Original article

Differences in clinical and cognitive variables in seasonal affective disorder compared to depressive-related disorders: Evidence from a population-based study in Finland

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ABSTRACT

Background: Seasonal affective disorder (SAD) is a type of depression with seasonal pattern. Although it involves some idiosyncratic symptoms, it can overlap with other depressive disorders such as major depressive disorder (MDD) or dysthymia. We aimed to characterize the differences in specific cognitive and clinical symptoms between SAD and depressive-related disorders.

Methods: In total, 4554 Finnish subjects from the population-based Health 2011 Survey were interviewed with the Munich version of Composite International Diagnostic Interview (M-CIDI) and filled in the Seasonal Pattern Assessment Questionnaire (SPAQ). From this sample for our analysis, we included those participants who fulfilled the criteria for SAD (n = 171), MDD (n = 153) or dysthymia (n = 84) and their 816 psychologically healthy controls matched by age and gender. In addition to M-CIDI and SPAQ, the Beck Depression Inventory, the General Health Questionnaire, an abbreviated version of the Mini-Mental State Examination, the category verbal fluency test, and the CERAD 10-word list were used.

Results: Subjects with dysthymia showed major deficits in both clinical and cognitive domains compared to MDD, SAD and healthy controls. Although clinical comorbidity was mild in SAD, these participants showed similar cognitive deficits to dysthymic subjects and greater impairments than MDD.

Conclusions: SAD subjects show a differential clinical and cognitive profile compared to other depressive-related disorders. Although less severe clinical symptoms are found in these individuals, some cognitive impairment already appears in subjects with SAD recruited from a population-based study.

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1. Introduction

Seasonal affective disorder (SAD) is a type of depression with a seasonal pattern, usually beginning in fall and continuing into winter months [1,2]. Symptoms center on sad mood, low energy, longer sleep duration and carbohydrate craving [3]. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), the criteria for mood disorder with a seasonal pattern include having a major depressive episode that begins and ends during a particular period (season) every year, with full remission for the remaining period, for at least two years, and having more seasons of depression than seasons without depression over a lifetime [4]. People with SAD can feel tired and lethargic, have difficulty concentrating, sleep more than normal, suffer lack of energy, decrease their activity levels, withdraw from social situations, crave carbohydrates and sugars, and tend to gain weight due to overeating [5]. Noteworthy, recent research highlights the substantial burden of SAD and the socioeconomic impact of this disorder, being the seasonal mood fluctuations a population-wide phenomenon of considerable proportions [6]. Nevertheless, and although this mood disorder involves some specific and idiosyncratic symptoms, it can overlap with other depressive disorders [7].

Major depressive disorder (MDD) is a mental disorder characterized by at least two weeks of low mood that is present across most situations and is often accompanied by low self-esteem, loss of interest in normally enjoyable activities, low energy, and pain without a clear cause [4]. More specifically, MDD is characterized by the presence of five or more depressive symptoms: (i) depressed mood most of the day; (ii) markedly diminished interest or pleasure in daily activities; (iii) significant weight loss, or weight gain, or decrease or increase in appetite; (iv) insomnia or hypersomnia; (v) psychomotor agitation or retardation; (vi) fatigue, tiredness, or loss of energy; (vii) feelings of...
worthlessness or excessive or inappropriate guilt; (viii) diminished ability to think or concentrate, or indecisiveness; or (ix) recurrent thoughts of death, recurrent suicidal ideas, or suicide attempt. On the other hand, dysthymia is a continuous long-term/chronic form of depression and is less acute and severe than MDD. This diagnosis is given when a person has had continuous depressed mood for at least two years [4]. Patients suffering from dysthymia may lose interest in normal daily activities, feel hopeless, lack productivity, and have low self-esteem. These symptoms last for years and may significantly interfere with their relationships, school, work and daily activities [8].

There is still no consensus on the specific symptoms that could clearly distinguish between SAD and other related mood disorders. Cognitive functioning is one of the main current topics in mood disorders studies [9,10], and previous studies highlighted the relevance of cognition to diagnosis and treatment in depressive disorders [11,12]. Therefore, it could be considered as a good candidate to differentiate among some specific mental disorders which could overlap between each other, such as in SAD, MDD and dysthymia. Regarding SAD, few studies have attempted to examine the relationship between daily variation in weather and human mood, and cognition. Previous research on seasonal effect suggests that exposure to sunlight immediately affects mood and cognition [13]. More recent studies found that seasonal changes in mood, appetite and weight have an impairing effect on auditory attention and processing speed [14]. Regarding MDD, neuropsychological deficits are well demonstrated, with many studies showing moderate effect sizes in several neurocognitive domains [15,16]. Finally, less research has been conducted in dysthymia. Previous findings indicate that the neuropsychological performance of these patients exhibit impairments in attention and memory [17], and in processing speed [18].

Some clinical variables may exert as well an important role on the characterization of these mood disorders. Regarding SAD, the prevalence of anxiety disorders in patients with this disorder might be high, although not different from that seen in nonseasonal MDD [19]. Moreover, patients with SAD have considerable social impairment, which is similar to clinical MDD [20]. Overall, about a half of the patients with MDD have anxiety and personality disorder, and about one fifth have substance use disorder [21]. In addition, clinical samples of MDD children and adolescents show high likelihood of psychiatric comorbidity and suicidality [22]. Finally, and concerning dysthymia, comorbidity of this mood disorder with other clinical disorders such as panic disorder, social phobia, and/or alcohol abuse is commonly found [23]. Altogether, the aim of this study was to characterize the specific cognitive and clinical differences between three related depressive disorders that under certain circumstances might overlap between each other (i.e., SAD, MDD and dysthymia).

2. Methods

2.1. Participants

The Health 2011 Survey (https://www.thl.fi/fi/web/thlfi-en/topics/information-packages/thl-biobank/researchers/sample-collections/health-2000-and-2011) was conducted by the National Institute for Health and Welfare (THL) in Finland in the years of 2011 to 2012. This survey was a follow-up of the Health 2000 Survey [24]. The participation rate was 73.6% (n = 5903), and 454 (56%) participants aged 18 to 97 years completed the diagnostic interview for mental disorders and were included in the analyses of this current study. We selected all those participants who fulfilled the criteria for SAD (n = 171), MDD (n = 153) or dysthymia (n = 84), thus a total of 408 cases. For this current study, we included within the SAD group all those participants with a global seasonality score (GSS) on the Seasonal Pattern Assessment Questionnaire (SPAQ) equal to or higher than 11 [25] in both the Health 2000 Survey and Health 2011 Survey. The GSS has been shown to have an acceptable reliability and validity in epidemiological studies [25,26]. Regarding MDD and dysthymia, we followed the criteria from the World Health Organization Composite International Diagnostic Interview (CIDI) [27]. As healthy controls, we selected a group of 816 participants from the Health 2011 Survey, who fulfilled the following inclusion criteria: GSS < 11; no diagnoses of any mental disorder in the M-CIDI; and they were matched by age and gender with the cases. Written informed consent was obtained from all participants and this study was approved by the ethical committee of the Helsinki and Uusimaa Hospital district.

2.2. Instruments

The World Health Organization Composite International Diagnostic Interview, Munich version (M-CIDI) [28] is a comprehensive, fully-structured and computerized interview for the assessment of mental disorders.

The SPAQ is a brief, self-administered questionnaire that is widely used in adult clinical and community samples as a screening tool for SAD [29].

The Beck Depression Inventory (BDI) is a 21-item self-report rating inventory that measures characteristic attitudes and symptoms of depression [30]. For this study, we used the BDI 13-item short form (BDI-13).

The General Health Questionnaire (GHQ) is a screening test for identifying minor psychiatric disorders in the general population [31]. We selected for this study the 12-items version as it is considered a quick, reliable and sensitive short form.

The Mini-Mental State Examination (MMSE) [32] has been extensively used in clinical and research settings to measure cognitive impairment. For this study, we used a short version of the MMSE with 16 items, providing a rough overall estimate of cognitive functioning. MMSE is used for the detection of dementia and thus it was only administered to those subjects aged 55 years or over. Cut-off score for this version is 10/11.

Category verbal fluency test–Animals [33]. In the standard version of the task, participants are given one minute to produce as many unique words as possible within a semantic category (category fluency) or starting with a given letter (phonemic fluency). For this study, we used the animal version.

The CERAD 10-word list (CWL) [34] consists of three immediate-recall trials of a 10-word list, followed by an interference task, and then a delayed recall trial. The CWL has been shown to be one of the most sensitive tests for detecting mild cognitive impairment [35].


2.3. Statistical analysis

Statistical analyses were performed with the SPSS Statistics V22.0. In order to examine the different functioning in both clinical and cognitive variables between SAD, MDD, dysthymia and controls, one-way analysis of variance (ANOVA) test, with Bonferroni post hoc correction was conducted for the continuous
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