

## A Scale for Quality of Work-Life among Nurses Accuracy and Reliability Study

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### Abstract

**Purpose:** This is a methodologically conducted study with the purpose of developing a reliable and valid scale to assess the quality of work-life among nurses and pinpoint the related factors.

**Methods:** The population of this study, which consists of the nurses that work at three hospitals in Marmara region in Turkey and nurses were expected to be working at the same institution at least for one year (N:357). Nurses who were working in other professions and nurses on leave were also not included in the study. The finding was collected from 253 individuals who agreed to participate (70.9%). The research data was carried out between the dates of October and November 2011 after the necessary permissions were granted by the institutions. The data gathering tool was divided to two sections. The first section was composed of a personal information form of eight questions about personal elements (age, marital status, experience, position, departments as like). The second section introduced "Nurses' quality of Work-Life Scale". Individuals' first language was Turkish and so the research was use Turkish version of scale.

**Results:** From 97 items were designated for the nurses' quality of work-life scale after reviewed by 11 experts and made the necessary arrangements scale was reduced to 86 agents. After the necessary adjustments were made, according to the expert opinion and recommendations was passed on to the reliability and validity analysis of 86 expression.

In this study, item-total correlation coefficients ranged from 0.41 to 0.79. In this study "Nurses' Quality of Work-Life Scale" item-total correlation coefficient was considered to be 0.40. But 13 of item were removed from the scale because of being the level of this point.

5 factors were singled out after a factor analysis was conducted in order to assess the scale's construct validity. These are named as; nursing management, institutional management, working conditions, physical work environment and social benefits and social work environment. While Cronbach's Alpha of the scale was calculated to be 0.97.

**Conclusion:** As a result, the "Nurses' Quality of Work-Life Scale" is proved to be a highly reliable and valid.

**Key words:** Nursing, quality of work-life scale, validity, reliability

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## Introduction

The world is rapidly changing due to the advances in science and technology, and this situation consequently increases the society's expectations when it comes to quality of life [1]. It is fair to say that quality of life is mainly a combination of satisfaction of needs and social relationships; and thus, it is strongly associated with quality of work-life [2]. Quality of work-life has major effects on an individual's life satisfaction, as well as one's mental and physical health [1].

According to the studies, an average individual spends one third of one's lifetime at work; so, naturally, some of the emotional, social and physical needs are expected to be satisfied by the work environment [3]. Social environment, management style, organizational effectiveness, employee satisfaction and complaints, working conditions, work and life balance or, in other words, all the positive and negative elements related to work constitute quality of work-life [4,5]. McGirr and Bakker define a "positive work environment" as a condition where employees are contented with themselves, their jobs, their co-workers and their managers [6]. People are different from each other in terms of their desires, needs and expectations. Furthermore, working conditions may also differ in terms of physical and social environment and management style. This varying structure might have a significant effect on job satisfaction. Every organization consists of individuals with unique characteristics and socio-cultural backgrounds who have different needs and expectations. This situation leads to differing perceptions of work-life quality. Moreover, characteristics related to that particular job or position also create an impact on the factors related to quality of work-life [7].

While there are some similarities between the factors that were underlined by the studies about general employee satisfaction and nurses' quality of work-life, there are also some significant differences [8]. Managerial, institutional, environmental/physical and employee-related factors make up the similarities. Physical work environment, communication among co-workers and departments, capability of co-workers, sufficient number of co-workers and workload constitute the environmental/physical factors. Workflow, job trainings, career development, remuneration, other benefits (such as day care), overtime working hours and pays, job definitions and orientation programs form the institutional factors. Finally, policies and processes, capability of leaders and managers, fair treatment, management style and involvement in decision making make up the managerial factors. Furthermore, there are some effecting individual factors such as employee independence, senior support, capability of employee, stress at home and private life, promotion expectations etc [9]. On the other hand, the differences are nursing workload, staff number, quality of care, emotional and physical abuse, basic job training and continuous employee training [8].

Patient care and treatment are the most basic services hospitals provide where nurses constitute the largest workforce. Considering there is a growing need for qualified nurses, a work environment that might cause discontent and distress among nurses is highly dangerous since it might lead to resignations, and consequently, a decrease in service quality. This situation

inevitably creates a negative effect on the performance of the institution. Insufficient workforce capacity disrupts the quality of work-life perceptions of the existing personnel by resulting in longer working hours and shorter leaves, creating a vicious cycle.

Labour constitutes the most important production factor in healthcare services. Healthcare consists of all the services that have an effect on people's lifespan, health, energy and strength. The chief purpose of healthcare services is to meet people's needs related to these issues, and this is the healthcare providers' duty. Therefore, it is absolutely necessary to provide more convenient and safer work environments for nurses who undertake such important tasks. High quality of work-life can lead to strong organizational commitment [9]. It is unreasonable to expect high motivation and performance from nurses when their quality of work-life is below acceptable levels in a modern society. Therefore, directors of nursing should prioritize increasing their co-workers' quality of work-life, motivation and organizational attachment, consequently increasing the service quality of their institution. Nevertheless, it should be noted that "quality of work-life" is a wide-ranging concept that might include social, organizational and environmental factors along with personal ones. It is hard to measure, hence it might be taken under consideration together with other concepts such as job satisfaction, occupational pressure and stress and organizational climate [8].

The purpose of this study is to develop a scale that would help assess nurses' quality of work-life, living area, healthy and safe working conditions, capacity-building, social responsibility, social integration, communication, conditions of night shift and occupational diseases.

## Material and Method

Canakkale Onsekiz Mart University Medical Faculty Local Ethics Committee approval number of B.30.2 CAÜ.0 AK 001147. The research was planned as a methodological study. This study investigated the validity and the reliability of a scale for quality of work life among nurses. As it was stated before, the study was aimed to reach the entire population instead of a sample group. The population consists of the nurses that work at private, state and university hospitals in Canakkale city centre in Marmara region in Turkey (N = 357). In order to ensure healthy and realistic assessments, nurses were expected to be working at the same institution at least for one year; thus, those who did not meet this requirement were excluded from the study (N = 357).

56 nurses who were working in professions other than nursing at the hospitals (such as anaesthesia, purchasing, radiology department, pharmacy etc.) and 8 nurses who were on leave for various reasons (such as annual leave, sick leave or maternity leave) were excluded from the study. The data was collected from 253 nurses who agreed to participate (n=253). The response rate of the reliability and validity study was 70.9% (n=253)

The data of the study was collected by the researcher herself between the dates of October –November 2011. The purpose and the method of the study were explained to the participants thoroughly. The questionnaires were collected back from the nurses after they were filled out.

Provincial Health Services Authority and the hospital administrations were informed about the content and the purpose of the study while applying for permissions and the research was carried out after the necessary permissions were granted.

The data gathering tool was divided to two sections. The first section was composed of a personal information form of 8 questions about personal and occupational elements. This section included questions about participants' age, marital status, experience, position and department, duration or length of the position held and the department affiliated, weekly working hours and quality of work-life.

The second section introduced the "Nurses' Quality of Work-Life Scale (NQWLS)", which was tested for reliability and validity, with 73 items and 5 different dimensions. After a research with 253 participants by NQWLS and sub groups, it was found that the Cronbach's Alpha reliability coefficient was 0.97 for the entire scale.

A 5-point Likert scale was used with the following format: 1 for "not at all effectual", 2 for "slightly effectual", 3 for "moderately effectual", 4 for "very effectual", and 5 for "extremely effectual". After the reliability and validity analysis, the preliminary scale of 86 items was reduced to 73; and following the factor analysis, it was divided into 5 dimensions of "nursing management" (30 items), "working conditions" (13 items), "institutional management" (14 items), "physical work environment" (8 items) and "social benefits and social work environment" (8 items). Scoring was done using a scale of 100 points. While an increase in score meant the quality of work-life was affected negatively, a decrease in score highlighted a positive situation.

The researcher carried out the analysis of the data herself with the help of a consultant in statistics. The analysis was done by using the programs of "SPSS for Windows version 13.0" and "LISREL 8.8". A variety of methods were used throughout the analysis for different purposes: Kendall's coefficient of concordance for content validity; factor analysis for construct validity and pinpointing the dimensions; Cronbach's alpha coefficient for the scale's and its dimensions' reliability and internal consistency; Pearson product-moment correlation coefficient for the total score analysis of the items in order to assess the scale's reliability; and finally, minimum, maximum and average standard deviation for the definitive statistics of the scale and its dimensions.

## Findings and Discussion

68.4% of the participants were working at state hospitals, 26.5% were working at university hospitals and 5.1% were working at private hospitals. It was found that most of the participating nurses were between the ages of 30-35 (38.7%) and married (76.7%). Again, a majority of the participants were working at departments involving high risk (41.5%) as a practical nurse (67.2%) for 54 hours per week (46.6%). The total experience ranged between 121 - 240 months (45%), and the duration or the length of the time at the affiliated department went up to 60 months from 1 (62%). 50% of the nurses who participated in the research evaluated their quality of work-life as average (n = 127),

while 30.8 % (n = 78) found it low or very low .

The reliability and validity of the measurement instrument to be dealt with in terms of scale, it is important to be able to serve the purpose. In this context, the reliability and validity studies of NQWLS were performed.

### The evaluation of analysis work life quality scale content validity for nurses

For scale development work, paying attention to the theoretical methods which are based on work life quality and qualitative works on national and international standards, a feedback form consisting of 97 items which will be used at the process of qualitative dimension is formed. Statements of feedback form consist of the items work life quality of nurses and the factors of affecting it.

The scale was tested for construct validity in order to assess its validity. In general, it is fair to say that validity determines whether the items used in a study are suitable, in terms of both quality and quantity, to represent the behaviour or characteristic the study targets to analyze [10-12]. As it was stated before, 97 items were after reviewed by 11 experts and made the necessary arrangements scale was reduced to 86 agents. Tavsancil suggests an expert group of 3 to 20 whilst designing a new scale [13]; therefore, an expert group of 11 was deemed sufficient for this study. Kendall's coefficient of concordance analysis proved the expert opinions to be consistent with each other (Kendall's W: 0.176, p = 0.079). According to the literature and expert opinion it was decided to be five-point likert scale and the answer tags was decided to be held between "does not affect at all" to "very affecting". According to the literature review, a 5-point Likert scale constitutes the optimal measuring instrument since fewer points would cause information loss while more points might lead to undetectable differences among responses and create chaos [11].

It is advised that every scale should be tested on a small group before moving on to the real research (Tezbasaran, 1997). Therefore, first, the scale was tested on a small group of 25 nurses in order to check the understand ability of the statements. The statistical analysis revealed that NQWLS is an appropriate measurement tool in terms of content validity.

### "Nurses' Quality of Work-Life Scale" carried content validity according to the statistical analysis

Cronbach's alpha coefficient was used in order to assess the homogeneity and internal consistency of the "Nurses' Quality of Work-Life Scale". Cronbach's alpha determines the value of items individually and highlights the relationship between each item with the entire scale. If every item in a scale has equal value and shows independence, then the correlation between the item and scale is expected to be high [14]. As the correlation increases, the item becomes more effective and relevant. However, an item is not considered reliable if it shows low correlation. A total item correlation of 0.15-0.20 is unacceptable, 0.20-0.35 is poor, 0.35-0.60 is good, and 0.60 and above is excellent [14]. Only items with a correlation of 0.30 and above were taken into consideration

when it comes to the “Nurses’ Quality of Work-Life Scale”. All the factor loadings were positive. Items 1, 4, 6 and 8 with a variance of 0.30 were excluded from the scale (**Table 1**).

Cronbach’s alpha and correlation values for 82 items were recalculated in order to assess their internal consistency and homogeneity. Items 19, 21, 22 and 25 with a variance lower than 0.30 were also excluded from the scale after a factor analysis was carried out; thus, the item number of the scale was reduced to 78.

An exploratory factor analysis was carried out in order to assess

**Table 1:** Total Item Correlations of the Quality of Work-Life Scale (N = 253)

Item-Total Correlation Coefficient			Item-Total Correlation Coefficient		
Items	r	p	Items	r	p
1	0,20	p<0,001	44	0,61	p<0,001
2	0,43	p<0,001	45	0,55	p<0,001
3	0,36	p<0,001	46	0,60	p<0,001
4	0,28	p<0,001	47	0,60	p<0,001
5	0,32	p<0,001	48	0,54	p<0,001
6	0,29	p<0,001	49	0,53	p<0,001
7	0,33	p<0,001	50	0,61	p<0,001
8	0,29	p<0,001	51	0,59	p<0,001
9	0,49	p<0,001	52	0,66	p<0,001
10	0,46	p<0,001	53	0,68	p<0,001
11	0,58	p<0,001	54	0,73	p<0,001
12	0,46	p<0,001	55	0,66	p<0,001
13	0,61	p<0,001	56	0,58	p<0,001
14	0,48	p<0,001	57	0,65	p<0,001
15	0,49	p<0,001	58	0,53	p<0,001
16	0,40	p<0,001	59	0,61	p<0,001
17	0,44	p<0,001	60	0,62	p<0,001
18	0,47	p<0,001	61	0,60	p<0,001
19	0,40	p<0,001	62	0,55	p<0,001
20	0,40	p<0,001	63	0,60	p<0,001
21	0,39	p<0,001	64	0,63	p<0,001
22	0,46	p<0,001	65	0,70	p<0,001
23	0,34	p<0,001	66	0,57	p<0,001
24	0,61	p<0,001	67	0,60	p<0,001
25	0,44	p<0,001	68	0,59	p<0,001
26	0,59	p<0,001	69	0,53	p<0,001
27	0,47	p<0,001	70	0,60	p<0,001
28	0,60	p<0,001	71	0,59	p<0,001
29	0,51	p<0,001	72	0,65	p<0,001
30	0,40	p<0,001	73	0,67	p<0,001
31	0,44	p<0,001	74	0,64	p<0,001
32	0,42	p<0,001	75	0,68	p<0,001
33	0,41	p<0,001	76	0,63	p<0,001
34	0,50	p<0,001	77	0,66	p<0,001
35	0,48	p<0,001	78	0,61	p<0,001
36	0,49	p<0,001	79	0,60	p<0,001
37	0,57	p<0,001	80	0,59	p<0,001
38	0,52	p<0,001	81	0,55	p<0,001
39	0,56	p<0,001	82	0,50	p<0,001
40	0,61	p<0,001	83	0,56	p<0,001
41	0,58	p<0,001	84	0,58	p<0,001
42	0,69	p<0,001	85	0,54	p<0,001
43	0,65	p<0,001	86	0,58	p<0,001

the “Nurses’ Quality of Work-Life Scale”’s construct validity. This analysis determines the common dimensions of the scale items. Grouping of the similar items with a strong association highlights the dimensions in question [10,11]. It is necessary to evaluate the sample size and its sufficiency before a factor analysis is carried out [14].

In order to assess the sufficiency of the sample size, “Kaiser-Meyer-Olkin Measure of Sampling Adequacy”; and to determine the adequacy of the sample, “Bartlett’s Test” was used. KMO extent lower limit value 0.60 is considered as significant [15]. If Quality of Work Life Scale’s KMO coefficient is 0.89 in nurses, sample size is adequate for factor analysis. Bartlett Test result is detected  $\chi^2=15598,8$  and  $p<0.001$  was significant. These results indicate a normal distribution, and a sufficient sample size for the factor analysis.

Varimax rotation was used in order to determine the component factors of the nurses’ quality of work-life scale. Even though there is no certain limit for factor loadings, which show the relationship between items and factors, it is often suggested to use values above 0.40 in practice [14]. Following an examination of factor loadings, a total of 5 items (7, 20, 28, 47 and 83) with factor loadings below 0.40 were excluded from this study and, the item number of the scale was reduced to 73. The factor loadings of the items were observed to range between 0.41 and 0.79 while all factor loadings were positive (**Table 2**). All factor loadings are positive sign. It was found that the items were grouped under five different dimensions after the explanatory factor analysis. The factorial structure of the scale strengthens as variance increases [14]. It was stated that the dimensions that were singled out by the factor analysis should be named in accordance with the topic of the study after consulting experts in the field [13,14]. Accordingly, the dimensions in this study were named as follows: nursing management, working conditions, institutional management, physical working environment, social benefits and social working environment. While the first factor explains 20.71% of the variance, five factors explains 51.57% of the total variance (**Table 3**).

Cronbach’s alpha is a useful instrument in order to assess the internal consistency of items while developing a scale (especially in the Likert format). The rule of thumb for describing internal consistency using Cronbach’s alpha is as follows: <0.40 unreliable, 0.40-0.59 little reliable, 0.30-0.79 reliable, 0.80-1.00 highly reliable [10,11]. Cronbach’s alpha for the “Nurses’ Quality of Work-Life Scale” was found to be 0.97. The dimension with the highest Cronbach’s Alpha coefficient was “nursing management” with 0.96, while the lowest one was “social benefits and social work environment” with 0.79 (**Table 4**). Cronbach’s alpha coefficient for the dimensions of the “Nurses’ Quality of Work-Life Scale” varies between 0.79 and 0.96. Thus, it is fair to say that the scale and its dimensions show an acceptable level of internal consistency.

While scoring, the values were assigned over 100 for the scale and its dimensions. Since there were no items with a negative value, the scores of 73 items were simply added in order to obtain the overall score. This total score was divided into the number of items, subtracted 1, and multiplied with 25 in order



**Table 2:** Factor Loading for a Scale of 73 Items (N = 253)

Questions	Dimension 1	Questions	Dimension 2	Questions	Dimension 3	Questions	Dimension 4	Questions	Dimension 5
Soru 75	0,79	Soru 40	0,75	Soru 30	0,72	Soru 9	0,74	Soru 18	0,66
Soru 76	0,78	Soru 34	0,72	Soru 31	0,67	Soru 11	0,65	Soru 17	0,65
Soru 74	0,76	Soru 45	0,69	Soru 50	0,65	Soru 12	0,63	Soru 14	0,58
Soru 61	0,75	Soru 38	0,64	Soru 68	0,60	Soru 10	0,62	Soru 5	0,53
Soru 60	0,74	Soru 44	0,63	Soru 69	0,60	Soru 13	0,60	Soru 16	0,51
Soru 67	0,74	Soru 35	0,60	Soru 23	0,58	Soru 2	0,51	Soru 3	0,49
Soru 77	0,74	Soru 41	0,59	Soru 49	0,57	Soru 15	0,49	Soru 27	0,47
Soru 62	0,73	Soru 39	0,51	Soru 48	0,55	Soru 26	0,46	Soru 24	0,47
Soru 59	0,72	Soru 37	0,51	Soru 29	0,52				
Soru 65	0,72	Soru 51	0,51	Soru 84	0,48				
Soru 73	0,72	Soru 46	0,50	Soru 80	0,44				
Soru 64	0,69	Soru 36	0,47	Soru 81	0,44				
Soru 66	0,69	Soru 43	0,46	Soru 32	0,44				
Soru 71	0,69	Soru 33	0,41						
Soru 58	0,67								
Soru 63	0,67								
Soru 56	0,66								
Soru 72	0,63								
Soru 55	0,63								
Soru 53	0,60								
Soru 57	0,59								
Soru 52	0,59								
Soru 54	0,59								
Soru 78	0,58								
Soru 86	0,57								
Soru 70	0,54								
Soru 79	0,48								
Soru 42	0,47								
Soru 82	0,45								
Soru 85	0,44								

**Table 3:** Variance Percentages After Varimax Rotation in Factor Analysis

Factors	Eigenvalue	Explained Variance Percentage	Cumulative Explained Variance Percentage
Factor 1 (Nursing Management)	15,12	20,71	20,71
Factor 2 (Working Conditions)	6,74	9,23	29,94
Factor 3 (Institutional Management)	6,63	9,08	39,02
Factor 4 (Physical Working Environment)	4,76	6,52	45,55
Factor 5 (Social Benefits and Social Working Environment)	4,40	6,02	51,57

to achieve a scale grade between 1 and 100. [(total score/item number)-1 x 25]. While a raising score (towards 100) indicates a negative attitude, a decreasing score (towards 0) indicates a positive attitude.

## Limitations

This study was conducted among nurses in Turkey. Scale was prepared according to the Turkish culture. The study was done in a small and underpopulated city, and so the population was not homogenous.

## The End Result and Suggestions

At the end of the research that was aimed to design a reliable and valid scale in order to assess quality of work-life among nurses:

- Content validity was achieved for the "Nurses' Quality of Work-Life Scale".

- After 13 items were excluded because of negative or low item-total correlation as a result of internal consistency analysis, a scale of 73 items with factor loads between 0.41 and 0.79 and 5 dimensions that explains 51.57 % of the total variance was

**Table 4:** Internal Consistency Values for the Dimensions and the Scale

Dimensions	Cronbach's Alpha Coefficient	Standardized Alpha Coefficient
Nursing Management	0,96	0,96
Institutional Management	0,90	0,91
Work Conditions	0,89	0,89
Physical Work Conditions	0,84	0,85
Social Benefits and Social Work Environment	0,79	0,81
The Entire Scale	0,97	0,97

designed in order to assess the quality of work-life among nurses.

- Cronbach's alpha coefficient for the total scale was 0.97, while it ranged between 0.79 and 0.96 for the scale's dimensions.

- It is fair to say that the "Nurses' Quality of Work-Life Scale", which was designed in accordance with these results, is a reliable and valid measuring instrument.

The "Nurses' Quality of Work-Life Scale" is suggested to be used in order to assess and increase nurses' quality of work-life, determine poor and strong sides of nurses' work environment, and pinpoint the actions and measures that can be taken with this purpose. It is also possible to reassess the scale's reliability and validity with a larger sample size.

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