



## Avoidance behavior associated with depressive symptoms in patients with implantable cardioverter defibrillators



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### KEYWORDS

Implantable cardioverter defibrillator;  
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Depressive symptom;  
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Cross-sectional study

**Abstract** *Objective:* Many patients with implantable cardioverter defibrillators experience depressive symptoms. In addition, avoidance behavior is a common problem among patients with implantable cardioverter defibrillators. We examined the association between avoidance behaviors and depressive symptoms in patients with implantable cardioverter defibrillators. *Method:* We conducted a single-center, cross-sectional study with self-completed questionnaires between May 2010 and March 2011. We measured avoidance behaviors (avoidance of places, avoidance of objects, and avoidance of situations) and depressive symptoms (using the Beck Depression Inventory, Version II) in 119 participants. An avoidance behaviors instrument was developed for this study and we confirmed its internal consistency reliability. *Results:* Ninety-two (77.3%) patients were aged older than 50 years, and 86 (72.3%) were men. Fifty-one (42.9%) patients reported "avoidance of places", 34 (28.6%) reported "avoidance of objects", and 63 (52.9%) reported "avoidance of activity". Avoidance behavior was associated with increased odds for the presence of depressive symptoms (*OR* 1.31; 95% *CI* 1.06–1.62). *Conclusions:* This was the first study to identify the relationship between avoidance behavior and depressive symptoms among patients with implantable cardioverter defibrillators; however, there are a few methodological limitations.

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**PALABRAS CLAVE**

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estudio transversal

## Conducta de evitación asociada a síntomas depresivos en pacientes con desfibriladores cardioversores implantables

**Resumen** *Objetivo:* Muchos pacientes con desfibriladores cardioversores implantables experimentan síntomas depresivos. Además, la conducta de evitación es un problema común entre estos pacientes. El objetivo fue examinar la asociación entre las conductas de evitación y síntomas depresivos en pacientes con desfibriladores cardioversores implantables. *Método:* Se llevó a cabo un estudio transversal en un único centro entre mayo de 2010 y marzo de 2011. Mediante autoinformes se midieron conductas de evitación (evitación a lugares, evitación a objetos y evitación a situaciones) y síntomas depresivos (mediante el Inventario de Depresión de Beck, Versión II) en 119 participantes. El instrumento de evitación se desarrolló para este estudio con adecuada fiabilidad de consistencia interna. *Resultados:* Noventa y dos pacientes (77,3%) tenían más de 50 años y 86 pacientes (72,3%) eran hombres. Cincuenta y un pacientes (42,9%) informaron de "evitación a lugares", 34 pacientes (28,6%) informaron de "evitación a objetos" y 63 pacientes (52,9%) informaron "evitación a actividad". La conducta de evitación se asoció con un aumento en la probabilidad de síntomas depresivos (OR 1,31; IC del 95%, 1,06-1,62). *Conclusiones:* Este es el primer estudio para identificar la relación entre la conducta de evitación y síntomas depresivos en pacientes portadores de desfibriladores cardioversores implantables, aunque existen algunas limitaciones metodológicas.

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An implantable cardioverter defibrillator (ICD) is an electronic internal device that can detect and correct fatal arrhythmia. The use of ICDs, including the cardiac resynchronization therapy defibrillator (CRT-D) for patients with heart failure, significantly reduces mortality from sudden cardiac death compared with anti-arrhythmic drug therapy (Alba et al., 2013; Chen, Ling, Kikuchi, Yin, & Krucoff, 2013; Connolly et al., 2000; Tan, Wilton, Kuriachan, Sumner, & Exner, 2014). However, some patients with ICDs experience psychological distress due to fear of blast or strong pain by electric shock (de Ornelas Maia, Soares-Filho, Pereira, Nardi, & Silva, 2013; Heller, Ormont, Lidagoster, Sciacca, & Steinberg, 1998). According to a recent systematic review, 5–41% of patients reported depressive symptoms and 8–63% reported anxiety symptoms (Magyar-Russell et al., 2011).

Depressive symptoms are a particularly difficult psychological problem for patients with ICDs. Indeed, 11–28% of all such patients have major depressive disorder (Magyar-Russell et al., 2011) that follows a severe clinical course. Several studies have reported that depressive symptoms were a risk factor for poor adherence (Luyster, Hughes, & Gunstad, 2009), arrhythmic episodes (Tzeis et al., 2011), phantom shock (Starrenburg, Kraaijer, Pedersen, Scholten, & Van Der Palen, 2014), rehospitalization (Shalaby, Brumberg, El-Saed, & Saba, 2012), and increased mortality rates (van den Broek et al., 2013; Whang et al., 2005). In contrast, some earlier studies suggested that depressive symptoms are predicted by being younger, being female, having poor social support (e.g., living alone), having a poor physical condition (e.g., presence of heart failure), and electric shock events among patients with ICDs (Moryś, Pąchalska, Bellwon, & Gruchata, 2016). However, the personal factors that are related to depressive symptoms have not yet been fully defined, although factors related anxiety symptoms have been increasingly clarified (Sears & Conti, 2002).

Avoidance behavior is one of the most common symptoms for patients with ICDs (Godemann et al., 2001, 2004; Ingles, Sarina, Kasparian, & Semsarian, 2013; Morken et al., 2014). Patients with avoidance behaviors characteristically reduce their routine behaviors such as using cell phones, taking showers, or going out because they fear electric shock from an ICDs (Cutitta et al., 2014). Indeed, 17% of patients reported "avoidance of places", 27% reported "avoidance of objects", and 39% reported "avoidance of situations" (Lemon, Edelman, & Kirkness, 2004). Avoidance behavior promotes anxiety and is a symptom of anxiety disorders such as panic disorder and posttraumatic stress disorder (Godemann et al., 2004; Pauli, Wiedemann, Dengler, Blaumann-Benninghoff, & Kühlkamp, 1999; Sears & Conti, 2002; von Känel, Baumert, Kolb, Cho, & Ladwig, 2011). In the general population, research on behavioral activation treatment has suggested that avoidance behaviors are related to depressive symptoms (Jacobson, Martell, & Dimidjian, 2006; Jacobson & Newman, 2014). However, no study has examined the association between avoidance behaviors and depressive symptoms in patients with ICDs; therefore, we examined (1) the frequency of avoidance behaviors and (2) the association between avoidance behaviors and depressive symptoms in patients with ICDs. Our primary hypothesis was that patients who have a strong avoidance tendency would be more likely to have depressive symptoms.

## Method

### Participants

We conducted a single-center, cross-sectional study using self-reported questionnaires. The data were collected from outpatients or inpatients in Department of Cardiology, Tokyo

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