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Late-Life Mental Health Disorders. Data from a Population-Based Study

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Abstract

Although highly prevalent, so far mental disorder in late life has deserved little research interest, especially at the population level.

Our study provides a reliable picture of the distribution of mental health disorders in a sample of 462 Italian older people aged 75+ (women 53.2%) from a population-based study, the Faenza Project.

In our sample, one mental disorder is diagnosable in one out of 3 elderly. The most prevalent diagnoses were General Anxiety Disorder (20.7%) and Dementia (19.0%), with female significantly more affected than male. Also Cognitive Impairment No Dementia was highly prevalent with 13.9% of the sample showing these symptoms. The most frequent overlap was between GAD and Major Depressive Episode. The risk of suicide is very high among older, in our sample 7.3% had suicidal thoughts.

In spite of that approximately 70% of older adults with mood and anxiety disorders did not use services. There is a need to improve awareness about mental disorders in late- life, both in the community and among health care professionals to find innovative strategies to promote a successful aging with the integration of geriatric psychiatry and primary care.

Keywords: Mental health; Late-life; Population-based; Epidemiology; Elderly

Introduction

In spite of the population ageing, little research is dedicated to late-life mental health [1]. Conversely, mental illnesses in older people are highly prevalent [2] and costly [3]. Besides being affected by life-long chronic psychiatric disturbances, older people might run into new (or newly diagnosed) mental disorders. They include neurodegenerative disorders leading to dementias [4], late-onset psychoses [5], and 'common mental disorders' such as depressive, adjustment and anxiety disorders.

A few peculiarities of late-life mental health disorders deserve some comments. First, at older ages, psychiatric diseases often co-occur with other adverse medical conditions and this worsens prognoses [6] and strengths psychotropic drugs side-effects [7]. Second, in older persons the phenomenology of mental diseases may differ from the typical presentation observed in young-adult [8-10], thus differential diagnosis are more complicated than used to be in young-adults. Third, older patients suffering from blues, insomnia, pain, worries or forgetfulness are less likely to have their symptoms properly diagnosed than young-adult ones and, therefore, might end up to be under-treated [11]. Forth, many different health professionals might be involved in the care of older psychiatric patients thus having different perspectives, priorities and principles. Last, in most countries around the world, suicide rates are higher for both men and women in later life than for younger age groups [12] although this issue is especially disregarded.

The most of the epidemiological literature on late-life is centered on single disease (e.g., dementia) [13], mood disorders [14] and alcohol-related problems [15-17], whilst overviews of mental illness in advanced ages are few [18,19]. Among the 70+ years old participants in The Berlin Aging Study (BASE), the estimated overall psychiatric morbidity was 23.5% and reached 40.4% (30.9% in men and 43.8% in women) after inclusion of clinical diagnoses that were not otherwise specified by DSM-III-R criteria [19]. Similarly, a Canadian study which employed administrative records estimated a 5-years prevalence of any mental illness of 20.4% for men and 28.5 % for women after age 55 [18]. In US after age 59 the life-time prevalence of any disorders was 26.1%, as emerged in the *National Comorbidity Survey Replication* study [20]. Two or more disorders occurred in 11.6% of participants and three or more in the 5.3% [21]. Since services dedicated to older psychiatric patients have claimed to be not fully effective [22] and improvements are needed in the screening and prevention of 'Common Mental Health Disorders' [23] more research is needed to provide informative figures of mental disorders occurrence in late-life.

The main outcome of our study is to describe the occurrence of all aspects of mental health disorders in a community-dwelling population aged 75+. The second purpose is to demonstrate the overlap between psychiatric disorders and symptomatology, in order to provide a reliable and real picture of elderly mental health.

Subjects and Method

Participants

The baseline cohort of the Faenza Project (N=7,930; women=60.3%; mean age: 72.6 ± 8.2 years) included all subjects born before 1930 living in the Faenza district on prevalence day (January 1st, 1992) [24]. In 2006, a cross-sectional evaluation of surviving subjects who were cognitively intact at the time of the first evaluation was carried out on

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a randomly chosen sample of 773 individuals. Out of 773 persons, 71 (9.2%) were not reachable and 240 (34.2%) refused to join the study leaving a sample of 462 participants (59.8%). Written informed consent was obtained by all of them and, in case of subjects with cognitive impairment, by proxies (usually a next of kin). The study was ethically approved by the local authority of Faenza.

Sample data (socio-demographic features, medical status and treatments) were collected for all participants by trained medical doctors. Age was first used as a continuous variable and then categorized into four strata: <81 years; 81-85 years; 86-90 years; >90 years [25]. Education was categorized as follows: illiterate and incomplete primary school (less than 5 years); primary school (5 years); more than primary school (more than 5 years). Marital status was codified as married, no longer married (divorced or widowed), never married. Living arrangements were categorized as: living with a spouse, living with family or others, living alone.

Instruments and diagnoses

All subject included were administered the Cambridge Mental Disorders of the Elderly Examination-Revised (CAMDEX-R). The CAMDEX is a diagnostic schedule consisting in a structured psychiatric interview including three main sections: i) questions to investigate mood, worries, delusions, present and past personal history of mental disorders; ii) records of subject's mental state, appearance and demeanor; and iii) a structured interview with an informant. All diagnoses were achieved by two psychiatrists thanks to the information retrieved from the former instruments, adding information through clinical interview with both participants and informants if necessary. In case of disagreement between the two diagnosing physicians a third opinion was asked to a senior psychiatrist and considered as definitive.

Diagnosis of Dementia and Major Depressive Episode (MDE) were output of CAMDEX-R, based on DSM-IV criteria [26]. We did not divide the subtypes of dementia because neuroimaging was unavailable.

For the evaluation of cognitive functions the Mini Mental State Examination Score were extracted from the Camdex-Cognitive Section (CAM-CoG). For the present study, the MMSE For the evaluation of cognitive functions the Mini Mental State Examination Score (MMSE) were extracted from the Camdex-Cognitive Section (CAM-CoG). score was adjusted by age and education, according to the normative criteria for Italian populations proposed by Magni and colleagues [27].

The Geriatric Anxiety Inventory Short Form (GAI-sf) is a yes or no short tool used to investigate symptoms of anxiety in older populations and a score of three or greater was used as cut off for the detection of DSM-IV Generalized Anxiety Disorder (GAD) in this community sample [28,29].

Two items of the CAMDEX-R were used as screening questions to investigate suicidal ideation ("do you sometimes feel that life is not worth living?" and "do you have the will of get it over with life?"). Participants who positively answered to at least one of the two were also administered the Scale for Suicide Ideation (SSI) [30], which investigates three dimensions of suicide ideation: active suicidal desire, specific plans for suicide, and passive suicidal desire. Last, the presence of suicidal ideation was defined for a positive answer in at least one of the three areas of the SSI.

For all participants that did not fulfill criteria for dementia but showed impaired general cognitive function Cognitive impairment not dementia (CIND) was operationally defined for a scores ≤ 1 standard deviation (SD) than the age- and education-adjusted mean MMSE scored from the dementia free population [13].

Based on the CAMDEX-R interview, information on psychotics symptoms such as delusions or hallucinations were collected either questioning directly the participants, either asking to the caregivers/ next of kin either was based on the direct clinical judgment of the interviewer.

Information about the use of psychotropic drugs was collected, but not employed for diagnostic purposes.

Statistical analyses

Data were managed and analyzed using SPSS (Statistical Package for Social Science) versions 22.0. Results are presented as raw frequencies with the associated weighted percentages, weighted means and the associated standard error, or weighted medians, as appropriate.

The Chi-square Test and the Student's T-Test for independent sample were used respectively to compare frequencies and means among groups.

Gender, age, education and MMSE were included in the final logistic model as possible confounders (Adjusted Odds Ratios=aORs).

Results

The main socio-demographic features of the study population by gender are shown in Table 1. Mean age was significantly higher in women than was in men. On average, women were significantly one year less educated than men, more likely to be widowed or divorced.

		All N=462	Men N=216 (46.8%)	Women N=246 (53.2%)	p*
Age, years	Mean (SD)	85.1 (6.86)	83.5 (6.2)	86.47 (7.1)	<0.001
Education, years	Mean (SD)	5.4 (3.57)	5.9 (3.7)	4.9 (3.3)	0.003
MMSE score (sex-age-adj)	Mean (SD)	23.3 (7.85)	24.7 (6.4)	22.0 (8.8)	<0.001
Marital status [1]					
Married	N (%)	199 (43.1)	146 (68.2)	53 (22.4)	<0.001
No longer married	N (%)	224 (48.5)	57 (26.6)	167 (70.5)	
Never married	N (%)	28 (6.1)	11(5.1)	17 (7.2)	
Living arrangements [2]					
With relatives/others	N (%)	284 (64.5)	165 (77.5)	19 (52.4)	<0.001
Alone	N (%)	124 (28.2)	36 (16.9)	88 (38.8)	
Institutionalized	N (%)	32 (7.3)	12 (5.6)	20 (8.8)	

* T test/ Chi square as appropriate, comparing man and women
[1]missing N=11; [2]missing N=22.

Table 1: Description of the main socio-demographic features by gender.

Moreover women more frequently lived alone or were institutionalized. Women had lower sex-age-adjusted MMSE score. In Table 2 the point prevalence of Dementia, MDE, and GAD are reported together with 95% Confidence Intervals. Dementia and GAD occurred in almost one out of five participants, with female significantly more affected than male (p=0.008 and p=0.014, respectively), whilst MDE was observed in 4.2% of the sample.

Overall, at least one mental disorder occurred in the 33.1% of the sample and the 3.9% was affected by two or three disturbances. Women were more likely to be affected by at least one mental disorder than men (42.5 46.7% vs. 28.3% p<0.001). Each subject was affected by an increasing number of mental disorders with increasing age (p=0.002). Multivariate logistic regression analyses demonstrated that the association between female gender and increasing number of mental disorders is confounded by age. Table 3 describes the co-occurrence of mental disorders by gender and age strata. The most frequent overlap was between GAD and MDE (8 persons equal to the 1.9% of the sample, to the 9.6% of the persons affected by GAD and to the 42.1% of the persons affected by MDE). Dementia and GAD also overlapped (7 subjects, 1.7%). Dementia covered the 8.4% of the GAD cases, and GAD covered the 7.9% of the Dementia cases.

Other psychiatric symptoms

Psychotic symptoms emerged in 33 (7.2%) participants. Within these symptoms, 6 were self-reported visual hallucinations, 4 auditory hallucinations, and 3 paranoid delusions. The remaining symptoms were referred from the informant or directly observed from the interviewer. In ten participants, psychotic symptoms seemed to be isolated whereas they co-occurred with other mental disorders in 23 subjects (18 affected by dementia, 3 by MDE, 3 by GAD). Psychotic symptoms covered 20.5% of Dementia and 10.5% of MDE cases. Cognitive Impairment No Dementia was present in 13.9% of the non-demented sample (7.9% of men vs. 14.2% of women; p=0.031) and it increases with increasing age (p for trend <0.001). CIND occurs in 6 (7.1%) persons affected by GAD and no overlap is observed between CIND and MDE. In three subjects CIND and psychotic symptoms co-occurred. Fifty-one participants (13.1%) felt that living was not worthy (95% CI: 8.0-14.0%) and 29 (7.3%) had suicidal thoughts (95% CI: 4.0-8.0%). No gender differences neither age groups difference emerged in suicidal ideation (Table 4). Only 92 years old men acknowledged that he attempted suicide in the past. He committed it with high death wish and avoided thanks to a lucky rescue.

Discussion

Currently the number of people aged 60 and over is more than 800 million and by 2050 this figure is projected to increase to over two billion [31].

Findings on the prevalence of mental disorders in older people are heterogeneous. The most of the epidemiological studies carried on in late-life are mainly centered on dementia [13], mood disorders [14] and alcohol use disorders [15,16,17,20]. At the same time, few studies have investigated the prevalence rates of psychotic disorders [32,33] among the elderly population, even if paranoid psychoses in old age are much more common than previously thought [34].

Our study aims to describe mental disorders occurrence in the Faenza population, one mental disorder is diagnosable in one out of 3 community-dwelling elderly. In our sample the most prevalent diagnosis were GAD and dementia, with almost one out of 5 participant suffering of one of them. Also CIND was highly prevalent with 13.9% of the sample showing these symptoms.

Among people older than 65 years total prevalence of major

	All		Men			Women	
	N	% (95% CI)	N	% (95% CI)	N	% (95% CI)	Chi square Df–*p*
Dementia	88	19.0 (15.0-23.0)	30	13.9 (9.0-19.0)	58	23.6 (13.0-35.0)	X2=7.001 df=1 *p*=0.008
Major Depressive Episode[1]	19	4.2 (2.4-6.0)	7	3.3 (0.9-5.7)	12	5.0 (2.2-7.8)	X2=0.843 *p*=0.358
Generalized Anxiety Disorder[2]	85	20.7 (16.1-23.9)	31	15.7 (16.8-24.6)	54	25.5 (19.6-31.4)	*X2=6.002 df=1 p*=0.014

[1] missing N=8; [2] missing N=52.

Table 2a: DSM-IV diagnoses point prevalence and 95% Confidence Intervals (CI).

	All		Men			Women	p*
	N	P (95% CI)	N	P (95% CI)	N	P (95% CI)	
Cognitive Impairment No Dementia	52	11.3 (3.0-20.0)	17	7.9 (6.0-9.8)	35	14.2 (3.0-26.0)	0.031
Psychotic Symptoms[1]	33	7.2 (4.8-9.6)	8	3.7 (1.2-6.2)	25	10.2 (6.4-14.0)	0.007

[1] missing N=1

* Chi square comparing man and women

Table 2b: Other symptoms point prevalence by gender. Proportions (P) and 95% Confidence Intervals (CI).

	Men *			**Women ^**		
Age groups	**<79**	**80-89**	**90+**	**<79**	**80-89**	**90+**
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
None	58 (37.2)	69 (44.2)	29 (18.6)	34 (25.2)	47 (34.8)	54 (40.0)
At least one	17 (32.1)	21 (39.6)	15 (28.3)	21 (21.0)	35 (35.0)	44 (44.0)
At least two§	1 (14.3)	2 (28.6)	4 (57.1)	1 (9.1)	4 (36.4)	6 (54.5)
Tot.	76 (35.2)	92 (42.6)	48 (22.2)	56 (22.8)	86 (35.0)	104 (42.3)

*p for trend=0.022; ^p for trend=0.199; §one subjects has three disorders: MDE, Dementia and GAD

Table 3: Co-occurrence of mental disorders by gender and age strata.

	Gender			Age groups			
	Men	Women	p*	<79	80-89	90+	p*
	N (%)	N (%)		N (%)	N (%)	N (%)	
Not worth living	23 (12.1%)	28 (14.1%)	0.65	18 (14.6%)	17 (11.3%)	16 (13.9%)	0.85
Getting over with life	13 (6.7%)	16 (7.8%)	0.70	10 (8.1%)	12 (7.6%)	7 (5.9%)	0.52
Little lust for life	8 (4.1%)	11 (4.9%)	0.81	5 (4.1%)	9 (5.5%)	5 (3.7%)	0.85
Death wish	6 (3.1%)	10 (4.5%)	0.61	3 (2.5%)	7 (4.3%)	6 (4.4%)	0.42
Reasons to die equal to/more than reasons to live	4 (2%)	5 (2.2%)	1	2 (1.7%)	3 (1.8%)	4 (3%)	0.46
Willing to commit suicide	2 (1%)	1 (0.5%)	0.60	1 (0.8%)	1 (0.6%)	1 (0.7%)	0.94
Passivity (no care in case of danger of life)	2 (1%)	3 (1.4%)	1	2 (1.7%)	2 (1.2%)	1 (0.7%)	0.50

*Chi square comparing man and women

Table 4: Suicidal ideation by gender and age strata.

depression and dysthymia varies widely from 2% to 25% [35], with some studies reporting higher rates among older people compared to younger adults [36,37], whilst others describing lower frequencies of depressive [16,38] and anxiety disorders [39] among older persons. In the former meta-analysis [40] rates for current and lifetime GAD were 2.30% and 6.36% respectively, and differed from previous findings that reported a much higher rate for current GAD (10.8%) and a lower rate for lifetime GAD (4.6%) [41]. Although GAD has been posed as the most common anxiety disorder in old age [42], there is much controversy about whether GAD is a diagnosis in its own right [43] or lies on a continuum of depression [44]. In fact anxiety is a warning sign for depression in the elderly. Unsurprisingly, fear for the future, and in particular 'dependency anxiety' was commonplace among older [45]. The excess costs of depression and anxiety in community-dwelling elderly are just as significant as those observed for adults even when productivity losses are not considered.

Also in our sample the most frequent overlap was between GAD and MDE (8 persons equal to the 1.9% of the sample, to the 9.6% of the persons affected by GAD and to the 42.1% of the persons affected by MDE). Anxiety disorders could be a risk factor for late-life depression as well as a predictor of persistence and relapse, even if evidences in this direction are not univocal [8]. This comorbidity request a particular warning anxious depression in older adults predicts more cognitive decline [46] and greater suicide risk [47] than nonanxious depression. Adequately managing depression and anxiety in the older adult population may lead to important healthcare cost savings for society [48]. In fact the presence of depressive disorders can lead to impairments in physical, mental, and social functioning and often affects the onset, the course and the complications of other chronic diseases. Mortality risk of older depressed subjects has been estimated to be 2-3 fold higher than that of non-depressed elderly individuals, with suicide as well as complications of cardiac diseases accounting for a significant proportion of the increase in risk [49].

According to a recent meta-analysis assessing the prevalence of mental disorders in older people in Europe and North America [40] the overall random-effects estimate for the 13 included studies was 3.29% for current major depression (MD) and 16.52% for lifetime MD, with high variability within study entered the meta-analysis. Large heterogeneity has been reported in a previous review [41], between 3.1% and 26.9%. Among factors the variability or possible underestimation of prevalence rates of depression may be associated with the fact that depressive symptoms in older adults may often manifest through somatic symptoms and may be confused with these symptoms [50]. Furthermore, the consequences of symptoms may not affect the daily life of elderly people as much as they affect younger age groups [51]. Hence, current diagnostic criteria and instruments may not adequately assess depressive disorders in the elderly and the wide spectrum and severity of cognitive symptoms in elderly patients impairs the reliability of diagnosis and the differential diagnosis.

The common belief that persons with cognitive impairment cannot provide accurate, reliable self-report on their depressive symptoms has been questioned by Snow and colleagues, who suggested that among those who can self-report, severity of cognitive impairment (as measured by a cognitive screening measure) is not itself a significant predictor of self-reported depression accuracy and that main effects on patient-reported depression scores is for deficit awareness and depression diagnosis but not for dementia diagnosis [52]. However, when self-report is unreliable or unavailable due to cognitive dysfunction, observation of behaviors that are suggestive of depression and caregiver/clinician evaluation of depression are recommended [53].

Gender differences affect mental disorders in younger adults as well as in older. In late-life men and women have different health and morbidity patterns and women generally have lower income but better family support networks [54]. On the other hand both depression and Alzheimer's disease are more prevalent among women [55]. In our sample women were more likely to be affected by at least one mental disorder than men (42.5 46.7% vs. 28.3% $p<0.001$). Nevertheless multivariate logistic regression analyses demonstrated that the association between female gender and increasing number of mental disorders is confounded by age (data not shown), and each subject was affected by an increasing number of mental disorders with increasing age ($p=0.002$). These figures are controversial because the prevalence rates of *DSM-IV* mood and anxiety disorders in late life were found tending to decline with age. Nevertheless these disorders were found as very common, especially in women [23], and our findings are in line, with dementia and GAD significantly more frequently found in women than in male, as well as Cognitive Impairment No Dementia.

The risk of suicide is very high among older men in almost all cultures [56] and suicidal ideation is a core phenomenon in all psychiatric diseases in elderly persons. In our sample 7.3% had suicidal thoughts, in line with those found by other studies [57-59] that share similar characteristics regarding methodology and population sample. No gender differences neither age group differences were found in our study regarding suicidal ideation, although most findings concluded that older males had a higher risk of suicide than older females [60].

Psychotic disorders, characterized by a loss of contact with reality, may be common in people in their later years, causing hallucinations, abnormal beliefs, and impaired insight. The symptom presentation of this condition is heterogeneous and empirical findings are scarce, so it remains unclear whether the prevalence of psychosis increases with age.

They may be caused by many medical conditions such as dementia, infections, metabolic or hormonal disorders, sensory impairments, and substance abuse. According to our finding and figures in previous report psychotic symptoms may trouble up to five percent of the elderly in the community [32,61,62] and much higher numbers in nursing homes. With the exponential aging of the population, the numbers of older individuals experiencing psychosis will likewise expand. Some studies have argued that the prevalence of psychosis may increase due to its combined occurrence with dementia [62,63] or due to age-related changes in symptom presentation [64]. Late-life psychosis is associated with decreased quality of life, caregiver distress, institutionalization, and increased healthcare costs. Existing pharmacotherapy for late-life psychosis is far from ideal in light of its risky side effect profile, especially for the psychosis of dementia. Existing psychosocial therapies for psychosis of dementia are promising, but more evidence-based data on these therapies are needed to merit widespread implementation [10].

Our study acknowledges some limitations: first our data are generalizable only to an urban area of northern Italy whereas a multicentric design would have been more informative. Second the cross-sectional design of our study does not allow us to have a perspective framework of our sample. Third we used the diagnosis of GAD according to Byrne [28], as GAI-SF was validated and recommended as a short form of the Geriatric Anxiety Inventory for use in epidemiological studies. At last DSM-IV and ICD-10 diagnostic criteria may not sufficiently consider important age-related changes [40].

In spite of these limitations, in a society with a rapidly aging population, implementing innovative strategies to promote successful aging in older adults is imperative. There is a need to improve the awareness about mental disorders in late-life both at the community level and among health professionals and epidemiologic studies demonstrating the improvement of appropriate health care for the elderly with mental illness will open the way to Collaborative care, one promising model for improving geriatric mental health care delivery in primary care. Public policy should reflect the essential role of psychiatry in geriatrics and promote the integration of geriatric psychiatry with primary care [22].

Conclusion

Mental health problems can have a high impact on an older person's ability to carry out the basic activities of daily living, reducing their independency, autonomy, and quality of life and a prompt recognition and treatment could lead to significant improvements in each of these issues. Moreover mental disorders may exacerbate the symptoms and functional disabilities associated with medical illnesses and increase the use of healthcare resources, length of hospital stay and overall cost of care. Four themes crucial to understanding mental disturbances among older adults are: 1) Sub-syndromal depression, 2) coexisting depression and anxiety, 3) comorbidity of depression and chronic medical conditions, and 4) risk factors for cognitive impairment [65].

Studies specifically designed on older persons with mental disorders are needed to promote a successful mental aging our study, even with some limitations, might have implications for policy makers and primary care providers.

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