Journal of Affective Disorders 155 (2014) 266–272

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Research report

Depression, subthreshold depression and comorbid anxiety symptoms in older Europeans: Results from the EURODEP concerted action

Arjan W. Braam [a,b,*], John R.M. Copeland [c], Philippe A.E.G. Delespaul [d], Aartjan T.F. Beekman [a], Ariel Como [e], Michael Dewey [f], Manfred Fichter [g], Tjalling J. Holwerda [a,h], Brian A. Lawlor [i], Antonio Lobo [j], Hallgrímur Magnússon [k], Martin J. Prince [f], Friedel Reischies [l], Kenneth C. Wilson [c], Ingmar Skoog [m]

[a] VU University Medical Centre, EMGO+ Institute for Health and Care Research; Department of Epidemiology and Biostatistics, Longitudinal Aging Study Amsterdam, Amsterdam, The Netherlands
[b] Altrecht Mental Health Care, Department of Emergency Psychiatry and Department of Specialist Training, Utrecht, The Netherlands
[c] Section of Old Age Psychiatry, Department of Psychiatry, University of Liverpool, UK
[d] Department of Psychiatry and Psychology, Maastricht University, and Mondriaan Regional Care System, The Netherlands
[e] Child and Adolescent Psychiatry Service, Tirana University School of Medicine, Tirana, Albania
[f] Health Service and Population Research Department, Institute of Psychiatry, King's College London, UK
[g] Department of Psychiatry, Ludwig Maximilians Universität, München, Germany
[h] Department of Psychiatry, ARKIN Institute of Mental Health Care, Amsterdam, The Netherlands
[i] Department of Psychiatry, Jonathan Swift Clinic, St. James' Hospital, Dublin, Republic of Ireland
[j] Department of Psychiatry, University of Zaragoza; Instituto de Investigacion Sanitaria de Aragon (IIS) and Centro de Investigacion Biomedica en Red de Salud Mental (CIBERSAM), Zaragoza, Spain
[k] Heilsugæslustöð, Grundarfirði, Iceland
[l] Psychiatrische Klinik und Poliklinik, Charité – Universitätsmedizin Berlin, Germany
[m] Institute of Clinical Neurosciences, Sahlgrenska University Hospital, Göteborg University, Sweden

ARTICLE INFO

Article history:
Received 5 September 2013
Received in revised form
17 November 2013
Accepted 18 November 2013
Available online 25 November 2013

Keywords:
Depression
Old age
Anxiety
Comorbidity
Epidemiology

ABSTRACT

Background: In the epidemiology of late life depression, few insights are available on the co-occurrence of subthreshold depression and comorbid symptoms of anxiety. The current study aims to describe prevalence patterns of comorbid anxiety symptoms across different levels of depression in old age, and to describe the burden of depressive symptoms and functional disability across patterns of comorbidity.
Methods: Respondents were older adults in the community, age 65–104 ($N=14{,}200$), from seven European countries, with in total nine study centres, collaborating in the EURODEP concerted action. Depression and anxiety were assessed using the Geriatric Mental State examination (GMS-AGECAT package), providing subthreshold level and case-level diagnoses. Presence of anxiety symptoms was defined as at least three distinct symptoms of anxiety. Number of depressive symptoms was assessed with the EURO-D scale.
Results: The prevalence of anxiety symptoms amounts to 32% for respondents without depression, 67% for those with subthreshold depression, and 87% for those with case-level depression. The number of depressive symptoms is similar for those with subthreshold-level depression *with* comorbid anxiety, compared to case-level depression *without* symptoms of anxiety. In turn, at case level, comorbid symptoms of anxiety are associated with higher levels of depressive symptoms and more functional disability.
Limitations: GMS-AGECAT is insufficiently equipped with diagnostic procedures to identify specific types of anxiety disorders.
Conclusions: Anxiety symptoms in late life depression are highly prevalent, and are likely to contribute to the burden of symptoms of the depression, even at subthreshold level.

1. Introduction

Although categorised as different nosological entities, depression and anxiety frequently co-occur. Jacob et al. (1998) even conclude that mixed conditions are more common than pure depression or pure anxiety. The pattern has also been reported to pertain to older adults (Byers et al., 2010): in the NCS-R study in

* Corresponding author at: VU University Medical Centre, EMGO+ Institute for Health and Care Research, LASA, Van der Boechorststraat 7, 1081 BT Amsterdam, The Netherlands. Tel.: +31 20 4446770; fax: +31 20 4446775.
E-mail addresses: a.braam@vumc.nl, a.braam@altrecht.nl (A.W. Braam).

0165-0327/$ - see front matter © 2013 Elsevier B.V. All rights reserved.
http://dx.doi.org/10.1016/j.jad.2013.11.011

the US, over half of the older adults with a depressive disorder suffered from comorbid anxiety. The 10/66 study showed similar results, comparing a range of participating centres with samples aged 65 years and older from different countries in Asia and South and Central America (Prina et al., 2011). In these studies, anxiety disorders were diagnosed according to DSM-IV criteria (6 months for GAD) or to GMS-AGECAT case definition with levels of severity that warrant professional intervention. In other studies focusing on mixed depression and anxiety, these criteria were relaxed to 1 month recency, yielding higher rates and higher comorbidity levels (Kendler et al., 2007; Kendler and Gardner, 2011).

Prina et al. (2011) showed that having both depression and anxiety was linked to higher disability scores than having depression or anxiety alone. Similarly, comorbid depressive-anxiety disorder was more strongly associated with several physical conditions than were single mental disorders (Scott et al., 2007). Moreover, comorbid anxiety and depression result in a poorer course than non-comorbid depression or anxiety (Fava et al., 2008; Rhebergen et al., 2011), also in later life (Schoevers et al., 2005).

Whereas the epidemiology of depression and comorbid anxiety receive substantial research evidence, few insights are available on the co-occurrence of subthreshold depression and comorbid symptoms of anxiety. Subthreshold depression in later life, however, frequently runs a chronic course or tends to develop into an episode of major depressive disorder (Beekman et al., 2002). Subsequently, the severity of the condition warrants clinical intervention and can be defined as 'case'. As advocated by Batelaan et al., comorbid subthreshold conditions of depression and anxiety are in need of more research (2012). Therefore, population-based studies can facilitate obtaining further insight into patterns of comorbidity as well as the severity of comorbid, subthreshold depression and symptoms of anxiety.

The current, population based study employs data from the centres participating in the EURODEP concerted action (Copeland, 1999a), and addresses the following research questions:

- What patterns of comorbid, late life anxiety symptoms with different levels of depression do occur? Do levels of comorbidity persist into very old age?
- What is the burden of depressive symptoms and functional disability among older adults with depression across levels of caseness (non-case, subthreshold and diagnostic case) for those without and with comorbid symptoms of anxiety?

2. Methods

2.1. Sample

The EURODEP Concerted Action is a consortium of 15 research groups from 12 European countries all engaged in population based research into the epidemiology of late-life depression (Copeland et al., 1999a, 1999b). Although there has been considerable collaboration between the centres in the design of the studies, especially with respect to the assessment of depression (Copeland et al., 1999a, 1999b), the collaboration is based on post-hoc possibilities of comparisons between the datasets, and harmonisation of measures has been applied where necessary (Prince et al., 1999a; Braam et al., 2005). In the current contribution on comorbidity of anxiety and depression, data of nine centres are included. Basic demographic characteristics of the study-samples with data available for the present study are summarised in Table 1 (references in table). The overall sample size of the pooled EURODEP data-set for the aims of the current study amounts to 14,200 respondents. All participating studies adhered to standards according to local or university ethical committees. More detailed information on sampling-frame, interview procedures, and non-response have been described elsewhere (Copeland et al., 1999a, 1999b; Braam et al., 2004). The sampling frames are generally based either on municipality registers, or on general practitioner registers. Except for Dublin, London (Gospel Oak district), and Iceland, where the complete registers were used, the samples were drawn randomly. These random samples were stratified for age and sex, which implies that an even distribution of male and female respondents was realised by over-sampling of male respondents. Although there were no exclusion criteria in most studies, subjects who were staying in hospitals and nursing homes are underrepresented. With respect to Liverpool, the first follow-up measurement, 2 years after baseline (Wilson et al., 1999) has been used, because this observation cycle included measures on physical functioning. Cases of dementia (diagnosed as 'organicity' with GMS-AGECAT) were excluded from the present study.

2.2. Instruments

2.2.1. GMS-AGECAT

Depression and anxiety are assessed using the Geriatric Mental State Examination (GMS) together with its diagnostic

Table 1
The EURODEP consortium – studies and basic characteristics.

	Centre, year	Country	Sample described by	Mean age (range)	Female %	Married %	Education Index (0–1) mean	Functional Disability (0–2) mean	EURO-D mean (EURO-sec) mean[a]	N
AMS	Amsterdam 1990	Netherlands	van Ojen et al. (1995)	74 (65–84)	62.1	49.4	0.49	0.07	1.9 (1.5)	3773
BER	Berlin 1990–93	Germany	Helmchen et al. (1996)	83 (70–103)	47.9	31.2	0.64	0.26	2.5 (1.7)	436
MUN	Munich 1990	Germany	Meller et al. (1993)	88 (85–99)	76.9	18.5	0.26	0.75[b]	3.2 (2.2)	195
ICE	Reykjavík 1983	Iceland	Magnusson (1989)	86 (83–89)	58.6	29.0	0.60	0.31	1.9 (1.1)	649
EIR	Dublin 1993	Ireland	Lawlor et al. (1994)	74 (65–98)	63.7	50.1	0.60	0.49	1.7 (1.4)	1002
LIV	Liverpool 1991	England	Copeland et al. (1999b)	78 (67–104)	51.3	38.8	0.38	0.61	2.1 (1.6)	3114
LON	London 1993	England	Prince et al. (1997)	74 (65–99)	59.3	38.6	0.70	0.74	2.5 (2.0)	583
ESP	Zaragoza 1994	Spain	Lobo et al. (2005)	76 (65–102)	57.4	55.1	0.34	0.08	1.4 (0.9)	3311
ALB	Tirana 1996–97	Albania	–	71 (65–95)	45.9	–[c]	–	–	2.6 (1.7)	1137
TOTAL				76 (65–104)	57.6	47.2	0.48	0.28	1.9 (1.4)	14,200

[a] Sec scores: three symptoms shared with anxiety (concentration problems, sleep problems, and loss of appetite) are excluded.
[b] Munich *N* for functional disability is 115.
[c] From Tirana, no other demographic or physical health data available.