PSYCHOMETRIC PROPERTIES OF THE TURKISH VERSION OF THE WORK-RELATED QUALITY OF LIFE SCALE ON NURSES

Cahit KORKU [*]

ABSTRACT

Nurses are exposed to physical and psychological pressure in the workplace due to adverse workplace conditions such as heavy workload and working conditions. The low quality of work life of nurses causes poor performance, medical errors and prevents reaching the desired health outcomes. In order to achieve the desired health outcomes, nurses' quality of work life should be measured and improved. This study aimed to determine the psychometric properties of the Turkish version of the Work-Related Quality of Life scale. The study was conducted with nurses in a training and research hospital in Central Anatolia Region, Turkey (N = 226). Confirmatory factor analysis was performed to determine the scale's factor structure. The regression analysis was performed to determine sociodemographic variables affected the quality of working life. The scale's factor structure was confirmed (χ^2/df = 2.370, RMSEA = 0.070). The scale had a high level of reliability (Cronbach's alpha = 0.944). Among socio-demographic variables, age, gender, marital status and years of working in the hospital have an effect on the scale or at least one subscale. The Turkish version of the Work-Related Quality of Life scale is a valid and reliable instrument for assessing the nurses' quality of working life.

Keywords: *Quality of working life, Psychometric properties, Hospital, Nurse*

HEMŞİRELERDE İŞLE İLGİLİ YAŞAM KALİTESİ ÖLÇEĞİNİN TÜRKÇE VERSİYONUNUN PSİKOMETRİK ÖZELLİKLERİ

Cahit KORKU [*]

ÖZ

Hemşireler yoğun iş yükü ve ağır çalışma koşulları gibi olumsuz işyeri koşulları nedeniyle işyerinde fiziksel ve psikolojik baskıya maruz kalmaktadırlar. Hemşirelerin iş yaşam kalitelerinin düşük olması, düşük performansa, tıbbi hatalara neden olmakta ve istenen sağlık sonuçlarına ulaşmayı engellemektedir. Arzulanan sağlık sonuçlarına ulaşabilmek için hemşirelerin iş yaşam kalitesinin ölçülmesi ve iyileştirilmesi gerekir. Bu çalışma, İşle İlgili Yaşam Kalitesi ölçeğinin Türkçe versiyonunun psikometrik özelliklerini belirlemeyi amaçlamıştır. Araştırma Türkiye'nin İç Anadolu Bölgesi'nde bir eğitim ve araştırma hastanesindeki (N=226) hemşireler üzerinde yapılmıştır. Ölçeğin faktör yapısını belirlemek için doğrulayıcı faktör analizi yapılmıştır. Çalışma yaşam kalitesini etkileyen sosyo-demografik değişkenleri belirlemek için regresyon analizi yapılmıştır. Ölçeğin faktör yapısı doğrulanmıştır (χ2/sd = 2.370, RMSEA = 0.070). Ölçeğin yüksek düzeyde güvenirliğe sahip olduğu belirlenmiştir (Cronbach's Alpha = 0.944). Sosyo-demografik değişkenlerden yaş, cinsiyet, medeni durum ve hastanede çalışma süresi ölçek üzerinde veya en az bir alt boyut üzerinde etkiye sahiptir. İşle İlgili Yaşam Kalitesi ölçeğinin Türkçe versiyonu hemşirelerin çalışma yaşam kalitesini değerlendirmede geçerli ve güvenilir bir araçtır.

Anahtar Kelimeler: *İş Yaşam Kalitesi, Psikometrik Özellikler, Hastane, Hemşire*

I. INTRODUCTION

The aging world population and increasing healthcare needs cause an increase in nurses' workload and lead to nursing shortage (Liu et al., 2012). Nurses encounter greater challenges during extraordinary periods such as that of the COVID-19 (Mo et al., 2020; Halcomb et al., 2020). This nursing shortage caused by the increasing demand and decreasing supply is one of the most critical problems regarding healthcare services worldwide (Dai et al., 2016; Wang et al., 2019). The distribution of nurses is also an important issue, and there are significant differences between countries in terms of rates of nurses to population. For example, there are 18 nurses per 1,000 people in Norway, 8.2 (on average) in the OECD countries, 2.3 in Turkey, and 1.3 in Colombia as from 2018 (OECD, 2020). Nurses, who comprise the largest part among healthcare professionals in hospitals, are exposed to physical and psychological pressure more than employees in other relevant professions (Abbasi et al., 2017). Nurses and other healthcare professionals have to deal with numerous risk factors (For example; time pressure, insufficient rewards, workload, violence, communication-related challenges, and nonideal organization of work) (European Commission, 2011). These factors have undesirable individual and organizational consequences (Suzuki et al., 2004; Almalki et al., 2012; Akar, 2018; Casida et al., 2019). For this reason, it becomes important to improve the nurses' quality of working life. Health outcomes can be improved if nurses' quality of working life is assessed, and related improvements are made.

The concept of quality of working life goes back a long way, and it has been in the literature since the 1950s (Ferreira et al., 2017; Easton & Van Laar, 2018). The quality of working life, which is considered to be one of the most important issues of human resource management, is a multidimensional concept that addresses one's state inside and outside the workplace (Dai et al., 2016; Alvanoudi, 2020). It affects not only one's work performance but also other aspects of one's life such as happiness, social life, and recreational activities (Wang et al., 2019). The quality of working life can be defined as consideration of an employee's needs and longing related to working conditions, wage and career development opportunities, work–family role balance, safety and social interactions at work, and employees' social relativity (Kanten & Sadullah, 2012). It is associated with numerous concepts that have an impact on organizational results. The quality of working life has a positive relationship with organizational commitment (Nayak et al., 2018), job satisfaction, and productivity (Almalki et al., 2012) and a negative relationship with cognitive failure (Abbasi et al., 2017), burnout (Akar, 2018; Casida et al., 2019), work alienation (Akar, 2018) and employee turnover (Almalki et al., 2012). These relationships make it important for management to assess and improve nurses' quality of working life.

It is highly difficult to find measurements that basically focus on quality of working life when the quality of life is measured under certain conditions. While some of them assess people's overall quality of life, others are aimed at measuring the quality of life in the chronic condition. (Garzaro et al., 2020). Some of the scales used to assess the quality of work life require lengthy procedures that are not easily performed in daily clinical practice due to their long duration (Dai et al., 2016; Garzaro et al., 2020). Work-Related Quality of Life (WRQoL) was developed by Van Laar et al., (2007). The WRQoL is widely used to measure the quality of working life of healthcare professionals (Dai et al., 2016; Garzaro et al., 2020). The WRQoL was translated into a variety of languages and used to analyze the quality of working life in numerous fields of profession (Easton and Laar, 2018). Easton and Van Laar (2012) suggested the conceptual and operational definitions of the six independent factors contributing to the WRQoL. The WRQoL and its subscales allow researchers, organizations, and individuals to determine the most important problems within the broader context (Easton and Laar, 2018).

Duyan and others (2013) conducted a validity and reliability of the WRQoL scale in Turkish Language and confirmed its 6-subscale and 21-item structure. Then, Akar and Üstüner (2017) conducted its (WRQoL) validity and reliability study for the education sector. Akar and Üstüner (2017) also confirmed its 6-subscale and 23-item structure. By contrast, no studies were conducted in

Turkey that determine the validity, reliability, and psychometric properties of the WRQoL in the health sector. This study aimed to determine the psychometric properties of the Turkish version of the WRQoL scale for nurses.

II. MATERIALS AND METHODS

2.1. The Work-Related Quality of Life Scale

The WRQoL scale consists of 23 items and 6 subscales. The Job and Career Satisfaction (JCS) subscale assesses one's level of job satisfaction in terms of various factors such as personal development, career development, meeting of educational needs, and rewarding. The General Well-Being (GWB) subscale assesses one's general well-being in terms of general life satisfaction, overall quality of life, and mental health problems such as depression and anxiety disorders. The Stress at Work (SAW) subscale assesses one's state of feeling under too much pressure at work and not being able to meet the expectations. The Control at Work (CAW) subscale reflects employees' level of confidence in their feelings that they are in control of their work. This subscale is mainly related to one's state of getting involved in decisions that affect one's way of working. The Home–Work Interface (HWI) subscale analyzes the relationship between home life and work life. The results of this subscale can be affected by a number of factors such as opportunities provided at work, flexible working hours, maternity and parental leave, and child and dependent care. The Working Conditions (WCS) subscale assesses employees' level of satisfaction in terms of primary resources, working conditions, and state of working in a safe and effective manner (Easton and Van Laar, 2018).

The WRQoL is a five-point Likert-type scale (Strongly disagree = 1 to strongly agree = 5). The factor structure of the reverse-coded items (7, 9, and 19) is determined by reversing the items before analysis. Higher scores of scale, indicate higher levels of quality of working life. The total and subscale scores can also be classified as low, medium, or high level of quality of working life to improve the interpretation of the scale (Easton & Van Laar, 2018).

2.2. Data Analysis

The data were analyzed using Statistical Package for Social Science for Windows (SPSS) 21.0 and Linear Structural Relations (LISREL) 9.30 programs. Bartlett's test of sphericity and the Kaiser–Meyer–Olkin (KMO) coefficient were used to determine the data's suitability for factor analysis. The item analyses regarding the scale items were also performed. The confirmatory factor analysis was used in the LISREL 9.30 program to test the construct validity of the scale. The scale's suitability for the second-order multi-factor model was determined through the chi squared goodness of fit test/degrees of freedom ($\chi2/df$), the root mean square error of approximation (RMSEA), the root mean square residual (RMR), the goodness of fit index (GFI), the comparative fit index (CFI), the non-normed fit index (NNFI), and t-values. Cronbach's alpha coefficient was used for the entire scale and its subscales to determine their level of reliability. A regression analysis was performed to determine the impact of the sociodemographic variables on the entire scale and its subscales. In order to determine the suitability of the data for regression analysis, the distribution of the data, covariance, multicollinearity and extreme values were analyzed.

2.3. Participant

The target population consisted of all nurses who had been working in the same unit for at least 6 months in a training and research hospital in Niğde, Turkey. Prior to the study, ethics committee approval, written permission, and informed consent were obtained from the Niğde University Ethics Committee [Number: 2019/5-7], the hospital, and the nurses, respectively. This study was conducted from July 1 to July 31, 2019. It was completed with 226 (55.4%) of 408 nurses who met the inclusion criteria. Table 1 lists the participants' descriptive statistics.

Table 1. Occupational and Demographic Characteristics of the Nurses (N = 226).

| Characteristics	Proportion, n (%)	M[a] ± SD[b] Mdn[c] (25th–75th percentiles)
Age <30 30–39 ≥40	62 (27.4) 76 (33.6) 88 (38.9)	35.26 ± 7.96 38 (29–41)
Gender Female Male	164 (72.6) 62 (27.4)	
Education Level High school Associate degree Bachelor's degree Master's degree	18 (8.0) 51 (22.6) 139 (61.5) 18 (8.0)	
Marital Status Single Married	55 (24.3) 171 (75.7)	
Number of Children None One Two Three or more	57 (25.2) 55 (24.3) 81 (35.8) 33 (14.6)	
Working Time Daytime Daytime and night-time	72 (31.9) 154 (68.1)	
Years of Professional Experience <10 ≥10	90 (39.8) 136 (60.2)	12.68 ± 6.57 12 (6.50–18.27)
Years of Working in the Hospital <5 ≥5	107 (47.3) 119 (52.7)	6.57 ± 6.02 5 (1.75–8.70)

[a]Mean, [b]standard deviation, [c]median.

Nearly three-fourths of the participants (72.6%) were female, and their mean age was 35.26 years. More than half of them (61.5%) had a bachelor's degree. Nearly three-fourths of them were married (75.7%) and had at least one child (74.8%). Less than one-third of the participants were working in the daytime, had approximately 12 years of professional experience, and had approximately 6.5 years of working in the hospital (Table 1). The legislation indicating who could work as a nurse in Turkey has changed over time. People who received nursing education at the high school or associate degree level could be appointed as a nurse until 2014. Today, contrarily, only nurses who have a bachelor's diploma in the nursing department are allowed to be appointed as a nurse to hospitals. The wages of nurses vary by education level, but there are no differences between their tasks and powers (Yıldız et al., 2020). Therefore, this study also included nurses who did not have a bachelor's degree (appointed before 2014).

III. RESULTS

The WRQoL scale has 23 items. Items 7, 9, and 19 were reverse-coded; thus, these items were recorded in line with the rest of the scale. The item analyses were performed to determine which items of the WRQoL scale would be included in the scale. The item-total correlation ranged from 0.470 (I1) to 0.760 (I4). No items were detected that lowered the reliability of the scale. Item1 (I1) did not contribute to the reliability of the scale. The first- and second-order confirmatory factor analyses were

performed for all scale items. The t-values of all items were significant (p <0.01), and the error variance of item I1 was high for the first- (0.720) and second order (0.850) multi-factor models. Çokluk and collegues (2016) suggested different views on the acceptable values of the fit indices. A value ≤2.5 indicated a perfect fit, and ≤5 indicated a good fit for χ^2/df. A value ≤0.05 indicated a perfect fit, ≤0.08 a good fit, and ≤0.1 a poor fit for RMSEA and RMR; ≥0.95 indicated a perfect fit and ≥0.90 a good fit for GFI; ≥0.95 indicated a perfect fit and ≥0.90 a good fit for CFI; and ≥0.95 indicated a perfect fit and ≥0.90 a good fit for NNFI. The indices used in the study are analyzed to determine whether the model is confirmed or not (Çokluk et al., 2016). The values of fit indices were found to be χ^2/df = 626/215 = 2.910, RMSEA = 0.090, RMR = 0.060, GFI = 0.800, CFI = 0.970, and NNFI = 0.960 for the first order of the model, whereas they were found to be χ^2/df = 661/224 = 2.950, RMSEA = 0.090, RMR = 0.070, GFI = 0.800, CFI = 0.960, and NNFI = 0.960 for the second order of the model. The χ^2/df value indicated an acceptable fit, and the RMESEA value indicated a poor fit in both models. The goodness of fit indices significantly improved when the I1 was excluded from the model. The values of fit indices were found to be χ^2/df = 449/194 = 2.310, RMSEA = 0.070, RMR = 0.050, GFI = 0.850, CFI = 0.980, and NNFI = 0.097 for the first-order multi-factor model, whereas they were found to be χ^2/df = 483/203 = 2.370, RMSEA = 0.070, RMR = 0.060, GFI = 0.840, CFI = 0.970, and NNFI = 0.097 for the second-order multi-factor model. The fit indices, except for GFI, indicated a good or perfect fit in both models. The path coefficients were indicated only for the second order because the WRQoL scale was determined to be suitable for both the first- and second-order multi-factor models (Figure 1).

Figure 1. Confirmatory Factor Analysis Results of the Work-Related Quality of Life Scale
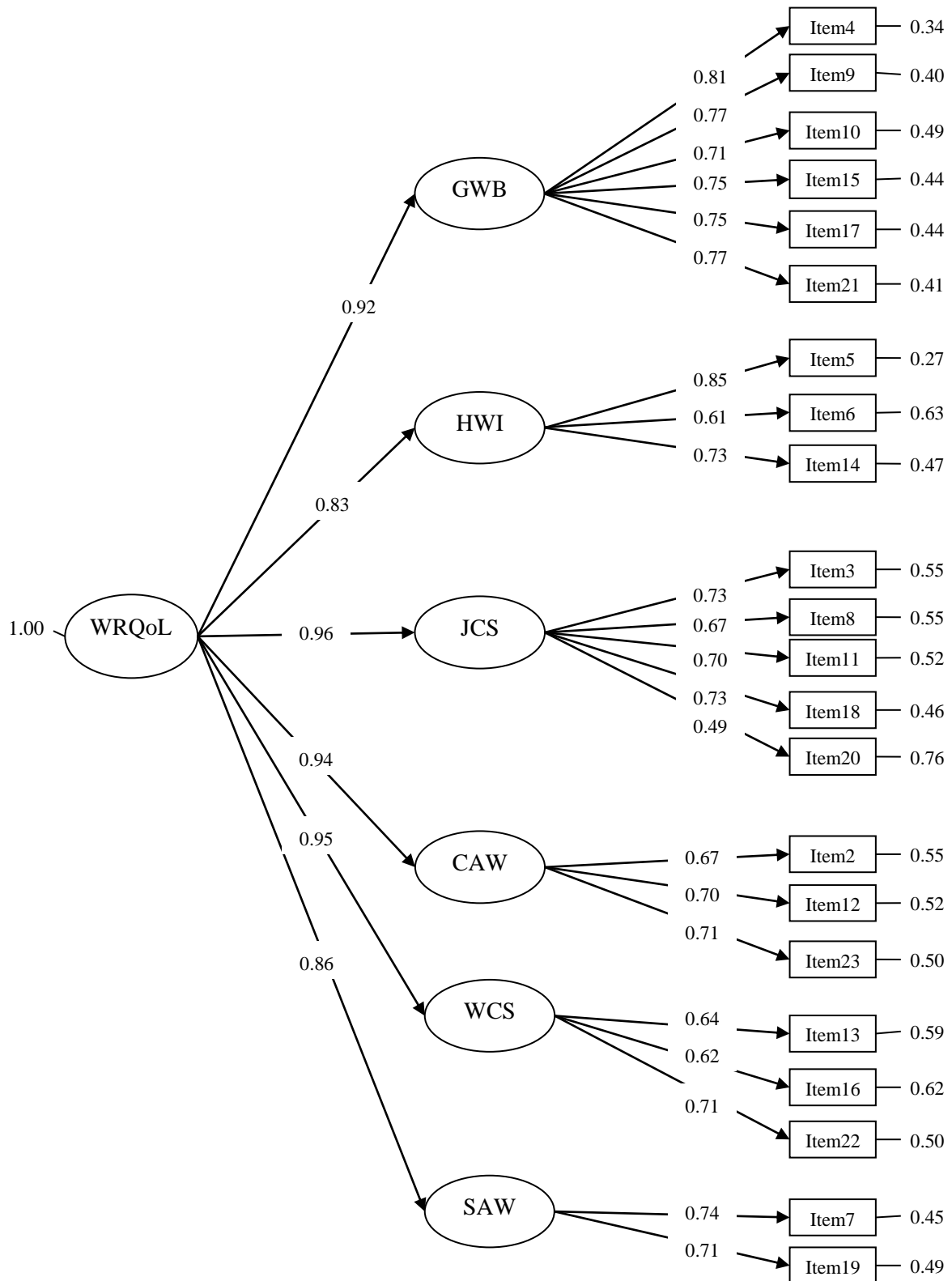
Direct effects on latent variables were above 60, except for the I20, and all t-values were significant. The confirmatory factor analysis determined that the second-order multi-factor model of the WRQoL scale had a compatible structure. The reliability analysis also found that the entire scale and its subscales had a sufficient level of reliability (Table 2).

Table 2. Reliability Analysis Results Regarding the Scales and Subscales

Scales and Subscales	Item	Mean SD[a]	Cronbach's Alpha Coefficient	Guttman Split-half Coefficient
WRQoL (Overall)	22	3.24 ± 0.71	0.944	0.924
GWB	6	3.29 ± 0.83	0.891	
HWI	3	3.29 ± 0.92	0.778	
JCS	5	3.31 ± 0.76	0.800	
CAW	3	3.34 ± 0.85	0.729	
WCS	3	3.01 ± 0.83	0.693	
SAW	2	3.17 ±0.92	0.691	

[a]Standard deviation.

The WRQoL scale had a high level of reliability (0.944) in terms of internal consistency. One of the most common methods of determining the reliability of the scale is to split the test into two parts (Alpar, 2012). The scale was found to be highly reliable (Guttman Split-Half Coefficient = 0.924) when the test was split into two parts. The reliability levels of its subscales (Cronbach's Alpha coefficient) ranged from 0.691 to 0.891. The CAW subscale had the highest mean score (3.34 ± 0.85), and the WCS subscale had the lowest mean score (3.01 ± 0.83).

The multiple linear regression analysis was performed to determine impacts of the sociodemographic variables on the scale scores (Table 3) and before that, the test assumptions were examined. A Dublin-Watson value between 1.5 and 2.5 indicates that there is no autocorrelation, a WIF value less than 5 indicates no multicollinearity, and a Mahalanobis value less than χ^2 table value indicates that there is no multicollinearity (Demir, 2020). The data provided the regression analysis assumptions. WIF values for the variables vary between 1.02 and 2.15. These values, and the Dublin Watson coefficient, vary between 1.786 and 1.925. There is 1 extreme value according to Mahallonobis distance. There is no extreme value according to the Cook distance coefficient (0.66). Therefore, all data were analyzed.

Table 3. Regression Analysis Results

Variable	WRQoL	GWB	HWI	JCS	CAW	WCS	SAW
Model summary							
R	0.170	0.206	0.280	0.167	0.155	0.265	0.211
R squared	0.029	0.042	0.078	0.028	0.024	0.070	0.045
Adjusted R squared	0.024	0.034	0.066	−0.003	−0.007	0.058	0.040
ANOVA							
F	6.634	4.921	4.922	0.896	0.771	5.594	10.460
Sig.	0.011	0.008	0.000	0.510	0.612	0.001	0.001
Beta (B) (Standardized)							
Constant	3.106[b]	3.413[b]	4.439[b]	3.534[a]	3.771[a]	3.564[a]	2.956[b]
Age	−0.142	−0.135	−0.186[a]	−0.079	−0.117	0.009	−0.098
Gender	−0.034	−0.026	−0.033	−0.076	−0.045	0.012	0.065
Education Level	0.010	0.004	−0.016	0.053[a]	−0.002	0.038	0.030
Marital Status	−0.107	−0.067	−0.162[a]	0.018[a]	0.004	−0.150[a]	−0.059
Number of Children	−0.108	−0.106	0.043	−0.039[a]	0.008	0.013	−0.076
Years of Working in the Hospital	0.170[a]	0.150[a]	0.245[b]	0.152	0.164[a]	0.227[b]	0.211[a]
Weekly Working Hours	−0.085	−0.155[a]	−0.069	−0.026[a]	−0.022	−0.151[a]	−0.039

[a]$p < 0.05$, [b]$p < 0.01$.

According to regression results, of the seven models, five were significant ($p < 0.05$), and two were insignificant ($p > 0.05$). The age variable had a negative impact on the HWI subscale. The balance

between home and work deteriorated as the age increased. The number of years of working in the hospital had a positive impact on WRQoL, GWB, HWI, WCS, and SAW. Weekly working hours had a negative impact on GWB and WCS. The gender, education level, and the number of children had no significant impacts on the scale scores.

IV. DISCUSSION

In this research confirmatory factor analysis performed to test the construct validity of the WRQoL. First, Van Laar and collegues (2007) used confirmatory factor analysis to test the scale's suitability for the first-order multi-factor model; then, Duyan and collegues (2013) used this analysis to test the scale's suitability for the first- and second-order multi-factor models. However, the 23-item structure of the WRQoL indicated a poor fit for the RMSEA, whereas its 21-item structure was suitable for both the first- and second-order multi-factor models. This study also found that the scale's 23-item structure for the first- and second-order multi-factor model had a poor fit for RMSEA. Accordingly, this result agrees with that of the study by Duyan and collegues (2013). The scale's 22-item structure had a good fit for the first- and second-order multi-factor models.

The results in the literature show that WRQoL and its subscale have sufficient reliability. This study found that the scale had a high level of reliability (α = 0.944). This study's results regarding the reliability level of the entire scale agree with results of the previous studies. The alpha reliability levels were found to be 0.952 by Zubair and others (2017), 0.910 by Casida and others (2019), and 0.910 by Alvanoudi (2020). The reliability coefficients of the subscales of WRQoL ranged from 0.690 to 0.880 in this study. The reliability coefficients ranged from 0.700 to 0.830 in the study by Chen and others (2014), 0.778 to 0.829 in the study by Alvanoudi (2020), 0.690 to 0.760 in the study by Duyan and others (2013), and 0.732 to 0.911 in the study by Zubair and others (2017). The overall reliability of the scale was good.

The results in the literature show that the employees do not have high WRQoL scores. The mean WRQoL score in this study was 3.24. The mean WRQoL score was 3.40 in the study by Dai and others (2016), 3.35 in the study by Hu and others (2020), 3.32 in the study by Wang and others (2020), 3.30 in the study by Zubair and others (2017), 3.30 in the study by Casida and others (2019), 3.11 in the study by Yoosefi Lebni and others (2021), and 2.97 in the study by Opollo and others (2014). The mean score in this study was lower than those in other studies, except for the ones conducted by Yoosefi Lebni and others (2021) and Opollo and others (2014).

In the literature, different results were obtained in terms of the relationship between socio-demographic variables (age, gender, marital status and working years) with WRQoL and its subscale. This study found that age had a negative impact on HWI but did not have a significant impact on the WRQoL and its other subscales. Opollo and others (2014) found no significant relationships between age and WRQoL. Hu and others (2020), also found no significant differences in WRQoL between age groups. Wang and others (2019), by contrast, found that age had a negative impact on WRQoL. Carrillo-García and others (2013) found that people in the 41–50 age group had lower levels of job satisfaction than those in the 20–30 age group and who were 60 years old or older. Wang and others (2020) and Abbasi and others (2017) also found that WRQoL varied by a number of age some groups. This study found that gender did not have a significant impact on the WRQoL and its other subscales. Similarly, Shukla and others (2017), Wang and others (2019) and Hu and others (2020) also found that WRQoL did not significantly vary by gender. By contrast, Opollo and others (2014) found a relationship between gender and WRQoL, and Zubair and others (2017) found that scores on the except WRQoL and two subscales (JCS and SAW) significantly vary by gender; male have higher score than female. This study found that marital status did not have an impact on WRQoL. Similarly, Wang and others (2019) and Hu and others (2020) found no significant WRQoL differences based on marital status between the groups. However, this study found that marital status had a significant impact on HWI and WCS. This study found that years of working in the hospital had a positive significant impact on WRQoL, GWB, WCS, and SAW. Wang and others (2019) found a difference between the WRQoL scale scores by years of working. Yoosefi Lebni and others (2021) found that

people who had more work experience had higher scale scores. By contrast, Akter and others (2018) found that work experience did not have a significant impact on WRQoL, and Opollo and others (2014) found no significant relationships between work experience and the WRQoL.

From this study and the limited number of studies in the literature, there is no evidence that there is a relationship between education level and number of children, and the WRQoL and its sub-dimensions. This study found that the education level and number of children did not have a significant impact on the WRQoL scale and its subscales. Similarly, Wang and others (2019), Hu and others (2020) and Wang and others (2020) found that WRQoL did not significantly vary by the education level, and Akter and others, (2018) found that years of education did not have a significant impact on WRQoL. Wang and others (2019) found no significant differences between the WRQoL scores based on number of children.

V. CONCLUSION

This study aimed to determine the validity and reliability of the WRQoL scale for the nurses in Turkey and to analyze the relationship of the entire scale and its subscales with demographic and work-related variables. The WRQoL scale is a valid and reliable instrument for assessing the nurses' quality of working life. According to the scores obtained from the scale, the quality of working life of nurses is moderate. Nurses' WRQoL in our research is generally lower when comparision to other researh. Accordingly, strategies should be developed to improve the quality of nurses' working life. Considering the low ratio of nurses to the population, the number of nurses can be increased to reduce the workload of nurses. Professional powers and responsibilities can be clarified by legal regulations. They can be empowered in the work environment in which they work. Effective strategies are needed to improve the quality of nurses' working life in order to improve organizational outcomes. There is evidence that socio-demographic variables have an effect on WRQoL and its sub-dimensions. However, more studies and larger samples are needed for these variables to be taken into account in working life. In addition, studies investigating the effect of socio-demographic variables on the sub-dimensions of WRQoL are limited. In future studies, not only WRQol but also the sub-dimensions of the scale should be investigated.

Nurses are the occupational group that faces the most physical and psychological pressure. The results obtained from WRQoL also show that the quality of work life of nurses is not high. Managers, play an important role in ensuring the welfare of nurses and improving their organizational outcomes. Managers, have an impact on both employees and organizational outcomes by providing appropriate working conditions, motivating them and creating a supportive organizational climate. For this, the problems of the employees should be recognized, and their needs and priorities should be determined. It is recommended that managers obtain information related to the quality of working life of their employees with appropriate measurement tools and methods and develop strategies in this direction.

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