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# Panic disorder and health-related quality of life: The predictive roles of anxiety sensitivity and trait anxiety



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## ABSTRACT

Panic disorder (PD) is a very common anxiety disorder and is often a chronic disabling condition. However, little is known about the factors that predict health-related quality of life (HRQOL) other than sociodemographic factors and illness-related symptomatology that explain HRQOL in only small to modest degrees. This study explored whether anxiety-related individual traits including anxiety sensitivity and trait anxiety can predict independently HRQOL in panic patients. Patients with panic disorder with or without agoraphobia ( $N=230$ ) who met the diagnostic criteria in the Structured Clinical Interview for DSM-IV were recruited. Stepwise regression analysis was performed to determine the factors that predict HRQOL in panic disorder. HRQOL was assessed by the 36-item Short-Form Health Survey (SF-36). Anxiety sensitivity was an independent predictor of bodily pain and social functioning whereas trait anxiety independently predicted all of the eight domains of the SF-36. Our data suggests that the assessment of symptomatology as well as individual anxiety-related trait should be included in the evaluation of HRQOL in panic patients.

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## 1. Introduction

Panic disorder is a common anxiety disorder and is often a chronic disabling condition (Bruce et al., 2005; Kessler et al., 2006). Many studies have reported low health-related quality of life (HRQOL) and significant impairment in patients with panic disorder (Davidoff et al., 2012). In addition, Sherbourne et al. (1996) reported that panic patients had even lower HRQOL level than those of patients with other major chronic medical illnesses such as diabetes mellitus, heart disease, and chronic lung problems. Until recently, however, little attention has paid to the question of predictive factors of HRQOL in panic disorder. It is surprising and interesting that several researchers have repeatedly found a limited explanatory role of panic-related symptoms per se as a predictor of HRQOL in panic patients (Rapaport et al., 2005; Carrera et al., 2006). Rapaport et al. (2005) reported that symptom severity (panic attacks) explained only 3.8% variance in QOL. Carrera et al. (2006) found that anxiety and depressive symptoms, age, frequency of panic attacks and

agoraphobic avoidance accounted for 18–42% of the variance in QOL. Although the significant clinical correlates include panic severity, depressive symptomatology, neuroticism, and worry, research is sparse on the topic of psychological variables on HRQOL of panic patients other than illness-related symptomatology (Hollifield et al., 1997; Katerndahl and Realini, 1997; Carrera et al., 2006). Besides illness-related symptomatology, individual factors such as individual cognitive and personality trait, genetic polymorphisms, numerous stressors may affect HRQOL (Kung et al., 2006; Pais-Ribeiro et al., 2007; Zou et al., 2010; Margetic et al., 2011). In panic disorder, both anxiety sensitivity and trait anxiety are well known anxiety-related individual traits. They also have been widely used in research for panic disorders and many studies have revealed that both anxiety sensitivity and trait anxiety play important roles in symptom severity, psychopathology, course, and prognosis (Ehlers, 1995; Eke and McNally, 1996; Carrera et al., 2006; Roppongi et al., 2010; Park et al., 2012; Tanaka et al., 2012). Although they both are closely associated with panic disorder, they differ in that anxiety sensitivity is defined as fear of anxiety-related sensations and considered to be a dispositional variable (Reiss and McNally, 1985) while trait anxiety refers to a general tendency to perceive situations as threatening (Spielberger et al., 1983). McNally (2002) provides a good explanation showing the differences

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between anxiety sensitivity and trait anxiety. People not only vary in their tendency to experience anxiety symptoms but also vary in their tendency to respond fearfully to them (i.e. fear of fear). The former is related to trait anxiety whereas the latter is anxiety sensitivity. They also differ in that anxiety sensitivity is closely related to panic attack and panic disorder whereas trait anxiety is related to general and nonspecific factors (Taylor et al., 1992). Furthermore, several studies showed that the anxiety sensitivity is a better predictor of response to biological challenges than trait anxiety (Rapee and Medoro, 1994; Eke and McNally, 1996; Sturges et al., 1998). Thus, anxiety sensitivity as well as trait anxiety needs to be included in evaluating panic patients.

However, there are no data about the HRQOL in Korean panic patients as well as about the predictive roles of anxiety-related individual trait (i.e., anxiety sensitivity and trait anxiety) in assessing HRQOL in patients with panic disorder. Thus, in the present study, we hypothesized that Korean panic patients would show lowered HRQOL compared to healthy controls and that higher anxiety sensitivity or trait anxiety would predict lower HRQOL in panic patients.

## 2. Methods

### 2.1. Participants

We recruited 230 panic patients with or without agoraphobia who met the diagnostic criteria in the Structured Clinical Interview for DSM-IV (SCID-IV) (First et al., 1996) consecutively at the Department of Psychiatry of CHA Bundang Medical Center. Exclusion criteria included any history of schizophrenia, bipolar disorder, alcohol and substance abuse or dependence, mental retardation, and current or

past serious medical or neurological disorders. One-hundred fifteen healthy controls were recruited from community and matched on age and gender ratio. To be eligible, they should have no personal or family history of psychiatric disorders according to SCID-IV. All subjects (age  $\geq 18$ ) were of Korean descent. At the time of enrollment, patients were taking the following medications: 71 patients were taking escitalopram, 83 patients were taking paroxetine or paroxetine CR, four patients were taking bupropion, two patients were taking fluoxetine, and one patient was taking sertraline. In terms of benzodiazepines, 137 patients were taking alprazolam, 19 patients were taking clonazepam, five patients were taking diazepam, and eight patients were taking lorazepam. Seventy-one patients were not taking antidepressant medication nor any benzodiazepines. Nineteen patients were receiving the mindfulness-based cognitive therapy (MBCT). All study procedures were complied with CHA Bundang Medical Center Institutional Review Board regulations and Declaration of Helsinki. After a complete description of the study was given to the subjects, written informed consent was obtained.

### 2.2. HRQOL measures and psychological variables

Panic patients evaluated for their HRQOL state, panic severity, level of depressive symptoms, and individual anxiety-related trait. Healthy controls were evaluated for their HRQOL state.

The Medical Outcomes Study 36-item Short-Form Health Survey (SF-36) (Ware and Sherbourne, 1992; Nam and Lee, 2003) is a reliable and widely used scale to determine HRQOL. It consists of eight subscales: physical functioning (the ability to perform a range of physical activities), role physical (the impact of physical health on usual role activities), bodily pain, general health (overall perception of personal health), vitality (energy and fatigue), social functioning (interference of physical and emotional problems in social activities), role emotional (impact of emotional problems on usual role activities), and mental health (psychological distress and well-being). The Korean version of Panic Disorder Severity Scale (PDSS) (Shear et al., 2001; Lim et al., 2007) and Beck Depression Inventory (BDI) (Beck et al., 1961; Lee and Song, 1991) were administered to panic patients to assess the overall panic-related symptoms and the level of depressive symptoms. Anxiety sensitivity was assessed using the Korean version of the Anxiety Sensitivity Index-Revised (Taylor and Cox, 1998; Kim et al., 2004). The ASI-R is an expanded version of the ASI

**Table 1**  
Sample characteristics.

Characteristic	Panic disorder (n=230)	Healthy controls (n=115)	Statistics	
			t or $\chi^2$ (d.f.)	P
Age, mean (S.D.), years	37.74 (9.95)	37.81 (10.85)	−0.06	0.96
Gender, n (%)			0.01 (1)	0.94
Male	101 (43.9)	50 (43.5)		
Female	129 (56.1)	65 (56.5)		
Education, mean (S.D.), years	13.47 (3.00)	15.86 (3.18)	−6.85	< 0.001
Job, n (%)			10.44 (1)	0.001
Employed	159 (69.1)	98 (85.2)		
Unemployed	71 (30.9)	17 (14.8)		
Monthly household income, n (%)			12.12 (2)	0.002
< \$2000	29 (12.6)	7 (6.1)		
\$2000 – 5000	131 (57.0)	52 (45.2)		
≥ \$5000	70 (30.4)	56 (48.7)		
Marriage, n (%)			7.33 (2)	0.03
Married	158 (68.7)	67 (58.3)		
Never married	57 (24.8)	44 (38.3)		
Divorced/separated/widowed	15 (6.5)	4 (3.5)		
Duration of illness, mean (S.D.), months	33.41 (58.68)	NA		
Agoraphobia, n (%)	146 (63.5)	NA		
PDSS, mean (S.D.)	10.14 (6.69)	NA		
PDSS minus item 4 (S.D.)	8.84 (5.83)	NA		
BDI, mean (S.D.)	17.70 (11.50)	NA		
STAI-T, mean (S.D.)	50.40 (10.81)	NA		
ASI-R, mean (S.D.)	49.77 (30.51)	NA		
SF-36, mean (S.D.)				
Physical functioning	72.76 ± 20.29	86.00 ± 12.43	−7.48	< 0.001
Role physical	59.21 ± 29.64	83.80 ± 18.62	−9.41	< 0.001
Bodily pain	50.05 ± 30.14	86.67 ± 16.20	−14.67	< 0.001
General health	39.54 ± 19.25	65.52 ± 15.62	−13.45	< 0.001
Vitality	38.37 ± 21.28	62.72 ± 15.57	−12.06	< 0.001
Social functioning	58.59 ± 25.90	86.62 ± 16.18	−12.28	< 0.001
Role emotional	58.62 ± 30.82	86.67 ± 18.46	−10.53	< 0.001
Mental health	49.26 ± 19.76	73.17 ± 13.48	−13.21	< 0.001

Abbreviations: ASI-R, Anxiety Sensitivity Inventory-Revised; BDI, Beck Depression Inventory; item 4, Agoraphobia fear/Avoidance subscale of the PDSS; NA, not applicable; PDSS, Panic Disorder Severity Scale; S.D., standard deviation; SF-36, 36-Item Short Form Health Survey; and STAI-T, trait subscale from the State Trait Anxiety Inventory.

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