Title: Validity and Reliability of the Turkish Version of the General Work Stress Scale

Short running title: Turkish Version of General Work Stress Scale

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Conflict of interest: None declared.

Funding disclosures: None. No funding was received for this study.

Ethical approval: The study was approved by Niğde Ömer Halisdemir University Ethical Commission. The ethics committee permission required to perform the study was obtained on March 27, 2019 with decision number 2019/03-10.

Author contributions: Concept – M.T., Design – M.T., Supervision – M.T, Funding – M.T., Materials – M.T., Data collection and/or processing M.T., Analysis and/or interpretation – M.T., Literature search – M.T., Writing – M.T., Critical review – M.T.

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Article type : Original Article

Validity and Reliability of the Turkish Version of the General Work Stress Scale

Abstract

Aim: The aim of this study is to test the validity and reliability of the Turkish version of the General Work Stress Scale.

Background: Nursing is one of the most stressful professions. The primary measure that should be taken to ensure that nurses can cope with stress is determining their stress levels.

Method: The General Work Stress Scale was translated into Turkish via back-translation. Its reliability and validity were analyzed via item analyses, content and construct validities, exploratory and confirmatory factor analyses, Cronbach's alpha and Spearman-Brown reliability coefficients. Average and standard deviations of the scale items and the overall scale were calculated.

Results: The study was conducted with 276 nurses. The Cronbach's alpha of the whole scale was 0.91, and the Spearman-Brown reliability coefficient was 0.89. According to the resulting one-dimensional structure, the factor loadings of the scale items were between 0.67-0.82, and this structure alone explained 58.72% of the total variance. The confirmatory factor analysis revealed perfect and good fit indices (χ^2/sd=1.96; RMSA=0.06; CFI=0.99; IFI=0.99; GFI= 0.97; RMR=0.04; NFI=0.99). The mean total score was 2.55±0.87, while the items' means ranged from 2.10±1.15 to 3.33±1.13.

Conclusion: The Turkish version of the General Work Stress Scale is a valid and reliable tool for assessing nurses' general work stress. Nurses largely feel that their work makes them so stressed that they wish they had a different job. The items with low means suggest opportunities for improvement.

Implications for practice: The nurses or nursing services and units with low or high stress levels can be determined with the General Work Stress Scale. If necessary, measures aimed at eliminating or reducing the negative effects of those nurses or nursing services and units with high stress levels can be taken in a timely manner.

Keywords: General Work Stress Scale, Turkish version, validity, reliability, nurses.

INTRODUCTION

As old as human existence itself, stress is a term that is rarely fully understood, particularly because it lacks a single, all-inclusive definition (Stranks, 2005). Nonetheless, stress always describes a feeling, and therefore, it should be viewed as a basic component of emotional situations (Dewe, O'Driscoll & Cooper, 2010). Stress is a psychological response that allows us to deal with problems and a reaction to an event or events that produces negative feelings (Lomas, 2000). Stress has been traditionally defined as a stimulus between reaction and interaction (Dewe, O'Driscoll & Cooper, 2010). Another definition of stress is that it is the generation of involuntary, non-specific and excessive energy in the body to meet the demands of daily events personally perceived as exciting, scary, irritating or dangerous (Soderman, 1983).

In living systems, stress avoidance emerging automatically as physical energy to activate the body and mind is not only an unwanted situation, but also an impossible one (Rice, 1999; Soderman, 1983). Stress itself is neither good nor bad; it affects our body and mind (Araoz, 1998) and motivates us to act in life (Lomas, 2000). We need stress to face unpleasant situations or to cope with the excitement of a new and promising relationship (Soderman, 1983). The relationship between stress and illness is a complex one. Whether stress is good or bad entirely depends on what is done with that energy, how and what way it is used or how it is managed. Illness may result from too little stress, just as it might from too much stress. The amount of stress should be optimal; neither too little nor too much. (Greenberg, 2017). Chronic stress leads to negative consequences and presents with various symptoms. These symptoms can be divided into three categories: physical, psychological and behavioral (Robbins & Judge, 2013). Physical symptoms manifest primarily as palpitations, upset stomach, loss of appetite, headache, tense muscles, breathing problems, etc.; psychological symptoms, as anxiety, incoherent speech, panic attacks, sudden changes in mood, insomnia, forgetfulness, etc.; behavioral symptoms, as throwing or kicking things, low performance at work, excessive smoking, arguing with managers, excessive alcohol consumption, arguing with family, withdrawal from society, etc. (Araoz, 1998; Wainwright & Calnan, 2002).

Potential stress sources can be divided into three subdimensions: environmental, personal and organizational factors (Robbins & Judge, 2013). Environmental factors refer to all kinds of slow or

sudden physical changes that disturb the internal or external balance of a living creature at that moment. Along with factors like foreign bodies, such as bacteria, virus, sound, light, radiation, air pollution, injuries, etc., economic or political uncertainties or changes in technology can be counted among environmental stressors (Rice, 1999; Arden, 2009; Robbins & Judge, 2013). Personal factors refer to what a person individually experiences and the potential changes these experiences can cause in a person's life. These sources of stress at work are perceived differently depending on one's individual characteristics (Greenberg, 2017). Examples of these include family life, marital relations, getting news that you have a terminal illness, emotional relations, economic woes and natural personality traits (Stranks, 2005; Robbins & Judge, 2013). Organizational factors refer to workplace stressors that individuals may experience while working at an organization (Greenberg, 2017). Work stress is a psychological condition that can cause the individual to behave dysfunctionally in the workplace and is due to the reaction of people to the imbalance between their job demands and their ability to cope (Stranks, 2005). There are many organizational factors that cause stress; examples of them include: poor physical working conditions, role conflict and uncertainty, excessive or low workload, contradictory demands at work, presence of ineffective managers, long working hours, imbalance between the responsibilities of work and family (Stranks, 2005; Lundberg & Cooper, 2010). Factors causing stress generally arise from complications in social, economic and work conditions, and it is important to keep in mind that these can change over time, interact with each other, and affect people in different ways (Dewe, O'Driscoll & Cooper, 2010).

Additionally, there are stressors specific to certain occupations. For example, health occupations that involve being responsible for human lives can be counted among these. Mining, police, journalism, construction/building, pilot (civil aviation), doctor and nursing etc. are stated as occupations with the highest stress levels. A study by the University of Manchester Institute of Science and Technology indicated that nursing was among the most stressful jobs or occupations (Stranks, 2005). A study conducted on 130 occupational groups by the National Institute for Occupational Safety and Health in America reported that in terms of stress-related diseases, 40 occupations had higher incidence rates than expected. The study stated that seven of these occupations were in the healthcare field, including registered nurses, licensed practical nurses, nurse aides, clinical laboratory technicians, health technology technicians, dental assistants, and health aides (Seago & Faucett, 1997).

Background

Nursing is acknowledged to be stressful work (Cox et al., 1996; Abualrub & Al-zaru, 2008) and work stress in nursing is already of global concern (Happell et al. 2013). It is estimated that 70% of nurses suffer from stress (Alkhawaldeh et al., 2020). In a study, that's found prevalence rates of depression, anxiety, and stress were 32.4%, 41.2%, and 41.2% respectively among nurses (Maharaj et al., 2018). Pretty high nurse turnover rates have been reported globally, particularly in New Zealand (44.3%), United States (26.8%), Canada (19.9%), and Australia (15.1%), with turnover costs estimated to range from $20,561 to $48,790 per nurse across these countries (Chesak et al., 2019).

Work stress can be defined as work-related environmental events or work-related stressors that can cause stress in nurses (Liu & Aungsuroch, 2019). A comprehensive review of the literature has identified numerous stressors of nurses (McVicar 2016; Cox et al., 1996). Main stress sources of nurses generally include but are not limited to, job design, heavy workloads, relationships with other clinical staff (conflicts with coworkers, supervisors and physicians etc.), uncertainty with medical treatments, unsupportive management and leadership style, coping with emotional needs of patients and their families, death and dying, low recognition and support from their families, handover procedures, requirements to use sophisticated technologies, inadequate resources, low income, irregular schedules and lack of reward (Cox et al., 1996; Tabak & Koprak, 2007; Moustaka & Constantinidis, 2010; Purcell et al., 2011; Happell et al., 2013; Teo et al., 2013; Hayes et al., 2015; Zhou & Gong, 2015; Maharaj et al., 2018; Liu & Aungsuroch, 2019). Lack of a partner or child, being older and married, higher body mass index, long work hours, shorter duration of employment, frequent night shifts, and working in inpatient services also may be risk factors for anxiety, depression and stress (Saquib et al., 2019).

These stressful work experiences may overwhelm the nurses' coping capacities (Liu & Aungsuroch, 2019). Work stress is associated with physical as well as mental health outcomes (Khamisa et al., 2015). Numerous studies have shown that work stress significantly influenced nurses' burnout, musculoskeletal disorders, poorer self-perceived health, social support, self-efficacy, absenteeism and job satisfaction (Cox et al., 1996; Tabak & Koprak, 2007; Hayes et al. 2015; Khamisa et al., 2015; Alkhawaldeh et al., 2020; Liu & Aungsuroch, 2019). Stress in the workplace has a negative effect on nursing wellbeing outcomes (Tabak & Koprak, 2007; Teo et al., 2013; Farquharson et al., 2013). Workplace stress may lead to psychosomatic disorders, anxiety, anger, headaches, insomnia, frustration, depression, dizziness, eating disorder, migraines, muscle aches, and chronic fatigue among nurses (Cox et al., 1996; King et al., 2009; Chen et al., 2016; Maharaj et al., 2018; Chesak et al., 2019; Liu & Aungsuroch, 2019; Alkhawaldeh et al., 2020). Additionally, high levels of stress may lead to or exacerbate maladaptive behaviours, such as smoking, excessive alcohol consumption, substance abuse and over or under eating (Maharaj et al., 2018).

High levels of nursing turnover and shortages increase the workload on nurses (Alkhawaldeh et al., 2020). When health staff are exposed to stressful working environments with low resources and high job demands, these may risk their health situation, causing medical errors and insufficient patient care (Farquharson et al., 2013; Chen et al., 2016). Workplace stress may have adverse effects on nurses' physical and psychological health, as well as on the hospitals for which they work and the society (Happell et al., 2013). Nurses' occupational stress can be significant enough to harm patient safety associated with patient errors (Saquib et al., 2019, Chesak et al., 2019). Work stress has a negative effect on quality of patient care and a positive effect on accidents (Tabak & Koprak, 2007; Chesak et al., 2019).

Studies carried out in Turkey mostly show that nurses had higher stress levels than those seen in other health staff (doctors, technicians, managerial staff, etc.) (Nur, 2011; Erşan et al., 2013). A study on nurses in Turkey identified workload and uncertainty concerning treatment as the main causes of work stress. The same study evaluated the factors contributing to these causes and found that they were related to a physician not being present in a medical emergency, not enough staff to adequately cover the unit, too many non-nursing tasks required, such as clerical work (Önder et al., 2014). Another study indicated the following to be the most important sources of stress: inadequate wages, not enough staff to adequately cover the unit, and having to deal with abusive patients (Özcanarslan, 2009). Workload as a result of staff shortage has been reported to be the major source of work stress (Nabirye et al. 2011). A current study in Turkey showed that a relationship was found between the nurses' job stress and compulsory citizenship behaviours (Unaldi Baydin et al., 2020). Turkey is well below the average of the OECD countries (8.8) in terms of the number of nurses (2.1) per 1000 people, and is in fact, the lowest ranking country among the OECD countries (OECD, 2019). According to a recent study in Turkey, compared to doctors and other medical personnel, nurses were more exposed to sexual, verbal and physical violence (Demirci & Uğurluoğlu, 2020). Factors such as staff insufficiency, excessive workload and workplace violence can cause higher work stress among nurses in Turkey.

The primary measure that should be taken to ensure that nurses can cope with stress is determining their stress levels. The scale to be used to determine their stress levels should be valid and reliable. This study conducted the validity and reliability study of the Turkish version of the General Work Stress Scale developed by de Bruin (2006) for nurses with the aim of adapting the scale into Turkish.

METHOD

Data Collection Tool

This cross-sectional study used the General Work Stress Scale developed by de Bruin (2006). Consisting of 9 items, the General Work Stress Scale is a 5-point Likert-type scale that includes the following response options: "1=Never; 2=Rarely; 3=Sometimes; 4=Often; 5=Always". The General Work Stress Scale addresses the emotional, cognitive, motivational and social consequences of the interaction between an individual and the perceived demands of his/her workplace. The scores on this scale reveal the stress levels an individual experiences or feels according to their own evaluations of themselves. The General Work Stress Scale intends to function as a short, one-dimensional work stress indicator. The total score is a summary expression of the work stress an individual experiences. High scores indicate high work stress, while low scores indicate low work stress (De Bruin, 2006).

To obtain permission to use the General Work Stress Scale, de Bruin was informed via e-mail as it was stated on his website (De Bruin, 2018). After the translation-back translation of the General Work Stress Scale, the original scale and back-translation were compared by the author and translators. It

was seen that the items of both versions had the same meaning. Then, a pilot study was carried out to examined whether there were any questions nurses could not understand. The pilot study found that all of the questions were understood perfectly by the participants, and therefore, the scale was able to be implemented.

Population and Sample

The ethics committee permission required to perform the study was obtained. The study population consisted of 516 nurses who worked in a 300-bed public hospital in Turkey. The questionnaire forms were handed out to the participants by the researcher. These forms were then collected by visiting the hospital units and services 3 times every other week between June 10, 2019 and June 28, 2019. The study did not draw any sample as the aim was to reach the whole population; however, only 53.5% of the participants (276 nurses) filled out the questionnaire. All participants agreed to take part in the study, and informed consent was obtained from all of them.

Data Analysis

The data were evaluated using "SPSS 20.0" and "LISREL-LisWin32" software. The validity of the General Work Stress Scale was evaluated using content and construct validity methods. The study consulted experts to determine the scale's content validity and used exploratory and confirmatory factor analysis to determine its construct validity. Prior to performing the exploratory factor analysis, an item analysis was conducted; to determine the instrument's factorability, Bartlett's test of sphericity, the determinant of the correlation matrix and the Kaiser-Meyer-Olkin measure of sampling adequacy were used. To determine the reliability of the General Work Stress Scale, Cronbach's alpha coefficient and the split half-reliability method were used. At the end of the study, the fitness of the construct found from the exploratory factor analysis was tested by a confirmatory factor analysis in "LISREL-LisWin32" software.

FINDINGS

The participants' mean age was 34.4±7.8; four-fifths of the participants (80.1%) were female; two-thirds of them (66.7%) had bachelor's degrees; more than three-fourths of them (78.6%) worked the day/at night shifts (both during the day and at night) (Table 1).

Please insert Table 1 here

The study consulted experts to determine the content validity of the General Work Stress Scale and found that 5 consultants were needed for this purpose. In this process, each expert was asked to evaluate whether each item on the scale tested the feature to be measured by choosing one of the following three options: "essential", "useful but not essential" or "not necessary". In content validity,

if the number of experts specifying that an item is "essential" is high, the related item then remains on the scale (Lawshe, 1975; Alpar, 2014). The evaluation revealed that 4 experts said two of the items were necessary, and 5 experts indicated the other seven items were necessary; thus, all items remained on the scale.

Before performing a factor analysis, some items should be analyzed to investigate their contributions to the scale. Statistical analysis of items spots questionable items. When the items are reviewed they increase the validity of the test (Evroro, 2015). Table 2 shows the results of the correlation matrix and item-total statistics analysis done for this purpose. The correlation coefficients between the items were between 0.37-0.73, and their total was below 0.90. The correlation matrix roughly suggested that at first glance the General Work Stress Scale had a one-dimensional construct, because the relationships between the items were similar and there were no correlation coefficients indicating a high correlation between specific items. However, this broad finding needs to be supported with a factor analysis. As evident from the item-total statistics, when the related item was removed, no major change was observed in total mean scores and variances by summing up the values of the remaining items. Since the Cronbach's alpha coefficients (0.896-0.908) after removing the item were below the Cronbach's alpha coefficient of the whole scale (<0.911), it was concluded that all items were integral parts of the scale.

Please insert Table 2 here

Another method used to determine an item's validity is to compare the item mean scores of the lower and upper 27% of the groups. The basic logic of this approach anticipates a statistical difference for each item between those who are positive (upper 27% of participants) or negative (lower 27% of participants) in terms of the feature to be measured by the scale. If there is no difference, the related item is deemed to have no power of discrimination for this difference, and the item will not be included on the scale (Alpar, 2014; Evroro, 2015). The study used this method and found a statistically significant difference ($p \leq 0.001$) between all item mean scores of the lower and upper 27% of the groups. According to this method, all items should remain on the scale.

Both the content validity analysis and the item analysis revealed that all items on the General Work Stress Scale should remain on the scale. In the next step, an exploratory factor analysis was conducted. The tests done to determine the factorability prior to the factor analysis found that Bartlett's test of sphericity was significant (chi-square=1421.52; $p \leq 0.001$); the Kaiser-Meyer-Olkin measure of sampling adequacy was 0.90 and the determinant of the correlation matrix was 0.005. These values were adequate in terms of factorability. Principal components method was used as a factor extraction method. To determine the number of factors, a scree plot (Figure 1) and the Kaiser criterion (eigenvalues above 1) were taken into consideration. In one-dimensional constructs, it is necessary that the first factor explains at least 40% of the total variance (Alpar, 2014). This study

found that the eigenvalue of factor no. 1 was 5.29, and that it explained on its own 58.72% of the total variance. Figure 1 shows that the slope of factor no. 2 and the factors after that reached invariance or varied only slightly. From these results, it was concluded that the factor number of the General Work Stress Scale was one.

Table 3 shows the factor loadings after the principal components analysis, the reliability coefficients of the scale, and the descriptive statistics of the items. These elements reveal that the scale has construct validity, as all items were able to be loaded on the first factor with very high loadings (0.67-0.82). While a common variance (or explained variance) above 0.5 is generally considered to be adequate (Thompson, 2004), in social sciences, a common variance between 0.40-0.60 is deemed "adequate" (Alpar, 2014). In terms of the variances (common variances) of the items on the General Work Stress Scale explained by the first factor, the variance was 0.44 for the first item and between 0.51-0.67 for the other items. These results indicate that the variances explained by the first factor were adequate. The Cronbach's alpha coefficient of the scale was 0.91. The Spearman-Brown reliability coefficient derived from the split-half reliability method was 0.89. Both reliability coefficients had high values. While the overall work stress perception mean score (on 5-point Likert) of the nurses was 2.55±0.87, the item mean scores were between 2.10±1.15 and 3.33±1.13.

Please insert Table 3 here

Please insert Figure 1 here

If wanted, confirmatory factor analysis can be used to confirm the factor structure identified in the exploratory factor analysis (Harrington, 2009). By conducting a confirmatory factor analysis, the study tested the one-dimensional structure of both the original questionnaire and Turkish version of the General Work Stress Scale this study found as a result of the exploratory factor analysis. Since the data used for the model showed a multivariate normal distribution, the maximum likelihood method was used as an estimation method.

After creating the model, the study examined the "t-values" (the "t-values" for items 1 to 9 were as follows: 10.65, 12.80, 15.16, 12.13, 13.76, 14.79, 15.42, 14.98 and 14.01) and found that all of them were statistically significant ($p<0.01$). The study then examined the model fit indices and found that some of them were not a good fit. If a model does not fi t well, the researcher will need to identify the areas of poor fit. In such cases, it is recommended to first make a modification between the error covariances of the items within the same dimension to improve the fitness of the model (Harrington, 2009). The study examined the modification recommendations for the model and found that a modification between items 5 and 6 would make the greatest contribution to the model. It is critical that any type of modification made be based on theoretical logic (Harrington, 2009). A modification between items 5 and 6 led to the assumption that there was a common variation between these two

variables. In examining the questions, a nurse who gets so stressed at work that he/she forgets to do important tasks, as indicated by item 5, is expected to get so stressed that he/she finds it hard to concentrate on his/her tasks, as indicated by item 6. After following the modification recommendation, the study found that the modification made a significant contribution to the chi-square (Chi-square difference with 1 degree of freedom=53.75; $p \leq 0.001$). Considering that constructs (or factors) consist of questions directed at measuring features that cannot be measured by a single question (Thompson, 2004), making other modifications between the other items considered to form a one-dimensional structure, like between items 5 and 6, would be theoretically prudent. The important thing here is to re-run the model after each modification and to check later if there are any modifications that can be made or that are recommended by the model (Çokluk, Şekercioğlu & Büyüköztürk, 2013). As part of this rule, after examining the modification recommendations, modifications were made between items 1 and 2 (Chi-square difference with 1 degree of freedom=39.45; $p \leq 0.001$), 7 and 8 (Chi-square difference with 1 degree of freedom=17.96; $p \leq 0.001$), 6 and 7 (Chi-square difference with 1 degree of freedom=13.16; $p \leq 0.001$), 4 and 8 (Chi-square difference with 1 degree of freedom=13.72; $p \leq 0.001$), and 4 and 9 (Chi-square difference with 1 degree of freedom=9.10; $p=0.003$), respectively; the study found that all of these modifications made significant contributions to the model ($p \leq 0.005$). After the last modification, since there were no modification recommendations by the model, the model was deemed complete; Figure 2 shows the results. After the modifications, the study re-examined the "t-values" (the "t-values" for items 1 to 9 were as follows: 10.34, 12.51, 15.79, 13.12, 12.65, 13.13, 13.91, 14.53 and 14.61) and found that all of them were statistically significant ($p<0.01$) too. In Figure 2, the rectangle boxes (or the General Work Stress Scale items) are the observed variables, while the one-dimensional construct of the General Work Stress Scale in the circle is the latent variable. The numbers on the arrows show the direct effects from the latent variable on the observed variables and correspond to the factor loading values in the exploratory factor analysis. As general rules of thumb, loadings above 0.71 are excellent, 0.63 very good, 0.55 good, 0.45 fair, and 0.32 poor (Harrington, 2009). In Figure 2, these values are between 0.69-0.81, from which it can be concluded that the factor loadings here can generally explain the structure well.

Please insert Figure 2 here

Various model fit indices can be used to evaluate the results of a confirmatory factor analysis. The most frequently used indices are: χ^2/df (degrees of freedom), Root Mean Square Error of Approximation (RMSA), Comparative Fit Index-CFI), Incremental Fit Index (IFI) and Goodness of Fit Index (GFI), Root Mean Square Residual (RMR) and Normed Fit Index (NFI). Table 4 shows the evaluation criteria for the fit indices, and the results found in the model. While the RMSA, one of the

fit indices, corresponds to a good fit, all of the other fit indices correspond to a perfect fit. These results confirmed the General Work Stress Scale's single-factor structure consisting of 9 items model.

Please insert Table 4 here

DISCUSSION

This study provided information on the general work stress perceptions of nurses in a public hospital in Turkey and revealed various important findings about the psychometric features of the Turkish version of the General Work Stress Scale. To fulfill its aim, this study first conducted item analyses, followed by an exploratory factor analysis and a confirmatory factor analysis.

To the best of the present researcher's knowledge, there has been no validity and reliability study of the General Work Stress Scale in any other languages but English. This study, believed to be the first to test the psychometric robustness of the Turkish version of the General Work Stress Scale, had 276 participants (response rate 53.5%). From the item analyses conducted as part of this study, it was concluded that all items should remain on the scale. Content validity and construct validity methods were used to determine the validity of the scale. In the content validity, the number of experts stating that the items were essential was ≥4 (5 experts in total). The factor analysis found a single-factor structure and very high loadings for the items loaded on the related factors (0.67-0.82). In his original study, de Bruin (2006) carried out a validity and reliability study of the General Work Stress Scale on two different groups. While the participants in Group 1 consisted of 475 employees working in two higher education institutions, the participants in Group 2 consisted of 477 employees working in a major chemical company. Similar to this study, the original study found a one-dimensional structure for both groups; while the factor loadings of the items were between 0.546-0.742 for Group 1, these loadings were between 0.555-0.718 for Group 2.

This study found that the items' variances (0.44-0.67) explained by the first factor were at adequate levels. The original study by de Bruin (2006) found that while these variances were between 0.380-0.772 for Group 1, they were between 0.350-0.788 for Group 2. The present study found from the reliability coefficients of the General Work Stress Scale that the Cronbach's alpha coefficient was 0.91 and the Spearman-Brown coefficient was 0.89. The original study by de Bruin (2006) found that the Cronbach's alpha coefficients were 0.89 and 0.88, respectively, for Groups 1 and 2. The present study confirmed that the General Work Stress Scale consisted of a one-dimensional (or a single-factor) construct according to the goodness of fit indices (χ^2/sd:1.96; RMSA:0.06; CFI:0.99; IFI:0.99; GFI:0.97; RMR:0.04 and NFI:0.99) found as a result of the confirmatory factor analysis. The analyses conducted in the original study by de Bruin (2006) showed that the goodness of fit indices found for Group 1 (χ^2/sd=0,013; RMSA:0.049; SRMR:0,013) and Group 2 (χ^2/sd=1,915; RMSA:0,044; SRMR:0,015) were a good fit. Based on the evidence presented, the present study concluded that the

Turkish version and the one-dimensional construct of the General Work Stress Scale were valid and reliable tools for measuring the general work stress perceptions of nurses in Turkey (Appendix I).

This study found that the overall mean score was 2.55±0.87 on the General Work Stress Scale, and that the highest mean score (3.33±1.13) was obtained on the question, "Does work make you so stressed that you wish you had a different job?". The original study by de Bruin (2006) found that while this item was the second item with the highest mean score (2.66±1.12) for Group 1, it was the first item with the highest mean score (2.51±0.99) for Group 2. Moreover, Group 1 had an overall mean score of 2.38; Group 2 had an overall mean score of 2.08. Strikingly, all the mean scores calculated in this study were higher than those of both groups in the original study. According to the other items with the highest means (items 9, 3 and 2, respectively), the nurses stated the following; the work made them so stressed that they lost their temper, they worried about having to wake up and go to work in the morning, and they got so stressed at work that they want to quit. Most of the findings from this study were consistent with those reported in the relevant literature. Work stress results in increased turnover rate which causes more and more nurses to leave the nursing profession (Moustaka & Constantinidis, 2010). In a study in Turkey it was found that majority of newly graduated nurses (54.7%) had the intent to quit the profession (Tastan et al., 2013). Similarly, other studies showed that nearly half or more of the nursing staff wanted to quit their jobs (Bjorvell & Brodin, 1992; Gardulf et al., 2005; Yeh & Yu, 2009; Ghawadra et al., 2020). Nurses experience anxiety, which is an emotional response to stress. This is characterized by feelings of tension, worry and physical changes, such as difficulty breathing (Lin et al., 2020). Kane (2009) found that 66% and 7% of nurses had moderate and severe stress, respectively; and that emotional symptoms such as anger, worry and depression increased with stress levels. Workplace stress can create mental problems such as anxiety, depression, insomnia and feelings of inadequacy (Moustaka & Constantinidis, 2010). Chen et al. (2016) found that job stress and anxiety affect nurses' health.

Several studies showed that greater work stress was associated with poorer job performance (Abualrub & Al-zaru, 2008), job control (Chen et al., 2016), self-perceived health status (Chen et al., 2016; Lin et al., 2014), job satisfaction (Hayes et al., 2015; Lautizi et al., 2009; Brunetto et al., 2016; Chien & Yick, 2016; Toh et al., 2012), sleep quality (Lin et al., 2014), social support (Liu & Aungsuroch, 2019), self-efficacy (Liu & Aungsuroch, 2019) and; higher anxiety or worry (Chen et al., 2016; Lin et al., 2020), depression (Chen et al., 2016), intention to quit (Gardulf et al., 2005; Abualrub & Al-zaru, 2008; Brunetto et al., 2016; Chien & Yick, 2016; Yeh & Yu, 2009; Labrague et al., 2020) and burnout (Liu & Aungsuroch, 2019; Toh et al., 2012; Zhang et al., 2018). Albion et al. (2015) found that nurses also had more distress (strain), and lower levels of morale, job satisfaction and quality of worklife than other healthcare professionals.

Studies conducted in Turkey have shown that the stress levels of nurses and the symptoms of stress in nurses were greater than those of doctors, technicians and other health staff (Nur, 2011; Erşan et al., 2013). Nurses overall manifest greater signs of stress, especially in the muscular, cognitive,

endocrine, and immune systems (Nur, 2011). Consequently, factors such as long working hours, shift working, excessive workload and risky work environment for the nurses could explain these results. After identifying the nurses experiencing high levels of general work stress, the stressors responsible should be put forward, these nurses should be taught stress coping skills, and training and guidance programs should be created to develop their problem solving and communication skills (Nur, 2011). Ghawadra (2020) showed that the Mindfulness-Based Training intervention was effective in improving anxiety and job satisfaction among nurses. Pishgooie et al. (2019) also showed that the transformational and transactional leadership styles could reduce nurse's job stress and intention to leave. Additionally, suggestions for reduction work stress among nurses may include that: workload modification, changing shift hours, ensuring nurses get breaks, music, cognitive behavioural therapy, maintain normal life, mindfulness, relaxation response, forwarding suggestions for change, thought about solutions, massage therapy, selfmanagement techniques, used past experience, situational control, information seeking (Happell et al., 2013; Alkhawaldeh et al., 2020; Xu et al., 2019). However, as Happel et al. (2013) stated, understanding the local perspective and involving nurses in identifying initiatives were important to reduce work stress.

CONCLUSION

The Turkish version of the General Work Stress Scale is a valid and reliable tool to measure the general work stress perceptions of nurses in Turkey. The participants agreed most to the view that their work made them so stressed that they wished they had a different job. This item points to the primary area that needs improvement. The results presented here pertain to the nurses working in one public hospital in Turkey; they may not apply to other types of hospitals. Similar studies need to be carried out on nurses working in other types of hospitals. This study only measured the general work stress perceptions of the participants. By using the General Work Stress Scale, future studies can investigate topics such as associations between nurses' general work stress perceptions and job satisfaction, workloads or intentions to quit the job.

IMPLICATIONS FOR NURSING MANAGEMENT

The primary measure that should be taken to ensure that nurses can cope with stress is determining their stress levels. The scale to be used to determine their stress levels should be valid and reliable. As far as we know, there have been no studies of the psychometric properties of the General Work Stress Scale in other languages except for the English version. In this study, Turkish version of the General Work Stress Scale is found as a valid and reliable tool for measuring the general work stress

perceptions of nurses in Turkey. The nurses or nursing services and units with low or high stress levels can be determined with the General Work Stress Scale. In addition, factors that cause work stress should be determined. Thus, nurse managers can determine what kind of measures should be taken for nurses or nursing services and units that has high stress level. Factors that cause job stress in nurses can be removed by implementing standard protocols nationwide.

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Table 1. Sociodemographic and Occupational Characteristics of the Nurses (N=276)

	N	%	**Mean±SD**
Gender			
Female	53	19.9	
Male	214	80.1	
Marital Status			
Married	200	76.6	
Single[†]	61	23.4	
Age (years)			34.4 ± 7.8
≤30	177	31.3	
31-40	146	45.0	
≥41	182	23.7	
Education			
High school	19	7.1	
Associate degree	70	26.2	
Undergraduate[‡]	178	66.7	

Unit of Service			
Internal services	48	17.9	
Surgical services	78	29.1	
Intensive care services	56	20.9	
Emergency service	35	13.1	
Clinical support services[§]	51	19.0	
Administrative function			
Yes	60	22.5	
No	207	77.5	
Direct interaction with patients			
Yes	246	92.1	
No	21	7.9	
Years employed in the hospital			6.8 ± 5.7
≤5	126	47.2	
6-10	93	34.8	
≥11	48	18.0	
Years employed in the profession			12.7 ± 7.9
≤5	51	19.1	
6-10	77	28.8	
≥11	139	52.1	
Work shifts			
Only during the day	57	21.4	
Day/night[¶]	209	78.6	
Hours Worked per Week			
40	81	30.3	
48	108	40.4	
≥56	78	29.2	

□Standard deviation

[†]51 bachelors, 9 widowed, 1 separated/divorced

[‡]165 licenses, 12 postgraduates, 1 doctorate

[§]13 operating rooms, 2 angio, 1 EEG, 2 education nurses, 1 endoscopy unit, 1 infection unit, 3 home health services units, 4 hemodialysis units, 8 administrative units, 1 technician, 2 diagnostic groups, 12 other groups (unspecified)

[¶]204 day and night, 5 night only

Table 2. Correlation Matrix and Item-Total Statistics of Items on the General Work Stress Scale

Correlation Matrix of Items[*]									
Items	1	2	3	4	5	6	7	8	9
1	1.00								
2	0.62	1.00							
3	0.52	0.62	1.00						
4	0.43	0.45	0.61	1.00					
5	0.37	0.41	0.54	0.52	1.00				
6	0.45	0.48	0.53	0.50	0.73	1.00			
7	0.40	0.50	0.59	0.55	0.58	0.66	1.00		
8	0.39	0.56	0.60	0.45	0.54	0.58	0.70	1.00	

9	0.49	0.52	0.62	0.45	0.53	0.54	0.55	0.62	1.00

Item-Total Statistics

Items	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
1	19.63	51.11	0.59	0.45	0.908
2	20.39	49.05	0.68	0.55	0.903
3	20.15	47.69	0.76	0.61	0.896
4	20.54	50.31	0.64	0.46	0.905
5	20.70	50.08	0.68	0.59	0.902
6	20.59	49.63	0.73	0.64	0.899
7	20.63	49.13	0.74	0.63	0.898
8	20.85	48.94	0.72	0.61	0.899
9	20.13	49.23	0.71	0.53	0.900

* All correlations are significant at $p \leq 0.001$.

Table 3. Descriptive Statistics, Reliability Coefficients, and Exploratory Factor Analysis Results of the General Work Stress Scale

General work stress scale items	**Mean±SD**[†]	**Factor 1's factor loadings**	**h^2**[‡]
1. Does work make you so stressed that you wish you had a different job?	3.33±1.13	0.67	0.44
2. Do you get so stressed at work that you want to quit?	2.56±1.20	0.75	0.56
3. Do you worry about having to wake up and go to work in the morning?	2.80±1.22	0.82	0.67
4. Do you find it difficult to sleep at night because	2.41±1.14	0.71	0.51

you worry about your work?			
5. Do you get so stressed at work that you forget to do important tasks?	2.25±1.10	0.76	0.58
6. Does work make you so stressed that you find it hard to concentrate on your tasks?	2.36±1.08	0.80	0.64
7. Do you spend a lot of time worrying about your work?	2.33±1.11	0.81	0.65
8. Do you feel like you cannot cope with your work anymore?	2.10±1.15	0.80	0.63
9. Does work make you so stressed that you lose your temper?	2.82±1.15	0.78	0.60
Overall	2.55±0.87		
Cronbach's α		0.91	
Spearman-Brown coefficient (split-half method)		0.89	
Eigenvalue		5.29	
Explained variance (%)		58.72	
Determinant		0.005	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.90	

† Standard deviation

‡ Common variance

Table 4. Confirmatory Factor Analysis of the General Work Stress Scale Goodness of Fit Indices

Fit indices	**Good fit** †	**Perfect fit** †	**Measure of Model Fit**	**Model Fit**
χ^2/sd	≤3.00	≤2.00	41.18/21=1.96	Perfect fit
RMSA	≤0.08	≤0.05	0.06	Good fit
CFI	≥0.90	≥0.95	0.99	Perfect fit

IFI	≥0.90	≥0.95	0.99	Perfect fit
GFI	≥0.90	≥0.95	0.97	Perfect fit
RMR	≤0.08	≤0.05	0.04	Perfect fit
NFI	≥0.90	≥0.95	0.99	Perfect fit

†The evaluation criteria for the goodness of fit indices were taken from Baumgartner & Homburg, 1996; Hu & Bentler, 1999; Tabachnick & Fidell, 2001; Thompson, 2004; Kline, 2005; Brown, 2006; Hooper et al., 2008; Raykov & Marcoulides, 2008.

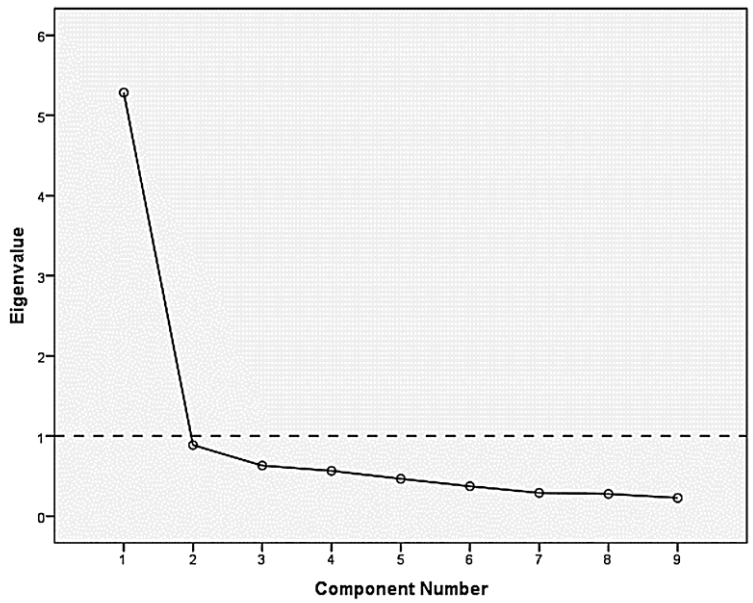

Figure 1. Factor Analysis of the Turkish Version of General Work Stress Scale - Scree Plot

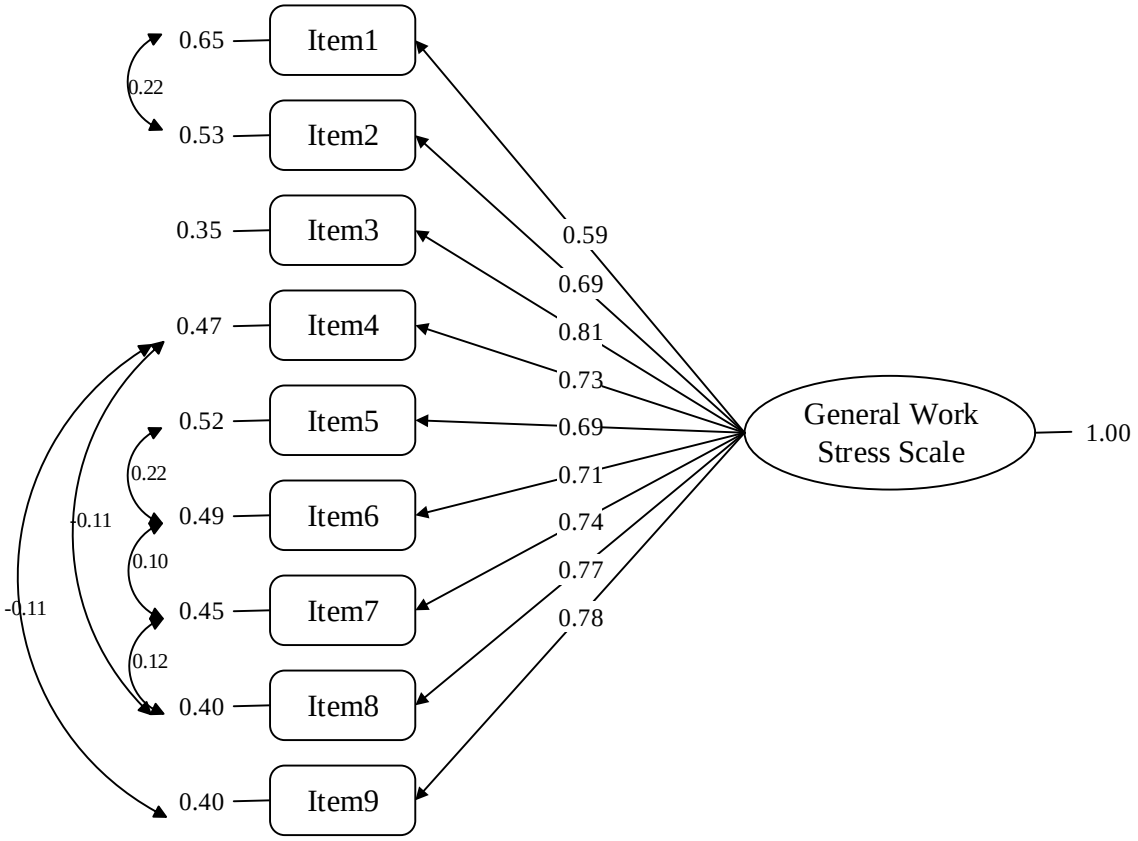

Figure 2. The Confirmatory Factor Analysis Results of the Turkish Version of the General Work Stress Scale

Appendix I: The Turkish Version of the General Work Stress Scale

Genel İş Stresi Ölçeği

TALİMATLAR

Aşağıdaki soruların amacı, iş yerinde ne kadar stresli olduğunuzu incelemektir. Lütfen, yanıtınızı en iyi gösteren numaranın üzerine çarpı (x) işareti koyarak aşağıdaki soruları cevaplayınız.

		Hiçbir zaman	Nadiren	Bazen	Çoğunlukla	Her zaman
1.	İşiniz, farklı bir iş sahibi olmayı dileyecek kadar sizi stresli kılıyor mu?	1	2	3	4	5
2.	İstifa etmeyi isteyecek kadar iş sırasında stres yaşıyor musunuz?	1	2	3	4	5
3.	Sabahları kalkıp işe gitme konusunda kaygı duyuyor musunuz?	1	2	3	4	5
4.	İşinizle ilgili kaygı duyduğunuz için geceleri uyumakta zorluk yaşıyor musunuz?	1	2	3	4	5
5.	Önemli görevleri yapmayı unutacak kadar iş sırasında stres yaşıyor musunuz?	1	2	3	4	5
6.	Görevlerinize odaklanmayı zorlaştıracak kadar iş sırasında stres yaşıyor musunuz?	1	2	3	4	5
7.	İşiniz için kaygılanarak çok zaman harcıyor musunuz?	1	2	3	4	5

8.	Artık işinizle baş edemeyeceğinizi düşünüyor musunuz?	1	2	3	4	5
9.	İşiniz öfkelenecek kadar sizi strese sokuyor mu?	1	2	3	4	5