Assessing the relationship between work-related factors and the quality of working life among nurses: A cross-sectional study in Laos

Moukda Chanthavisouk [1,#], *Trung Quang* Vo[1,#,*], *Quang Vinh* Tran[1,#], *Bay Van* Vo[1], *Tuan Nguyen Anh* Ho[2], *Susi Ari* Kristina[3], *Dwi* Endarti[3], *and Shyamkumar* Sriram[4]

[1] Faculty of Pharmacy, Pham Ngoc Thach University of Medicine, Ho Chi Minh City 700000, Vietnam.
[2] Faculty of Medicine, Pham Ngoc Thach University of Medicine, Ho Chi Minh City 700000, Vietnam.
[3] Faculty of Pharmacy, Universitas Gadjah Mada, Yogyakarta 55281, Indonesia.
[4] College of Health Sciences and Professions, Ohio University, Athens OH 45701, Ohio, United States.
[#] These authors are the co-first authors and contributed equally to this work.

Abstract. The quality of working life is crucial for improving work productivity, particularly among nurses, who often experience high levels of stress. This study aims to evaluate the quality of working life among nurses in Laos and identify the factors that influence it. A cross-sectional study was conducted among Laos nurses from August 2021 to July 2022. Data collection was conducted using an anonymous questionnaire distributed via the Internet. The Quality of Working Life version 2 (WRQoL-2) questionnaire, comprising 32 items divided into seven subscales, was employed to assess the quality of working life. Statistical tests such as t-tests, ANOVA, and Spearman correlation were applied to examine differences and correlations. A total of 326 participants were included, with an average age of 32.62±8.21 years. Among the seven subscales, the highest score was observed in the Job Career Satisfaction subscale (3.72±0.56), while the lowest score was found in the Safety at Work subscale (3.22±0.71). The overall mean score was 3.49±0.54. Significant differences in the quality of working life were observed among different groups categorized by age, job position, salary, and working hours. The WRQoL-2 questionnaire was found to be suitable for assessing the quality of working life in this study.
Keywords: job satisfaction, healthcare staff, Laos, stress, WRQoL.

1 Introduction

Quality of working life (QoWL) has been mentioned since 1960 and is regarded as a key to augmenting worker productivity [1]. There were various definitions of QoWL proposed, with different relevant factors highlighted [2]. While some authors merely concentrated on job characteristic criteria, others emphasized numerous aspects, including personality, psychological wellbeing, relationships with managers and colleagues, life satisfaction, and happiness [2-9]. The QoWL reflects not only the employees' consciousness of physical and mental health relating to their work, but also their contentment based on their experiences in the organizations [10, 11].

It cannot be denied that healthcare staff usually have an extreme level of stress because of their heavy workload and the nature of their occupations. According to a report, occupations in the health sector ranked third in terms of depression [12]. Especially nurses have been admitted to usually cope with distress and stress-related burnout in high numbers of prevalence [13-15]. This negative psychology could lead to a decrease in nurses' work performance, which would have a detrimental effect on both them and their patients [16]. Therefore, it is necessary for governments to pay attention to the assessment of QoWL of nurses in order to mitigate some of the necessary preventions and interventions.

There are some tools to assess the QoWL under several language versions, such as the GHQ-12 General Health Questionnaire, Warr Job Satisfaction Scale (WJSAT), Warr Job Related Well-being Anxiety-Contentment Scale (WJRWB-AC) and the Work Locus of Control [2]. Among them, the Work-Related Quality of Life Scale (WRQoL) was acknowledged as a dependable indicator with strict generation and validation [2, 17]. It is likely to demonstrate a systematic view of the definitions of QoWL given [2]. Moreover, it is only presented on a single page, which has significant advantages for data collection. Many researchers applied this survey tool in their studies, addressing different types of subjects. There were some of them that could be mentioned, comprising higher education staff in the UK (The United Kingdom) (2009), nurses in China (2013),

[*] Corresponding email: trungvq@pnt.edu.vn

police in the UK (2013), train drivers in Iran (2014), nurses in Uganda (2014), nurses in Taiwan (2016), nurses in Turkey (2016) and General Surgery Residents in the US (The United State) [17-24]. Nowadays, the WRQoL scale version 2 was published with better psychometric properties to accomplish the objective of QoWL estimation when compared to the origin.

Laos has a large population, with more than 7.4 million residents in 2021 and the figures recorded over the last ten years showed a dramatic upward tendency [25]. This means the demand for health care in this nation will probably increase in the future. It is critical to establish reliable data on Lao healthcare workers' QoWL. However, there was still a limited amount of research carried out in this field. The objective of this study was to evaluate the quality of working life among Laos nurses and explore influencing factors by using the WRQoL questionnaire.

2 Materials and Methods

2.1 Study Design

A cross-sectional study was conducted among Laos nurses from August 2021 to July 2022. Data collection took place from January to March 2022 using an online questionnaire. An anonymous questionnaire was shared within nurse networks to invite nurses to participate in the study.

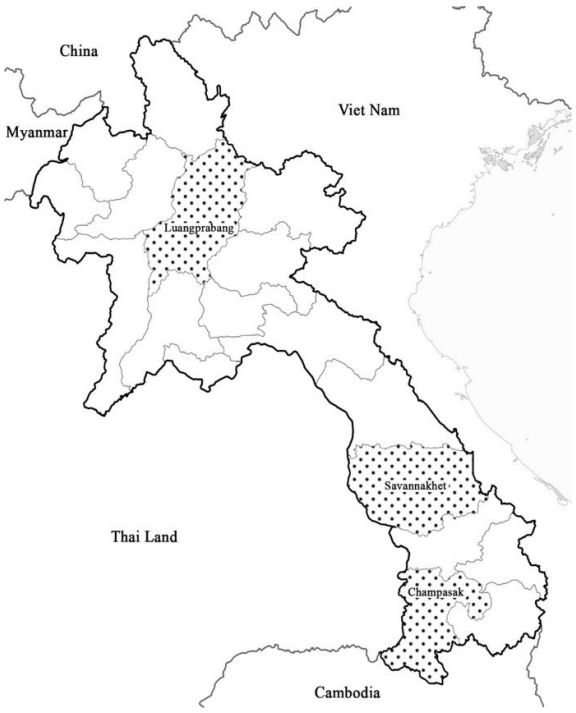

Fig. 1. Maps of Lao People's Democratic Republic with neighbor coutries

2.2 Study Subjects

The study included Laos' nurses who were working at a medical center and voluntarily chose to participate. The research objectives were explained to the participants before they answered the questionnaire.

2.3 Survey Instrument

The questionnaire consisted of two parts. Part one gathered demographic information such as age, gender, marital status, education level, work location, employer, job position, type of work, income, working hours, and extra work. Part two included the second edition of the Quality of Working Life scale (WRQoL-2), which was translated into the Laotian language. The WRQoL-2 comprised 32 questions divided into seven subscales: Job and Career Satisfaction (JCS - 6 items), General Well-Being (GWB - 6 items), Home-Work Interface (HWI - 4 items), Control at Work (CAW - 4 items), Working Conditions (WCS - 4 items), Stress at Work (SAW - 4 items), and Employee Engagement (EEN - 3 items). Details are presented in **Table 2** [26]. In addition, question 32, *"I am satisfied with the overall quality of my working life"*, was not included in any subscales but was used as a single measure of QoWL to validate the WRQoL scale. [26]. Each question was answered using a five-point Likert scale ranging from 1= strongly disagree, 2= disagree, 3= neutral, 4= agree, to 5= strongly agree [2]. The translation from English to Laotian followed the process recommended by the World Health Organization [27].

2.4 Validation

A pilot test was conducted with a sample size of 30 participants to verify the questionnaire. Cronbach's alpha was calculated for each subscale and the overall score. The obtained values for JCS, GWB, HWI, CAW, WCS, SAW, EEN, and overall were 0.721, 0.614, 0.800, 0.652, 0.750, 0.622, 0.829, and 0.906, respectively, indicating acceptable internal consistency.

2.5 Statistical Analysis

All collected data were entered into Microsoft Excel 2016 and analyzed using the Statistical Package for the Social Sciences (SPSS) version 20.0. Following the provided instructions, scores for the five dimensions and the overall quality of working life were calculated and presented as Mean±Standard Deviation (Mean±SD) [26]. The differences in WRQoL scores among groups categorized by demographic characteristics were assessed using t-tests or one-way analysis of variance (ANOVA). Spearman's correlation analysis was used to examine the correlation between two continuous variables based on their distribution.

3 Results

A total of 326 eligible nurses participated in the study, with an average age of 32.62±8.21. The study population had a distribution of 43.87% participants under the age of 30 and 17.18% participants over the age of 40. **Table 1** provides an overview of the demographic variables. The majority of participants were female (69.63%), married (60.43%), and working in urban areas (83.44%). Approximately 55.21% of the nurses had a bachelor's degree, and only a small minority worked for foreign medical centers. More than 90% of the nurses held staff positions and worked full-time. Figure 1 presents the distribution of nurses based on the number of disabled, elderly, and young family members. Nearly half of the nurses had an elderly family member (N=162) or children under 6 years old (N=157), while 53.07% (N=173) had children between the ages of 6 and 18. The majority of nurses did not have disabled family members.

As shown in **Table 1**, the income distribution of the participants indicated that 49.69% (N=162) earned less than 3 million Laotian Kip. Around 50% of the nurses reported having an extra income source or not having any other income source. Notably, 62.58% of the nurses expressed satisfaction with their income. In terms of working hours, Laos nurses reported spending an average of 39.82±16.79 hours on their tasks, and 213 out of 326 participants indicated that they occasionally or seldom had to work extra hours.

Table 1. Demographic characteristics

Variables	N (%)	Variables	N (%)
Age		**Type of work**	
Mean±SD	32.62±8.21	Full time	265 (81.29)
Gender		Part time	61 (18.71)
Male	99 (30.37)	**Extra income source**	
Female	227 (69.63)	Yes	148 (45.40)
Marital status		No	178 (54.60)
Single	121 (37.12)	**Monthly income (million Laotian Kip)**	
Married	197 (60.43)		
Divorced/Widow	8 (2.45)	< 1.5	162 (49.69)
Education level		1.5 - < 2.0	122 (37.42)
Short-time training	64 (19.63)	2.0 - <3.0	27 (8.28)
Bachelor	180 (55.21)	≥ 3	15 (4.60)
Post-graduate	82 (25.16)	**Satisfaction of income**	
Work location		Yes	204 (62.58)
Urban	272 (83.44)	No	122 (37.42)
Rural	54 (16.56)	**Working hour per week**	
Employer		Mean±SD	39.82±16.79
State	175 (53.68)	**Extra working hour**	
Private	143 (43.87)	Never	54 (16.56)
Foreign	8 (2.45)	Seldom	96 (29.45)
Job position		Sometimes	127 (38.96)
Manager/Head of department	21 (6.44)	Usually	39 (11.96)
Staff	305 (93.56)	Always	10 (3.07)

Table 2 displays the average scores for each subscale and the overall Quality of Working Life (QoWL) assessment for Laos nurses across multiple aspects. The highest score was observed in Job and Career Satisfaction (JCS) with a mean of 3.72±0.56, followed by Working Conditions (WCS) with 3.63±0.68, General Well-Being (GWB) with 3.60±0.68, and Employee Engagement (EEN) with 3.59±0.82. The lowest mean score was reported for Stress at Work (SAW) with 3.22±0.71. On average, Laos nurses scored 3.49±0.54 for QoWL.

Additionally, more than 34% of nurses responded "neutral" or "agree" to item 32, *"I am satisfied with the overall quality of my working life"*, which represented the highest proportion among the five response options.

Table 3 presents the mean QoWL scores for each group categorized based on demographic characteristics, along with the results of difference testing. Significant differences were observed in JCS scores when comparing age, education level, and job position groups. T-tests and ANOVA tests indicated statistically significant differences in GWB averages among groups classified by age, marital status, education level, and type of employer (p-value<0.05). This suggests a need to focus on improving QoWL for nurses in lower hierarchical positions. For HWI, age group and job position were

Table 2. Work-related quality of life of Laos nurse (N=326)

Aspect		Question	Mean±SD
JCS	Job and career satisfaction	q01, q03, q08, q11, q18, q20	3.72±0.56
GWB	General well-being	q04, q09, q10, q15, q17, q21	3.60±0.68
HWI	Home-work interface	q05, q06, q14, q25	3.36±0.80
CAW	Control at work	q02, q12, q23, q30	3.34±0.57
WCS	Working conditions	q12, q16, q22, q31	3.63±0.68
SAW	Stress at work	q07, q19, q24, q29	3.22±0.71
EEN	Employee engagement	q26, q27, q28	3.59±0.82
Overall	Average of all aspects above		3.49±0.54

identified as influential factors. In addition to these factors, gender influenced the mean score for Control at Work (CAW). Significant differences (P-value < 0.01) in WCS and overall scores were observed when analyzing age groups and job positions. No factors were found to be associated with SAW and EEN. **Figure 2** presents the average WRQoL overall score according to caregiving responsibilities. T-tests did not reveal any statistically significant differences between these groups (P-value > 0.05).

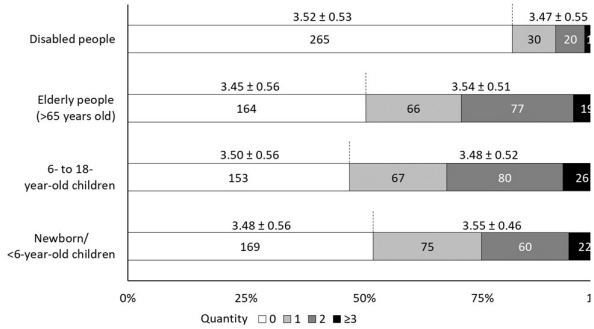

Fig. 2. WRQoL overall score followed by caregiving responsibilities (P-value > 0.05)

Table 3 also displays the WRQoL overall scores based on income and working hours. The importance of income in relation to QoWL was evident. Nurses who were satisfied with their income or had a monthly salary of less than 3 million Laotian Kip had higher scores in all aspects and overall QoWL. These results were statistically significant, except when comparing SAW between groups based on monthly income. Regarding working extra hours, ANOVA tests yielded p<0.01 for HWI and SAW, and p=0.02 for GWB. Having an extra income source was a significant factor that influenced all scores, except for WCS and SAW. Spearman's correlation analysis revealed a negative correlation between working hours and QoWL.

4 Discussion

4.1 Demographic characteristics

The average age of the participants in this study was 32.62±8.21 years, which was similar to a study conducted in Iran (33.1±8.00) but higher than a study in Turkey (29.5±7.1). The decrease in the number of participants with increasing age groups could be attributed to the methodology of data collection via the internet, which may have influenced the participation of older individuals. The gender distribution showed a higher proportion of females (69.63%) compared to males, which is consistent with the nature of the nursing profession. Similar results have been reported in studies conducted in Iran (61.4% females) and China (96.6% females) [19, 28].

4.2 Quality of working life

Among the subscales, Job and Career Satisfaction (JCS) had the highest average score of 3.72±0.56, indicating that Laos nurses felt content in their workplace and recognized their career development. This subscale plays a crucial role in the overall quality of working life [2]. When compared to other studies, the JCS score of Laos nurses was higher than that of nurses in Turkey (3.0-3.3) and China (3.48±0.58) [19, 23]. However, studies conducted in China and Uganda also identified JCS as the dimension with the highest score when evaluating the quality of working life of nurses [21, 28]. The subscale with the lowest score in this study was Stress at Work (SAW) with a mean of 3.22±0.71. The high work pressure in healthcare professions, particularly nursing, is well-known. Some studies have identified other subscales such as Working Conditions (WCS) or Home-Work Interface (HWI) as having the lowest scores [29]. In 2017, there were an estimated 2.1 nurses and midwives in Laos, which means Laos nurses usually have a heavy workload [30]. Abbasi *et al.* assessed the SAW score at 3.21±0.77 which was also the smallest value among the six dimensions [28]. Some studies have identified other subscales such as Working Conditions (WCS) or Home-Work Interface (HWI) as having the lowest scores [21, 23]. The overall score for quality of working life among

Laos nurses was 3.49±0.54, indicating that their quality of working life was above average. However, due to the lack of studies using the WRQoL version 2 to assess nurses' quality of working life, a direct comparison of the overall score is challenging.

4.3 Influencing factors

The analysis of demographic characteristics revealed that age and job position significantly influenced the quality of working life of nurses. Previous studies in Iran have also shown a significant relationship between age and WRQoL scores, while other studies have identified gender as an influencing factor [21, 28, 31]. Regarding job position, managers or heads of departments had significantly higher scores in JCS, HWI, Control at Work (CAW), and WCS compared to staff nurses. Similar findings have been reported by Shukla et al., except for WCS.

Factors related to income and working hours played an important role in the quality of working life scores. They significantly affected most of the subscales and the overall score. Nurses who were satisfied with their income had significantly higher scores in all dimensions compared to those who were not satisfied, and there was a significant difference between nurses with a salary of ≥ 3 million Laotian Kip and their counterparts. Therefore, providing reasonable remuneration and implementing wage increase policies are crucial for improving nurses' psychological well-being.

4.4 Limitations and recommendations

Several limitations should be considered in this study. Firstly, the data collection method relied on internet-based surveys, which may have limited the participation of certain individuals. Conducting direct surveys at medical centers would provide a more representative sample. Secondly, as a cross-sectional study, it cannot establish causal relationships. Future research should consider longitudinal designs to investigate the dynamic nature of the quality of working life. Lastly, the sample size was limited to 326 nurses, which may not fully represent the entire population. Future studies with larger sample sizes would provide a more comprehensive understanding of the quality of working life among nurses. Based on the limitations of this study, several recommendations can be made for future research. Direct surveys conducted at medical centers would ensure a more diverse and representative sample. Expanding the study to include healthcare staff beyond nurses would provide a broader perspective on the quality of working life in the health sector. Additionally, comparing job satisfaction between different occupations within the healthcare sector would be valuable for designing interventions to improve overall working productivity and well-being.

5 Conclusion

In conclusion, the WRQoL version 2 scale was found to be suitable for assessing the quality of working life (QoWL) of nurses. The average score for WRQoL was 3.49±0.54, indicating a relatively positive level of QoWL among nurses in Laos. Among the dimensions of WRQoL, job and career satisfaction had the highest score, while stress at work had the lowest score. It is important for managers and directors to consider factors such as working hours and salary to improve nurses' QoWL. By understanding and addressing these influencing factors, it is possible to enhance the quality of working life for nurses, leading to improved efficiency in community healthcare.

Table 3. Work-related quality of life by demographic characteristics

Variables		JCS	GWB	HWI	CAW
Age group	<30	3.64±0.57	3.48±0.65	3.23±0.81	3.28±0.54
	30-40	3.75±0.54	3.62±0.70	3.37±0.79	3.33±0.57
	>40	3.88±0.56	3.87±0.61	3.68±0.69	3.52±0.59
	p-value	**0.02***	**<0.01***	**<0.01***	**0.03***
Gender	Male	3.80±0.55	3.67±0.63	3.44±0.80	3.48±0.53
	Female	3.69±0.56	3.57±0.69	3.33±0.80	3.28±0.57
	p-value	*0.12*	*0.22*	*0.24*	***<0.01****
Marital status	Single	3.68±0.57	3.50±0.67	3.30±0.80	3.32±0.50
	Married	3.74±0.54	3.64±0.66	3.38±0.79	3.34±0.58
	Divorced/Widow	3.94±0.77	4.06±0.86	3.91±0.77	3.69±0.76
	p-value	*0.32*	***0.03****	*0.10*	*0.20*
Education level	Short-time training/Bachelor	*3.67±0.54*	3.55±0.66	3.32±0.78	3.33±0.55
	Master/Doctor	3.88±0.58	3.75±0.70	3.49±0.83	3.37±0.62
	p-value	***<0.01****	***0.02****	*0.10*	*0.59*
Work location	Urban	3.73±0.57	3.61±0.67	3.38±0.81	3.32±0.58
	Rural	3.69±0.49	3.56±0.69	3.25±0.73	3.43±0.50
	p-value	*0.61*	*0.67*	*0.28*	*0.20*
Employer	State	3.76±0.54	3.68±0.65	3.43±0.80	3.36±0.55

	Private/Foreign	3.68±0.57	3.50±0.70	3.29±0.79	3.31±0.59
	p-value	*0.21*	***0.02****	*0.12*	*0.40*
Job Position	Manager/Head of department	4.04±0.63	3.87±0.87	3.85±0.92	3.75±0.58
	Staff	3.70±0.55	3.58±0.66	3.33±0.78	3.31±0.55
	p-value	***0.01****	*0.06*	***<0.01****	***<0.01****
Type of work	Full time	3.72±0.57	3.59±0.69	3.35±0.78	3.32±0.58
	Part time	3.74±0.49	3.66±0.60	3.41±0.86	3.41±0.48
	p-value	*0.77*	*0.41*	*0.64*	*0.26*
Monthly income	< 3 million Laotian Kip	3.65±0.57	3.50±0.68	3.24±0.82	3.24±0.56
	≥ 3 million Laotian Kip	3.79±0.54	3.70±0.66	3.49±0.76	3.44±0.56
	p-value	***0.02****	***0.01****	***<0.01****	***<0.01****
Income satisfaction	Yes	3.85±0.54	3.81±0.64	3.61±0.72	3.44±0.55
	No	3.51±0.53	3.26±0.59	2.95±0.76	3.18±0.56
	p-value	***<0.01****	***<0.01****	***<0.01****	***<0.01****
Extra working hour	Never	3.73±0.55	3.59±0.77	3.52±0.80	3.38±0.50
	Seldom	3.76±0.61	3.71±0.63	3.47±0.76	3.28±0.62
	Sometimes	3.72±0.52	3.63±0.62	3.36±0.73	3.38±0.56
	Usually	3.68±0.63	3.36±0.74	3.06±0.95	3.33±0.53
	Always	3.57±0.39	3.20±0.71	2.63±0.80	3.15±0.63
	p-value	***0.86***	***0.02****	***<0.01****	***0.55***
Extra income source	Yes	3.82±0.56	3.69±0.68	3.49±0.74	3.42±0.52
	No	3.65±0.54	3.52±0.66	3.25±0.82	3.27±0.59
	p-value	***0.01****	***0.03****	***0.01****	***0.01****
Working hour	r	-	-0.185	-0.177	-
	p-value	0.08	***<0.01****	***<0.01****	0.27
	Variables	**WCS**	**SAW**	**EEN**	**Overall**
Age group	<30	3.55±0.64	3.15±0.66	3.55±0.83	3.41±0.53
	30-40	3.63±0.71	3.27±0.76	3.56±0.83	3.50±0.54
	>40	3.83±0.69	3.27±0.72	3.74±0.79	3.69±0.52
	p-value	**0.03***	0.33	0.29	**0.01***
Gender	Male	3.70±0.69	3.13±0.74	3.61±0.90	3.55±0.52
	Female	3.60±0.68	3.25±0.70	3.58±0.79	3.47±0.55
	p-value	*0.23*	*0.17*	*0.77*	*0.24*
Marital status	Single	3.55±0.60	3.12±0.67	3.53±0.84	3.43±0.53
	Married	3.66±0.68	3.28±0.73	3.60±0.82	3.52±0.54
	Divorced/Widow	4.09±0.68	3.00±0.68	4.08±0.77	3.82±0.56
	p-value	*0.05*	*0.10*	*0.17*	*0.07*
Education level	Short-time training/Bachelor	3.61±0.63	3.23±0.68	3.58±0.79	3.47±0.52
	Master/Doctor	3.7±0.810	3.18±0.79	3.59±0.91	3.56±0.60
	p-value	*0.33*	*0.56*	*0.96*	*0.18*
Work location	Urban	3.65±0.69	3.24±0.72	3.59±0.84	3.50±0.55
	Rural	3.56±0.64	3.09±0.65	3.58±0.77	3.45±0.50
	p-value	*0.37*	*0.15*	*0.96*	*0.53*
Employer	State	3.66±0.69	3.24±0.69	3.64±0.83	3.54±0.53
	Private/Foreign	3.59±0.67	3.19±0.73	3.53±0.82	3.44±0.54
	p-value	*0.37*	*0.52*	*0.24*	*0.11*
Job Position	Manager/Head of department	4.13±0.70	3.24±0.83	3.76±1.05	3.80±0.67
	Staff	3.60±0.67	3.21±0.70	3.57±0.81	3.47±0.52
	p-value	***<0.01****	*0.88*	*0.31*	***<0.01****
Type of work	Full time	3.63±0.69	3.21±0.73	3.55±0.84	3.48±0.55
	Part time	3.65±0.62	3.26±0.59	3.75±0.76	3.56±0.51
	p-value	*0.79*	*0.61*	*0.08*	*0.32*
Monthly income	< 3 million Laotian Kip	3.55±0.67	3.20±0.72	3.48±0.88	3.41±0.55
	≥ 3 million Laotian Kip	3.71±0.69	3.23±0.71	3.69±0.76	3.58±0.52
	p-value	***0.03****	***0.69***	***0.03****	***<0.01****

Income satisfaction	Yes	3.79±0.65	3.34±0.71	3.72±0.78	3.65±0.50
	No	3.37±0.66	3.01±0.67	3.36±0.85	3.23±0.50
	p-value	***<0.01****	***<0.01****	***<0.01****	***<0.01****
Extra working hour	Never	3.69±0.65	3.44±0.63	3.48±0.89	3.54±0.56
	Seldom	3.63±0.75	3.32±0.75	3.56±0.85	3.53±0.56
	Sometimes	3.65±0.63	3.19±0.69	3.68±0.78	3.52±0.50
	Usually	3.53±0.71	2.83±0.69	3.51±0.88	3.33±0.57
	Always	3.40±0.71	2.95±0.39	3.50±0.61	3.20±0.50
	p-value	***0.64***	***<0.01****	***0.54***	***0.10***
Extra income source	Yes	3.71±0.69	3.27±0.71	3.73±0.79	3.59±0.52
	No	3.56±0.67	3.17±0.71	3.47±0.84	3.41±0.54
	p-value	***0.05***	***0.24***	***<0.01****	***<0.01****
Working hour	r	-	-	-	-0.132
	p-value	0.32	0.10	0.62	**0.02***

Note: - r was unnecessary to be calculated; **P*-value<0.05; Test used: t-test, ANOVA and Spearman.

Conflict of Interest

There is no conflict of interest to declare.

Funding

No funding was received for this analysis.

Acknowledgements

The author would like to acknowledge the voluntary participants for data collection.

Authors Contributions

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Chanthavisouk Moukda, Trung Quang Vo, Quang Vinh Tran. All authors commented on all draughts of the manuscript. All authors read and approved the final version for submission.

References

1. E. Mayo, *The Human Problems of an Industrial Civilization.* Nature, 1934. **134**(3380): p. 201-201.
2. S. Easton and D. Van Laar, *User Manual for the Work-Related Quality of Life (WRQoL) Scale : A Measure of Quality of Working Life. 2nd ed*. 2018: University of Portsmouth.
3. V. V. Baba and M. Jamal, *Routinization of job context and job content as related to employees' quality of working life: A study of Canadian nurses.* Journal of Organizational Behavior, 1991. **12**(5): p. 379-386.
4. J. R. Hackman and G. R. Oldham, *Motivation through the design of work: test of a theory.* Organizational Behavior and Human Performance, 1976. **16**(2): p. 250-279.
5. R. A. Katzell and R. A. Guzzo, *Psychological approaches to productivity improvement.* American Psychologist, 1983. **38**(4): p. 468-472.
6. R. S. M. Lau and B. E. May, *A win-win paradigm for quality of work life and business performance.* Human Resource Development Quarterly, 1998. **9**(3): p. 211-226.
7. K. A. Loscocco and A. R. Roschelle, *Influences on the quality of work and nonwork life: Two decades in review.* Journal of Vocational Behavior, 1991. **39**(2): p. 182-225.
8. P. H. Mirvis and E. E. Lawler, *Accounting for the Quality of Work Life.* Journal of Occupational Behaviour, 1984. **5**(3): p. 197-212.
9. P. Warr, J. Cook, and T. Wall, *Scales for the measurement of some work attitudes and aspects of psychological wellbeing.* Journal of Occupational Psychology, 1979. **52**: p. 129-148.
10. H. Li, Z. Liu, R. Liu, L. Li, and A. Lin, *The relationship between work stress and work ability among power supply workers in Guangdong, China: a cross-sectional study.* BMC public health, 2016. **16**: p. 123.
11. K. Tuomi, J. Ilmarinen, L. Eskelinen, E. Jarvinen, J. Toikkanen, and M. Klockars, *Prevalence and incidence rates of diseases and work ability in different work categories of municipal occupations.* Scand J Work Environ Health, 1991. **17 Suppl 1**: p. 67-74.
12. Substance Abuse and Mental Health Services Administration, *Results From the 2006 National Survey on Drug Use and Health: National Findings*. 2007, Department of Health and Human services. Substance Abuse and Mental Health Services Administration. Office of Applied Studies: Rockville, MD.
13. L. P. Chou, C. Y. Li, and S. C. Hu, *Job stress and burnout in hospital employees: comparisons of different medical professions in a regional hospital in Taiwan.* BMJ Open, 2014. **4**(2): p. e004185.
14. N. Khamisa, K. Peltzer, and B. Oldenburg, *Burnout in relation to specific contributing factors and health*

outcomes among nurses: a systematic review. Int J Environ Res Public Health, 2013. **10**(6): p. 2214-40.
15. R. K. Roberts and P. L. Grubb, *The consequences of nursing stress and need for integrated solutions.* Rehabilitation nursing : the official journal of the Association of Rehabilitation Nurses, 2014. **39**(2): p. 62-69.
16. H. Sveinsdottir, P. Biering, and A. Ramel, *Occupational stress, job satisfaction, and working environment among Icelandic nurses: a cross-sectional questionnaire survey.* Int J Nurs Stud, 2006. **43**(7): p. 875-89.
17. J. A. Edwards, D. Van Laar, S. Easton, and G. Kinman, *The Work-related Quality of Life Scale for Higher Education Employees.* Quality in Higher Education, 2009. **15**(3): p. 207-219.
18. S. Easton, D. V. Laar, and R. Marlow-Vardy, *Quality of Working Life and the Police.* Management, 2013. **3**(3): p. 135-141.
19. X. Zhao, T. Sun, Q. Cao, C. Li, X. Duan, L. Fan, and Y. Liu, *The impact of quality of work life on job embeddedness and affective commitment and their co-effect on turnover intention of nurses.* J Clin Nurs, 2013. **22**(5-6): p. 780-8.
20. A. Mazloumi, Z. Kazemi, G. Nasl-Saraji, and S. Barideh, *Quality of Working Life Assessment among Train Drivers in Keshesh Section of Iran Railway.* International Journal of Occupational Hygiene, 2014. **6**(2): p. 50-55.
21. J. G. Opollo, J. Gray, and L. A. Spies, *Work-related quality of life of Ugandan healthcare workers.* Int Nurs Rev, 2014. **61**(1): p. 116-23.
22. H. D. Dai, F. I. Tang, I. J. Chen, and S. Yu, *Taiwanese Version of the Work-Related Quality of Life Scale for Nurses: Translation and Validation.* J Nurs Res, 2016. **24**(1): p. 58-67.
23. H. Kahyaoglu Sut and E. Mestogullari, *Effect of Premenstrual Syndrome on Work-Related Quality of Life in Turkish Nurses.* Saf Health Work, 2016. **7**(1): p. 78-82.
24. M. H. Zubair, L. R. Hussain, K. N. Williams, and K. J. Grannan, *Work-Related Quality of Life of US General Surgery Residents: Is It Really so Bad?* J Surg Educ, 2017. **74**(6): p. e138-e146.
25. The World Bank. *Population, total - Indonesia*. 2018 [cited Oct 15, 2019; Available from: https://data.worldbank.org/indicator/SP.POP.TOTL?locations=ID.
26. Quality of working life. *WRQoL-2 Scale*. 2015 [cited July 20, 2019; Available from: http://www.qowl.co.uk/researchers/qowl_downloads_qnr_overview.html#WRQoL2.
27. World Health Organization. *Process of translation and adaptation of instruments*. 2019 [cited July 20, 2019; Available from: https://www.who.int/substance_abuse/research_tools/translation/en/.
28. M. Abbasi, A. Zakerian, A. Akbarzade, N. Dinarvand, M. Ghaljahi, M. Poursadeghiyan, and M. H. Ebrahimi, *Investigation of the Relationship between Work Ability and Work-related Quality of Life in Nurses.* Iran J Public Health, 2017. **46**(10): p. 1404-1412.
29. K. Shukla, S. Shahane, and W. D'Souza, *Role of demographic and job-related variables in determining work-related quality of life of hospital employees.* J Postgrad Med, 2017. **63**(1): p. 4-10.
30. The World Bank. *Nurses and midwives (per 1,000 people)*. 2019 [cited Oct 20, 2019; Available from: https://data.worldbank.org/indicator/SH.MED.NUMW.P3.
31. C. Carrillo-Garcia, C. Solano-Ruiz Mdel, M. E. Martinez-Roche, and C. I. Gomez-Garcia, *Job satisfaction among health care workers: the role of gender and age.* Rev Lat Am Enfermagem, 2013. **21**(6): p. 1314-20.