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# Gender and cross-cultural differences in somatic symptoms associated with emotional distress. An international study in primary care

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## ABSTRACT

**Background.** Gender and cross-cultural differences in the association between somatic symptoms and emotional distress were investigated, using data from the World Health Organization Collaborative Project on Psychological Problems in General Health Care.

**Methods.** Data were collected at 15 centres in 14 countries around the world. At each centre, a stratified random sample of primary care attenders aged 15–65 years was assessed using, among other instruments, the 28-item General Health Questionnaire and the Composite International Diagnostic Interview-Primary Health Care Version.

**Results.** Females reported higher levels of somatic symptoms and emotional distress than males. A strong correlation between somatic symptoms and emotional distress was found in both sexes, with females reporting more somatic symptoms at each level of emotional distress. However, linear regression analysis showed that gender had no significant effect on level of somatic symptoms, when the effects of centre and emotional distress were controlled for. In both sexes, no specific pattern of association emerged between somatic symptom clusters and either anxiety or depression. Primary care attenders from less developed centres reported more somatic symptoms and showed greater gender differences than individuals from more developed centres, but inter-centre differences were small. Finally, gender was not a significant predictor of reason for consultation (somatic *versus* mental/behavioural symptoms), after controlling for levels of somatic symptoms and emotional distress as well as for centre effect.

**Conclusions.** These data do not support the common belief that females somatize more than males or the traditional view that somatization is a basic orientation prevailing in developing countries. Instead, somatic symptoms and emotional distress are strongly associated in primary care attenders, with few differences between the two sexes and across cultures.

## INTRODUCTION

Several studies carried out in different settings have reported a strong association between somatic symptoms and emotional distress or psychiatric illness. Data collected in five US communities during the National Institute of Mental Health Epidemiologic Catchment Area study showed that respondents with increasing number of functional somatic symptoms typically reported also higher levels of overt emotional distress, especially anxiety and depression. Among respondents with five or more current somatic symptoms, 63% reported current psychological symptoms as well and 50% met criteria for a current psychiatric diagnosis, compared with 7% and 6%, respectively, among those with no current somatic symptoms (Simon & VonKorff, 1991). Similarly, Katon *et al.* (1991) found that increasing levels of medically unexplained somatic symptoms were indicative of increasing distress, disability and abnormal illness behaviour in a sample of high utilizers of

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two primary care clinics, suggesting the potential utility of viewing somatization as a continuum process rather than a discrete diagnostic entity. Finally, a strong linear association between current emotional distress, overall health status and number of somatic symptoms reported by respondents also emerged from the baseline evaluation of a large sample of civil servants (Stansfeld *et al.* 1993).

Somatization, defined as either a general tendency to experience and communicate emotional distress in terms of somatic discomfort or a discrete diagnostic entity (i.e. somatization disorder), has been described in both males and females. For example, Golding *et al.* (1991) investigated demographic characteristics, diagnostic status, symptom patterns, functional impairment, self-reported health status, and psychiatric co-morbidity in 30 males and 117 females with multiple unexplained somatic complaints and found few gender differences on any of the dimensions that were assessed.

Although somatization has been reported in both sexes, it is commonly held that it occurs more often in females compared to males. Indeed, a recent literature review of the latter half of this century showed that females tend to endorse more functional somatic symptoms than males. However, this gender difference remained unclear and inconclusive due to inconsistencies across studies and the frequent lack of control for the confounding effects of social variables, referral patterns, psychiatric co-morbidity, cultural factors and research techniques (Wool & Barsky, 1994). As a consequence, there is still a debate about the nature of this gender difference, being controversial whether it is a true gender difference in morbidity or an artefact.

At least four main issues should be considered. First, it can be expected that the gender difference in somatization is 'true', with genetic, biological, social and cultural factors contributing to it. Genetic predisposition may account for different patterns of familial aggregation, with somatization disorder occurring in 10 to 20% of first-degree female relatives of probands, whereas first-degree male relatives are more prone to alcoholism, drug abuse and antisocial personality disorder (Kaplan & Sadock, 1991). On the other hand, since studies of psychosomatic symptoms in adolescence have shown a shift from an almost equal sex ratio in the prevalence of such symptoms before puberty to a female preponderance during late puberty and adult life (Rauste-von Wright & von Wright, 1981, 1992; Choquet & Menke, 1987), it can be expected that changes in physiological mechanisms and/or in the socialization process of males and females may be involved. Finally, sex-specific differences in cultural norms, social aspirations and roles have been advocated, with higher levels of functional somatic symptoms occurring among cultural and social groups in which expression of emotional distress is more stigmatized (Fitzpatrick & Scambler, 1984; Lipowski, 1988).

A second issue refers to the possibility that gender differences depend on the criteria used. Kirmayer and Robbins (1991) suggested three distinct forms of somatization in primary care settings: high levels of functional somatic symptoms, the extreme form being somatization disorder; somatic preoccupation or illness worry beyond what was expected for demonstrable physical disease, as in hypochondriasis; and predominantly or exclusively somatic presentation of psychiatric disorder, mainly depression or anxiety. Individuals with multiple functional somatic symptoms were significantly more likely than non-somatizers to be female; however, there were no significant differences in the sex ratio between non-somatizers and hypochondriacal patients or those with somatic presentation of psychiatric disorder.

Thirdly, gender differences in somatization may be due to differences in symptom perception and appraisal. The determinants of beliefs about health and illness and the ways these factors affect subsequent health care behaviour have been investigated within several theoretical frameworks (Marteau & Johnston, 1986). There is evidence that females tend to use more situational and circumstantial clues in evaluating bodily sensations compared with males. Such a tendency might influence the intensity with which symptoms are experienced and result in females endorsing more somatic symptoms than males, especially when symptoms are relatively mild, vague and ambiguous (Wool & Barsky, 1994).

Finally, the excess of females with functional somatic symptoms, which is often reported in clinical samples, may simply reflect females' higher rates of health care service utilization (Jenkins & Clare, 1989; Corney, 1990).

The World Health Organization Collaborative Project on Psychological Problems in General Health Care selected a large sample of primary care attenders from 14 different countries, using the same instruments and research procedures, and, thus, allowed for a detailed cross-cultural investigation of possible gender differences in the association between somatic symptoms and emotional distress. Two potentially distinct definitions of somatization will be considered in the paper, i.e. level of somatic symptoms reported on a standardized psychiatric interview and presentation of somatic as opposed to mental/behavioural symptoms to the primary care physician. More specifically, this paper will test the following questions: (*i*) Is there a gender difference in the level and type of somatic symptoms associated with emotional distress?; (*ii*) Is there a gender difference in the main reason for contacting the primary care physician (somatic *versus* mental/behavioural symptoms) after controlling for levels of somatic symptoms and emotional distress?; and, (*iii*) Do gender differences vary across countries?

## METHOD

### Sample selection

The World Health Organization Collaborative Project on Psychological Problems in General Health Care investigated the frequency, symptom profile, course, management and outcome of psychological problems among primary care attenders from 15 different centres in 14 countries around the world. Participating centres included: Ankara, Turkey; Athens, Greece; Berlin and Mainz, Germany; Bangalore, India; Groningen, Netherlands; Ibadan, Nigeria; Manchester, United Kingdom; Nagasaki, Japan; Paris, France; Rio de Janeiro, Brazil; Santiago, Chile; Seattle, United States; Shanghai, China; and Verona, Italy.

The study design has been described in detail elsewhere (Sartorius *et al*. 1993; Von Korff & Üstün, 1995). In brief, each centre selected a representative sample of primary care attenders aged 15 to 65 years. Consenting subjects completed the 12-item General Health Questionnaire (GHQ) (Goldberg & Williams, 1988) before the physician visit. A stratified random sample of respondents was then selected for second-stage evaluation on the basis of centre-specific GHQ thresholds (i.e. all of the high GHQ scorers, 35% of medium GHQ scorers and 10% of low GHQ scorers). At each centre, GHQ thresholds were set on the basis of the GHQ score distribution from a pilot study, so that about 60% of consecutive primary care attenders were regarded as low scorers and 20% each were medium and high scorers, respectively. The second-stage evaluation included the Composite International Diagnostic Interview-Primary Health Care Version (CIDI-PHC) (Robins *et al*. 1988; WHO, 1990) and a set of additional instruments investigating the respondent's health status, medical history, social and functional disability, and use of health care services.

### Instruments and measures

(*i*) *Emotional distress*

The anxiety (or 'B') and depression (or 'D') subscales of the 28-item GHQ (Goldberg & Williams, 1988) were considered as measures of current anxiety and depression, respectively. The sum of items from the two subscales was considered as a measure of current emotional distress. Each subscale contains seven items, allowing for a total score of between 0 and 7 according to the conventional scoring procedure (0–0–1–1). In our sample, Cronbach's alpha coefficient (i.e. internal consistency) was 0·83 for the 'B' subscale and 0·86 for the 'D' subscale. A principal components analysis with varimax rotation of the combined 'B' and 'D' items provided a two-factor solution, with standard anxiety and depression items loading on separate factors. The total score on the GHQ-28 was not used, since the 'somatic symptoms' subscale included in the questionnaire might artificially raise the association between somatic symptoms and emotional distress measured by total GHQ score.

(*ii*) *Somatic symptoms*

The Somatization Module of the CIDI-PHC includes symptoms of somatization according to the ICD-10 and DSM-III-R as well as additional symptoms that were expected to be common at some study centres. Investigators from each centre received group training to administer the CIDI-PHC (including joint ratings of example interviews) and rated videotaped reliability interviews over the course of the study. The

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interviewer–observer reliability coefficient (kappa) ranged between 0·81 and 1·00 for individual CIDI items (Sartorius *et al.* 1993).

Each positive somatic symptom was coded as clinically significant provided that it lead to health care or medication use or interfered a lot with respondent's life or activities. Moreover, information was collected to classify each symptom as medically explained or medically unexplained, according to whether or not a physician's diagnosis or abnormal test finding was reported by the respondent.

Thirteen symptoms that were endorsed by less than 5% of respondents at all centres were excluded from analyses. These were: several foods that made you ill; double vision; blindness; lost feeling in arm or leg; paralysis; lost voice; fainting; amnesia; loss of consciousness; blotchiness of skin; frequent urination; painful sexual relations; other sexual difficulties. Menstrual symptoms were also excluded to allow for direct comparison between males and females. This left 22 somatic symptoms that were included in analyses (see next).

An overall somatic symptom score was derived by adding up clinically significant somatic symptoms occurring over the month prior to interview, whether or not classified as medically explained. The latter decision was based on three reasons. First, information about symptom medical explanations was provided by respondents and no additional sources (e.g. medical records) were checked. Although a medical audit of each CIDI-PHC protocol was performed to ensure that reasons offered by respondents for their symptoms were medically plausible, reliability of respondents' medical explanations was not known. Secondly, an adequate assessment of relevant biological, psychological and social factors is required to distinguish between medically explained and medically unexplained somatic symptoms. In the present study, it was not possible to determine whether respondents had appropriate investigation, explanation and discussion of their symptoms by primary care physicians in order to make such a distinction. Finally, we were concerned that restricting analyses to medically unexplained somatic symptoms might introduce bias due to marked differences in health service availability, physicians' diagnostic practices and diagnostic test use across centres.

In addition, factor analysis of the 22 somatic symptom items was performed to identify dimensions of somatic distress. Subscale scores were then obtained as the sum of those items with highest loadings on each factor. The first subscale (gastrointestinal subscale) included abdominal pain, vomiting, nausea, bad taste in mouth, lump in throat, diarrhoea, and excessive gas. The second subscale (neurological/conversion subscale) included headache, dizziness, blurred vision, ears buzzing or ringing, numbness or tingling, and skin crawling or creeping. The third subscale (musculoskeletal subscale) included back pain, joint pain, arm and leg pain, trouble walking, and weakness. Finally, the fourth subscale (autonomic subscale) included chest pain, shortness of breath, palpitations and shaking spells.

#### (*iii*) *Main reason for consultation according to respondents*

Main reasons for contacting the primary care physician as reported by respondents during the CIDI-PHC were dichotomized as follows: mental or behavioural symptoms (with the exception of those related to alcohol or drug abuse) were considered together as expressions of overt emotional distress and opposed to somatic symptoms (e.g. headache, pain in various parts of the body, weakness, dizziness etc.). Visits for antenatal/postnatal care, family planning or injuries, periodic visits for chronic physical illness, and check-up of health status were not included in logistic regression analysis.

### Statistics

Unless otherwise specified, univariate analyses incorporated sampling weights to account for varying probabilities of selection for second-stage evaluation according to study design.

Linear regression analysis was applied to determine whether gender, centre and emotional distress were significant predictors of level of somatic symptoms. Separate models were fitted with the emotional distress score (and, alternatively, the anxiety subscore or the depression subscore) as predictor variable and the overall somatic symptom score (or each of the four somatic symptom subscores) as dependent variable.

Logistic regression analysis was used to determine whether gender was a significant

predictor of respondent's main reason for contacting the primary care physician (mental/behavioural *versus* somatic symptoms), controlling for levels of somatic symptoms and emotional distress as well as for centre effect.

## RESULTS

Across all centres, 26969 subjects were approached at primary care clinics and, of these, 25916 completed the screening GHQ-12 (mean response rate 96·5%; range 91·0–99·8%). Overall, 8698 subjects were selected for second stage evaluation and this was completed by 5438 (mean response rate 64·9%; range 36·8–98·8%). Primary reasons for non-completion of second-stage evaluation were patients' lack of time or inability to keep the scheduled appointments. The low response rate to second-stage evaluation at some centres may be a potential limitation to generalizability of results. However, respondents did not differ significantly from non-respondents in terms of gender, age or initial GHQ-12 score. Moreover, the method of weighting study data was adjusted for non-response differentials by gender and GHQ score stratum at each centre.

Across all centres, 62·0% of primary care attenders were females. Across all centres, 14·9% of primary care attenders were aged 15 to 24 years, 45·2% were 25 to 44 years and 39·9% were 45 to 65 years. Other sociodemographic characteristics of the study sample were reported by Üstün & Sartorius (1995).

Data on levels of emotional distress and somatic symptoms were available for 5190 subjects (2011 males and 3179 females). Table 1 shows that, across all centres, females tended to report higher levels of emotional distress and somatic symptoms compared to males. In general, gender differences were modest, although highly significant due to large sample size.


FIG. 1. Correlation between emotional distress score and somatic symptom score in males and females across all centres.

Fig. 1 shows the correlation between emotional distress score and somatic symptom score in males and females across all centres. A strong correlation ($P < 0{\cdot}0001$) between somatic symptoms and emotional distress was found in both sexes, with females tending to report more somatic symptoms than males at each level of emotional distress.

Table 2 sets out mean levels of emotional distress and somatic symptoms for males and females at each centre; to aid comparison, centres were ranked according to increase in position in the UN Development Programme's Human Development Index (i.e. a measure combining income level, adult literacy and life expectancy at each centre). In general, females reported higher levels of emotional distress and somatic symptoms compared to males, although gender differences were statistically significant at

Table 1. *Mean levels of emotional distress and somatic symptoms in males and females across all centres*

| | Males Mean (S.D.) | Females Mean (S.D.) | *t* | *P* |
|---|---|---|---|---|
| Emotional distress score | 1·59 (2·6) | 2·07 (3·0) | 6·05 | < 0·001 |
| Anxiety score | 2·90 (2·9) | 3·38 (3·2) | 5·60 | < 0·001 |
| Depression score | 4·31 (4·1) | 4·73 (4·5) | 3·44 | < 0·001 |
| Somatic symptom score | 1·74 (2·2) | 2·55 (2·8) | 11·6 | < 0·001 |
| Gastrointestinal score | 0·46 (0·96) | 0·58 (0·98) | 4·25 | < 0·001 |
| Neurological/conversion score | 0·48 (0·87) | 0·81 (1·1) | 11·97 | < 0·001 |
| Musculoskeletal score | 0·53 (0·89) | 0·77 (1·1) | 8·77 | < 0·001 |
| Autonomic score | 0·27 (0·62) | 0·39 (0·74) | 6·36 | < 0·001 |

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Table 2. *Mean levels of emotional distress and somatic symptoms, and correlations between emotional distress score and symptom score, in males and females at each centre*

| | Emotional distress | | Somatic symptoms | | Pearson's *r* | |
|---|---|---|---|---|---|---|
| Centre | Males Mean (S.D.) | Females Mean (S.D.) | Males Mean (S.D.) | Females Mean (S.D.) | Males | Females |
| Ibadan | 1·34 (2·11) | 0·83 (1·57) | 1·35 (1·60) | 1·26 (1·63) | 0·38 | 0·33 |
| Bangalore | 1·61 (2·95) | 2·33 (3·32)* | 1·97 (2·51) | 3·04 (3·45)** | 0·56 | 0·48 |
| Shanghai | 1·34 (2·18) | 1·62 (2·49) | 1·61 (1·75) | 2·45 (2·51)** | 0·41 | 0·41 |
| Ankara | 1·14 (2·34) | 1·34 (2·36) | 1·95 (2·20) | 3·28 (3·16)** | 0·43 | 0·42 |
| Rio | 1·38 (2·86) | 2·65 (3·38)** | 2·33 (2·73) | 3·86 (3·36)** | 0·37 | 0·48 |
| Santiago | 4·07 (2·98) | 4·55 (4·19) | 4·46 (2·18) | 4·16 (4·27) | 0·49 | 0·36 |
| Athens | 1·69 (2·77) | 2·21 (2·67) | 1·30 (1·76) | 2·05 (2·29)* | 0·34 | 0·37 |
| Verona | 1·79 (2·34) | 2·24 (2·90) | 0·76 (1·54) | 1·70 (1·80)** | 0·34 | 0·27 |
| Berlin | 2·21 (2·83) | 2·38 (3·23) | 2·29 (2·27) | 2·79 (2·56)* | 0·23 | 0·26 |
| Mainz | 1·64 (2·75) | 2·24 (2·93)* | 2·07 (2·49) | 2·14 (2·53) | 0·36 | 0·27 |
| Manchester | 2·24 (3·19) | 2·44 (3·45) | 1·87 (2·36) | 2·57 (3·04)** | 0·45 | 0·29 |
| Paris | 1·59 (2·67) | 2·86 (3·48)** | 1·43 (1·91) | 3·07 (2·94)** | 0·30 | 0·34 |
| Seattle | 1·23 (2·12) | 1·45 (2·43) | 1·20 (1·74) | 1·76 (2·26)** | 0·25 | 0·29 |
| Groningen | 1·59 (2·80) | 2·32 (3·13)* | 1·38 (1·86) | 2·42 (2·27)** | 0·34 | 0·47 |
| Nagasaki | 1·17 (2·31) | 1·12 (2·15) | 1·33 (2·11) | 1·47 (2·08) | 0·39 | 0·29 |

* Significant gender difference between the means at the $P < 0·05$ level.
** Significant gender difference between the means at the $P < 0·01$ level.

some of the study centres only. Correlation coefficients between emotional distress score and somatic symptom score varied across centres, ranging between 0·23 and 0·56 in males and between 0·26 and 0·48 in females. Correlations between emotional distress score and somatic symptom score were similar in males and females at each centre, the only difference approaching statistical significance being found in Manchester ($Z = 1·69$; $P = 0·09$). For more details about distribution of somatic symptoms across centres, interested readers may refer to Simon *et al.* (1996).

Table 3. *Estimated coefficients and statistics from linear regression analysis* (*somatic symptom score as dependent variable*)*

| Variable | B† | S.E.‡ | *t*§ | *P* |
|---|---|---|---|---|
| Sex | 0·12 | 0·35 | 0·36 | 0·7222 |
| Age | 0·41 | 0·03 | 13·91 | < 0·0001 |
| Distress | 0·28 | 0·01 | 22·77 | < 0·0001 |
| GHQST2 | 0·58 | 0·12 | 4·80 | < 0·0001 |
| GHQST3 | 0·92 | 0·12 | 7·97 | < 0·0001 |
| Bangalore | 1·11 | 0·34 | 3·28 | 0·0010 |
| Ankara | 0·97 | 0·37 | 2·64 | 0·0084 |
| Rio | 1·19 | 0·40 | 2·96 | 0·0031 |
| Verona | −1·16 | 0·41 | −2·81 | 0·0050 |
| Sex*Bangalore | 0·94 | 0·44 | 2·12 | 0·0337 |
| Sex*Ankara | 1·48 | 0·45 | 3·26 | 0·0011 |
| Sex*Paris | 0·91 | 0·44 | 2·04 | 0·0411 |
| Constant | 0·01 | 0·30 | 0·03 | 0·9765 |

* In addition to sex, only independent variables that were significant at the $P < 0·05$ level were reported.
† Partial regression coefficient.
‡ Standard error of partial regression coefficient.
§ Based on Wald statistic.
$R^2 = 0·26$; $F(33, 5146) = 55·14$; $P < 0·0001$.
Legend: Sex, (0 = male; 1 = female); Age, (0 = 15–24 years; 1 = 25–44 years; 2 = 45–65 years); Distress, emotional distress scored on GHQ; GHQST2 and GHQST3, sampling strata as dummy variables with low stratum as reference; Bangalore, Ankara, Rio, Verona, Paris, centres as dummy variables with Ibadan as reference centre.

Gender as well as centre differences in somatic symptoms associated with emotional distress were tested using linear regression analysis. First, a linear regression line as well as quadratic and cubic regression curves were fitted to the bivariate scatterplot of emotional distress score against somatic symptom score. Since the value of $R^2$ was virtually the same for the three fit methods, we concluded that a linear regression line provided a satisfactory fit of our data. Moreover, since the distribution of somatic symptom scores in the sample was skewed to the right, a transformation was performed to approximate normality. Linear regression analysis was carried out on both original and transformed data and similar results were obtained. Table 3 sets out findings from linear regression analysis as applied to original data, since they lend themselves to easier interpretation. Somatic symptoms were significantly and positively

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Table 4. *Estimated coefficients and statistics from linear regression analysis* (*somatic symptom score as dependent variable*)*

| Variable | B* | S.E.† | *t*‡ | *P* |
|---|---|---|---|---|
| Sex | 1·56 | 0·392 | 3·97 | 0·0001 |
| Age | 0·36 | 0·029 | 12·62 | < 0·0001 |
| Distress | 0·31 | 0·012 | 25·04 | < 0·0001 |
| GHQST2 | 0·54 | 0·124 | 4·37 | < 0·0001 |
| GHQST3 | 0·85 | 0·117 | 7·28 | < 0·0001 |
| HDI | −0·02 | 0·004 | −4·51 | < 0·0001 |
| Sex*HDI | −0·01 | 0·005 | −2·30 | 0·0213 |
| Constant | 1·53 | 0·316 | 4·85 | < 0·0001 |

* Partial regression coefficient.
† Standard error of partial regression coefficient.
‡ Based on Wald statistic.
$R^2 = 0{\cdot}20$; $F(5, 5178) = 265{\cdot}0$; $P < 0{\cdot}0001$.
Legend: Sex, (0 = male; 1 = female); Age, (0 = 15–24 years; 1 = 25–44 years; 2 = 45–65 years); GHQST2 and GHQST3, sampling strata as dummy variables with low stratum as reference; Distress, emotional distress scored on GHQ; HDI, Human Development Index.

Table 5. *Main reasons for contacting primary care services across all centres*

| Reason | Males *N* (%) | Females *N* (%) |
|---|---|---|
| Mental/behavioural symptoms | 85 (4·3) | 213 (6·7) |
| Somatic symptoms | 1390 (71·0) | 2290 (71·5) |
| Alcohol/drug abuse | 5 (0·3) | 5 (0·2) |
| Antenatal/postnatal care | 0 (0·0) | 40 (1·2) |
| Family planning | 0 (0·0) | 20 (0·6) |
| Others* | 478 (24·4) | 633 (19·8) |

* Periodic visits for chronic physical illness or injuries and check-up of health status.

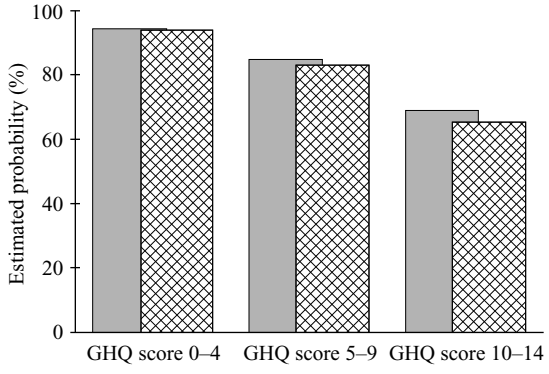


FIG. 2. Estimated probability of reporting somatic symptoms as main reason for consultation by increasing level of emotional distress across all centres. (▩, Males; ⊠, females.)

associated with emotional distress and age, but not with gender. Compared to males, females tended to report only 0·12 more somatic symptoms, with the difference between the two sexes being essentially the same at each level of emotional distress (i.e. the gender-by-emotional distress interaction did not provide a significant contribution and was not retained in the model).

The 15 centres differed significantly from one another in the association between somatic symptoms and emotional distress; moreover, gender differences in this association varied across centres. To aid interpretation of these findings, a new model was fitted with the UN Development Programme's Human Development Index and its interaction with gender as predictor variables. Estimated coefficients and statistics are reported in Table 4. Primary care attenders from less developed centres, according to the Human Development Index, tended to report more somatic symptoms and to show greater gender differences at each level of emotional distress. Although statistically significant, these differences were small. For example, individuals from the least developed centre (i.e. Ibadan) reported about one somatic symptom more than those from the most developed one (i.e. Nagasaki) at each level of emotional distress. The difference in somatic symptoms between males and females was half a symptom greater in Ibadan compared to Nagasaki, with the other centres distributing in between. The greater main effect of gender in this model compared to the previous one is likely to be due to centre differences other than those included in the Human Development Index being not accounted for.

Similar results were found with either anxiety and depression subscores as predictor variables or the four somatic symptom subscores as dependent variables, suggesting no clear pattern of association between specific somatic symptoms and either anxiety or depression as well as no gender differences in this association. These data were not reported here, but are available from the authors upon request.

Table 5 shows main reasons for contacting primary care physicians as reported by respondents during second-stage evaluation. Mental or behavioural symptoms were mentioned by 5·8% of the sample, whereas somatic symptoms prompted a physician's visit

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in 71·3% of respondents. Marked inter-centre differences were found, with the frequency of mental/behavioural symptoms ranging between 0·2% (in Shanghai) and 13·7% (in Manchester) and that of somatic symptoms between 45·4% (in Seattle) and 92·4% (in Shanghai).

After controlling for levels of emotional distress and somatic symptoms as well as for age and centre effect, gender was not a significant predictor of reason for consultation (mental/behavioural *versus* somatic symptoms) (odds ratio = 0·82; 95% CI 0·62, 1·07). Fig. 2 illustrates the findings from logistic regression analysis. Estimated probability of reporting somatic symptoms as main reason for consultation tended to decrease with increasing levels of emotional distress, with small differences between males and females.

## DISCUSSION

In this paper, gender and centre differences in the association between somatic symptoms and emotional distress were investigated according to two potentially distinct definitions of somatization, that is level of somatic symptoms reported on a standardized psychiatric interview and presentation of somatic as opposed to mental/behavioural symptoms to the primary care physician. In our sample of primary care attenders, females reported higher levels both of somatic symptoms and of emotional distress compared to males. However, a strong correlation between somatic symptoms and emotional distress was found in both sexes, with gender having little effect if any on level of somatic symptoms associated with emotional distress. Moreover, in both sexes no specific pattern of association emerged between somatic symptom clusters and either anxiety or depression. Finally, gender had no effect on main reason for consulting the primary care physician (somatic *versus* mental/behavioural symptoms), after controlling for levels of somatic symptoms and emotional distress. Thus, our findings provide little support to the commonly held belief that females somatize more than males.

Due to cross-sectional results being reported here, no inferences can be made about temporal relationships between somatic symptoms and emotional distress. Hypotheses implying a time order (i.e. somatic symptoms secondary to emotional distress or vice versa) will be tested when 1-year follow-up data from this study will be available. At present, three possible explanations may be suggested for the association between somatic symptoms and emotional distress.

First, somatic symptoms may imply a general tendency for individuals to experience and communicate emotional distress in somatic terms and eventually seek medical help (Lipowski, 1987; Mumford, 1993). Defined in these terms, somatization is expected to be a widespread phenomenon and may have several adaptive advantages by allowing people to occupy the sick-role while emotionally distressed, avoid the associated blame and stigma and, thus, reduce the underlying emotional distress (Goldberg & Bridges, 1988). Indeed, Bridges *et al.* (1991) explored possible determinants of somatization in primary care and found that individuals who somatized their emotional distress were less severely ill according to total PSE and GHQ score and less depressed according to clinical diagnosis, reported lower levels of social dissatisfaction and social stress and were less dependent on their relatives, compared to those who presented psychological symptoms to their physician. However, these possible advantages are obscured by the detrimental effects of somatization, leading to lack of or delay in recognition of underlying psychiatric illness, inappropriate physical investigations and persistent patterns of abnormal illness behaviour (Lloyd, 1989; Mayou & Sharpe, 1995).

An alternative explanation might be that somatic symptoms and emotional distress share common antecedents. Quite recently, Bass & Murphy (1995) have reported that about two in three subjects with a somatoform disorder also met criteria for a personality disorder and argued for reconsidering somatoform disorders as disorders of development along with personality disorders. Indeed, personality traits of neuroticism, negative affectivity or harm avoidance (consisting of chronic negative emotions and associated cognitive–behavioural characteristics when aversive stimuli are confronted) have been repeatedly associated with higher numbers of medically unexplained somatic symptoms and

anxiety or depression diagnoses (Tyrer, 1985; Andrew *et al*. 1990; Russo *et al*. 1994; Vassend *et al*. 1994). In addition to personality traits, the association between somatic symptoms and emotional distress might result from exposure to risk factors which are pathogenic to both physical and psychological health. In a sample of civil servants, exposure to chronic poverty-related difficulties such as poor housing, financial hardship and rundown neighbourhoods was significantly associated with both psychological and physical symptoms in both sexes, whereas life events and alcohol intake were positively associated with both types of symptoms in males but not in females (Stansfeld *et al*. 1993). Research in this field has made considerable progress in understanding the common pathways through which psychobiological stressors may affect a wide spectrum of health disorders. The evidence available so far suggests that pathophysiological processes and cognitive–behavioural mechanisms may interact in complex ways and affect both psychological and physical well-being (Steptoe, 1991; Sharpe & Bass, 1992).

Finally, the association between somatic and psychological symptoms might be due to reporting bias resulting from tendency to over-report both types of symptoms. This response bias might be responsible for the absence of a clear association between specific somatic symptoms and either anxiety or depression that was found in this study. However, this explanation seems unlikely given the reliability and validity of the instruments used (GHQ and CIDI) and the decision to include in analyses only clinically significant somatic symptoms as assessed by the investigator during interview. Moreover, our findings are similar to those of Kroenke *et al*. (1994), who reported that the number of somatic symptoms strongly predicted anxiety or depressive disorder in a sample of primary care attenders in the United States, but somatic symptoms had no specific association with depression or anxiety.

Contrary to expectation, similar patterns of association between somatic symptoms and emotional distress were found in males and females across all the participating centres. Thus, our data do not support the traditional view that somatization is a basic orientation prevailing in developing countries, whereas 'psychologization' is a recent phenomenon that occurs especially in developed countries (Kirmayer, 1984; Goldberg & Bridges, 1988). Although the patterns of somatic symptoms associated with emotional distress may partly differ in various cultural settings, recent findings from cross-cultural surveys have shown that somatization is a widespread phenomenon (Escobar, 1995). It follows that the role of somatization might have been overemphasized in the past as a distinct feature of the illness behaviour in non-Western countries (Cheng, 1989).

Two types of explanation can be suggested for the association between somatic symptoms and emotional distress occurring across different cultural settings. A few studies carried out in various ethnic groups have proposed that somatic symptoms may be part of the core features of psychiatric disorders, especially depression, and thus tend to be invariable across cultures. Under this assumption, cultural factors may be involved mainly in the perception and elaboration of somatic and emotional experiences, in the emphasis placed on them and in their reporting to health professionals (Silver, 1987; Ebert & Martus, 1994). Alternatively, there is some evidence that those subjects who experience emotional distress and tend to be introspective are also more likely to amplify and report somatic symptoms (Parsons & Wakeley, 1991).

On the other hand, there are some limitations that might influence our findings. First, many somatic symptoms were reported too infrequently to be included in analyses; among them, there were conversion-type symptoms (e.g. lost feeling in arm or leg, paralysis, lost voice, blindness, amnesia etc.) that might best account for possible cultural differences in somatic expression of emotional distress. Moreover, the primary care setting may not be ideal to explore gender and cultural differences, since a filtering process is operating along the pathways to care and may alter or reduce such differences. Further studies in different samples are required to explore these issues.

Secondly, inter-centre differences might be reduced by our decision to consider somatic symptoms irrespective of medical explanation. It follows that organic disorders might partly account for somatic symptoms reported during

interview and for primary care physicians' consultations due to somatic complaints. However, in addition to the methodological reasons already discussed, two further issues support this decision. Indeed, there is growing evidence that physical and psychological symptoms are multifactorial in origin and may share common events, so that a clear distinction between the two is spurious and misleading (Lipowski, 1987; Mumford, 1993). For example, Creed *et al.* (1990) examined female patients admitted to a neurological ward and found that, although many had clear organic disease or somatic presentation of psychiatric disorder, about one-third fell between these two extremes and either had a complex mixture of the two types of illness or could not be accurately diagnosed. Moreover, a dualist perspective (medically explained *versus* medically unexplained symptoms) may merely reflect a Western cultural construction that has never gained dominance in non-Western countries (Fabrega, 1990).

A final limitation of this study refers to the specific nature of respondents' symptoms not being assessed, since the instruments used in this study were not designed to elicit respondents' understanding and attribution of symptoms and resulting help-seeking behaviour. As Fabrega (1990) pointed out, '…the cross-cultural uniformities exist provided one adopts an abstract mode of description. If, on the other hand, one looks at the phenomena of illness as individuals experience, describe, and display this in social behavior, few cross cultural uniformities between disease and illness can be expected'.

Our findings carry important practical implications. Primary care physicians and other professionals working in primary care settings should be aware of the association between somatic and psychological symptoms in the clinical evaluation and management of their patients, since the co-occurrence of somatic and psychological symptoms often poses considerable diagnostic problems and may interfere with the recognition of psychiatric illness (Bridges & Goldberg, 1985). Thus, Kirmayer *et al.* (1993) investigated the effect of patients' style of clinical presentation on primary care physicians' recognition of depression and anxiety and found that somatized presentation significantly decreased the likelihood of physician's recognition of psychosocial distress or psychiatric illness and predicted a higher number of visits until psychiatric illness was recognized.

At the same time, classifications of health problems for use in primary care settings should reflect the close inter-relationship between psychological and physical illness in order to assist primary care physicians in their clinical practice and researchers in their investigation. In this regard, multiaxial classificatory systems allowing for simultaneous recording of physical, psychological and social problems are expected to be appropriate in primary care settings (Clare *et al.* 1992).

In conclusion, these data showed that somatic symptoms and emotional distress are strongly associated, with few differences between the two sexes and across cultures. It follows that somatic symptoms do not merely replace or symbolize emotional distress; instead, somatic symptoms and emotional distress tend to occur together in various proportions. Therefore, it is expected that somatic symptoms cut across different diagnostic conditions, being 'a final common pathway through which emotional disturbances, psychiatric disorder, and organic pathology all express themselves, and which prompt patients to visit doctors' (Barsky *et al.* 1986).

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