

# Antenatal alcohol exposure: An East Anglian study of midwives' knowledge and practice

## Abstract

**Objective:** To study midwives' knowledge, practice and opinions regarding advice about fetal alcohol syndrome (FAS), fetal alcohol spectrum disorders (FASDs) and alcohol intake in pregnancy.

**Design:** A postal questionnaire was sent to 1862 midwives employed in 13 NHS Trusts in East Anglia, incorporating city and rural areas.

**Results:** The authors received responses from 33.5% of the midwives contacted ( $n=624$ ), of which 98% stated that alcohol abstinence in pregnancy would be their preferred advice, and 38% had seen an infant with FAS. Less than 2% indicated that they were 'very prepared' to deal with the subject. Only 10% identified all four classic features of FAS.

**Conclusions:** More than a third of midwives had seen an infant with FAS. The advice given to pregnant mothers by participants varied. The midwives stated that they would like more information and support.

**Implications for practice:** Expansion of midwives' knowledge should improve the quality of antenatal advice, leading to better prevention, intervention and recognition of FASD in children.

**Keywords:** Fetal alcohol spectrum disorder, Fetal alcohol syndrome, Pregnancy, Alcohol, Midwifery practice

In 1968, the French doctor Lemoine and his colleagues first described a pattern of physical and neurodevelopmental abnormalities observed among children of mothers with alcohol problems (Lemoine et al, 1968). Unfortunately, this series of French case studies went unnoticed until Jones et al (1973) publicised their independent observations in the USA 5 years later. Jones et al (1973) introduced the term 'fetal alcohol syndrome' (FAS) to describe common features of the disorder.

FAS is a complex, multifactorial disorder in which exposure to alcohol consumption interacts with other environmental and genetic factors. Two developments in research have suggested further complications (National Perinatal Epidemiology Unit, 2006):

- Recognition that it is possible to have partial forms of the syndrome, i.e. fetal alcohol spectrum disorders (FASDs)
- Evidence that a more moderate alcohol consumption may also be harmful to the developing fetus.

The worldwide incidence of FAS is 0.97 cases per 1000 births, making it the most common cause of non-genetic learning disabilities around the world. Western countries report a FASD diagnosis in as many as 9 cases per 1000 births; therefore, the condition is of global concern (British Medical Association (BMA), 2007).

The prevalence of FASD is unknown in the UK as there is no standardised approach to making and recording the diagnosis—this highlights the need for a UK-wide epidemiological study. Other countries, including Canada, the USA and Australia have collected FAS data (Williams et al, 1999; May and Gossage, 2001; Chudley et al, 2005; Elliott et al, 2007).

The diagnosis of FASD relies on history-taking and clinical examination because there is no diagnostic test available. The two main diagnostic criteria systems in use originate from the USA and are intended for use in the clinical setting: the Institute of Medicine (IoM) Criteria, by Stratton et al (1996), and the Centers for Disease Control and Prevention (CDC) Criteria, by Bertrand et al (2004). For diagnosis, prenatal alcohol exposure should be ascertained or assumed, and during a clinical assessment, the health professional should concentrate on identifying a triad of the following (not all need to be present):

- Specific facial features
- Growth restriction
- Neurodevelopmental disorder.

The provision of advice for women about alcohol intake presents a dilemma for midwives and obstetricians, who do not wish to spread alarm but recognize the need for information. Accurate history-taking by midwives is crucial to identifying women at risk, hence the authors' interest in exploring midwives' knowledge and practice relating to their advice about alcohol consumption during pregnancy.

## Existing UK guidelines

The evidence and the antenatal guidelines on which midwives base their advice were reviewed. The BMA (2007), following an extensive review

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in 2007 that aimed to raise awareness of FASDs, stated: 'Women who are pregnant, or who are considering a pregnancy, should be advised not to consume any alcohol'.

The Department of Health recommends that pregnant women should avoid alcohol altogether (NHS Choices, 2014). However, the National Institute for Health and Care Excellence's (NICE) antenatal care guideline is different. It dates from 2003, was updated in March 2008, and was reviewed again in March 2011. It was then placed on the 'static list', meaning the advice stays as it is but will be reviewed every 5 years (NICE, 2003; 2008). NICE recommends that:

- Pregnant women and women planning to become pregnant should be advised to avoid drinking alcohol in the first 3 months of pregnancy because there may be an increased risk of miscarriage
- Women should be advised that if they choose to drink alcohol while they are pregnant, they should drink no more than 1–2 UK units once or twice a week
- Women should be advised not to get drunk or binge drink (drinking more than 7.5 UK units of alcohol on a single occasion) while they are pregnant as this can harm their unborn baby.

The Royal College of Obstetricians and Gynaecologists (RCOG) recently produced (February 2015) a patient information leaflet giving advice about the effects of drinking alcohol during pregnancy. This was based on the above NICE guideline. RCOG stated that the only way to be certain that the baby is not harmed by alcohol is to abstain from drinking during pregnancy or while breastfeeding. The Royal College of Midwives (RCM, 2015) commented on the leaflet and said: 'The evidence suggests that the cumulative effects of alcohol consumption during pregnancy cause harm to the developing fetus and can have adverse impacts on the newborn. The RCM continues to advise women to abstain from drinking alcohol when pregnant or if trying to conceive.'

## Methods

This quantitative, non-experimental study was designed to discover what advice practising midwives give about alcohol intake in pregnancy. The questionnaire used for the study was closely based on one distributed in Western Australia to 1443 health professionals (79% participated) in 2002–2003; written permission from the authors of this study was obtained.

Section one explored demographic data, current knowledge and practice regarding FAS, sources of information, preparedness and available resources.

**Table 1. Year of midwives' graduation**

Year	Number of respondents
1966–1980	80
1981–1995	238
1996–2011	290

\* 16 midwives did not reply

**Table 2. Midwives' areas of work**

Midwife type	Number of respondents	Percentage of respondents
Hospital midwife	268	43%
Community midwife	257	41%
Midwife (other)	99	16%

**Table 3. Midwives seeing infants**

Infants seen per week	Percentage of respondents
Did not see any infants	9%
Saw between 1–25 infants	81%
Saw between 26–35 infants	6%
Saw between 36–50 infants	4%

**Table 4. Midwives seeing pregnant women**

Pregnant women seen per week	Percentage of respondents
Did not see any pregnant women	0.16%
Saw between 1–30 pregnant women	80%
Saw between 31–60 pregnant women	18%
Saw between 61–100 pregnant women	1.84%

Section two explored midwives' opinions, perceived educational needs and attitudinal perspectives, using a Likert scale.

In 2007, there were 35305 midwives in the UK (Nursing and Midwifery Council (NMC), 2007). The Centre for Applied Medical Statistics (CAMS), University of Cambridge, stated that 600 midwives were needed to participate to ensure robust data. This study recruited midwives from NHS Trusts in East Anglia.

Ethical approval for the research was gained from the Cambridgeshire Research Ethics Committee in November 2010 (reference: 10/H0305/54). In addition, the study was discussed with the Research and Development Department and the audit coordinator. Final midwifery management and Research and Development approvals were gained from each NHS Trust via Site-Specific Information (SSI) forms by March 2011.

**Table 5. Respondents' knowledge of features of fetal alcohol syndrome**

Knowledge of the four essential features	Percentage of respondents	
	Yes	No
CNS abnormality/dysfunction	46%	54%
Abnormal facial appearance	64%	36%
Growth restriction	55%	45%
Confirmed prenatal alcohol intake	54%	46%
Midwives who ticked all four correct features and no others	10%	90%

Note: Choices were not mutually exclusive; CNS—central nervous system

**Table 6. Experience with fetal alcohol syndrome**

Experience of FAS	Percentage of respondents	
	Yes	No
Had diagnosed FAS	4%	96%
Had seen already diagnosed child with FAS	34%	66%
Certain child had FAS but did not record	<1%	>99%
Referred children to confirm a diagnosis of FAS	3%	97%

Note: Choices were not mutually exclusive; FAS—Fetal alcohol syndrome

As the questionnaire was anonymous, it was not possible to document signed consent. Consent was assumed if the questionnaire was returned. The first page of the questionnaire explained the research purpose, gave clear instructions and invited the midwives to participate. There is great variation in the demographics of the East Anglian population, so it was important that the geographical distribution of the responses was identified, otherwise the findings could be skewed. It was made clear to respondents that it would be possible to identify the Trust from which the response came.

Midwives were not coerced to participate, although a polite reminder was emailed to the entire sample group via their Trusts; 13 NHS Trusts in East Anglia participated and 1862 questionnaires were distributed.

The coded, quantitative study data were stored on a password-protected computerised database, and the response to each question was given an individual value with a label for identification, including missing values.

Of the questionnaires distributed, 624 were

completed satisfactorily, resulting in a response rate of 33.5% by August 2011.

Statistical analysis used descriptive statistics and PASW (formerly Statistical Package for the Social Sciences (SPSS)), version 17, with advice from CAMS.

To make analysis more meaningful, the Likert scale-based attitudinal questions were mostly grouped, i.e. 'strongly agree' with 'tend to agree'.

The qualitative data obtained from the free text boxes were coded into themes, and the frequency of themes was considered (see Results). Test-retest should be possible for a replication of the study.

## Results

### Respondents' characteristics

The entire respondent group was female; 268 respondents were hospital-based midwives, 257 were community midwives, and 99 worked in a variety of roles. They graduated between 1966 and 2011; the majority graduated after 1980 (86.8%) and less than 4% graduated before 1973, when FAS was first described in English (Jones et al, 1973). The respondents saw a wide range of pregnant women and/or infants in a typical week, as shown in *Tables 2–4*.

### Participants' knowledge

Midwives were asked how they gained their knowledge and awareness of FAS, and most (82%) stated that this was from professional training/studies. *Table 5* outlines participants' knowledge of the four essential features of FAS, according to Astley and Clarren (2000):

- Central nervous system (CNS) abnormality/dysfunction
- Abnormal facial appearance
- Growth restriction
- Confirmed alcohol exposure in pregnancy.

Additionally, two non-essential features were listed as 'red herrings'. Just 10% of the respondents correctly identified all four diagnostic features.

Around 4% of midwives had previously diagnosed FAS, and 34% had seen an infant with an established FAS diagnosis (*Table 6*), while 3% of respondents suspected and referred children to confirm a diagnosis. Less than 1% considered FAS a likely diagnosis but did not record it in medical notes.

### Alcohol intake in pregnancy

The midwives were questioned on what they ask women about their alcohol habits, and, if women sought prenatal alcohol advice from them, and if they told women about the consequences of alcohol intake in pregnancy (*Table 7*). The aim was

to establish if midwives provided this information and if their practice reflected advice from current BMA (2007) and NICE (2008) guidelines. The questionnaire allowed respondents to tick more than one of the alternatives offered, so the answers were not mutually exclusive. Of the participants, 93% preferred to give the advice that pregnant women should consider not drinking alcohol at all; 27% suggested 'do not become intoxicated'; 41% recommended drinking less than two units once or twice a week; and 13% advised 'do not binge-drink' (i.e. drinking five or more drinks). Many midwives did not provide advice in accordance with the latest NICE guidelines (2008). Despite most trusts having a mandatory question in antenatal notes, only 60% of the respondents said they routinely ask pregnant women about their alcohol use, and just 17% stated that they asked if there were certain known risk factors, i.e. alcohol and/or drugs. Disappointingly, only 29% routinely provided information about antenatal alcohol use, and 22% did not provide any information; however, >97% said that education and information on this subject should be readily available. The participants tackled difficult tasks: 74% emphasised the dangers of drinking to women, and 58% stated that they had needed to advise someone who was concerned about endangering their unborn child by drinking alcohol.

Some questions encouraged participants to use free text and about 5% volunteered information:

- 'Have any resources assisted you in dealing with FAS?': 'Colleagues' ( $n=11$ ), 'Training' ( $n=9$ ), 'Literature' ( $n=8$ ), 'Internet' ( $n=7$ )
- 'What affects your alcohol assessment skills in pregnant women?': 'I don't have concerns discussing alcohol' ( $n=10$ ), 'Guidelines keep changing' ( $n=2$ ), 'Need an evidence-based leaflet for service users' ( $n=2$ ), 'Women underestimate how much they actually drink' ( $n=1$ ).

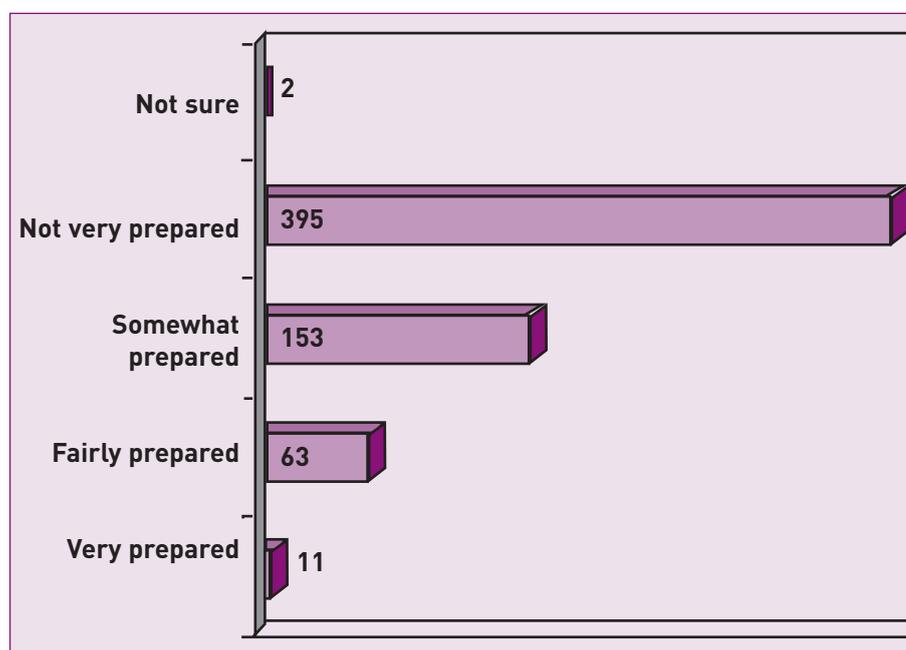
The latter part of the questionnaire examined midwives' confidence, opinions and perceived educational needs. A Likert scale was used, although these attitudinal questions essentially did not have 'correct answers', they provided an interesting insight into participants' views (Table 8). Of the respondents, 85% believed that making an early diagnosis might help a child with FAS, and 84% agreed that FAS was preventable, although 52% believed that making a diagnosis might stigmatise the child and/or the family. When asked if professionals were sufficiently aware of FAS, 21% agreed, 62% disagreed and 17% were unsure.

When asked about their discussions with pregnant women, 75% of respondents felt it was easy to ask pregnant women about alcohol use, but

**Table 7. Alcohol intake in pregnancy**

Choices	Number of midwives responding 'Yes'	Percentage of midwives responding 'Yes'
<b>Midwives preferred choices about giving antenatal alcohol use advice</b>		
Consider not drinking at all	583	93%
Drink no more than one to two UK units once or twice a week	258	41%
Don't become intoxicated	167	27%
Have less than four UK units over a week	98	16%
Avoid drinking > 5 standard drinks or 7.5 UK units on a single occasion	82	13%
<b>Midwives asking women about antenatal alcohol use</b>		
Routinely ask	375	60%
Ask if a known risk factor exists (alcohol or drugs)	103	17%
Do not ask	61	10%
<b>Midwives providing antenatal alcohol use information</b>		
Routinely provide information	178	29%
Sometimes provide information	195	31%
Provide information if a risk factor exists (alcohol and drugs)	124	20%
Do not provide information	137	22%

Note: Categories were not mutually exclusive



**Figure 1. Participating midwives' feeling of preparedness to deal with fetal alcohol syndrome ( $n=624$ )**

Table 8. Opinions on fetal alcohol syndrome

Statement	Percentage of respondents			n
	Agree*	Disagree*	Not sure	
Early FAS diagnosis of the child may improve treatment	85%	2%	13%	618
It is possible to prevent FAS	84%	5%	11%	618
FAS diagnosis may lead to stigmatisation	52%	19%	29%	619
Health professionals are sufficiently aware of FAS	21%	62%	17%	622
A safe level of alcohol in pregnancy has not been established	76%	15%	9%	614
It is easy to ask pregnant women how much and how often they drink alcohol	75%	22%	3%	619
Discussing alcohol use in pregnancy will frighten or anger pregnant women	6%	85%	9%	618

FAS—Fetal alcohol syndrome. \*Categories 'Strongly agree' and 'Tend to agree', and 'Strongly disagree' and 'Tend to disagree' were combined

6% felt that discussing alcohol use could frighten or anger pregnant women. Many respondents (76%) agreed that there is no established safe level of alcohol intake in pregnancy. Participants were asked about their preparedness to deal with FAS and resources that would be helpful in dealing with parents and babies in this area of health care (Table 9).

Only 11 (1.7%) midwives felt 'very prepared' to deal with this area of health care, while 63 (10%) felt 'fairly prepared', 153 (25%) felt somewhat prepared, 395 (63%) were 'not very prepared' and 2 (0.3%) were not sure (Figure 1).

### Discussion

This survey explored midwifery practice in East Anglia, in an area of health with little pre-existing research to guide practitioners and pregnant women. Similar studies from Australia (Payne et al, 2005) and Denmark (Kesmodel and Kesmodel, 2011) are frequently referred to and will hereafter be referred to as 'the Australian' or 'the Danish' study.

The findings indicate that accurate knowledge on diagnostic features of FAS is limited. The same uncertainty was apparent in the Australian survey, as just 12% of participants defined FAS correctly, compared with 10% in the East Anglia study. Children with FAS have a range of developmental, cognitive and communication problems that can benefit from early intervention strategies, so it is important that health professionals recognise the features (Stratton et al, 1996). Chudley (2008: 721) made the point that FAS is difficult to identify, while the wider spectrum of FASD is even more complex because there are no fully reliable diagnostic tests; 'some rare diseases are rare simply because they are rarely diagnosed'.

It is therefore significant that 34% of the midwives who participated in the survey had seen an infant with the diagnosis of FAS; additionally, 4% had diagnosed an infant with FAS themselves compared with 5% in the Australian study. This is even more remarkable given that midwives usually only provide postnatal care for infants for the first 28 days of life and that the reported FAS diagnosis median age was 3.3 years in another Australian study (Elliott et al, 2007).

Ambiguous recommendations made it difficult for the midwives in East Anglia to give sound advice. This is entirely consistent with the Danish study (2000), which found that none of its sample knew the official recommendations, and the Australian study (2005), in which only 13% of health professionals adhered to official recommendations.

In Australia, the 2001 guideline was changed in 2009 (Australian Government, 2009) to: 'Not drinking in pregnancy is the safest option'. Payne et al (2014) reported that in 2013, 99.4% (n=166) of midwives gave such advice, concluding that: 'The 2009 guideline is easy to convey and reduces confusion when counselling pregnant women.' Likewise, Denmark changed its guideline recommendations to abstinence in 2007, resulting in improved understanding (Kesmodel and Kesmodel, 2011). Midwives based in the UK may find it difficult to discuss these sensitive issues without clear consensus between advisory bodies, such as the BMA and NICE. The BMA guideline (2007) advises that women completely avoid alcohol in pregnancy, whereas the NICE guidelines (2008) present a number of options. Previous research established that women do not hold it against midwives if no accurate answer exists, but women appreciate frank discussions (Kirkham, 1997; Raymond et al, 2009). In the present study,

60% of East Anglian participants routinely asked all pregnant women about their alcohol use, compared with 59% in the Danish study, and 45% in the Australian study—in Australia, this increased to 93% by 2013 (Payne et al, 2014).

Of the midwives questioned in East Anglia, 93% stated that ‘consider not drinking at all’ best represented their preferred advice to give pregnant women, and this is in line with recommendations from the BMA (2007).

In East Anglia, just 20% of midwives (and 30% in the Australian survey) provided information about antenatal alcohol use if there was a known risk factor, suggesting a reluctance to discuss alcohol. This reluctance was also apparent in the Danish study, and all three studies reported that participants felt unprepared to deal with this topic. Midwives may not be afraid to facilitate support but seemed unsure about the most effective way to do so. Less than 2% ( $n=11$ ) of participants felt ‘very prepared’ to deal with the area of FAS (and also just 2% of midwives in the 2005 Australian survey). In Australia, Payne et al (2014) found that by 2013, most midwives felt confident in advising on alcohol in pregnancy; however, 93% stated that they would still like more education about FASD. The importance of education and involvement with multidisciplinary teams, the support of local government and a willingness to raise public awareness are crucial if this growing area of concern is to be addressed (Astley and Clarren, 2000). Brief interventions and discussion show promise for alcohol risk reduction in antenatal care (Stade et al, 2009; Wilson et al, 2012).

Despite debate about binge-drinking in the British media, just 13% ( $n=82$ ) of East Anglian respondents stated that they would advise pregnant women to ‘avoid drinking five or more drinks per session’, and 27% indicated that they would ‘advise women not to become intoxicated’. This is in stark contrast to the Danish survey where 90% advised against binge-drinking.

Just 29% of respondents routinely provide information on alcohol, despite more than 97% of midwives agreeing that information should be readily available. In response, one author of the study produced a ‘midwives’ pocket guide’, accompanied by a letter to participating midwives, which discussed the principal findings of this study. The pocket guide was designed so that midwives can discuss the front page with pregnant women, while the back page acts as an aid for health professionals.

### Advantages and limitations of the study

The strengths of this study include an acceptable response rate of over 30% from a number

**Table 9. Respondents’ opinions on helpful resources**

Resource	Percentage of midwives agreeing with helpfulness of resource	<i>n</i>
Written information for pregnant women	76%	476
Pregnancy/alcohol history checklists	48%	297
FAS materials for health professionals	81%	507
FAS diagnostic checklist	66%	410
Counselling and alcohol assessment training	54%	337
Registry of specialists	44%	274
Referral resources	62%	388

FAS: Fetal alcohol syndrome

of East Anglia NHS Trusts and the use of a questionnaire based on one that had already been successfully used in Australia. Interesting data were collected on a subject of great importance to public health, and a comparison was made with similar studies that had taken place in other countries, in this under-researched area in the UK (Larcher and Brierley, 2014).

However, caution must be taken when comparing this study’s results with others because of differences in the samples’ composition and culture. The results from East Anglia may also not be representative of midwifery practices throughout the UK.

### Recommendations for clinical practice and further research

An epidemiological study of FASDs across the UK would help to raise awareness of the issues discussed in this paper and would provide essential data for service planning. There are difficulties in setting up a robust population-based surveillance system for FASDs, such as agreeing a reliable surveillance case definition and obtaining an accurate history of alcohol intake in pregnancy. However, surveillance for FAS is currently carried out in Scotland, so it is possible that it could be carried out more widely across the UK.

Motivation for behavioural change is generally high during pregnancy (Larsson, 1983; Health and Social Care Information Centre, 2008); the greatest challenge may be knowing how best to motivate and inform pregnant women.

Complex issues require complex solutions; different strategies should be used to reach different populations, to encourage pregnant women to make use of personalised information, advice and support.

## Key points

- Worldwide studies have shown that the consumption of alcohol in pregnancy causes fetal alcohol syndrome (FAS) and fetal alcohol spectrum disorders (FASDs), which may be under-diagnosed causes of disability in children
- Most of the participating midwives felt uncertain in this area of health promotion
- Midwives stated that they would benefit from readily-available information and resources if the best outcome for pregnant women is to be achieved
- Outcomes could be improved by routinely asking about alcohol consumption and providing advice to pregnant women as well as identifying and supporting mothers 'at risk of an alcohol-exposed pregnancy' as early as possible

## Conclusions

This research aimed to increase the understanding of the antenatal advice given to expectant mothers about an important aspect of health in pregnancy. The study obtained data on midwives' knowledge and attitudes about FASDs and how they chose to advise women about alcohol intake in pregnancy. Participating midwives clearly stated that they would like more information and support. More than a third had seen an infant with FAS, highlighting the need for more education in this area. It is essential that midwives feel better prepared to give appropriate advice so they can support women in making healthier choices for themselves and their babies.

BJM

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- Australian Government (2009) *Australian Guidelines to reduce health risks from drinking alcohol*. <http://tinyurl.com/qgfm4dm> (accessed 11 February 2015)
- Astley SJ, Clarren SK (2000) Diagnosing the full spectrum of fetal alcohol-exposed individuals: Introducing the 4-digit diagnostic code. *Alcohol and Alcoholism* 35(4): 400–10
- Bertrand J, Floyd RL, Weber MK et al (2004) Fetal alcohol syndrome: Guidelines for referral and diagnosis. Centers for Disease Control and Prevention. <http://tinyurl.com/mnzv833> (accessed 28 January 2015)
- British Medical Association (2007) *Fetal alcohol spectrum disorders: A guide for health professionals*. BMA, London
- Chudley AE, Conry J, Cook JL et al (2005) Fetal alcohol spectrum disorder: Canadian guidelines for diagnosis. *CMAJ* 172(5 suppl): S1–S21
- Chudley AE (2008) Fetal alcohol spectrum disorder: Counting the invisible—mission impossible? *Arch Dis Child* 93(9): 721–2. doi: 10.1136/adc.2008.137109
- Elliott EJ, Payne J, Morris A et al (2007) Fetal alcohol syndrome: A prospective national surveillance study. *Arch Dis Child* 93(9): 732–7
- Health and Social Care Information Centre (2008) Statistics on alcohol: England, 2008. <http://tinyurl.com/ocf29xo>

- (accessed 28 January 2015)
- Jones KL, Smith DW, Ulleland CH et al (1973) Pattern of malformation in offspring of chronic alcoholic mothers. *Lancet* 1(7815): 1267–71
- Kesmodel US, Kesmodel PS (2011) Alcohol in pregnancy: Attitudes, knowledge, and information practice among midwives in Denmark 2000 to 2009. *Alcohol Clin Exp Res* 35(11): 2226–30. doi: 10.1111/j.1530-0277.2011.01572.x
- Kirkham M (1997) Labouring in the dark. In: Abbott P, Sapsford R, eds. *Research into Practice: A Reader for Nurses and the Caring Professions*. Open University Press, Milton Keynes
- Larcher V, Brierley J (2014) Fetal alcohol syndrome (FAS) and fetal alcohol spectrum disorder (FASD)—diagnosis and moral policing; an ethical dilemma for paediatricians. *Arch Dis Child* 99(11): 969–7
- Larsson G (1983) Prevention of fetal alcohol effects. An antenatal program for early detection of pregnancies at risk. *Acta Obstet Gynecol Scand* 62(2): 171–8
- Lemoine P, Harousseau H, Borteyru JP et al (1968) Les enfants de parentes alcooliques. Anomalies observees. Apropos 127 case. *Ouest Med* 21: 476–82
- May PA, Gossage JP (2001) Estimating the prevalence of fetal alcohol syndrome: A Summary. *Alcohol Res Health* 25(3): 159–67
- National Institute for Health and Clinical Excellence (2003) *Antenatal care: Clinical Guideline 6*, 10 NICE, London
- National Institute for Health and Clinical Excellence (2008) *Antenatal care. NICE clinical guideline CG62*. NICE, London
- National Perinatal Epidemiology Unit (2006) Review of the fetal effects of prenatal alcohol exposure. <http://tinyurl.com/p3jnqly> (accessed 28 January 2015)
- NHS Choices (2014) Services and support for parents. <http://tinyurl.com/lu9sjcv> (accessed 28 January 2015)
- Nursing and Midwifery Council (2007) Statistical analysis of the register—1 April 2006 to 31 March 2007. NMC, London
- Payne J, Elliott E, D'Antoine H et al (2005) Health professionals' knowledge, practice and opinions about fetal alcohol syndrome and alcohol consumption in pregnancy. *Aust N Z J Public Health* 29(6): 558–64
- Payne JM, Watkins RE, Jones HM et al (2014) Midwives' knowledge, attitudes and practice about alcohol exposure and the risk of fetal alcohol spectrum disorder. *BMC Pregnancy Childbirth* 14(1): 377
- Raymond N, Beer C, Glazebrook C et al (2009) Pregnant women's attitudes towards alcohol consumption. *BMC Public Health* 9:175. doi: 10.1186/1471-2458-9-175
- Royal College of Obstetricians and Gynaecologists (2015) *Alcohol and pregnancy*. RCOG, London
- Royal College of Midwives (2015) RCOG updates information on alcohol consumption. RCM, London
- Stade BC, Bailey C, Dzendoletas D et al (2009) Psychological and/or educational interventions for reducing alcohol consumption in pregnant women and women planning pregnancy. *Cochrane Database Syst Rev* 2: CD004228
- Stratton KR, Howe CJ, Battaglia FC (1996) *Fetal Alcohol Syndrome: Diagnosis, Epidemiology, Prevention and Treatment*. National Academy Press, Washington DC
- Williams RJ, Odaibo FS, McGee JM (1999) Incidence of fetal alcohol syndrome in north-eastern Manitoba. *Can J Public Health* 90(3): 192–4
- Wilson GB, McGovern R, Antony G et al (2012) Brief intervention to reduce risky drinking in pregnancy: Study protocol for a randomized controlled trial. *Trials* 13: 174