A prospective study of social difficulties, acculturation and persistent depression in Pakistani women living in the UK

N. Chaudhry*, N. Husain, B. Tomenson and F. Creed

University of Manchester, Manchester, UK

Background. The reasons for the high prevalence of depressive disorders in women of Pakistani origin living in the UK are not clear. The aim of this study was to determine the relative importance of life events, chronic social difficulties and acculturation in a population-based sample of British Pakistani women.

Method. A cross-sectional and prospective cohort study of 18- to 65-year-old Pakistani women in UK was carried out. The Schedule for Clinical Assessment in Neuropsychiatry for diagnosis, the Life Events and Difficulties Schedule for social stress and an acculturation questionnaire were used.

Results. Depressive disorder at baseline was associated with older age, social isolation and marked difficulties involving health and close relationships. Depressive disorder at follow-up was associated with severity of depression at baseline, difficulties in close relationships and two aspects of acculturation, especially less acculturation in relation to use of the English language.

Conclusions. Lack of acculturation, especially less familiarity with the English language, is an independent predictor of persistence of depression in Pakistani women in UK. This needs to be taken into consideration when planning treatment, which also needs to address the personal difficulties associated with persistent depression. The implication of this work is that women of Pakistani origin with depression should be encouraged to receive help in the use of English as one part of treatment that may prevent relapse.

Introduction

Women of Pakistani and Indian origin living in the UK have a higher prevalence of common mental disorder than other ethnic groups, but the reasons for this are not clear (Williams & Hunt, 1997; Weich *et al.* 2004). Recently we found that few years of education, marked social difficulties and poor social support were associated with depressive disorder, suggesting that some aspects of Brown & Harris's social model of depression hold for this group although some of the vulnerability factors might be different (Brown & Harris, 1978; Gater *et al.* 2008). It has also been reported that distress or depression in this population is associated with lack of adapting to UK culture, racism and difficulty speaking English (Husain *et al.* 1997; Williams & Hunt, 1997; Weich *et al.* 2004). Lack of

acculturation to the host country has been documented as a risk factor for depression in immigrant populations in different countries, but the results are conflicting (Miller & Chandler, 2002; Bhui *et al.* 2005; Parker *et al.* 2005). The most recent studies have suggested that stressful life events may mediate the association between depression and lack of acculturation (Hwang & Myers, 2007; Hwang & Ting, 2008). The current study assessed whether lack of acculturation and social difficulties were independent correlates of distress, prevalent and persistent depressive disorder in a population-based sample of women of Pakistani origin in the UK. We hypothesized that depressed women would be less acculturated than non-depressed women, and that lack of acculturation would be an independent predictor of persistent depressive disorder.

* Address for correspondence: N. Chaudhry, Psychiatry Research Group, School of Community-Based Medicine, The University of Manchester, University Place, The Scan Building, 3rd Floor East Oxford Road, Manchester M13 9WL, UK.

(Email: nasim.chaudhry@manchester.ac.uk)

Method

The study design was a cross-sectional two-phase population-based survey to determine correlates of

depression, followed by a prospective cohort study of depressed subjects to identify risk factors for persistent depressive disorder.

Sample

The study sample of 487 (66% response rate) was drawn from four general practitioner (GP) practices in central Manchester, located in areas with a high population of British Pakistani Muslims. Practice registers were scrutinized to identify all 18- to 65-year-old female patients with recognizable Pakistani Muslim names. One subject was randomly selected from each household using a random number generator. The explanatory letters and the Self Reporting Questionnaire (SRQ), both in the English and Urdu language, were posted along with a return envelope to the potential participants selected from the GP lists. The letter also stated that if a completed SRQ or a refusal to participate letter was not received within a few weeks, a researcher would visit the woman's home. If a completed SRQ was not returned within 3 weeks, bilingual researchers visited the potential participants at home. During these visits the researchers again explained the study and answered any questions. Potential participants were requested to complete the SRQ at the time or it was collected later at a mutually agreed time.

If the potential participant was not at home repeatedly over five visits at different times of the day, the researcher tried to establish residency by enquiring from a neighbour. If, in this way, the person was found not to live at the address they were considered nonresident. Those who did not return the SRQ were considered as refusals. Participants gave written informed consent for inclusion in the study, and ethical approval was obtained from Central Manchester Ethical committee (no. CEN/00/122).

Measurement of psychiatric morbidity

The first phase used the SRQ, which is a widely used psychiatric screening questionnaire (WHO, 1994). It consists of 20 items to which the respondent answers 'yes' or 'no' according to whether they have experienced the symptom in the previous 30 days. The SRQ takes only a few minutes to complete. The SRQ has been successfully used in Pakistani populations and has been shown to have good sensitivity and specificity. It was validated earlier against the Psychiatric Assessment Schedule (PAS) (Husain *et al*. 2000; 2006). In the second phase of the study all high scorers (score of 7 or more on the SRQ) and a 1 in 4 sample of low scorers were contacted for interview using the Schedule for Clinical Assessment in Neuropsychiatry

(SCAN) to assess whether subjects met the criteria for either International Classification of Diseases, tenth revision (ICD-10) or Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV) depressive disorders (WHO, 1992; Gater *et al*. 2008). A total of 202 women (69% response rate) completed the SCAN interview. On the basis of these assessments the participants were divided into three groups: (1) depressive disorder, according to either ICD-10 or DSM-IV; (2) distressed, i.e. a high SRQ score (7 or more) but not depressed on the SCAN interview; and (3) not depressed, i.e. low SRQ group (<7). The reason for the three groups was, first, to examine whether an exposure–response relationship occurred between potential risk factors and depressed, distressed and non-depressed groups, and, second, whether the depression–acculturation association differed according to depression group.

Measurement of social stress

The Life Events and Difficulties Schedule (LEDS) was used to measure social stress (Brown & Harris, 1978). This is a semi-structured interview, which covers a number of domains such as family, work, health and relationships to establish any life events and difficulties that may have occurred or been present in the 12-month period prior to the date of the interview. The interviewers in this study were trained in the use of this instrument at Bedford College, London. They were supervised by senior researchers experienced in the use of LEDS (F.C. and N.H.), and all events and difficulties were presented for rating to a group who were blind to whether the participant was depressed or not. This work has led to a supplement to the Bedford College LEDS dictionary because some of the events and difficulties are unique to the Pakistani population. The proportion of each group who had experienced a marked social difficulty, namely one that carried a marked degree of threat to the individual (1–3 on a scale from 1–7) (Brown & Harris, 1978), is quoted. Marked difficulties were also rated according to the dimensions of 'humiliation' or 'entrapment' in an ongoing difficult situation. In order to assess change in the level of social difficulties between baseline and follow-up, a social difficulties score was derived for each of the following: physical health of the respondent or close relative, marital or other close relationship difficulties, housing and financial difficulties (Brown *et al*. 1998).

Measurement of assimilation into British society

An acculturation questionnaire was derived from the Cultural Questionnaire (Stopes-Roe & Cochrane,

1990). The original questionnaire comprises 116 questions covering the areas of employment, friendships, language, cooking, movies and media, religious ceremonies and festivals, clothes, marriages and family pattern, attitude towards country of migration, and discrimination and prejudice. Since many of the questions overlapped (e.g. 'do you speak any English at home?' and 'which language do you use with the family?'), the questionnaire was initially reduced to 38 items, and from these 38 only 16 questions, which covered a broad range of aspects of daily life (items displayed in Table 3), were included.

Each item was scored as 0=less or 1=more acculturated, with a range of 0–16 (mean 7.5, S.D.=3.4) and higher values indicating a higher level of acculturation. This was then dichotomized using a cut-off of 8/9; women scoring 9 or above (more than half the 16 items indicating good acculturation) were considered to be more acculturated, whereas those scoring 8 or less were considered to be less acculturated (Chaudhry, 2007). A factor analysis was carried out on the 16 items, and subsequent analyses used the factor analysis regression scores for each of the first five factors, which had eigenvalues >1, and which together explained 63.3% of the total variation.

Other variables

Information was collected on age, marital status and duration of full-time education (none, 1–7 years, 8–12 years or more than 12 years). Employment status was categorized as one of seven options: working full-time, working part-time, domestic work full-time in the house, not working due to ill health/disability, unemployed, student or retired.

Socio-economic status was rated using the Goldthorpe and Hope system (Goldthorpe & Hope, 1974) according to the participant's most recent job (Escobar & Vega, 2000). If the participant had never worked, then her partner's current or last position was used.

Satisfaction with social support was determined by asking about social networks, the kind of social support received and whether the respondent was satisfied with the support received. The response was categorized on a four-point scale. The number who expressed dissatisfaction with social support is quoted.

Social isolation was determined by enquiring about the participant's daily activities, how often she went out of the house, autonomy, and contact with friends and acquaintances. This was rated on a four-point scale (1=marked, 2=moderate, 3=some, 4=little or none) and analyses compared the 72 (39%) women

who were rated as experiencing any degree of social isolation with the remainder.

Intimate confiding (Brown & Harris, 1978) was determined by asking the respondent with whom she could discuss problems. If it became clear that the woman had no one in whom she could confide then this was rated as no confidant. Other variables that were considered as possible vulnerability factors for depression were loss of mother before the age of 11 years, having three or more children under the age of 14 years, living in extended families, not having children and having only female offspring.

At 6 months after the baseline interview, the depressed and distressed participants were re-interviewed using the SCAN and LEDS, to identify the predictors for persistent depression. The non-depressed participants were not reinterviewed, as the sample was not large enough to examine predictors of new onset depression.

Statistical analysis

Data were analysed using SPSS (version 15; SPSS, Inc., USA). The first set of univariable analyses compared the three groups, depressive disorder, distressed, and not depressed with respect to sociodemographic factors, vulnerability factors, life events and difficulties, and acculturation items, using Pearson's χ^2 test with test for linear trend across the three groups. Fisher's exact test was used to compare proportions of women with and without each of the potential risk factors who were classified as being acculturated.

Factor analysis of the Acculturation Questionnaire

Principal components analysis was used with Kaiser–Meyer–Olkin (KMO) and Bartlett's test for sphericity, and factors with eigenvalues >1 were identified. Factors were rotated to improve their interpretability. Both orthogonal (equamax) and oblique rotations (oblimin) were applied. The relationship between acculturation and depression group was examined using one-way analysis of variance on both the total acculturation score and the five factor scores derived from the factor analysis.

A hierarchical logistic regression analysis was performed to identify those variables independently associated with depressive disorder at baseline compared with non-depressed and distressed groups combined. Adjusted odds ratios (ORs) with 95% confidence intervals (CIs) were calculated. Independent variables included were those found to be significant in the univariate analyses, but not including any which may cause problems with multicollinearity. In detail, the independent variables were age and total

acculturation score (model 1), plus social isolation (model 2), plus presence/absence of a marked health difficulty, marital and/or close relationship difficulty, and one or more independent severe life events (model 3). All variance inflation factors in the final model were checked, since any greater than 2 may indicate problems with multicollinearity.

For those women with depressive disorder at baseline who were reinterviewed 6 months later, univariable analyses used Fisher's exact test to identify baseline dichotomous variables which were associated with persistent *v.* resolved depression and *t* tests for continuous scores such as total SRQ score and acculturation scores. A hierarchical logistic regression analysis was used to determine factors relating to depression at follow-up (i.e. comparing persistent with resolved depression). The independent variables included were age >50 years and social isolation (model 1), plus baseline total SRQ score, baseline score for marital, partner and other close relationship difficulties, and the first three acculturation factor scores (model 2). In the third model, a change score (between baseline and follow-up) for marked difficulties was included.

Results

A total of 738 women of Pakistani origin were considered to be eligible for the study, and 487 completed the screening instrument SRQ (66% response rate). Of these 487, 227 (46.6%) scored 7 or more on the SRQ and all of these participants were invited to participate in the second-phase interview together with 66 randomly selected low scorers. A total of 202 completed the SCAN interview (158 high scorers, 70% response rate, and 44 low scorers, 67% response rate), and 193 of these completed the LEDS. Of these 193 participants, 175 completed the Acculturation Questionnaire.

Of the 202 participants, 96 had a depressive disorder, 65 had high SRQ scores but did not have depressive disorder (the distressed group), and 41 had low SRQ scores (not depressed). The adjusted prevalence of depressive disorder using inverse probability sampling weights was 31.1% (95% CI 24.1–38.0) (Gater *et al.* 2008).

Correlates of depression at baseline (*univariable analyses*)

Women with depressive disorder were more likely to be aged over 50 years than the other two groups; they were less likely to have social support, but did not differ significantly with respect to marital status, education, employment or language used to complete the SRQ (Table 1). There was no significant difference

between the three groups in terms of separation from mother before the age of 11 years, having three or more children, living in an extended family, and not having any children at all or any male children (Table 1). After Bonferroni adjustments to account for the fact that 14 variables were analysed in Table 1, only age and social isolation remained significant at $p < 0.05$.

Severe threatening life events and marked difficulties were experienced more often by the depressed than the other two groups. There was an exposure–response relationship for health difficulties, but for other types of difficulty and severe life events, the depressive disorder group was clearly different from the other two groups (Table 2), and was significant in all cases, except for housing difficulties where there were no significant differences between the three groups. After Bonferroni adjustments to account for the fact that eight variables were analysed in Table 2, all the significant variables except for severe independent life events and money-related difficulties remained significant at $p < 0.05$.

Acculturation

Of the 175 women who completed the Acculturation Questionnaire, 64 (36.6%) scored 9 or more, and were considered to be more acculturated than the rest. For example, the majority of these more acculturated women felt that UK is their home country (70% *v.* 26% of less acculturated women); they speak fluent English (80% *v.* 16%) and eat either Pakistani or English food (91% *v.* 45%).

A total of 55 (73.1%) of the 78 depressed women, 33/60 (55%) of the distressed and 21/37 (56.8%) of the non-depressed women were less acculturated ($p = 0.058$). The depressed group differed significantly from the remainder (54/97, 55.7%) ($p = 0.019$).

The sociodemographic features of older age (11% acculturated *v.* 42% for younger women, Fisher's exact $p = 0.002$), first-generation immigrant status (21% *v.* 79%, $p < 0.001$), no formal education (5% *v.* 40%, $p = 0.002$), social isolation (16% *v.* 50%, $p < 0.001$) and absence of a confidant (10% *v.* 42%, $p < 0.001$) were associated with less acculturation. On the other hand, the experience of individual types of marked difficulties were not significantly associated with acculturation: housing (37% *v.* 37%), money/possessions (14% *v.* 38%), health (29% *v.* 39%) and marital, partner or other relationships (25% *v.* 41%).

Factor analysis of the Acculturation Questionnaire

The principal components analysis resulted in a KMO of 0.77 and Bartlett's test for sphericity of $\chi^2 = 888.0$ (degrees of freedom $= 120$; $p < 0.001$). This indicates

Table 1. *Comparison of depressed, distressed and non-depressed Pakistani women with respect to sociodemographic variables*

Correlates	Depressed ($n=96$)	Distressed ($n=65$)	Non-depressed ($n=41$)	Total ($n=202$)	Significance		
					χ^2	df	p
Demographic variables							
Age $\geqslant 50$ years	25 (26.0)	5 (7.7)	2 (4.9)	32 (15.8)	14.4	2	0.001*
Marital status							
Single	10 (10.4)	8 (12.3)	5 (12.2)	23 (11.4)			
Married/cohabiting	60 (62.5)	47 (72.3)	31 (75.6)	138 (68.3)	5.4	4	0.25
Widowed/separated/divorced	26 (27.1)	10 (15.4)	5 (12.2)	41 (20.3)			
Housewife	56 (58.3)	41 (63.1)	29 (70.7)	126 (62.4)	1.9	2	0.39
No education	16 (16.7)	6 (9.2)	2 (4.9)	24 (11.9)	4.5	2	0.11*
Unemployed	8 (8.3)	4 (6.2)	0 (.0)	12 (5.9)	3.6	2	0.17
SRQ completed in Urdu	37 (38.5)	27 (41.5)	11 (26.8)	75 (37.1)	2.5	2	0.29
Social variables[a]							
No confidant[b]	24 (26.1)	6 (9.8)	4 (10.3)	34 (17.7)	8.5	2	0.014*
No social support[c]	27 (29.7)	9 (14.8)	4 (10.5)	40 (21.1)	8.1	2	0.018*
Social isolation[d]	46 (55.4)	17 (28.8)	8 (20.5)	71 (39.2)	17	2	<0.001*
Separated from mother before age 11 years	11 (12.0)	5 (8.1)	5 (12.8)	21 (10.9)	0.8	2	0.68
Three or more children	48 (52.2)	32 (51.6)	15 (38.5)	95 (49.2)	2.3	2	0.32
Living in an extended family[e]	16 (17.8)	18 (29.5)	5 (12.8)	39 (20.5)	4.9	2	0.088
No children	17 (18.5)	11 (17.7)	6 (15.4)	34 (17.6)	0.2	2	0.91
No male children	28 (30.4)	23 (37.1)	11 (28.2)	62 (32.1)	1.1	2	0.58

df, Degrees of freedom; SRQ, Self Reporting Questionnaire; LEDS, Life Events and Difficulties Schedule.

Data are given as number of subjects (percentage).

[a] Social variables were asked at the LEDS interview, and therefore the maximum group sizes are 92, 62 and 39, respectively.

[b] Missing data for one subject in the distressed group.

[c] Missing data for one subject in each group.

[d] Missing data for nine subjects in the depressed group and three subjects in the distressed group.

[e] Missing data for two subjects in the depressed group and one subject in the distressed group.

* Significant trend across the three depression groups ($p<0.05$).

the sampling adequacy that factor analysis will give distinct and reliable factors.

The first five factors had eigenvalues >1. The cumulative variance explained by these five factors was 63.3% (Table 3).

The mean acculturation scores for the depressed, distressed and non-depressed groups were: 6.8 (S.D.=3.3), 8.0 (S.D.=3.3) and 8.0 (S.D.=3.4) respectively (one-way analysis of variance, $p=0.054$). The only factor score significantly associated with depression group was factor 2 (friends and clothes): -0.17 (S.D.=0.9), 0.002 (S.D.=1.0) and 0.36 (S.D.=1.1) ($p=0.025$), indicating least acculturation in the depressed group and greatest acculturation in terms of friends and clothes being in the non-depressed group.

In logistic regression analysis with depressive disorder group versus the remainder as the dependent variable, low acculturation was not associated with depressive disorder when age was added to the regression equation (model 1). Older age, social isolation and marked difficulties concerning health and marital or other close relationships were independent correlates of depressive disorder at baseline (model 3, Table 4).

Correlates of persistent depression (6 months after baseline)

A total of 89 of the 96 depressed women at baseline were followed up: two women refused, two could not be located and three could not be contacted. Of the 89 women with depressive disorder, 55 remained depressed at follow-up and 34 were no longer depressed.

Of the sociodemographic variables listed in Table 1, the following were significantly associated with depression at follow-up in univariable analyses: aged over 50 years ($p=0.003$), lack of education ($p=0.023$), lack of support ($p=0.018$), having no children ($p=0.024$), no male children ($p=0.034$), baseline SRQ score ($p<0.001$), and acculturation score ($p=0.016$).

Table 2. *Comparison of depressed, distressed and non-depressed women and marked difficulties and severe events at baseline*

Possible correlates of depression at baseline	Depressed (n=92)	Distressed (n=62)	Non-depressed (n=39)	Total (n=193)	χ²	df	p
Life events							
Severe events in the last year	23 (25.0)	3 (4.8)	1 (2.6)	27 (14.0)	17.8	2	<0.001
Severe independent events in the last year	16 (17.4)	3 (4.8)	1 (2.6)	20 (10.4)	9.4	2	0.009
Difficulties							
Marked housing difficulty	7 (7.6)	3 (4.8)	0 (0)	10 (5.2)	3.2	2	0.20
Marked money/possession difficulty	7 (7.6)	0 (0)	0 (0)	7 (3.6)	7.8	2	0.019
Marked health difficulty at baseline	30 (32.6)	11 (17.7)	1 (2.6)	42 (21.8)	15.4	2	<0.001
Marked marital/partner or other relationship difficulty	43 (46.7)	7 (11.3)	5 (12.8)	55 (28.5)	28.7	2	<0.001
Marked difficulty involving humiliation	30 (32.6)	4 (6.5)	4 (10.3)	38 (19.7)	18.8	2	<0.001
Marked difficulty involving entrapment	31 (33.7)	5 (8.1)	2 (5.1)	38 (19.7)	21.9	2	<0.001

df, Degrees of freedom.
Data are given as number of subjects (percentage).

Table 3. *Factor loadings from principal components analysis of 16 acculturation items after equamax rotation of factors with eigenvalues >1*[a]

Items	Factor 1: use of English	Factor 2: friends and clothes	Factor 3: Pakistan is home	Factor 4: sense of identity	Factor 5: discrimination
Watches English television	0.706				
Eats English food	0.683				
Speaks fluent English	0.563	0.422			
Little or no English and can't/won't learn	−0.633				
Would prefer son/daughter to have an arranged marriage	−0.422				
It would be unacceptable for a son/daughter to marry an English person					
Wear non-Asian clothes at home sometimes		0.861			
Wear non-Asian clothes to go out sometimes		0.842			
Some English friends		0.551			
Would prefer to be living in Pakistan now			0.871		
Definitely plan to return to Pakistan			0.863		
England is home country			−0.597		
Feel more Pakistani than English				0.893	
Feel different from English people				0.876	
Felt discriminated against					−0.828
English treat us well or accept us					0.747
Percentage of variance explained by factor	13.9	13.8	13.2	11.9	10.4
Cumulative percentage of variance explained by factor	13.9	27.7	40.9	52.8	63.3

[a] Loadings <0.4 are omitted for clarity. In further analyses, the item 'speaks fluent English' was loaded onto factor 1 because its loading was greater for factor 1 than for factor 2. The item 'unacceptable for son/daughter to marry an English person' was included in factor 1, since its largest loading, 0.39, was on that factor. Oblimin rotation yielded very similar groupings of items onto these five factors.

Table 4. *Logistic regression analysis with depression at baseline as the dependent variable*

Variable	Model 1[a]	Model 2[b]	Model 3[c]
Age >50 years	6.45 (2.27–18.32)	6.82 (2.28–20.35)	5.05 (1.57–16.19)
Acculturation	0.94 (0.85–1.03)	0.99 (0.89–1.10)	1.00 (0.89–1.13)
Social isolation		3.72 (1.81–7.63)	3.71 (1.66–8.31)
Marked health difficulty			2.81 (1.12–7.04)
Marked marital or other close relationship difficulty			6.39 (2.66–15.35)
One or more independent severe life events			3.99 (0.92–17.36)

Data are given as odds ratio (95% confidence interval).

[a] Model 1 includes age and acculturation score.

[b] Model 2 includes also social isolation.

[c] Model 3 includes also marked health and marital/other close relationship difficulties and independent severe life events.

All variance inflation factors in the final model are less than 1.2, indicating no problems with multicollinearity.

Only age >50 years and baseline SRQ score would remain significant after Bonferroni adjustments for multiple variable tests. The only type of marked difficulty at baseline which was associated with persistent depression was that of marital/partner or other relationships: 31 of 55 women (56%) with persistent depression experienced such a marked difficulty at baseline, and all except two of these still had the same marked difficulty at follow-up. By contrast, of the 34 women whose depression resolved, 11 had such a marked difficulty at baseline but in only five did this continue at follow-up.

Of the depressed women at baseline who completed the Acculturation Questionnaire, 50 remained depressed and in 25 it resolved. The respective acculturation scores for these groups were 6.0 (s.d. = 3.0) and 8.0 (s.d. = 3.4) ($p = 0.016$), showing that the less acculturated women were more likely to have persistent depression; 41/56 (73%) less well-acculturated women were still depressed at follow-up, compared with nine out of 19 (47%) well-acculturated women (OR 3.0, 95% CI 1.0–8.9).

The only factor score associated with persistent depression was factor 1 (use of English); respective scores were −0.44 (s.d. = 0.9) and 0.35 (s.d. = 1.0) ($p = 0.001$, for persistent *versus* resolving depression), indicating that good use of the English language was associated with recovery.

In logistic regression analysis, after adjusting for baseline SRQ score, persistent depression was associated with baseline and increased scores for marital and close relationship difficulties and factor 1 and 3 scores of acculturation (use of the English language and feels that Pakistan is home) (Table 5). The results were similar when oblimin factors were used instead of orthogonal factors. The result for 'Pakistan is home' was slightly more significant (OR 0.35, 95% CI 0.14–0.88, $p = 0.026$).

Discussion

The findings of this study confirm that the high prevalence of depression in women of Pakistani origin living in the UK is associated with older age, social isolation and marked social difficulties (Weich *et al.* 2004; Gater *et al.* 2008). What is new about these findings is the identification of certain aspects of acculturation as independent predictors of persistent depressive disorder in this group of women. Both our hypotheses were confirmed. Our data emphasize the very high rate of marked difficulties in close personal relationships experienced by these women. We did not find that the vulnerability factors for depression identified by Brown & Harris (1978), such as loss of mother before the age of 11 years; having three or more children under the age of 14 years; and lack of employment were relevant in this population, except lack of a confidant.

The literature concerning the relationship between acculturation and depression in immigrants is somewhat conflicting. On the one hand, there is some evidence that greater acculturation is associated with increased chance of depression (Hwang & Myers, 2007; Hwang & Ting, 2008). This may occur because of the gradual loss of protective cultural factors associated with greater acculturation and increased exposure to stressors that immigrants may not be equipped to handle (Escobar & Vega, 2000). On the other hand, it has been reported that acculturation is associated with lower rates of depression; this was found among immigrants who reported greater English usage and more integrated social relationships (Escobar & Vega, 2000; Miller & Chandler, 2002). These authors have suggested that working and living near English speakers and exposure to English cultural events or media enhances psychological well-being. It appears that the process of acculturation is

Table 5. *Logistic regression analysis with depression at follow-up as the dependent variable*

Variable	Model 1[a]	Model 2[b]	Model 3[c]
Age >50 years (yes *v.* no)	5.45 (1.39–21.3)	2.85 (0.57–14.1)	2.39 (0.41–13.87)
Social isolation (yes *v.* no)	2.63 (0.90–7.66)	1.58 (0.38–6.62)	3.47 (0.64–18.7)
SRQ total score		1.41 (1.12–1.78)	1.49 (1.11–2.00)
Baseline score for marital and other close relationship difficulties		1.40 (1.05–1.86)	2.14 (1.31–3.48)
Acculturation factor-1 score: good use of English		0.36 (0.16–0.79)	0.30 (0.12–0.76)
Acculturation factor-2 score: has English clothes and friends		1.05 (0.48–2.27)	1.13 (0.46–2.80)
Acculturation factor-3 score: Pakistan is home		0.47 (0.22–1.03)	0.41 (0.17–1.00)
Increase in social difficulties score for marital and other close relationship difficulties			2.65 (1.23–5.68)

SRQ, Self Reporting Questionnaire.

Data are given as odds ratio (95% confidence interval).

[a] Model 1 includes age and social isolation.

[b] Model 2 includes also SRQ total score, social difficulties score for marital and other close relationship difficulties, and acculturation factors 1–3.

[c] Model 3 also includes change in social difficulties score for marital and other close relationship difficulties. All variance inflation factors in the final model are less than 1.4, indicating no problems with multicollinearity.

specific to particular immigrant groups in different cultures and may depend on the age at which the immigration takes place (Oh *et al.* 2002; Hwang *et al.* 2005). Psychiatric disorder was reported to be inversely related to command of English in Greek Cypriots in London (Mavreas & Bebbington, 1990). The authors also interestingly reported a gender effect, whereby the disorder was most prevalent in the highly acculturated males but in the least acculturated females. Other studies have reported effects between individual acculturation and area characteristics on psychiatric morbidity (Ghubash *et al.* 1994).

In the prospective part of our study we found that two aspects of acculturation were predictive of persistent depression. This finding suggests a degree of specificity in the association between these aspects of acculturation and depressive disorder, as the total acculturation score was not a predictor. Limited use of the English language may predict persistent depressive disorder as it restricts a British Pakistani woman's opportunity to gain social support or become involved in activities outside of the home. This concurs with previous work that indicated that fluency in English was associated with less distress. Regarding Pakistan as home may represent a strong ethnic identity and traditionalism; these dimensions of acculturation could be regarded as a protective cultural factor (Escobar & Vega, 2000).

Prospective studies in this area of research are very few, but illustrate two different scenarios. Among Mexican American women living in the USA, prenatal depression was more prevalent in those who did not speak English readily but who lived in a household where English was the predominant language. Use of English did not predict post-natal depression; this was predicted by difficulties in close family relationships (Martinez-Schallmoser *et al.* 2003). In the other prospective study of Chinese Americans, depression was more likely to develop in those exposed to negative life events and social conflicts. Exposure to such stressors was associated with a greater degree of acculturation, which appeared to exacerbate the effect of negative life events (Hwang & Myers, 2007). Our study is more similar to the former study, as greater acculturation was associated with an increased chance that the depression would resolve. Having marked difficulties in marital and close relationships was also a predictor.

Prospective studies are clearly needed in this area of research, as we found that there was a different pattern of association in the cross-sectional and prospective part of our study. In the cross-sectional part, older age mediated the association between depression and acculturation. In the prospective part this was not so, and there were elements of both less and greater degrees of acculturation associated with persistent depression. Thus both increased fluency of English and perhaps protective cultural factors (seeing one's future in Pakistan) appear to be associated with resolving depression.

There also appears to be a difference according to the measure of depression. A study of Chinese people in Australia found that a greater degree of acculturation was associated with persistent depressive episodes, whereas current distress was associated with less acculturation (Parker *et al.* 2005). In the cross-sectional part of our study we found that lack of acculturation was associated with depressive disorder,

but those with high levels of distress below the depression cut-off (distressed group) showed no acculturation difference from those with neither.

Some strengths of the study

An important strength of this study lies in the use of recognized instruments administered by bilingual researchers who were from the same ethnic, gender and cultural background as the British Pakistani women interviewed. This meant that no participants were excluded on the basis of language, which has been a limitation of many previous studies. The rating of severity of life events and chronic social difficulties was performed with a full knowledge of the cultural context by raters who remained blind as to whether the woman was depressed or not. We had a good response rate at follow-up. We followed the suggestion of previous researchers to identify particular aspects of acculturation and not just use a single construct (Escobar & Vega, 2000; Hwang & Ting, 2008).

Some limitations of the study

Our study also had a number of limitations that must be recognized. The response rate of 66% for the initial phase of the study was slightly lower than the usual accepted rate but comparable with other studies in this population (van der Wurff *et al.* 2004; Weich *et al.* 2004; Thapa & Hauff 2005; Tinghog *et al.* 2007). The sampling strategy could have missed some of the more acculturated women who had acquired British surnames by marriage, although these numbers if at all would be very small considering the Pakistani Muslim culture and the selection of GP practices with very high numbers of British Pakistanis. We followed up only the distressed and depressed women (response rate 93%), and present here only data for the latter because of small numbers in the former. There were too few onsets of depression in the distressed group to analyse risk factors for onset. However, we have shown elsewhere that while the rate of onset of depression in people of Pakistani origin living in UK is similar to that in white Europeans, it is the rate of persistence that is higher in people of Pakistani origin (Gater *et al.* 2008). Therefore our findings regarding acculturation relate to persistent depression, not new onsets. Since it is clear that the process of acculturation differs greatly between immigrant groups and between countries, our results cannot be extrapolated to other immigrant groups or countries (Bhui *et al.* 2005).

Conclusion

The implication of this work is that women of Pakistani origin with depression should be encouraged to receive help in the use of English as one part of treatment that can prevent relapse. Our experience of working with such women is that this may be hard to achieve – it may be appropriate for English classes to be made available for them through a local Pakistani community centre or equivalent. In some centres a voluntary mental health service for people of ethnic minorities offers English classes. These initiatives could help bring depressed women of Pakistani origin together, which might offer social support in addition to providing English classes.

Declaration of Interest

None.

References

Bhui K, Lawrence A, Klineberg E, Woodley-Jones D, Taylor S, Stansfield S, Viner R, Booy R (2005). Acculturation and health status among African-Caribbean, Bangladeshi and white British adolescents: validation and findings from the RELACHS study. *Social Psychiatry and Psychiatric Epidemiology* **40**, 259–266.

Brown GW, Adler Z, Bifulco A (1998). Life events, difficulties and recovery from chronic depression. *British Journal of Psychiatry* **152**, 487–498.

Brown GW, Harris T (1978). *Social Origins of Depression; A Study of Psychiatric Disorder in Women*. Tavistock Publications: London.

Chaudhry N (2007). *Social Factors Associated with Depression in Pakistani Women*. MD Thesis, University of Manchester.

Escobar JI, Vega WA (2000). Mental health and immigration's AAAs: where are we and where do we go from here? *Journal of Nervous and Mental Disease* **188**, 736–740.

Gater R, Tomenson B, Percival C, Chaudhry N, Waheed W, Dunn G, Macfarlane G, Creed F (2008). Persistent depressive disorders and social stress in people of Pakistani origin and white Europeans in UK. *Social Psychiatry and Psychiatric Epidemiology* **44**, 198–207.

Ghubash R, Hamdi E, Bebbington P (1994). The Dubai Community Psychiatric Survey: acculturation and the prevalence of psychiatric disorder. *Psychological Medicine* **24**, 121–131.

Goldthorpe JH, Hope K (1974). *The Social Grading of Occupations. A New Approach and Scale*. Clarendon Press: Oxford.

Husain N, Creed F, Tomenson B (1997). Adverse social circumstances and depression in people of Pakistani origin in the UK. *British Journal of Psychiatry* **171**, 434–438.

Husain N, Creed F, Tomenson B (2000). Depression and social stress in Pakistan. *Psychological Medicine* **30**, 395–402.

Husain N, Gater R, Tomenson B, Creed F (2006). Comparison of the Personal Health Questionnaire and Self Reporting Questionnaire in rural Pakistan. *Journal of Pakistan Medical Association* **56**, 366–370.

Hwang W, Chun C, Takeuchi DT, Myers HF, Prabha S (2005). Age of first-onset major depression in Chinese Americans. *Cultural Diversity and Ethnic Minority Psychology* **11**, 16–27.

Hwang W, Myers HF (2007). Major depression in Chinese Americans: the roles of stress, vulnerability and acculturation. *Social Psychiatry and Psychiatric Epidemiology* **42**, 189–197.

Hwang W, Ting JY (2008). Disaggregating the effects of acculturation and acculturative stress on the mental health of Asian Americans. *Cultural Diversity and Ethnic Minority Psychology* **14**, 147–154.

Martinez-Schallmoser L, Telleen S, MacMullen NJ (2003). The effect of social support and acculturation on postpartum depression in Mexican American women. *Journal of Transcultural Nursing* **14**, 329–338.

Mavreas V, Bebbington P (1990). Acculturation and psychiatric disorders: a study of Greek Cypriot immigrants. *Psychological Medicine* **20**, 941–951.

Miller AM, Chandler PJ (2002). Acculturation, resilience, and depression in midlife women from the former Soviet Union. *Nursing Research* **51**, 26–32.

Oh Y, Koeske GF, Sales E (2002). Acculturation, stress and depressive symptoms among Korean immigrants in the United States. *Journal of Social Psychology* **142**, 511–526.

Parker G, Chan B, Tully C, Eisenbruch M (2005). Depression in the Chinese: the impact of acculturation. *Psychological Medicine* **35**, 1475–1483.

Stopes-Roe M, Cochrane R (1990). *Citizens of This Country: The British Asian*. Multilingual Matters Ltd: Clevedon.

Thapa SB, Hauff E (2005). Gender differences in factors associated with psychological distress among immigrants from low- and middle-income countries – findings from the Oslo Health Study. *Social Psychiatry and Psychiatric Epidemiology* **40**, 78–84.

Tinghog P, Hemmingsson T, Lundberg I (2007). To what extent may the association between immigrant status and mental illness be explained by socioeconomic factors? *Social Psychiatry and Psychiatric Epidemiology* **42**, 990–996.

van der Wurff FB, Beekman AT, Dijkshoorn H, Spijker JA, Smits CH, Stek ML, Verhoeff A (2004). Prevalence and risk factors for depression in elderly Turkish and Moroccan migrants in the Netherlands. *Journal of Affective Disorders* **83**, 33–41.

Weich S, Nazroo J, Sproston K, McManus S, Blanchard M, Erens B, Karlsen S, King M, Lloyd K, Stansfeld S, Tyrer P (2004). Common mental disorders and ethnicity in England: the EMPIRIC study. *Psychological Medicine* **34**, 1543–1551.

Williams R, Hunt K (1997). Psychological distress among British South Asians: the contribution of stressful situations and subcultural differences in the West of Scotland Twenty-07 Study. *Psychological Medicine* **27**, 1173–1181.

WHO (1992). *International Classification of Diseases (ICD)-10: Clinical Descriptions and Diagnostic Guidelines*. World Health Organization: Geneva.

WHO (1994). *A User's Guide to the Self Reporting Questionnaire (SRQ)*. World Health Organization: Geneva.