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ORIGINAL PAPER

VALIDATION OF THE PROFESSIONAL QUALITY OF LIFE SCALE AMONG SLOVENIAN AND CROATIAN NURSES

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Abstract

Aim: The aim was to validate the Professional Quality of Life Scale. **Design:** A cross-sectional study. **Methods:** The data were collected using the Professional Quality of Life Scale (ProQoL) from February to April 2019 among nurses in Slovenia and Croatia. **Results:** The results indicate that the original version of the scale was not suitable for this sample. Thus, the scale was revised to improve the model fit. The final model showed a good fit (TLI = 0.886; CFI = 0.915; RMSEA = 0.107). It is comprised of eleven items, three belonging to the compassion satisfaction subscale, four to the burnout subscale, and four to the secondary traumatic stress subscale. **Conclusion:** Although the ProQoL was revised to show a good fit to data, it is an adequate questionnaire for assessing the professional quality of life of nurses. Effective interventions can be proposed to improve the nurses' professional quality of life.

Keywords: burnout, healthcare professionals, professional satisfaction, ProQoL, quality of life, stress.**Introduction**

Nurses play an important role in the everyday life of patients. They are also often exposed to death (Samson & Shvartzman, 2018) and workplace stressors such as increased patient assignments and staff shortages (Jang et al., 2016; Samson & Shvartzman, 2018), and they perceive a lack of management support (Kelly & Lefton, 2017; Samson & Shvartzman, 2018), which eventually affect their emotional and personal health (Branch & Klinkenberg, 2015; Jang et al., 2016; Kim et al., 2015). Consequently, these factors have an impact on the nurses' ability to provide safe (Branch & Klinkenberg, 2015) and quality care to their patients (Jakimowicz et al., 2018; Markwell et al., 2016). Moreover, research shows that severe stress and burnout have negative consequences such as fatigue, depression, anxiety, insomnia, decreased professional effectiveness, and self-reported medical errors (Duarte, 2017). Furthermore, research shows that Slovenian nurses experience a high level of stress which results in inefficiency, staff turnover, and sick leave, subsequently decreasing the quality of care and their work satisfaction (Dobnik et al., 2018). Additionally, research on Croatian critical care nurses showed a high level of emotional

exhaustion and depersonalization (Friganović & Selič, 2020).

Quality nursing care gives nurses a feeling of satisfaction with their job, which is often closely related to professional quality of life (Wulandari et al., 2018). "Professional quality of life is the quality one feels in relation to their work as a helper. Both the positive and negative aspects of doing one's job influence one's professional quality of life." (Stamm, 2010) The evaluation of the professional quality of life gives an understanding of aspects of work that nurses or the employer can modify, and thus improve the professional quality of life of nurses (Režić, 2017). It includes both positive and negative aspects of work that can be influenced by the work environment, clients, and individuals. Positive aspects are often correlated with compassion satisfaction (Stamm, 2010). Compassion satisfaction is "the pleasure derived from being able to do one's work well and helping others in a positive way" (Markwell et al., 2016; Stamm, 2010) and one of the essential factors that affect those who choose to work in nursing (Jakimowicz et al., 2018). On the other hand, the negative aspect is known as compassion fatigue, characterized by burnout and secondary traumatic stress (Stamm, 2010). Compassion fatigue is defined as "a combination of physical, spiritual, and emotional depletion when caring for patients in significant physical and emotional distress" (Markwell et al., 2016) or, in terms of nursing, as

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“a condition characterized by progressive lessening of compassion for patients over time” (Jang et al., 2016). Facing death on a daily basis is associated with increased fear of death and death avoidance, a decline in empathy, secondary traumatic stress and burnout, a decreased level of anxiety, and diminished compassion satisfaction (Samson & Shvartzman, 2018). All these factors decrease nurses’ professional quality of life.

Due to increased demands in the clinical environment, nurses are under daily stress. Some possible strategies for improving the quality of working life are improving working conditions, providing development opportunities, improving organizational culture, developing quality interpersonal relationships, providing training opportunities, ensuring a secure workplace, providing awards for good work or benefits, and encouraging productivity (Režić, 2017). To allow implementation of novel strategies for improving the professional quality of life of nurses, professional quality of life must be measured using a valid and reliable measure. The Professional Quality of Life Scale: Compassion Satisfaction and Compassion Fatigue (ProQoL) is often used among nurses who have experienced stressful events (Duarte, 2017; Stamm, 2010). Thus, the scale was validated in two countries.

Aim

The aim of this study was to validate the ProQoL (Stamm, 2010) following recommendations by Lajovic (2008) for the process of questionnaire validation.

Methods

Design

A cross-sectional study was conducted from February to April 2019 among nurses employed in various fields of expertise in Slovenia and Croatia.

Sample

The convenience sampling method (opportunity sampling) was used to include the population of nurses that is “close to hand” (West, 2019). Questionnaires were distributed to the nurses in the online form via social media.

A total of 343 nurses were involved in the research. Of those, 63 (18.4%) were from Slovenia and 280 (81.6%) from Croatia. Their mean age was 37.71 years (SD = 10.2); the youngest participant was 19 years old and the oldest was 80 years old. Other characteristics of the sample (education level and field of work) are shown in Table 1.

Table 1 Sample characteristics (n = 343)

	Slovenia n (%)	Croatia n (%)
Gender		
male	13 (20.6)	15 (5.4)
female	50 (79.4)	265 (94.6)
Education level		
nurse carer	0 (0.0)	110 (39.3)
medical technician	7 (11.1)	126 (45.0)
higher education or university program (1st degree)	46 (72.0)	44 (15.7)
master’s degree (2nd degree)	10 (15.9)	0 (0.0)
Field of work		
surgery	12 (19.0)	54 (19.3)
internal medicine	7 (11.1)	46 (16.4)
gynaecology	2 (3.2)	6 (2.1)
paediatrics	2 (3.2)	18 (6.4)
psychiatry	9 (14.3)	15 (5.4)
anaesthesiology	1 (1.6)	13 (4.6)
emergency medicine	4 (6.3)	18 (6.4)
general health care	3 (4.8)	17 (6.1)
oncology	0 (0.0)	4 (1.4)
community health care	1 (1.6)	12 (4.3)
clinics	4 (6.3)	0 (0.0)
social welfare institutions	11 (17.5)	5 (1.8)
non-governmental systems	0 (0.0)	2 (0.7)
institute for training work and care	0 (0.0)	69 (24.6)
other	7 (11.1)	0 (0.0)

Data collection

Data was collected using the validated questionnaire Professional Quality of Life Scale – ProQoL (Stamm, 2010). The ProQoL is a 30-item scale used to measure positive and negative effects on nurses who work with people who have experienced stressful events. The scale was developed in the late 1980s by Charles Figley and later modified in cooperation with Beth Hudnall Stamm. In the late 1990, it was shifted entirely to Stamm. The tool was originally developed in the English language but it was widely used and translated to other languages (Stamm, 2010). The scale consists of three discrete subscales: Compassion Satisfaction (CS), Burnout (BO), and Secondary Traumatic Stress (STS). While CS focuses on satisfaction from one's job and from the helping itself, BO is characterized by negative feelings (unhappiness, disconnectedness, insensitivity to the work environment) and STS in an element of compassion fatigue and focuses on feelings one experiences when caring for someone who has experienced extreme stress. The scale uses a five-point Likert scale for responses ranging from 1 meaning never to 5 meaning very often. Participants are asked to indicate how often they experienced each item in the previous 30 days. In the present study, questionnaires were distributed to nurses via email and social media. Due to the convenience and ease of use, online surveys are very popular and frequently used to collect data (West, 2019). The data collection process lasted from February to April 2019. The data was collected using the authorized online survey provider 1KA.

Since this observational study did not invade privacy, nor it interfered with participants' rights and dignity, obtaining their consent is not required (European Commission – Community research, 2018). Ethics boards of both faculties were consulted. They suggested that no ethical approval for the online survey was needed as it posed no potential harm to the participants. Before participating in the online survey, the subjects were informed about the study aims and how the data would be collected and published. Participation was entirely voluntary and anonymous. The free online survey provider 1KA follows the General Data Protection Regulation (GDPR) protocols and regulations on the protection of personal data. Furthermore, under the GDPR, participants have the right to delete, access, correct, transfer, restrict the processing or revoke their consent to the processing of their personal and survey data (Enklik Anketa, 2020).

Data analysis

Data were processed using descriptive and inferential statistical analyses performed in the R statistical computing environment (R Development Core Team, 2005). R is a free statistical programming language offering a high level of results reproducibility. Nevertheless, it is not frequently used in the nursing research (Stiglic et al., 2019).

Three steps were followed when scoring the ProQoL. First, negative items were reversed. Then items of each subscale were summed; finally, raw scores were converted to t-scores. Higher scores indicated higher levels of CS, BO and STS (the latter two are sometimes referred to as compassion fatigue) (Stamm, 2010). Missing values were replaced using the missForest method as proposed by Stekhoven & Bühlmann (2012).

The steps recommended in the process of questionnaire validation are questionnaire translation, synthesis and language adaptation, back translation, comparison of a translated version and original version of the questionnaire, and testing questionnaire reliability (Lajovic, 2008). Permission for translation of the questionnaire was granted by the author – Beth Hudnall Stamm. The questionnaire was translated using the following steps for both languages (Croatian and Slovenian): a) translation into Slovene/Croatian by two independent translators; b) discussion about the translated versions and reaching an agreement; c) translation into the original (English) language and d) comparison of the translated versions and the original version (Brislin, 1970). After the translation process, psychometric properties were checked to evaluate the scale's reliability and validity. Confirmatory factor analysis (CFA) was conducted to test whether the data fit a hypothesized measurement model and to assess construct validity. Prior to factor analysis, Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) test were performed to indicate whether factor analysis was needed. Bartlett's test of sphericity states that factor analysis may proceed if $p < 0.001$. The KMO statistic indicates the degree to which a variable in a set is predicted without an error by the other variables. It can vary from 0 to 1. Model adjustment was checked using fit statistics: chi-square, Tucker-Lewis index (TLI) (Tucker & Lewis 1973), comparative fit index (CFI) (Bentler, 1990) and root mean square error of approximation (RMSEA) (Steiger, 1990). Cronbach's alpha ($\alpha \geq 0.7$ was considered acceptable) was assessed for internal consistency. The inter-scale correlations were checked to evaluate the homogeneity of the scale. Scores higher than 0.3 were considered acceptable.

To conduct inferential statistics, data distribution was checked using a distribution test (Shapiro-Wilk) and graphical visualization (histograms). To test professional quality of life among countries and genders, the Mann-Whitney U test was used. Results are shown in the form of graphs and tables.

Results

Descriptive statistics

A total of 63 (18.37%) nurses from Slovenia and 280 (81.63%) nurses from Croatia participated in the

survey. There were 28 (8.16%) male and 315 (91.84%) female participants.

The Shapiro-Wilk test was used to test the distribution of data in each subscale in both countries. Graphical visualization of data distribution and corresponding item correlations in each subscale are shown in Figure 1.

As data were not normally distributed, non-parametric tests were used in further analyses. Summary statistics (mean, standard deviation, factor loadings, and Cronbach's alpha) were calculated for each item in each subscale (Table 2).

Table 2 Summary statistics for scale items

#	Item	mean	SD	λ	α
Compassion satisfaction					0.88
Q5ac	I get satisfaction from being able to help people.	4.3	0.6	0.422	
Q5af	I feel invigorated after working with those I help.	4.2	0.6	0.412	
Q5al	I like my work as a helper.	4.2	0.7	0.605	
Q5ap	I am pleased with how I am able to keep up with helping techniques and protocols.	3.7	0.9	0.421	
Q5ar	My work makes me feel satisfied.	3.9	0.9	0.664	
Q5at	I have happy thoughts and feelings about those I help and how I could help them.	3.8	0.7	0.441	
Q5av	I believe I can make a difference through my work.	3.4	0.8	0.378	
Q5ax	I am proud of what I can do to help.	4.3	0.7	0.477	
Q5ba	I have thoughts that I am a "success" as a helper.	3.7	0.8	0.492	
Q5bd	I am happy that I chose to do this work.	4.1	0.8	0.694	
Burnout					0.79
Q5aa1	I am happy.	3.9	1.2	0.545	
Q5ad1	I feel connected to others.	2.1	0.8	0.336	
Q5ah	I am not as productive at work because I am losing sleep over traumatic experiences of a person I help.	2.0	0.8	0.366	
Q5aj	I feel trapped by my job as a helper.	2.7	1.0	0.789	
Q5ao1	I have beliefs that sustain me.	2.0	0.7	0.108	
Q5aq1	I am the person I always wanted to be.	2.1	0.8	0.466	
Q5as	I feel worn out because of my work as a helper.	3.6	1.0	0.656	
Q5au	I feel overwhelmed because my case workload seems endless.	2.9	1.0	0.670	
Q5az	I feel "bogged down" by the system.	3.8	1.0	0.521	
Q5bc1	I am a very caring person.	1.8	0.6	0.192	
Secondary traumatic stress					0.78
Q5ab	I am preoccupied with more than one person I help.	3.9	1.2	0.136	
Q5ae	I jump or am startled by unexpected sounds.	2.7	0.9	0.308	
Q5ag	I find it difficult to separate my personal life from my life as a helper.	2.5	0.9	0.476	
Q5ai	I think that I might have been affected by the traumatic stress of those I help.	2.5	1.0	0.639	
Q5ak	Because of my helping, I have felt "in edge" about various things.	2.7	1.0	0.727	
Q5am	I feel depressed because of the traumatic experiences of the people I help.	2.3	0.9	0.696	
Q5an	I feel as though I am experiencing the trauma of someone I have helped.	2.0	0.8	0.589	
Q5aw	I avoid certain activities or situations because they remind me of frightening experiences of the people I help.	1.9	0.8	0.505	
Q5ay	As a result of my helping, I have intrusive, frightening thoughts.	1.7	0.8	0.503	
Q5bb	I can't recall important parts of my work with trauma victims.	2.1	0.7	0.188	

– item abbreviation; α – Cronbach's alpha; λ – factor loadings; SD – standard deviation

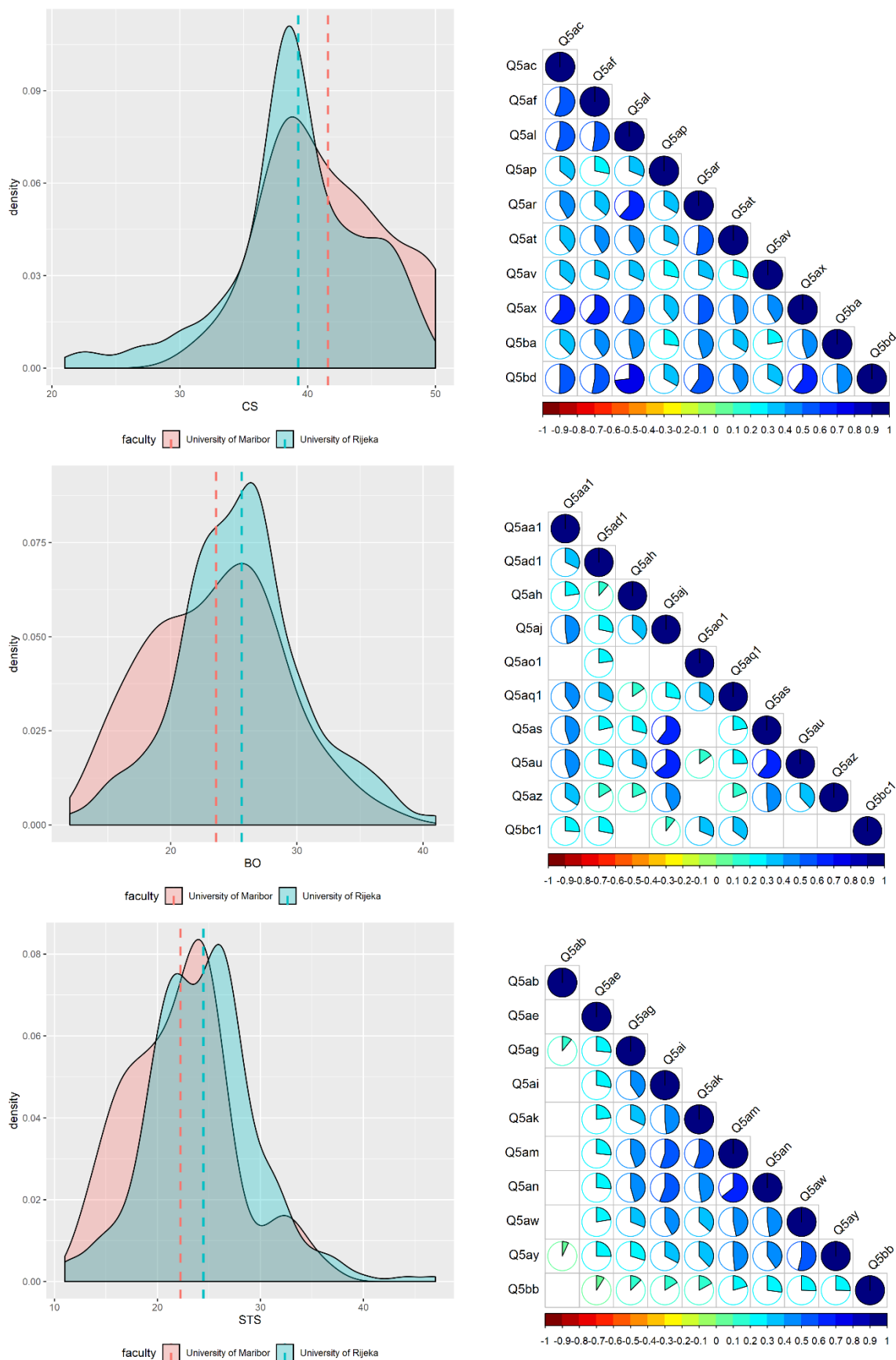


Figure 1 Data distribution and item correlations

Confirmatory factor analysis

Prior to CFA, Bartlett’s test of sphericity and the KMO measure were tested. The KMO measure of sampling adequacy suggested that the data seemed appropriate for factor analysis (KMO = 0.91). Bartlett’s test of sphericity suggested that there was a sufficient significant correlation in the data for factor analysis [χ^2 (435) = 4665.79; $p < 0.001$]. A CFA was conducted to test construct validity. Goodness-of-fit statistics were checked for each subscale of the ProQoL scale (Table 3). The first model included all items as in the original version of the scale but showed poor fit to the data. Thus, models 2, 3 and 4 were explored. All items where standardized factor loading was under 0.50 were deleted. The final model 4 showed a good fit to the data (TLI = 0.886; CFI = 0.915; RMSEA = 0.107). Model 4 is comprised of eleven items out of which three items belong to the CS subscale, four items to the BO subscale, and four items to the STS subscale.

Observing the model fit measures (Table 3) it is evident that models 3 and 4 resulted in significantly better CFI. As previously discussed, CFI is sensitive to model misspecifications but does not depend on sample size as strongly as χ^2 and is therefore recommended as one of the more reliable measures of fit for the CFA (Schermelleh-Engel et al., 2003). On the other hand, reducing the number of items in subscales can result in an increased RMSEA value (Schermelleh-Engel et al., 2003). Therefore, it is necessary to balance different measures of fit to achieve acceptable goodness of fit when multiple measures of fit are used. As presented in Figure 2, CS was negatively correlated with both BO ($r = -0.56$) and STS ($r = -0.39$). Nurses with higher CS levels reported less BO and STS. The remaining items in each subscale were relatively strongly correlated, with correlations ranging from 0.54 to 0.87.

Table 3 Goodness-of-fit statistics for the ProQoL subscales

	p	χ^2 / df	TLI	CFI	RMSEA
Model 1	< 0.001	1482.812 / 402	0.737	0.757	0.089
Model 2	< 0.001	1173.625 / 296	0.770	0.790	0.093
Model 3	< 0.001	224.305 / 51	0.888	0.914	0.100
Model 4	< 0.001	201.427 / 41	0.886	0.915	0.107

χ^2 / df – chi-square / degrees of freedom; TLI – Tucker-Lewis index; CFI – comparative fit index; RMSEA – root mean square error of approximation

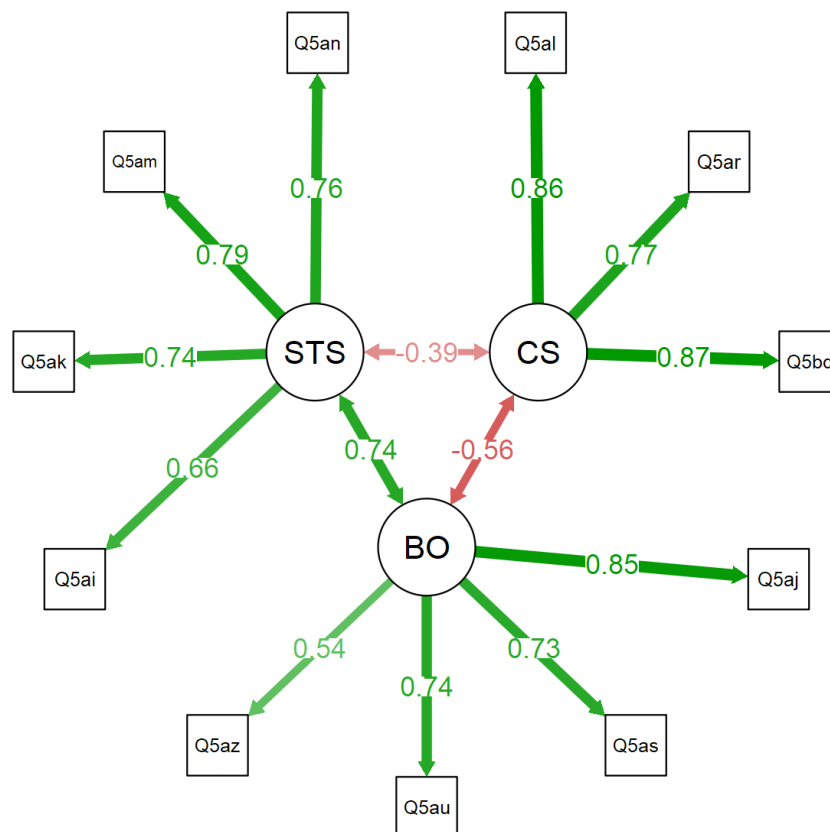


Figure 2 CFA results

Correlations of the ProQoL with demographic categories

The mean values of CS, BO and STS were 39.71 (SD = 5.32), 25.21 (SD = 5.11) and 24.10 (SD = 5.29), respectively. The Mann-Whitney U test was used to test the difference in professional quality of life among nurses in the two countries. There was a statistically significant difference ($U = 10558$; $p = 0.014$) in CS between nurses in Slovenia (mean = 41.52; SD = 4.87) and nurses in Croatia (mean = 39.29; SD = 5.35). There was a statistically significant difference ($U = 7031.5$; $p = 0.012$) in BO between nurses in Slovenia (mean = 23.63; SD = 5.26) and nurses in Croatia (mean = 25.62; SD = 5.04). There was also a statistically significant difference ($U = 6757.5$; $p = 0.004$) in STS between nurses in Slovenia (mean = 22.27; SD = 5.17) and nurses in Croatia (mean = 24.39; SD = 5.28). We were also interested in differences in professional quality of life between female and male nurses. There was a statistically significant difference ($U = 5689$; $p = 0.011$) in CS between female (mean = 39.5; SD = 5.35) and male (mean = 42.07; SD = 4.37) nurses, but no difference for BO ($U = 4089.5$; $p = 0.523$). There was also a difference ($U = 3424$; $p = 0.049$) in STS between female (mean = 24.32; SD = 5.23) and male (mean = 22.25; SD = 6.03) nurses.

Discussion

Nurses compassion satisfaction is related to wellbeing, compassion for others, and less burnout (Durkin et al., 2016). In recent years, professional quality of life of nurses has been investigated, raising concerns about professionals' compassion, and risk of burnout and secondary trauma (Galiana et al., 2017), as negative work experiences can influence nurses' mental well-being and both personal and professional quality of life. Moreover, low professional quality of life of nurses can have a negative impact on patient care and quality of life. Findings show that nurses working in various fields experience negative stressors that impact their professional quality of life (Cherven et al., 2020; Duarte et al., 2016; Kwak et al., 2020). Good working conditions that provide safety for employees can enhance their emotions and help them to improve their mental and physical health at the workplace and thus increase their sense of competence and job satisfaction. The emphasis is also on nurses to make decisions and provide services so that they can improve the workplace with their professional performance, thereby increasing job satisfaction and, consequently, increasing their professional quality

of life (Keshavarz et al., 2019). To be able to intervene, it is crucial that nurses' professional quality of life is measured using a valid and reliable scale. The ProQoL is commonly used to measure CS, BO, and STS among nurses, despite a lack of research on its psychometric properties (Geoffrion et al., 2019; Hagan, 2019). Since the ProQoL scale has been used since 1995, several revisions have been made. The scale was also translated and validated in other countries such as Portugal (Duarte, 2017), Canada (Hemsworth et al., 2018), Spain and Brazil (Galiana et al., 2017) or Korea (Kim & Choi, 2019). Our results indicate that the original version of the scale was not suitable for this sample, so the scale was revised to improve the model fit. The final model showed good data fit (TLI = 0.886; CFI = 0.915; RMSEA = 0.107). It was comprised of eleven items (three CS items; four BO items; four STS items). The original version of the ProQoL questionnaire was not suitable for the use among nurses in Portugal (Duarte, 2017). In the Korean study, additional revisions were needed to provide a model with good data reported about factor loadings on all three subscales which ranged from 0.25 to 0.82. The model was validated using CFA (CFI > 0.7; RMSEA = 0.05-0.1) (Kim & Choi, 2019). Adequate scale fit was reported for nurses working in Spain (CFI = 0.936; RMSEA = 0.074) and Brazil (CFI = 0.943; RMSEA = 0.081) (Galiana et al., 2017). Moreover, the present study showed good internal consistency of the subscales, with Cronbach's alpha values being 0.88 for CS, 0.79 for BO, and 0.78 for STS. Those were similar to values ($\alpha_{CS} = 0.88$; $\alpha_{BO} = 0.75$; $\alpha_{STS} = 0.81$) reported by the author of the questionnaire (Stamm, 2010). While some authors reported Cronbach's alpha values of 0.72–0.90 for the three subscale (Kim & Choi, 2019), others reported values ranging from 0.65 to 0.83 for BO and from 0.68 to 0.87 for STS (Cieslak et al., 2014) or 0.857 for CS and 0.770 for STS (Galiana et al., 2017). However, estimations for BO indicated reliability problems with an alpha of 0.537. As can be seen from the results obtained in our and similar studies, very few studies matched or exceeded more general recommendations for model fit evaluation (Schermelele-Engel et al., 2003). However, it needs to be noted that they even do not give an exact opinion on how and when to stop optimizing a model concerning the evaluation of fit measures (Schermelele-Engel et al., 2003).

Limitation of study

Although our study showed good results and the revised version of the scale is suitable for use among nurses working in Slovenia and Croatia, several

limitations must be considered. Firstly, data distribution was not normal among both countries. The study sample was relatively small, mainly comprising women; this limits the opportunity to generalize the findings. This limitation is in accordance with other samples at the international level (Duarte, 2017). Moreover, a convenience sample may not adequately represent the population. Finally, due to the small sample size, some measurements were not conducted.

Conclusion

The study results provide an adjusted questionnaire for measuring the professional quality of life of nurses in Slovenia and Croatia for. The revised scale showed a good fit to data. The ProQoL questionnaire is an appropriate measure for the population of nurses as they provide help to people in need. They also encounter different patients' needs and wishes. Nurses are often the first to help people in various healthcare crises. Thus, they have to face stressful events that may impact their professional quality of life.

Ethical aspects and conflict of interest

No conflict of interest has been declared by the authors.

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Author contributions

All authors made substantial contribution to the conception and design of the study and approved the final version to be submitted. LC and MS collected the data; LC and GS performed data analyses and interpreted the data; MS and KM provided study background; GS described used methods; and LC interpreted and synthesized the results.

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