Antenatal depression and male gender preference in Asian women in the UK

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Abstract
Objective: to identify the prevalence of antenatal depression among Asian women living in the UK in one antenatal clinic, and to investigate the possible association with a desire for a male child and other risk factors.
Design: cross-sectional questionnaire-based study.
Setting: general antenatal clinic in a hospital in Birmingham.
Participants: 300 Asian women, irrespective of place of birth.
Methods: consecutive Asian women attending routine antenatal appointments during the study period self-completed a questionnaire. The first part investigated socio-demographic, cultural and other possible risk factors, including gender preference. The second part comprised the Edinburgh Postnatal Depression Scale (EPDS).
Measurements: EPDS score greater than or equal to 12 indicating probable depression.
Findings: the prevalence of depression was 30.7% (92/300, 95% confidence interval 25.4–35.9%). Maternal male gender preference was not common and was not associated with antenatal depression. Family male gender preference, unplanned pregnancy, a history of depression and feeling anxious in pregnancy were independently associated with an increased likelihood of depression, whilst support from family and friends, being satisfied with pregnancy and being multiparous were associated with a reduced likelihood of depression.
Conclusion: rates of antenatal depression were very high in Asian women with some associated risk factors. However, male gender preference was not associated with antenatal depression.
Implications for practice: given the high prevalence, screening Asian women for depression may be indicated to allow treatment.
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Keywords Antenatal depression; Asian pregnancy; Gender preference

Introduction

Depression is a common disorder globally and a major cause of disability (World Health Organization, 2006). It is known that depression is more common in women than men across many cultures, and its first onset often occurs during the child-bearing years (Weissman and Olfson, 1995). In the developed world, postnatal depression has been the subject of many investigations and its

prevalence is estimated to be 10–15% (O'Hara and Swain, 1996). The negative and ongoing impacts of postnatal depression, physically, cognitively and socially on infant development, have been well documented (Beck, 1998; Patel et al., 2004; Rahman et al., 2007). Children with mothers who have postnatal depression have a higher rate of insecure attachments and perform poorly in cognitive tasks (Cogill et al., 1986; Murray, 1992; Murray et al., 1996).

Antenatal depression, generally defined as the onset of depressive symptoms during pregnancy, can occur at any gestation (Bennett et al., 2004). Less information is available on antenatal depression but studies have generally demonstrated a prevalence of 9–17% (Evans et al., 2001; Joseffsson et al., 2001; Heron et al., 2004). Antenatal depression has important implications for fetal and maternal health. Women with antenatal depression or anxiety have been found to have more planned caesarean sections and epidural use in labour (Andersson et al., 2004), to be at a higher risk of pre-eclampsia (Kurki et al., 2000), and to be more likely to deliver preterm and have low-birth weight infants (Steer et al., 1992; Hedegaard et al., 1993). Furthermore, antenatal depression is associated with postnatal depression (Cooper et al., 1996; Forman et al., 2000).

Although research has been conducted on antenatal and postnatal depression in Asian countries, few studies have examined antenatal depression among Asian women living in Western countries. High rates of postnatal depression (28%) have been reported in Pakistani women (Rahman et al., 2003), with rates of 11–23% in Indian women (Chandran et al., 2002; Patel et al., 2002). Information on antenatal depression from the developing world is more limited, but one study in India found a prevalence of 16% (Chandran et al., 2002) and another study in Pakistan found a prevalence of 25% (Rahman and Creed, 2007).

Gender preference, meaning a desire for a male child, exists in many cultures in South Asia, the Middle East and East Asia (Booth et al., 1994; Nielsen et al., 1997; Chandran et al., 2002; Patel et al., 2002; Ekuklu et al., 2004; Lofstedt et al., 2004). This can be illustrated by the example of India, where sex-selected abortions of female fetuses are believed to have contributed to the unequal male-to-female ratio (Booth et al., 1994; Nielsen et al., 1997; Sharma et al., 2007). In these societies, the birth of a female child when a male child is desired has been found to be associated with postnatal depression (Ghubash and Abou-Saleh, 1997; Chandran et al., 2002; Patel et al., 2002; Rahman et al., 2003; Ekuklu et al., 2004).

The aim of this study was to identify the prevalence of antenatal depression among Asian women living in the UK in one antenatal clinic, and to investigate the possible association with a desire for a male child and other risk factors.

Methods

The study was cross-sectional, conducted at a large maternity hospital in Birmingham, UK. Birmingham is a diverse city with 66% of the population identifying themselves as White British compared with the 87% national average (Population Census Data, 2001). The Asian ethnic groups in Birmingham include Pakistani (10.6%), Indian (5.7%), Bangladeshi (2.1%) and other Asian (1.0%) (Population Census Data, 2001). Eighty-four per cent of Birmingham residents are born in the UK (Population Census Data, 2001).

Women of Asian ethnicity were recruited from general antenatal appointments from January to April 2007. Asian ethnicity was defined as Pakistani, Bangladeshi or Indian descent, irrespective of place of birth. Other Asian ethnicities were excluded as they constitute only a small percentage of the Birmingham population (Population Census Data, 2001). All women recognised to be Asian, either from names on the clinic list or their appearance, were asked if they were able to speak and read English and then asked if they would participate. Although this study focused on Indian, Pakistani and Bangladeshi women, within these areas, many different languages are spoken. It was not possible to obtain translators for all the different languages, so women unable to speak English could not be included in the study. Ethical approval was received from the South Birmingham Ethics Committee.

After written informed consent, women were given an anonymous two-part questionnaire to complete. The first part included questions on risk factors identified in previous studies, in particular the questionnaire used by Patel et al. (2002) in their study in Goa, India. Data were sought about socio-demographic characteristics (age, household, ethnicity, country of birth, marital status, employment) and about topics such as social support from husband, family and friends and the quality of support. Data were recorded on present pregnancy (number of weeks of gestation, unplanned pregnancy, satisfaction with pregnancy) and previous pregnancy such as number of other children and their gender. Data about present and previous psychological illness, specifically previous antenatal depression, previous postnatal depression and

feeling anxious in pregnancy, and information regarding gender preference were also collected. The second part of the questionnaire comprised the Edinburgh Postnatal Depression Scale (EPDS) to identify women with probable antenatal depression (Cox et al., 1987; Murray and Cox, 1990). This 10-item self-complete scale was developed to screen for postnatal depression but has been validated for use in pregnancy and for use around the world (Green and Murray, 1994; Ebehard-Gran et al., 2002). The scale ranges from 0 to 30 and a cut-off score of greater than or equal to 12 was used to identify probable cases of depression, as recommended by a validation study in pregnancy, to include all women with both major and minor depression (Murray and Cox, 1990).

The questionnaire was self-completed with the researcher present if clarification was required. Women could return questionnaires directly to the researcher or to a box at the clinic reception to maintain anonymity. A pilot study of 50 subjects demonstrated that women had adequate levels of literacy and were confident in completing the questionnaire. Some struggled with the meaning of gender when answering on gender preference, so this was changed to preference for the sex of the child. The question was phrased so that women were asked 'what sex do you want your child to be?' and could answer one of male, female or do not mind.

Data were analysed using Statistical Package for the Social Sciences version 15.0 (SPSS Inc., Chicago, IL, USA) with two-tailed significance levels of less than 0.05. Association between variables and antenatal depression were investigated using univariate analysis. Chi-squared test was used for categorical variables and Fisher's exact test was used where expected cell sizes were less than five. For continuous variables, t-tests or Mann–Whitney U-tests were used for parametric or non parametric data where indicated. To identify factors independently associated with antenatal depression, variables were entered into a binary forward stepwise logistic regression model, and odds ratios and 95% confidence intervals (CI) were calculated.

Findings

Only 26 of the 364 Asian women attending clinics were ineligible for inclusion in the study as they were unable to speak English. Of the 338 eligible women, 300 participated; a response rate of 88.8%. Twenty-three women refused to participate and 15 questionnaires were incomplete or not returned (see Table 1). Ninety-two women met the threshold score

of greater than or equal to 12 for depression, giving a prevalence of 30.7% (95% CI 25.4–35.9%). Thus, the power of the study, based on equivalence of proportion, to investigate the association of antenatal depression with male gender preference was 93%.

Univariate analyses were conducted to identify associations between socio-demographic and cultural factors and antenatal depression (see Table 1). Factors found to be significantly associated with increased likelihood of depression were unplanned pregnancy, previous antenatal depression, previous postnatal depression, depression at some other time, feeling anxious in pregnancy, and family preference for a male child. Factors found to be significantly associated with a decreased likelihood of developing depression included being satisfied with pregnancy, number of people providing support, quality of support from family and friends as rated by women, and support from husband.

Only 22/300 (7.3%) women desired a male child and there was no association with antenatal depression (see Table 2). Although the difference was not significant, more women (28/300, 9.3%) desired a female child. Thirty-eight of 300 (12.7%) women stated that their family had a preference for a male child, and this was significantly associated with antenatal depression. Most of the women whose families desired a male (31/38, 81.6%) compared with those with no such preference (7/292, 2.4%) did not already have a male child. Among families of Indian women, 19.5% (16/82) had a preference for a male relative to 9.8% (19/189) of the Pakistani women.

A potential confounding factor in examining the role of gender preference was that some women (68, 22.7%) were aware of the sex of their baby. This was adjusted for by entering as a variable in the logistic regression model, along with other potentially confounding factors, but it was not found to be associated with antenatal depression. The logistic regression model showed, after adjustment, that factors positively associated with antenatal depression were unplanned pregnancy, previous antenatal depression, depression at some other time, feeling anxious in the pregnancy and family preference for a male (see Table 3). Support from family and friends, being satisfied with pregnancy and being multiparous were negatively associated with antenatal depression.

Discussion

This study provides information on the prevalence and factors associated with antenatal depression in

Table 1 Univariate analysis of all factors and antenatal depression

Factor	Depressed n = 92 (SD) or (% of n)	Not depressed n = 208 (% of n)	Unadjusted odds ratio (95% CI)	Significance $p < 0.05$
Mean EPDS score	15.0 (3.1)	6.6 (3.3)	–	<0.000[a]
No. of weeks gestation (mean)	24.1 (12.2)	23.5 (10.3)	–	0.687[a]
Mean age	28.6 (5.2)	27.6 (4.6)	–	0.057[a]
Mean household size	4.1 (2.1)	4.6 (7.0)	–	0.634[a]
Ethnicity[c]				
Indian	25 (27.1)	57 (27.4)	–	0.851
Bangladeshi	6 (6.5)	10 (4.8)		
Pakistani	60 (65.2)	134 (64.4)		
Country of birth				
UK	52 (56.5)	129 (62.0)	1.3	0.371[b]
Not UK	40 (43.5)	78 (37.5)	(0.8–2.1)	
Education to 16+ years				
Y	74 (80.4)	164 (78.8)	0.3	0.637[b]
N	16 (17.4)	42 (20.2)	(0.7–1.2)	
Married				
Y	82 (89.1)	194 (93.3)	0.6	0.251[b]
N	10 (10.8)	14 (6.7)	(0.3–1.4)	
Employed				
Y	38 (41.3)	90 (43.3)	0.9	0.801[b]
N	54 (58.7)	118 (56.7)	(0.6–1.5)	
Type of family				
Extended	33 (35.9)	87 (41.8)	0.8	0.372[b]
Not extended	59 (64.1)	121 (58.2)	(0.5–1.3)	
Second or subsequent pregnancy				
Y	42 (45.7)	82 (39.4)	0.8	0.37[b]
N	50 (54.3)	126 (60.6)	(0.5–1.3)	
Unplanned pregnancy				
Y	58 (63.0)	160 (76.9)	2.0	0.017
N	34 (37.0)	48 (23.1)	(1.1–3.3)	
Satisfied with pregnancy				
Y	87 (94.6)	206 (99.0)	0.2	0.030[b]
N	5 (5.4)	2 (1.0)	(0.0–0.9)	
Previous antenatal depression				
Y	17 (18.5)	3 (1.4)	15.5	<0.000
N	75 (81.5)	205 (98.6)	(4.4–54.3)	
Previous postnatal depression				
Y	23 (25.0)	8 (3.9)	3.2	<0.000
N	69 (75.0)	199 (95.7)	(1.5–6.8)	
Depression at some other time				
Y	26 (28.3)	10 (4.81)	7.80	<0.000
N	66 (71.7)	198 (95.2)	(3.6–17.0)	
Feeling anxious in pregnancy				
Y	45 (48.9)	48 (23.1)	3.3	<0.000
N	46 (50.0)	160 (76.9)	(1.9–5.5)	

Table 1 (*continued*)

Factor	Depressed n = 92 (SD) or (% of n)	Not depressed n = 208 (% of n)	Unadjusted odds ratio (95% CI)	Significance $p < 0.05$
No. of people providing support (mean)	2.6 (1.8)	3.5 (2.1)	0.8 (0.7–0.9)	<0.001[a]
Support from husband				
Satisfied	63 (68.5)	178 (85.6)	0.3	<0.001[b]
Not satisfied	28 (30.4)	27 (13.0)	(0.2–0.6)	
Quality of support from family and friends				
Good	85 (92.4)	204 (98.1)	0.2	0.039[b]
Poor	7 (7.6)	4 (1.9)	(0.1–0.8)	

EPDS, Edinburgh Postnatal Depression Scale.
[a]Mann–Whitney *U* or *t*-test, as appropriate.
[b]Fisher's exact test.
[c]Women of other ethnicity (*n* = 8) excluded due to small numbers.

Table 2 Univariate anaylsis of gender preference and antenatal depression

Variable	Depressed n = 92 (% of n)	Not depressed n = 208	Unadjusted odds ratio (95 % CI)	Significance $p < 0.05$
Preference for male				
Y	9 (9.8)	13 (6.3)	0.6	0.337[a]
N	83 (90.2)	195 (93.6)	(0.3–1.5)	
Preference for female				
Y	7 (7.6)	21 (10.1)	1.4	0.667[a]
N	85 (92.4)	187 (89.9)	(0.6–3.3)	
Family preference for male				
Y	19 (20.7)	19 (9.1)	2.6	0.008[a]
N	73 (79.3)	189 (90.9)	(1.3–5.2)	
Family preference for female				
Y	2 (2.2)	6 (2.9)	0.8	1.000[a]
N	90 (97.8)	202 (97.1)	(0.2–3.8)	

[a]Fisher's exact test.

Table 3 Logistic regression showing factors independently associated with antenatal depression

Factor	Odds ratio (95% CI)	*P*-value
Multiparous (in second or subsequent pregnancy)	0.3 (0.2–0.6)	<0.001
Unplanned pregnancy	2.2 (1.1–4.3)	0.019
Satisfied with pregnancy	0.1 (0.0–0.7)	0.018
Previous antenatal depression	19.4 (3.3–114.0)	<0.001
Depression at some other time	5.5 (2.0–15.2)	<0.001
Feeling anxious	2.2 (1.2–4.2)	0.018
Number of people providing support (mean)	0.8 (0.6–0.9)	0.002
Family preference for a male	2.9 (1.2–7.1)	0.017

women of Asian ethnicity living in the UK. The high prevalence of depression during pregnancy in this study (30.7%, 95% CI 25.4–35.9%) indicates that this poses an important issue for UK Asian women. This prevalence is higher than the 25% reported in Pakistan and 16% in India (Chandran et al., 2002; Rahman and Creed, 2007). It is also higher than the 7–15% prevalence reported in studies from general populations in the developed world (Evans et al., 2001; Joseffsson et al., 2001; Heron et al., 2004). It is comparable, however, with rates of postnatal depression found in Pakistan, India and the Middle East (Patel et al., 2002; Rahman et al., 2003; Ekuklu et al., 2004). However, it should be noted that some variation between depression rates could occur due to the utilisation of different methods to assess and record depression.

This study specifically examined male gender preference and its association with antenatal depression. Only a few women (7.3%) had a preference for a male child; in fact, female preference was a little more common. Preference for a son exists in many countries in South East Asia and the Middle East, often due to social and cultural beliefs (Booth et al., 1994; Chandran et al., 2002; Patel et al., 2002; Ekuklu et al., 2004; Lofstedt et al., 2004). In countries such as India, economic pressures and religious pressures, such as funeral rites, also make sons more desirable than daughters (Arnold et al., 1998). A recent survey in Pakistan found a significantly greater preference for male than female children (Zubair et al., 2007). Previous studies in the developing world have found an association between male gender preference and depression in the postnatal period, and a study in Egypt found that women who desired a son were more likely to have antenatal depression than women who desired a daughter (Kamal et al., 1999).

A history of previous antenatal depression or depression at some other time was found to be associated with antenatal depression and is consistent with the literature (O'Hara and Swain, 1996). Previous postnatal depression did not remain in the predictive model even though this association is well documented in the literature. This is probably because it was very closely related with depression at some other time, which may have displaced it in the statistical model. Anxiety in pregnancy has been related to postnatal depression (Zubair et al., 2007). In the developing world, unwelcome or unplanned pregnancies have been found to be associated with postnatal depression (Ghubash and Abou-Saleh, 1997; Chandran et al., 2002; Ekuklu et al., 2004). Again consistent with the literature, in both Western and non-Western

societies, women with more support from family and friends were less likely to develop depression (Zuckerman et al., 1989; Hobfall et al., 1995; Séguin et al., 1995; Bolton et al., 1998; Ritter et al., 2000; Chandran et al., 2002; Patel et al., 2002; Rahman et al., 2003).

Although the questionnaires were anonymous, women often attended the clinic with their partners or family members and so this may have presented a situation for social desirability bias. Some of the EPDS questions enquire about personal issues, such as self-harm, and women may have been unwilling to divulge this information in the vicinity of family members or friends, which would have led to an underestimation of depression. Similarly, overestimations of support actually received may have been reported. Participants were asked to self-complete questionnaires but occasionally there appeared to be discussion with people accompanying them. Other studies in the developing world have observed that women misinterpreted the meanings of some of the questions, such as those about self-harm (Patel et al., 2002; Fisher et al., 2004), but in this study, comprehension of the questions did not seem to be an issue. An intrinsic limitation of the EPDS is that it is a screening tool and is not diagnostic, so it can only indicate those women with probable depression (Murray and Cox, 1990). Nevertheless, it is validated for use in research to identify women with probable depression and has been used by previous studies for this purpose (Cox et al., 1987; Murray and Cox, 1990; Green and Murray, 1994). For logistical reasons, women unable to speak English were excluded from this study. Due to the diverse multi-ethnic population of Birmingham, it would not have been feasible to translate the questionnaire into all the various South East Asian languages spoken in the region. However, from the 364 women approached, only 26 were excluded as they were unable to speak English.

This study found high rates of antenatal depression among Asian women in the UK. Antenatal depression has significant impacts on the well-being of the mother and fetus, as well as progressing to postnatal depression, for which the negative implications on mother and child are well documented (Murray, 1992; Steer et al., 1992; Hedegaard et al., 1993; Beck, 1995, 1998; Kurki et al., 2000; Andersson et al., 2004). Health practitioners should be aware that such a large proportion of women may be suffering from antenatal depression, especially given its adverse effects and its potential for management, either through drug treatment or psychological methods (Antenatal and Postnatal Mental Health, 2007). In

antenatal clinics, utilisation of Whooley questions as recommended by National Institute for Health and Clinical Excellence guidelines may be beneficial (Antenatal and Postnatal Mental Health, 2007).

Conclusion

The rates of antenatal depression were shown to be very high in this sample of Asian women living in the UK. Very few women stated a preference for a son, and maternal male gender preference was not associated with antenatal depression. Familial preference for a male child was not common but was associated with antenatal depression. Antenatal depression has implications for fetal development and maternal health, and can progress to postnatal depression. Further studies to examine this are important. If this high rate of depression is confirmed, consideration of early recognition and treatment may minimise the physical and emotionally distressing impact of this condition.

Conflicts of interest

None.

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