

THE VALIDATION OF THE TAMIL VERSION OF THE 12 ITEM GENERAL HEALTH QUESTIONNAIRE

A.KURUVILLA, M.POTHEN, K.PHILIP, D.BRAGANZA,
A. JOSEPH & K.S.JACOB

ABSTRACT

The 12 item General Health Questionnaire (GHQ-12), increasingly used to screen for common mental disorders (CMD) in primary care, has been validated in different languages and cultures. However, the validity of the Tamil version has not been established. Consecutive patients, attending a primary health care centre in Vellore, rural Tamil Nadu, India, were screened for CMD using the Tamil version of the GHQ-12. The subjects were also interviewed using the Revised Clinical Interview Schedule (CIS-R). The International Classification of Diseases-10: Primary care version (ICD-10 PHC) criteria were used to diagnose CMD. Various thresholds of the GHQ-12 were compared against the standards of the ICD-10 PHC. A receiver operator characteristic curve was drawn to obtain the best threshold value for screening. Principal Component Analysis was done to identify latent variables. The Cronbach's alpha and the split half reliability were also calculated. One hundred and eleven (33%) subjects of the 327 patients interviewed satisfied ICD-10 PHC criteria for CMD. The optimal threshold for the GHQ-12 was 2/3. This threshold had a sensitivity 87.4% and a specificity of 79.2%. Three factors were extracted with eigen values of 5.0 (depression-anxiety), 1.7 (social performance) and 1.1 (self-esteem) which explained 42.0%, 13.9% and 9.2% of the variance. The Cronbach's alpha was 0.86 while the split half-reliability was 0.83. The sensitivity and specificity of the Tamil version of the GHQ-12 is high. The factor structure is similar to that reported in other populations. The instrument can be employed as a screening instrument in this population.

Key words: General health questionnaire, validation, common mental disorders, screening, primary care.

The General Health Questionnaire (GHQ) (Goldberg, 1972; Goldberg & Williams, 1988) is a standardized self report questionnaire used to screen for common mental disorders and has been widely used in primary care. Its main focus is psychological components of ill health. The GHQ has been extensively studied with regard to almost every methodological aspect, ranging from reliability and validity to cross-cultural differences. Versions of different length (12, 18,30) have been validated for use in different languages and cultures and in diverse settings (Goldberg & Williams, 1988). Different methods

of scoring have also been evaluated in detail. Factor analysis of the GHQ produced two factor solutions, which measure anxiety-depression and social performance. The GHQ is also said to be a reasonable measure of change in the severity of psychopathology. The GHQ has also been translated into Kannada (Shamsunder et al., 1986) and Hindi (Gautum et al., 1987).

The 12-item version (GHQ-12) has been widely used in primary care research. It takes 2-3 minutes to complete the questionnaire. The ease of administration and scoring and the high sensitivity and specificity have made it a useful

tool for screening for common mental disorders. Goldberg *et al.* (1997) summarized the data from previous validity studies of the GHQ-12. The threshold score (mode) was 2/3 and had a median sensitivity of 83.7% and a specificity of 79.0%. Gender, age and educational level did not have a significant effect on the validity of the GHQ.

This paper examines the validity of the Tamil version of the GHQ-12 for screening for common mental disorders (CMD) in patients attending primary care in rural Tamil Nadu, India.

MATERIAL AND METHOD

The GHQ-12 and the Revised Clinical Interview Schedule (CIS-R) (Lewis *et al.*, 1992) were initially translated by two health professionals, proficient in Tamil and English, into Tamil. The vernacular version obtained was then back-translated to English by 2 bilingual health professionals. The final Tamil version was arrived at by a consensus decision by all 4 translators with attention being paid to content, semantic, technical and conceptual equivalence of the Tamil version.

Consecutive patients who attended the general health clinic of the Community Health and Development Hospital, Vellore, Tamil Nadu, India, a primary health care centre, were recruited for the study. Informed consent was obtained. Subjects aged over 16 years and who were conversant in Tamil included in the study. Subjects with the following characteristics were excluded: chronic psychosis, organic mental disorders, mental retardation and severe language or hearing impairment.

As a significant proportion of the local population is not literate, the GHQ-12 was verbally administered to all subjects to ensure uniformity [using the recommended procedure (Goldberg & Williams, 1988)]. The subjects were then interviewed using the CIS-R. Algorithms were developed to lead to an International Classification of Diseases-10 Primary Care Version (ICD-10 PHC) diagnosis.

Chi-square test and the student's t test were

used to assess the statistical significance of associations. Thresholds of the GHQ-12 were compared against the standards of the ICD-10 PHC. A receiver operator characteristic curve was drawn to obtain the best threshold value for screening. Principal Component Analysis was done to identify latent variables. The Cronbach's alpha and the split-half reliability were also calculated.

A sample size of 323 was obtained based on the following assumptions: an estimated prevalence of 30% and an estimate of error of $\pm 5\%$.

RESULTS

Three hundred and seventy three subjects were contacted, 358 (96.0%) were screened and 327 subjects (87.7%) consented to the CIS-R interview respectively. Subjects who consented and those who refused did not differ with respect to age and gender. The majority of the subjects who consented were women (66.5%), were married (74.3%), Hindu (81.7%), literate (63.9%) and employed (67.6%). The mean age was 35.29 years (s.d. 14.14).

The mean GHQ score was 2.34 (s.d. 2.59) while the mean CIS-R score was 8.42 (s.d. 9.53). 111 subjects (33%) satisfied ICD-10 PHC criteria for CMD. The thresholds of the GHQ-12 was compared against the standards of the ICD-10 PHC. The sensitivity and specificity values are shown in Table 1. The optimum threshold for screening, obtained using a receiver operator

TABLE 1
SENSITIVITY AND SPECIFICITY FOR
DIFFERENT GHQ THRESHOLDS
AGAINST ICD-10 PHC CRITERIA

Threshold	Sensitivity(%)	Specificity(%)
0/1	94.6	56.9
1/2	90.1	69.9
2/3	87.4	79.2
3/4	73.0	86.6
4/5	55.0	93.5
5/6	32.4	96.3
6/7	17.1	98.6
7/8	12.6	98.6
8/9	8.1	99.1
9/10	2.7	100.0
10/11	0.9	100.0
11/12	0.0	100.0

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TABLE 2
FACTOR LOADING USING PRINCIPAL COMPONENT ANALYSIS VARIMAX ROTATION

GHQ item	Factor-I Anxiety-depression	Factor-II Social performance	Factor-III Self-esteem
Could not concentrate	0.75	-0.06	-0.05
Lost sleep	0.77	0.07	0.16
Not playing a useful part	0.22	0.69	0.09
Could not take decisions	0.08	0.78	1.10
Felt under strain	0.76	0.25	0.18
Could not overcome difficulties	0.11	0.80	0.23
Not enjoying activities	0.59	0.25	0.11
Could not face problems	0.14	0.72	0.18
Unhappy & depressed	0.69	0.25	0.43
Lost confidence	0.27	0.23	0.85
Felt worthless	0.13	0.21	0.92
Not feeling happy	0.64	0.27	0.38
Eigen value	5.00	1.70	1.10
% variance	42.00	13.90	9.20

characteristic curve, was 2/3 (Figure 1). This threshold had a sensitivity 87.4% and a specificity of 79.2%. The positive and negative predictive values, at this threshold, were 68.3% and 92.4% respectively.

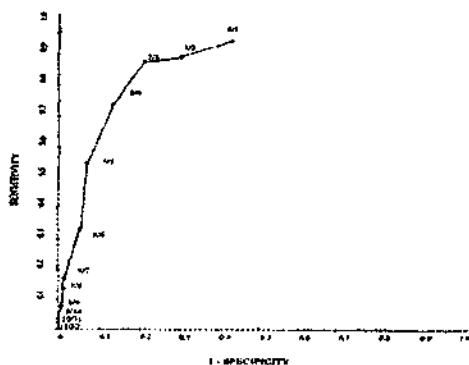


Figure 1 Receiver operating characteristic curve - GHQ-12 threshold against ICD10PC cases

The Cronbach's alpha for the GHQ-12 was 0.86 while the split-half reliability (Spearman Brown) was 0.83. Principal Component Analysis with varimax rotation was done. 3 factors were extracted with eigen values of 5.0, 1.7 and 1.1 which explained 42.0%, 13.9% and 9.2% of the variance (Table 2). Factor I was loaded with items related to depression and anxiety while Factor II had items related to social performance. The item related to self esteem contributed to Factor III.

DISCUSSION

The major issue in translating the GHQ-12 into Tamil was choice of dialect. The Tamil dialects vary from region to region within the state of Tamil Nadu. The local dialect was chosen. The version may require modifications for use in other parts of the state.

There have been several validity studies of the GHQ-12 (Tennant, 1977; Banks, 1983; Radovanovic & Eric, 1983; Mari & Williams, 1985; Shamsunder et al, 1986; Bellantuono et al, 1987; Piccinelli et al., 1993; Jacob et al., 1997a; Goldberg et al., 1997). Goldberg et al. (1997) summarized the data from previous validity studies. The threshold score (mode) was 2/3 and had a sensitivity of 83.7% and a specificity of 79.0%. The results of this study with regard to optimal threshold, sensitivity and specificity are comparable with many previous studies. However, the threshold for screening obtained in this study differed from that found in Bangalore (India) where a cut off of 6/7 was optimal for the Kannada version of the GHQ-12 (Goldberg et al., 1997). The difference emphasizes the need to validate the instrument in different populations.

The reliability and internal consistency of in this study was high and compares well with values obtained from other investigations

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(Goldberg & Williams, 1988; Gureje, 1991; Politi et al. 1994). Similarly, the factor structure of the instrument is remarkably stable. The majority of the studies have resulted in a two-factor solution. The first two factors which were extracted in this study were similar to those obtained from other investigations (Goldberg & Williams, 1988; Graetz, 1991; Worsley & Gribbin, 1977; Burvill & Knuiman, 1983; Gureje, 1991; Politi et al., 1994; Jacob et al., 1997b). These two factors explained about half the variance in all studies. Although differences in item loadings do exist they appear to be minor.

The GHQ-12 has high indices of reliability and internal consistency and a stable factor structure when assessed in different populations. Its high sensitivity and specificity for the identification of CMD and its ease of administration makes it a valuable tool for screening in primary care settings.

Acknowledgements

The study was funded by a research grant (No. 22F576) from the Christian Medical College Hospital, Vellore.

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A.KURUVILLA, MD, M.POTHÉN, DPM, Department of Psychiatry, K.PHILIP, FRANZCGP, Department of Community Health, D.BRAGANZA, MD, DPM, Department of Psychiatry, A.JOSEPH, MD, MS (Epid), Department of Community Health, K.S.JACOB*, MD, PhD, Department of Psychiatry, Christian Medical College, Vellore 632002

*Correspondence