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COVID-19; damgalama; güvenilirlik; geçerlilik.

Adaptation of The COVID-19 Stigma Scale to Turkish: A Validity and Reliability Study

COVID-19 Damgalama Ölçeği'nin Türkçe'ye Uyarlanması: Geçerlik ve Güvenirlik Çalışması

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ABSTRACT

Objective: During the COVID-19 pandemic in Turkey, several studies have been conducted on stress among health care workers, but it was observed that there was no study on stigma. Therefore, the aim of this study is to adapt the "COVID-19 Stigma Scale" to Turkish, which allows the assessment of nurses' perception of stigma.

Methods: The research was conducted in a methodological and descriptive type for the Turkish adaptation of the scale. A total of 138 nurses were included in the study to evaluate the Turkish validity and reliability of the scale consisting of 13 items and one dimension. The construct validity of the scale was tested linguistically and psychometrically. Exploratory factor analysis and confirmatory factor analysis were conducted after language adaptation. In the comparison of quantitative data, the independent samples t-test was used for the means of two groups, and the ANOVA (F) test was used to compare more than two group means. All approvals were obtained for the study.

Results: It was found that the sample size included in the study was "perfectly adequate" to perform factor analysis. In the exploratory factor analysis, when factor load values were examined, it was found that all items were significant. The Cronbach alpha was calculated to be at least 0.842 in the sub-dimensions, and the scale was found to be perfectly reliable. Although the original scale has one dimension, it was found that the Turkish adaptation of the scale has three dimensions according to the factor design.

Conclusion: It was found that the Turkish form of the COVID-19 Stigma Scale is a valid and reliable tool that can be used to assess health professionals' perception of stigma due to COVID-19.

ÖZ

Amaç: Türkiye'de COVID-19 salgını sırasında sağlık personeli arasında stres konusunda farklı çalışmalar yapılmış, ancak damgalanmaya ilişkin bir çalışma olmadığı görülmüştür. Bu nedenle, bu çalışmada hemşirelerin damgalanmaya yönelik algılarını değerlendirmeyi sağlayan "COVİD-19 Damgalama Ölçeği"nin (COVID-19 Stigma Scale) Türkçe'ye uyarlanmasının yapılması amaçlanmıştır.

Yöntem: Araştırma, ölçeğin Türkçe uyarlaması için metodolojik ve tanımlayıcı türde planlanmıştır. 13 madde ve tek boyuttan oluşan ölçeğin Türkçe geçerlilik ve güvenirliğinin değerlendirilmesi için 138 hemşire çalışma kapsamına alınmıştır. Ölçeğin yapı geçerliği dilbilimsel ve psikometrik ölçümlerle test edilmiştir. Dil adaptasyonunun ardından Açımlayıcı Faktör Analizi ve Doğrulayıcı Faktör Analizi yapılmıştır. Niceliksel verilerin karşılaştırılması için iki grup ortalaması için bağımsız örneklem t testi; ikiden fazla grup ortalamasının karşılaştırması için ANOVA (F) testi yapılmıştır. Çalışma için gerekli tüm izinler alınmıştır.

Bulgular: Çalışma kapsamına alınan örneklem büyüklüğünün faktör analizi yapmak için "mükemmel derecede yeterli" olduğu saptanmıştır. Açımlayıcı faktör analizinde, faktör yük değerleri incelendiğinde bütün maddelerin anlamlı olduğu görülmüştür. Cronbach alpha değerinin alt boyutlarda minimum 0.842 olarak hesaplanmış ve ölçeğin mükemmel güvenilirlikte olduğu saptanmıştır. Orijinal ölçekte tek boyut olmasına karşın, Türkçe ölçeğin faktör desenine göre üç boyutlu olduğu bulunmuştur.

Sonuç: COVID-19 Damgalama Ölçeği'nin Türkçe formunun, hemşirelerin COVID-19 nedeniyle damgalanma algılarını değerlendirmede kullanılabilecek geçerli ve güvenilir bir araç olduğu belirlenmiştir.

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INTRODUCTION

The stigmatization is known that stigma is experienced a lot in the history of medicine. Societies have been more prone to stigmatization, especially in epidemics and mental illnesses that have a widespread impact. There are examples in the literature regarding the prevalence of the belief that people with mental illnesses suffer the wrath of God, are under the influence of evil spirits, and will be dangerous and harmful to their environment (Özmen and Erdem, 2018). It was believed that in the epidemics that emerged suddenly in ancient Greece, leprosy, and plague in the 1300s, and the AIDS pandemic in the 1980s, people who got the disease were sentenced to a divine punishment due to their crime/sin (Özdemir, 2010). Since diseases were seen as a sign of disgrace, these stigmatized individuals were condemned and discredited by separating from healthy and normal ones (Özmen and Erdem, 2018).

Stigmatization is a public health problem that should be addressed as an outsourced stressor with the potential to harm the person and society, such as depression and other mental symptoms (Tuncay, Koyuncu and Özel, 2020). Within the scope of psychosocial effects of epidemics, symptoms of psychiatric diseases such as anxiety, depression, and post-traumatic stress disorder are primarily included (Brooks et al., 2020; Erkin, Konakçı and Duran, 2021). Although the physical distance rule is the most effective method of preventing the epidemic, this method can have negative effects on health workers and their families (Centers for Disease Control and Prevention-CDC, 2020). Some studies had reported that healthcare professionals and family members are stigmatized by society as potential virus carriers (Qiu et al., 2020; Rajkumar, 2020; Uvais, Aziz, and Hafeeq, 2020; Wang et al., 2020).

The new coronavirus pandemic (COVID-19 or 2019-nCOV), which first appeared in Wuhan, China, in late 2019 and rapidly caused a pandemic all over the world, has also significantly affected the individual and social life and the world economy (Kiroglu, 2020; Zhu, Wei and Niu, 2020). Coronavirus is a large family of viruses with types that cause diseases ranging from the common cold to Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV) (Kiroglu, 2020). Today, the disease is transmitted from person to person, transcending China and spread all over the world, as of 03 May 2023 with the total number of cases worldwide approaching 766 million and the number of deaths approaching 6,9 million (World Health Organization-WHO, 2023). The total number of COVID-19 cases in Turkey is more than 17 million and the number of deaths is more than 101,000 (Republic of Turkish Ministry, 2023).

Epidemics have historically led to the stigma of those infected, those most likely to get sick, managers and health workers (CDC, 2020). Discriminatory and stigmatizing rhetoric and behavior directed at Asians, especially Chinese, in the days beginning of the COVID-19 pandemic has also left health workers facing stigma with the spread of the disease worldwide (WHO, 2023).

Health workers who have been quarantined may experience more post-traumatic stress and post-traumatic syndrome than quarantined individuals in the general society (Brooks, et al., 2020; Erkin, et al., 2020). Health workers also feel more stigmatized than other members of society and exhibit more avoidant behaviors after quarantine (Kaya, 2020). They experience mental complaints more severely and frequently, such as anger, sadness, fear, feeling blocked, guilt, helplessness, and feeling isolated (Aykut and Aykut, 2020; Yıldız, Çıkrıkçılı, and Yüksel, 2020). Moreover, stigma can affect job satisfaction and the quality of patient care by increasing the stress levels of health workers. Stigma is also associated with violence against health workers (Hernandez, Morgan, and Parshall, 2016). In addition, it has been learned from past quarantine experiences that financial losses can be greater than in general society (Brooks et al. 2020). However, healthcare providers that care for patients during Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS) have been under extraordinary stress related to the high risk of infection, stigma, and uncertainty, and they have been a high priority in comprehensive psychological support during and after outbreaks (Çevik Aktura and Özden, 2020). WHO emphasised that some health workers may, unfortunately, experience avoidance by their families or communities due to stigma or fear. This can make an already difficult situation much more difficult. The way we talk about COVID-19 is critical in supporting people to take effective steps to help fight the disease and avoid fueling fear and stigma" (Bagcchi, 2020). In this context, although studies are examining the stress and trauma levels of healthcare personnel during the COVID-19 pandemic in Turkey, no tool was found to measure the perceptions of healthcare professionals regarding COVID-19 stigmatization.

This study was conducted to adapt the COVID-19 Stigma Scale (CSS) into the Turkish and to determine its validity and reliability for nurses' perceptions of COVID-19 stigma.

METHODS

Research Design

The research was methodological and descriptive study for CSS validation.

Population and Sample

For methodological studies, it has been recommended in the literature that individuals 5-10 times the number of items in a scale should be included in the study (Özdamar, 2018). In this context, the sample size was determined as 150 nurses for 13-item CSS. 12 nurses who did not complete/approved the study questionnaire were excluded from the sample and the final sample comprised 138 nurses. The sample of the study consisted of nurses who are 18 years of age and older, who care for patients with suspected/positive COVID-19, who are not diagnosed with clinical stress disorder, and who can use mass media mediums.

Data Collection

The study was conducted between December 2020 and May 2021 by a web-based self-report method due to COVID-19 measures. For this, a questionnaire was prepared via google form and volunteer participants were asked to fill in the questionnaire by sending a link.

Data Collection Tools

The response time of the surveys was 10-15 minutes as web-based using the "Introductory Information Form", which includes the socio-demographic characteristics of individuals, "Covid-19 Stigma Scale - CSS", and "Social Stigma Perception Scale - SSPS". The 10-item personal information form prepared by the researchers identifies the socio-demographic characteristics of nurses (age, marital status, educational status, occupational/work status, etc.) and includes two questions about exposure to COVID-19 transmission, as well as quarantine history.

The COVID-19 Stigma Scale consists of 13 items and is scored with a 5-point Likert. It was adapted by Uvais et al., (2020) to study the stigma among doctors during the COVID-19 pandemic process. Uvais et al., (2020) had adopted the stigma questionnaire developed by Park, Lee, Park and Choi, (2018). In the original study, Cronbach's alpha of the stigma questionnaire was 0.94 (Park et al., 2018).

In scale adaptation studies, the parallel form validity method is used to determine whether the adapted scale measures the same state (Özdamar, 2018). In this context, the Social Stigma Perception Scale (SSPS) developed by Eren Bana (2020) was used as a parallel form in the CSS validation study. This scale is a 5-point Likert-type scale with 19 items and four sub-dimensions, with a total Cronbach alpha value of 0.86. Reliability values for Social Stigma (items 1-6), Professional Dignity (items 7-13), Exclusion (items 14-17) and Witnessing Stigma (items 18-19) sub-dimensions are respectively: 0.91, 0.89, 0.74, and 0.75. The total score that can be obtained from the scale ranges from 19 to 95, while the higher score indicates higher perceived social stigma.

Data Analysis

The data obtained in the study were analyzed using the SPSS (Statistical Package for Social Sciences) for Windows 25.0. Descriptive statistical methods (number, percentage, mean, standard deviation) were used for data evaluation. Data distribution normality can be evaluated by normality tests as well as histogram, Q-Q graph, and box-plot graphics, and skewness and kurtosis can be evaluated by distribution measures such as the coefficient of variation. In order to ensure normality, the values should be observed close to the 45-degree line in the scatter diagram of the data and positioned by centering the median line of the box in the box- plot graph (Seçer, 2018). Distribution normality was checked with normality tests and kurtosis and skewness values. In addition to exploratory and confirmatory factor analyses, Cronbach's Alpha values and composite reliability CR and Average Variance Extracted (AVE) values were separately calculated for reliability analysis. In all analyses, the statistical significance level was taken as $p < 0.05$ at most.

Investigation of Psycholinguistic Features (Language Adaptation)

In this study, the International Test Commission 25 guideline was followed during the cultural adaptation process of the original scale (International Test Commission, 2017). The scale was originally developed in English. Back translation method was used in the language adaptation of the scale. The translation experts did not consult with each other and worked independently. Then compared with the original English version and the final corrections on the items were obtained. The content validity ratio and content validity index of the scale were calculated with to the Lawshe technique (Lawshe, 1975). Next, a pilot study was performed and the items of the scale were found to be understandable. After these stages were completed, the “prefinal version” of the scale was shown in Figure 1.

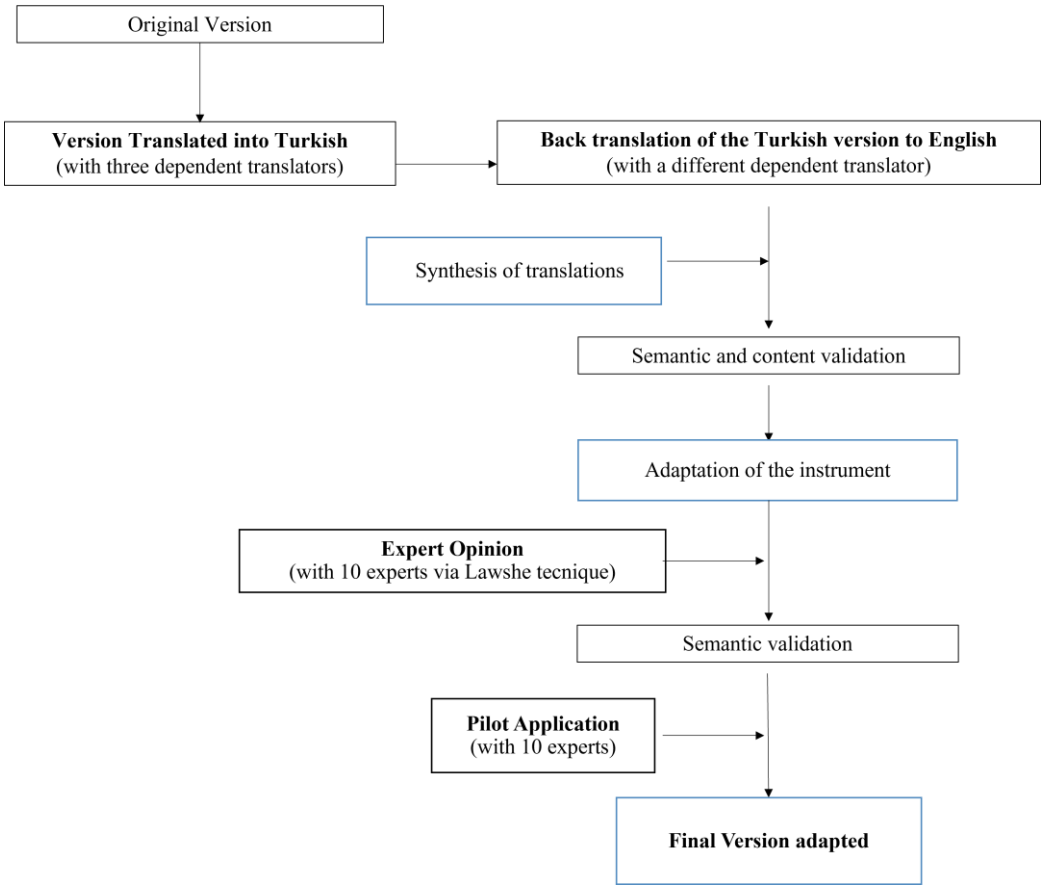

Figure 1: Adaptation Process of The Scale (Prefinal version)

Investigation of Psychometric Properties (Validity - Reliability)

Reliability analysis is carried out to test whether the expressions on the scales show consistency among themselves and whether all expressions measure the same subject (Seçer, 2018). In order for the tests and results to be reliable, the measurements must be reliable. In this context, the reliability of the scale was examined with Cronbach alpha. In addition, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were performed for the reliability and construct validity of the adapted scale. Excellent fit is indicated by SRMR ≤ .08, RMSEA ≤ .06, and CFI ≥ .95. Good fit is indicated by CFI ≥ .90. Average Variance Extracted (AVE) and Composite Reliability (CR) were also performed.

Also, test-retest reliability was examined through the intraclass correlation coefficient (ICC) to further evaluate the reliability of the CSS only. To assess test-retest reliability, a subset of 49 nurses were completed the CSS via online survey by a 2-week interval.

Ethical Considerations

The research protocol was approved by a İzmir Katip Çelebi University Non-Interventional Clinical Studies Institutional Review Board (23/03/2021 Date and 2021/03 Decision number). All respondents consented written prior to beginning the research. Furthermore, permission was obtained from Uvais for the use of the CSS, and from the individuals showing their willingness to participate in the study. Also, all authors accepted the Declaration of Helsinki.

RESULTS

Findings regarding the individual characteristics

138 nurses were included in the study. Nurses were aged 21-56 years (34.01±8.03). Moreover, 53.6% of the nurses were single and 47.1% of them have been working as a nurse for 11 years and more. Although only 11.6% of nurses work in COVID-19 patient service and 71.7% do not have COVID-19 infection, 40.6% are quarantined on suspicion of infection.

Findings regarding the exploratory factor analysis and internal consistency of scales

As can be seen in Table 1, the COVID-19 Stigma Scale has been developed as a theoretical dimension. However, when the culture fit and factoring patterns of the items were examined, it was seen that there were three sub-dimensions. These dimensions were named as [1] *Avoiding medical staff* (items 1-6), [2] *Avoiding others as a health care professional* (items 7, 8, 11, 12, and 13), and [3] *Disguising being a medical staff* (items 9 and 10). In this context, exploratory factor analysis was carried out in order to reveal the factor pattern of the instrument.

Table 1. Exploratory Factor Analysis and Reliability Results of The Scale

Factors and items	Explained Variance (%)	Eigenvalue (Λ)	Factor Loadings
Factor 1: (α=0.858)			
M5	27.629	4.500	0.799
M4			0.791
M1			0.790
M3			0.746
M6			0.731
M2			0.717
Factor 2: (α=0.802)			
M12	22.309	2.336	0.800
M7			0.785
M11			0.783
M8			0.651
M13			0.565
Factor 3: (α=0.889)			
M9	14.657	1.562	0.933
M10			0.931
Total (α=0.823)			
KMO =0.757; $\chi 2(78)$ =876.149; Bartlett Global Test (p) = 0.000			
Total explained variance ratio= 64.595			

Prior to the exploratory factor analysis, Kaiser-Meyer-Olkin (KMO) test was performed to test the suitability of the sample size to factoring. As a result of the analysis, the KMO value was determined as 0.757. In line with this finding, it was concluded that the sample size was "sufficient" for factor analysis. In addition, when Bartlett's test of sphericity results was examined, it was observed that the obtained chi-square value was significant ($\chi 2$ (78) =876.149; $p<0.01$). Accordingly, it has been accepted that the data comes from the multivariate normal distribution.

After confirming the conformity of the data to factor analysis, descriptive factor analysis was performed using Principal Components Analysis and Varimax Rotation methods to examine the factor structure of the scale. As a result of the analysis, when the factor pattern with an eigenvalue above "1" for all the items based on the analysis was examined, it was determined that it did not overlap and had sufficient factor loadings and all items were significant. The minimum value for factor load should be 0.30 and above (Seçer, 2018). When the factor loads of the scale were examined, it was found that there was no item below 0.44 and the factor loads were within acceptable limits. When the resulting pattern was examined, three factor patterns were formed for all items. The contribution of these components to the total variance is 64.595%.

When the graph, which includes the number of factors on the horizontal axis and the eigenvalues on the vertical axis, is examined, it can be seen that the high-accelerated drop decreases after the fourth point. Çokluk et al. (2018) stated that the tendency of the descents seen from the first point shows the degree of contribution to the variance. The contribution of each factor to the variance after the fourth point decreases and the contributions of the variances to be added are quite close to each other. The multifactorial structure of the Scale is shown in Figure 2. It was decided that there should be three factors in line with the exploratory factor analysis of the data obtained with the Eigenvalue and Explained Variance.

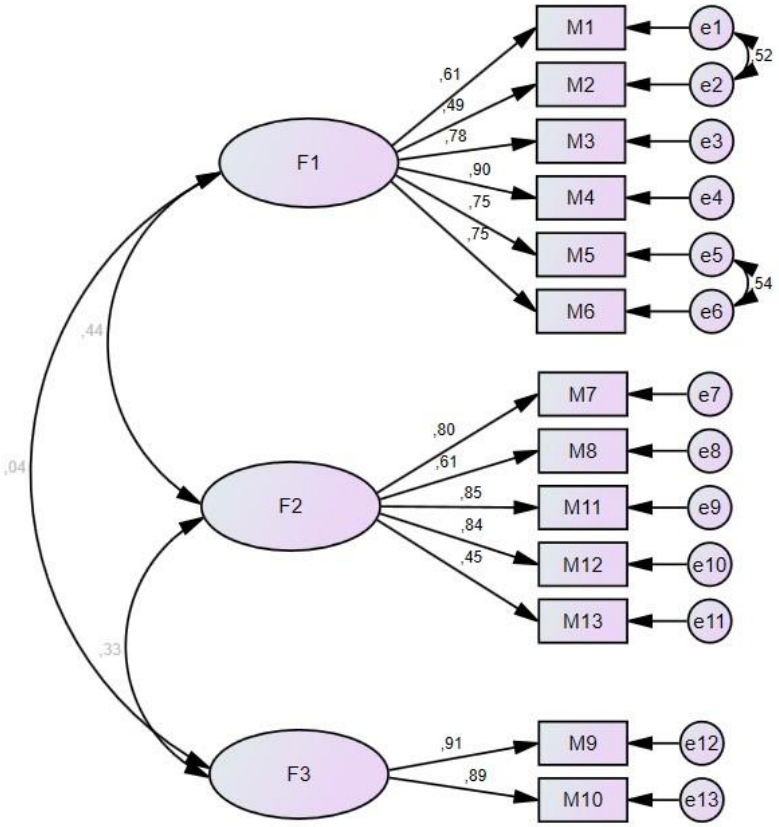

Figure 2: Multifactorial Structure of The Scale

The Cronbach Alpha value was calculated as 0.823 in three dimensions and the overall scale. For the convergent and divergent validity, the composite reliability (CR) and the average variance extracted (AVE) values for each dimension were calculated and shown in Table 2. A CR value of 0.70 and above and AVE values of 0.50 and above indicate convergent validity (Henseler, Ringle, and Sarsted, 2015). Intervariable correlations were calculated for divergent validity, and the square root of AVE values must be greater than these correlation values. When CR and AVE values of the scale were calculated separately, AVE values were found to be 0.53, 0.53, and 0.81 in all sub-dimensions, respectively, and CR values were found to be much higher than the critical value (0.70). In addition, it was calculated that the CR values in all dimensions were larger than the AVE values, and it was determined that the CR and convergent validity conditions of the scale were met.

Table 2. Average Variance Extracted (AVE) and Composite Reliability (CR)

Subscale	**F1**	**F2**	**F3**	CR	AVE	$\sqrt{AVE}$
F1	1.000			0.87	0.53	0.73
F2	0.335**	1.000		0.84	0.53	0.73
F3	0.021	0.236**	1.000	0.90	0.81	0.90

**p<0.01

In the Pearson correlation analysis for parallel form validity, the correlation between the CSS and the SSPS sub-dimensions. A statistically significant positive and weak correlation was found between the first factor of the scale and healthcare workers' perception of social stigma (p <0.01: r = 0.308). A statistically significant positive and moderate correlation was found between the second factor of the scale and healthcare workers' perception of social stigmata (p<0.01: r=0.646). A statistically significant positive and weak correlation was found between the third factor of the scale and healthcare workers' perception of social stigmata (p<0.01: r=0,239). A statistically significant positive

and weak correlation was found between the overall score of the scale and healthcare workers' perception of social stigmata ($p < 0.01$: $r = 0.590$).

Findings regarding the confirmatory factor analysis

According to the CFA, it was determined that the structural equation modeling results of the scale were significant at the p=0.000 level, and all the items that make up the scale were related to the multifactorial structure of the Scale (Table 3). The model has been improved. While making improvements, covariance was created between errors with high MI values (e1-e2; e5-e6). When considering the fit indexes of the CSS according to the first level multi-factor analysis results, RMSEA is 0.053; GFI 0.906; $\chi 2$ was found to be in perfect fit with 1.392 ($p = 0.000$).

Table 3. Structural Equation Modeling Results of Scale

Goodness of Fit Measures	Perfect Fit Criteria	Acceptable Fit Criteria	Before Modification	After Modification
CMIN/Df	$0 \leq \chi^2/df \leq 3$	$3 \leq \chi^2/df \leq 5$	1.926	1.392
GFI	0.90≤GFI	0.80≤GFI	0.866	0.906
AGFI	0.90≤AGFI	0.80≤AGFI	0.803	0.858
CFI	0.95≤CFI	0.85≤CFI	0.694	0.875
RMSEA	0.0≤RMSEA≤0.05	0.06≤RMSEA≤1.0	0.082	0.053
TLI	0.90≤TLI	0.80≤TLI	0.615	0.837
IFI	0.95≤IFI	0.85≤IFI	0.718	0.886

CMIN/Df = Chi square/Degree of freedom; GFI = Goodness of Fit Index;

TLI = Turker-Lewis Index; AGFI = Adjusted Goodness of Fit Index; CFI = Comparative Fit Index;

RMSEA = Root Mean Square Error of Approximation; IFI = Incremental Fit Index

Findings regarding the test-retest analysis

The test was measured again 15 days later for a retest. When the results were examined, a relation was found for retest measurements for the first factor ($r = 0.954$); for the second factor ($r = 0.947$); for the third factor ($r = 0.912$); ($r = 0.949$) for the total. According to the results, the re-measurements were correlated, and consistent results were obtained in the intervening time. In addition, when the alpha values for the repetition of the test were examined, it was seen that all alpha values were above 0.70. The fact that the internal consistency coefficient is above 0.70 indicates that the internal consistency is sufficient.

Findings regarding the discriminant validity

The minimum required value for the item-total test correlation to be sufficient is 0.30 (Seçer, 2018). According to the independent group t-test results showing the discrimination power of all items and item-total correlation, the item-total test correlation values of all items varied between 0.372 and 0.801. All remaining items were found to be related to each other. As a result of the items discrimination, it was determined that there was a statistically significant difference between the means of lower and upper group item scores. Therefore, it can be stated that the scale is distinctive in terms of measuring the desired quality.

DISCUSSION

Recent studies have shown that frontline health care workers can experience significant mental health problems such as the fear of death, depression, anxiety, stress, stigma, discrimination, while caring for patients with COVID-19 (Aykut and Aykut, 2020; Qiu, et al., 2020; Rajkumar, 2020; Wang, et al., 2020). This study aims to adapt the COVID-19 stigma scale to Turkish and to analyze its validity and reliability.

In this study, in which the Turkish validity and reliability study of the COVID-19 stigma scale (CSS) was conducted, the data were collected by online survey. Although the scale was single factor in the original study (Uvais et al., 2020), in this study, which was adapted to Turkish, the scale was found to have three factors with factor analysis. These factors were named as (1) Avoiding medical staff (items 1-6), (2) Avoiding others as a health care professional (items 7, 8, 11, 12, and 13), and (3) Disguising being a medical staff (items 9 and 10).

In Park's study, the content validity of the scale was established by the content validity index exceeding 0.78. The stigma scale satisfied factorial construct validity using both exploratory factor analysis (explaining 71% of the variance) and confirmatory factor analysis (the ratio of the chi-square value to the degrees of freedom, comparative fit index, normed fit index, and standardized root mean square residual were 2.65, 0.95, 0.92, and 0.04, respectively), which indicates a good fit to the data. Cronbach's alpha of the scale was 0.94 (Park et al., 2018).

In the literature, it is recommended that the minimum value for factor load should be 0.30 and above (Seçer, 2018). Accordingly, in the Turkish adaptation study, a three-factor pattern emerged as a result of the eigenvalue of all items being above 1, the factor design not being overlapping, and having sufficient factor loading. The contribution of these components to the total variance was determined as over 64.0%. In addition, the reliability of the scale was found to be excellent in all sub-dimensions by Cronbach alpha analysis (Cronbach alpha values for sub-dimensions and total scale were 0.858, 0.802, 0.889, and 0.823, respectively). A Cronbach Alpha value above 0.70 is sufficient for reliability. Therefore, the reliability of the adapted scale and all sub-dimensions was found to be high. In addition, as Kline (2016) stated, because of the evaluations regarding the Structural Equation Modeling Results and the goodness of fit indices of the scale, despite the good fit in the original scale study, this study showed excellent fit.

In the CFA, the RMSEA value varies between 0 and 1, and it is expected to take values close to 0. While values equal to or less than 0.05 indicate a Perfect fit, values up to 0.08 indicate an acceptable fit (Hayran, and Hayran, 2020). The other basic fit index for CFA is Chi-Square Goodness of Fit ($\chi 2$). It is tested whether the covariance structure of the model for the observed variables is different from that of the established structure. The smallness of the calculated $\chi 2$ statistic value indicates that the degree of fit is good. In addition, the probability value should also be significant. The significance of the Chi-square indicates that the model is significant. The significance of Chi-Square (χ^2) means that χ^2/df is less than 5, χ^2 less than 3 shows the perfect fit of the model (Çokluk, Şekercioğlu, Büyüköztürk, 2018; Seçer, 2018). The Goodness of Fit Index (GFI) is a measure related to the relative amount of explained variance and covariance of the model, and it takes values between 0 and 1. 0.90 and above can be considered as a good fit, values above 0.85 can be considered as acceptable values. Comparative Fit Index (CFI) produces fit value by comparing the developed model with the independent model. A CFI value of 0.95 and above indicates good fit; values between 0.90-0.94 indicate acceptable fit. A GFI value above 0.85 indicates acceptable fit (deVellis, 2016; Hayran, and Hayran, 2020).

In this study, compliance was found to be "good fit" (CMIN/df = 1.392, RMSEA= 0.053, GFI= 0.906, AGFI = 0.858). In the study of Park et al. (2018), the results of the confirmatory factor analysis showed a "good fit" (CMIN/df = 2.65, RMSEA= 0.04, CFI= 0.95) (Park, et al., 2018). Although the total variance contribution of all components in the Turkish adaptation study was found to be lower than Park's study (64.6% vs 71.0%), factor analyses similarly showed a "good fit".

It has been determined that the scale can evaluate the nurses' perception of COVID-19 stigma regarding the COVID-19 pandemic process. In addition, whether the scale measures the desired quality was examined by discriminant validity. In the Turkish adaptation study, it was observed that the scale was distinctive and could select the stigma perception associated with COVID-19 in nurses.

As in pandemics such as SARS, MERS-COV, H1N1 (McCauley, Minsky, and Viswanath, 2013; Park, et al. 2018; Skalski, Uram, Dobrakowski, and Kwiatkovska, 2021; Taylor, 2019), it is estimated that during and after the COVID-19 pandemic, traumatic mental problems such as anxiety, fear, apprehension, and stigma will be experienced in the community and health professionals. Specific assessments should be made regarding these problems that may develop during the COVID-19 pandemic, which has become a global problem.

CONCLUSION

It was concluded that the COVID-19 Stigma Scale, adapted to Turkish, is an important tool to assess the perception of COVID-19 stigma among health professionals in this context. After the pandemic, necessary measures should be taken to support health professionals who experience stigma in adapting to normal processes and to ensure that they can manage these perceptions by changing them. As a result, the COVID-19 Stigma Scale has been identified as a valid and reliable tool for use by healthcare professionals working in this field to better understand the perceptions of stigma experienced by nurses due to COVID-19 and to identify individuals experiencing COVID-19 stigma. Use of the scale to measure perceptions of COVID-19-related stigma in healthcare workers with different characteristics and in larger populations is recommended.

Author Contributions

Concept and design: B.N.O.U., G.K., Ö.E. Data collection: B.N.O.U., G.K., Ö.E. Data analysis and interpretation: B.N.O.U., G.K., Ö.E. Writing manuscript: B.N.O.U., G.K., Ö.E. Critical review: B.N.O.U., G.K., Ö.E.

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REFERENCES

Aykut, S., Soner Aykut, S. (2020). The importance of social work on the basis of post-traumatic stress disorder and the Covid-19 pandemic. *Turkish Journal of Social Policy, 1* (1), 56-66. Retrieved from https://dergipark.org.tr/tr/pub/tpd/issue/54902/764078

Bagcchi, S. (2020). Stigma during the COVID-19 pandemic. *Lancet Infectious Diseases*, *20*(7), 782. DOI:http://doi.org/10.1016/S1473-3099(20)30498-9

Brooks, S.K., Webster, R.K., Smith, L.E., Woodland, L., Wessely, S., Greenberg, N., Rubin, G.J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *The Lancet, 395*(10227), 912-920. DOI: http://doi.org/10.1016/S0140-6736(20)30460-8

Centers for Disease Control and Prevention (2020). *Reducing stigma COVID-19.* https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/reducing-stigma.html [Available date: 20 December 2020].

Çevik Aktura, S., Özden, G. (2020). Psychological effects of the epidemic: Nurses of Covid-19. *The Journal of International Social Research, 13*(73), 1146-1151. DOI: http://doi.org/10.17719/jisr.11049

Çokluk, Ö., Şekercioğlu, G., Büyüköztürk, Ş. (2018). *Multivariate statistics for social sciences SPSS and LISREL applications*. 4th ed. Ankara: Pegem Academy

DeVellis, R.F. (2016). *Scale development: Theory and applications*. 26. Sage publications.

Eren Bana, P. (2020). Evaluation of the social ımplication perception of healthcare employees ın the Covid-19 outbreak process. *Press Academia Procedia* (PAP), *11*, 115-119. DOI: http://doi.org/10.17261 /Pressacademia.2020.1251

Erkin, Ö., Konakçı, G., Duran, S. (2021). Secondary traumatic stress in nurses working with patients with suspected/confirmed COVID-19 in Turkey. *Perspectives in Psychiatric Care*, *57*(4), 1664-1672 DOI: http://doi.org/10.1111/ppc.12733

Hayran, M., Hayran, M. (2020). *Basic statistic for health research*. Ankara: Art. Ofset Matbaacılık Publishing

Hernandez, S.H.A., Morgan, B.J., Parshall, M.B. (2016). Resilience, stress, stigma, and barriers to mental healthcare in US Air Force nursing personnel. *Nursing Research*, 65(6), 481–486. DOI: http://doi.org/10.1097/NNR.0000000000000182

Henseler, J., Ringle, C.C.O.I., Sarstedt, M.A. (2015). New criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115-135. DOI: http://doi.org/10.1007/s11747-014-0403-8

International Test Commission. (2017). *The ITC guidelines for translating and adapting tests* (Second edition). [Available date: 21 May 2006]. Available from: https://www.intestcom.org/files/guideline_test_adaptation_2ed.pdf

Kaya, B. (20202). The effects of pandemic on mental health. *Turkish Journal of Clinical Psychiatry*, *23*, 123-124. DOI: http://doi.org/10.5505/kpd.2020.64325

Kiroglu, F. (2020). Working conditions and general issues in the COVID-19 pandemic environment. *Meyad Academy Journal, 1(*1), 9-90. [Available date: 18 January 2022]. Available from: https://dergipark.org.tr/tr/download/article-file/1811709

Kline, R.B. (2016). *Methodology 1in the social sciences. Principles and practice of structural equation modeling*. 4th ed. Guilford Press.

Lawshe, C.H. (1975). A quantitative approach to content validity. *Personnel Psychology*, *28*(4), 563-575. https://doi.org/10.1111/j.1744-6570.1975.tb01393.x

McCauley, M., Minsky, S., Viswanath, K. (2013). The H1N1 pandemic: Media frames, stigmatization and coping. *BMC Public Health*, *13*(1), 1-16.

Yıldız, İ., Çıkrıkçılı, U., Yüksel, Ş. (2020). Karantinanın ruhsal etkileri ve koruyucu önlemler. Türkiye *Psikiyatri Derneği.* [Available date: 18 January 2022]. Available from: https://www.psikiyatri.org.tr/TPDData/Uploads/files/KarantinaCOVID.pdf

Özdamar, K. (2018). *Statistical data analysis with package programs*. 10th ed. Nobel Academic Publishing;

Özdemir, H. (2010). *Deaths from epidemics 1914-1918*. 2nd ed. Ankara: Türk Tarih Kurumu.

Özmen, S., Erdem, R. (2018). Conceptual framework of the stigmatization. *Süleyman Demirel University Journal of Faculty of Economics & Administrative Sciences*, *23*(1). [cited 2022 Jan 20]. Available from: https://dergipark.org.tr/tr/download/article-file/1004031

Park, J.S., Lee, E.H., Park, N.R., Choi, Y.H. (2018). Mental health of nurses working at a government-designated hospital during a MERS-CoV outbreak: A cross-sectional study. *Archives of Psychiatric Nursing, 32,* 2–6. DOI: http://doi.org/10.1016/j.apnu.2017.09.006

Qiu, J., Shen, B., Zhao, M., Wang, Z., Xie, B., Xu, Y. (2020). A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: Implications and policy recommendations. *Gen Psychiatry, 33,* e100213. DOI: http://doi.org/10.1136/gpsych-2020-100213

Rajkumar, R.P. (2020). COVID-19 and mental health: A review of the existing literatüre. *Asian Journal of Psychiatry, 52,* 102066. DOI: https://doi.org/10.1016/j.ajp.2020.102066

Republic of Turkey Ministry. (2023). *COVID-19 ınformation page*. [Accessed date: 03 May 2023]. Available from: https://covid19.saglik.gov.tr

Seçer, İ. (2018). *Psychological test development and adaptation process: SPSS and LISREL applications.* 2nd ed. Ankara: Anı Publishing.

Skalski, S., Uram, P., Dobrakowski, P., Kwiatkowska, A. (2021). The link between ego-resiliency, social support, SARS-CoV-2 anxiety and trauma effects. Polish adaptation of the Coronavirus Anxiety Scale. *Personality and individual differences, 171,* 110540. DOI: http://doi.org/10.1016/j.paid.2020.110540

Taylor, S. (2019). *The psychology of pandemics: Preparing for the next global outbreak of infectious disease.* Newcastle upon Tyne, UK: Cambridge Scholars Publishing.

Tuncay, F.E., Koyuncu, E., Özel, Ş. (2020). A review of protective and risk factors affecting the psychosocial health of health workers in pandemics. *Ankara Medical Journal, 2,* 488-501.

DOI: http://doi.org/10.5505/amj.2020.02418

Uvais, N.A., Aziz, F., Hafeeq, B. (2020). COVID-19-related stigma and perceived stress among dialysis staff. *Journal of Nephrology, 33,* 1121–1122. DOI: https://doi.org/10.1007/s40620-020-00794-1

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., Ho, R. C. (2020). ımmediate psychological responses and associated factors during the ınitial stage of the 2019 Coronavirus disease (COVID-19) Epidemic among the general population in China. *International Journal of Environmental Research and Public Health, 17*(5), 1729. https://doi.org/10.3390/ijerph17051729 .

World Health Organization. (2023). *WHO Coronavirus disease (Covid-19) dashboard*. https://covid19.who.int [Accessed date: 03 May 2023]

Zhu, H., Wei, L., Niu, P. (2020). The novel coronavirus outbreak in Wuhan, China. *Global Health Research and Policy. 5*(6), 1-3. DOI: http://doi.org/10.1186/s41256-020-00135-6