



# Prevalence, correlates, comorbidity and severity of generalized anxiety disorder in Singapore



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## ABSTRACT

Despite its pervasiveness and associated impairment, generalized anxiety disorder (GAD) remains a poorly recognized disorder. Furthermore, given that GAD has been relatively understudied in Asia, the current study examined the prevalence, correlates and co-morbid conditions of this disorder in a multi-ethnic population of Singapore. Data was utilized from the Singapore Mental Health Study (SMHS), a cross-sectional epidemiological survey conducted among the adult population ( $n = 6616$ ) aged 18 years and above. The Composite International Diagnostic Interview version 3.0 (CIDI v3.0) was used to assess co-morbidity as well as the life-time and 12-month prevalence of disorders. Functional impairment and treatment-seeking behavior were also assessed. The life-time (0.9%) and 12-month (0.4%) prevalence estimates in the current study were found to be lower than those reported in Western populations but comparable to the prevalence estimates found in Asian countries. The relatively lower prevalence rate of GAD in this study suggests the possible role of culture in reporting and manifestation of anxiety symptomatology. The failure of a substantial proportion of individuals to seek treatment despite self-reported impairment was also identified as an area of concern.

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## 1. Introduction

Generalized anxiety disorder (GAD) as defined by DSM-IV-TR is characterized by excessive anxiety and worry lasting for a minimum of 6 months with at least 3 of the following six symptoms: restlessness, fatigue, poor concentration, irritability, muscle tension, and sleep disturbance; all of which cause significant distress and impairment to an individual (APA, 2000). It is a chronic disorder which has a waxing and waning course with few spontaneous remissions (Davidson et al., 2010; Wittchen et al., 1994; Wittchen, 2002).

Compared to other anxiety disorders, GAD tends to have a higher prevalence rate in primary care settings as opposed to the general population (Wittchen, 2002), and is more commonly seen in middle age (Davidson et al., 2010). In accordance with this, the US National Co-morbidity Survey found the lowest life-time prevalence of GAD in the 15–24 year age group and the highest rate in the 45–55 year age group (Wittchen, 2002). GAD tends to be

more common among females as opposed to males, with age-standardized rates ranging from 3.7 to 7.1% in females and 4.1 to 6% in males among European samples (Munk-Jorgensen et al., 2006). Other factors found to have an association with GAD include low socio-economic status, presence of chronic medical conditions (e.g., coronary heart disease, chronic obstructive pulmonary disease), being divorced, separated, unemployed, retired and being a homemaker (Belanger et al., 2005; Lim et al., 2005; Wittchen & Hoyer, 2001).

However, despite the significant risk factors generally associated with GAD diagnosis, cross national studies which adopted the same instrument and similar sampling technique, found a higher GAD prevalence in Western samples and a lower prevalence in Asian samples (Kessler et al., 2005; Lee et al., 2007a,b; Oakley-Browne et al., 2006). For instance, the National Comorbidity Study Replication (US) indicated that the life time prevalence of GAD was 5.7% (Kessler et al., 2005), while GAD prevalence was 6% in a New Zealand sample (Oakley-Browne et al., 2006); however Lee et al. (2007b) found that the prevalence of GAD was 0.8% in a metropolitan Chinese sample. These cross national differences require further investigation of the variability, as the differences may occur due to underlying mechanisms such as measurement non-equivalence of the instrument used, inability of the

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instrument or diagnostic system to truly capture psychopathology, or reflect true differences across groups (Lewis-Fernández et al., 2010).

GAD has been associated with greater disability, increased use of health care services (particularly primary care services) (Bereza et al., 2009; Lepine, 2002; Wittchen, 2002), lower quality of life (Revicki et al., 2008) and significant economic burden (decreased work productivity and work impairment) (Wittchen et al., 2000; Wittchen, 2002). A previous study found greater severity of symptoms to be associated with increased disability in individuals with GAD and sub-threshold GAD as opposed to those with no psychiatric symptoms (Wittchen, 2002). This finding was replicated by a recent study which in addition found severity of GAD symptoms to be significantly associated with lower psychological well-being, physical functioning, as well as quality of life (Revicki et al., 2008). Patients with GAD were also more likely to visit a primary care physician compared to individuals without the disorder (Belanger et al., 2005).

The associated impairment however, is notably higher when GAD is co-morbid with other psychiatric conditions, particularly with major depressive disorder (MDD) (Lim et al., 2005; Stein & Heimberg, 2004; Van der Heiden et al., 2011; Wittchen, 2002). For instance, the percentage of individuals reporting moderate to severe social disability increased from 27% to 59% when GAD was co-morbid with MDD; with absenteeism from work being higher among these individuals (Wittchen, 2002).

Despite its pervasiveness in primary care (Calleo et al., 2009; Wittchen, 2002) and its associated disability, GAD still remains a poorly recognized disorder. Moreover, while the disorder has been well documented in Western psychiatric literature (Munk-Jorgensen et al., 2006), there has been a relative lack of data from countries in South East Asia (Lee et al., 2007a,b; Lim et al., 2005). The current study thus aims to explore the prevalence, correlates, and co-morbidity of GAD in the multi-ethnic population of Singapore in an attempt to further understand this chronic and disabling condition.

## 2. Materials and methods

### 2.1. Sample

The Singapore Mental Health Study was a nationally representative survey of the Singapore adult resident population, aged 18 years and above. Using a disproportionate stratified sampling, an equivalent proportion of 30% of the three main ethnic groups (Chinese, Malays, and Indians) were sampled. The study was approved by the institutional ethics committee (National Healthcare Group, Domain Specific Review Board) prior to its commencement. Respondents were randomly selected from an administrative database, and were approached at their households for face-to-face interviews. Written informed consent was obtained from all respondents and parent/guardian of respondents who were between 18 and 21 years of age. Six thousand six hundred and sixteen respondents completed the entire interview yielding a response rate of 75.9%. Study methodology has been described in detail in Fig. 1, Fig. 2 and in an earlier article (Subramaniam et al., 2012).

### 2.2. Measures

Diagnoses of mental disorders were established using the Composite International Diagnostic Interview version 3.0 (CIDI 3.0) (Kessler & Ustun, 2004). This is a fully structured diagnostic instrument which allows trained non-clinician interviewers to assess mental disorders. The study team members, who had undergone the training offered by WHO-CIDI Research and Training Center, trained the interviewers in the survey team.

Diagnostic modules for life-time and 12-month prevalence of disorders included affective disorders (i.e. MDD, dysthymia, bipolar disorder), anxiety disorders (i.e. GAD, obsessive compulsive disorder (OCD)), and alcohol use disorder (i.e. alcohol abuse, alcohol dependence). Diagnostic hierarchy and organic rules were applied to obtain the diagnoses (Kessler et al., 2005). The GAD

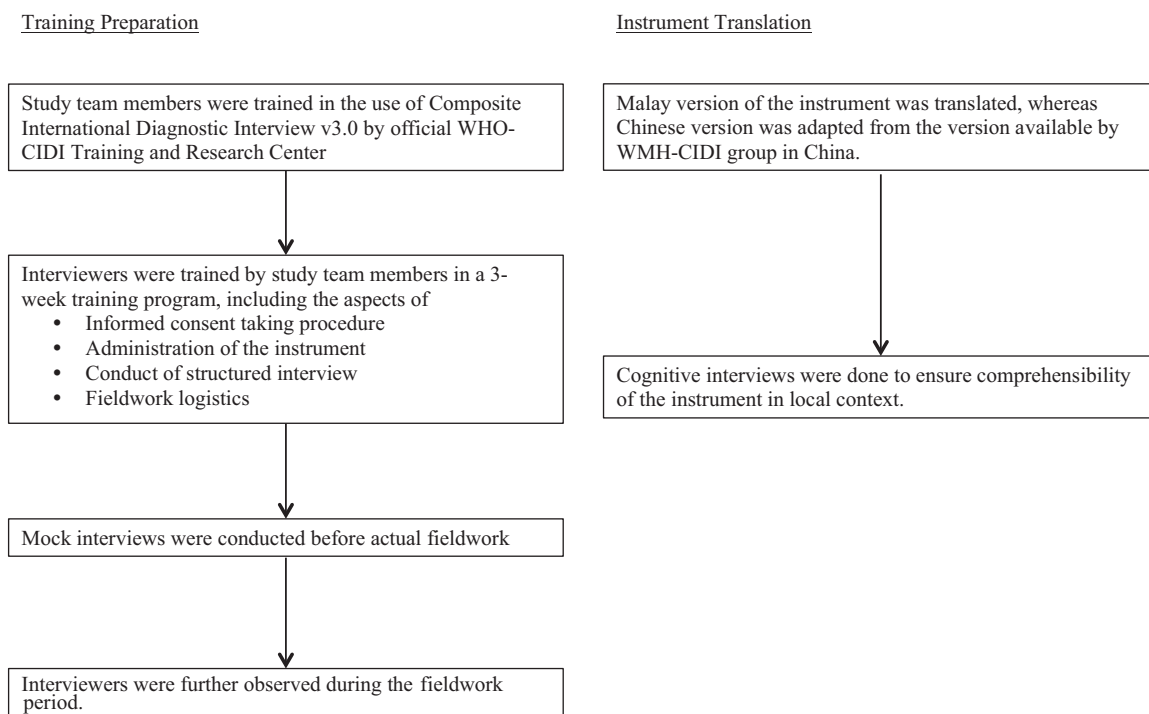


Fig. 1. Preparatory phase of the Singapore Mental Health Study. For more details please refer to Subramaniam et al. (2012).

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