Research paper

Lifetime prevalence, sociodemographic correlates, and diagnostic overlaps of bipolar spectrum disorder in the general population of South Korea

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ABSTRACT

Background: Patients with subthreshold bipolar disorder (Sub-BP) experience severe clinical courses and functional impairments which are comparable to those with bipolar I and II disorders (BP-I and -II). Nevertheless, lifetime prevalence, socioeconomic correlates and diagnostic overlaps of bipolar spectrum disorder (BPS) have not yet been estimated in the general population of South Korean adults.
Methods: A total of 3013 adults among the 2011 Korean Epidemiologic Catchment Area survey (KECA-2011) completed face-to-face interviews using the Korean versions of the Composite International Diagnostic Interview 2.1 and Mood Disorder Questionnaire (K-CIDI and K-MDQ).
Results: The lifetime prevalence of BPS in the South Korean adults was measured to be 4.3% (95% CI 2.6–6.9). Nearly 80% of the subjects with BPS were co-diagnosed with other DSM-IV non-psychotic mental disorders: 35.4% (95% CI 24.2–48.5) for major depression and dysthymic disorder, 35.1% (95% CI 27.7–43.3) for anxiety disorders, and 51.9% (95% CI 40.5–63.1) for alcohol and nicotine use disorders. Younger age (18–34 years) was the only sociodemographic predictor of BPS positivity ($P=0.014$), and the diagnostic overlap patterns were different between men and women.
Limitations: The prevalence of BPS and other mental disorders could have been influenced by recall bias due to the retrospective nature of this study.
Conclusions: Positivity for BPS was estimated to be much greater than the prevalence of DSM-IV BP in South Korea. Most of the respondents with BPS were diagnosed with other major mental disorders and this might be related with mis- and/or under-diagnosis of clinically relevant Sub-BP.

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1. Introduction

Since the concept of manic-depressive illness (MDI) was divided into bipolar and major depressive disorders (BP and MDD) in the Diagnostic and Statistical Manual of Mental Disorders, third edition (DSM-III) (American Psychiatric Association, 1980), BP has been defined as a syndromal entity eminently distinguishable from "unipolar" MDD (Ghaemi and Dalley, 2014). Nevertheless, a substantial body of literature in recent years has argued that soft or mild hypomania with or without alternating depressive episodes should be considered subthreshold bipolar disorder (Sub-BP), and, moreover, the broader concept of bipolar spectrum disorder (BPS) be introduced in the diagnostic criteria (Ghaemi and Dalley, 2014; Nusslock and Frank, 2011). It has been revealed that people with Sub-BP are not only at high risks of conversion to

bipolar I and II disorders (BP-I and -II) (Nusslock and Frank, 2011), but also prone to experiencing severe role impairment and adverse clinical courses including comorbidity of substance abuse and anxiety disorders, and high risks of physical illnesses, which are virtually equivalent to those from BP-I and -II (Merikangas et al., 2011; Nusslock and Frank, 2011). In spite of this clinical importance, Sub-BP is frequently neglected in clinical settings (Cassano et al., 1999). Angst et al. (2010) revealed that around 40–50% of individuals with MDD had a history of subthreshold hypomania (Angst et al., 2010; Kim et al., 2008; Zimmermann et al., 2009). It also has been found that up to 70% of the diagnosis of BP might be being delayed 6–10 or more years, and most of them being misdiagnosed with unipolar MDD (Nusslock and Frank, 2011). Researchers have cautiously argued that the possible mis- and under-diagnosis of Sub-BP might be due to the narrowness of the current diagnostic criteria of BP, and evidence might support the clinical validity of the wider concept of BPS (Angst et al., 2010; Cassano et al., 1999; Nusslock and Frank, 2011).

Within the DSM diagnostic framework, the lifetime prevalence of BP-I in the general population of the United States has been reported to range from 0.4% to 1.2% (Bebbington and Ramana, 1995; Kessler et al., 2012b; Merikangas et al., 2007); that number reaches as high as 0.8–2.5% when BP-II is included (Bebbington and Ramana, 1995; Kessler et al., 2012b). Most of epidemiological surveys for BP-I and -II used fully-structured diagnostic tools, e.g., the Composite International Diagnostic Interview (CIDI) (World Health Organization, 1997), which was proposed to be too strict to detect Sub-BP in community-based studies (Angst et al., 2003; Nusslock and Frank, 2011). Hence, even well-trained investigators might underestimate past manic or hypomanic symptoms using a highly structured interview or a dichotomous questionnaire in epidemiological studies (Benazzi and Akiskal, 2003; Carta and Angst, 2005; Carta et al., 2008).

The overall prevalence of broader BPS has been investigated to be between 3% and 18% using either a validated screening tool (Bae et al., 2013; Carta et al., 2012; Hirschfeld et al., 2003a; Judd and Akiskal, 2003; Mangelli et al., 2005) or a modified (semi)structured diagnostic instrument (Angst et al., 2003; Lee et al., 2009; Merikangas et al., 2007; Moreno and Andrade, 2005), because there is no consensus for the operational definition of Sub-BP yet (Nusslock and Frank, 2011). In a recent report from the World Mental Health (WMH) survey comprising the results of 11 countries, mean cross-national lifetime prevalence of BPS was estimated to be 2.4% (0.6% for BP-I, 0.4% for BP-II, and 1.4% for Sub-BP, respectively) using the modified CIDI (Merikangas et al., 2011).

So far, there has not been a report on the prevalence of BPS in the representative population of South Korea. This study aimed to estimate the lifetime prevalence and correlates of BPS using a validated screening instrument in the nationwide general population of South Korea, as previous studies did in other populations (Bae et al., 2013; Carta et al., 2012; Hirschfeld et al., 2003a; Judd and Akiskal, 2003; Mangelli et al., 2005). Additionally, diagnostic overlaps of BPS with nonpsychotic mental disorders were also investigated.

2. Materials and methods

2.1. Recruitment and sampling procedures

The 2011 Korean Epidemiologic Catchment Area study (KECA-2011) was a nationally representative survey on mental illness conducted between July 19, 2011, and November 16, 2011 (Cho et al., 2015). The target population included all non-institutionalized and eligible South Koreans aged 18–74.

We used a multi-staged and stratified cluster sampling method based on the 2010 Population Census data obtained from the Korean National Statistical Office. We initially divided South Korea into six large divisions according to administrative districts. We then selected 12 catchment areas ("Si/Gun/Gu" in Korean) in these divisions based on population size and accessibility to each research center. Next, 3–8 subdivisions ("Eup/Myeon/Dong") per catchment area were selected according to population size. From the 2010 national population census, we also adopted the census blocks ("enumeration districts") as sampling units. A total of 246 sampling units were selected from a total of 61 subdivisions. Every household in each unit was included in the survey (14,204 households), and one individual per household was randomly chosen as the respondent. Preliminary surveys were conducted by visiting every household to compile a list of eligible subjects. Household visits were repeated at least five times to contact individuals who were temporarily unavailable. Trained field workers carried out all the face-to-face interviews. We excluded subjects who were not within the age range, whose eligibility could not be ascertained, or who were impossible to contact. Houses that were not households or found empty were also excluded.

2.2. Investigation tools

A fully structured clinical interview was performed on each subject using the Korean version of the CIDI 2.1 (K-CIDI) to assess various psychiatric disorders based on DSM-IV (American Psychiatric Association, 1994). The K-CIDI was validated by Cho et al. (2002) according to World Health Organization (WHO) guidelines (World Health Organization, 1997). A total of 78 interviewers were recruited from the catchment areas and provided 5-day training sessions with standard protocols and instruction materials developed by the WHO. These trained interviewers administered the survey to all respondents.

In the present study, we used version 2.1 of the K-CIDI which had also been used in the KECA (2001) (Cho et al., 2007) and the KECA-R (2006) (Cho et al., 2010) for consistency in the interpretation of results. Using the K-CIDI, the total lifetime prevalence of BP-I and -II has been reported to be 0.2–0.3% in the KECA (Cho et al., 2007), the KECA-R (Cho et al., 2010), and the KECA-2011 (Cho et al., 2015). These rates are substantially lower than the previous results assessed with CIDI 3.0 from the National Comorbidity Survey Replication (NCS-R) in the US (2.5%) (Kessler et al., 2012b). Our results are also lower than the combined lifetime prevalence from the 11 countries in the WMH survey (0.6% and 0.4% for BP-I and -II, respectively) (Merikangas et al., 2011). The relatively low prevalence rate of BP in South Korea might be, at least partially, attributable to the strictness of the K-CIDI as a fully-structured diagnostic instrument. Additionally, the K-CIDI might have higher diagnostic thresholds for BP symptoms in South Korea than in Western countries. Analogously, Chang et al. (2008) has shown that the lower prevalence rates of MDD in East Asian countries than in the West might be related with cross-cultural differences in symptom manifestation, and similar phenomena could have influenced the diagnostic process of BP. In order to complement the possible under-estimation of BP using the K-CIDI, we also administered the Korean version of the Mood Disorder Questionnaire (K-MDQ) (Hirschfeld et al., 2003b; Jon et al., 2009) after the K-CIDI interview in 6 catchment areas. In the end, a total of 3013 subjects completed the K-MDQ assessment. The lifetime prevalence of BPS was then estimated by positive screening rate for the K-MDQ in our study because, as mentioned earlier in this article, there is no consensus on operational definition of Sub-BP yet (Nusslock and Frank, 2011).

The MDQ was developed as a screening tool by Hirschfeld et al. (2003b) to improve the recognition of BPS. A positive MDQ screen requires that all 3 criteria are endorsed: 7 or more symptoms experienced (part 1), co-occurrence of the symptoms (part 2), and