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Confirmatory Factor Analysis of Work-Life Quality for Female Nurses in Medan City, Indonesia

Nuraini[1*], Heru Santosa[2], Erna Mutiara[3], Wirsal Hasan[4], Etti Sudaryati[5]

1 Faculty of Public Health, University of Sumatera Utara, Indonesia
Institut Kesehatan Helvetia, Medan, Indonesia ainuncantik0770@gmail.com
2 Faculty of Public Health, Universitas Sumatera Utara, Indonesia heru_php@yahoo.com
3 Faculty of Public Health, Universitas Sumatera Utara, Indonesia erna_mutiara@yahoo.com
4 Faculty of Public Health, Universitas Sumatera Utara, Indonesia wirsal_hasan@yahoo.com
5Faculty of Public Health, Universitas Sumatera Utara, Indonesia etysudaryati@gmail.com

Abstract

This study aims to determine the factors that form the work-life quality of female nurses in Indonesia. The study population includes 836 female nurses from 9 hospitals in Medan City, the sample size was determined using the Slovin 270 formula and by accidental sampling technique on nurses that work in the morning shift. The data were collected using a questionnaire and analyzed using confirmatory factor analysis with PLS software version 3.2.2. Furthermore, the validity and reliability of the instrument were obtained based on the outer model analysis, while the factors analysis was used to determine the work-life quality based on the T-value. The confirmatory factor analysis (n = 270) showed that the factors that form the work life quality nurses include work/home life (t-statistics = 2.079), work design (t-statistics = 5.329), and development opportunities (t-statistic = 5,329). Based on the results, the work-life quality of female nurses is improved by managing the constituent factors.

Keywords: factor analysis, work design, development management, development opportunities, work-life quality

Introduction

During the Covid-19 pandemic, nurses as health workers were faced with a difficult task, leading to physical and mental stress. The complexity and routine of a nurse's work cause stress and boredom. In addition, high work risks, unfavorable work environments, and job security culminate in pressure and low work-life quality. Data from the Ministry of Health showed that the nursing profession is dominated by females 71% (256,326 people) and then males 29% (103,013 people) (Kementerian Kesehatan RI, 2017). This study focused on female nurses due to the complexity of having multiple tasks, and the role as a mother in the family.

Previous studies stated that the prevalence of females working in various occupations reached 80.3% in North Sumatra Province. Factors that dominate working conditions are influenced by economic demands and social status, therefore, females are required to work (Utami & Nuraini, 2020). Furthermore, working females have a heavier role than males due to the responsibilities at work and family, causing psychological problems, and conflict in the workplace (Utami et al., 2020), this condition affects the work-life quality of females.

Good health services are determined by the work-life quality of health workers such as nurses that treat patients for 24 hours. Morsy & Sabra (2015) stated that the work-life quality of nurses is determined by 3 dimensions, namely work/home life, work design, and supervisory management. This study adopts the theory of Sabra and Morsy (Morsy & Sabra, 2015) in combination with 2 new dimensions, namely development opportunities and nurse participation. A worker involved in the working process feels more valued and confident. Based on the results of an interview at one of the X

hospitals in Medan city, nurses complained of never having the opportunity to get a good career. In addition, the position as a nurse did not develop and there was no career advancement.

Previous studies reported that the 37.9% turnover rate of nurses was due to dissatisfaction with work (Lisnawati et al., 2020). The uncertainty of a nurse's career constitute one of the reasons to quit the job and find another work. Meanwhile, good work-life quality is needed to provide equal rights as well as obligations for nurses' responsibilities and organizational behavior with a positive effect on performance (Suyantiningsih et al., 2018). Another study found that work-life quality affects satisfaction, but has no effect on employee performance (Asharini et al., 2018).

Studies on the work-life quality of nurses in Indonesia have been carried out, including Suyatiningsih et. al., (2018), Diana et al., (2020) which reported that work-life quality has a positive effect on performance as well as the attitudes and behavior of workers. However, previous studies did not focus on female nurses nor analyzed the factors that make up work-life quality. Hence, the important dimensions to improve the work-life quality of female nurses have not been specifically identified, meanwhile, this is essential to determines the quality of the service. Therefore, this study analyzes the factors that form the work-life quality of female nurses and provides an innovation for improvement based on the constituent factors. When these factors are properly managed, the work-life quality is improved hence, female nurses become effective in improving management in the workplace.

Method

Research design, population, and sample

This is a quantitative study with a cross-sectional design, the study population includes nurses that worked in 9 class C hospitals in Medan City, North Sumatra Province. Considerations were based on hospitals operating as a referral for BPJS patients (Social Security Administering Agency) and are willing to be used as a research location. The total population registered at the hospital was 836 female and 223 male nurses. Meanwhile, the sample size was determined using the Slovin formula of 270 samples. Determination of the sample size at 9 hospitals based on the population quota is as follows:

TABLE 1
Sample Calculation Based on 9 Research Location Hospitals

Hospital	Implementing nurse population	Sample Requirement	Sample required
A	96	96/836 x 270	31
B	151	151/836 x 270	49
C	78	78/836 x 270	25
D	60	60/836 x 270	19
E	53	53/836 x 270	17
F	74	74/836 x 270	24
G	120	120/836 x 270	39
H	87	87/836 x 270	28
I	117	117/836 x 270	38
Total			270

Source: primary data, 2021

Furthermore, the study samples from the 9 hospitals were determined by accidental sampling, namely respondents met at the time this study was conducted and the implementing nurses that served in the morning shift.

Data collection technique

Data were collected using a closed questionnaire, consisting of 1 variable (construct) of work life quality and 5 constituent factors (indicators). The questionnaire contains 6 question items and 5 answer choices using a Likert scale: strongly agree, agree, less agree, disagree and strongly disagree. Furthermore, the questionnaire was compiled based on the dimensions of the work life quality of Morsy & Sabra (2015) with 2 new dimensions based on the initial survey data obtained in the field. The results were categorized into 2, namely good (score 19-30) and less good (score 6-18). Moreover, the questionnaire has 5 forming factors (indicators) namely work/home life, work design, supervisory management, development opportunities, and nurse participation. Each forming factor consists of 3 question items and 5 answer options based on a Likert scale, namely strongly agree, agree, less agree, disagree and strongly disagree.

Data analysis

Data were analyzed by confirmatory factor analysis using Smart PLS 3.3.2 software. This software identifies factors that make up a variable (construct) through the inner model and simultaneously analyzes the validity and reliability of a questionnaire construct through the outer model. The strength of the variables analyzed was based on the loading factor value > 0.5 for the construct validity test. Furthermore, the average variance extracted > 0.5 the value of the discriminant validity test, and the value of Cronbach's alpha > 0.7 the value of the instrument's reliability test. The factors that form the work-life quality were declared acceptable based on the significant value of $T > 1.96$.

Results

The confirmatory factor analysis of the measured variable (construct) represents a form (dimension) through the outer model with 15 question items on 5 factors (dimensions) that form the work-life quality. After the analysis with smart PLS (Partial Least Square), 4 items were declared invalid (outer loading value < 0.7) as shown in the following table:

TABLE 2
The Value of The Outer Loading of Question Items and Indicators of Factors Forming The Work-Life Quality

Factor (dimension)	Question items	Outer loading	Description
Work/home life	Work environment	0.903	Valid
	Relationship with coworkers	0.653	Invalid
	Relationship with leadership	0.780	Valid
Work design	Workspace	0.535	Invalid
	Work equipment	0.838	Valid
	Comfort	0.734	Valid
Supervision management	Surveillance system	0.585	Invalid
	Performance	0.923	Valid
	Job description	0.954	Valid
Development opportunities	Career development	0.754	Valid
	Justice	0.909	Valid
	Equality	0.864	Valid
Nurse participation	Decision-making	0.844	Valid
	Work activity	0.146	Invalid

	Express your opinion	0.845	Valid

Source: 2021 primary data

Four items were declared invalid on the dimensions of the factors forming the quality of work-life based on the value of outer loading < 0.7, namely work relations (0.653), workspace (0.535), supervision systems (0.585), and work activities (0.146).

Furthermore, four items were excluded from the analysis and the results of the analysis are shown in the following image:

Figure 1. Outer Model Analysis
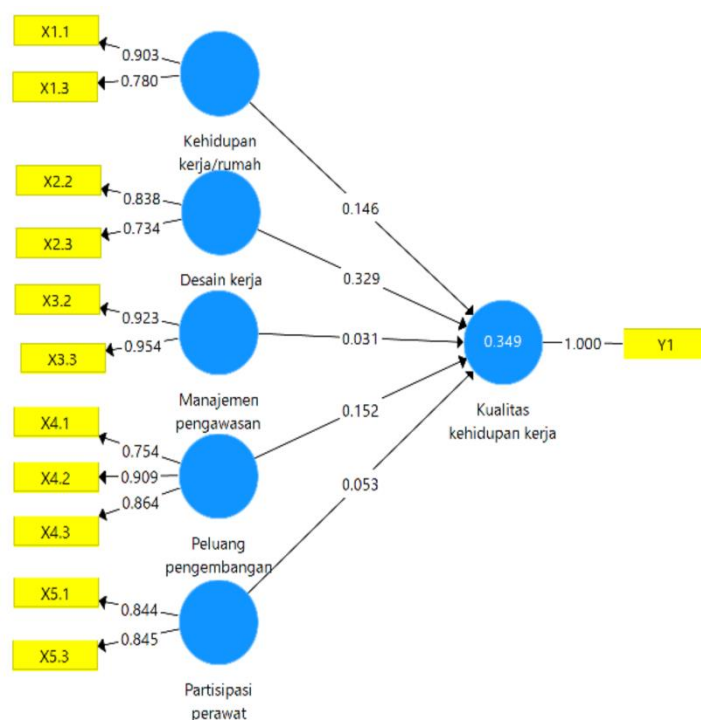
After the 4 items were removed and analyzed, all question items were declared valid with an outer loading value > 0.7. This was followed by the assessment of dimension analysis or factors forming the work-life quality by bootstrapping to determine the t-significance value. The results of the bootstrap analysis are shown in Table 2 as follows:

TABLE 3
Factors Forming The Work-Life Quality of Female Nurses

Forming Factor	Original Sample	Sample Mean	Standard Deviation	t-Statistics	p-Value
Work life ➔ work-life quality	0.146	0.146	0.070	2.079	0.038*
Work design ➔ work-life quality	0.329	0.331	0.062	5.329	0.001*
Supervision management ➔ work-life quality	0.031	0.034	0.074	0.421	0.674
Development opportunities ➔ work-life quality	0.152	0.153	0.076	2.008	0.045*
Nurse participation ➔ work-life quality	0053	0.054	0.056	0.955	0.340

Source: primary data, 2021. (*significant p < 0.05 or t-statistic > 1.97)

Three factors forming the quality of work life were found, namely work/home life (t-statistics = 2.079), work design (t-statistics = 5.329) and development opportunities (t-statistics = 0.045), while 2 factors does not meet the requirements, namely: supervisory management (t-statistic = 0.421) and nurse participation value (t-statistic = 0.674).

Discussion

Confirmatory factor analysis is an analytical method used to measure a latent variable against indicators. Latent variables are not directly formed nor constructed as observable variables, in contrast, indicators are variables that are observed and measured directly. The results showed that the confirmatory factor analysis was used to adequately measure a factor and its indicators along with question items to measure latent variables (work-life quality of nurses). Work-life quality represents the relationship between workers and the work environment as a whole.(Rohman, 2012)

Based on the 15 question items used to test the 5 factors forming the work-life quality, 4 items were declared invalid, namely relationships with coworkers, workspace, supervision systems, and work activities. Regarding relationships with colleagues, majority of the responses received were very good and good, hence, the data were not distributed and the item was declared invalid. In contrast to Viselita et al., (2019), peer relationships and collaboration improve work-life quality. Furthermore, Beloor (2019) reported that cooperative relationships with colleagues are a major component of work-life quality (Beloor et al., 2019). This component attracts a positive work condition and produces a comfortable and satisfying work atmosphere.

The forming factor in which all question items are declared valid is the probability of developing opportunities. This is demonstrated in the outer loading value which showed that the construct assumed to be the forming factor was statistically accepted. Work organizations that focus on employee development through education and training increase work capacity, provide worker satisfaction, and are more effective in achieving organizational goals. Previous studies showed that work satisfaction leads to an increase in worker performance and productivity.(Suyantiningsih et al., 2018) In this study, the results indicate that development opportunities for workers are an important factor for organizational progress.

In line with previous studies, female nurses have responsibilities at home and work, spending time outside the home and leaving the families due to work. The demands of this role cause psychological problems, tension, and anxiety (Utami & Nuraini, 2020). In addition, career development in the workplace has a positive influence on nurses' self-confidence and performance.

Analysis of the 5 factors forming the work-life quality obtained 3 significant factors, namely work life, work design, and development opportunities. The work-life quality of nurses reduces absenteeism thereby increasing performance. Besides, the nursing profession requires energy and a mind that is physically, mentally, and emotionally involved. Work/home life plays a role in the emotional stability of nurses, meanwhile, previous studies stated that social life is part of work-life and is an integral part of nurse psychology. Psychological interventions reduce fatigue, improve the work-life quality, and prevent burnout (Permarupan et al., 2020) (Hafizh et al., 2021).

Work design is one of the factors forming the work-life quality of nurses with the highest value (t-statistic 5.329) compared to the other two factors. The results obtained in this study are in accordance with the previous studies on the work-life quality of textile industry workers based on confirmatory factor analysis of the instrument for measuring the compensation structure, work environment, work relations, job security, facilities, and training.(Beloor et al., 2019)

Conclusion

Factors forming the work-life quality include 3 significant variables, namely work/home life, work design, and development opportunities. Work/home life contributes to emotional stability, meanwhile, social life is part of work-life and is closely related to the psychology of workers. Furthermore, work design is an inseparable part of the work environment. The arrangement in the form of easy access to equipment and comfort increase the efficiency of nurses in the workplace. In addition, career development has a positive effect on nurses' confidence and performance.

Conflict of interest

There is no conflict of interest between the authors

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