

## Reliability and Validity of the Kurdish version of General Health Questionnaire (K-GHQ)

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### Abstract

General Health Questionnaire has been used for screening of mental health in many countries but, the valid and reliable Kurdish version of this questionnaire is not available. Therefore, this study aimed to determine the validity and reliability of the Kurdish GHQ-28. The sample consists of 156 students selected by multistage cluster sampling among the students of Garmian University in 2018-19 academic years. First, the GHQ successfully translated into Kurdish and back translated into English by independent professional bilingual translators. After investigating and approving the validity and reliability of this version in a small group of 50 students from the research population, the final version was prepared for data collection. The result of investigating reliability using the test-retest (0.88), split-half (0.89) and Cronbach's alpha (0.82), showed that the K-GHQ has adequate reliability. The validity was evaluated using the concurrent reliability of K-GHQ and Pittsburgh Sleep Quality Index. Results showed that the correlation coefficient was significant ( $r=0.77$ ,  $p<0.01$ ). Also, the correlations between the global score with subscales of K-GHQ were all statistically significant ( $r=0.51-0.88$ ,  $p < 0.01$ ). It was concluded that the Kurdish version of General Health Questionnaire is a valid and reliable tool for screening mental Health in Kurdish communities.

### Introduction

General Health Questionnaire (GHQ) is a self-administered questionnaire with multidimensional nature, designed to examine non-psychotic disorders in different community settings. It can be used for adolescents and adults of any age to discover the disability in normal people, and to investigate the disturbing events in life. However, GHQ does not have a diagnostic aspect, and only used for screening people in acute conditions (Goldberg & Hillier 1979).

It is also widely used internationally and in the Middle East to measure mental health status especially in detection of emotional disturbances such as distress (Jackson, 2007; Montazeri, Harrichi, Shariati and et al, 2003). This questionnaire was first designed by Goldberg in 1972. The main form of the questionnaire involved 60 questions but, as needed, the shorter versions with 28, 12 and 30 questions were gradually designed and used (Goldberg & Williams, 1988). According to literature, the version with 28 items has been more valid and sensitive (Banles, 1983; Sterling, 2011). Ever since Goldberg introduced the GHQ in 1978, it has been translated into 38 different languages, testimony to validity and reliability of the questionnaire (Jackson, 2007). Reliability coefficients of the questionnaire ranged from 0.78 to 0.95 in various studies.

Goldberg reported that the average area under the ROC curve was 0.88, range from 0.83 to 0.95, which reflect its validity (cited in Yusoff, 2010).

Though GHQ is well-known and used in many studies around the world, if this tool used in a non-English speaking country for the first time, it is necessary to investigate the validity and reliability of translated version. Validity generally is defined as to what extent the measurement measures what it should measure, whereas reliability generally is defined as consistency or reproducibility of measurement over time or occasions (Indrayan, Satyanarayana, 2006; Downing, 2004).

In many countries, investigation of validity and reliability has been carried out and after studying the validity and reliability of translated questionnaire, it has been used in many studies, for example Nazifi, Mokarami, Akbaritabar and et al (2013), investigated the reliability, validity and factor structure of the Persian translation of GHQ in Hospitals of Kerman University of Medical Sciences. According to the evidence of this research this questionnaire has an appropriate internal consistency and an adequate validity for the assessment of general health in this sample. In another study Kim, Maeng, Park and et al, (2013) conducted a study to determine the thresholds associated with optimum sensitivity and specificity for the GHQ in a sample of 6,510 Korean adults. This study showed that the Korean version of the GHQ could be used to screen for individuals at high risk of mental disorders, namely mood and anxiety disorders.

Zulkefly (2010) in a study on students investigated the reliability and factor structure of the GHQ in Malay language. The findings of the study affirm that the Malay version of GHQ is a good measure for assessing the overall psychological well-being of students in Malaysia. [Salama-Younes](#), [Montazeri](#), [Ismail](#), and [Roncin](#) (2009) in another study on a French sample, investigated the factor structure and internal consistency of GHQ and the Subjective Vitality Scale (VS) in elderly French people. The results showed that the French versions of GHQ and the Subjective Vitality Scale (VS) are reliable measures of psychological distress and vitality. In another study reliability, validity, and factor structure of the Arabic version of GHQ was investigated by [Daradkeh](#), [Ghubash](#), [el-Rufaie](#) (2001) in a sample of 157 university students. Results showed that Arabic General Health Questionnaire was a reliable and valid screening tool in university settings.

Considering the fact that this questionnaire has not yet been translated into Kurdish and its psychometric properties have not been investigated, the purpose of this study was to translate and evaluate the validity and reliability of Kurdish version of GHQ.

## Methodology

- Study design and Participants

In this cross-sectional study, the psychometric properties of Kurdish version of GHQ has been investigated in order to develop a reliable Kurdish version of the GHQ for assessment of mental health status of students in Garmian University.

Sample consists of 200 students studying at the different college at Garmian University in academic year 2018-2019. University of Garmian is a non-profit public higher education institution located in the suburban setting of the large town of Kalar with a population of more than 250,000 inhabitants. More than 5000 undergraduate and graduate students enrolled during academic year of 2018-2019 in the university. Sample was selected using multistage cluster

sampling method from five colleges at the Garmian University. The few cases where either the GHQ-28 was missing in its entirety, or did not contain at least one intact subscale were excluded and finally the study completed by participation of 156 students. The number and demographic characteristics of the sample present in table 1.

Table 1: demographic characteristics of the sample

Variable		Frequency	Percent
Colleges	College of Education	50	32.1
	College of Basic Education	36	23.1
	College of Sciences	30	19.2
	College of Agriculture	19	12.2
	College of Literature and Human sciences	21	13.5
	Total	156	100
Stage	First	42	26.9
	Second	44	28.2
	Third	34	21.8
	Fourth	36	23.1
Gender	Female	82	52.6
	Male	74	47.4

- Translation process

The translation process was performed according to a standard methodology and Functional Assessment of Chronic Illness Therapy translation methodology ( FACIT)( Manzar MD, Moiz JA, Zannat, 2007). First, the GHQ was translated into Kurdish by two independent Kurdish-English bilingual, and then the two versions were revised and aggregated by researcher and sent to back translation process. Another two independent bilingual translators who did not have access to the original English version conducted a reverse translation from Kurdish into English and the two versions aggregated by the first translators. The Kurdish translation and back-translation critically analyzed and compared with the original English version through a committee consist of a psychologist, psychiatrist, and English and Kurdish language professors, all fluent in both languages. After approval of the final version of the GHQ, a pilot study was conducted on 50 subjects to assess reliability via Cronbach's Alpha (0.78), and then final version of K-GHQ prepared for assessment.

- Instruments and variables

GHQ has four versions based on the number of items; GHQ-60, GHQ-30, GHQ-28 and the shortest version GHQ-12. The questionnaire asked whether the respondent had experienced a particular symptom or behavior recently, and each item was rated on a set of four response options (less than usual, no more than usual, rather more than usual, or much more than usual)(Endsley, Weobong, and Nadkarni, 2017). There are two recommended methods for scoring the GHQ. The first scoring method ranges from 0 to 3 respectively: with the least symptomatic answer scores 0 and the most symptomatic answer scores 3. The second scoring method, also known as binary method, ranges from 0 to 1: with the two least symptomatic

answers score 0 and the two most symptomatic answers score 1. Through factor analysis, the GHQ-28 has been divided into four subscales, which are somatic symptoms (items 1–7); anxiety/insomnia (items 8–14); social dysfunction (items 15–21), and depression (items 22–28) (Sterling, 2011). In this study The Likert method of scoring from 0 to 3 was used then, the scale ranging from 0 to 84.

- Statistical analysis

After collecting main data, all analyzed using spss22. Cronbach's  $\alpha$  coefficient was calculated to examine PSQI global score and components inter-item internal consistency. To examine test-retest reliability and correlation of GHQ global scores with subscale Pearson was used.

## Results

- Descriptive findings

Totally 151 student from 5 college of Garmian University participated in this study between May 2018 and December 2018. From them 35.1% were from College of Educational, 23.1% College of Basic Education, 19.2% College of Sciences, 12.2 College of Agriculture, and 13.5% College of Literature and Human sciences. Females were 52.6 percent and male 47.4 percent of sample. 26.1 were first stage, 28.1 second stage, 21.8 third and 23.1 were fourth students.

- Reliability analysis:

Reliability of K-GHQ was investigated using three methods, internal consistency, test-retest and split-half. In order to assess the internal consistency of the questionnaire, the Cronbach's alpha was calculated. Based on its results, Cronbach's alpha value for the global score was 0.82, and for the sub-scales of somatic symptoms, anxiety/insomnia, social dysfunction and severe depression were 0.77, 0.75, 0.74 and 0.78 respectively which was desirable and significant ( $p < 0.001$ ).

Test-retest analysis: About 33 percent of healthy samples selected randomly ( $N=52$ ) and completed K-GHQ after 4 weeks. There was a significant strong correlation between test and retest scores analyzed by Pearson correlation coefficient for global scores and all four subscales (somatic symptoms = 0.88, anxiety/insomnia = 0.74, social dysfunction = 0.89 severe depression = 0.82 and global scores=0.88,  $p < 0.01$ ).

For Split-half, questions were divided into two parts, (Paired and odd questions) then, the scores of the subjects were calculated in each section and finally corrected correlation coefficient of Spearman-Brown was calculated for two halves. The correlation coefficient for global score was 0.89. The correlations between two halves of K-GHQ were all statistically significant ( $p < 0.05$ )

- Validity analysis:

One way of validity analysis is investigation of Criterion validity. For investigating criterion validity correlation between PSQI scores (global and 7 components) and GHQ28 global score were analyzed by Person correlation coefficient. The results of Person correlation coefficient presented in table 2.

Table 2. Person correlation coefficient between GHQ28 and components of PSQI

	C1 (sleep quality)	C2 (sleep latency)	C3 (sleep duration)	C4 (habitual sleep efficiency)	C5 (sleep disturbances)	C6 (use of sleeping medication)	C7 (daytime dysfunction)	PSQI
GHQ	.62*	.25*	.41*	.53*	.55*	.59*	.47*	.77*

As it is clear in Table 2, the correlations between global score and seven components of PSQI with GHQ28 were all statistically significant ( $r=0.25-0.77$ ,  $p < 0.05$ )

Correlation of the sub-scales with each other and with the global score :One of the methods for determining the structural validity in each test is the existence of an appropriate correlation between the sub-scales with each other and with the global score of the test. Therefore, the internal correlation of 4 sub-scales of K-GHQ with each other and the global score were calculated, the results are presented in Table 3.

Table 3: Inter-Item Correlation Matrix of sub-scales and global scores

	somatic symptoms	anxiety/insomnia	social dysfunction	severe depression
anxiety/insomnia	.522*			
social dysfunction	.533*	.747*		
severe depression	.515*	.662*	.702*	
Global score	.756*	.873*	.885*	.857*

According to ta results there were statistically significant Correlation between all sub-scales and global scores at the 0.01 level (2-tailed).

### Discussion and conclusion

Current study aims to translate and validate the Kurdish version of GHQ in order to preparing the appropriate tools for measuring the mental health of people in the Kurdish community. This questionnaire has been widely accepted for several reasons such as being easy to use, as its items are simple, objectivity, as there are due to daily life, and appropriate psychometric properties, according to different researches, so it has so far been used in several countries.

Results indicated an appropriate internal consistency in the pilot and main study for global score and its sub-scales. This implies to adequate internal consistency of K-GHQ. Many studies report appropriate internal consistency for different translated GHQ in other countries for example the studies of Kashyap, Singh, 2017; Nazifi, Mokarami, Akbaritabar and et al (2013); Akbaritabar and et al (2013); Zulkefly (2010) and [Salama-Younes](#), [Montazeri](#), [Ismail](#), and [Roncin](#) (2009) all showed appropriate internal consistency of different translation of GHQ. Of course, in some of

these studies, the alpha coefficient was reported only for the global score, but in the present study, this coefficient was calculated for all subscales too.

High internal consistency in subscales and total score does not mean that all translated questions and subscales are psychologically acceptable, so it is needed to more analysis them. One of the methods of doing this work is to investigate the correlation of each of the subscales with the global score. Therefore, this analysis was carried out in the present study and the results showed that the questions of the subscales had an acceptable correlation with the total score and each other.

The correlation of retest with Pearson coefficient shows strong correlation and indicate good reliability of GHQ among participants. This finding is in agreement with other studies too. Although some of this studies examined differebt version of GHQ (Namjooa , Shagaghia , Sarbaksh, and et al, 2016; Gibbons, de Arévalo, and Mónico, 2004; Taghavi, 2001; [Daradkeh, Ghubash, el-Rufaie](#), 2001). The results of Split-half analysis showed fignifigant correlation between two halves and was very closed to the results of Goldberg and William (1997) and Taqavie (2001) study which showed 0.93 split-half reliability.

In order to evaluate the validity of the questionnaire, Criterion validity was investigated using correlation between PSQI scores (global and 7 components) and GHQ28 global score by Person correlation coefficient. The results showed that there is a significant correlation between mental health scores and Pittsburgh Sleep Quality Index. As a result of current validity of this questionnaire was approved. This result was agreed with the results of the Keshavarz-Akhlaqi AA, Ghalebandi, (2009) and Nazifi, mokarami, an et al (2013).

In the present study due to the time limitation of respondents, it was not possible to use other variables for the study of simultaneous validity. In addition, due to the limited availability of Kurdish tools, it was not possible to use a tool other than Pittsburgh's sleep quality. Also, due to time constraints, factor analysis was not performed in this study, and sampling was performed only by university students who were considered as a healthy sample. Selecting various samples more analysis for future research is recommended.

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