General Health Questionnaire (GHQ12 & GHQ28): psychometric properties and factor structure of the scales in a Turkish primary care sample

Abstract
The General Health Questionnaire is a widely used screening instrument. It detects a wide range of psychological disorders, mainly the anxiety/depression spectrum, and has been shown to be a valid and reliable instrument across cultures. This study reports the psychometric properties of the 12- and 28-item versions of the questionnaire among Turkish primary care attenders, focusing mainly on the factor structures. Both questionnaires were found to be reliable and they had factor structures consistent with the original studies.

Introduction
The General Health Questionnaire (GHQ) is successfully used in more than 30 languages throughout the world as a case finder in screening large populations (Goldberg and Williams 1988). It has been translated into Turkish and found to be valid and reliable in primary care attenders (Kılıç 1996a). The majority of studies on the factorial structure of the GHQ28 have confirmed the original four-factor solution (Lobo et al. 1986; Medina-Mora et al. 1983; Romans-Clarkson et al. 1989; Weyerer et al. 1986), which suggests a cross-cultural applicability. There are few studies (Graetz 1991; Worsley and Gribbin 1977; Burvill and Knuiman 1983; Politi et al. 1994; Gureje 1991) that attempt at factor analysing the 12-item version (GHQ12).

The present study investigated the psychometric properties and factor structure of the Turkish versions of the GHQ12 and GHQ28 in a semi-rural primary care setting near Ankara. This study was part of a larger, multicentre WHO collaborative study on "psychological problems in general health care" of which Hacettepe University, Department of Psychiatry in Ankara was one of the sites (Rezaki et al. 1995). The WHO Project on Psychological Problems in General Health Care is a transcultural investigation carried out in 15 settings in Brazil, Chile, Germany, France, Greece, India, Italy, Japan, the Netherlands, Nigeria, People's Republic of China, Turkey, United Kingdom and the United States of America. It was designed to explore forms and rates of psychological disorders presenting in general health care settings in different cultures, to further develop methods for the study of characteristics of such disorders and their course in different settings and to lay scientific groundwork for future international research in the area.

Method
The study was conducted in the primary health care unit of a town near Ankara. All patients attending the primary care unit during the study month (1307 cases) and who were between 15 and 65 years of age were screened using the GHQ12; 400 cases were selected for further investigation by stratified random sampling [all of the high (GHQ > 4) scorers, 35% of the moderate (GHQ = 2 or 3) scorers and 10% of the low (GHQ = 0 or 1) scorers]. The 400 cases were asked to complete the combined version of the GHQ12 and GHQ28 (GHQ34; six items were common to both), along with a comprehensive clinical evaluation (see Rezaki et al. 1995). The GHQs were read aloud to the patients and the responses were recorded by psychologists or psychiatrists trained in the use of the GHQ.
In scoring the GHQ, the four columns ranging from "not at all" to "much more than usual" are coded 0, 1, 2 or 3. An alternative scoring method offered by Goldberg and Williams is the "GHQ scoring method", which transforms the scale into a yes/no scale by recoding 0 and 1 as 0, and 2 and 3 as 1. Since this method gives less normally distributed data, we used this method only in computing GHQ total scores to allow possible comparisons with the literature.

Results

GHQ12

A total of 1307 cases were screened for inclusion in the main study; 869 (66.5%) were female. The mean age was 33.9 (SD 13.5; range 15–65). The mean GHQ12 total score was 1.89 (SD 2.25; range 0–11, yes/no scale type scoring).

Factor analysis (n = 1307)

A principal components analysis with varimax rotation revealed two factors explaining 44% of the variance (Table 2). The first factor (anxiety/depression factor) loaded high on anxiety/depression items and the second factor (social dysfunction factor) loaded high on items related to work and social performance plus one item tapping the overall level of happiness.

Factor analysis in patients selected for further investigation (n = 400)

Factor analysis was repeated for the 400 cases selected for the second interview. The factor structures were almost identical to those of the previous sample.

Sex differences

Women scored higher than men on total GHQ12 scores (means: 1.98 vs 1.71, P < 0.05). Each GHQ12 item was compared to see if any item discriminated between men and women. Of the 12 items, 7 were significantly different between the groups. Women scored higher than men on GHQ1 (lost sleep over worry, P < 0.01), GHQ2 (constant strain, P < 0.05), GHQ7 (overcome difficulties, P < 0.001), GHQ10 (unhappy, P < 0.05), GHQ11 (losing confidence, P < 0.05) and GHQ12 (worthless, P < 0.05). Men scored higher than women on GHQ5 (face up to problems, P < 0.001).

Reliability

The internal consistency of the scale as measured by Cronbach’s alpha was 0.78 (identical to that of a previous study; Kılıç 1996 b). Split-half reliability was found to be 0.78 (Spearman–Brown).

Correlations

GHQ12 scores correlated significantly with the overall health self-rating (r: 0.35, P < 0.001); (Table 1). GHQ12 scores did not correlate with severity of physical disorder [as rated by the general practitioner (GP)] and had a low correlation with severity of psychological disorder (as rated by the GP). Age had a low but significant correlation with severity of physical disorder (r: 0.23, P < 0.001) and had no correlation with either the mean GHQ score or severity of psychological disorder. The correlation between severity of physical and psychological disorder was almost zero.

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Factor analysis in patients selected for further investigation (n = 400)

Factor analysis was repeated for the 400 cases selected for the second interview. The factor structures were almost identical to those of the previous sample.

Sex differences

Women had higher scores than men (means 6.9 vs 5.4, P < 0.05).

Reliability

The internal consistency (alpha) was 0.92 and the Spearman–Brown split-half reliability was 0.84.

Correlations

The correlations of the GHQ28 scores with other variables were very similar to those of the GHQ12 (Table 1). The GHQ28 had a high correlation with overall health rating (patient rated). It did not correlate