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## Standardization Of GHQ-28 Inventory On The Students Of Azerbaijan Province Of Iran

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### Abstract

The aim of this research was to investigate of the psychometric characteristics of GHQ-28 inventory in the base of classical model for use in the various situations. The subjects of this research were 773 students that selected by cluster random sampling from Azerbaijan universities of Iran. The results of this research indicated that GHQ-28's scales have high correlations with SCL-90-R, and also total scores of GHQ-28 have a high correlation with GSI of SCL-90-R. The results suggest that GHQ-28 and four subscales of this inventory have a high reliability factor analysis indicated that this inventory, after omission of 14 items, was saturated with 4 factors. At least between the scores male and female students, with the exception of Somatization scale, in the other three scales significant differences were found. But with the use of 0-0-1-1 scoring method, only in the social dysfunction scale a significant difference was found.

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### 1. Introduction

Students may be at particular risk of mental ill-health, as several studies have noted significantly worse psychological health among this population than general population norms (Webb et al., 1996; Roberts et al., 1999; Stewart-Browne et al., 2000; Roberts & Zelenyanski, 2002). Recent research also indicates that there has been an increase in the absolute rate of mental ill-health and psychiatric disorders in children, adolescents and young adults (Connell et al., 2007; Singleton et al., 2001).

Symptoms are central in psychiatry because they can be assessed more reliably than many other theoretical constructs. While there are many different theoretical orientations within modern psychiatry, clinicians and researchers can generally agree on how the disorders look like (Williams 1988). To put it in other words, clinicians

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and researchers can more or less reliably agree on what symptoms and signs are present in individual patients (Holey, 2003).

There are considerable advantages to developing adequate screening instruments for evaluating mental health, that could be used in different cultural environments. General Health Questionnaire (GHQ) is one of these important questionnaires for assessing mental state symptoms and signs. GHQ is a semi-structured psychiatric screening interview designed for the detection of emotional disorders in community surveys. Its original version with 60 questions explored somatic, depressive anxiety and sleeping disorders and social disabilities (Goldberg, 1972).

Goldberg's original idea was to develop a questionnaire that would allow for distinguishing patients suffering from psychiatric problems from those in good mental health. Two aspects of a psychiatric episode are measured: the inability to pursue normal functions of daily living and the appearance of new symptoms that lead to a state of psychological distress. According to Goldberg, the GHQ allows for estimating the prevalence of psychological distress in a given population and, in general medicine, it allows for detecting cases of potential psychiatric problems that would otherwise escape detection by the physician. In this questionnaire, patients assessed their state in the past weeks by comparing it with their usual state. This approach makes the GHQ sensitive to transitory states and allows for detecting an aggravation of the patient's situation. The tool is, thus, not designed to detect long-standing phenomena (Richard, Lussier, Gagnon and Lamarche, 2004). It has gained widespread acceptance for its brevity, ease of administration and acceptability to the user. The instrument examines functioning in two main areas, firstly of one's ability to carry out one's usual healthy activities, and secondly of the recent development of subjective symptoms of psychological distress (Goldberg and Williams, 1988).

A number of different versions of the instrument exist, ranging in size from 12 to 60 items, each of which is scored on a 4 point Likert-type scale of severity or alternatively according to a 0-0-1- 1 system described by the authors as being the most useful in identifying psychiatric 'caseness'. The 28-item version of the GHQ is the only version that provides subscale measures of more specific domains of psychopathology (Goldberg and Hillier, 1979).

As well as the global score, there are four subscales consisting of 7 items in each case, which are labeled Severe depression, Anxiety and insomnia, Somatization and Social dysfunction (Gibbons, de Arévalo, and Mónico 2003). The item content of these subscales was selected so as to maximize the differentiation of anxiety from depression. Validation of the subscales against a structured clinical interview has revealed that the Anxiety and insomnia and the Severe depression subscales both correlated equally with interview ratings of anxiety and depression, though the Somatization subscale correlated less well with interview rating of the same domain (Goldberg and Williams, 1988). The GHQ has been translated into 38 languages, and has been studied in a wide range of cultural settings, described in over 700 articles currently listed in the 'Medline' database of medical journals maintained by the National Library of Medicine of the United States. Factor analysis of GHQ-28 data from 15 different cultural and linguistic settings worldwide has confirmed the stability of the Severe depression and Social dysfunction subscales, though indicating significant overlap of the Anxiety and insomnia and Somatic symptom domains (Werneke et al., 2000). The Spanish language version of the GHQ has received relatively little research attention outside of Spain and is not cited in any previous study from Central America, despite the fact that the overwhelming majority of Spanish speakers live in Latin America and the USA (Gibbons, de Arévalo, and Mónico 2003). Also factor analysis of GHQ-28 data from 15 different cultural and linguistic settings worldwide has confirmed the stability of the Severe depression and Social dysfunction subscales, though indicating significant overlap of the Anxiety and insomnia and Somatic symptoms domains (Werneke et al., 2000).

It was therefore deemed opportune to make the present effort to test whether GHQ-28 retained its usefulness as a screening instrument in a Persian version on academic students.

## **2. Methodology**

The present study is an exploratory one, which has been conducted on the basis of classic psychometric model in which the features of questionnaire GHQ - 28 including reliability and validity have been studied over the students of East Azerbaijan. By using the clustering sampling method, 771 students (324 male and 449 female) were selected as the sample and the GHQ - 28 questionnaire was administered to them. The statistical methods for standardization

and evaluation of the psychometric features of GHQ-28 that were used in this study are: 1. The reliability coefficient of the questionnaire, by using the internal consistency method (Cronbach's Alpha), 2. To study Component factors, the principal component analysis method (PC) was used, and 3. Finally, to estimate the validity through criteria validity, the correlation between the scores of GHQ-28 and SCL-90-R scales were used.

### 3. Results

To study the reliability of the GHQ-28, the Internal Consistency Method was used and for each of the four scales, a separate internal consistency (Cronbach's Alpha) was calculated.

Table 1. The Internal Consistency (Cronbach's Alpha) Calculated For Each of Four Scales and The Questionnaire of GHQ-28

Scales of GHQ-28	Cronbach's Alpha for male students	Cronbach's Alpha for female students	Cronbach's Alpha for all of students
somatization	0.78	0.78	0.78
anxiety and insomnia	0.64	0.6	0.61
social dysfunction	0.61	0.59	0.6
severe depression	0.84	0.85	0.84
All items of GHQ-28	0.87	0.87	0.87

To study the validity, two factors and criteria related validity analyses were used. Both of the questionnaires were administrated on 39 students simultaneously and the correlation between the scales of GHQ-28 with SCL-90-R were calculated (table 2).

Table 2. Correlation Between The Scales GHQ-28 with SCL-90-R

	GSI	Poh.	Par.	Psy.	Agr.	Anx.	Dep.	Son.	Obs.	Som.
Somatization	.599*	-	-	.602*	.466*	.597*	.559*	.37**	.473*	.702*
anxiety and insomnia	.759*	.395**	.559*	.593*	.687*	.755*	.754*	.698*	.638*	.483*
social dysfunction	.512*	.391**	.375**	.44*	.517*	.483**	.427*	.487*	.43*	.377**
severe depression	.741*	.49*	.467*	.69*	.609*	.718*	.781*	.742*	.611*	.397**
All items of GHQ_28	.82*	.489*	.532*	.726*	.711*	.803*	.799*	.722*	.675*	.606*

\*correlation is significant at the level of 0.01 \*\*correlation is significant at the level of 0.05

Ultimately, for calculating of the construct, the factor analysis method was used. For this purpose two measurement indices, KOM and Bartlett's Test, were performed (table 3).

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.916
Bartlett's Test of Sphericity	Approx. Chi-Square
	7405.740
	df.
	351
	Sig.
	.000

According to table 3, the value of KOM is higher than 0.9 and Bartlett's Test is significant ( $P < .001$ ). Then with regard to the above mentioned criteria the factor analysis on the basis of matrix, the obtained correlation in the sample group is justifiable. Of course the three main indices, of special value, the ratio of determining variance by each factor and the diagram of the special rotated values called screen have been attended to.

The early analysis results of the main components showed that the item 14 had the least factorial loading equal to 0.255 and the item 20 had the factorial loading equal to 0.343 and the item 28 had the most factorial loading equal to 0.715. The obtained factors show that the special value of 5 factors is larger than 1 and the clarification degree of the common variance among the variables for 5 factors altogether is %51.905 of the total variance of variables. Then the item 14 was omitted and from the total remaining 27 items, four factors were extracted. This clarifies %44.37 of the total variance. The first, second, third and fourth factors each clarify 13.469, 12.527, 12.43 and 10.944 from the variance respectively. With regard to rotate factorial matrix of the test with Varemmax on the basis of four factors, the table 4 has been obtained.

Table 4. Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.713	28.567	28.567	7.713	28.567	28.567	3.637	13.469	13.469
2	2.784	10.312	38.879	2.784	10.312	38.879	3.382	12.527	25.996
3	1.632	6.043	44.922	1.632	6.043	44.922	3.357	12.433	38.429
4	1.202	4.451	49.373	1.202	4.451	49.373	2.955	10.944	49.373

Extraction Method: Principal Component Analysis.

On the basis of the matrix structure of the factors 2 and 4 and also item 4 has loaded in factors 1 and 4 and the items 5, 6, 7 and 11 have loading in factors 3 and 4 and the items 13, 23, 20 and 27 have a loading and complexity of factors 1 and 3. The rest of the items have loading only in one factor. To show the correlation between the principal factors, the correlation between the four factors was calculated (table 5).

Table 5. Correlation Between The Principal Factors

Scales of GHQ-28	Severe depression	Anxiety and insomnia	Social dysfunction
Anxiety and insomnia	0.589*	-	-
Social dysfunction	0.318*	0.256*	-
Severe depression	0.542*	0.591*	0.322*

\*correlation is significant at the level of 0.01

To test the hypothesis that there is a difference between the scores of male and female students in GHQ-28, the statistical t-test of independent groups was used. The statistical results showed that the scores of two groups in the scales of social dysfunction, severe depression, and Somatization and total scores were significant differences ( $p < .01$ , df. 771), but in the scale of anxiety and insomnia, the difference was not significant.

#### 4. Discussion

With regard to the fact that the general health questionnaire (GHQ-28) has a wide spread application, it used to as a screening and research tool. In Iran two researches have been done on the psychometric features of it in a wide

range, and no specified study has been done on the Azerbaijani students who enjoy special cultural characteristics. The psychometric features and standardization of the above-mentioned tool was studied in the mentioned statistical population. On the basis of the obtained results, four factors from the factorial analysis results were identified from this study. Which were named as somatization, anxiety and insomnia, social dysfunction and severe depression with regard to research literature and this is in line with the results of Gibbons and et al (2004) and Asgari (2006), both of which have identified four factors. With regard to internal consistency (Cronbach's Alpha), it showed that each of the four scales and the total test have an appropriate reliability. The least reliability was in the scale of social dysfunction equal to .598, and the highest one for severe depression equal to .84, and for the total test it was .873, and these results were almost equal to the results obtained from the Gibbons study and Cronbach's Alpha for the total test was almost the same, but for the other four scales, the obtained results from this study were in low level. In the comparison the obtained results from the reliability of Cronbach's Alpha and the comparison of these values in females and male students except for the scale of social dysfunction which the reliability of male group is higher than that of the female group, in the other comparison, the obtained reliability in both groups is the same. The results obtained by Asgari (2006) have shown that the reliability indices in male group are higher than the female one. On the basis of the results obtained from Gibbon and et al (2004), all the 28 items were kept in the principal structure of the questionnaire, but in this study item 14 was omitted as an inappropriate one. The comparison results of the scores of the male and female group showed that there was no significant difference in the scale of anxiety and insomnia, but between the scores of the two groups there were significant difference differences between in the other three scales and the total grades. Thus GHQ-28 inventory has a relevant reliability and validity for various situations.

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