2008

Socio-cultural variations in depressive symptoms of ageing South Asian Canadians

Lai, Daniel

Hong Kong Geriatrics Society & Hong Kong Association of Gerontology

Socio-cultural variations in depressive symptoms of ageing South Asian Canadians

DWL Lai[1] PhD, **S Surood**[2] PhD

1 Professor and Alberta Heritage Health Scholar, Faculty of Social Work, The University of Calgary, Calgary, Alberta, Canada
2 Diversity Research/Evaluation Strategist, Calgary Health Region, Calgary, Alberta, Canada

ABSTRACT

Background. This study aims to identify socio-cultural–specific characteristics of depressive symptoms in ageing South Asians.

Methods. Data were collected in a probability-sampled survey on 210 South Asians aged 55 years and older in Calgary. Depressive symptoms associated with different genders, age, religious affiliations, and the length of residency in Canada were examined.

Results. A mean of 2.6 depressive symptoms was reported and 21.4% participants reported being mildly depressive. Differences in depressive symptoms were observed in participants from different gender groups, religious groups, and lengths of residency in Canada.

Conclusions. Health providers should understand the intra-cultural differences affecting depressive symptoms and be proactive when discussing commonly reported depressive symptoms with patients, as a strategy for early identification. Mental health professionals should pay attention to intra-cultural and gender differences governing depressive symptoms. Understanding the most frequently reported depressive symptoms enables practitioners to concentrate on these symptoms when they surface. Health providers are encouraged to actively discuss commonly reported depressive symptoms with patients.

Key words: Aging; Asia, western; Canada; Culture; Depression; Emigrants and immigrants

Correspondence to: Prof Daniel WL Lai, Faculty of Social Work, The University of Calgary, 2500 University Drive NW, Calgary, Alberta, T2N 1N4, Canada. E-mail: dlai@ucalgary.ca

INTRODUCTION

Despite the increase in culturally diverse older adults in Canada, empirical research on the mental health of ageing cultural minority groups is lacking. Depression affects many older adults[1] with an estimated prevalence of 10% to 15% in North America.[2] Yet, many depressive symptoms have been undetected or misdiagnosed in ageing populations,[3,4] probably due to lack of awareness in the early stages, or to mistaking the symptoms as common traits of the ageing process.

Research on depressive symptoms in ageing ethno-cultural minority groups in North America has not caught up with the region's growth in ethnic and cultural diversity. For instance, between 1996 and 2001, the proportion of visible minorities grew from 11.2% to 13.4%.[5] Of these, Chinese and South Asians formed the largest two groups. From 1996 to 2001, the South Asian population in Canada increased by 37%, whereas the Chinese population grew by 20%.[6] In the 2006 census, South Asians were the largest visible minority group in Canada with a total population of 1.26 million.[7] Despite the growth of this ethno-cultural minority group, a comprehensive search of major relevant research databases including Medline, Psychinfo, Cinahl, and AARP Ageline indicated that no research on depression of older South Asian Canadians has been done in Canada. A few studies have been conducted in the United Kingdom,[8-12] the United States,[13] and India.[14,15] These studies examined the predictors of depressive symptoms, including age,

illiteracy, abuse and neglect, family conflicts, social isolation, physical health, feeling like a burden, the loss of self-respect, dependency on others, low social support, inadequate housing, insufficient income, and illiteracy in the English language.[8-15] In a study in the United Kingdom, 20% of elderly immigrant South Asians reported being depressed.[8] A study in the United States found 12% of the non-English-speaking South Asian older immigrants were depressed, while only 7% of the English-speaking immigrants were depressed.[13] For older South Asians in South Asian countries, the reported prevalence of depression among elderly Pakistani in Karachi was 19.8%,[16] whereas in Bikaner, India the prevalence was 18% among the medically ill elderly.[17] The percentages reported were slightly lower than those reported among the older Chinese in Canada. In a study on a representative sample of older Chinese in Canada, 23.2% of the respondents were depressed.[18]

Cultural diversity and mental health

In South Asian cultures depressive symptoms are often considered normal, and their occurrence is perceived to be due to major social or personal loss.[19] Somatisation of mental distress is common among South Asians.[20] It has been documented that South Asians have higher rates of physical complaints.[21,22] For example, expressing depressive symptoms as any kind of pain[23] or using physical idioms like 'sinking heart'[24] or 'heartache'[25] is very common among South Asians. These physical expressions sometimes undermine and act as barriers to the detection of mental illnesses.[23,26] Even when psychological distress is reported, diagnoses are generally related to physical health and the psychological aspects are overlooked by health practitioners.[22]

The roles of gender, age, and ethnicity are important for understanding and identifying depression. For instance, research into the depressive symptoms seen in older adults has consistently indicated that gender is a factor in depression.[26] Older women often report more depressive symptoms or are more likely to be depressed than older men.[27,28] Age is another significant correlate of depression within the ageing population. Age has been positively related to depression among older adults.[14,29] Ethnicity refers to the psychological aspects of identity,[30] as it relates to an individual's self-identification with a culture

that may change with time, experience in life, and place of residency.[31,32] In Canada, 'South Asia' is an umbrella term, including countries on or in proximity to the Indian sub-continent. People from South Asia belong to a very heterogeneous group; this diversity is based not only on country of origin, but also extends to religion, language, and rural-urban background, etc. According to Statistics Canada,[33] the term 'South Asians' refers to people originating from Bangladesh, India, Pakistan, Sri Lanka, and Nepal. The Public Use Microdata File of the 2001 Census indicated that 13.7% of the South Asians in Canada were 55 years and older and of these, 50.5% were male and 49.5% female. Most (99.2%) ageing South Asians were immigrants. About a third (32.1%) of the South Asians were affiliated with the Sikh religion, followed by the Hindu (28.6), and Muslim (20.2%) religions. As religion probably has a strong influence on their cultural values, beliefs, and norms, there may be differences in how depressive symptoms are manifested.

There has been no research comparing the depressive symptoms in older adults from these different South Asian groups in Canada. This study is a pilot attempt to examine the socio-cultural variations in depressive symptoms in this diverse ethno-cultural minority group. The key research question is "To what extent do the depressive symptoms reported by ageing South Asians in Canada differ according to their socio-cultural characteristics, including sex, age, and ethnicity?"

METHODS

Data were extracted from a telephone survey conducted between August 2004 and July 2005, which examined the health and well being of older South Asians aged 55 years and older in Calgary. We do not consider 55 years and older 'old age'. As ageing is a continuous process that may not have a clear chronological demarcation,[34] we consider people who are 55 years and older as 'ageing'. Until recently, many older adults in South Asian countries retired at age 55 years. Although 65 is the usual retirement age in Canada, it is not uncommon for Canadian South Asians to consider people 55 years and older 'ageing adults'. The inclusion of participants aged 55 years and older also permitted a comparison of depressive symptoms between South Asians under 65 years and those 65 years and older.

The sample used in the original study was obtained using random selection of published telephone numbers listed with South Asian surnames. An exhaustive list of names for South Asian older adults does not exist, so surnames listed in the telephone directory were used as the sampling frame. Previous studies have established this method of using surnames as the identification key for locating Asian participants.[35-38] From the local telephone directory, a total of 10 640 telephone numbers listed under 3241 South Asian surnames were identified. These telephone numbers were all entered into a statistical programme, which was then used to generate a random list of telephone numbers for this study. Research assistants speaking English and different South Asian languages were hired and trained to call all the randomly selected numbers to identify eligible participants who were South Asians and 55 years of age or older and invite them to take part in a telephone survey. In households with more than one eligible participant, the one whose birthday was soonest was selected. The telephone screening was conducted using 4719 randomly selected telephone numbers and these yielded a total of 329 eligible participants. Of the remaining telephone numbers, 2316 were not answered, 950 were not South Asian families, and 1124 were South Asian households with no members that met the age criteria. Of the 329 eligible participants identified, 220 completed the telephone survey, with a response rate of 66.9%.

In the original study, a structured questionnaire was used in the telephone survey, covering a wide range of topics. As the purpose of this study was to examine the socio-cultural differences in depressive symptoms experienced by ageing South Asian Canadians, only the socio-demographic and cultural variables and depressive symptoms were included in the analysis. In the original study, the telephone interviews were conducted in either English or a South Asian language spoken by the participant. Ethics approval was obtained from the research ethics board of the university. Verbal informed consent was obtained from the participants on the telephone before the interview. As a result, 30.9% of the interviews were completed in English, 18.2% in Hindu, 9.5% in Urdu, 40.5% in Punjabi and 0.9% in Gujarati.

Measures

Depressive symptoms were measured by a 15-item Geriatric Depression Scale (GDS), which was forward and backward translated, adapted, and validated to better fit the cultural context of the elderly Asians in North America.[39] Scores were assigned to participants who indicated positive answers to items that represent depressive symptoms. Participants who scored a total of 4 or below were considered 'normal'. Those who scored between 5 and 9 on the scale were 'mildly depressed', and those who scored 10 or higher were 'moderately to severely depressed'. For all participants in this study, a Cronbach's alpha of 0.87 was reported when the GDS was used. For participants who completed the GDS using English, a Cronbach's alpha of 0.83 was reported. A Cronbach's alpha of 0.87 and 0.85 was reported for those who completed the scale in Hindi and Punjabi, respectively. When completed by participants using Urdu and Gujarati, a Cronbach's alpha of 0.91 was reported. These findings suggest the translated GDS used by participants from different language groups had reasonable psychometric properties.

To understand the socio-demographic and cultural background of the ageing South Asians in this study, data on a list of socio-demographic and cultural variables were collected. These included age, sex, marital status, education, income, self-rated financial adequacy, living arrangements, religion, country of origin, length of residence in Canada, and self-rated English competence. Age was measured by asking participants to report their chronological age at the time of the interview. Sex was grouped as male and female. Marital status was grouped as married or single, which included never married, widowed, divorced, and separated. The educational level of the participants was grouped as no formal education, elementary, secondary, and post-secondary. Income referred to the personal monthly income of the participants. In the survey questionnaire, this was measured by a question asking the participants to report their answers along a nine-group continuum ranging from less than $500 to $4000 and over, with an interval of $500 between each group. Many reported lower income levels, so the income data were regrouped as less than $500, $500 to $999, $1000 to $1499, and $1500 and above. Self-rated financial adequacy was measured by asking the participants to indicate how well their income and investments satisfied their financial needs, from the answers of very inadequate, not very well, adequately, and very well, with corresponding scores of 1, 2, 3, and

4 respectively. A higher score represented a higher level of financial adequacy. Living arrangements were grouped as either living alone or living with someone. Religion was measured by asking the participants to identify their religion. The country of origin referred to the country from which the participant migrated. Length of residence in Canada referred to the number of years they had resided in Canada. Self-rated English competence was measured by two questions asking the participants whether they were able to understand and speak English, from the choices of very well, a little bit, to not at all. A score was assigned to each answer and the answers to the two questions were combined to form a self-rated English proficiency scale with a score range from 2 to 6. A higher sum represented a higher level of self-rated English competence.

RESULTS

Among the original 220 older South Asians who took part in the study, only 210 completed all the questions measuring depressive symptoms. The 10 incomplete questionnaires were excluded from the analysis. As shown in TABLE 1, the mean age was 65.8 (standard deviation [SD], 7.6; range, 55-93) years. Over half (56.2%) of the participants were men. The gender distribution in the sample was similar to that reported in the 2001 census. Most (80.0%) reported their marital status as married. Over half (56.2%) of the participants reported a personal monthly income between $500 and $999. About one in ten (10.5%) reported an income less than $500 and a similar proportion (14.3%) reported an income level of $1500 and above. Close to 19% reported an income between $1000 and $1499. Most of the participants (63.3%) reported their financial status as being adequate. Close to 20% indicated that their financial adequacy level was either 'very inadequate' or 'not very well'. Almost all of them (95.7%) reported living with someone.

The results also indicate that approximately three quarters (75.2%) of the participants had an educational level equal to or higher than secondary level, with 37.1% reporting a secondary level of education and 38.1% a post-secondary level or higher. However, 16.7% of the participants had no formal education, while a small proportion (8.1%) had an elementary level of education. On average, the participants had been living in Canada for 15.6

(SD, 11.4) years. Their length of residency ranged from less than a year to 46 years. In the case of self-reported English competence, the mean was 4.4 (SD, 1.5; range, 2-6).

The 210 participants reported a mean of 2.6 (SD, 3.3) depressive symptoms. Using the GDS-SF suggested cut-off point of 4, the results indicated that over one in five (21.4%) participants reported having at least a mild level of depression (GDS scores of 5 and above). More females than males were depressed (33.7% vs 11.9%, Chi squared=14.63, p<0.01). No significance was found in the proportion of participants reporting depression in terms of age, religion, and length of residence.

A frequency distribution was used to present the depressive symptoms reported by the participants. The Chi squared test was used to examine differences in the frequency distribution of the depressive symptoms reported by participants of different sexes, ages, religions, and lengths of residency in Canada.

As a group, participants reported 'dropped many activities and interests', 'often get bored', and 'frequently worry about the future' most frequently. These three symptoms were also among the symptoms most frequently reported by those who were found to be depressed (meaning that they had more than four symptoms), as well as those who were not depressed (had fewer than four symptoms). When examining the depressive symptoms reported by participants of different sexes, age ranges, religions, and lengths of residency in Canada, the findings in TABLE 2 indicated that the three most frequently reported depressive symptoms were more or less the same. On the other hand, 'basically not satisfied with life', 'feeling pretty worthless', and 'not feeling happy most of the time' were the symptoms least frequently reported by the participants. Again, a similar pattern was observed when examining the least frequently reported symptoms of participants from different socio-cultural backgrounds.

As would be expected, the depressed participants reported significantly higher prevalence rates of all depressive symptoms than participants who were not depressed. Sex differences were observed in depressive symptoms despite the fact that the most frequently and least frequently reported symptoms were similar. A significantly higher proportion of

TABLE 1
Demographic and socio-cultural background of the participants
(n=210)

Demographics	Percentage*
Gender	
Female	43.8
Male	56.2
Age (mean±SD) [years]	65.8±7.6
Marital status	
Single	20.0
Married	80.0
Personal monthly income	
<$500	10.5
$500-$999	56.2
$1000-$1499	19.0
≥$1500	14.3
Self-rated financial adequacy	
Very inadequate	1.4
Not very well	18.6
Adequately	63.3
Very well	16.7
Education	
No formal education	16.7
Elementary	8.1
Secondary	37.1
Post-secondary & above	38.1
Country of origin	
India	75.7
Pakistan	9.0
Africa	9.0
Others (England, USA, Fuji, Brazil, etc)	6.2
Religion	
Not having a religion	0.5
Catholic	1.0
Hindu	21
Muslim	20.5
Sikh	54.8
Others	2.4
Length of residency (mean±SD) [years]	15.6±11.4
Self-rated English competency (mean±SD)	4.4±1.5
Living with someone	95.7

* Values are presented as percentages unless otherwise stated

females than males reported the three most frequently reported depressive symptoms. Sex differences were also observed in other symptoms, including 'often get restless and fidgety', 'having more problems with memory', 'frequently get upset over little things', and 'frequently feel like crying', with more females than males reporting these symptoms.

Participants aged more than 65 years reported higher prevalence rates than those younger than 65 years in the first two most frequently reported symptoms. However, no significant differences in

TABLE 2
Depressive symptoms by gender, age, religion, and length of residency in Canada*

Depressive symptoms	All cases, n=210	Depressive		Gender		Age (years)		Religion†			Length of residency (years)	
		No (n=165)	Yes (n=45)	Male (n=118)	Female (n=92)	<65 (n=99)	≥65 (n=111)	Hindu (n=44)	Muslim (n=43)	Sikh (n=115)	<10 (n=74)	≥10 (n=136)
Basically not satisfied with life	7.1 (13)	1.2 (11)‡	28.9 (8)‡	7.6 (8)	6.5 (12)	5.1 (10)	9.0 (10)	6.8 (11)	9.3 (9)	6.1 (11)	8.1 (8)	6.6 (12)
Dropped many activities and interests	33.3 (1)	23.0 (1)‡	71.1 (2)‡	27.1 (1)‡	41.3 (1)‡	26.3 (1)‡	39.6 (1)‡	36.4 (2)	37.2 (2)	30.4 (1)	35.1 (1)	32.4 (1)
Feel that life is empty	14.3 (10)	6.7 (6)‡	42.2 (7)‡	13.6 (4)	15.2 (10)	10.1 (9)	18.0 (5)	15.9 (8)	14.0 (8)	13.9 (5)	16.2 (6)	13.2 (8)
Often get bored	27.6 (2)	14.5 (2)‡	75.6 (1)‡	21.2 (2)‡	35.9 (2)‡	21.2 (3)‡	33.3 (2)‡	38.6 (1)‡	39.5 (1)‡	18.3 (2)‡	32.4 (2)	25.0 (2)
Not in good spirits most of the time	14.8 (9)	4.2 (9)‡	53.3 (4)‡	15.3 (3)	14.1 (11)	12.1 (8)	17.1 (6)	15.9 (8)	23.3 (5)	11.3 (8)	21.6 (4)‡	11.0 (10)‡
Afraid that something bad is going to happen	16.2 (7)	6.1 (7)‡	53.3 (4)‡	12.7 (5)	20.7 (7)	16.2 (6)	16.2 (7)	20.5 (6)	23.3 (5)	13.0 (6)	21.6 (4)	13.2 (8)
Not feel happy most of the time	13.3 (11)	5.5 (8)‡	42.2 (7)‡	10.2 (7)	17.4 (9)	13.1 (7)	13.5 (9)	9.1 (10)	20.9 (6)	12.2 (5)	21.6 (4)‡	8.8 (11)‡
Often get restless and fidgety	20.5 (4)	10.9 (3)‡	55.6 (3)‡	15.3 (3)‡	27.2 (5)‡	18.2 (4)	22.5 (4)	22.7 (5)	32.6 (3)	16.5 (3)	21.6 (4)	19.9 (3)
Frequently worry about the future	23.3 (3)	10.3 (4)‡	71.1 (2)‡	15.3 (3)‡	33.7 (3)‡	22.2 (2)	24.3 (3)	34.1 (3)	30.2 (4)	18.3 (2)	31.1 (3)‡	19.1 (4)‡
Have more problems with memory	16.7 (6)	6.7 (6)‡	53.3 (4)‡	10.2 (7)‡	25.0 (6)‡	17.2 (5)	16.2 (7)	27.3 (4)	9.3 (9)	14.8 (4)	17.6 (5)	16.2 (5)
Often feel downhearted and blue	14.3 (10)	4.2 (9)‡	51.1 (5)‡	10.2 (7)	19.6 (8)	13.1 (7)	15.3 (8)	13.6 (9)	23.3 (5)	11.3 (8)	14.9 (7)	14.0 (7)
Feel pretty worthless	11.9 (12)	2.4 (10)‡	46.7 (6)‡	10.2 (7)	14.1 (11)	10.1 (9)	13.5 (9)	13.6 (9)‡	23.3 (5)‡	7.0 (10)‡	17.6 (5)	8.8 (11)
Think that most people are better off	13.3 (11)	4.2 (9)‡	46.7 (6)‡	11.9 (6)	15.2 (10)	10.1 (9)	16.2 (7)	18.2 (7)	18.6 (7)	8.7 (9)	14.9 (7)	12.5 (9)
Frequently get upset over little things	17.1 (5)	7.3 (5)‡	53.3 (4)‡	7.6 (8)‡	29.3 (4)‡	16.2 (6)	18.0 (5)	20.5 (6)	23.3 (5)	13.9 (5)	21.6 (4)	14.7 (6)
Frequently feel like crying	15.7 (8)	4.8 (8)‡	55.6 (3)‡	5.1 (9)‡	29.3 (4)‡	13.1 (7)	18.0 (5)	15.9 (8)	23.3 (5)	13.9 (5)	17.6 (5)	14.7 (6)
Overall score	-	78.6	21.4	11.9§	33.7§	17.2	25.2	25.0	32.6	16.5	24.3	19.9

* Values are presented as percentages (ranking within the group)
† Eight participants reporting other religions are not included
‡ p<0.05
§ p<0.01

other symptoms were reported between these two age-groups.

Significant differences were found in 'often get bored' and 'feel pretty worthless'. Muslims tended to report a higher prevalence rate of these two symptoms, followed by Hindus, then Sikhs. No significant differences were observed in the prevalence rates of other symptoms in these three religious groups.

Significant differences were found in two depressive symptoms between participants who had resided in Canada for less than 10 years and those for 10 years or more. Those who had resided in Canada for a shorter period reported higher prevalence rates of feeling 'not in good spirits most of the time' and

'not feeling happy most of the time'. No significant differences were reported in the prevalence rates of other depressive symptoms in these two groups.

DISCUSSION

We found that ageing female South Asians reported more depressive symptoms, as well as presented higher prevalence rates in many depressive symptoms, a finding consistent with previous findings on gender and depression.[40,41] Our findings also suggest that ageing South Asian women have different symptoms from ageing South Asian men, with some depressive symptoms ranked very differently between women and men. For example, 'frequently getting upset over little things' and 'frequently feels like crying' were

both ranked the fourth most frequently reported symptoms by women. These symptoms were ranked as least frequently reported by the men. When considering other socio-cultural characteristics, the findings did not indicate many differences in the types of depressive symptoms reported by participants from different age-groups, religious groups, and with different lengths of residency.

These findings inform medical and health practitioners of the importance of understanding intra-cultural and intra-group differences in mental health symptoms manifested by ageing South Asians. Although this randomised study's sample size is relatively small, our findings have indicated a few directions and suggestions for mental health practice. First, understanding the most frequently reported depressive symptoms in these groups should enable health practitioners to pay more attention to these symptoms when manifested by patients. Being aware of the most common types of depressive symptoms presented by South Asian older adults from certain backgrounds should also enable practitioners to identify signs of depression more easily in this group. Therefore, health providers and practitioners can take a more proactive role, questioning patients about commonly reported depressive symptoms, as a means of identifying those at risk of depression. Health and mental health professionals need to be aware of the specific types of depressive symptoms reported by patients from different socio-cultural backgrounds. For example, we have found that older South Asian women report slightly different types of depressive symptoms than their male counterparts. When interacting with socio-culturally diverse patients, health providers can better attend to the different symptom characteristics presented by different groups of patients by using different intervention and treatment strategies.

A few limitations of this study should be noted. The use of South Asian surnames listed in local telephone directories might have missed potential participants who lack a telephone, or have unlisted phone numbers, as well as those with non-South Asian surnames. As only those participants living in the community were included, the findings cannot be generalised to elderly South Asians living in long-term care facilities or those who were too frail to take part in the study. The relatively small sample size means the findings cannot be generalised to the ageing South Asian population in Canada. The use of a larger multi-site representative sample in future studies is recommended. Living alone is a key factor in depression,[42,43] yet in this study almost all of the participants reported living with someone. Therefore, the effect of living alone on the types of depressive symptoms presented should be further examined in future studies. Although previous research has found that income is an important correlate of depression,[44,45] data on income in this study were inadequately collected, due to the sensitivity surrounding the collection of actual financial information in a survey.[46] Most of the participants reported a relatively low income, resulting in the sample being unrepresentative of those in higher income groups. Future research should consider using a more generalisable sample inclusive of higher income older South Asians. Finally, use of self-reporting risks potential under-reporting, due to the stigma and shame associated with mental health problems.

References

1. Roberts RE, Kaplan GA, Shema SJ, Strawbridge WJ. Does growing old increase the risk for depression? *Am J Psychiatry* 1997;154:1384-90.

2. Blazer DG. The prevalence of depressive symptoms. *J Gerontol A Biol Sci Med Sci* 2002;57:M150-1.

3. Adshead F, Cody DD, Pitt B. BASDEC: a novel screening instrument for depression in elderly medical inpatients. *BMJ* 1992;305:397.

4. Shah A, Phongsathorn V, George C, Bielawska C, Katona C. Psychiatric symptoms as predictors of mortality in continuing care geriatric inpatients. *Int J Geriatr Psychiatry* 1994;9:695-702.

5. Statistics Canada. Census of population: immigration, birthplace and birthplace of parents, citizenship, ethnic origin, visible minorities and Aboriginal peoples. Statistics Canada 2003. Available at: http://www.statcan.ca/Daily/English/o30121/d030121a.htm. Accessed 13 January 2007.

6. Statistics Canada. 2001 Census: analysis series, Canada's ethnocultural portrait—the changing mosaic. Statistics Canada 2003. Available at: http://www12.statcan.ca/english/census01/products/analytic/companion/etoimm/pdf/96F0030XIE2001008.pdf. Accessed 28 October 2005.

7. Statistics Canada. Ethnic origin and visible minorities. Available at: http://www12.statcan.ca/english/census06/release/ethnicorigin.cfm. Accessed 10 June 2008.

8. Bhatnagar K, Frank J. Psychiatric disorders in elderly from the Indian sub-continent living in Bradford. *Int J Geriatr Psychiatry* 1997;12:907-12.

9. Guglani S, Coleman PG, Sonuga-Barke EJS. Mental health of elderly Asians in Britain: a comparison of Hindus from nuclear and extended families of differing cultural identities. *Int J Geriatr Psychiatry* 2002;15:1046-53.

10. Lindesay J, Jagger C, Hibbett MJ, Peet SM, Moledina F. Knowledge, uptake and availability of health and social services among Asian Gujarati and white elderly persons. *Ethn Health* 1997;2:59-69.

11. Silveira E, Ebrahim S. Mental health and health status of elderly

Bengalis and Somalis in London. *Age Ageing* 1995;24:474-80.

12. Silveira ER, Ebrahim S. Social determinants of psychiatric morbidity and well-being in immigrant elders and whites in east London. *Int J Geriatr Psychiatry* 1998;13:801-12.

13. Diwan S, Jonnalagadda SS, Gupta R. Differences in the structure of depression among older Asian Indian immigrants in the United States. *J Applied Gerontol* 2004;23:370-84.

14. Ganguli M, Dube S, Johnston JM, Pandav R, Chandra V, Dodge HH. Depressive symptoms, cognitive impairment and functional impairment in a rural elderly population in India: a Hindi version of the geriatric depression scale (GDS-H). *Int J Geriatr Psychiatry* 1999;14:807-20.

15. Patel V, Prince M. Ageing and mental health in a developing country: who cares? Qualitative studies from Goa, India. *Psychol Med* 2001;31:29-38.

16. Taqui AM, Itrat A, Qidwai W, Qadri Z. Depression in the elderly: does family system play a role? A cross-sectional study. *BMC Psychiatry* 2007;7:57.

17. Prakash O, Gupta LN, Singh VB, Singhal AK, Verma KK. Profile of psychiatric disorders and life events in medically ill elderly: experiences from geriatric clinic in Northern India. *Int J Geriatr Psychiatry* 2007;22:1101-5.

18. Lai DW. Depression among elderly Chinese-Canadian immigrants from Mainland China. *Chin Med J (Engl)* 2004;117:677-83.

19. Patel V, Pereira J, Mann AH. Somatic and psychological models of common mental disorder in primary care in India. *Psychol Med* 1998;28:135-43.

20. Mukherji BR. Cross-cultural issues in illness and wellness: implications for depression. *J Soc Distress Homeless* 1995;4:203-17.

21. Gillam SJ, Jarman B, White P, Law R. Ethnic differences in consultation rates in urban general practice. *BMJ* 1989;299:953-7.

22. Wilson M, MacCarthy B. GP consultation as a factor in the low rate of mental health service use by Asians. *Psychol Med* 1994;24:113-9.

23. Bhugra D, Mastrogianni A. Globalisation and mental disorders. Overview with relation to depression. *Br J Psychiatry* 2004;184:10-20.

24. Krause IB. Sinking heart: a Punjabi communication of distress. *Soc Sci Med* 1989;29:563-75.

25. Rait G, Burns A. Appreciating background and culture: the South Asian elderly and mental health. *Int J Geriatr Psychiatry* 1997;12:973-7.

26. Bhui K, Bhugra D, Goldberg D. Causal explanations of distress and general practitioners' assessments of common mental disorder among Punjabi and English attendees. *Soc Psychiatry Psychiatr Epidemiol* 2002;37:38-45.

27. Kessing LV. Gender differences in subtypes of late-onset depression and mania. *Int Psychogeriatr* 2006;18:727-38.

28. Djernes JK. Prevalence and predictors of depression in populations of elderly: a review. *Acta Psychiatr Scand* 2006;113:372-87.

29. Husain MM, Rush AJ, Sackeim HS, Wisniewski SR, McClintock SM, Craven N, et al. Age-related characteristics of depression: a preliminary STAR*D report. *Am J Geriatr Psychiatry* 2005;13:852-60.

30. Fernando S. *Mental health, race and culture*. London: MIND/Macmillan; 1991.

31. Senior PA, Bhopal R. Ethnicity as a variable in epidemiological research. *BMJ* 1994;309:327-30.

32. Trickett EJ, Watts RJ, Birman D. *Human diversity: perspectives on people in context*. San Francisco: Jossey-Bass; 1994.

33. Tran K, Kaddatz J, Allard P. South Asians in Canada: unity through diversity. *Can Soc Trends* 2005:20-5.

34. McPherson BD. *Aging as a social process: an introduction to individual and population aging*. 2nd ed. Toronto: Butterworths; 1990:5-10.

35. Abrahamse AF, Morrison PA, Bolton NM. Surname analysis for estimating local concentration of Hispanics and Asians. *Popul Res Policy Rev* 1994;13:383-98.

36. Lauderdale DS, Kestenbaum B. Asian American ethnic identification by surname. *Popul Res Policy Rev* 2000;19:283-300.

37. Rosenwaike I. Surname analysis as a means of estimating minority elderly: an application using Asian surnames. *Res Aging* 1994;16:212-27.

38. Tjam EY. How to find Chinese research participants: use of a phonologically based surname search method. *Can J Public Health* 2001;92:138-42.

39. Mui AC, Kang SY, Chen LM, Domanski MD. Reliability of the Geriatric Depression Scale for use among elderly Asian immigrants in the USA. *Int Psychogeriatr* 2003;15:253-71.

40. Angst J, Gamma A, Gastpar M, Lepine JP, Mendlewicz J, Tylee A. Gender differences in depression. Epidemiological findings from the European DEPRES I and II studies. *Eur Arch Psychiatry Clin Neurosci* 2002;252:201-9.

41. Suen LJ, Morris DL. Depression and gender differences: focus on Taiwanese American older adults. *J Gerontol Nurs* 2006;32:28-36.

42. Sicotte M, Alvarado BE, Leon EM, Zunzunegui MV. Social networks and depressive symptoms among elderly women and men in Havana, Cuba. *Aging Ment Health* 2008;12:193-201.

43. Chou KL, Chi I. Comparison between elderly Chinese living alone and those living with others. *J Gerontol Soc Work* 2000;33:51-66.

44. Angel RJ, Frisco M, Angel JL, Chiriboga DA. Financial strain and health among elderly Mexican-origin individuals. *J Health Soc Behav* 2003;44:536–51.

45. Wong SY, Mercer SW, Woo J, Leung J. The influence of multi-morbidity and self-reported socio-economic standing on the prevalence of depression in an elderly Hong Kong population. *BMC Public Health* 2008;8:119-24.

46. Locander WB, Burton JP. The effect of question from on gathering income data by telephone. *J Mark Res* 1976;13:189-92.