Clinical Research Report

Journal of INTERNATIONAL MEDICAL RESEARCH

Journal of International Medical Research
2019, Vol. 47(10) 4854–4861

DOI: 10.1177/0300060519872310
journals.sagepub.com/home/imr
SAGE

Health anxiety in medical employees: A multicentre study

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Abstract

Objective: The aim of this study was to explore health anxiety (HA) in a sample of hospital medical employees and to identify factors that influence HA.

Methods: A consecutively recruited sample of 1702 medical employees with or without HA was obtained from 13 hospitals across China. Participants' demographic and clinical characteristics were collected using a standardized protocol and data collection procedure. Subjects were divided into a HA and non-HA group according to their scores on the Chinese version of the Short Health Anxiety Inventory. Comparisons between groups were conducted and binary logistic regression was used to identify risk factors of HA.

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Results: Total HA prevalence was 30.14%. There were significant differences between the HA and non-HA groups in number of working years, hospital category, sex, marital status, family income, personality, physical disease and education degree. Working in a specialist hospital, being female, being married, low income, introversion, graduate education or above and presence of physical disease were risk factors of HA.
Conclusions: HA is common in medical employees. More investigation of the long-term impact of HA is warranted.

Keywords
Health anxiety, medical employee, risk factors, China, Short Health Anxiety Inventory, hospital worker, demographics

Date received: 30 March 2019; accepted: 6 August 2019

Introduction

Health anxiety (HA) is a multidimensional construct which includes an affective component, a behavioural aspect, a perceptual aspect and a cognitive component (beliefs that health concerns are not taken seriously enough by others).[1] Epidemiological research has confirmed that HA is a common mental symptom associated with the negative interpretation of and fears about the meaning of both ordinary and unusual bodily sensations.[2,3] Health anxious individuals display dysfunctional patterns of response to illness information and may be deficient in protective coping strategies.[4] The characteristic behaviours of patients diagnosed with HA are often associated with substantial economic costs because such patients repeatedly consult doctors, seek additional tests and search textbooks or the Internet for information.[5] Moreover, HA in either parent is positively correlated with HA in children.[6] Therefore, HA has a significant long-term impact on healthcare costs and on patients' self-rated mental and physical health function.

In China, medical employees experience various pressures from clinical work, scientific research, administration and other responsibilities. The 24-hour shift system and irregular hours because of emergency work can result in biorhythm disorders and high stress. For example, a previous study on the association between work-related stress and symptoms of psychological malaise in radiologists reported a psychological malaise prevalence of 21.4%.[7] Another study found that podiatric physicians demonstrated high levels of pain, moderate levels of job satisfaction and low-to-moderate levels of depression and anxiety.[8] Medical doctors also show a high prevalence of anxiety.[9] Such negative effects may result from empathy for patients' suffering, excessive workloads, organizational difficulties or worries about errors or malpractice accusations. Although medical employees experience a range of psychological problems, to our knowledge, no studies have explored their experiences of HA.

HA in different populations is influenced by various factors. Our previous study reported that life satisfaction, neuroticism and alexithymia predicted HA in nursing students,[10] and there is evidence that life quality and neuroticism predict HA in patients with physical diseases.[2] Lee et al.[11] demonstrated that individuals with somatic symptoms report high HA.

Research is needed on the possible effects of demographic factors such as age, gender and education on HA. However, there are no studies on the relationship between HA and demographic factors in medical employees. Therefore, the study aim was to investigate the prevalence of HA in Chinese medical employees and to explore the effects of demographic factors on HA. We assumed that HA prevalence would be higher in medical employees than in the general population. We also predicted that HA level would be influenced by specific demographic factors, such as hospital category, sex, family income and physical disease.

Methods

Study design and participants

Between 1 April 2014 and 26 May 2014, we conducted a population-based study of HA among Chinese medical employees. The sample was recruited from 13 centres in different provinces and included doctors, nurses and other medical workers (e.g. medical technicians). All participants provided written informed consent as required by the ethics committee that approved the study (Zhongda Hospital, Southeast University, Nanjing, China) and completed the Chinese version of the Short Health Anxiety Inventory (CSHAI). Individuals who met the following criteria were included: (1) worked in a hospital; (2) signed an informed consent form; and (3) completed the questionnaire.

Demographics

Age, sex, family income, marital status, career type, working years, personality, presence of physical disease, education and hospital category were the background demographic characteristics investigated. Participants rated their family income as 'high', 'middle' or 'low' based on their personal judgement. Personality was rated as 'introversion', 'middle' or 'extraversion'. Education degree was divided into 'graduate degree and above' and 'undergraduate'.

CSHAI

The CSHAI[12] is an 18-item measure that assesses HA in clinical and non-clinical individuals.[13] Each CSHAI item consists of four statements rated from 'I do not' (0) to 'I spend most of my time'.[3] The total score ranges from 0 to 54; 15 is the cutoff score. The CSHAI contains two factors: the Illness Likelihood (14 items) subscale and the Negative Consequences (4 items) subscale. The CSHAI has strong construct validity, and has demonstrated good internal consistency (alpha = 0.864) and test–retest reliability (r = 0.562).

Analysis

The Predictive Analytic Software Statistics 18 package (IBM Corporation, Armonk, NY, USA) was used to analyse the data. The chi-squared test was used for comparisons for categorical variables: hospital category (1 = specialist, 2 = general), sex (1 = male, 2 = female), marital status (1 = married, 2 = single), career type (1 = doctor, 2 = nurse, 3 = other), family income (1 = low, 2 = middle, 3 = high), personality (1 = introversion, 2 = middle, 3 = extraversion), presence of physical disease (1 = no, 2 = yes) and education degree (1 = undergraduate, 2 = graduate or above). The independent-sample t-test was used for comparisons of continuous variables, such as age and working years. Additionally, binary logistic regression was conducted to examine the effects of demographics on HA. For each variable, odds ratios (OR) and 95% confidence intervals (CI) were calculated. The significance level was set at 0.05 (two-tailed) for all analyses.

Results

Participant demographics

After attrition and data screening, the sample comprised 1702 medical employees (403 males and 1299 females). According to their CSHAI scores, 513 were categorised into the HA group and the remaining 1189 employees into the non-HA (NHA) group. Participant age ranged from 19 to 64 years; the mean age was 34.19 years. There were 593 doctors, 959 nurses and 150 other employees; 44.36% of employees worked in specialist hospitals. In addition, there were 1575 medical employees with a graduate education or above. Almost all participants were married (82.55%).

A total of 513 participants (30.14%) had HA. Employees' demographics are shown in Table 1. There was a statistically significant difference between HA and NHA groups in hospital category ($\chi^2 = 7.900$,

Table 1. Comparisons of demographics between medical workers with or without HA.

	HA (n = 513)	non-HA (n = 1189)	χ^2	*P*
Hospital category, n				
general hospital	259	688	7.900	0.005
specialist hospital	254	501		
Sex, n				
male	105	298	4.188	0.041
female	408	891		
Marital status, n				
married	449	956	12.614	<0.001
single	64	233		
Career type, n				
doctor	165	428	3.668	0.160
nurse	307	652		
other	41	109		
Family income, n				
low	241	413	23.298	<0.001
middle	260	750		
high	12	26		
Personality, n				
introversion	77	143	10.867	0.004
middle	363	801		
extraversion	73	245		
Physical disease, n				
yes	98	97	42.321	<0.001
no	415	1092		
Education degree, n				
graduate degree or above	486	1089	5.141	0.023
undergraduate	27	100		
	Mean ± SD	Mean ± SD	t	*P*
Age (years)	34.71 ± 8.48	33.97 ± 8.73	−1.601	0.110
Working years (years)	12.28 ± 8.99	11.09 ± 9.41	−2.426	0.015

HA: health anxiety; SD: standard deviation.

$P = 0.005$), sex ($\chi^2 = 4.188$, $P = 0.041$), marital status ($\chi^2 = 12.614$, $P < 0.001$), family income ($\chi^2 = 23.298$, $P < 0.001$), personality ($\chi^2 = 10.867$, $P = 0.004$), physical disease ($\chi^2 = 42.321$, $P < 0.001$) and education degree ($\chi^2 = 5.141$, $P = 0.023$). The HA group had significantly more working years than the NHA group ($t = -2.426$, $P = 0.015$). However, there were no significant differences between the HA and NHA groups in personality and age.

Logistic regression

The effects of demographics on risk of HA were analysed using binary logistic regression models. Hospital category (OR 0.741, CI 0.596–0.920, $P = 0.007$), sex (OR 1.411, CI 1.088–1.830, $P = 0.010$), marital status (OR 0.595, CI 0.426–0.832, $P = 0.002$), family income (OR 0.653, CI 0.531–0.804, $P < 0.001$), personality (OR 0.782, CI 0.645–0.950, $P = 0.013$), education (OR 2.186, CI 1.381–3.461, $P = 0.001$) and physical disease (OR 2.671, CI 1.924–3.709, $P < 0.001$) were significant risk factors. The precision, sensitivity and specificity of the logistic regression model were 70.80%, 59.09% and 71.44%, respectively.

Discussion

In this study, we investigated HA in medical employees using the CSHAI. The results suggest that HA is a common symptom with a high prevalence. Previous studies have reported the prevalence of HA in different populations. Sunderland et al.[14] found that HA affected approximately 5.7% of the non-clinical Australian population. However, clinical populations show a larger HA prevalence rate than non-clinical populations. For example, our previous study found that HA prevalence levels varied by clinic: cardiology (47.69%) had the highest prevalence, followed by rheumatology (47.17%), neurology (42.62%), rehabilitation (41.94%) and endocrinology (34.48%).[2] One study found that 8% to 11% of genitourinary patients had HA.[15] We found that HA was more prevalent in medical employees than reported in these previous studies, and higher than in some patients. Medical employees are often exposed to conflicts or violent situations.[16] Employees who have experienced physical or emotional violence may feel depressed or anxious.[17]

A previous study showed that mental health employees experience higher levels of general satisfaction with their life, family roles, sexual life, emotional state and relations with patients.[18] However, in our study, employees in psychiatric hospitals had a higher prevalence of HA, and HA correlated with working conditions. One Korean study showed that healthcare workers had higher ORs for mood disorders, anxiety disorders, sleep disorders and any psychiatric disorders.[17] Moreover, female healthcare workers show higher prevalence of psychiatric disorders than males.[17] The present findings indicated that HA was more prevalent in females and that being female is a risk factor for HA. Dagher et al.[19] reported that females are slightly more likely to be diagnosed with anxiety. Another potential explanation is the consistent evidence in the literature that females are twice as likely to have an anxiety disorder than males.[20] The greater susceptibility of females to stress-related neuropsychiatric diseases because of hyperactive extrahypothalamic corticotropin-releasing factor circuits [21] may explain this sex difference in HA.

Chabaud et al.[22] assessed the association between sociodemographic factors and risk of at least one mental disorder; they found that married persons with a high family income and university degree had a decreased level of risk of psychiatric pathology. Our findings support those of many previous studies. For example, in pregnant

women[23] and outpatients with heart failure,[24] negative symptoms are associated with low family income. However, we found that married subjects showed a higher HA prevalence than single subjects, which is inconsistent with previous research. Some research indicates that invisible help and support from partners and relationship interactions improve married persons' life satisfaction.[25] In contrast (and consistent with our findings), one study found that being married is a risk factor in patients with irritable bowel syndrome.[26] We suggest that in the present study, the effect of marital status was confounded by age: single employees were young and had few life burdens.

We also found that HA was related to education level. Lei et al.[27] reported that patients with sleep disturbances show lower educational levels. This is inconsistent with our finding that medical employees with high educational levels were more likely to have HA symptoms. The occupational characteristics of medical employees may explain this finding. Medical employees with high educational levels would be more conscientious in their work and experience more pressure from being involved in scientific research. Thus, they are more likely to experience serious HA symptoms.

The prevalence of HA was significantly higher in employees with physical disease. Previous research suggests that HA is common in individuals with physical diseases.[2,28] We found that extraversion was negatively correlated with HA, which suggests that extraversion should protect individuals against HA. These findings support those of previous studies. For example, in an investigation of the impact of childhood trauma on psychosocial factors in young adults, Wang et al.[29] found that individuals with childhood trauma had lower extraversion and higher anxiety. Another study suggested that college students with higher extraversion are more likely to be happy and have less anxiety.[30]

The present study had some limitations. First, we did not recruit medical employees in community hospitals and primary care hospitals and so could not measure HA prevalence or factors related to HA in that population. Second, we only assessed demographic factors; an examination of more health-related characteristics is needed to fully understand HA in medical employees.

This is the first study to demonstrate evidence of the effect of demographic factors on HA in medical employees. More effective measures are needed to reduce HA in medical employees with high risk factors.

Acknowledgements

We thank all the medical employees who took part in this study.

Declaration of conflicting interest

The authors declare that there is no conflict of interest.

Funding

This work was supported by funding from a Foundation Research Project of Jiangsu Province (grant number BK20180829, Yuqun Zhang) and the Natural Science Foundation of Jiangsu Higher Education Institutions of China (grant number 18KJB320013, Yuqun Zhang).

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