Fertility and prenatal attitudes towards pregnancy in women with eating disorders: results from the Avon Longitudinal Study of Parents and Children

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Abstract

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Reference


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Fertility and prenatal attitudes towards pregnancy in women with eating disorders: results from the Avon Longitudinal Study of Parents and Children

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Objective To study the effects of eating disorders (EDs) on fertility and attitudes to pregnancy.

Design A longitudinal prospective birth cohort.

Setting Avon area, UK.

Sample A cohort of 14,663 women who enrolled in the Avon Longitudinal Study of Parents and Children (ALSPAC). Singleton and live births were included across four groups of women: lifetime anorexia nervosa (AN; n = 171); lifetime bulimia nervosa (BN; n = 199), lifetime anorexia nervosa and bulimia nervosa (AN + BN; n = 82); and the general population (n = 10,636).

Methods Fertility problems, conception time and attitudes to pregnancy were investigated in women with AN, BN and AN + BN, compared with the remaining sample (general population).

Main outcome measures Having seen a doctor for fertility problems, time taken to conceive (>12 months, and >6 months), unplanned pregnancies, and attitudes to pregnancy at 12 and 18 weeks of gestation.

Results Women with AN (OR 1.6, 95% CI 1.1–2.5; P < 0.021) and women with AN + BN (OR 1.9, 95% CI 1.1–3.4; P < 0.020) were more likely to have seen a doctor for lifetime fertility problems, and women with AN + BN were also more likely to take longer than 6 months to conceive (OR 1.9, 95% CI 1.0–3.5; P < 0.04), and to have conceived the current pregnancy with fertility treatment. Unplanned pregnancies were more common in the AN group compared with the general population. All ED groups more frequently experienced negative feelings upon discovering their pregnancy, which remained higher in the AN + BN group at 18 weeks of gestation.

Conclusions Lifetime EDs are associated with fertility problems, unplanned pregnancies and negative attitudes to pregnancy. Health professionals should be aware of EDs when assessing fertility and providing treatment for this.

Keywords Avon Longitudinal Study of Parents and Children, conception, eating disorders, fertility, pregnancy, prenatal attitudes.

Introduction

It is well established that the presence of an eating disorder (ED) causes disruption to a woman’s menstrual cycle. Substantial weight loss can lead to hormonal changes, including reduced levels of luteinising hormone (LH) and follicle-stimulating hormone (FSH), often resulting in anovulation and amenorrhoea.

It has been posited that critical levels of body weight are required for regular menstruation; furthermore, weight restoration appears to be the most important factor in recovering regular menstruation among women with EDs.

It may therefore be assumed that only women meeting criteria for anorexia nervosa (AN) with amenorrhoea are at risk of experiencing difficulties conceiving; however, impaired fertility may exist across the spectrum of EDs. The incidence of disturbed menses remains higher in women with a history of AN compared with the general population, and this has been shown to persist in up to 30% of those who have recovered from AN. Women
suffering from bulimia nervosa (BN), or eating disorders not otherwise specified (EDNOS), also frequently experience irregular menstrual patterns,\(^2,7\) despite more commonly retaining a body mass within the normal range. A recent study found that irregular menstruation in women with EDs was strongly associated with childlessness, irrespective of ED classification.\(^8\)

There has been insufficient research attempting to determine the extent of disruption to fertility in women with EDs. Two small studies of women seeking infertility treatment found a similarly high prevalence (16 and 20\%) of women meeting the criteria for an ED within their clinics.\(^9,10\) However, these findings have not always been supported by long-term follow-up studies, and there have been conflicting reports. For example, the prevalence and frequencies of pregnancy have been shown to be comparable with healthy control groups, or the general population, in women with both AN and BN.\(^11,12\) In contrast, the number of births in women with AN has been found to be reduced to one-third of the expected rate.\(^13\) The differing findings across these studies may be the result of different durations of follow-up, as well as the severity of the participants’ EDs and the age of the study population. A higher rate of unplanned pregnancies has also been found in women with BN.\(^14\) More recently, in a large longitudinal child cohort study,\(^15\) rates of unplanned pregnancy and termination of pregnancy were significantly elevated in women with AN. Unplanned pregnancies in women with EDs may possibly result from mistaken beliefs about fertility.

Time taken to conceive may provide a more accurate measure of fertility in epidemiological studies.\(^16,17\) Most women will become pregnant within 3–6 months of trying to conceive, and up to 90\% will become pregnant within 12 months of unprotected sex.\(^18\) Thus infertility is often defined as an inability to conceive for 12 months or longer;\(^19\) however, delays in conception time can reflect a whole range of underlying fertility problems.

Very little is known about the early relationship between mother and baby, and bonding, in women with EDs. The mother–infant relationship begins during pregnancy when the mother begins to bond with her unborn child,\(^20\) and to prepare for birth and motherhood. Poor prepartum bonding has been shown to predict poor postpartum mother–infant attachment, and may ultimately have long-term consequences for both mother and child.\(^21\) A recent study found that more than 90\% of women with a history of EDs reported problems regarding their adjustment at 3 months postpartum, compared with 13\% of controls.\(^22\) Women with EDs also display more pregnancy-related anxieties, specifically for the wellbeing of their unborn child and inevitable weight gain during pregnancy, it may be a particularly daunting experience for women with EDs.

The aim of the present study was to investigate fertility in women with a lifetime ED, using a large birth cohort: specifically, the length of time taken to conceive, having seen health professionals for fertility problems and fertility treatment in women with EDs, compared with the general population. Secondly, we aimed to investigate the occurrence of unintentional pregnancies and women’s feelings towards their pregnancy in women with lifetime EDs compared with the remaining sample.

**Methods**

**Design and participants**

This study is based on data collected from the Avon Longitudinal Study of Parents and Children (ALSPAC).\(^24\) ALSPAC is a longitudinal birth cohort study, which enrolled all pregnant women living within Avon, England, who were due to deliver their baby between 1 April 1991 and 31 December 1992.

A total of 14 663 women initially enrolled in the study at 9 weeks of gestation. Data were obtained from 14 472 of them via postal questionnaires. At 12 weeks of gestation women were asked if they had any recent or past history of psychiatric problems, including depression, schizophrenia, alcohol abuse, AN, BN and other disorders. Women were excluded from the current study if they did not respond to the 12-week questionnaire (2019). For the purpose of this study we only included singleton live births (12 254), and excluded women who reported having had a psychiatric disorder other than an ED only (\(n = 1166, 9.5\%\)).

In total, 171 (1.5\%) women responded yes to the question ‘have you ever had AN’, 199 (1.8\%) reported that they had suffered from lifetime BN, and an additional 82 (0.7\%) responded yes to both having ever had AN and BN (AN + BN); the remaining 10 636 (96\%) formed the general population comparison group. For further details see Micali et al.\(^25\) The validity of the self-reported diagnosis was examined using the behavioural and cognitive symptoms of EDs.\(^24\)

**Outcomes and measures**

For the purpose of this study, data from self-report questionnaires completed at 12 and 18 weeks of gestation were investigated.

**Fertility**

At 12 weeks of gestation women were asked if they had ever seen a doctor for infertility problems, and if they had received treatment or help to conceive the current pregnancy. Additionally, at 18 weeks of gestation, women were asked the duration of time it took them to conceive.
Women were asked to indicate how long it took them to conceive from four possible options: <6 months, 6–11 months, 1–3 years and more than 3 years. Responses to this question were deemed inapplicable if the participant's pregnancy was unintentional: i.e. the analysis for time taken to conceive was restricted to women who had an intentional pregnancy (n = 7694). For the purpose of this study, these options were collapsed into two dichotomous variables: less/more than 12 months (to investigate rates of infertility) and less/more than 6 months (to investigate underlying difficulties conceiving).

Intentional pregnancies
At 18 weeks of gestation, women were asked if their current pregnancy was intentional.

Reactions to pregnancy
At 18 weeks of gestation all participants were asked how they felt when they discovered that they were pregnant, and how they currently felt about their pregnancy. Responses were scored as: overjoyed/pleased, mixed feelings and not happy/very unhappy. In addition, at 12 weeks of gestation participants were asked if becoming a mother meant giving up something important to them, and responses were scored: yes a great deal/quite a lot and not really/definitely not.

Sociodemographic data
Smoking, age, occupation and marital status were also obtained via questionnaires at 12 weeks of gestation. At 18 weeks of gestation a questionnaire was sent to the partner of the pregnant mother. Partners were asked to provide details of their relationship to both the study mother and unborn child. Where paternal age is included as a covariate in the analysis, the questionnaire had been completed by the biological father of the study child.

Data on the age of the biological father was only available for 7136 participants. There was no selective attrition across the groups, and missing data in the index groups on this variable were comparable with the general population group.

Statistical analysis
Cross-sectional analyses were carried out to determine the characteristics of the main outcome variables: time taken to conceive, frequencies of planned pregnancies, and fertility-related problems and treatment in groups of women reporting AN, BN and AN + BN, compared with the general population. Univariate and multivariable logistic regressions were used to examine predictors of these main outcomes. Women’s reactions to discovering their pregnancy and their current feelings towards their pregnancy were analysed using ordinal logistic regressions. Potential covariates (maternal and paternal age, prepregnancy smoking, maternal education level and parity) that were likely to influence fertility and attitudes to pregnancy were included: (i) following a literature review of shown associations with the outcomes under study; and (ii) if they were associated with the predictor and outcome, and not with the causal pathway. All analyses were performed using stata 10 (for Windows), and all statistical tests presented are two-tailed. Statistical significance was defined as P < 0.05.

Results
Sociodemographic data
Table 1 illustrates the sociodemographic data across the four groups. Maternal age at delivery, parity, employment and ethnicity did not differ across groups. Women with AN, BN and AN + BN were all more likely to not have a current partner compared with the general population. Paternal age (of the biological father) was higher in women with AN + BN than in the general population. Additionally, women reporting AN and AN + BN were more likely to have smoked prepregnancy than the general population.

Fertility
The majority of women across the four groups had never seen a doctor for fertility-related problems (n = 9685, 88.1%), or had used treatment or help with conceiving their current pregnancy (n = 10 693, 97.3%).

After adjusting for relevant covariates (maternal age, maternal education level, parity and prepregnancy smoking), compared with the general population, women with AN (OR 1.6, 95% CI 1.1–2.5; P < 0.021) and women with AN + BN (OR 1.9, 95% CI 1.1–3.4; P < 0.020) were more likely to have been seen by a doctor for lifetime fertility problems. Women with AN + BN were more than twice as likely (6.2%) than the general population (2.7%) to have received treatment or help to conceive their current pregnancy (P = 0.05; Table 2).

Intentional pregnancy
Overall, women in this sample were more likely to report that their current pregnancy was intentional (n = 7694; 71.4%). Women with lifetime AN were less likely to have intentional pregnancies (OR 0.5, 95% CI 0.4–0.7; P < 0.001) compared with the general population, and had more unplanned pregnancies (41.5 versus 28.3%). This difference persisted when relevant confounding factors were entered into the model (Table 2).

Time taken to conceive
Of the 7694 women reporting a planned pregnancy, the majority conceived within the first 6 months (74.5%), with
relatively few taking longer than 1 year (8.3%) or more than 3 years (3.6%) to conceive.

Two separate regression analyses were carried out, primarily to investigate if there were any group differences for women who took longer than 12 months to conceive (to investigate infertility), and secondly, to investigate group differences for women who took longer than 6 months to conceive (to investigate underlying fertility problems).

Overall, women in the ED groups were no more likely to take longer than 12 months to conceive than the general population, in both univariate and adjusted analyses. However, there was some evidence that women reporting lifetime AN + BN took longer than 6 months to conceive, compared with the general population; this difference persisted after the model was adjusted for relevant confounding factors (maternal age at delivery, maternal education level, parity, prepregnancy smoking and paternal age; OR 1.9, 95% CI 1.0–3.5; \( P = 0.04 \); Table 3). An initial stratified analysis by parity suggested no differences in relation to the outcome across groups. Furthermore, a sensitivity

### Table 1. Sociodemographic characteristics: comparisons based on analysis of variants (ANOVA) (in bold) and binary logistic regression

<table>
<thead>
<tr>
<th>Group</th>
<th>AN (n = 171)</th>
<th>BN (n = 199)</th>
<th>AN + BN (n = 82)</th>
<th>General population (n = 10 636)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at delivery: mean (SD)</td>
<td>28.9 (5.2)</td>
<td>28.2 (4.6)</td>
<td>29.2 (4.6)</td>
<td>28.2 (4.8)</td>
</tr>
<tr>
<td>Multiparity: %</td>
<td>52.5%</td>
<td>51.6%</td>
<td>53.3%</td>
<td>54.9%</td>
</tr>
<tr>
<td>OR (95% CI)</td>
<td>0.6 (0.6–1.2)</td>
<td>0.9 (0.7–1.2)</td>
<td>0.9 (0.6–1.5)</td>
<td>98.8%</td>
</tr>
<tr>
<td>White Ethnicity: %</td>
<td>96.2%</td>
<td>97.4%</td>
<td>98.8%</td>
<td>97.6%</td>
</tr>
<tr>
<td>OR (95% CI)</td>
<td>0.6 (0.3–1.4)</td>
<td>0.9 (0.7–1.2)</td>
<td>1.9 (0.3–13.8)</td>
<td>42.7%</td>
</tr>
<tr>
<td>Employment: %</td>
<td>49%</td>
<td>48.9%</td>
<td>42.7%</td>
<td>49.1%</td>
</tr>
<tr>
<td>OR (95% CI)***</td>
<td>1.0 (0.7–1.34)</td>
<td>1.0 (0.7–1.3)</td>
<td>0.8 (0.5–1.2)</td>
<td>29.4%</td>
</tr>
<tr>
<td>Pre-pregnancy smoking: %</td>
<td>39.8%</td>
<td>35.7%</td>
<td>44.4%</td>
<td>29.4%</td>
</tr>
<tr>
<td>OR (95% CI)</td>
<td>1.5 (1.1–2.1)**</td>
<td>1.3 (0.9–1.8)***</td>
<td>1.9 (1.2–2.9)*</td>
<td>89.6%</td>
</tr>
<tr>
<td>Currently has a partner %</td>
<td>95.3%</td>
<td>95.6%</td>
<td>89.6%</td>
<td>98.1%</td>
</tr>
<tr>
<td>OR (95% CI)***</td>
<td>0.3 (0.2–0.9)*</td>
<td>0.4 (0.2–0.9)*</td>
<td>0.1 (0.1–0.3)**</td>
<td>98.1%</td>
</tr>
<tr>
<td>Fathers age: mean (SD)****</td>
<td>30.9 (6.2)</td>
<td>30.75 (5.8)</td>
<td>33.6 (6.2)*</td>
<td>31 (5.2)</td>
</tr>
<tr>
<td>Missing father’s age n (%)</td>
<td>82 (48%)</td>
<td>83 (42%)</td>
<td>34 (41%)</td>
<td>3753 (35%)</td>
</tr>
</tbody>
</table>

*P ≤ 0.05, versus general population.

**P < 0.001, versus general population.

***P = 0.07, versus general population.

****Full-time or part-time employment or full-time education, training versus unemployed, housewives or retired at enrolment.

*****Data only available for 7136 participants.

### Table 2. Logistic regression of fertility problems, intentional pregnancy and ‘motherhood means personal sacrifice’

<table>
<thead>
<tr>
<th></th>
<th>Unadjusted OR (95% CI)</th>
<th>General population (n = 10 636)</th>
<th>Adjusted OR (95% CI)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AN (n = 171)</td>
<td>BN (n = 199)</td>
<td>AN + BN (n = 82)</td>
</tr>
<tr>
<td>Seen a doctor for</td>
<td>35 (20.6%)</td>
<td>22 (11.2%)</td>
<td>16 (19.5%)</td>
</tr>
<tr>
<td>fertility problems: n (%)</td>
<td>1.9 (1.3–2.8)**</td>
<td>0.9 (0.6–1.49)</td>
<td>1.8 (1–3.1)*</td>
</tr>
<tr>
<td>Received help to</td>
<td>4 (2.3%)</td>
<td>3 (1.5%)</td>
<td>5 (6.2%)</td>
</tr>
<tr>
<td>conceive: n (%)</td>
<td>0.8 (0.3–2.3)</td>
<td>0.5 (0.2–1.8)</td>
<td>2.3 (0.9–5.8)***</td>
</tr>
<tr>
<td>Intentional pregnancy</td>
<td>96 (58.5%)</td>
<td>131 (67.1%)</td>
<td>53 (66.2%)</td>
</tr>
<tr>
<td>n (%)</td>
<td>0.5 (0.4–0.8)**</td>
<td>0.8 (0.6–1.0)</td>
<td>0.7 (0.5–1.2)</td>
</tr>
</tbody>
</table>

*P ≤ 0.05, versus general population.

**P < 0.001, versus general population.

***P = 0.07, versus general population.

*Adjusted for maternal age at delivery, parity, maternal educational level and pre-pregnancy smoking.
analysis was carried out in relation to paternal age, and there was no evidence that the association between exposure and outcome changed if data on paternal age was missing.

Feelings towards pregnancy
The majority of women in the ALSPAC sample reported feeling overjoyed/pleased when they discovered that they were pregnant (£7657, 71%), with few reporting negative feelings (not happy/very unhappy £426, 3.9%). Maternal EDs were associated with a tendency to have negative feelings about discovering that they were pregnant. Women in the three ED groups showed increased odds of reporting negative feelings about discovering their pregnancy, compared with the general population group (see Table 4). Women in the AN group had a 1.8 increase in odds of going up one category from being happy to unhappy, compared with the general population (adjusted OR 1.8, 95% CI 1.3–2.6; £0.001).

Table 3. Logistic regression models of conception time

<table>
<thead>
<tr>
<th>Time taken to conceive</th>
<th>Unadjusted OR (95% CI)</th>
<th>Adjusted OR (95% CI)†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AN (n = 89)</td>
<td>BN (n = 116)</td>
</tr>
<tr>
<td>Model 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failing to conceive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>within 12 months n (%)</td>
<td>1.3 (0.8–2.4)</td>
<td>0.9 (0.5–1.6)</td>
</tr>
<tr>
<td></td>
<td>14 (15.7%)</td>
<td>11 (9.4%)</td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failing to conceive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>within 6 months n (%)</td>
<td>1.0 (0.6–1.6)</td>
<td>0.6 (0.4–1.1)</td>
</tr>
<tr>
<td></td>
<td>23 (25.8%)</td>
<td>21 (18.1%)</td>
</tr>
</tbody>
</table>

*P £ 0.05, versus general population (n = 6883).
†Adjusted for maternal age at delivery, parity, maternal educational level, pre-pregnancy smoking and partners age.

Table 4. Ordinal logistic regressions of participant’s reactions to pregnancy and logistic regression of ‘motherhood means personal sacrifice’

<table>
<thead>
<tr>
<th>Group</th>
<th>Unadjusted OR (95% CI)</th>
<th>Adjusted OR (95% CI)†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AN (n = 171)</td>
<td>BN (n = 199)</td>
</tr>
<tr>
<td>Feelings upon discovering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pregnancy</td>
<td>1.7***</td>
<td>1.5**</td>
</tr>
<tr>
<td></td>
<td>(1.3–2.4)</td>
<td>(1.1–2.1)</td>
</tr>
<tr>
<td>Feelings towards pregnancy</td>
<td>1.4</td>
<td>1.4†</td>
</tr>
<tr>
<td>at 18 weeks of gestation</td>
<td>(0.9–2.2)</td>
<td>(0.9–2.1)</td>
</tr>
<tr>
<td>Motherhood means sacrifice: n (%)</td>
<td>47 (29.2%)</td>
<td>43 (22.5%)</td>
</tr>
<tr>
<td>OR (95% CI)</td>
<td>2.3 (1.5–3.7)**</td>
<td>0.8 (0.5–1.4)</td>
</tr>
</tbody>
</table>

*P £ 0.05, versus general population.
**P < 0.001, versus general population.
***P < 0.001, versus general population.
†P = 0.070, versus general population.
††P = 0.059, versus general population.
‡‡P = 0.091, versus general population.
†Adjusted for maternal age at delivery, parity and maternal educational level.
At 18 weeks of gestation, women’s negative feelings about pregnancy had reduced; however, there was a trend towards women with EDs to continue to experience more negative feelings about their pregnancy than the general population. Within the AN + BN group the odds of negative feelings towards pregnancy at 18 weeks of gestation was 2.3 compared with the general population (OR 2.3, 95% CI 1.3–4.1; P < 0.01; Table 4).

At 12 weeks of gestation relatively few women felt that motherhood meant giving up something important (n = 1181, 16.9%). However, women with lifetime AN (OR 2.3, 95% CI 1.5–3.7; P < 0.0001) and AN + BN (OR 2.4, 95% CI 1.3–2.6; P = 0.004) were more likely to view motherhood as a personal sacrifice, compared with the general population group (Table 4).

**Discussion**

The aim of the current study was to investigate fertility, unplanned pregnancies and reactions to pregnancy in women with lifetime EDs, using a large general population cohort (ALSPAC).

**Fertility**

Women with lifetime AN (AN and AN + BN) were more likely to have been seen by a doctor for lifetime fertility problems than the general population. Although only a small percentage of women had received treatment when trying to conceive across this sample, women with AN + BN were more than twice as likely to have received treatment for a fertility problem than the general population. It is likely that lifetime fertility problems might be secondary to a low body mass index (BMI), which was evident in both groups. However, it is important to note that the data from the present study relates to the early 1990s, and since this time there have been a number of advances in the treatment of fertility problems. Nevertheless, fertility treatment of the problems commonly seen in women with EDs, such as hypogonadotropic hypogonadism, has been more widely available since the early 1990s.

Across the three ED groups participants were no more likely than the general population group to take longer than 12 months to conceive. However, after adjusting for relevant maternal and paternal covariates women reporting AN + BN were more likely than the general population to take longer than 6 months to conceive their current pregnancy. This finding, in combination with the findings above, suggests that although infertility was uncommon in this sample, underlying fertility-related problems and difficulties conceiving existed, particularly within the AN + BN group. It is of note that this group had the highest prevalence of lifetime purging and lowest pre-conception BMIs across the three index groups. The severity of the ED might therefore explain the higher risk of fertility-related problems in this group, as they appear to be at greatest risk of experiencing both fertility problems and delays in conceiving.

Our findings are consistent with previous long-term follow-up studies, which suggest that in general, fertility is affected but not significantly compromised in women with EDs. However, the women in this study were pregnant at the time of enrolment, i.e. were able to conceive, and therefore could represent a group of women with less severe EDs. This is likely to result in an underestimation, rather than overestimation, of fertility-related problems in this group.

Approximately 40% of women with AN reported that their current pregnancy was unintentional. Our results are consistent with a recent Norwegian longitudinal study, which indicated that more than half of pregnancies in their sample of women with AN were unplanned. These findings may result from erroneous beliefs about their ability to become pregnant (and therefore lack of contraceptive use); however, ovulation and pregnancy could still occur in women with EDs who experience irregular cycles.

**Reactions to pregnancy**

Across all three ED groups, negative feelings towards discovering that they were pregnant were more frequent than in the general population. In women with AN + BN, negative feelings remained stronger at 18 weeks of gestation. Furthermore, women with lifetime AN more frequently viewed motherhood as a personal sacrifice. Women suffering with AN often highly value aspects of their illness, and perceive the AN as providing several benefits. As pregnancy inevitably involves weight gain, becoming a mother may be seen as threatening to a potentially valued ‘anorexic identity’. Negative feelings in the ED group possibly result from a combination of the unexpected discovery of pregnancy and prospect of weight gain during pregnancy. On the other hand, a recent study reported that pregnancy in a close important other or therapist has a positive impact on women with EDs, and in particular on their intention to become pregnant and their view of motherhood. Therefore, prenatal bonding in women with EDs may reflect a more complex process than in the normal population.

The prenatal period has been shown to be an important time for maternal bonding and may be reflective of attachment once the baby is born. In general, ED symptoms have been shown to reduce during pregnancy, where maternal concern for their unborn child appears to override ED behaviours. This may help explain the adjustments in feelings towards pregnancy by 18 weeks of gestation, as the risk of negative feelings had reduced in women with AN or BN. However, the postpartum period remains a high-risk time for women with EDs, where previous symptoms and behaviours tend to return. Women with EDs also...
have an increased risk of postnatal depression and potentially experience attachment difficulties,\textsuperscript{14,32} therefore, the prepartum period may be an ideal time for preventative intervention in this group.

**Strengths and limitations**
This study is the first study to systematically investigate conception time in women with lifetime EDs from a general population cohort, and additionally to distinguish between different ED classifications. Furthermore, the availability of data on important confounding factors allowed a less biased investigation of relevant outcomes across EDs, and compared with the general population. Investigating the time taken to conceive is thought to be a more accurate measure of general fertility problems, compared with the research outcomes previously used in this field.

There are some limitations to this study, which require consideration when interpreting the results. The classification of EDs was made on the basis of self-reporting. The use of self-reporting as a method of classifying EDs may be subject to bias. However, there is evidence that self-reported ED classification, when used in community studies, is comparable with many ED screening instruments.\textsuperscript{33} Moreover, behavioural data in the sample lend weight to the self-reported diagnosis, and the prevalence of self-reported EDs in this sample was consistent with the prevalence of EDs in community samples.\textsuperscript{24}

A second limitation is that the number of women within each of the ED groups was relatively small, and it is therefore possible that negative findings are a result of small sample size, particularly for the smallest (AN + BN) group. However, if this is true our findings (in particular in relation to fertility problems) are likely to be an underestimation rather than an overestimation.

As mentioned earlier, it is also important to note that, given the nature of the sampling procedure, all of the women in this study were able to become pregnant, and so women in the ED groups might be representative of a less severe ED sample, compared with a clinical sample. However, should this be true, this is likely to cause an underestimation of fertility problems across ED groups.

**Clinical implications**
The present study has important implications for the treatment of women with EDs during their childbearing years. Underlying difficulties conceiving were indicated by a higher percentage of women in the AN + BN group taking longer than 6 months to conceive, and having received treatment for infertility. Given the obstetric risks associated with EDs,\textsuperscript{11,13,25,34} a reduction in ED symptoms should ideally be achieved prior to conception.

Moreover, we found that unplanned pregnancies were more common in this sample, confirming recent findings in women with AN.\textsuperscript{15} These findings might underlie an underestimation of the chances of conceiving in women with AN. ED specialists are ideally placed to approach issues of fertility and family planning with their patients early on during treatment. To overcome any mistaken beliefs about fertility, clinicians should inform women with EDs that they can still be fertile, even when experiencing disturbed menstrual patterns. In addition, given that many women with EDs fail to discuss their illness with midwives and obstetricians, multidisciplinary working and the formation of close links with obstetric and gynaecological services should be encouraged when working with a patient who is pregnant.

Negative feelings towards becoming pregnant were more frequent within the ED groups, particularly on finding out about pregnancy; therefore, the early phases of pregnancy may be particularly difficult for women with EDs, and additional support should be given in this period.

**Disclosure of interests**
None.

**Contribution to authorship**
NM had the original idea for the research and designed the study. All authors planned the analysis, which was performed by AE and supervised by NM. AE wrote the first version of the article, which all the authors discussed and made suggestions on. JT was involved in the interpretation of data analyses and revised the article critically.

**Details of ethics approval**
The study was approved by the Institute of Psychiatry ethics committee (ref. 110/02), the ALSPAC law and ethics committee, and the local research ethics committees.

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