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Research report

Lower PHQ-9 cutpoint accurately diagnosed depression in people with long-term conditions attending the Accident and Emergency Department

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ABSTRACT

Background: Major Depressive Disorder (MDD) is frequent in the Accident and Emergency Department (AED) but is often unrecognized. We aimed to assess the prevalence of MDD and determine the psychometric properties of the PHQ-9 in diagnosing MDD in patients with long-term medical conditions attending an AED.

Methods: The PHQ-9 was administered to 349 patients with diabetes, COPD and chronic inflammatory rheumatic diseases, mainly rheumatoid arthritis and spondyloarthropathies, visiting an AED. The MINI interview was used as the criterion standard for MDD. Receiver operator characteristic (ROC) curve analysis was performed to determine the optimal PHQ-9 cutpoint for MDD. Construct validators included psychological distress (SCL-90-R), illness perceptions (B-IPQ) and Health-Related Quality of Life (WHOQOL-BREF).

Results: The prevalence of MDD was 27.2%. At an optimal cutpoint of 8, PHQ-9 had a sensitivity of 90.5% and specificity of 89.4%. The area under the curve (0.96) was excellent. Convergent validity was established by the strong associations between PHQ-9 scores and functional status, SCL-90-R depression, illness perceptions and AED visits during the previous year.

Limitations: The sample consisted of multiple rather a single disease group, preventing us from accounting for illness severity using specific disease severity indices.

Conclusion: MDD is frequent in patients with long-term medical conditions attending the AED and the PHQ-9, at a cutpoint of 8, is an accurate, reliable and valid measure for MDD screening in this patient population.

1. Introduction

Depression ranks among the top five disorders causing severe disabilities worldwide (Murray and Lopez, 1996) and is expected to be number one by 2030 (WHO, 2008). The prevalence of Major Depressive Disorder (MDD) increases from 2–5% in community settings (Myers et al., 1984) to 5–10% in primary care (Kessler et al., 1994) and to 6–14% among medical/surgical inpatients (Katon and Schulberg, 1992; Katon and Ciechanowski, 2002). However, depression is often unrecognized and undertreated, especially in the busy Accident and Emergency Department (AED) (Mimiaga et al., 2010; Rhodes, 2008). In a study at a university teaching hospital AED (Schriger et al., 2001), Primary Care Evaluation of Mental Disorders (PRIME-MD) interview (Spitzer et al., 1994) revealed a psychiatric diagnosis in 42% of patients, whereas physicians made diagnoses in only 5% and offered psychiatric consultation or referral to 3%. The AED is increasingly becoming a location in which mental illness first presents (Kowalenko and Khare, 2004) and frequently serves as the principal source of care for individuals who are uninsured, homeless,

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economically disadvantaged, elderly, mentally ill, or immigrants and refugees (Billings et al., 2000; McCusker et al., 2003).

The Patient Health Questionnaire depression scale (PHQ-9) (Kroenke and Robert, 2002) is one of the most widely used depression scales in clinical practice (Kroenke et al., 2010). It can be used to establish a DSM-IV criteria-based diagnosis of probable MDD as well as to assess depression severity and monitor response to treatment, and it has been translated into numerous languages and has been validated across a variety of clinical settings and patient populations (Wittkampf et al., 2007).

The PHQ-9 has been used as a screening instrument in people with medical conditions and a pooled meta-analysis of 14 studies with 5026 patients found that it was able to correctly diagnose MDD (sensitivity 92%) and also able to rule out this condition with some certainty (specificity 80%) (Gilbody et al., 2007a). Most studies used as an optimum diagnostic cutpoint a summed score of 10 or more, but there are studies in which the cutpoint was increased to >11 or >12 to obtain optimum specificity (Fann et al., 2005; Gilbody et al., 2007b). For example, in newly diagnosed diabetes patients in a UK primary care setting, a score of ≥ 12 was suggested as the optimal cutoff to avoid misattribution of symptoms of an organic origin to depression (Twist et al., 2013). Conversely, in a study with older adults with diabetes from general practices, the optimal cut-off point for MDD was lowered to 7 (Lamers et al., 2008). A meta-analysis provided further support for varying the cutpoints (Gilbody et al., 2007a).

The PHQ-9 has not yet been validated against a diagnosis of MDD based on a structured clinical interview to establish diagnostic accuracy in people with long-term conditions (LTCs) seeking urgent care in the AED, and therefore it is not known whether a different cutpoint could better identify people with MDD. People with LTCs frequently seek urgent healthcare in the AED (Magid et al., 2004; Tsai et al., 2007), while mental disorders, especially depression, are also associated with greater healthcare utilization and more frequent AED use (Dickens et al., 2012). According to the World Health Organization and World Psychiatric Organization (Graham et al., 2003), depression is still stigmatizing, especially in older age, and it has been argued that depression in people with physical illness is further stigmatizing, as it is usually seen as a consequence of physical illness or as personal weakness (Lamers et al., 2008). This may be particularly true in people with LTCs attending the AED, where the person may feel embarrassed to reveal emotional vulnerability in addition to the physical symptoms. A recent meta-analysis of PHQ-9 validation studies has also reported a remarkable variability in the suggested PHQ-9 cutpoints, with optimal thresholds with acceptable diagnostic properties for detecting MDD ranging from 8 to 11 (Manea et al., 2012). The authors emphasized the importance of using caution when choosing a specific cutpoint, as the same cutpoint might not be appropriate in all settings, and concluded that more studies that report data for a range of cutpoints in various settings are needed. Prompted by these facts, the aim of the present study was to assess the prevalence of MDD based on a structured clinical interview and to estimate the operating characteristics of the PHQ-9 in diagnosing MDD in patients with LTCs attending an AED at a major hospital in Greece.

2. Methods

2.1. Study design and participants

Data were collected during the baseline assessment of the cohort study "Applying effective and Beneficial strategies to REduce unscheduled and urgent VIsits of patients with chronic physical illnesses to Greek Accident and Emergency departments". This ongoing prospective cohort is being carried out in the context of the Greek and the European Union's Operational Program "Education and Lifelong Learning" "ARISTEIA" (EXCELLENCE) under the acronym ABREVIATE, and its main objective is to develop effective psychosocial strategies to reduce the need for frequent unscheduled care in patients with LTCs.

We recruited patients with at least one of three LTCs: diabetes mellitus (DM), chronic inflammatory rheumatic diseases (CIRD), mainly rheumatoid arthritis and spondyloarthropathies, and chronic obstructive pulmonary disease (COPD) who were seeking urgent care at the AED of the University Hospital of Ioannina during an 18-month period (9/2012-3/2014). Our hospital's AED provides 24-h service every other day, and patients were recruited on a consecutive basis during sampling time frames when researchers were in the AED (i.e., from 9.00 a.m. to 11.00 p.m. every day the AED was providing service). Inclusion criteria were age >18 and a diagnosis of DM, CIRD or COPD confirmed by the treating AED clinician. Exclusion criteria were inability to read and write Greek and inability to participate due to an acute psychotic episode, intoxication or confusion, or due to the severity of the medical condition.

Sampling was undertaken by three researchers, two psychiatrists and a clinical psychologist. All patients with DM, CIRD or COPD attending the AED during the sampling period were considered for recruitment. Eligible patients were approached by the researchers, and consenting participants were subsequently interviewed. The interviewers were blind to scores of the self-report questionnaires. All the procedures followed were in accordance with the World Medical Association Helsinki Declaration. The study was approved by the hospital's ethics committee (23/19-09-2012). Signed informed consent was obtained from all participants.

2.2. Study instruments

2.2.1. Patient Health Questionnaire-9 (PHQ-9)

The PHQ-9 rates the frequency of symptoms over the past 2 weeks on a 0–3 Likert-type scale (*not at all* to *nearly every day*) with summed scores ranging from 0 to 27 (Kroenke and Robert, 2002). It contains items derived from the DSM-IV classification system relevant to (1) anhedonia, (2) depressed mood, (3) trouble sleeping, (4) feeling tired, (5) change in appetite, (6) guilt or worthlessness, (7) trouble concentrating, (8) feeling slowed down or restless, and (9) suicidal thoughts. An alternative method of scoring using a "PHQ office diagnostic algorithm" has been also proposed (Spitzer et al., 1999), requiring 5 or more of the 9 depressive symptoms to have been present "more than half the days" in the past 2 weeks and 1 of the symptoms is depressed mood or anhedonia for a diagnosis of MDD. We used the Greek translation of the PHQ-9 (Patient Health Questionnaire (PHQ) Screeners; www.phqscreeners.com), which has been standardized by our research team for use in patients with chronic inflammatory rheumatic diseases attending a tertiary rheumatology clinic, and has showed an optimal cutpoint of 10 for screening for MDD (Hyphantis et al., 2011).

2.2.2. Mini International Neuropsychiatric Interview (MINI) (Greek Version 5.0.0) (Papadimitriou et al., 2004)

The MINI, which was used as the criterion standard to ascertain the presence of MDD, is a structured psychiatric interview that ascertains the diagnosis of mental disorders according to DSM-IV or ICD-10 criteria (Sheehan et al., 1998). It focuses mainly on current diagnoses and contains 120 questions for screening 17 axis I disorders (Sheehan et al., 1997). MINI has been previously used in studies with Greek medical patients (Hyphantis et al., 2011).