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The Kessler Psychological Distress Scale (K6) as a Screening Instrument: a Study of Iranian University Students

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Abstract

The Kessler Psychological Distress Scale (K6) provides a brief diagnostic measure for psychological distress. The aim of the present study was to study the validity and usefulness of the K6 as a screening instrument for psychiatric problems in a non-clinical sample of Iranian university students. A convenience sample of 157 Iranian volunteer students was selected from the Medical School in the Iran University of Medical Sciences. The students completed the K6 Scale and the Symptom Checklist 90 Revised (SCL-90-R). The mean score for the K6 was 9.39 (SD=5.48). Cronbach's α was 0.87. K6 scores correlated 0.62 with the SCL-90-R Anxiety score (ANX), and 0.77 with the Depression score (DEP). K6 items loaded on a single factor labeled: Psychological Distress. The K6, therefore, had adequate psychometric properties and appears to be useful for screening non-clinical samples for the presence of psychiatric problems.

Keywords: Psychological well-being; Psychological distress; Validation; K6; Students

Introduction

The task of screening people for psychological distress has grown in importance in recent years. Suicides by university students and employees in major companies become front-page news, and institutions are increasingly considering screening all newcomers for signs of psychological distress. October 18, 2018 was the 24th annual National Depression Screening Day in the USA. In 2017, the University of California in Los Angeles (UCLA) offered depression screening for all incoming students[1]. However, there are many symptoms other than depression, such as anxiety, and there may be more value in a more general screening scale.

Anxiety and mood disorders are common psychiatric disorders in the world. Major depression is a commonly occurring and burdensome disorder [1]. Kessler, Sampson, Berglund, Gruber, et al reported that patterns and correlates of comorbid DSM-IV anxiety disorders among people with DSM-IV major depression disorder (MMD) are similar across World Mental Health (WMH) countries [2]. Kessler and Bromet [3], Al-Hamzawi, Bruffaerts, Bromet, AlKhafaji and Kessler [4] indicated that major depressive episode is associated with considerable disability and low treatment in general population.

Positive psychology is concerned with the construct of psychological well-being. Two features of psychological well-being are a sense of control and supportive social relationships. Psychological well-being is negatively associated with psychological distress [5-6]. Psychological well-being and psychological distress can be viewed as two complementary states of mental health, and a reduction of psychological distress can improve mental health [7]. Psychological distress is a state of emotional turbulence manifested by depressive and anxiety symptoms [8], and has an impact at both cognitive and behavioral levels [9-10]. According to Stress Distress Model, psychological distress is a negative construct. This concept is influenced on physical and mental health, as well as coping with the distress [11-14].

Raza, Yousaf, and Rasheed [15] found that psychological distress was negatively associated with psychological well-being in Pakistani Muslim undergraduates and graduates, and female students had significantly higher scores on a measure of psychological distress than did males. In contrast, Kawa and Shafi [16] found that Indian male students had higher psychological distress scores than did females. Gyawali, Choulagai, Paneru, Ahmad, et al [17] reported that psychological distress symptoms correlated with demographic, behavioral, and psychosocial variables in Nepali patients with substance use disorders, and female patients reported more psychological distress than did male patients. A national mental health survey in Australia [18] found that university students reported high levels of psychological distress (9.2% did so), and female students reported more psychological distress than did male students (10.4% vs. 7.1%).

Psychological distress has been investigated in many studies using the Kessler Psychological Distress screening Scale (K6). The K6 is a short rating scale developed to identify persons at risk for mood disorder [19-21]. The K6, as a broader screening instrument, has advantages compared to the General Health Questionnaire-12 (GHQ-12), and the Patient Health Questionnaire-9 (PHQ-9) [17] because the K6 can predict mood and anxiety disorders in psychiatric patients [22-25]. The aim of the present study was to study usefulness of the K6 in predicting depression and anxiety in non-clinical samples

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of university students.

Materials and Methods

Subjects

A convenience sample of 157 Iranian students was selected from Medical School at the Iran University of Medical Sciences in Tehran. Their mean age was 25.48 years (SD=8.04); 61.5% of them were male; 51.9% had a BA degree, 18.6% an MSc degree and 22.4% were at the basic level. They completed the Farsi versions of the Kessler Psychological Distress scale-6 (K6), and the Symptom Checklist 90 Revised (SCL-90-R) in individual sessions. The study obtained ethics approval from the Research Ethics Committee. The students completed informed consent forms. Confidentiality was assured, and student's anonymity was maintained.

Measures

The Kessler Psychological Distress Scale-6 (K6): The K6 is a shorter version of the Kessler Psychological Distress Scale-10 (K10). It measures general distress in the preceding month [26]. The K6 has two formats: an interviewer-administered format and a self-report format. The K6 has been translated for use into Arabic, Chinese, Dutch, French, Hebrew, Italian, Japanese, Nepali, Sinhalese and Spanish. The items measure whether the respondent feels nervous, hopeless, restless, jumpy, sad, and worthless. Each item of the K6 is answered on a 5-point Likert-type scale: None of the time (0); A little of the time (1); Some of the time (2); Most of the time (3), and All of the time (4). The total score ranges from 0-24 [22, 27-28]. Krynen, et al [19] indicated that the K6 had good psychometric properties in Pacific, Asian, Māori, and Pākehā/European peoples in New Zealand. The correlations K6 with the K10 score was r=0.89 in college students [23, 27]. A typical item is "During the last 30 days, about how often did you feel hopeless?"

Symptom Checklist 90 Revised (SCL-90-R): The initial form of the Symptom Checklist 90 (SCL-90) was designed by [29] to measure different psychological aspects of physical and mental illnesses. The SCL-90-R [30] has 90 items and nine subscales: Somatization (SOM), Obsessive-Compulsive (O-C), Interpersonal Sensitivity (INTS), Depression (DEP), Anxiety (ANX), Hostility (HOS), Phobic Anxiety (PHOB), Paranoid Ideation (PAR), and Psychoticism (PSY). It includes additional items from the Global Severity Index (GSI), the Positive Symptoms Distress Index (PSDI), and the Positive Symptoms Total (PST). Each item of the Checklist is rated on a four-point scale: (0) not at all, (1) little, (2) some, (3) very, (4) severe. The score for the SCL-90-R is calculated by dividing the total score by 90, and ranges from 0 to 4. Scores higher than 2 indicate psychopathology [31]. The SCL-90-R has been validated in Iran [32,33], and the Cronbachalphas ranged between 0.70 and 0.97, and test-retest reliability 0.78 to 0.90 [34]. A typical item is "The idea that someone else can control my thoughts."

Procedure

Approval was obtained from the Research Ethics Committee before data collection began. All procedures performed in studies involving human participants were in accordance with the ethical standards of the Research Ethics Committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Participants completed an informed consent form and were assured of confidentiality and anonymity. Participants first answered a demographic questionnaire, followed by the Farsi versions of the K6 and the Symptom Checklist 90 Revised (SCL-90-R) in individual sessions. Only participants with complete data were included for analysis.

Statistical analyses

All statistical analyses were performed using SPSS 23.0.

Results

The mean score on the K6 was 9.39 (SD=5.48). The lowest mean item score was 1.17 (SD=1.31) for item 6, and the highest mean item score was 1.82 (SD=1.21) for item 5 (See Table 1).

The Cronbach's α for the K6 was 0.87. The inter-correlations between the items ranged from 0.24 to 0.74, and the item-total correlations ranged from 0.56 to 0.88 (See Tables 2 & 3).

The K6 correlated 0.62 with the SCL-90-R subscale of Anxiety (ANX) and 0.77 with the SCL-90-R subscale of Depression (DEP) (See Table 4).

The criteria for a factor analysis were evaluated using the Kaiser-Meyer- Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity. The KMO was 0.859, indicating the adequacy of the sample, and Bartlett's Test of Sphericity (504.160, df=15, p<.001) indicated that the factor analysis was justified. To investigate the factor structure of the scale, a Principal Component Analysis with a Varimax rotation and Kaiser Normalization were used. One component with eigenvalues greater than one was extracted labeled Psychological Distress and had an eigenvalue of 3.748, and explained 62.46% of variance (See Table 5).

Discussion

The K6 had good internal consistency in the present sample. A single component was identified for the K6, labeled Psychological Distress. The correlations between the K6 scores and other scale scores were high for Depression (DEP), and moderate for Anxiety (ANX). Thus, it appears that the K6 is appropriate for assessing depressive and anxiety symptoms in the sample, and may be a useful

Table 1: Means and SDs of the K-6 items and total score.

(Kessler Psychological Distress Scale) Item	Mean	SD
Nervous	1.68	1
Hopeless	1.61	1.2
Restless or Fidgety	1.63	1.1
Depression	1.46	1.2
Everything was an effort	1.82	1.2
Worthless	1.17	1.3
Total score	9.39	5.5

Table 2: Descriptive statistics for the scales.

Scales	Mean	SD	Cronbach's α
Kessler Psychological Distress Scale-6	9.39	5.48	0.87
SCL-90-R subscales			
Anxiety (ANX)	5	4.16	0.89
Depression (DEP)	15.81	12.17	0.91

Table 3: Inter-correlations between items and with the total score of the Kessler Psychological Distress Scale (K6).

Item	1	2	3	4	5	6	Total
1	1						
2	**0.618****	1					
3	**0.650****	**0.736****	1				
4	**0.519****	**0.722****	**0.675****	1			
5	0.359**	0.329**	0.306**	0.243**	1		
6	**0.528****	**0.731****	**0.556****	**0.655****	0.358**	1	
Total	**0.772****	**0.883****	**0.828****	**0.815****	**0.560****	**0.828****	1

Table 4: Pearson correlations (r) between the scale scores.

Scale	*r* with the K6
SCL-90-R subscales	
Anxiety (ANX)	0.621**
Depression (DEP)	0.775**

Table 5: Factor loadings (>0.5) of the Kessler Psychological Distress Scale (K6) in Iranian college students.

Kessler Psychological Distress Scale (K6) Items	Component
	1
1. During the last 30 days, about how often did you feel nervous?	**0.782**
2. During the last 30 days, about how often did you feel hopeless?	**0.899**
3. During the last 30 days, about how often did you feel restless or fidgety?	**0.85**
4. During the last 30 days, about how often did you feel so sad that nothing could cheer you up?	**0.832**
5. During the last 30 days, about how often did you feel that everything was an effort?	0.486
6. During the last 30 days, about how often did you feel worthless?	**0.823**
Eigen value	3.748
% of Variance	62.46

tool for evaluating psychological distress in research and in non-clinical settings.

The results replicate those of earlier research by others. Gyawali, et al. [17] found a Cronbach's α of 0.89 in addicted patients, while Dadfar, et al. [22] found a Cronbach's α of 0.88, test-retest reliability 0.80, and item-total correlations ranging from 0.50 to 0.92, with one factor (64.57% of variance) labeled: Psychological Distress in Iranian psychiatric outpatients. Easton, Safadi, Wang and Hasson [35] reported that scores on the Arabic version of K6 correlated 0.66 with Generalized Anxiety Disorder (GAD-7) and 0.61 with the Somatic Symptoms Scale (SSS-8), indicating good convergent validity. Kang, et al. [36] found that the K6 had good reliability and validity in Chinese undergraduate students: the test-retest reliability was 0.79; Cronbach's α 0.84; sensitivity 0.83; specificity 0.79; positive predictive value 0.60; and negative predictive value 0.80. Cornelius, Groothoff, van der Klink, et al [37] showed that the K6 was a reliable and valid scale for screening for DSM-IV psychiatric disorders. The optimal cut-off score was 14, and the positive predictive value and the negative predictive values for the optimal cut point of the K6 of 0.51 and 0.87. They indicated that the K6 can be used as a guide for a follow-up clinical interview in order to diagnose psychiatric disorders. Arnaud, Malet, Teissedre, Izaute, et al. [38] reported that threshold scores were 10 for the K6 (sensitivity: 0.92; specificity: 0.62), Cronbach's α 0.76, correlations 0.83 with the Hospital Anxiety and Depression Scale (HADS) scores and 0.51 with the Hamilton Depression Rating Scale (HDRS) scores in patients with alcohol-related disorders. There have been reports of factor analyses with two factors [35, 39-40], and a single factor [41-44]. Green, Gruber, Sampson, Zaslavsky, et al. [43] found that there is a need to add of indexes of behavior disorders to the K6 to screen sufficiently for serious emotional disturbance in American adolescents.

Conclusion

The present study indicates that the K6 is a reliable and useful instrument for screening non-clinical populations and may be easily included in applications by potential students and workers applying for positions. The study was carried out in Iranian university students, and so the generalizability of the results to other populations merits more investigation. It is hoped that the study will stimulate further cross-cultural research on the K6, will be useful in future population mental health surveys, and will prove for the identification of subclinical cases.

Conflict of Interest

There were no competing interests, and no financial support for the study.

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Foot Nate: [1]https://khn.org/news/ucla-offers-depression-screening-to-thousands-of-incoming-students/

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