TABLE 1** Inclusion and exclusion criteria.

	Inclusion criteria	Exclusion criteria
Sample	<ul style="list-style-type: none"> <li>Mothers aged 18+ years at the time of the data collection or during most of the follow-up.</li> <li>If both mothers and fathers are included, then, data on mothers must be presented separately.</li> <li>General population samples.</li> <li>Sample primarily composed of participants drinking below the recommended guidelines. Studies including participants drinking above the guidelines will be included if the focus is not limited to problematic drinking and includes subsamples of participants.</li> </ul>	<ul style="list-style-type: none"> <li>Mothers under the age of 18 years at the time of the data collection or during most of the follow-up.</li> <li>Studies where data related to mothers and fathers are not analysed separately.</li> <li>Sampling strategy focused on special subsets of consumers (e.g., individuals with heavy alcohol consumption, alcohol dependence or alcohol use disorders, adolescent mothers, women suffering from depression, clinical samples and/or consumers of illegal psychoactive substances, etc.).</li> </ul>
Focus	Patterns and/or meanings of women's alcohol consumption 0–5 years after giving birth	<ul style="list-style-type: none"> <li>Different/irrelevant topics (e.g., impact of alcohol on infant development, bio-medical research, effects of parental consumption on children's drinking).</li> <li>Main focus on breastfeeding.</li> </ul>
Alcohol measures	In quantitative papers, use of alcohol consumption measures	In quantitative papers, measures of alcohol consumption absent or unclear
Evidence type	Peer-reviewed, full text and original papers	Position papers, commentaries, editorials, conference abstracts and 'grey' literature
Setting	Any	—
Language	English	Non-English language papers

subsample of women with dependent children was mostly composed of mothers with at least one child 0–5 years.

The lead author extracted data which included: authors, publication year, study setting, focus and design, sample composition, observation period and, where applicable, measures of alcohol consumption (main outcome) and theoretical approaches. In studies with observation periods longer than 5 post-partum years or including mothers of older children, only data regarding the EPP was considered. Following the review questions, three tables displaying relevant data were developed, and the sections of the narrative synthesis circumscribed.

Quantitative papers presented numerous variables associated with alcohol consumption. Following an iterative data extraction process, we focused on associations with women's socio-demographics characteristics and household circumstances, rather than other individual-level variables considered in a limited number of papers, such as 'post-partum depression' [31] or 'health-related lifestyle' [32]. These were each considered in only one or two papers and, thus, did not allow drawing meaningful review-level conclusions related to our review questions. Corresponding authors were contacted to retrieve numerical data presented in graphs but not available in tables or text. An independent reviewer (Iain Hardie) checked the accuracy of all the quantitative data extracted. Two reviewers (Serena Vicario and Marian Peacock) conducted a thematic synthesis of key results from the qualitative papers. As in Thomas and Harden [33], the initial plan was to extract data according to the review questions, but it soon became apparent the risks of ending up with, what the authors have termed, an 'empty synthesis' [33, p. 4]. Hence, the analysis considered all the findings regarding mothers' drinking in the EPP. With the support of an electronic spreadsheet, the first author extracted relevant evidence from findings sections and elaborated initial codes, subsequently refined and aggregated into eight descriptive themes. Codes and descriptive themes were discussed with a second reviewer (Marian Peacock), familiar with the literature, to ensure the correct translation of concepts across studies. Through an inferential process, the descriptive themes were integrated into two more abstract on 'analytical' themes: 'gender identity and mothers' drinking' and 'intersection of class and gender', as the discussion located social class as a specific and distinct topic. Table 6 illustrates how codes evolved into themes.

The methodological quality of the studies was evaluated using the JBI Checklists [34] for Qualitative Research, Analytical Cross-Sectional Studies and Case Series Studies (considered more appropriate than the Cohort Studies checklist, because of the observational and non-comparative designs of the studies). The JBI checklists were deemed appropriate for our purposes of assessing the

trustworthiness, relevance and results of published papers. They can handle the methodological diversity of the included papers better than some other candidate checklists. Three reviewers (Serena Vicario, Loren De Freitas and Iain Hardie) met and discussed how to use the checklist consistently, to ensure reliable coding. Each paper was assessed by two independent reviewers (Serena Vicario and Loren De Freitas or Iain Hardie). Through the quality appraisal, possible study biases and heterogeneous results were examined in light of assumptions of statistical models, sample representativeness, study settings and limitations. During the appraisal there was a high level of agreement between the reviewers (>90%). Discordant opinions were solved through consultation and identifying relevant statements or data in the papers validating the checklist item considered.

### 3 | RESULTS

The included studies are first described, and then the three thematic areas presented: (i) women's drinking patterns and trajectories in the EPP and associations with socio-demographic and domestic circumstances; (ii) theoretical approaches employed; and (iii) qualitative studies and meanings of mothers' drinking.

#### 3.1 | Description of included studies

The electronic search retrieved 1999 records. After the removal of duplicates ( $n = 291$ ) and irrelevant publications ( $n = 1570$ ), 141 full-text papers were reviewed. Of these, 17 met the inclusion criteria. An additional three papers were found through citation searching and reference lists, yielding a total of 20 papers for consideration. The PRISMA flow chart of the study selection [35] is presented in Figure 1.

The characteristics of the included studies are presented in Table 2. The majority of papers were published between 2012–2021 ( $n = 18$ ) and conducted in industrialised countries (USA  $n = 6$ , UK  $n = 7$ , Australia and New Zealand  $n = 5$ , Norway  $n = 1$ , The Netherlands  $n = 1$ ). Quantitative studies ( $n = 14$ ) were primarily informed by secondary analysis of large datasets from prospective birth or pre-birth cohort studies ( $n = 9$ ) or cross-sectional surveys ( $n = 5$ ). Three papers originated from the same study [7, 31, 36]. Qualitative studies ( $n = 6$ ) were based on primary data collected through interviews ( $n = 3$ ), focus groups ( $n = 2$ ) or ethnographic work ( $n = 1$ ).

In quantitative studies, data were drawn from a minimum of 556 up to a maximum of 77,137 women belonging to the general population. Qualitative evidence was

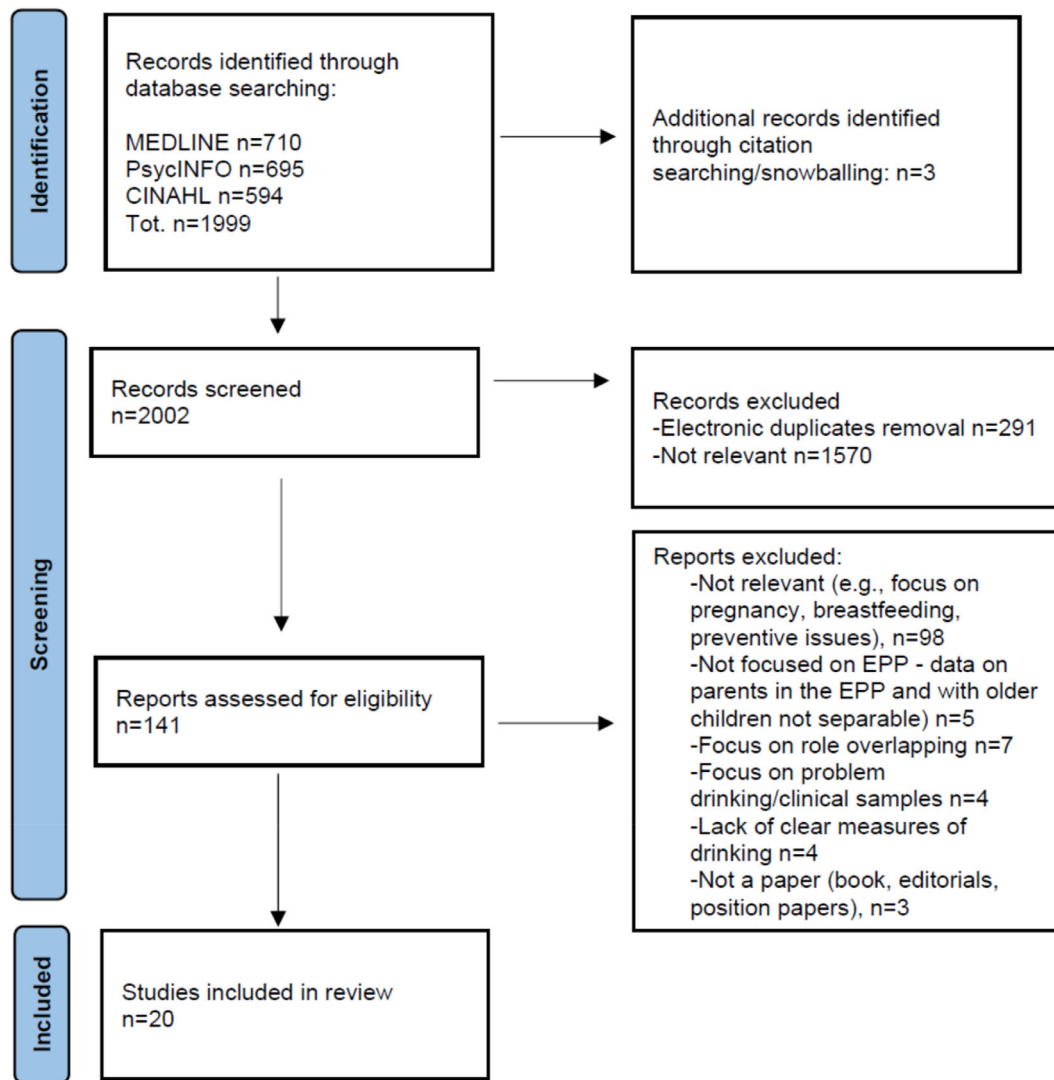


FIGURE 1 PRISMA flowchart. EPP, early parenting period.

based on (sub)samples ranging from 11 up to 21 women (sample size not stated in [29]). Nine studies explicitly referred to samples of biological mothers; five studies, although clearly involving biological mothers, did not explicitly state it; and six studies provided an operational definition of parental status. The observation period spanned from 3 months up to 5–6 years post-partum and was not detailed in two qualitative studies. Two studies referred to the transition to motherhood, when the maternal role was acquired. Quantitative studies employed a range of consumption measures and definitions of alcohol units, thus reducing the comparability of results. The quality of the studies was considered overall good, according to the JBI checklists and within the bounds of their own design limitations (Appendix B, Tables B1–B3).

### 3.2 | Drinking patterns and trajectories in the EPP and associations with socio-demographic and household circumstances

Quantitative studies analysed the relationship between alcohol consumption and heterogeneous variables, depending on the datasets considered. In doing this, they often compared alcohol use between women drinking below and above the recommended guidelines. Results (Tables 3 and 4) may be influenced by possible memory and response bias (including social desirability bias), cultural assumptions regarding drinking (papers mostly set in English-speaking countries) and analysis of data collected more than 10 years before the publication [32, 44].

TABLE 2 Studies characteristics.

Study and setting	Aim	Sample	Postnatal observation period	Study design <sup>a</sup>	Measures of alcohol consumption
Quantitative studies					
Leggat 2021, Australia [37]	Analyse prenatal to postnatal changes in parental drinking and the role of education in those changes	1248 biological mothers aged 15+	3 postpartum years	(B) Labour Dynamics in Australia survey (births between 2002 and 2018)	In the past 12 months: 1. Weekly frequency of consumption (from 'never' to 'everyday'); and 2. Usual quantity consumed (from 1–2 to 13 SD)—SD = 10 g ethanol
Borschmann 2019, Australia and New Zealand [38]	Estimates the effect of the transition to parenthood comparing non-parents, parents with youngest child(ren) <1, 1–4 and ≥5 years	2151 women aged 21–35	5 postpartum years	(A) Three Australasian cohorts. Data collected at ages 21, 24, 30 and 35.	1. Alcohol abuse-dependence; 2. Past week binge drinking (not defined); and 3. No. of SDs in the last drinking occasion—SD: not defined
Bowden 2019, Australia [39]	Compares drinking patterns between: parents/non-parents, mothers/fathers; examines locations of drinking and the impact of children's age on consumption	6212 mothers aged 25–55 (53.6% of the sample)	Extracted data regarding 0–5 postpartum years	(B) Australian National Drug Strategy Household Survey (2013)	Exceeding the guidelines for: 1. Lifetime risk of disease (>2 SD/day); 2. Single occasion risk (≤4 SDs) at least monthly; 3. Single occasion risk (≤4 SDs) at least weekly—SD = 10 g alcohol
Levy 2018, USA [40]	Compares drinking patterns in women living with child(ren) <1 year, not living with child(ren) <1 year, and living with child(ren) 1–18 years	34,077 women aged 18+	1 postpartum year	(B) NESARC, Combination of data from Waves 1 (2001/2002) and 2 (2004/2005).	Past year drinking frequency: 1. Never; 2. At least once a week; 3. At least once a month; 4. Less than once a month. Past year binge drinking (≥ 4 drinks/day for women at least once): 1. Never; 2. At least once a week; 3. At least once a month; 4. Less than once a month—SD: 0.60 oz of ethanol

(Continues)

TABLE 2 (Continued)

Study and setting	Aim	Sample	Postnatal observation period	Study design <sup>a</sup>	Measures of alcohol consumption
Liu 2017, USA [36]	Identifies trajectories of alcohol and cigarettes use in mothers from preconception up to early parenthood	8800 adult biological mothers aged 18+	5–6 postpartum years	(A) Early Childhood Longitudinal Study, representative of US births in 2001. Mothers interviewed at 9 months after birth and followed up at 2, 4 and 5/6 postpartum years.	No. of alcoholic beverages in an average week: no alcohol, <1 drink/week, 1–3 drinks/week, >4 drinks/week. Average no. of cigarettes/day
Matusiewicz 2016, USA [41]	Describes changes in alcohol use occurring with motherhood by comparing mothers and non-mothers (having/not having a child-being pregnant between waves 1/2)	2118 women aged 18–44	3 postpartum years	(B) NESARC. Combination of data from Waves 1 (2001/2002) and 2 (2004/2005).	Past year: 1. No. of drinking days; 2. No. of drinks/occasion 3. Frequency of heavy episodic drinking (4+ drinks/occasion)
Liu 2016, USA [7]	Identifies trajectories of maternal drinking and their social correlates	9100 biological mothers aged 18+	5–6 postpartum years	(A) Early Childhood Longitudinal Study, representative of US births in 2001. Mothers interviewed at 9 months after birth and followed up at 2, 4 and 5/6 postpartum years	Average no. of drinks/week converted in: no alcohol, <1 drink/week, 1–3 drinks/week, 4+ drinks/week
Mellingen 015, Norway [42]	Investigates the relationship between marital status, family size and alcohol use, by comparing: first time and experienced mothers, single and partnered mothers	77,137 biological mothers (mean age 29.6 years)	4 postpartum years	(A) Norwegian mother and Child Cohort Study. Women interviewed at 17 weeks gestation months, after giving birth, and followed up at 6, 18 and 36 postpartum months	Frequency and quantity of consumption (units per occasion at 0–3, 4–6, 18 and 36 months postpartum). The study only analyses report from weekend consumption—SD = 150 ml of pure alcohol
Liu 2015, USA [31]	Analyses drinking patterns in mothers with different ages at childbirth (20–25, 26–35, ≥36 years), identify drinking trajectories by age group and covariates effects	3397 biological mothers aged 20+	3 postpartum years	(A) Fragile Families and Child Wellbeing Study. Mothers interviewed at childbirth and followed up at 1, 3 and 5 postpartum years	In the past years: No alcohol, <4 drinks per occasion, ≥4 drinks per occasion ('binge drinking')

(Continues)



TABLE 2 (Continued)

Study and setting	Aim	Sample	Postnatal observation period	Study design <sup>a</sup>	Measures of alcohol consumption
Tran 2015, Australia [32]	Identifies trajectories of maternal drinking and their social correlates	6597 biological mothers (85% aged 20+)	6 postpartum months	(A) Mater University of Queensland Study of Pregnancy. Participants surveyed at 4 time points from first prenatal visit up to 6 postpartum months	Consumption frequency (never-daily) and quantity/occasion (0–7 standard drinks) combined to identify four groups: 1. Abstainers-little alcohol; 2. Light drinkers (<0.5 glass/day); 3. Modest drinkers (0.5–1 glass/day); 4. Heaviest drinkers (≥1 glass/day)
Baker 2014, UK [43]	Analyses the prevalent drinking patterns of British mothers with children aged 0–3 and the associated factors	15,510 biological mothers (from 14–19 age group to >30 age group at time of first live birth)	3 postpartum years	(A) Millennium Cohort Study (sample of children born in 2000–2001). Combined data from interviews at Waves 1 and 2 (9 postpartum months and 3 postpartum years)	Weekly consumption frequency and quantity. Most common patterns: 1. Infrequent drinking (never/<1/week); 2. Infrequent light drinking (1 unit/day, <1/week); 3. Frequent light drinking (<14 units/week)—SD: 8 g of alcohol
Staff 2014, UK [44]	Examines the association between changes in family social roles and changes in alcohol consumption	7212 mothers tracked from ages 16–50	Transition to motherhood	(A) National Child Development Study (cohort of infants born in 1 week in 1958). Participants interviewed at ages 16, 23, 33, 42, 46 and 50	1. Past week alcohol units; 2. Heavy-daily drinking: ≥2 (for women) units per day in the previous week; 3. Problem drinking (CAGE symptoms) 1 unit: 0.5 pint of beer, small glass of wine, 25 mL spirits
Laborde 2012, USA [45]	Compares drinking patterns in 'new mothers' and 'other women' (living/not living with a child ≤1 and/or not pregnant in the past 5 years). Identify individual characteristics predicting alcohol use	28,537 women aged 18–48	5 postpartum years	(B) California Women's Health Survey. Data combined from years 1997 to 2008	In the past month: 1. Any alcohol use; 2. Frequent drinking (drink ≥4 day); 3. ever binge drinking (drink ≥4/5 drinks ≥1) and 4. Binge 2+ times (≥4/5 drinks ≥2 times)

(Continues)

TABLE 2 (Continued)

Study and setting	Aim	Sample	Postnatal observation period	Study design <sup>a</sup>	Measures of alcohol consumption
Hajema 1998, Netherlands [46]	Evaluates the effects of changes in social roles on weekly alcohol consumption and heavy drinking frequency	556 women aged 16–69	Transition to motherhood	(A) Local prospective cohort study (T1: 1980, T2: 1989)	1. Weekly alcohol units consumed; 2. Heavy drinking: weekly frequency of drinking $\geq 6$ units per occasion—1 Dutch unit: 10 g ethanol
Qualitative studies					
Vicario 2021, UK [47]	Examines meanings and reasons underpinning women's surveillance of their partners' drinking in the EPP	21 biological mothers	3 postpartum years	(C) Biographical narrative interviews. Data collection: 2017–2018	N/A
Vicario 2021a, UK [48]	Analyses the narrative strategies through which mothers present their drinking	21 biological mothers aged 18+	3 postpartum years	(C) Biographical narrative interviews. Data collection: 2017–2018	N/A
Jackson 2018, North-Eastern England, UK [30]	To understand non-dependent female drinking in daily life contexts	26 women aged 24–67 years ( $n = 11$ with dependent children)	Not detailed	(C) Data collection: 2014–2015	N/A
Baker 2017, UK [49]	Explores how mothers from different socio-economic backgrounds perceive their alcohol use	18 advantaged and disadvantaged mothers, from 14 to 19 age group to 30+ age group at first birth	5 postpartum years	(D) No. 4 focus groups. Data collection: not stated	N/A
Emslie 2015, West of Scotland, UK [50]	Explores the role alcohol has in the construction of gender identities in middle-aged women from different backgrounds	34 women aged 30–50 ( $n = 13$ with children <5)	5 postpartum years	(D) No. 11 focus groups. Data collection: not stated	N/A
Killingsworth 2006, Melbourne, Australia [29]	To investigate the role alcohol has in the construction of mothers' identity. Account for the gender and power relationships produced through alcohol consumption	A group of middle-class women (age-ranges not detailed)	Not detailed	(C, E, F) Participant observation and in-depth interviews (2004/2005) Focus on a case study.	N/A

<sup>a</sup>A, Quantitative analysis of data from prospective cohort studies; B, Quantitative analysis of data from cross-sectional survey(s); C, Qualitative analysis of interview data; D, Qualitative analysis of focus group data; E, Ethnography, field work, F, case studies; N/A, not applicable; NESARC, National Epidemiologic Survey of Alcohol; SD, standard drink.

**TABLE 3** Socio-demographic and household factors: associations with alcohol consumption.

Mothers vs. non-mothers	Borschmann 2019 [41]	When compared with mothers with youngest child aged <1, non-mothers were more likely to meet the criteria for alcohol abuse-dependence (fully adjusted RR: 3.5, 95% CI 1.5–7.9, $p < 0.001$ ) and past week binge drinking (RR: 3.0, 95% CI 2.1–4.3, $p < 0.001$ ). The mean number of standard drinks per occasion was 3.8 amongst non-mothers compared with 1.8 amongst mother with youngest child aged <1 year
	Bowden 2019 [42]	Parents less likely than non-parents to exceed drinking guidelines. In the multivariate analysis, mothers of children aged 0–2 less likely than non-mothers to exceeded guidelines for 'lifetime risk of disease or injury' (OR 0.37, $p < 0.001$ ; no difference in fathers vs. non-fathers), 'short-term risk on a monthly basis' (OR 0.50, $p < 0.001$ ) and 'short-term risk on a weekly basis' (OR 0.41, $p < 0.001$ ). Mothers less likely than non-mothers to drink at restaurants/café (43.5%, 95% CI 40.3–46.9 vs. 52.3%, 95% CI 49.7–54.8, $p < 0.001$ ) and at licensed premises (33.0%, 95% CI 29.9–36.3 vs. 45.8%, 95% CI 43.2–48.3, $p < 0.001$ ). No differences for drinking in the home or at a friend's house
	Levy 2018 [43]	Mean daily ethanol intake(oz) lower amongst women living with child(ren) <1 year than amongst women not living with child(ren) <1 year (0.10 vs. 0.18, $p < 0.01$ ). After adjustments for socio-demographic characteristics and clinical correlates, low drinking frequencies decreased amongst women living with a child <1 year, compared with those not living with child(ren) <1 year (AOR 0.40; 95% CI 0.27–0.58, $p < 0.01$ in 'drinking at least once a month'; AOR 0.56, 95% CI 0.40–0.80, $p < 0.01$ in 'drinking less than once a month'). No differences in 'binge drinking'
	Matusiewicz 2016 [44]	Women who became mothers between survey waves reported lower levels of alcohol use across all indicators than women who did not become mothers. Women who became mothers reported 21.7 fewer drinking days between waves compared with a 6.8 increase in days for non-mothers ( $p < 0.001$ ), and 15.0 fewer days of heavy drinking compared with no change for non-mothers ( $p < 0.001$ ). Women who became mothers also reported a reduction of 0.8 drinks per occasion compared with a 0.3 reduction for non-mothers ( $p < 0.001$ ). These results remained statistically significant after adjusting for socio-demographic variables
Maternal age at childbirth	Laborde 2012 [48]	'New mothers' were less likely than 'other women' to drink any alcohol (AOR 0.99, 95% CI 0.71–1.40), drink frequently (AOR 0.19, 95% CI 0.07–0.51), binge drink (AOR 0.30, 95% CI 0.15–0.59), or binge drink 2+ times (AOR 0.16, 95% CI 0.05–0.54)
	Leggat 2021 [40]	During the pre- to postnatal period, increasing age was associated with a decrease in female usual drinking quantity ( $B = -0.04$ , 95% CI 0.06–0.02, $p < 0.01$ ) but an increase in female usual drinking frequency ( $B = 0.06$ , 95% CI 0.04–0.07, $p < 0.01$ )
	Liu 2017 [36]	When compared with mothers aged 26–35, the odds of being in the 'Non-Smokers and Escalating High Probability Drinkers' class were higher amongst mothers aged 36+ (AOR 2.21, $p < 0.01$ ), and lower amongst mothers aged 18–25 (AOR 0.17, $p < 0.01$ ). Meanwhile, the odds of being in the 'Temporary Reduced Smokers and Low Probability drinkers' class were higher amongst mothers aged 18–25 (AOR 2.04, $p < 0.01$ ).
	Liu 2016 [7]	When compared with mothers aged 26–35, those aged 36+ had greater odds of being in the 'Escalating Risk Drinkers' class (AOR 2.18, $p < 0.001$ )
	Liu 2015 [31]	At 1 year postpartum, younger maternal age groups were less likely to drink <4 drinks per occasion (e.g., 22.1% of 20–25 year old mothers vs. 55.1% of mothers aged 36+), and more likely to binge drink (6.8% of 20–25 vs. 2.7% of mothers aged 36+). At 1, 3 and 5 years postpartum, the proportion of binge drinkers was higher in mothers ≥36 years (2.7%, 18.4%, 26.6%) than in those aged 26–35 (3.3%, 5.5%, 9.3%)
	Baker 2014 [46]	When compared with mothers aged 30+ (at first live birth), the odds of 'infrequent drinking' were higher amongst younger age groups (e.g., for 20–24 age group OR 2.40, 95% CI 2.08–2.76)
Ethnicity	Liu 2017 [ ]	When compared with White mothers, Black, Hispanic, Asian and other non-White mothers all had lower odds of being in any of the drinking and smoking classes (AORs from 0.002 to 0.49, $p < 0.01$ )
	Liu 2016 [7]	When compared with White mothers, Black, Hispanic and other non-White mothers had lower odds of being in the 'Escalating Risk Drinkers' and 'Escalating Low Risk Drinkers' (AORs range from 0.26 to 0.57, $p \leq 0.01$ ).

(Continues)

TABLE 3 (Continued)

	Liu 2015 [31]	Being White increased the odds of being in the 'Binge Drinking' class amongst mothers aged 26–35 (AOR 10.18, $p < 0.01$ ) and mothers aged 36+ (AOR 29.80, $p < 0.001$ )
	Laborde 2012 [48]	The difference in any alcohol consumption between new mothers and other women was greater amongst Hispanic women than White women (AOR 0.80, 95% CI 0.64, 1.00).
Income	Liu 2017 [31]	When compared with mothers with a household income below the poverty line, mothers with a household income of 185% or more of the poverty line had greater odds of being in the following drinking and smoking classes: 'Non-Smokers and Moderate Probability Drinkers' (AOR 2.43, $p < 0.01$ ), 'Non-Smokers-Escalating High Probability Drinkers' (AOR 6.92, $p < 0.05$ ) and 'Temporary Reduced Smoking and High Probability Drinking' (AOR 2.25, $p < 0.01$ ). Meanwhile, they had lower odds of being in the 'Heavy Smoking and Declining Probability Drinkers' class (AOR 0.63, $p < 0.05$ )
	Liu 2016 [7]	When compared with mothers with a household income below poverty line, mothers with an income of 185% or more of the poverty line had greater odds of being in the 'Escalating Risk Drinkers' (AOR 3.96, $p < 0.001$ ) and 'Escalating Low Risk Drinkers' classes (AOR 2.57, $p < 0.001$ )
	Liu 2015 [31]	Having a household income of 185% or more of the poverty line increased odds of being in the 'Non-Binge Drinkers' class in mothers 20–25 years (AOR 5.22, $p < 0.001$ ) and odds of being in the 'Binge Drinkers' class in mothers 26–35 (AOR 11.73, $p < 0.05$ )
	Tran 2015 [32]	Having a lower income was associated with greater odds of an abstaining pattern (compared with a family income of \$10,400+, the \$10,390 or less; OR 1.34, 95% CI 1.17–1.53, $p < 0.001$ )
	Baker 2014 [46]	When compared with household incomes of £31,200+, lower incomes were associated with greater odds of 'infrequent drinking' and 'infrequent light drinking' (e.g., for those with a household income of £10,400–£20,800 'infrequent drinking' OR 2.98, 95% CI 2.56–3.46)
	Laborde 2012 [48]	In models interacting between drinking frequency and new motherhood (where reference category is other women), there were positive interactions with most higher income cohorts compared with those earning <\$10,000 per year (e.g., AOR 3.23, 95% CI 1.28–8.60 for those earning over \$75,000 per year).
Working status	Liu 2017 [31]	When compared with 'not employed' mothers, the odds of being in the 'Non-smokers and Moderate Probability Drinkers' class were greater amongst mothers working full-time (AOR 1.51, $p < 0.01$ ) and part-time (AOR 1.55, $p < 0.01$ ). Odds of being in the classes of 'Non-Smokers and Escalating High Probability Drinkers' (AOR 1.69, $p < 0.01$ ), 'Temporary Reduced Smokers and Low Probability Drinkers' (AOR 1.35, $p < 0.05$ ), and 'Temporary Reduced Smokers and High Probability Drinkers' (AOR 1.76, $p < 0.01$ ) were greater amongst part-time working mothers
	Liu 2016 [7]	When compared with 'not employed' mothers, part-time employed mothers had greater odds of being in the 'Escalating Risk Drinkers' class (AOR 1.76, $p < 0.001$ ), whereas full-time employed mothers had greater odds of being in the 'Escalating Low Risk Drinkers' class (AOR 1.48, $p < 0.001$ )
	Liu 2015 [31]	Being employed before/during pregnancy increased the odds of 'Binge Drinkers' class membership in mothers aged 36+ (OR 12.30, 95% CI 1.25–120.95, $p < 0.05$ )
	Baker 2014 [46]	When compared with those who were economically active, the odds of 'infrequent drinking' (OR 1.40, 95% CI 1.30–1.51) and 'infrequent light drinking' (OR 1.55, 95% CI 1.39–1.74) were higher amongst those who were economically inactive
	Laborde 2012 [48]	When compared with those working full-time, new mothers who were self-employed were more likely to drink frequently (AOR 1.79, 95% CI 1.05–3.04, $p < 0.05$ ) and binge drink 2+ times (AOR 2.31, 95% CI 1.01–5.26, $p < 0.05$ ) than other women who were self-employed
Education	Leggat 2021 [40]	During the prenatal to postnatal period, no relationship was found between education and female usual drinking quantity or frequency
	Liu 2017 [31]	(Continues)

TABLE 3 (Continued)

	When compared with mothers with less than a high school degree, mothers with higher levels of education had greater odds of being in the 'Non-smokers and Moderate Probability Drinkers' class (AORs ranging 1.56–2.48, $p < 0.05$ ) and were less likely to be in the 'Heavy Smoking and Declining Probability Drinkers' class (AORs ranging 0.04–0.55, $p < 0.05$ ). Mothers with some college (AOR 0.60, $p < 0.05$ ) or a college/grad school degree (AOR 0.16, $p < 0.01$ ) had lower odds of being in the 'temporary reduction smokers and low probability drinkers' than mothers with less than a high school degree
Liu 2016 [7]	When compared with mothers with less than a high school degree, mothers with higher education had greater odds of being in the 'Escalating Risk Drinkers' class (e.g., AOR 4.52, $p < 0.001$ for mothers with college/grad school education) and in the 'Escalating Low Risk Drinkers' class (e.g., AOR 3.57, $p < 0.001$ for mothers with college/grad school education).
Liu 2015 [31]	Having a college or graduate degree increased the odds of being in the 'Non Binge Drinkers' class in mothers aged 26–35 (AOR = 2.44, $p < 0.05$ ) and aged 36+ (AOR = 7.14, $p < 0.05$ )
Baker 2014 [46]	When compared with mothers leaving education aged 22+, those leaving education at younger ages had greater odds of 'infrequent drinking', and lower odds of 'infrequent light drinking'. For example, for mothers leaving education at 16 and under: OR 1.70 (95% CI 1.41–2.03) in 'infrequent drinking', and OR 0.58 (95% CI 0.45–0.75) in infrequent light drinking.
Laborde 2012 [48]	In models interacting between any drinking and new motherhood (where reference category is other women), there were negative interactions with having more than a high school education compared with having less than ninth grade or some high school (e.g., for college or post grads AOR 0.71, 95% CI 0.51, 0.97)
Leggat 2021 [40]	During the pre- to postnatal period, being in a cohabiting relationship (compared with being married) was associated with increased female usual drinking quantity ( $B = 0.39$ , 95% CI 0.23–0.56, $p < 0.01$ ), but there was no difference with regards to female usual drinking frequency
Liu 2017 [31]	Odds of being in drinking and smoking classes were lower amongst married/cohabiting mothers (AORs from 0.46 to 0.72, $p < 0.05$ ) compared with those not married/cohabiting
Liu 2015 [31]	Being married decreased the odds of being in the 'Non-Binge Drinkers' class amongst mothers aged 20–25 (AOR 0.24, $p < 0.001$ )
Mellingen 2015 [45]	When compared with married/cohabiting mothers, single mothers had a lower frequency of postpartum drinking but consumed more units of alcohol per drinking occasion (Cf. Figure 2)
Baker 2014 [46]	When compared with those who were married, those who were cohabiting and those who were lone parents had greater odds of 'infrequent drinking' and lower odds of 'infrequent light drinking' and 'frequent light drinking'. For example, for lone parents 'infrequent drinking' OR 1.61 (95% CI 1.40–1.85).
Tran 2015 [32]	When compared with being married, being single (OR 1.65, $p < 0.05$ ) and being separated/divorced/widowed (OR 2.38, $p < 0.001$ ) were associated with greater odds of heavy consumption pattern
Laborde 2012 [48]	In models interacting between drinking frequency and new motherhood (where reference category is other women) there were no interactions (at 5% level) with regards to marital status
Leggat 2021 [40]	During the prenatal to postnatal period, no relationship was found between number of children and female usual drinking quantity or frequency
Mellingen 2015 [45]	First-time mothers consumed alcohol less frequently and fewer units per occasions when compared with experienced mothers. At 7–18 postpartum months, 15.9% of first-time mothers had a first drink (compared vs. 21.2% of second child mothers and 23% of third or more child mothers)
Tran 2015 [32]	

(Continues)

TABLE 3 (Continued)

		When compared with having a single study child, having 4+ children was associated with greater odds of an abstaining pattern (OR 1.32, $p < 0.001$ )
Children's age	Baker 2014 [46]	When compared with having three or more children in the household, having one child in the household was associated with greater odds of 'frequent light drinking' (OR 1.34, 95% CI 1.09–1.65)
	Borschmann 2019 [41]	When compared with mothers with youngest child aged <1, mothers with youngest child aged 1–4 were more likely to meet the criteria for alcohol abuse/dependence (RR 1.9, 95% CI 0.8–4.5) and binge drinking (RR 1.6, 95% CI 1.1–2.4). The mean number of standard drinks per occasion was positively correlated with age of youngest child, e.g., it was 1.8 amongst mothers with youngest child aged <1 compared with 7.3 amongst mothers with youngest child aged 5+
	Bowden 2019 [42]	In the multivariate analysis, mothers with youngest child aged 0–2 (vs. non-mothers, see above) less likely to exceed the guidelines for 'increased lifetime risk' and the risk of injury on a single drinking occasion. There was no difference between non-mothers and mothers with youngest child aged 3–5. Most mothers and fathers drank at home (83.4%, 95% CI 80.9–85.7; 87.8%, 95% CI 85.0–90.2). There were no differences in drinking location by age of the youngest child
	Levy 2018 [43]	Mean daily ethanol intake(oz) lower amongst women living with child(ren) <1 year than amongst women living with older children (0.10 vs. 0.16, $p < 0.01$ ). After adjustments for socio-demographic characteristics and clinical correlates, low drinking frequencies decreased amongst women living with a child <1 year, compared with those living with child(ren) 1–18 years (AOR 0.52; 95% CI 0.36–0.75, $p < 0.01$ in 'drinking at least once a month'; AOR 0.66, 95% CI 0.46–0.94, $p < 0.05$ in 'drinking less than once a month'). No differences in binge drinking
	Staff 2014 [47]	Alcohol consumption lower in women living with child(ren) <5 years, compared with those who did not (Est. = $-0.38$ , 95% CI 0.43, 0.32, $p < 0.001$ in past week alcohol units; OR = 0.47, CI 0.36–0.62, $p < 0.001$ in heavy daily drinking; OR 0.66, CI 0.50–0.87, $p < 0.01$ in problem drinking)

Abbreviations: AOR, adjusted odds ratio; CI, confidence interval; OR, odds ratio; RR, risk ratio.

**TABLE 4** Longitudinal patterns of drinking (key findings).

Leggat 2021 [40]	Usual female drinking quantity (Figure 2 in the paper): 2.6 drinks per occasion at 3 years prenatal, 1.5–1.7 drinks per occasions at the potential timing of childbirth, and 2.3 drinks per occasion at 3 years postnatal. Usual female drinking frequency (Figure 4 in the paper): 1.6 drinking occasions per week at 3 years prenatal, 0.8–1.0 drinking occasions per week at the potential timing of childbirth, and 1.2 drinking occasions per week at 3 years postnatal
Liu 2017 [31]	Six classes of alcohol consumption and cigarette smoking identified: <ol style="list-style-type: none"> <li>1. Non-smoker and low probability drinkers (41%)</li> <li>2. Non-smokers and moderate probability drinkers (26%)</li> <li>3. Non-smokers and escalating high probability drinkers (8%)</li> <li>4. Temporary reduced smokers and low probability drinkers (11%)</li> <li>5. Temporary reduction in smoking, stable high probability of drinking (6%)</li> <li>6. Persistent heavy smoking and declining probability drinkers (9%)</li> </ol>
Liu 2016 [7]	Four classes of longitudinal alcohol consumption identified: <ol style="list-style-type: none"> <li>1. Low probability drinkers (50%)</li> <li>2. Escalating risk drinkers (12%)</li> <li>3. Escalating low risk drinkers (27.4%)</li> <li>4. Early parenting quitters (10.2%)</li> </ol>
Liu 2015 [31]	Three longitudinal latent classes of drinking categories identified: <ol style="list-style-type: none"> <li>1. Low-level drinkers (maternal age 20–25: 52.7%, maternal age 26–35: 52.1%, maternal age 36+: 45.9%)</li> <li>2. Non-binge drinkers (maternal age 20–25: 47.3%, maternal age 26–35: 43.2%, maternal age 36+: 32.1%)</li> <li>3. Binge drinkers (maternal age 26–35: 4.7%, maternal age 36+: 22%)</li> </ol>
Tran 2015 [32]	Three trajectories identified: <ol style="list-style-type: none"> <li>1. ‘Abstainers/minimal consumption’ trajectory (53.2%)</li> <li>2. ‘Light drinking’ trajectory (39.4%)</li> <li>3. ‘Heavy consumption’ trajectory (7.4%)</li> </ol>
Melling 2015 [45]	The mean frequency of postpartum alcohol consumption increased from 0.20 per week (SD = 0.37) at 0–3 months postpartum to 0.63 per week (SD = 0.77) at 36 months postpartum. Similarly, the mean number of units of alcohol consumed increased from 1.13 per occasion (SD = 1.14) at 0–3 months postpartum to 2.59 per occasion (SD = 1.89) at 36 months postpartum. 44.6% of mothers reported having their first postpartum drink at 0–3 months postpartum, 26.8% at 4–6 months postpartum, 18.6% at 7–18 months postpartum, 4.8% at 19–36 months postpartum, with the remaining 5.2% never drinking within the first 36 months.

### 3.3 | Drinking patterns and trajectories

Five studies analysed the differences between women who are mothers and women who are not mothers. When compared with the latter, the former were less likely to drink and to exceed the alcohol guidelines, and consumed less alcohol per occasion [41–44, 48] (Table 3). For example, in an analysis of 2188 US women, Matusiewicz et al. [44] observed that those who became mothers from survey wave 1 (2001–2002) to 2 (2004–2005) reported a reduction in past year drinking days (–22 vs. +7 in non-mothers), number of heavy drinking days (–15 vs. +0.7) and number of drinks per drinking occasion (–0.8 vs. –0.3). These findings remained substantially unchanged after adjustment for demographic variables and baseline alcohol use. Borschmann et al. [41] considered pooled data from three Australasian cohorts and found that, compared with mothers of children younger than 1 year, women without children were three times more likely to display alcohol abuse and binge drinking (RR 3.5, RR 3.0) and reported consuming twice as many drinks per occasions (3.8 vs. 1.8).

In men, changes in drinking patterns following parenthood were small and non-significant, thus suggesting that the effect of parenthood is mediated by gender [41, 42]. In relation to the drinking locations, Bowden et al. [42] found no difference in the proportion of domestic drinkers between mothers and women without children. The former, however, drank less often in licensed premises (33% vs. 45.8%) and restaurants (43.5% vs. 52.3%), thus avoiding exposure to contexts encouraging consumption.

Six studies analysed the trajectories of women’s drinking in the EPP [7, 31, 32, 40, 45] (Table 4). Two studies [40, 45] observed that women’s consumption per occasion and frequency of drinking declined in pregnancy and resumed shortly after childbirth (in Melling et al. [45], 44% of women reported having their first drink at 0–3 post-partum months), trending towards pre-pregnancy levels over the 3 postnatal years. For example, in Leggat et al. [40], the number of drinks per occasion shifted from 2.6 (3 years prenatal) to 1.5–1.7 (potential timing of childbirth) and 2.3 (3 years postnatal); and the number of drinking occasions per week went from 1.6 to

0.8–1.00 and 1.2. The remaining four studies [7, 31, 32] highlighted the importance of considering longitudinal changes of alcohol consumption in subgroups of women by employing longitudinal latent class analysis and general growth mixture models. Tran et al. [32] surveyed a cohort of Australian women at four time points from the first prenatal visit (time not specified) up to 6 post-partum months, identifying three drinking trajectories. More than half of the participants ( $n = 3509$ ; 53.2%) were 'abstainers/minimal consumption', whereas 39.4% ( $n = 2599$ ) were 'light drinkers' (from 0.37 glasses at baseline to a slight increase, not quantified, in the post-partum period) and 7.4% ( $n = 489$ ) were 'heavy consumers' (from 2.5 glasses per day at baseline to 1.25 at 6 post-partum months). These findings suggest that although women resumed drinking habits in the post-partum period this was mainly low-risk consumption. Three papers from prospective US cohort studies described longitudinal patterns of drinking and smoking up to 6 years post-partum. Liu et al. [7] identified four classes of drinking with 50.3% ( $n = 4577$ ) categorised as 'low probability drinkers' (very low and stable probability of drinking), 10.2% ( $n = 928$ ) as 'early parenting quitters' (likely to quit their consumption after three post-partum years), 27.4% ( $n = 2493$ ) as 'escalating low-risk drinkers' and 12% (1092) 'escalating risk drinkers' (0.9 probability of consuming from  $<1$  up to  $\geq 4$  drinks per week over the study period). Although these studies analysed correlates or predictors of each trajectory and are intended to inform prevention, the authors note that the expression 'escalating risk drinking', for example, 'does not necessarily signal risky drinking' as judged by drinking guidelines for women [7, p. 383].

### 3.4 | Age at childbirth

Five of six studies suggested that becoming a mother at a later age was associated with riskier consumption patterns in the EPP [7, 31, 40, 46]. Liu et al. [31] analysed past year drinking and binge drinking at 1, 3 and 5 years post-partum in 3400 women aged 20–25, 26–35 and  $>36$  years at childbirth. At 1 year post-partum, prevalence of mothers over 36 years consuming less than four drinks per occasion was more than double than in women aged 20–25 years (55.1% vs. 22.1%). In addition, from 1 to 5 post-partum years, the percentage of 'binge drinkers' increased from 2.7% to 26.6%, nearly three times greater compared with younger mothers aged 26–35 (from 3.3% to 9.3%). In subsequent studies, mothers aged over 36 were more likely to be in the 'escalating risky drinkers' category than those aged 26–35 years [7, 31]. These results are consistent with Baker and Graham

[46], where first-time mothers aged 25–29 and 20–24 showed more often 'infrequent drinking' pattern compared with those over 30 years (odds ratios [OR] 1.70 and 2.40). One study found mixed evidence, as increasing age at birth was associated with a decrease in drinking quantity, but with an increase in usual drinking frequency, from the prenatal period to 3 post-partum years [40].

### 3.5 | Ethnicity

Associations between ethnicity and maternal drinking were analysed in four papers from the United States [7, 31, 48]. Consistent with the epidemiology of alcohol consumption amongst United States ethnic minorities [51], non-White mothers engaged less in drinking compared with White mothers. Black, Hispanic and other non-White new mothers were less likely to drink any alcohol [48], and all had lower odds of being in drinking and smoking classes [7, 31].

### 3.6 | Income, working and education

In six studies, higher household income was positively associated with alcohol consumption and frequency of drinking. Higher income showed positive interactions with 'frequent drinking' in new mothers [48] and was associated with escalating drinking trajectories [7, 31]. For example, in Liu et al. [7], compared with mothers below poverty line, those with household income two times greater than the poverty line were almost four times as likely to be in the escalating risk drinking class (OR 3.96). Conversely, income disadvantage predicted abstaining pattern and was associated with abstention and infrequent, light consumption [32, 46].

Similarly, in five studies, being employed was related to increased odds of drinking [7, 31, 46, 48]. Employed women (including part-time and self-employed) were more likely to drink both at low and risky levels compared with 'stay at home' mothers. However, Liu et al. [30] found that effect of paid labour on mothers' drinking patterns in the EPP varied by age. In mothers over age 36 working before or during pregnancy resulted in a 12 times increased chance of being in the 'binge drinking' class (adjusted odds ratio [AOR] 12.30), whereas in mothers aged 26–35 years the effect of paid work was weaker (AOR 1.02).

The five papers above also analysed the relationship between education and parental consumption, suggesting that educated mothers drank more frequently than those less educated, although not at harmful levels. Laborde and Mair [48] found negative interactions between any



drinking and new mothers having more than a high school education, compared with having less than ninth grade or some high school (e.g., for college or post-grads AOR = 0.71). Additionally, although the three papers authored by Liu et al. [7, 31] showed mixed results, higher education was generally related to low-risk consumption patterns. For example, having a college or graduate degree increased the odds of being in the 'non-binge drinkers' class in mothers aged 26–35 years and > 36 years (AORs 2.44 and 7.14, respectively). Education, however, did not increase the odds of consuming four or more drinks per occasion [31]. These results differ from Leggat et al. [40], who did not find any impact of education on mothers' drinking.

### 3.7 | Marital status

Seven studies analysed the effect of marital status on mothers' drinking, overall finding that partnered mothers were less likely to consume alcohol and drink frequently than those who were single, separated, divorced or widowed [31, 32, 45, 46, 48]. However, Leggat et al. [40] explored the effects of cohabitation and marriage on parental drinking observing that, compared with being married, being in a cohabiting relationship was associated with drinking more (but not more frequently) over the transition to motherhood. This association was explained with reciprocal encouragements to drink between partners in the postnatal period, a phase increasingly organised around the domestic environment. Not being in a relationship increased the odds of risky consumption patterns in the first semester after childbirth, and was associated with greater amounts of alcohol per occasion [32, 45]. Mellingen et al. [45] analysed the changes in Norwegian mothers' drinking patterns up to 4 years post-partum and its association with family structure and size. Single, first-time mothers drank less frequently compared with married or cohabiting mothers but consumed a higher mean number of units per occasion (e.g., at 7–18 months, ~3.4 units, vs. 2.5 cohabiting vs. 2.2 married; estimated from the graph). This effect was less marked with the increasing number of children, and was explained as the result of the reduced opportunities that single mothers had to engage in social activities involving alcohol.

### 3.8 | Number of children

The influence that the number of children have on mothers' drinking was explored in four papers, suggesting that living with a higher number of children is

associated with lower drinking levels. Mothers living with one child at 6 months post-partum had greater odds of being in a 'high consumption trajectory' compared with those with two or more children (OR = 1 vs. OR = 0.59 vs. 0.59; [32]), and were more likely to drink up to 14 units per week compared with those with three or more children (OR = 1.34 vs. 1.00, [50]). However, Mellingen et al. [45] found that first-time mothers resumed alcohol consumption at a lower rate compared with those with multiple children (e.g., at 7–18 post-partum months, 15.9% of first-time mothers had a first drink versus 23% of mothers with three children or more), drank less frequently and consumed fewer units per occasion. In Leggat et al. [40], the number of children had no effects on female drinking over the prenatal to postnatal period. Overall, evidence suggests that first time motherhood has a greater impact on drinking than subsequent child(ren), and that the number of children is a factor regulating parental drinking.

### 3.9 | Child(ren)'s age

The influence of children's age on maternal drinking was examined in four population studies. These studies suggested that changes in drinking patterns may be influenced by recent childbirth, rather than by motherhood. In studies conducted in Australia and the United States, mothers living with children aged <1 year reported lower daily intake, number of drinks per occasion and low-risk drinking frequencies than those living with older children, and showed lower values across indicators of harmful consumption, including alcohol abuse-dependence and 'binge drinking' [41, 43]. For example, in Levy [43], US women living with child(ren) younger than 1 year drank on average one-third less alcohol per day compared with those living with older children (0.10 vs. 0.16 oz/day). Moreover, a longitudinal analysis of data from a British cohort born in 1958 found that residing with children younger than 5 years was associated with a decrease in women's consumption and risky drinking [47]. These results, based on births mostly occurring during the 1980s and 1990s, differ from those in Bowden et al. [42], who analysed data from the 2013 Australian National Drug Survey. Australian mothers with children younger than 2 years were less likely than non-mothers to exceed the guidelines for lifetime and short-term risk of disease or injury, but there was no difference for mothers of children aged 3–5 years. Importantly, these studies did not examine the possible impact of breastfeeding, which might explain low-risk consumption levels in proximity to childbirth. This topic (not the review focus) was considered only in three quantitative studies included in this

TABLE 5 Theoretical approaches.

	Social role theory	Role selection theory	Social practice theories	Sociological analysis of talks	Performativity of gender	Feminist ethics of care	Atheoretical	Not stated
Leggat 2021 [40]							X	
Borschmann 2019 [41]							X	
Bowden 2019 [42]							X	
Levy 2018 [43]							X	
Liu 2017 [31]							X	
Matusiewicz 2016 [44]							X	
Liu 2016 [7]							X	
Mellingen 2015 [45]							X	
Liu 2015 [31]							X	
Tran 2015 [32]							X	
Baker 2014 [46]								
Staff 2014 [47]	X	X						
Laborde 2012 [48]							X	
Hajema 1998 [49]	X	X						
Vicario 2021 [35]			X	X	X			
Vicario 2021 [37]			X		X			
Jackson 2018 [30]			X			X		
Baker 2017 [34]								X
Emslie 2015 [36]			X		X			
Killingsworth 2006 [29]			X		X			

section [7, 31], generally finding that women breastfeeding for 6 or more months were less likely to be in escalating drinking and smoking trajectories.

### 3.10 | Theoretical approaches on the changes in drinking occurring with motherhood

Seven papers have interpreted the changes in drinking occurring with motherhood through three theoretical approaches (Table 5). Since the eligibility criteria excluded papers not related to the EPP and employing additional theories (cf. [46, 52, 53]), this synthesis presents the main frameworks employed, but is not exhaustive of all the frameworks used to interpret parental drinking. Two papers drew from sociological and psychological elaborations on role theories [47, 49]. Several conceptualisations were gathered under the umbrella term 'social role theory' [47, 49], including Gerhardt's work on status, position and situation roles, Yamaguchi and Kandel's [54] 'role incompatibility theory' and Osgood

et al.'s 'routine activities/lifestyle theories' [55]. This posits that tasks and norms connected with the simultaneous enactment of different roles (i.e., being in paid labour or in a partnership) might restrict time and resources previously allocated to alcohol consumption and increase social control on maternal drinking, thus leading to a reduction in drinking occasions and alcohol use. However, as Hajema and Knibbe [49] observed, overlapping roles could also result in higher stress levels arising from competing demands from different life domains, leading mothers to increase their alcohol consumption as a coping strategy ('multiple burden' hypothesis, cf. [52]). Social role theory is presented in opposition to a second approach, the 'role deprivation' or 'role selection' theory, assuming that a less structured daily life may mitigate the regulation of drinking and increase the likelihood of consuming alcohol to deal with the strain stemming from role loss [47, 49].

Finally, social practice theories examine mothers' alcohol consumption as embedded in the flow of daily life, rather than focusing on more stable factors such as social expectations and daily life structure. Social practice

TABLE 6 Meanings of alcohol consumption: coding process and themes.

Initial code	Extract	Refined codes	Descriptive theme	Analytical theme
Acceptability of mothers' drinking	The majority of mothers ... acknowledged that their perceptions of what was acceptable behaviour amongst mothers and fear of disapproval from others influenced their actions- including their alcohol use [34]	Social and self-expectations around mothers' drinking	Expectations regarding motherhood and alcohol consumption	1. Gender identity and mothers' drinking
Adherence to social expectations regarding drinking	On the occasions when alcohol entered the group conversations it was always presented in the context of it being something that they could not, or should not, consume [29]	Adherence to expectations on motherhood and alcohol consumption		
Adherence to social expectations - judgement	These expectations, focussed on control and moderation, represented the criteria through which they evaluated both their conduct and that of their peers [35]	Adherence to expectations on motherhood and alcohol consumption		
Coping with stress	Some mothers ... described using alcohol to cope with stress [34]	Coping with stress and strain from paid and unpaid work	Roles and responsibilities	
Release from responsibilities	Drinking was equated with a release from responsibilities after a hard day at work or juggling paid work and childcare, and presented as having to be fitted around childcare responsibilities [36]	Coping with stress and strain from paid and unpaid work		
Radical change of responsibilities after becoming a mother	Gemma found it frustrating that her husband's priorities did not change as radically as hers, and this was mirrored by her perception of 'unequal' drinking [37]	Inequality in family responsibilities		
Regulation of partners' drinking/risk management	While regulating partners' drinking, participants mobilised cognitive and emotional resources, to support domestic routines and manage possible risks deriving from alcohol [37]	Management of domestic risks connected with alcohol		
Maternal responsibility and risk management	The accounts ... suggested that their caring responsibilities were always a consideration for them in these practices. Most did not drink until their children went to bed, and then they ensured the quantities they drank would not stop them from being able to care for their children [30]	Management of domestic risks connected with alcohol		
Affirmation of personal identity (separate from maternal identity)	Similarly, alcohol enabled mothers to maintain their own identity separate from their other role [34]	Affirmation of personal identity	Identity and resistance to gendered roles	(Continues)

TABLE 6 (Continued)

Initial code	Extract	Refined codes	Descriptive theme	Analytical theme
Affirmation of autonomous identity	Mothers of young children used alcohol to ... construct themselves as autonomous adults [36]	Affirmation of personal identity		
Alcohol as a marker of child-free time	Drinking was constructed as welcome 'freedom' (albeit temporary) from the work of being a mother of young children [36]	Time out' from (un)paid work		
Gender Inequalities and emotional reactions	Drinking appeared a key element of relaxation, symbolising a pause from daily duties [37]	Time out' from (un)paid work		
Coherent sense of self	Drinking was also ... understood as a way of resolving multiple co-existing femininities while keeping a coherent sense of one's self and identity [36]	Resistance through emotional well-being		
Drinking and receiving care	Most of the women described that drinking with friends was an opportunity for 'time out' and for receiving care [30]	Resistance through emotional well-being		
Confirm and resist the ideal-type of motherhood	By drawing on the symbolic power of alcohol, without having to emphasise the performance of drinking, [participants] were able to at once conform to, and resist, dominant, relatively traditional notions of (female) gender and motherhood [29]	Balancing tensions	Narrative presentation of self	
Rationalisation	Mothers who binged at the weekend were able to maintain their position as a 'good' mother by rationalising their behaviour in the context of what others within the same social network did [34]	Narrative strategies		
Othering'	Several participants presented themselves as responsible parents and drinkers by distancing themselves from 'other' styles of consumption that they deemed inappropriate [35]	Narrative strategies		
Young age: association with binge drinking	Age was identified by mothers as important in terms of patterns of alcohol use. Mothers spoke of young age as a key factor for binge drinking [34]	Drinking at a young age	Age and body	
Older age: controlled drinking	Mothers associated drinking little and often with older age groups. They described how this pattern of alcohol use was more controlled in comparison to patterns amongst younger age groups whereby the focus was on the physiological effects of alcohol [34]	Drinking at an older age		

(Continues)

TABLE 6 (Continued)

Initial code	Extract	Refined codes	Descriptive theme	Analytical theme
Transportation across lifecourse (to a 'younger' self)	Consumption of alcohol could be associated not only with 'time out' but also with metaphorical transportation across the lifecourse [36]	Transportation across lifecourse (to a 'younger' self)		
Declaration of adulthood	A bottle of wine on the Friday night and a nice meal would be like a big, big treat ... It would be a kind of like, a declaration of adulthood [36]	Transition to adult time		
Relaxation	'You pour it (wine) and you are telling the story and it's going down your neck ... I know that that first glass quite often will go down quite quickly ... And by the time I've got to the end of the story I've probably got to the end of the first glass ... And the second glass is far more relaxed ... [30]	Bodily sensations		
Home drinking and financial responsibilities	For some participants their circumstances, in particular, child caring responsibilities or financial difficulties, meant they were limited to drinking in their home [30]	Home drinking	Drinking places and times	
Drinking outside the home: acceptability of 'social drinking'	Several mothers commented that they were more likely to drink outside the home and their children more likely to be exposed to pub drinking cultures. Drinking in this type of environment was considered more acceptable by these mothers because it had a 'social' component to it [34]	Drinking outside the home		
Drinking outside home: occasional freedom	Other women described having more freedom to drink outside the home with their partner ... For example, Dawn spoke about going out to drink with her new husband once a fortnight [30]	Drinking outside the home		
Settings and drinking choices	Women discussed consuming different alcoholic drinks according to their mood, the season, the time of day, the price, where they were drinking, their companions and the formality or function of the occasion [36]	Drinking setting and influence of social circumstances		
Wine/beer o' clock	"Six o'clock is kind of like well, the evening's starting ... you can either come home from work and have a drink or sort of feel like the end of Mummy Day, it's coming to its beautiful end! (much laughter) ... I will sometimes be reading stories with a glass in my hand ..." [36]	Wine/beer o' clock		

(Continues)

TABLE 6 (Continued)

Initial code	Extract	Refined codes	Descriptive theme	Analytical theme
Middle class drinking: sophisticated, relaxed (vs. 'getting drunk')	Are you looking for class? I would probably say they were more like you, towards middle class type drinking pattern ... Partly to do with, I guess, it's got an air of kind of being sophisticated, and to relax drinking a glass of wine and having a bit of leisure time, and I guess there's a bit of a cost element in it as well and it's not for the purpose of getting drunk, it's for relaxation, measured as opposed to getting drunk [34]	"Appropriate" drinking in advantaged and disadvantaged SES	Social class and mothers' drinking	2. Intersection of class and gender
Middle class drinking: values and meanings	Alcohol consumption was a symbolic shorthand for equality and independence, for their enlightened (White) 'middle-classness', to which they added more specific contextual content regarding their sought/attained equality and independence (that is, references to pregnancy, children and husbands) [29]	Middle class drinking: knowledge, values, meanings		

Abbreviation: SES, socioeconomic status.

theories propose that maternal drinking is negotiated through the interplay of materials (objects and the body itself), competencies (skills and practical knowledge) and meanings (e.g., personal and collective values; [56]). Practice theories explain the existence of ways of doing that are universally recognised across society and suggest that the social and cultural systems that shape actions can be better understood through the analysis of everyday practices. Studies adopting this framework cast a light on how mothers' drinking and its significance are framed by macro-level factors such as ideas around motherhood and public health messages. In doing this, they employed conceptualisations on the performativity of gender [29, 35–37], the feminist ethics of care [30] and the sociological analysis of talks [35]. These theoretical approaches contribute to understand alcohol drinking in mothers not only as an individual behaviour, but as the result of structural and contextual elements, including labour market organisation and gender constructions.

### 3.11 | Meanings of consumption and experience of motherhood

Six qualitative papers explored the biographical experience of motherhood and its connections with alcohol consumption. Two analytical themes, connecting mothers' drinking with gender identity and social class respectively, were identified (Table 6). The first theme includes seven descriptive subthemes. In the EPP, alcohol consumption in mothers was expected to be extremely limited and often raised issues of morality and respectability, arguably stemming from Western notions of idealised femininity [29, 30, 34–37]. Through their accounts, mothers appeared highly aware that parental (heavy) drinking tend to be socially unacceptable. Participants portrayed their drinking as highly controlled, so that they could fulfil their duties in paid work and informal care, particularly intense in the EPP [29, 30, 34–37]. In this context, alcohol use represented a means to cope with stress and everyday tensions, intensified by an unbalanced gendered division of household labour. In several situations, mothers described exerting acts of informal surveillance and regulation of their partners' drinking [35]. These appeared aligned with traditional female functions of domestic risk management and, simultaneously, as a strategy to negotiate a fairer allocation of household labour, and thus greater equity, between the partners.

Consuming alcohol, however, also symbolised freedom from, and resistance to, the conventional gendered roles. Drinking expressed women's agency and the irreducibility of their identity to the role of staying-at-home mothers and partners [29, 36]. All the papers associated

mothers' alcohol use with temporary respite from domestic duties and aspects of emotional well-being. When consumed at low-risk quantities, alcohol may be seen as part of self-care practices, allowing women to restore themselves and, simultaneously, weave relationships [30]. Thus, drinking appeared as a complex balancing act, through which women brought together fractured and contradictory selves [29, 34, 36]. Ambivalences and tensions underpinning consumption were mirrored by mothers' narrative construction of self because, through their accounts, participants challenged and confirmed the gendered conventions of drinking. However, the analysis showed that participants primarily presented themselves and their drinking as responsible and adherent to public health and social norms regarding alcohol [29, 34–36]. To communicate and affirm a good maternal identity, their accounts include linguistic strategies such as rationalisations, non-confrontational language, omissions and 'othering' [29, 34, 35, 37].

Gender identity is also connected with age-related and bodily aspects, influencing mothers' drinking. Middle-aged mothers associated older age groups with lower and more controlled consumption compared with younger ones, and with different physiological effects (e.g., in terms of alcohol tolerance [34]). Alcohol consumption in mothers with children younger than 5 years appeared as a 'declaration of adulthood', as it occurred in times and places far from children, and a metaphorical return to a carefree life phase [29, 30, 36]. Control and self-regulation of consumption mirrored mothers' awareness of age and gender normative drinking and were experienced through their bodies [29]. Embodied were also feelings of relaxation, pleasure and enjoyment derived from drinking [36].

Becoming a mother entailed a change in drinking venues, not necessarily leading to lower consumption [34]. The choice of drinking in domestic or public environments appeared driven by needs of separation from the family sphere, considerations on acceptability of consuming alcohol in front of children, and the value attributed to the 'social' component of drinking [30, 34]. Drinking settings were also influenced by practical factors, such as childcare availability, financial constraints, drinking opportunities, presence of partners [30, 34]. In the EPP, mothers' construction of gender identity also manifested through the organisation of their drinking times. Alcohol consumption could take place in ritual times (often termed 'wine o' clock' or 'beer o' clock') in which mothers had the first drink of the day, perceived as rewarding after the daily commitments [36]. The first drinking occasions after having children represent a time of re-socialisation, return to a 'normal' self and to a different version of femininity [36]. While drinking

occasions outside the home were often organised and pre-planned based on childcare and family needs, those occurring in daily life used short windows of opportunity that allowed women to carve some 'time out' from traditional female responsibilities [30, 36].

The second analytical theme regards the intersection between mothers' drinking and social class and includes one descriptive subtheme (Table 6). Baker [34] analysed mothers' perceptions of alcohol in nine advantaged and nine disadvantaged mothers of dependent children. Even though results did not clearly delineate the differences between the subgroups, accounts suggested that mothers' drinking locations were influenced by social circumstances and reported their perceptions of middle-class drinking (relaxed, sophisticated, measured, associated with economic capacity). As opposed to 'heavy' consumption, the description delineates the features of normative drinking [34]. Alcohol consumption in middle-class mothers was generally outlined more clearly compared with that of mothers in other socioeconomic groups [29, 34, 35]. Vicario et al. [35] did not focus on the theme of class but observed that participants in professional occupations appeared to be highly aware of consumption guidelines and scientific evidence regarding drinking. In addition, in Killingsworth's middle-class mothers, drinking represented a means to achieve equality with their partners and independence from their children, values connected with their 'enlightened (White) middle-classness' and threatened by motherhood. Qualitative studies highlight that, despite the normalisation of women's drinking observed over the last decades, the notion of respectable, middle-class femininity and the moral aspects characterising motherhood remain salient.

## 4 | DISCUSSION

This review has synthesised studies on mothers' alcohol consumption in the EPP. The narrative synthesis focuses on three main themes: drinking patterns and trajectories and associations with socio-demographic and domestic circumstances, theoretical approaches employed, and lived experience of motherhood and meanings of alcohol use. The studies considered were conducted in high-income countries, and the growing publication number in the last decade suggests an increasing interest in the changes in women's alcohol consumption occurring with motherhood. As this transition entails a marked decrease in drinking, becoming a mother has been described as 'protective' in relation to alcohol use [31, 48]. The magnitude of this effect, however, varied across socio-demographic and domestic circumstances. In this review, older, White, employed, educated and affluent mothers

appeared more likely to show increased and increasing consumption levels and trajectories. Additionally, having a partner and living with young children were generally associated with lower frequency and volume of drinking. However, these results were drawn from studies primarily focused on White and biological mothers and may be not generalisable to other groups of mothers. The variations in alcohol consumption have been interpreted through a variety of theoretical approaches (social role, role deprivation and social practice theories), highlighting the importance of understanding structural and contextual factors underpinning differences in consumption patterns. Qualitative studies have foregrounded the importance of cultural assumptions regarding femininity and motherhood in shaping women's drinking and outlined symbolic and social aspects influencing drinking at the micro level.

Findings on the impact of socio-demographic and domestic circumstances on mothers' alcohol consumption are partly consistent with those of studies designed to identify factors associated with being a problematic drinker. For example, some found that non-White ethnicity and being in 'middle disadvantaged' groups decreased the likelihood of reporting 'risky drinking' [57] and hospital admission with alcohol use disorders in the post-partum period [58]. Being a single mother and becoming divorced were found to be associated with 'risky drinking' [57] and monthly and weekly 'binge' drinking [59]. Differently from our study, being unemployed was found to be related to problem drinking [8, 60]. In addition, younger age at birth predicted trajectories with chronic or increasing levels of risky alcohol use [61, 62], and increased the likelihood of relapsing in alcohol and other substances in the post-partum period [63].

Quantitative studies highlight the importance of distinguishing amongst subpopulations of mothers, and of considering the longitudinal development of drinking patterns. Studies on consumption trajectories found that in the EPP approximately 50% of mothers fell into abstaining or low consumption groups. In general, there are smaller changes in drinking patterns observed in fathers than in mothers upon entering parenthood [41–43], perhaps as the combined result of physical and biographical adaptations and of processes of social negotiation of gender [64]. Qualitative findings cast light on how longstanding models of respectable femininity and intensive motherhood [65] contribute to the perception of mothers' alcohol consumption as a behaviour requiring a continual search for self-legitimation and social legitimation. By describing participants' perceived responsibilities regarding their drinking, their actions of risk management, and high awareness that in the EPP alcohol consumption is expected to be (extremely) regulated, the studies propose a destigmatising view of mothers' drinking.

The results presented suggest that the demographic changes in motherhood may erode the 'maternal advantage' in relation to alcohol [44, p. 204]. These include the trend towards later parenthood occurring from the mid-1970s in industrialised countries, where one in five women now completes the reproductive period without giving birth [12]. This has important implications for the epidemiology of women's drinking, as the effects of motherhood may not manifest, or have a limited impact. As some proposed, the association between mothers' older age and escalating alcohol consumption in the post-natal period could be due to engrained, and thus hard to change, drinking habits [66]. Furthermore, smaller family sizes are becoming more common and the length of time between pregnancies is increasing [13, 67]. Given that evidence suggested that living with a greater number of children was associated with lower consumption levels, and that alcohol use was higher amongst women living with children older than 1 year, the duration of the protective effect of motherhood might become progressively shorter. This review also found that being in a partnered relationship was generally associated with lower drinking quantity and frequency. Nonetheless, the increasing marital instability in Western Countries [68], which has been associated with higher drinking levels [69, 70], may reduce the magnitude of the effect motherhood has on alcohol consumption [40]. Finally, another prominent socio-demographic change in motherhood regards the dyadic co-parenting relationships (e.g., same-sex couples and blended families), potentially leading to a diversification of consumption practices in the EPP. The topic is not discussed by the included papers and deserves further investigation.

Quantitative studies found that being in the workforce has an impact on mothers' alcohol consumption and drinking occasions. However, more evidence and a detailed exploration of this relationship, and of the role played by the concurring household labour, is needed. Across the Organisation for Economic Co-operation and Development countries, 71% of mothers are in full-time or part-time jobs and they often return to work following parental leave [71], however, institutional support for working mothers can be patchy or lacking [17]. Qualitative studies show that the interaction between paid and unpaid labour, particularly intense in the EPP, contributes to the representation of alcohol as a 'quick fix' and a marker of recreational time, ideas increasingly used in the last decade by offline and online communities and alcohol industry [36, 72]. In relation to this, some have argued that messages and discourses normalising alcohol drinking as a strategy to deal with daily pressures are toxic, as they provide a false resistance to the structural inequalities that mothers face in labour market and domestic work [73].



Mothers' double presence in working and domestic spheres is a key topic also in the studies drawing from role theories. From the 1980s, these have explored the effects of social role acquisition on women's drinking, and shed light on how institutional and structural factors may limit alcohol consumption in mothers, or contribute to an overload due to the overlap of paid and unpaid work [52, 74]. The epistemological limit of these studies lies in conceiving roles as fixed and static entities, whose content is rarely discussed [75]. For example, jobs are characterised differently in terms of status, salary, intellectual or physical effort. Thus, they may impact differently on the resources that mothers may mobilise in their daily life, which influence their alcohol consumption [14]. Furthermore, operationalising roles as individual attributes, these studies were not able to account for the cultural dynamics influencing drinking (e.g., orientations towards work–life balance), and did not consider that motherhood is intertwined with other identity aspects which may influence drinking (e.g., being a citizen or a friend [75]).

From a theoretical perspective, more recent studies on parental consumption moved the focus away from individual intake to the contextual elements featuring drinking occasions [51, 76], thus introducing a more complex view of consumption and the shift of theoretical perspective represented by social practice theories. These theories consider mothers' drinking practices in the EPP as sets of actions routinely performed and carrying meanings, and support a granular consideration of how the gendered division of work plays out in mothers' daily life and health behaviours. Despite cross-countries variations, globally women perform a disproportionate amount of household labour [17], with consequences on their alcohol consumption and attitudes towards drinking. For example, in England (where women aged 26–35 and 36–45 do respectively 100% and 60% more household work than men [77]), mothers in the EPP were found to set norms and boundaries around their male partners' drinking [37]. In doing this, they sought to share physical and non-physical tasks of household labour, thus privately addressing power imbalances produced from structural inequalities. Social practice theories were also employed to analyse how inequalities have been exacerbated by another systemic factor, namely the COVID-19 pandemic, which has challenged the understanding of the relationship between working and domestic spheres [78]. Cook et al. [19] observed that, during the pandemic restrictions, in Australian women existing work and family burdens were compounded by new forms of cognitive and emotional work, intensified by an absence of leisure options and the compression of living spaces. This greater stress could lead to an increased frequency of home drinking or changes in consumption patterns, to help cope during this intense

period [19]. The flexibility of social practice theories support accounting for how the structural circumstances deploy into the flux of daily life, thus shaping occasions and significance of mothers' drinking.

Other associations found by the review in quantitative studies are consistent with consumption trends already observed in the general female population in Western countries [79, 80]. These include the higher prevalence of consumption in White women, and in women with higher socio-economic status compared with those of other ethnic origins and from disadvantaged backgrounds. These papers, however, do not provide significant insight on how broader socio-economic inequalities operate at the micro level of the drinking occasions. This is a prominent theme, as a main trend observed from the second post-war period in high-income countries regards the social polarisation of motherhood, reflected by, and emphasised from, the gap in opportunities women have at the labour market entry [14, 15].

These phenomena underlie Waterson's [81] book (not included in the review) analysing alcohol consumption in mothers owning different economic, social and symbolic capitals. Waterson narratively explored alcohol consumption in 30 'professional' and 30 'non-professional' mothers, 'light' and 'heavy' drinkers, recruited in a London antenatal clinic. In line with more recent evidence about the differences in consumption patterns along the socio-economic spectrum [82], the study found that, at similar or lower consumption levels, disadvantaged participants were more inclined to develop alcohol-related harms and illustrated the mechanisms through which this 'alcohol harm paradox' may impact mothers' daily life. The study portrayed women's consumption and daily lives between the 1990s and 2000s and could be updated in light of a range of cultural transformations investing motherhood. These include views on childhood and children (increasingly seen as precious resources), processes of social atomisation affecting support networks, and the expansion of digital technologies [73, 83]. In addition, over the past 20 years, there has been growing evidence concerning alcohol-related risks, and parents have become increasingly aware of their role in supervising and modelling children's drinking and more inclined to promote equal family communications [84]. However, it is not clear how these socio-cultural changes operate on parental drinking along the socio-economic gradient.

This is the first review focusing on women's alcohol consumption in the EPP, and on different typologies of drinkers. The results presented have implications for alcohol-related interventions and policies addressing parental drinking. Interventions should be gender sensitive, embedding the notion that unpaid care work, particularly intense in the EPP, is increasingly recognised as a

social determinant of health [85]. Population-level policies should consider the ongoing changes of motherhood and be assessed in relation to the (un)intended outcomes related to gender. This review has several limitations. Due to resource constraints, published works different from peer-reviewed academic papers were excluded (e.g., grey literature, conference abstracts), articles were searched only for title and abstract only, and a small proportion of papers were screened independently. In addition, the focus on English-language papers may have contributed to finding only studies in high-income country settings. Despite the overall good quality, some studies presented limitations including unclear reporting and risky category definition. Because of the heterogeneous methods employed to assess alcohol consumption, the authors were unable to conduct a meta-analysis, and conducted instead a narrative analysis. Finally, this review does not analyse the relationship between breastfeeding and mothers' alcohol consumption in the EPP, a topic already reviewed [65] and considered by only a few eligible papers [7, 31].

## 5 | CONCLUSION

Factors associated with increasing consumption levels and trajectories in the EPP were older age at birth, being White and employed, having a higher education and household income. Odds of alcohol consumption decreased in mothers with partners and those with younger children. Findings highlight that preventive policies and interventions concerning parental drinking should consider the ongoing demographical and cultural aspects of motherhood. The theoretical lens employed to interpret mothers' drinking and the meanings of consumption highlight the importance of examining structural and contextual circumstances of maternal consumption and stresses the need for a wider discussion on maternal well-being and work-life balance. Future research could productively explore alcohol consumption in older mothers, in mothers with different occupations and socio-economic background, and living in low-income and middle-income countries.

### AUTHOR CONTRIBUTIONS

Each author certifies that their contribution to this work meets the standards of the International Committee of Medical Journal Editors.

### FUNDING INFORMATION

No external funding was received by any authors for this study.

### CONFLICT OF INTEREST STATEMENT

None to declare.

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**How to cite this article:** Vicario S, Buykx P, Peacock M, Hardie I, De Freitas L, Bissell P, et al. Women's alcohol consumption in the early parenting period and influences of socio-demographic and domestic circumstances: A scoping review and narrative synthesis. *Drug Alcohol Rev*. 2023. <https://doi.org/10.1111/dar.13643>

## APPENDIX A: SEARCH STRATEGY

TABLE A1 Medline.

1	((alcohol* adj2 (drink* or intake or consum* or 'use')) or drink* behavio* or drink* habit* or drink* practic*).ti,ab
2	((mother* or maternal or maternity or parent*) adj2 (new or early or role or transition)).ti,ab
3	(postnatal or postpartum or postnatal or post-partum or perinatal or perinatal).ti,ab
4	1 and (2 or 3)
5	exp Substance-Related Disorders/
6	Ethanol/ or exp Fetal Alcohol Spectrum Disorders/ or exp Prenatal Exposure Delayed Effects/
7	4 not (5 or 6)
8	exp animals/ not exp humans/
9	7 not 8
10	limit 9 to english language

TABLE A2 PSYCINFO.

1	((alcohol* adj2 (drink* or intake or consum* or "use")) or drink* behavio* or drink* habit* or drink* practic*).ti,ab
2	((mother* or maternal or maternity or parent*) adj2 (new or early or role or transition)).ti,ab
3	(postnatal or postpartum or postnatal or post-partum or perinatal or perinatal).ti,ab.
4	1 and (2 or 3)
5	exp Drug Rehabilitation/ or exp Drug Abuse/ or exp Alcohol Abuse/ or exp Alcoholism/
6	exp ETHANOL/
7	exp Fetal Alcohol Syndrome/
8	exp Prenatal Development/ or exp Prenatal Exposure/
9	4 not (5 or 6 or 7 or 8)
10	limit 9 to (human and English language)

TABLE A3 CINAHL.

1	TI (alcohol* or drink* or alcohol* consum* or alcohol* intake or alcohol* use or drink* behavio* or drink* habit* or drink* practic*)
2	AB (alcohol* or drink* or alcohol* consum* or alcohol* intake or alcohol* use or drink* behavio* or drink* habit* or drink* practic*)
3	S1 or S2
4	TI (mother* or maternal or maternity or parent*) n3 (new or early or role or transition*)
5	AB (mother* or maternal or maternity or parent*) n3 (new or early or role or transition*)
6	S4 or S5
7	TI postnatal or postpartum or postnatal or postpartum or perinatal or perinatal
8	AB postnatal or postpartum or postnatal or postpartum or perinatal or perinatal
9	S7 or S8
10	S6 or S9
11	S3 AND S10
12	(MM "Alcoholism") OR (MM "Altered Family Process: Alcoholism (NANDA)") OR (MM "Alcoholic Neuropathy") OR (MM "Alcohol Withdrawal Seizures") OR (MM "Alcohol Withdrawal Delirium") OR (MH "Alcohol Rehabilitation Programs+") OR (MH "Ethanol+") OR (MH "Alcohol Amnestic Disorder+") OR (MH "Liver Diseases, Alcoholic+") OR (MM "Liver Cirrhosis, Alcoholic") OR (MH "Amino Alcohols+") OR (MH "Alcoholic Intoxication+") OR (MH "Alcohol Withdrawal Syndrome+") OR (MH "Psychoses, Alcoholic+") OR (MH "Alcohol-induced Disorders, Nervous System)OR (MH "Alcohol-related Disorders+") OR (MH "Substance Use Disorders+") OR (MH "Organic Mental Disorders, Substance-Induced+") OR (MM "Epilepsy, Partial, Focal")
13	(MM "Prenatal Exposure Delayed Effects") OR (MM "Substance Abuse, Perinatal") OR (MM "Prenatal Nutritional Physiology") OR (MM "Delayed Onset") OR (MM "Cytopathogenic Effect, Viral") OR (MM "Fetal Alcohol Syndrome")
14	S11 NOT S12
15	S14 NOT S13
16	S14 NOT S13

## APPENDIX B: QUALITY EVALUATION

TABLE B1 Critical appraisal of case series/cohort studies.

	Borschmann 2019	Liu 2017	Liu 2016	Liu 2015	Tran 2015	Mellingen 2015	Baker 2014	Staff 2014	Hajema, 1998
1. Were there clear criteria for inclusion in the case series?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Was the condition measured in a standard, reliable way for all participants included in the case series?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. Were valid methods used for identification of the condition for all participants included in the case series?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4. Did the case series have consecutive inclusion of participants?	NA	NA	NA	NA	NA	NA	NA	Yes	NA
5. Did the case series have complete inclusion of participants? (Yes if response/retention rate > 50%, ndr)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6. Was there clear reporting of clinical information of the participants?	NA	NA	NA	NA	NA	NA	NA	NA	NA
7. Was there clear reporting of the demographics of the participants in the study?	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Unclear
8. Were the outcomes or follow up results of cases clearly reported?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9. Was there clear reporting of the presenting site(s)/clinic (s) demographic information?	Yes	Unclear	Unclear	Unclear	Unclear	Yes	Yes	Yes	Yes
10. Was statistical analysis appropriate?	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes

**TABLE B2** Critical appraisal of analytical cross-sectional studies.

	<b>Leggat 2021</b>	<b>Bowden 2019</b>	<b>Levy 2018</b>	<b>Matusiewicz 2016</b>	<b>Laborde 2012</b>
1. Were the criteria for inclusion in the sample clearly defined?	Yes	Yes	Yes	Yes	Yes
2. Were the study subjects and the setting described in detail?	Yes	Yes	Yes	Yes	Yes
3. Was the exposure measured in a valid and reliable way?	Yes	Yes	Yes	Yes	Yes
4. Were objective, standard criteria used for measurement of the condition?	Yes	Yes	Yes	Yes	Yes
5. Were confounding factors identified?	Yes	Yes	Yes	Yes	Yes
6. Were strategies to deal with confounding factors stated?	Yes	Yes	Yes	Yes	Yes
7. Were the outcomes measured in a valid and reliable way?	Yes	Yes	Yes	Yes	Yes
8. Was appropriate statistical analysis used?	Yes	Yes	Yes	Yes	Yes

**TABLE B3** Critical appraisal of qualitative studies.

	<b>Vicario 2021</b>	<b>Vicario 2021a</b>	<b>Baker 2017</b>	<b>Jackson 2018</b>	<b>Emslie 2015</b>	<b>Killingsworth 2006</b>
1. Is there congruity between the stated philosophical perspective and the research methodology?	Yes	Yes	Yes	Yes	Yes	Yes
2. Is there congruity between the research methodology and the research question or objectives?	Yes	Yes	Yes	Yes	Yes	Yes
3. Is there congruity between the research methodology and the methods used to collect data?	Yes	Yes	Yes	Yes	Yes	Yes
4. Is there congruity between the research methodology and the representation and analysis of data?	Yes	Yes	Yes	Yes	Yes	Yes
5. Is there congruity between the research methodology and the interpretation of results?	Yes	Yes	Yes	Yes	Yes	Yes
6. Is there a statement locating the researcher culturally or theoretically?	Yes	Yes	Yes	Yes	Yes	Yes
7. Is the influence of the researcher on the research, and vice-versa, addressed?	Yes	Yes	Yes	No	No	Yes
8. Are participants, and their voices, adequately represented?	Yes	Yes	Yes	Yes	Yes	Yes
9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?	Yes	Yes	Yes	Yes	Yes	No
10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?	Yes	Yes	Unclear	Yes	Yes	Yes