GENERAL HEALTH QUESTIONNAIRE -12: PSYCHOMETRIC PROPERTIES AND FACTOR STRUCTURE AMONG INDIAN WOMEN LIVING IN THE UNITED KINGDOM

K.S. JACOB, D. BHUGRA & A.H. MANN

ABSTRACT

The psychometric properties and factor structure of the 12 item General Health Questionnaire used in a sample of women of ethnic Indian origin living in the United Kingdom is described. The Cronbach's alpha was 0.89 and the split half reliability was 0.91. Principal component analysis revealed 2 significant components which accounted for 75.2% of variance. The psychometric properties and factor structure of the Hindi and English versions were similar.

Key words: GHQ, ethnic Indian, women

The General Health Questionnaire (GHQ) (Goldberg, 1972) has been validated in different languages and cultures and in diverse settings (Goldberg & Williams, 1988). The 12 item version, with its ease of administration and validity as a screening measure, has been increasingly employed in recent years in primary care and community settings. However, there are relatively few studies on the psychometric properties and factor structure of the 12 item GHQ (Graetz, 1991; Worsley & Gribbin, 1977; Burvill & Knuiman, 1983; Politi et al., 1994; Gureje, 1991). In these studies two or three factors explained a significant proportion of the variance. Factors associated with anxiety/depression and with social performance were consistently found in all investigations. In a minority of studies a third factor with loading from the item "sleep problem (Burvill & Knuiman, 1983) or from item for "lack of confidence" emerged.

The GHQ has been validated in India in Kannada (Shamsunder et al., 1986) and in Hindi (Gautam et al., 1987). It has also been validated among women of ethnic Indian origin living in the United Kingdom (Jacob et al., 1997). However, these studies examined issues related to validity rather than psychometric properties and factor structure. This paper examines its psychometric properties and factor structure when employed among ethnic Indians living in the United Kingdom.

MATERIAL & METHOD

The GHQ 12 was used to screen for psychiatric morbidity in a study of patterns of consultation and explanatory models of mental illness in a general practice in West London. It was estimated that 70% of the total number of patients registered with the practice were of ethnic Indian origin. A consecutive sample of patients who satisfied the following criteria were recruited: women aged over 16 years, of ethnic Indian origin (Indian subcontinent), resident in the catchment area for one year and conversant in English or Hindi. Individuals with the following characteristics were excluded: a diagnosis of schizophrenia, chronic psychoses,
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organic mental disorder, mental retardation, or the presence of severe language or hearing disability. Patients who consented were administered the GHQ-12. The patients were allowed to choose the language for the questionnaire (English or Hindi). The Hindi version of the GHQ standardized in India was employed (Gautam et al., 1987).

Split half reliability and cronbach's alpha were employed to assess reliability and internal consistency respectively. Principal component analysis with varimax rotation was employed to examine factor structure. The factors which had eigen values of greater than 1 were retained and rotated. Item loadings of greater than 0.5 were considered as contributing significantly to a particular factor. The Likert method of scoring (0-1-2-3) was employed. The responses to the Hindi and English versions were also analysed separately using the same procedures.

RESULTS

One hundred and forty individuals were contacted. 125 completed the GHQ. There were no statistical differences between individuals who consented and those who did not participate on the following variables: age, marital status, religion, occupation and chronic physical illness. The average age of those who participated was 42.2 (s.d. 14.1). The majority had been or were married (59.6%), were housewives (55.2%), had received formal education (82.4%), and followed the Sikh or Hindu faiths (76%).

65 individuals chose Hindi as the language for the interview while 60 preferred English. The choice of language for the interview was not significantly associated with the total GHQ, occupational status or religious beliefs. However, the choice of English was significantly associated with younger age ($t=8.19; d.f.=123; p<.001$), being single ($X^2=11.1; d.f.=1; p<0.001$) and having received formal education ($X^2=15.7; d.f.=1; p<0.001$).

The Cronbach's alpha was 0.89 while the split half reliability (Spearman - Brown) was 0.91. These values suggest high internal consistency and reliability for the instrument.

Principal component analysis was done. Varimax rotation was employed to rotate factors with eigen values greater than 1. Two factors were extracted with eigen values of 5.62 and 1.25 which explained 46.9% and 10.4% of the variance respectively. Table documents the item loadings. Items related to depression/anxiety loaded on Factor I while related to social performance loaded on Factor II.

| GHQ Item                  | Factor I | Factor II |
|--------------------------|----------|-----------|
| Could not concentrate    | 0.28     | 0.70      |
| Lost sleep               | 0.53     | 0.32      |
| Not playing a useful part| 0.15     | 0.72      |
| Could not take decisions | 0.03     | 0.69      |
| Felt under strain        | 0.42     | 0.50      |
| Could not overcome       | 0.67     | 0.41      |
| difficulties              |          |           |
| Not enjoying             | 0.57     | 0.49      |
| Could not face problems  | 0.34     | 0.66      |
| Unhappy and depressed    | 0.78     | 0.26      |
| Lost confidence          | 0.65     | 0.12      |
| Felt worthless           | 0.78     | 0.03      |
| Not feeling happy        | 0.66     | 0.43      |

The data set was subdivided based on the language of the GHQ used and the data reanalysed. The English version had a Cronbach's alpha of 0.90 and a split half reliability (Spearman-Brown) of 0.91. Two factors with eigen values of 6.14 and 1.2 which explained 51.2% and 10.3% of the variance. The item loadings on these factors were similar to
Cronbach's alpha and the split half reliability for the Hindi version were 0.88 and 0.91 respectively. Four factors were extracted on principal component analysis. The first two factors had item loadings similar to that obtained for the whole group. These two factors had eigen values of 5.39 and 1.49 which explained 44.8% and 12.5% of the variance respectively. The additional two factors extracted had eigen values of 1.04 and 1.02 with variance of 8.7% and 8.5% respectively. However, the third factor had only one item ("felt worthless") with a loading of 0.58 but the contribution of this item to the first factor was greater. The fourth factor did not have item loading of greater than 0.5.

DISCUSSION

This study employed standard criteria for factor analysis of the GHQ. The reliability and internal consistency of GHQ in this study was high and compares well with values obtained from other investigations (Goldberg & Williams, 1988; Gureje, 1991; Politi et al., 1994). Similarly, the factor structure of the instrument is remarkably stable. Majority of the studies have resulted in a two factor solution. The two factors which were extracted in this study using principal component analysis were similar to those obtained in other investigations (Goldberg & Williams, 1988; Graetz, 1991; Worsley & Gribbin, 1977; Burvill & Knuiman, 1983; Gureje, 1991; Politi et al., 1994). These factors explained about half the variance in all studies. Although differences in item loadings do exist between investigations they appear to be minor.

Analysis of the Hindi and English versions of the instrument revealed similar results. Although the Hindi version resulted in four factors, the additional factor had very low item loading and are not significant.

The 12 item GHQ has been validated in many different populations. Its sensitivity and specificity for the identification of common mental disorders in different populations (Goldberg & Williams, 1988) including among ethnic Indian in the United Kingdom (Jacob et al., 1977) is high. The ease of administration allows for its use as a screening instrument in primary care and community settings.

It can be concluded that the 12 item GHQ seems to have a stable factor structure when assessed in different populations. It also has high indices for reliability and internal consistency. Its high sensitivity and specificity for the identification of common mental disorders in different population, its ease of administration makes it a valuable tool for screening in community and primary care settings.

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K.S. JACOB, D. BHUGRA*, A.H. MANN, Institute of Psychiatry, Denmark Hill, London SE5 8AF.

*Correspondence