Alcohol consumption in pregnancy and its implications for breastfeeding

Abstract

Background: Current advice to women in Ireland is to abstain from alcohol when pregnant or breastfeeding. This study aims to establish whether women embrace this advice when pregnant and if there is a need for additional midwifery-led education in relation to alcohol consumption and breastfeeding.

Methods: A cohort study of 907 women who booked for antenatal care and to give birth in a large maternity hospital in Dublin, was undertaken from 2010–2011. Eligible women completed an interview at the first visit, a postal questionnaire during the third trimester of pregnancy, and were followed-up until the birth and discharge.

Results: During pregnancy women who planned to exclusively breastfeed continued to consume alcohol at a rate similar to those who did not plan to breastfeed (30.2% compared with 27.5%; (OR 1.13; 95% CI; 0.84–1.53). Consuming alcohol was associated with older maternal age, Irish nationality and private health care. Intention to exclusively breastfeed was associated with socioeconomic group, non-Irish nationality and private health care. The findings at follow-up were similar to the first set of results with almost a third of women who consumed alcohol in pregnancy exclusively breastfeeding at the time of hospital discharge; (OR 1.28; 95% CI, 0.95–1.73)

Conclusions: Many women who plan to breastfeed continue to consume alcohol in pregnancy despite national and international guidelines that recommend abstention. There may be opportunities in the antenatal period to influence behavioural change in relation to breastfeeding and alcohol consumption.

Keywords: Alcohol, Breastfeeding, Pregnancy, Antenatal education, Prospective cohort study

Clare Dunney
Research Midwife/Labour ward Midwife
Coombe Women and Infants University Hospital & Trinity College Dublin

Kathryn Muldoon
Assistant Professor of Midwifery, Head of Discipline of Midwifery and Director of Midwifery Programmes
Trinity College Dublin

Deirdre J Murphy
Professor of Obstetrics
Academic Department of Obstetrics and Gynaecology, Coombe Women and Infants University Hospital & Trinity College Dublin

Lifestyle choices before and during pregnancy can have a significant impact on the health and wellbeing of both a woman and her unborn child (O'Keeffe et al, 2013). Women are often advised by health professionals to make positive lifestyle modifications during the peri-conceptional, antenatal and postnatal period. These healthy lifestyle choices are encouraged to optimise infant health outcomes and to enhance the health of the new mother (Tarrant et al, 2011; Murphy et al, 2014). Health promotion is one of a midwife's key roles. As health professionals, midwives are in a powerful position to influence women's lifestyle behaviours and infant feeding decision making during pregnancy. Unfortunately, lifestyle choices such as alcohol consumption are often only addressed at the initial booking visit and at no further time point during pregnancy, despite the implications for breastfeeding.

In Ireland, consuming alcohol is an accepted part of Irish culture and in recent years it has become more acceptable for women, especially younger women to drink heavily and more often (Department of Health and Children (DOHC), 2008a; Alcohol Action Ireland, 2014). Alcohol is considered to be teratogenic to the developing baby and can cause defects to numerous organs including the central nervous system (Albertsen et al, 2004; Eberhart and Harris, 2013). Consuming alcohol during the antenatal period, even in small amounts, is known to have immediate and long-term adverse health outcomes for the developing baby during pregnancy (Henderson et al, 2007; NHS Choices, 2014). Moderate-to-heavy alcohol consumption has been associated with adverse outcomes including miscarriage, premature birth, stillbirth, intrauterine growth restriction (IUGR), behavioural problems and cognitive deficits (Albertsen et al, 2004; Henderson et al, 2007; O'Leary et al, 2009; Mullally et al, 2011; Patra et al, 2011; Murphy et al, 2014; Nykjaer et al, 2014). As a result of such harmful effects, very restrictive recommendations are documented for pregnant women concerning alcohol intake. The advice from the Department of Health and Children in Ireland is that alcohol should be avoided when planning a pregnancy and during pregnancy (DOHC, 2008b).

Pre-pregnancy and antenatal advice to women should include information about the harmful effects of alcoholic beverages on the unborn baby (Patra et al, 2011; Murphy et al, 2013a).

The endorsement of breastfeeding during the antenatal period is another key health promotion challenge for midwives, particularly in Ireland where breastfeeding rates are 49% at the time of discharge from hospital (Begley et al, 2009). Breastfeeding remains the safest and best method for optimising infant growth and health (World Health Organization (WHO), 2011). Breastfeeding has several health benefits for both the baby and mother including lowering the risk of infections and allergies in the infant, delayed menses and faster weight loss for the mother (Kramer and Kakuma, 2012). The negative effects of consuming alcohol in pregnancy have been well documented; however, the effects of alcohol while breastfeeding have not been as extensively investigated and the literature is scarce (Haastrup et al, 2014). More

research is needed about consuming alcohol while breastfeeding (Maloney at al, 2011).

Consuming alcohol during breastfeeding was thought to aid lactation by facilitating the let-down reflex and increase the milk supply; however, there is no scientific evidence to support this (Mennella and Beauchamp, 1991). A review of existing literature found that this idea has been replaced and several adverse effects of consuming alcohol when breastfeeding have been identified. Some of these adverse effects include: an increase in time to milk ejection, a decrease in milk production (Giglia, 2010), impaired motor development, a risk of hypoglycaemia to the baby (Koren, 2002) and duration of lactation may be affected by consuming alcohol while breastfeeding (Giglia et al, 2008). Current recommendations by WHO state that breastfeeding women should restrict or abstain from drinking alcohol (WHO, 2001). The advice from the Irish Government to women who are breastfeeding is consistent with the recommendations for pregnancy; abstention is recommended (DOHC, 2008b; Alcohol Action Ireland, 2009; Health Service Executive, 2013).

This study was carried out as part of a larger study on lifestyle behaviours during pregnancy. The aim of this study was to explore whether women follow current advice in relation to alcohol consumption and breastfeeding intention. The findings hope to provide information on whether there is an unmet need for midwives to provide antenatal education on healthy approaches to breastfeeding in relation to alcohol consumption.

Methods

Sample

This prospective cohort study took place in a large Dublin maternity hospital between November 2010 and December 2011. The hospital booked over 9500 women for antenatal care in 2010. Women were eligible to participate if they had a singleton pregnancy, were aged 18 years or over and understood English. Women were excluded from recruitment into the study for the following reasons—multiple pregnancy, language barrier, illiteracy, late booking or if they knew they would not give birth in the study site. The aim of recruitment was to invite every eligible woman to participate in the study; however, due to resource limitations and the range of settings for booking visits, a pragmatic approach was used by the research staff to recruit from settings that had the greatest numbers of women booking on a given day. An initial sample size of 1000 participants was planned, based on analyses from a previous study of alcohol exposure during pregnancy (Murphy et al, 2013a).

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Current advice to women in Ireland is to abstain from alcohol when pregnant or breastfeeding

Data were collected in three phases. Firstly at the booking visit by a structured interview and secondly, during the third trimester of pregnancy by a self-administered postal questionnaire. The sample size was inflated to 1300 when a lower response rate to the third trimester questionnaire became apparent. Finally, data were collected at the birth and postnatal period up until first hospital discharge.

Ethical approval

The study received research ethics and data protection approval from the Coombe Women and Infants University Hospital's research ethics committee: Study No. 22-2009 and also the approval of the ethics committee of the Faculty of Health Sciences Trinity College Dublin, Ireland.

Recruitment

A list of women booking each day was obtained by the members of the research team. Eligible women were given an information leaflet about the study as they waited for their booking appointment in the antenatal clinic. If they were interested in participating in the study, women made contact with a member of the study team. Consent to participate was discussed and written consent was obtained. To facilitate completion of the recruitment interview women were taken

to a quiet area. This was to encourage women to be honest when answering questions of a sensitive nature. The structured interview took between 5 and 10 minutes on average to complete. When the interview was complete, participants were thanked and reminded that they would be receiving a third trimester postal questionnaire when they reached 28–32 weeks pregnant. The postal address of participants was confirmed at this point. To protect confidentiality, questionnaires were anonymised by allocating each participant a unique study number. To facilitate follow-up corresponding names were stored separately in a locked office with access only by members of the research team. Recruitment continued until the sample size of 1300 was achieved.

Data collection

Information was gathered on lifestyle behaviours during pregnancy including alcohol intake, diet, exercise, smoking, drug use and infant feeding intention. The current study focused on the theme of alcohol consumption and breastfeeding. The interview schedule was developed by the multidisciplinary team. A comprehensive set of questions were devised by the multidisciplinary team, which were adapted from previously validated questionnaires including the Alcohol Use Disorders Identification Test-Consumption (AUDIT C) and Tolerance Annoyance Cut Down Eye Opener (T-ACE) screening tools for alcohol consumption (Bradley et al, 1998). Women were also asked during the first trimester and third trimester how they intended to feed their baby. The questions were designed to enable accurate documentation of alcohol consumption and infant feeding intention following the birth and discharge from hospital. During patient contact women were advised according to the DOHC (2008b) that total abstinence from alcohol consumption is recommended during pregnancy and while breastfeeding.

The third trimester postal questionnaire was sent to participants when they reached 28–32 weeks of pregnancy. The pregnancy status of all recruited women was checked prior to sending the questionnaire. At this stage, 71 women were removed from the cohort due to miscarriage, molar pregnancy, previously unknown multiple pregnancy, intrauterine death and a preference not to participate further. The remaining 1220 eligible women were sent a third trimester questionnaire. To encourage women to return the questionnaire, a prepaid return address envelope was also sent.

One week after sending out the questionnaires, a reminder telephone call was made to the participants and sometimes women arranged to meet a member of the research team while attending antenatal visits in the hospital to return the questionnaire. Follow-up telephone calls were made to approximately 300 women. In total, 907 questionnaires were returned. Women who booked for antenatal care but birthed elsewhere were not included in the final cohort.

The data from the first trimester interview and the third trimester questionnaire were linked to routinely collected hospital records which included: maternal age, marital status, socioeconomic group, nationality, public or privately funded antenatal care, parity, planned pregnancy, gestation at booking, smoking, alcohol use, illicit drug use, referral to a social worker, infant feeding type at birth and discharge from hospital. Maternal age was divided into the following bands: <20 years, 20–24 years, 25–29 years, 30–34 years, 35–39 years and ≥40 years. Socioeconomic groups were classified as professional, manager, employer, home duties, non-manual, manual, unemployed and non-classifiable. Two subgroups were formed for further analysis. The higher socioeconomic group included professionals and non-manual workers, and the lower socioeconomic group comprised all other occupations. Nationality was initially recorded by region. This was further classified as Irish or non-Irish before analysis. Gestation at booking was banded as <12 weeks, 12–20 weeks and >20 weeks. Smokers were defined as women who were current smokers at the time of attendance at their first antenatal visit. Illicit drug users (ever) were defined as women who had ever used illicit drugs.

The information gathered on alcohol consumption during both phases were recorded in units consumed. Participants who completed the recruitment questionnaire were divided into three groups: never drinkers, ex-drinkers and current drinkers. Never drinkers included women who abstain from alcohol all of the time, ex-drinkers women who drink alcohol but abstained during pregnancy, and current drinkers women who were drinking at the time of completion of the recruitment questionnaire. Categories of alcohol units consumed during pregnancy were formed using the following bands: occasional, 0–5 units per week, 6–9 units per week, 10–14 units per week, 15–20 units per week and >20 units per week. Participants who completed the third trimester questionnaire were divided into two groups for binary analysis: current drinker and not current drinker.

Infant feeding intention was coded as exclusive breastfeeding (breast milk only), artificial feeding, mixed feeding (breast milk and artificial feeding),

Table 1. Characteristics of study cohort in relation to the hospital population

	Population at recruitment[i] *n*=1300 (%)	Population at third trimester[ii] *n*=907 (%)	Population at birth[ʃ] *n*=1216 (%)	General hospital population[¥] *n*=6720 (%)
Maternal age at booking				
<20 years	34 (2.6)	19 (2.1)	31 (2.5)	200 (3.0)
20–24 years	161 (12.4)	102 (11.2)	152 (12.5)	776 (11.6)
25–29 years	362 (27.8)	235 (25.9)	336 (27.6)	1527 (22.7)
30–34 years	453 (34.8)	334 (36.8)	427 (35.1)	2322 (34.6)
35–39 years	247 (19.0)	188 (20.7)	232 (19.1)	1592 (23.7)
≥40 years	43 (3.3)	29 (3.2)	38 (3.1)	301 (4.5)
Marital status				
Married	679 (52.2)	505 (55.7)	635 (52.2)	3952 (58.5)
Single	621 (47.8)	402 (44.3)	581 (47.8)	2685 (40.0)
Socioeconomic group				
Professional	341 (26.2)	258 (28.4)	317 (26.1)	2077 (30.9)
Home duties	222 (17.1)	135 (14.9)	206 (16.9)	961 (14.3)
Non-manual	491 (37.8)	369 (40.7)	481 (39.6)	2622 (39.0)
Manual	65 (5.0)	44 (4.9)	46 (3.8)	267 (4.0)
Unemployed	117 (9.0)	50 (5.5)	103 (8.5)	501 (7.5)
Non-classifiable	64 (4.9)	51 (5.6)	63 (5.2)	289 (4.3)
Nationality				
Irish	888 (68.3)	618 (68.1)	839 (69.0)	5510 (82.0)
Non-Irish	412 (31.7)	289 (31.9)	377 (31.0)	1189 (17.7)
Gestation at booking*				
<12 weeks	528 (40.8)	369 (40.7)	493 (40.5)	2666 (39.8)
12–20 weeks	729 (56.3)	523 (57.7)	687 (56.5)	3683 (55.0)
>20 weeks	37 (2.9)	15 (1.7)	36 (3.0)	349 (5.2)
Private Health Care Đ				
Yes	145 (11.2)	122 (13.5)	142 (11.7)	1219 (18.1)
No	1155 (88.8)	785 (86.5)	1074 (88.3)	5499 (81.9)

i Recruitment took place at participants' first antenatal visit to the hospital which usually took place around 12 weeks gestation
ii The third trimester questionnaire was completed by participants from 28 weeks of pregnancy
ʃ Study population at birth includes IUD *n*=7 and neonatal death after the birth *n*=1
¥ Murphy et al (2013a and b) General hospital population February 2010–July 2011
* Missing data for gestation at booking *n*=6
Đ Private Health Care includes semi-private and private care

and undecided. For binary analysis, two groups were formed: exclusive breastfeeding and not exclusive breastfeeding. Infant feeding following the birth and discharge from hospital were categorised in the same manner.

Analysis

A total of 1915 women were invited to participate in the study, of whom 1300 completed the interview at the first hospital visit. Of these, 1216 women gave birth in the hospital and 907 (75%) completed the self-complete third trimester postal questionnaire. Birth and discharge data were available for 1216 women.

The analysis for this study was limited to the 907 mother–infant pairs on whom data were available from pregnancy through to birth. Data analysis was performed using the Statistical Package for Social Sciences (SPSS version 21). Descriptive statistics were used to describe the study cohort

Table 2. Alcohol consumption and infant feeding intention during pregnancy

	At third trimester *n*=907
Alcohol	
Never drinks	179 (19.7)
Ex-drinker	463 (51.0)
Current drinker	265 (29.2)
Infant feeding intention	
Exclusive breastfeeding	580 (63.9)
Artificial feeding	277 (30.5)
Mixed feeding	26 (2.9)
Undecided	24 (2.6)

Table 3. Characteristics of women according to alcohol consumption in pregnancy

	Current drinker *n*=265 (%)	Non-drinker *n*=642 (%)	Odds ratio *n*=642 (%)
Maternal age at booking			
<20 years	2 (0.8)	17 (2.6)	0.41 (0.09-1.85)
20–24 years	21 (7.9)	81 (12.6)	0.91 (0.51-1.61)
25–29 years ∫	52 (19.6)	183 (28.5)	1.00
30–34 years	115 (34.4)	219 (34.1)	1.84 (1.26-2.70)*
35–39 years	67 (25.3)	121 (18.8)	1.94 (1.26-2.99)*
≥ 40 years	8 (3.0)	21 (3.3)	1.34 (0.56-3.20)
Gestation at booking			
<12 weeks	109 (41.1)	260 (40.5)	1.15 (0.35-3.70)
12-20 weeks	152 (57.4)	371 (57.8)	1.12 (0.35-3.59)
>20 weeks ∫	4 (1.5)	11 (1.7)	1.00
Nulliparous	123 (46.4)	296 (46.1)	1.01 (0.76-1.34)
Married status	136 (51.3)	369 (57.5)	0.78 (0.58-1.04)
Higher SE group [i]	192 (72.5)	435 (67.8)	1.25 (0.91-1.71)
Irish nationality	214 (80.8)	404 (62.9)	2.47 (1.75-3.49)*
Private health care	49 (18.5)	73 (11.4)	1.76 (1.19-2.62)*
Unplanned pregnancy	77 (29.1)	211 (32.9)	0.83 (0.61-1.14)
Social work referral	5 (1.9)	17 (2.6)	0.70 (0.25-1.93)
Smoker	42 (15.8)	67 (10.4)	1.81 (1.20-2.73)*
Illicit drug use (ever)	37 (14.0)	51 (7.9)	2.33 (1.56-3.48)*

∫ Reference category
i Higher socioeconomic (SE) group—professional and non-manual vs all others
*P<0.05

at recruitment, in the third trimester and at birth. Descriptive statistics were then used to describe the cohort in relation to alcohol consumption and infant feeding intention. Univariable logistic regression analyses were performed to report associations between alcohol consumption (yes/no) and the sociodemographic characteristics of participants. Similar univariable logistic regression analyses were performed to measure the associations between exclusive breastfeeding intention (yes/no) during pregnancy and the characteristics of the participants. Finally, descriptive statistics and logistic regression analyses were used to describe alcohol consumption in pregnancy among women who intended to exclusively breastfeed (yes/no), and who went on to breastfeed at birth and discharge. Findings are reported using proportions, odds ratios (OR) and 95% confidence intervals (CI).

Results

Descriptive statistics

The characteristics of the study cohort are presented in *Table 1*. The study cohort was comparable to the general hospital population as found in a previous study on alcohol consumption during pregnancy (Mullally et al, 2011), exceptions were a higher proportion of non-Irish participants and lower proportion of private patients. This reflects higher rates of recruitment in the public clinics. The loss of participants at follow-up was largely representative for each category.

During the third trimester, 29% of participants continued to consume alcohol (*Table 2*). The majority of women, 71%, consumed 1–5 units per week, and 14% consumed 6–9 units per week. Six women reported at least one episode of binge drinking during the third trimester. The alcoholic beverages of choice were beer and wine. During the third trimester when asked how they intended to feed their baby, 64% planned to exclusively breastfeed.

The characteristics of the cohort in relation to alcohol consumption during the third trimester of pregnancy are presented in *Table 3*. Compared to non-drinkers, women who consumed alcohol during the third trimester of pregnancy were more likely to be older, age 35–39 years, of Irish nationality, have private health care, smoke cigarettes and have a history of illicit drug use.

The characteristics of women who intended to exclusively breastfeed are presented in *Table 4*. Factors associated with intention during the third trimester to exclusively breastfeed included nulliparity, being married, higher socioeconomic group and having private health care. Younger women, age <20–24, women of Irish nationality, unplanned pregnancy and smokers were less likely to intend to exclusively breastfeed.

The relationship between breastfeeding and alcohol consumption during pregnancy is

Table 4. Characteristics of women according to intention to exclusively breastfeed in pregnancy

	Intends exclusive breastfeeding *n*=580 (%)	Does not intend exclusive breastfeeding *n*=327 (%)	Odds ratio 95% confidence intervals
Maternal age at booking			
<20 years	7 (1.2)	12 (3.7)	0.27 (0.10-0.73)*
20-24 years	41 (7.1)	61 (18.7)	0.32 (0.19-0.52)*
25-29 years ∫	159 (27.4)	76 (23.2)	1.00
30-34 years	234 (40.3)	100 (29.9)	1.11 (0.78-1.60)
35-39 years	121 (20.9)	67 (20.5)	0.86 (0.57-1.29)
≥ 40 years	18 (3.1)	11 (3.4)	0.78 (0.35-1.73)
Gestation at booking			
<12 weeks	225 (38.8)	144 (44.0)	0.56 (0.17-1.81)
12-20 weeks	344 (59.3)	179 (54.7)	0.69 (0.21-2.22)
>20 weeks ∫	11 (1.9)	4 (1.2)	1.00
Nulliparous	294 (50.7)	125 (38.2)	1.66 (1.26-2.18)*
Married status	368 (63.4)	137 (41.9)	2.40 (1.82-3.17)*
Higher SE group i	426 (73.4)	201 (61.5)	1.73 (1.29-2.31)*
Irish nationality	328 (56.6)	290 (88.7)	0.16 (0.11-0.24)*
Private health care	95 (16.4)	27 (8.3)	2.17 (1.38-3.41)*
Unplanned pregnancy	146 (25.2)	142 (43.4)	0.43 (0.32-0.58)*
Social work referral	13 (2.2)	9 (2.8)	0.81 (0.34-1.91)
Smoker	36 (6.2)	73 (22.3)	0.26 (0.17-0.39)*
Illicit drug use (ever)	55 (9.5)	33 (10.1)	1.16 (0.76-1.76)

∫ Reference category
i Higher socioeconomic (SE) group – Professional and non-manual versus all others
* *P*<0.05

Table 5. Characteristics of women according to intention to exclusively breastfeed in pregnancy

	Intends to exclusively breastfeed	Does not intend to exclusively breastfeed	Odds ratio 95% confidence intervals
Consumed alcohol during pregnancy			
Yes *n*=265	175 (30.2)	90 (27.5)	1.13 (0.84-1.53)
No *n*=642	405 (69.8)	237 (72.5)	1.00
	Initiated breastfeeding at birth	**Did not initiate breastfeeding at birth**	**Odds ratio 95% confidence intervals**
Consumed alcohol during pregnancy			
Yes	168 (29.8)	91 (27.8)	1.10 (0.81-1.48)
No	396 (70.2)	236 (72.2)	1.00
	Exclusive breastfeeding at discharge	**Not exclusive breastfeeding at discharge**	**Odds ratio 95% confidence intervals**
Consumed alcohol during pregnancy			
Yes	102 (32.5)	157 (27.2)	1.28 (0.95-1.73)
No	212 (67.5)	420 (72.8)	1.00

presented in *Table 5*. Despite having a positive intention to exclusively breastfeed, almost a third of women were consuming alcohol during the third trimester of pregnancy (30.2% vs 27.5%; OR 1.13 (95% CI 0.84-1.53)). Similar associations were found for women who initiated breastfeeding at birth; OR 1.10 (95% CI 0.81-1.48). Almost a third of women (32.5%) who were exclusively breastfeeding at the time of discharge from hospital were women who consumed alcohol during pregnancy.

Discussion

Current advice to women in Ireland is to abstain from alcohol when pregnant or breastfeeding. This study was designed to address the limited body of knowledge available on alcohol consumption during pregnancy and implications for breastfeeding. A secondary aim was to ascertain if there is a need for further education on lifestyle behaviours such as alcohol consumption at different time points during pregnancy.

The study cohort was representative of women attending a large maternity hospital between 2010 and 2011 (Murphy et al, 2014). This study reports a high rate of alcohol consumption in pregnancy among women who intended to, and those who went on to, breastfeed with almost a third of women who intended to breastfeed consuming alcohol in the third trimester. This suggests that there has been little or no behaviour modification in relation to this issue.

From this cohort of women 29% reported consuming alcohol during the third trimester. This rate of alcohol consumption during pregnancy was slightly lower than previous studies in Ireland by Tarrant et al (2011) and Australia by O'Leary et al (2009), which found that 35.3 and 46.2% of women, respectively, were consuming alcohol during the third trimester. This decrease may be a result of recent Irish government campaigns to increase awareness of the harmful effects of consuming alcohol during pregnancy.

This study also found that almost two thirds of women in the third trimester intended to exclusively breastfeed, a figure that compares favourably with previous Irish studies that reported between 43 and 55% of women intending to breastfeed (Fitzpatrick et al, 1994; Begley et al, 2009). The profile of women who initiated and continued breastfeeding at discharge from hospital included women of older maternal age, higher socioeconomic employment, married women and women attending private health care. These findings are consistent with previous research (Fitzpatrick et al, 1994; Haslam et al, 2003; Begley et al, 2009; Wen et al, 2009; Llana et al, 2011; Economic and Social Research Institute, 2012).

The sociodemographic predictors of alcohol consumption during pregnancy reported in this study were similar to other studies—older maternal age, higher socioeconomic status and private health care (Daly et al, 1992; Crozier et al, 2009; O'Leary et al, 2009; Tarrant et al, 2011; Powers at al, 2012).

Older maternal age, higher socioeconomic employment and private health care were factors common to both alcohol consumption in pregnancy and intention to exclusively breastfeed. This suggests that older, successful women want to make healthy lifestyle choices for their baby by intending to breastfeed but then choose not to change their own lifestyle habits by continuing to consume alcohol during pregnancy.

Of the women in this study who continued to consume alcohol during the third trimester, the majority drank between 1 and 9 units of alcohol per week despite government recommendations. This finding is consistent with other studies (Crozier et al, 2009; O'Leary et al, 2009; Powers et al, 2012). Similarly, wine and beer were found to be the alcoholic beverages of choice during pregnancy (O'Leary et al, 2009; Powers et al, 2012). Women are likely to consume alcohol during pregnancy due to the 'social' aspect of drinking, and women who intend to breastfeed and continue drinking in late pregnancy are likely to maintain this approach while breastfeeding. In the absence of any definitive evidence of safe levels of alcohol in pregnancy or while breastfeeding, these findings highlight the need for continued lifestyle behavioural change education by health professionals, especially midwives throughout the pregnancy continuum.

The literature in relation to alcohol consumption and exclusive breastfeeding is limited. However,

Key points

- Women are encouraged to make healthy lifestyle choices to optimise infant health outcomes and to enhance the health of the new mother
- Almost a third of women consume alcohol in the third trimester of pregnancy, with no evidence of behaviour modification in relation to breastfeeding intention, initiation or exclusive breastfeeding at hospital discharge
- Health promotion is a major role for midwives who are in a powerful position to influence women's lifestyle behaviours and infant feeding decision making during pregnancy
- The ongoing challenge for health professionals in the cultural context of widespread alcohol consumption is to encourage healthy behavioural modification without discouraging women from breastfeeding

evidence from previous research supports the findings of this study (Tarrant et al 2011; Giglia et al, 2008). The findings of this study suggest that despite current recommendations to abstain, women continue to drink alcohol during pregnancy and while breastfeeding This study reports additional findings and has identified an area that needs more research.

Strengths and limitations

The study sample consisted of a representative cohort of women attending a large urban maternity hospital over a 2-year period. The data were collected prospectively by qualified health researchers using a standardised interview schedule at the first hospital visit and a self-completed questionnaire in the third trimester. This method of data collection ensured that the potential for recall bias was limited. However, the data on alcohol consumption and breastfeeding intention relied on self-reporting by the pregnant women and it is possible that alcohol consumption during pregnancy is under-reported. Despite written reminders and telephone contact there was a loss of responders in the third trimester, but the profile of the cohort at each stage of data collection suggests that the loss to follow-up was random rather than specific to a particular group of patients.

Implications for practice

Current government policies in Ireland, Australia, England and the US recommend total abstinence from alcohol during pregnancy and while breastfeeding (US Department of Health and Human Sciences, 2005; DOHC, 2008a; DOHC, 2008b; National Health and Research Council, 2009; National Institute for Health and Care Excellence, 2014), It is clear from this study that many women do not adhere to these recommendations. In this study, women who planned to breastfeed did not appear to perceive any risks in relation to alcohol consumption. Midwives are a key source of support and information for pregnant women and new mothers. The findings of this study suggest that midwives and other health professionals need to address alcohol consumption at various stages of pregnancy and specifically in relation to breastfeeding. Education from midwives can take place during any interaction in pregnancy. The challenge will be to ensure that alcohol abstention does not become a factor that adversely influences a woman's decision to breastfeed.

Conclusions

This study found that almost one third of women who intended to exclusively breastfeed continued to consume alcohol during pregnancy. These women were more likely to be older, work in higher socioeconomic employment and have private health care. Many women who have positive intentions about infant feeding fail to modify their own health behaviours during pregnancy. In the absence of definitive evidence to suggest safe levels of alcohol in pregnancy or while breastfeeding, abstaining completely would be the only way to protect a baby from alcohol's harmful effects. The ongoing challenge for health professionals in the cultural context of widespread alcohol consumption is to encourage healthy behavioural modification without discouraging women from breastfeeding. **BJM**

Acknowledgements: *We would like to thank the midwives who take great care with history-taking and data entry and the IT department of the Coombe Women and Infants University Hospital for assistance with data extraction. CD, Dr Aoife Mullally, Dr Nita Adnan and Claire Browne were responsible for recruitment and follow-up of study participants. We are extremely grateful Dr Brian Cleary for assistance with that database and Claire Browne for assistance with data entry and participant follow-up.*

Role of the funding source: *The study was funded by the Health Services Executive of Ireland as part of the 'Alcohol in Pregnancy' project. The funding source had no involvement in any aspects of the study design, writing of the report, or the decision to submit the paper for publication.*

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Lifestyles in Pregnancy Interview - 1st Trimester

PRIVATE AND CONFIDENTIAL Study Number .....

Do you have a healthy diet?
Yes ☐ No ☐ Don't know ☐

Have you increased your calorie intake since you became pregnant?
Yes ☐ No ☐ Don't know ☐

How much do you think your calorie intake has increased by?
.....

Do you eat your 5 a day fruit and vegetables? Yes ☐ No

Do you limit the amount of * saturated fat in your diet? Yes ☐ No ☐ Don't know ☐

Do you limit the amount sugar in your diet? Yes ☐ No ☐ Don't Know ☐

Do you limit the amount of salt in your diet? Yes ☐ No ☐ Don't Know

Are you currently taking dietary supplements? Yes ☐ No ☐

If yes, when and what type?
.....

How do you intend to feed your baby?
Breast feed ☐ Bottle feed ☐
Don't know ☐

How often do you exercise?
.....

When do you exercise?
.....

What type of exercise do you take?
.....

Do you drink alcohol? Yes ☐ No ☐

How many units do you think are in
A bottle of beer .....
A pint of beer .....
A single measure of spirits .....
An alcopop .....
A glass of wine .....

What is the safe level of units that a woman should not exceed per week?
.....

In the 12 month period before you became pregnant, how many times a week would you have a glass/ bottle / pint of beer?
Maximum once ☐
Twice a week ☐
Three times a week ☐
Four times a week ☐
Five times a week ☐
Every day ☐

On those days how many drinks did you have per day? .....

In the 12 month period before you became pregnant, how many times a week would you have an alcopop?
Maximum once ☐
Twice a week ☐
Three times a week ☐
Four times a week ☐
Five times a week ☐
Everyday ☐

On those days how many drinks did you have per day? .....

In the 12 month period before you became pregnant, how many times a week would you have a glass of wine? (small or large)
Maximum once ☐
Twice a week ☐
Three times a week ☐
Four times a week ☐
Five times a week ☐
Everyday ☐

On those days how many drinks did you have per day? .....

In the 12 month period before you became pregnant , how many times a week would you have a glass of spirits / fortified wine / liquor? (small or large)
Maximum once ☐
Twice a week ☐
Three times a week ☐
Four times a week ☐
Five times a week ☐
Everyday ☐

On those days how many drinks did you have per day? .....

In the 12 month period before you became pregnant, how many times a week would you have a glass/bottle/ pint of cider?
Maximum once ☐
Twice a week ☐
Three times a week ☐
Four times a week ☐
Five times a week ☐
Everyday ☐

Currently, how many times a week do you have a glass / bottle / pint of beer?
Maximum once ☐
Twice a week ☐
Three times a week ☐
Four times a week ☐
Five times a week ☐
Everyday ☐

On those days how many drinks did you have per day? .....

Currently, how many times a week do you have an alcopop?
Maximum once ☐
Twice a week ☐
Three times a week ☐
Four times a week ☐
Five times a week ☐
Everyday ☐

On those days how many drinks did you have per day? .....

Currently, how many times a week do you have a glass of wine?
Maximum once ☐
Twice a week ☐
Three times a week ☐

Four times a week ☐
Five times a week ☐
Everyday ☐

On those days how many drinks did you have per day? .....

Currently, how many times a week do you have a glass of spirits / fortified wine / liquers?
Maximum once ☐
Twice a week ☐
Three times a week ☐
Four times a week ☐
Five times a week ☐
Everyday ☐

On those days how many drinks did you have per day? .....

Currently, how many times a week do you have a glass/bottle/pint of cider?
Maximum once ☐
Twice a week ☐
Three times a week ☐
Four times a week ☐
Five times a week ☐
Everyday ☐

In the 12 month period before you became pregnant, how often would you have 5 or more drinks on one session?
Once a month ☐
Twice a month ☐
Once a week ☐
Twice a week ☐
More than twice a week ☐

How often would you have 5 or more drinks on one occasion now?
Maximum once ☐
Twice a week ☐
Three times a week ☐
Four times a week ☐
Five times a week ☐
Everyday ☐

In the 6 month period prior to becoming pregnant, did you smoke?
Yes ☐ No ☐

Do you smoke currently?
Yes ☐ No ☐

If yes, how many cigarettes do you smoke? .....

Have you ever tried to quit smoking?
Yes ☐ No ☐

What type of methods have you tried?
.....

Have you ever used recreational drugs?
Yes ☐ No ☐

In the 6 month period prior to becoming pregnant, did you use recreational drugs? Yes ☐ No ☐

If yes, name of drugs .....

Since becoming pregnant, have you used recreational drugs?
Yes ☐ No ☐

If yes, name of drugs .....

*saturated fat is a fat most often of animal origin, if can be found in foods such as butter, meat and egg yolks. It increases cholesterol levels in the blood.

Thank you for your participation

Lifestyles in Pregnancy Interview - 3rd Trimester

PRIVATE AND CONFIDENTIAL Study Number .....

Since your initial interview do you have a healthy diet? Yes ☐ No ☐

Since your initial interview have you increased your calorie intake?
Yes ☐ No ☐

Do you eat your 5 a day fruit and vegetables? Yes ☐ No ☐

Do you limit the amount of * saturated fat in your diet? Yes ☐ No ☐

Do you limit the amount sugar in your diet? Yes ☐ No ☐

Do you limit the amount of salt in your diet? Yes ☐ No ☐

Since your initial interview have you taken dietary supplement
Yes ☐ No ☐

If yes, when and what type?
.....

Has your intention to feed your baby changed since our initial interview? Yes ☐ No ☐
Breast feed ☐ Bottle feed ☐

Do you currently exercise? Yes ☐ No ☐

When do you exercise?
.....

What type of exercise do you take?
.....

Since your interview in the Coombe have you had any alcohol?
Yes ☐ No ☐

If yes how much alcohol do you drink per week?
(Please fill in the correct number in the space provided eg. A bottle of beer 2.)
A bottle of beer .....
A pint of beer .....
A single measure of spirits .....
An alcopop .....
A glass of wine .....

In the last week how much alcohol have you had to drink?
.....

Do you think you have changed your drinking habits since your initial interview? Yes ☐ No ☐

Since your interview have you had 5 or more drinks at any one time?
Yes ☐ No ☐
How many times have you had 5 or more drinks at any one time?
Once ☐
2-5 Times ☐
More than 5 times ☐

Since your initial interview in the Coombe have you smoked?
Yes ☐ No ☐

Do you smoke currently?
Yes ☐ No ☐
If yes, how many cigarettes do you smoke? .....

Since your interview have you tried to quit smoking? Yes ☐ No ☐

What type of methods have you tried?
.....

Since your initial interview have you used recreational drugs?
Yes ☐ No ☐

If yes, name of drugs
.....

*saturated fat is a fat most often of animal origin, if can be found in foods such as butter, meat and egg yolks. It increases cholesterol levels in the blood.

Thank you for your participation