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Fear and distress disorders as predictors of heart disease: A temporal perspective

A.M. Roest[a,*], P. de Jonge[a,u], C.W.W. Lim[b,v], D.J. Stein[c], A. Al-Hamzawi[d], J. Alonso[e], C. Benjet[f], R. Bruffaerts[g], B. Bunting[h], J.M. Caldas-de-Almeida[i], M. Ciutan[j], G. de Girolamo[k], C. Hu[l], D. Levinson[m], Y. Nakamura[n], F. Navarro-Mateu[o], M. Piazza[p], J. Posada-Villa[q], Y. Torres[r], B. Wojtyniak[s], R.C. Kessler[t], K.M. Scott[b]

[a] University of Groningen, University Medical Center Groningen, Department of Psychiatry, Interdisciplinary Center Psychopathology and Emotion regulation (ICPE), Groningen, The Netherlands
[b] Department of Psychological Medicine, University of Otago, Dunedin, New Zealand
[c] Department of Psychiatry and Mental Health, University of Cape Town, Cape Town, South Africa
[d] College of Medicine, Al-Qadisiya University, Diwania Governorate, Iraq
[e] IMIM-Hospital del Mar Research Institute, Parc de Salut Mar; Pompeu Fabra University (UPF); and CIBER en Epidemiología y Salud Pública (CIBERESP), Barcelona, Spain
[f] Department of Epidemiologic and Psychosocial Research, National Institute of Psychiatry Ramón de la Fuente, Mexico City, Mexico
[g] Psychiatrisch Centrum — Katholieke Universiteit Leuven (UPC-KUL), Campus Gasthuisberg Leuven, Belgium
[h] Psychology Research Institute, Ulster University, Northern Ireland, United Kingdom
[i] Chronic Diseases Research Center (CEDOC) and Department of Mental Health, Faculdade de Ciências Médicas, Universidade Nova de Lisboa, Lisbon, Portugal
[j] National School of Public Health, Management and Professional Development, Bucharest, Romania.
[k] IRCCS St John of God Clinical Research Centre, IRCCS Centro S. Giovanni di Dio Fatebenefratelli, Brescia, Italy
[l] Shenzhen Insitute of Mental Health & Shenzhen Kanging Hospital, Shenzhen, China
[m] Ministry of Health Israel, Mental Health Services, Israel
[n] Department of Public Health, Jichi Medical University, Shimotsuke, Tochigi, Japan
[o] IMIB-Arrixaca, CIBERESP-Murcia, Subdirección General de Salud Mental y Asistencia Psiquiátrica, Servicio Murciano de Salud, El Palmar (Murcia), Spain
[p] National Institute of Health, Peru, Universidad Cayetano Hereidia, Peru
[q] Colegio Mayor de Cundinamarca University, Bogota, Colombia
[r] Center for Excellence on Research in Mental Health, CES University, Medellin, Colombia
[s] Centre of Monitoring and Analyses of Population Health, National Institute of Public Health-National Institute of Hygiene, Warsaw, Poland
[t] Department of Health Care Policy, Harvard University Medical School, Boston, MA, United States
[u] University of Groningen, Department of Psychology, Developmental Psychology, Groningen, the Netherlands
[v] Queensland Brain Institute, University of Queensland, St Lucia and Queensland Centre for Mental Health Research, Wacol, Queensland, Australia

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ABSTRACT

Objective: Few studies have been able to contrast associations of anxiety and depression with heart disease. These disorders can be grouped in fear and distress disorders. Aim of this study was to study the association between fear and distress disorders with subsequent heart disease, taking into account the temporal order of disorders.

Methods: Twenty household surveys were conducted in 18 countries (n = 53791; person years = 2,212,430). The Composite International Diagnostic Interview assessed lifetime prevalence and age at onset of disorders, and respondents were categorized into categories based on the presence and timing of fear and distress disorders. Heart disease was indicated by self-report of physician-diagnosed heart disease or self-report of heart attack, together with year of onset. Survival analyses estimated associations between disorder categories and heart disease.

Results: Most respondents with fear or distress disorders had either pure distress or pure fear (8.5% and 7.7% of total sample), while fear preceded distress in the large majority of respondents with comorbid fear and distress (3.8% of total sample). Compared to the "no fear or distress disorder" category, respondents with pure fear disorder had the highest odds of subsequent heart disease (OR:1.8; 95%CI:1.5–2.2; $p < 0.001$) and compared to respondents with pure distress disorder, these respondents were at a significantly increased risk of heart disease

* Corresponding author at: Department of Psychiatry, University Medical Center Groningen, Hanzeplein 1, 9713 GZ Groningen, The Netherlands.
E-mail address: a.m.roest@umcg.nl (A.M. Roest).

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(OR:1.3; 95%CI:1.0–1.6; $p = 0.020$).
Conclusion: This novel analytic approach indicates that the risk of subsequent self-reported heart disease associated with pure fear disorder is significantly larger than the risk associated with distress disorder. These results should be confirmed in prospective studies using objective measures of heart disease.

1. Introduction

Most attention to the association between psychosocial factors and heart disease has been directed to depression, with several meta-analyses showing that depression is related to an increased risk of coronary heart disease (CHD) [31,50]. Several studies showed that anxiety is also related to the development of CHD, which was confirmed in a first meta-analysis on this topic [38]. Most anxiety studies have focused on elevated symptoms of anxiety. However, generalized anxiety disorder (GAD) was related to subsequent cardiovascular and all-cause mortality in Vietnam veterans, although after adjustment for covariates the association remained statistically significant for all-cause mortality only [33]. Posttraumatic stress disorder (PTSD) has also been shown to increase the risk of CHD and heart disease mortality in Vietnam veterans [4,49]. In addition, a recent systematic review and meta-analysis summarizing results of studies with varied study designs, found a significant association between panic disorder (PD) and incident CHD [47]. Indeed anxiety disorders might even be more strongly related to the development of CHD than depression. Early onset anxiety disorder, but not depressive disorder, predicted the development of CHD in young Swedish men over a period of 37 years [18]. Also, in the World Mental Health (WMH) Surveys, the risk of subsequent heart disease was stronger for PD, specific phobia, and PTSD than for depression after adjustment for mental disorder comorbidity [39], although it was not tested whether this difference between anxiety disorders and depression was statistically significant.

Depressive and anxiety disorders have a considerable overlap [7,54]. In an empirically based model, Watson grouped anxiety and depressive disorders into fear and distress disorder categories since these groups appear to be distinctly different from each other [54], a distinction that has subsequently been empirically confirmed [13,19]. In this model, fear disorders (panic disorder, agoraphobia without panic, social anxiety disorder (SAD), specific phobia) are distinguished from distress disorders (depression, dysthymia, and GAD). In this model GAD is classified as a distress disorder since it is more strongly linked to depression than to fear disorders, which are characterized by phobic fear and somatic arousal [5,7,11,54]. Phobic fear and somatic arousal may be particularly strongly related to the development of heart disease and adverse prognosis in patients with CHD [1,30,37,53]. Therefore, categorizing depressive and anxiety disorders into fear and distress disorders may be more useful than comparing anxiety and depressive disorders, or examining all disorders separately, when investigating the association between these disorders and heart disease.

Few studies have considered the role of anxiety disorders when examining the association between depressive disorder and heart disease and none have examined whether fear disorders explain the association between distress disorders and development of heart disease. The median age of onset of fear disorders is much earlier than for distress disorders, especially for specific phobia and SAD [20]. Also, traumatic life experiences, which can lead to PTSD, often occur for the first time in childhood/adolescence [21]. In addition to occurring at an earlier age, fear disorders also have a more persistent course than distress disorders, and fear disorders, especially phobias and panic, may even predict the first onset of a distress disorder [19,27,55]. These characteristics of fear disorders give rise to the possibility that the association with subsequent heart disease is stronger for fear disorders than for distress disorders since anxious individuals would experience a more long-term exposure to mediating mechanisms. As a result (part of) the observed association between distress disorders and CHD may be actually due to the comorbidity with fear disorders.

The aim of the current study is to examine the association between (any) fear and (any) distress disorder with subsequent onset of heart disease, while taking into account the temporal order of disorders. We hypothesize that both fear and distress disorders are predictors of subsequent onset of heart disease, but the risk associated with pure (non-comorbid) fear disorder, or fear disorder preceding distress disorder, will be stronger than the risk associated with pure (non-comorbid) distress disorder.

2. Method

2.1. Samples and procedures

This study used data from 20 of the WMH general population surveys. Most surveys were based on nationally representative household samples; the others were representative of urban areas (Colombia, Mexico, Peru, PRC Shenzhen, Japan). Interviews took place between 2001 and 2012 (see Table 1). In most countries the interview was divided in two parts to reduce respondent burden. All respondents completed Part 1, which included the diagnostic assessment of most mental disorders, including fear and distress disorders. All Part 1 respondents who met lifetime criteria for any mental disorder and a probability sample of respondents without mental disorders were administered Part 2 that, among others, assessed physical conditions. Part 2 responses were weighted by the inverse of their probability of selection into Part 2. Further details about WMH sampling and weighting are available elsewhere [15].

Analyses in the current study are based on the weighted Part 2 subsample ($n = 53{,}791$; person years = 2,212,430). Additional weights were used to adjust for differential probabilities of selection within households and to match population distributions on socio-demographic and geographic data. Measures taken to ensure data accuracy and cross-national consistency are described elsewhere [22,23].

2.2. Ethics statement

Procedures for human subject protection were approved and monitored for compliance by the institutional review boards of the organizations coordinating the surveys. Informed consent was obtained before the interviews commenced [23].

2.3. Measures

2.3.1. Mental disorders

Lifetime history, and age of onset, of DSM-IV mental disorders were assessed using the WMH survey version of the WHO Composite Diagnostic Interview (CIDI 3.0) [22]. The interview included probing strategies to increase reliability of the age of onset of disorders [22]. Fear disorders included PD, agoraphobia without PD, SAD, specific phobia, and PTSD because of their association with phobic fear and somatic arousal [5,7,11], which we hypothesized as driving factors for an association with subsequent heart disease. Distress disorders included major depressive episode/dysthymia and GAD. Respondents were also assessed for obsessive-compulsive disorder, bipolar disorder broad (I, II and sub threshold); substance use disorders (alcohol abuse and dependence, drug abuse and dependence); and impulse control disorders (intermittent explosive disorder, bulimia nervosa, and binge