

Primary care

Chronic fatigue in developing countries: population based survey of women in India

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Abstract

Objectives To describe the prevalence of and risk factors for chronic fatigue in a developing country; in particular, to determine the association of anaemia, mental health, and gender disadvantage factors with chronic fatigue.

Design Community survey.

Setting Primary health centre catchment area in Goa, India.

Participants 3000 randomly sampled women aged 18 to 50 years.

Main outcome measures Data on the primary outcome (reporting of fatigue for at least six months) and psychosocial exposures elicited by structured interview; presence of anaemia determined from a blood sample.

Results 2494 (83%) women consented to participate; 12.1% (95% confidence interval 10.8 to 13.4%) complained of chronic fatigue. In multivariate analyses, older women ($P=0.03$) and those experiencing socioeconomic deprivation—less education ($P<0.001$), families in debt ($P=0.09$), hunger in the past three months ($P=0.03$)—were more likely to report chronic fatigue. After adjustment for these factors, factors indicating gender disadvantage (notably sexual violence by the husband; $P<0.001$) and poor mental health ($P<0.001$) were strongly associated with chronic fatigue. Although women with a high body mass index had a reduced risk, suggesting an influence of poor nutrition, no association was found between chronic fatigue and haemoglobin concentrations.

Conclusions Chronic fatigue was commonly reported by women in this community study from India. The strongest associations with chronic fatigue were for psychosocial factors indicative of poor mental health and gender disadvantage.

Introduction

Fatigue is a common symptom among women in developing countries. In a survey in India, nearly a quarter of women complained of feeling weak or tired; more than half of them had had these problems for more than six months.¹ Fatigue in women has often been attributed to nutritional deficiencies and anaemia. Physicians are likely to prescribe iron, vitamins,

and nutritional supplements to treat the symptom presumptively. Such preparations account for the largest category of drugs dispensed in South Asia.²

Little research has been done on the associations of fatigue with psychological factors in developing countries, particularly in the context of the high prevalence of anaemia and poor nutrition. We hypothesised that the principal association of fatigue was with psychosocial risk factors, similar to patterns seen in developed countries,³ and with factors reflecting gender disadvantage that are important determinants of women's health.^{4,5}

Methods

Participants

The sampling frame consisted of 8595 women aged 18-45 years listed in the family health registers in an area of north Goa; we randomly selected 3000 women. Inclusion criteria for the study were age between 18 and 50 years, being resident in the area for the next 12 months, speaking one of the study languages, not having cognitive impairment, and not being pregnant. If a selected woman did not meet these criteria or was no longer living in the area, the researcher replaced her by using a priori steps to identify another eligible woman. Recruitment took place from November 2001 to May 2003.

Data collection

We used a semistructured interview to elicit data on personal history and health history. Items were derived from existing interviews used in other studies.⁶⁻⁸ We estimated haemoglobin concentration from a finger prick sample of blood. A gynaecologist did a general medical examination for participants who consented. We organised the data as follows.

Socioeconomic risk factors—We collected information on age, education, religion, and marital status from all participants, including those who refused to participate. We measured economic status through type of housing, access to water and a toilet, household composition and income, employment status,



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indebtedness, and experience of hunger in the previous three months.

Psychological factors—We used two measures of psychological factors. The scale for somatic symptoms measures somatic symptoms that are features of somatoform disorders and has been used previously in India.⁹ The scale elicits experience of four categories of somatic symptoms in the previous two weeks. We summed the scores on the pain related symptoms and sensory symptom scales to generate a somatoform disorder symptom score. The second measure was the revised clinical interview schedule, a structured interview for the measurement of common mental disorders in community settings. A version of the schedule used in the study had been previously used in Goa.¹⁰ The sum of the section scores, excluding the fatigue item scores, generated a total score which we used as a measure of non-psychotic psychiatric morbidity.

Gender disadvantage and social support—Questions on gender disadvantage and social support covered four domains. The first domain was the lifetime experience of verbal, physical, and sexual violence by the spouse and concerns about the spouse's extramarital relationships and substance use habits. Questions in the second domain were summed to generate an autonomy score. Questions in the third domain were summed to generate a social integration score. Finally we summed the questions in the last domain to generate a family support score (see bmj.com).

Physical health and anaemia—We asked all participants about any pregnancies and asked participants who were sexually active in the past year about any difficulty in conception and their use of contraceptives. We evaluated anaemia as a categorical variable. We measured weight, height, and blood pressure. We measured disability by using the World Health Organization 12 item disability assessment schedule. This generates a total score and a measure of the number of days in the previous 30 days that the participant had to cut back her usual activities.

Outcome—We defined the outcome on the basis of the responses to the fatigue section of the revised clinical interview schedule. This section has two optional questions on fatigue. Participants who answer positively to either of these are asked a series of four questions about the severity of the problem. We defined the outcome of chronic fatigue when participants had experienced fatigue in the past month and had scored at least 1 on the severity questions, and had experienced fatigue for a minimum duration of the past six months.

Analysis

We used logistic regression for all analyses, with chronic fatigue coded as a binary outcome (present or absent). We formed a composite multivariate model covering all domains. This consisted of the subset of socioeconomic factors in the first multivariate model; any mental health, gender disadvantage, and physical health factors for which the P value adjusted for the socioeconomic factors was ≤ 0.1 ; and haemoglobin concentrations on an a priori basis. We reached the final multivariate logistic regression model by dropping factors one at a time until all remaining factors were significant at the $P \leq 0.1$ level (see bmj.com).

Results

Of the 3000 randomly selected women, 2494 (83.1%) consented to participate in the study. The most common reasons for refusal were that the woman did not have time to participate (265, 52.4%) or that a family member had not given permission (95, 18.8%). Compared with participants, women who refused were less likely to be ethnic non-Goans, more likely to be Christian, more likely to be unmarried, younger, and more educated. Of those who participated, 957 (38.4%) replaced a randomly selected woman; the most common reasons for replacement were that the selected woman was no longer resident (400, 41.8%) or was unlikely to be resident for the duration of the study (45, 4.7%) and errors in the records of the family health register (381, 39.8%).

Fatigue was reported by 423 (17.0%) participants, of whom 301 (12.1%, 95% confidence interval 10.8% to 13.4%) had experienced it for at least six months. Participants who were experiencing chronic fatigue had significantly poorer WHO disability assessment schedule scores (mean score 14.1 (SD 2.5) *v* 12.4 (1.3); $t = -19.03$, $P < 0.0001$); they reported having to cut back on their daily activities on an average of 3.0 (2.2 to 3.9) days in the previous month compared with an average of 0.5 (0.3 to 0.6) days for participants who had not experienced chronic fatigue ($P < 0.001$).

Associations with socioeconomic risk factors

Older participants, participants living in households with more than three children under the age of 18, and those facing socioeconomic difficulties were significantly more likely to be experiencing chronic fatigue (see bmj.com). However, we found no association with household income. Compared with married participants, single participants had a lower risk, whereas divorced or widowed participants had a higher risk. In multivariate analyses, the following factors were significantly associated with chronic fatigue: lower education (school completers *v* no education; odds ratio = 0.57, 0.4 to 0.8); families in debt (1.27, 1.0 to 1.6); hunger in the previous three months (1.61, 1.1 to 2.6); and older age (age 40-50 *v* 18-24 years, odds ratio = 2.0, 1.3 to 3.1).

Associations with gender disadvantage and mental health factors

Participants who lived in unhappy marriages, indicated by spousal violence and concerns about the husband's extramarital relationships and substance use habits (mainly alcohol), were significantly more likely to experience chronic fatigue (table). Participants whose lives were marked by restrictions on personal freedoms and decision making and those who had low support from their families were significantly more likely to complain of chronic fatigue. The associations with the two mental health risk factors (common mental disorders and somatoform disorder symptom scores) were strong. All pain and sensory symptoms were between two and 10 times more commonly reported by participants with chronic fatigue.

Associations with physical health factors

The only significant associations with physical health factors were a reduced risk with high body mass index and having had a pregnancy in the previous year (see bmj.com). We found no association between

Association of gender disadvantage and mental health variables with chronic fatigue in a community sample of women in Goa, India (n=2494 unless stated otherwise). Values are numbers (percentages) unless stated otherwise

Factor	Total	Prevalence of chronic fatigue	Adjusted odds ratio (95% CI)*	Two tailed P value
Verbal abuse by husband†:				
No	1491 (85.2)	175 (11.7)	1	
Yes	259 (14.8)	56 (21.6)	1.81 (1.3 to 2.6)	0.001
Physical abuse by husband†:				
No	1585 (90.6)	199 (12.6)	1	
Yes	165 (9.4)	32 (19.4)	1.42 (0.9 to 2.2)	0.11
Sexual abuse by husband†:				
No	1686 (96.3)	207 (12.3)	1	
Yes	64 (3.7)	24 (37.5)	3.76 (2.2 to 6.5)	<0.001
Concerns about husband's extramarital affair†:				
No	1726 (98.6)	223 (12.9)	1	
Yes	24 (1.4)	8 (33.3)	2.71 (1.1 to 6.6)	0.03
Concerns about husband's habits†:				
No	1379 (78.8)	159 (11.5)	1	
Yes	371 (21.2)	72 (19.4)	1.57 (1.1 to 2.2)	0.005
Social integration:				
High	785 (31.5)	89 (11.3)	1	0.85
Medium	819 (32.8)	101 (12.3)	1.06 (0.8 to 1.4)	
Low	890 (35.7)	111 (12.5)	0.97 (0.7 to 1.3)	
Autonomy:				
High	832 (33.4)	84 (10.1)	1	0.07
Medium	1062 (42.6)	131 (12.3)	1.27 (0.9 to 1.7)	
Low	600 (24.1)	86 (14.3)	1.46 (1.0 to 2.0)	
Support from family:				
Minimal	482 (19.3)	78 (16.2)	1	0.10
Moderate	706 (28.3)	83 (11.8)	0.78 (0.5 to 1.1)	
High	1306 (52.4)	140 (10.7)	0.72 (0.5 to 1.0)	
Revised clinical interview schedule score:				
0	1530 (61.3)	23 (1.5)	1	<0.001
1-2	346 (13.9)	74 (21.4)	17.16 (10.5 to 27.9)	
3-4	222 (8.9)	49 (22.1)	17.24 (10.2 to 29.1)	
5-8	191 (7.7)	54 (28.3)	23.92 (14.2 to 40.4)	
>8	205 (8.2)	101 (49.3)	60.83 (36.8 to 100.6)	
Somatic symptom score:				
0	580 (23.3)	5 (0.9)	1	<0.001
1-2	825 (33.1)	39 (4.7)	5.57 (2.2 to 14.2)	
3-4	551 (22.1)	73 (13.2)	16.52 (6.6 to 41.3)	
5-19	538 (21.6)	184 (34.2)	53.96 (21.9 to 133.1)	

*Adjusted for independent socioeconomic risk factors: age, debt, hunger, education.

†Married women only (n=1750).

haemoglobin concentrations and chronic fatigue. Haemoglobin concentrations were also not associated with chronic fatigue in participants who had no symptoms of common mental disorders or somatoform disorders. We found no interaction ($P=0.5$) between anaemia (haemoglobin <11 g/dl) and common mental disorders.

In the final multivariate model, the following variables were independently associated with chronic fatigue: having experienced spousal sexual violence (odds ratio=1.96, 1.0 to 3.7); high revised clinical interview schedule scores (highest fifth *v* lowest fifth; 24.3, 14.3 to 41.3); high somatoform symptom scores (highest quarter *v* lowest quarter; 11.6, 4.5 to 30.1); low body mass index (≥ 25 *v* <17 ; 0.49, 0.3 to 0.9); and older age (40-50 *v* 18-24 years; 2.1, 1.2 to 3.7).

Discussion

Our principal findings were that more than 1 in 10 women reported chronic fatigue and that common mental disorders and symptoms associated with

What is already known on this topic

Chronic fatigue is common in developed countries and is strongly associated with psychological factors

In developing countries, fatigue in women is often attributed to anaemia and nutritional deficiencies

What this study adds

Chronic fatigue is common in women in developing countries

Psychological factors, notably symptoms of common mental disorders and somatoform disorders, and marital sexual violence are strongly associated with chronic fatigue

Low body mass index is associated with chronic fatigue, but anaemia is not

somatoform disorders were the strongest risk factors. Sexual abuse by the husband and a low body mass index were also independently associated with chronic fatigue; however, haemoglobin concentrations were not associated with the problem. Women with chronic fatigue had significantly increased levels of disability and were more likely to report other physical symptoms.

Strengths of our study include the use of a population sample, the use of standardised and validated measures of risk factors and outcome, and the evaluation of both psychosocial and physical health risk factors. Our definition of chronic fatigue was based on responses by participants to the fatigue section of the revised clinical interview schedule. One limitation is the possibility of a selection bias, given the differences between refusers and participants in the study and the relatively high proportion of participants who were recruited through replacement. We did not, however, find an association of replacement status with chronic fatigue. Some of the morbidity could have been attributable to infectious diseases that we were unable to diagnose in this study.

The rates of chronic fatigue lasting for at least six months that we report are similar to or higher than those reported in community studies from developed countries. For example, the UK population study that used similar criteria reported a point prevalence rate of chronic fatigue of 9%; the rates were higher in women.¹¹ The socioeconomic risk factors independently associated with chronic fatigue were older age and indicators reflecting socioeconomic deprivation. Compared with married women, being single was a protective factor, whereas being widowed or separated increased the risk. Although studies in developed countries have shown some of these associations (for example, with older age), the association with economic difficulties is less consistent.

Gender disadvantage is a major social determinant of health in developing countries.^{5 12} Our study shows a strong association between gender disadvantage and chronic fatigue. Chronic fatigue may be the result of heavy physical work, which might be experienced by women in such circumstances. Excess physical work

and gender disadvantages in access to food are perhaps the most likely explanation for the association of fatigue with low body mass index.

Mental health factors, notably the comorbidity with other physical problems, and symptoms of depression and anxiety, had the strongest associations with chronic fatigue. Common mental disorders and medically unexplained symptoms are among the most common causes of morbidity in developing countries. However, less than a third of clinically significant morbidity is detected,¹³ and fatigue may be a key problem in these disorders.

In conclusion, our main finding is that the strongest association of chronic fatigue in developing countries is with mental illness. Chronic fatigue is often comorbid with other medically unexplained physical symptoms, suggesting that such symptoms are part of a medically unexplained somatic syndrome.³ Practitioners in developing countries should investigate the psychological and social determinants of chronic fatigue before assuming that it is the result of anaemia or a nutritional deficiency. The growing evidence for effective treatments should provide the basis for guidelines for management of such symptoms.^{14 15}

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A little give and take

Mount Isa, a dusty mining town in the Australian outback, was not known for its pioneering medical practices, or so I thought. I worked there for six months in the hospital accident and emergency department with a team almost exclusively made up of ex-pat British doctors. The pace was gentle, and, although this was a working holiday for me, the emphasis was on the latter. The permanent staff were grudgingly resigned to the situation.

Members of the mining workforce would occasionally attend for the treatment of chemical burns to the eye. The patient would first have local anaesthetic applied to the cornea, then a device resembling a contact lens attached to a fine tube would be gently inserted under the eyelids and continuous irrigation applied with saline from a litre bag. A patient with kit in situ was a slightly disturbing sight, but the device's simplicity and effectiveness were impressive.

On moving to an accident and emergency department in the sprawling city of Brisbane, I was quick to call for the "contact lens irrigator" when faced with my first chemical burn to the eye. The nurse in charge simply gave me a bewildered look. She explained that eye irrigation was done by setting up a drip attached to a saline bag and standing over the supine patient while dripping the fluid into the eye. This was time consuming, ineffective, and not well tolerated, but was all that the staff knew.

A few telephone calls and several days later, an irrigator device arrived from Mount Isa. It was an instant hit, freeing up valuable time and stopping the nurses' shoes getting soaked. As far as I know, it is still in use to this day.

I sometimes feel that a junior doctor's existence is rather parasitic in nature—frequent moves from place to place (sometimes country to country) assimilating as much valuable experience as possible but giving little back to the local staff. On this occasion, however, I felt that I had passed on a little of what I had learnt on my travels as part payment for what I had received.

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