

## Original Article

# Development and Psychometric Evaluation of the Police Quality of Work–Life Questionnaire

Zeinab Tabanejad<sup>1</sup>, Fatemeh Oskouie<sup>1,2</sup>, Abbas Ebadi<sup>3,4</sup>, Morteza Mesri<sup>1</sup>

<sup>1</sup>Nursing Care Research Center, Iran University of Medical Sciences, <sup>2</sup>School of Nursing and Midwifery, Iran University of Medical Sciences, <sup>3</sup>Behavioral Sciences Research Center, Life Style Institute, Baqiyatallah University of Medical Sciences, <sup>4</sup>Nursing Faculty, Baqiyatallah University of Medical Sciences, Tehran, IR Iran

### ORCID:

Zeinab Tabanejad:  
0000-0002-9215-0262

Fatemeh Oskouie:  
0000-0002-7471-2794

Abbas Ebadi:  
0000-0002-2911-7005

Morteza Mesri:  
0000-0002-8705-8605

### ABSTRACT

**Background:** Police staff have difficult work conditions, are prone to physical damages, and experience high levels of occupational stress. Their work-related problems may affect their quality of work life (QWL). Meanwhile, there is no appropriate instrument for assessing their WLQ. **Objectives:** This study was conducted to develop the police quality of work–life questionnaire (PQWLQ) and evaluate its psychometric properties. **Methods:** This methodological study was conducted in 2018–2019 in two phases. In the first phase, literature review and semi-structured interviews with 13 police staff were conducted and the results were used for item generation. In the second phase, the face, content, and construct validity and reliability of the questionnaire were assessed. For construct validity assessment through exploratory factor analysis, 234 police staff were purposefully recruited to fill out PQWLQ. **Results:** In the first phase, 57 items were produced. In the second phase, item number reduced to 38 after face and content validity assessment. In exploratory factor analysis for construct validity assessment, 14 more items were deleted and the remaining 24 items were loaded on two factors. The Cronbach's alpha and the test–retest intraclass correlation coefficient of PQWLQ were 0.947 and 0.931, respectively. **Conclusion:** The 24-item PQWLQ has acceptable validity and reliability and can be used for QWL assessment among police staff. The use of this scale can help police and health managers develop their understanding about police staff's QWL and develop strategies for its improvement.

**KEYWORDS:** Police, quality of work life, validation

## INTRODUCTION

Police staff have a stressful job<sup>[1]</sup> which is associated with numerous physical and mental threats.<sup>[2]</sup> Their job requires them to arrest criminals, investigate and prevent crimes, and ensure public safety.<sup>[3]</sup> Unpredicted physical and psychological tensions in these situations can affect their job performance, health, well-being, family functions,<sup>[4]</sup> and quality of work life (QWL).<sup>[4]</sup>

QWL is a mental health phenomenon affected by feelings and perceptions.<sup>[5]</sup> It can affect labor productivity,<sup>[6,7]</sup> professional commitment,<sup>[7]</sup> job satisfaction, happiness at work, and thereby personal and organizational

outcomes.<sup>[8]</sup> Organizations offering a better QWL to their staff have lower staff turnover rate and less frequently lose their staff.<sup>[9]</sup>

Nurses have a significant role in improving the quality of life and the QWL of all people in communities

**Address for correspondence:** Prof. Fatemeh Oskouie, Nursing Care Research Center, Iran University of Medical Sciences, Rashid Yasemi St., Valiasr Ave., Tehran 1996713883, Iran.

E-mail: [oskouie.f@iums.ac.ir](mailto:oskouie.f@iums.ac.ir)

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and promoting public health. As the largest group of healthcare providers, they should “practice to the full of their education and training” to make positive health-related changes in communities and promote public health. Although most nurses work in clinical settings to provide care to patients, a progressive increase is occurring in the number of nurses who engage in promoting healthy behaviors in community settings, i.e., where people live, work, learn, and play.<sup>[10]</sup>

A prerequisite to QWL improvement is its accurate assessment.<sup>[10]</sup> QWL assessment in turn necessitates valid and reliable instruments. There are different instruments for QWL assessment. These instruments had been used in previous studies for QWL assessment among nurses,<sup>[11–13]</sup> teachers,<sup>[14,15]</sup> hotels and hospitality workers,<sup>[16,17]</sup> and information technology staff.<sup>[8]</sup> However, none of the QWL-related instruments is specific to police staff and cannot provide accurate information about their QWL. Therefore, culturally-appropriate police-specific instruments should be developed for QWL assessment among police staff. This study sought to fill this gap.

### Objectives

This study aimed to develop the police QWL questionnaire (PQWLQ) and evaluate its psychometric properties.

## METHODS

This methodological study was conducted in 2018–2019 in two main phases, namely PQWLQ item generation based on the results of a concept analysis and PQWLQ psychometric evaluation.

### Item generation phase

To generate PQWLQ items, a concept analysis study was conducted on the concept of QWL through the hybrid model. In the theoretical phase of the concept analysis, an integrated literature review was conducted through searching online national and international databases, namely MedLib, IranMedex, Magiran, Irandoc, PubMed, ProQuest, and ScienceDirect. The search protocol was limited to before 2017. In the fieldwork phase of the concept analysis, semi-structured interviews were conducted with 13 experienced police staff recruited through purposeful sampling. Interview questions were asked based on the physical and psychological work conditions of participants in order not to cause them undue stress. Interviews lasted 20–30 min. Interview data were analyzed through conventional content analysis. Credibility was ensured through recruiting a sample with maximum variation and also peer checking by two coauthors experienced in qualitative studies. Based on the findings of the theoretical and the fieldwork phases of the concept analysis, PQWLQ items were generated.

### Psychometric evaluation phase

In this phase, we assessed the face, content, and construct validity and the reliability of PQWLQ.

#### Face validity assessment

For qualitative face validity assessment, 14 police staff were asked to comment on the understandability, difficulty, and ambiguity of PQWLQ items. Items were revised according to their recommendations. For quantitative face validity assessment, the same police staff were asked to rate the importance of each PQWLQ item on a five-point Likert scale. Then, the impact score of each item was calculated through multiplying frequency by importance score.<sup>[18]</sup> The item impact  $\geq 1.5$  indicated the appropriateness of the item.<sup>[19]</sup>

#### Content validity assessment

For qualitative content validity assessment, five experts and five police staff were asked to review and comment about the difficulty and the understandability of the items. Their comments were used to revise the items. For quantitative content validity assessment, we calculated content validity ratio (CVR), content validity index (CVI), and modified Kappa statistic. For CVR calculation, the primary PQWLQ together with a cover letter (about the study aim and methods, PQWLQ target groups, and item generation strategy) was sent to 10 experts in human resource management, executive management, social sciences management, healthcare management, occupational medicine, psychology, psychiatry, sociology, social medicine, ergonomics, and instrument development.<sup>[19]</sup> They were asked to rate item essentiality on a three-point scale as “necessary,” “beneficial but not necessary,” or “not necessary.” According to Lawshe, the minimum acceptable CVR for 10 experts is 0.62.<sup>[20]</sup>

For CVI calculation, 10 experts in human resource management and instrument development were asked to rate the relevance of the PQWLQ items on a four-point scale as “not relevant” (scored 1), “somewhat relevant but needs revisions” (scored 2), “relevant but needs slight revisions” (scored 3), and “completely relevant” (scored 4). Then, item CVI was calculated through dividing the number of specialists who rated the intended item 3 or 4 by the total number of experts. Then, modified Kappa statistics was calculated using item CVI and the following equation, where K is the weighted Kappa, PC is the probability of random correlation coefficient, N is the number of experts, and A represents the very number of important scores (i.e. 3 and 4).<sup>[18,21]</sup>

$$K = \frac{I.CVI - PC}{1 - PC} \rightarrow PC = \left[ \frac{N!}{A!(N-A)!} \right] \times 0.5^N$$

### Pilot study

Before construct validity assessment, a pilot study was conducted on 50 police staff to identify possible problems in PQWLQ and to assess its primary internal consistency<sup>[22]</sup> through calculating Cronbach's alpha and inter-item correlation.

### Construct validity assessment

Construct validity was assessed by conducting exploratory factor analysis. Accordingly, a cross-sectional study was conducted to collect the necessary data. Sample size was calculated based on the rule of thumb of seven participants per item. The number of PQWLQ items in exploratory factor analysis was 38, and hence, a sample of 228 participants was considered appropriate (six samples per item). However, considering probable attrition, 300 questionnaires were distributed among 300 police staff conveniently selected from different police departments and official positions. They were provided with questionnaires either face to face.

In exploratory factor analysis, the assumption of the equality of variance was tested using the Kaiser-Meyer-Olkin (KMO) measure and the Bartlett's test of sphericity. A KMO value of 0.7–0.8 was considered acceptable.<sup>[23]</sup> After calculating the correlation matrix between items, factors were extracted using the maximum likelihood method. The command was run eight times to extract the factors. Items which were closely correlated with each other were grouped into one factor. The minimum acceptable factor loading value was 0.4.

### Reliability assessment

Internal consistency of PQWLQ was assessed by calculating Cronbach's alpha.<sup>[13]</sup> Stability was also assessed using the test–retest method, through which 37 police officers twice completed the questionnaire with a 2-week interval. Then, test–retest intraclass correlation coefficient (ICC) was calculated. The minimum acceptable ICC value was 0.4.<sup>[21]</sup>

### Statistical analysis

Kolmogorov–Smirnov test was performed to test data normality. Then, data analysis was done using exploratory factor analysis, Pearson's correlation analysis, ICC analysis, and Cronbach's alpha calculation method. The measures of descriptive statistics were used for data description.

### Ethical considerations

This study was approved by the Nursing Care Committee of the Faculty of Nursing of Iran University of Medical Sciences, Tehran, Iran (code: IR.IUMS.REC.1396.9421199006). The aims of the study were

explained for participants, and they were ensured of the confidential management of their personal data. Moreover, participation in the study was voluntary and participants could withdraw from the study at will.

## RESULTS

### Results of the item generation phase

In this phase, an item pool was generated with 107 items based on the results of the literature review ( $n = 57$ ) and the results of the interview analysis ( $n = 50$ ).

### Face validity of the items

After removing overlapping items and revising the wording of the items, the primary PQWLQ was prepared with 57 items. During qualitative face validity assessment, ten more items were revised. For instance, the item “My colleagues support me and my work environment has been designed according to safety principles” was revised to “I have good working relationships with my colleagues and have adequate and appropriate safety and security equipment at workplace.” In addition, four items were eliminated due to their low item impact scores which were below 1.5.<sup>[24]</sup> Consequently, item number reduced to 53. The item impact scores of the remaining 53 items were 1.5–5.

### Content validity assessment

One item had a low CVR and was deleted. Three items had low CVI and hence were deleted. The CVI values of the other items were in the range of 0.5–1. Item CVIs were averaged to determine scale-level CVI (S-CVI/Ave). An S-CVI/Ave of more than 0.79 is acceptable.<sup>[21]</sup>

### Pilot study

The Cronbach's alpha value of the primary PQWLQ was calculated as 0.96 after the questionnaire was administered on 50 police officers. This finding indicates the acceptable internal consistency of the questionnaire. Moreover, inter-item correlation as well as the correlations between the score of each item and the total score of PQWLQ was calculated. Items were deleted if they had an inter-item correlation coefficient of  $<0.3$  or more than 0.7.<sup>[25]</sup> Eleven items were removed in this phase.

### Construct validity assessment

In total, 234 police staff filled out PQWLQ. The main reason for other eligible staff's refusal to fill out PQWLQ was their reluctance to report their ideas about their QWL. Participants' mean age was  $35.62 \pm 6.15$  years and most of them were married (74%). The demographic characteristics of the police personnel are listed in Table 1.

KMO value was  $>0.94$ . The Bartlett's test was also statistically significant (test value = 3042.447;

**Table 1: Participants' characteristics**

Characteristics	n (%)	Not responded
Gender		2 (0.8)
Male	199 (85.1)	
Female	33 (14.1)	
Age (years)		17 (7.3)
24-30	96 (41)	
31-40	104 (44.4)	
41-47	17 (7.3)	
Educational level		43 (18.4)
Below diploma	4 (1.7)	
Associate degree	38 (16.2)	
Bachelor's degree	117 (50.0)	
Master's or higher	32 (13.7)	
Work experience (years)		25 (10.7)
10-5	49 (21)	
15-10	79 (33.8)	
20-15	62 (26.5)	
25-20	12 (6.1)	
30-25	7 (1.9)	

$P = 0.0001$ ), denoting the appropriateness of the correlation matrix.<sup>[26]</sup> During exploratory factor analysis, 14 items were deleted due to their low factor loading. The remaining 24 items were loaded on two factors. Factors were extracted based on eigenvalues and scree plot and were named based on their items, and their consistency with the dimensions of QWL determined in the qualitative phase of the item generation phase of the study.

### Nature of the occupation factor

The first factor was named the nature of the occupation. It had ten items (i.e., items 1–6, 11–13, and 15) which were related to the characteristics of the police staff's occupation. The highest factor loading in this factor was related to item 13, i.e., "In the past year, I had good social relationships with people." On the other hand, the lowest factor loading in this factor was related to factor 15, i.e., "There is a sense of security at workplace." After rotation, this factor explained 29.382% of the total variance [Table 2].

### Organizational support factor

This factor included 14 items (i.e., items 20, 24, 25, 27–34, 36–38) on organizational support perceived by police staff. The highest factor loading in this factor was related to item 29, i.e., "There are appropriate facilities such as locker room and rest place at my workplace." The lowest factor loading in this factor was related to item 37, i.e., "My colleagues easily share their work experience with me." This factor explained 20.373% of the total variance [Table 2].

### Reliability assessment

The Cronbach's alpha of the 24-item PQWLQ was 0.947 and its test–retest ICC was 0.931. The Cronbach's alpha and the test–retest ICC values of PQWLQ factors were all  $>0.80$  [Table 3].

### DISCUSSION

The aim of the present study was to develop PQWLQ and evaluate its psychometric properties. The final PQWLQ contained 24 items in the two factors of the nature of the occupation and organizational support. The S-CVI/Ave of PQWLQ was 0.84, which is considered satisfactory.<sup>[27]</sup> In construct validity assessment through factor analysis, KMO value was 0.94. Higher KMO values show more appropriate factor analysis. Achieving satisfactory results is due to the careful selection and generation of items for PQWLQ.

Reliability assessment revealed that the Cronbach's alpha of PQWLQ was 0.947. Cronbach's alpha values  $>0.7$  indicate acceptable internal consistency and reliability.<sup>[28]</sup> In line with our finding, a former study reported a Cronbach's alpha and an inter-rate ICC of, respectively, 0.92 and 0.78 for a safe nursing care assessment instrument.<sup>[29]</sup> Similarly, the Cronbach's alpha values of the Chinese version of a questionnaire for QWL assessment in nursing were 0.71–0.88.<sup>[30]</sup> Another study also reported that the Cronbach's alpha of a nurses' QWL questionnaire was 0.93.<sup>[31]</sup> The Cronbach's alpha of the Taiwanese work-related quality of life scale for nurses was 0.88, and the Cronbach's alpha values of its subscales were 0.68–0.84.<sup>[32]</sup> Another study also reported that the Cronbach's alpha of the quality of nursing work–life scale was 0.912.<sup>[33]</sup> On the other hand, the test–retest ICC of PQWLQ was 0.931, demonstrating its appropriate stability. ICC values  $>0.4$  are considered acceptable.<sup>[18]</sup> In a study in Malaysia, the ICC values of a QWL questionnaire were 0.644–0.780.<sup>[34]</sup> Similarly, the 2-week test–retest ICC of the quality of nursing work–life scale was reported to be 0.74.<sup>[33]</sup>

PQWLQ consisted of two subscales. The first subscale was the nature of the occupation with ten items on the characteristics of the occupation such as sense of worth, social acceptability, communication with family and colleagues, and attractive aspects of work. Similarly, a subscale of the Turkish version of the quality of nursing work–life scale was job perception which included items on perceived effectiveness in the life, autonomy in clinical decision-making, communication with physicians, and attachment to work.<sup>[13]</sup> Similarly, another study reported that the quality of nursing work–life scale had a subscale on work content.<sup>[33]</sup> The nature or content of a job reflects the impact of work-related factors (such

**Table 2: Police quality of work-life questionnaire items and their factor loading values**

Factors/items	Factor loading 1	Factor loading 2
Nature of occupation		
1. The police job gives me confidence	0.607	
2. I am a valuable person for colleagues and the organization	0.758	
3. Being a police has made me brave and helped me make the best decisions in specific situations	0.647	
4. I am interested in my work and will not change it even if I can	0.598	
5. I like different police activities	0.597	
6. I have good working relationships with colleagues	0.515	
11. I feel attached to the police organization	0.719	
12. My family supports me in doing my police job	0.679	
13. I have had good social relationships with people during the last year	0.806	
15. I feel safe at my workplace	0.504	
Organizational support		
20. Compared with other organizations, I have good work conditions in this organization		0.570
24. The organization supports me if I face legal problems during missions		0.633
25. The organization pays attention to my physical well-being and basic needs in different situations, such as lengthy standing and cold and warm weather		0.779
27. I receive proper and sufficient in-service training		0.818
28. I have easy access to occupational and health-related counseling to reduce and eliminate work-related problems		0.700
29. There are appropriate facilities such as locker room and rest place at my workplace		0.819
30. My senior managers have a rational conduct toward the improper behaviors of subordinates		0.795
31. I have direct access to the senior managers of the organization		0.776
32. My senior managers are experienced and familiar with the work environment		0.773
33. Meritocracy exists in our organization		0.575
34. Our performance is fairly evaluated		0.722
36. Senior managers consult with me in decision-making		0.575
37. My colleagues easily share their work experience with me		0.548
38. Novice police staff are supervised by experienced and trustworthy staff		0.724
Total		
Eigenvalue	7.052	4.889
Explained variance (%)	29.382	20.373
Collective variance (%)	29.382	49.754

**Table 3: The Cronbach’s alpha and the test-retest intraclass correlation coefficient values of police quality of work-life questionnaire and its subscales**

Subscale	Item number	Cronbach’s alpha	ICC	95% CI for ICC	P
Nature of occupation	10	0.938	0.804	0.6-0.90	0.0001
Organizational support	14	0.892	0.970	0.94-0.98	0.0001
Total		0.947	0.931	0.87-0.97	0.0001

ICC: Intraclass correlation coefficient, CI: Confidence interval

as communication, supervision, collaboration, job development, and a sense of job security) on the employee.<sup>[35]</sup> Taken together, these factors make employees (regardless of their organizational position) feel that the organization values them and they can freely discuss their own ideas and problems with higher authorities. Such conditions will increase the employees’ job satisfaction.<sup>[36]</sup>

The second subscale of PQWLQ was organizational support which contained 14 items on staff training, welfare, psychological counseling, and payments. A study on 1092 employees in mechanical manufacturing

enterprises also showed that one of the subscales of a QWL scale was related to work environment with items on safe and healthy working conditions, continuity of services, and labor management relations.<sup>[8]</sup> Another study also reported that factors such as educational status, monthly income, and work environment affected nurses’ QWL.<sup>[12]</sup> Two other studies also reported organizational support as a subscale of QWL scales.<sup>[32,37]</sup> Although organizational support is one of the factors affecting job satisfaction and staying in the job, the lack of support from the organization can negatively affect the quality of job performance, work commitment, and

staying in the job and finally increases the intention to leave.<sup>[27,38]</sup>

The two factors extracted in the present study accounted for about 50% of the variance of QWL. Although this level of explanation of variance seems to be appropriate for a measurement tool,<sup>[39]</sup> it does indicate that there are other factors that may affect the QWL of police staff but have not been addressed in this study. This finding indicates the need for further study in this area.

Given the lack of valid and reliable instruments for QWL assessment among Iranian police staff, concurrent validity assessment of PQWLQ was not possible. Yet, the other psychometric properties of the questionnaire were confirmed. Moreover, as the study participants were Iranian police staff, the findings may not easily be generalizable to other contexts and cultures. Studies are needed to evaluate the psychometric properties of PQWLQ among larger samples of police staff from both genders.

## CONCLUSION

This study shows that PQWLQ is a simple valid and reliable instrument for QWL assessment among police staff. Police authorities can use the results of this study to develop appropriate strategies and programs to strengthen police staff's job motivation, promote their participation in decision-making, and thereby, improve their QWL, facilitate the achievement of organizational goals, and enhance labor productivity. QWL improvement programs need to include in-service staff training programs. Future studies in this area are recommended to evaluate factors affecting productivity and QWL and use interventions to manage those factors and improve QWL. In addition, implementing the scale developed in this study among police officers would help community health nurses and police nurses play a prominent role in assessing and enhancing the QWL of police staff. This scale and using it also will serve as a basis for the broadening of nursing knowledge beyond the hospital environment and for the greater recognition of the nursing profession in the community.

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## Conflicts of interest

There are no conflicts of interest.

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