

Investigating nurses' quality of life and work-life balance statuses in Singapore

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Aims: To investigate the key determinants of nurses' quality of life and work-life balance statuses in a tertiary hospital in Singapore.

Background: Nurses' quality of life can directly and indirectly impact patients' safety and quality of care. Therefore, identifying key factors that influence nurses' quality of life is essential in the healthcare delivery system.

Methods: A descriptive quantitative study design was adopted, and validated questionnaires were used. Data were collected in a period of 3 months (March to May 2014) at a 600-bed tertiary hospital in Singapore. One thousand and forty nurses participated in the study.

Results: Social support and sense of coherence were found to be significant predictors for high quality of life in all domains. Most nurses in this study spent more time on work than their private lives. However, there was no significant difference in job satisfaction among the four groups of nurses' proportions of percentages of actual time spent on work and private life.

Conclusions: Cultivating social support from family, friends/colleagues and supervisors can help an individual cope with stress and enhance a nurse's quality of life.

Implications for nursing policy and practice: Even though nurses who spent more time at work were still satisfied with their job, they might need to be aware of their physical health and work environment. Nursing policy related to nurses' physical health and environment should be established. Health promotion programmes such as physical exercise and mindfulness interventions should be conducted to promote nurses' well-being and healthy workplace environments to enhance nurses' quality of life.

Keywords: nurses, quality of life, sense of coherence, social support, stress, work-life balance

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Conflict of interest

The authors have declared no conflict of interest.

Introduction

In the past two decades, health-related studies have been heavily focused on patients' quality of life (QoL) as one of the patient outcome measures. QoL has been defined as 'individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns' (World Health Organization, 1997, p. 1). However, patient outcomes depend not only on clinical treatments and interventions but also on the work-life balance (WLB) and QoL of healthcare workers (Lee et al. 2013; Mosadeghrad et al. 2011). Based on review literature, age, gender, shift work, workplace environment, job satisfaction and WLB impact nurses' QoL (Lee et al. 2013; Makabe et al. 2015). Wu et al. (2011) also addressed that nurses' QoL may directly or indirectly affect patient safety and health outcomes. As such, healthcare organizations need to pay close attention to nurses' QoL as it affects the status of the nursing workforce, and, in turn, contributes to the quality of care delivered to patients (Vagharyyedin et al. 2011). Hence, assessing nurses' QoL can provide a source of data that serves as a reference for policy makers to make changes in organizations.

In the context of organizational studies, better QoL in employees and WLB are related to the absence of stress and burnout (Ruzevicius & Valiukaite 2017). In several studies, WLB refers to an employee's satisfaction with their working life and the balance of time spent between work and one's private life (Makabe et al. 2015; Mullen 2015). Several studies stated that nurses often experienced a lack of balance between work and their life outside work or private life (He et al. 2012; Mullen 2015). Time spent on work and on their private lives should be balanced in order for nurses to be happy and healthy. This can be supported by the study that was conducted in Japan by Makabe et al. (2015), which found that job satisfaction and QoL were unsatisfied in nurses who spent more time on work than on their private lives. These results are similar to other studies, which found that WLB has an impact on the QoL of nurses in hospitals (Abraham & D'Silva 2013; Milosevic et al. 2011). Hence, maintaining the WLB of nurses is a crucial issue as it is the foundation for the well-being of the healthcare workforce and job satisfaction (Milosevic et al. 2011; Mullen 2015).

Occupational nursing stress is a common issue in the workplace that is caused by an undesirable working environment, which nurses have to face every day (Arsalani et al. 2012). This is related to the concept of sense of coherence (SoC). SoC is a stress coping mechanism in people and why some can remain mentally healthy despite constant stressful situations and hardships (Eriksson 2016). A review study,

which was conducted on nurses from nine hospitals in Sweden, found that SoC, or the ability to cope with stress, was a predictor of QoL (Malinauskiene et al. 2011). Malinauskiene and his colleagues (2011) also suggested that research studies should focus on identifying critical factors that cause occupational stress and focus on solving workplace issues. Even though relationships among the WLB, job satisfaction, SoC and QoL of nurses have been investigated, information on the impact of these factors on QoL is very limited.

Nowadays, nurses are looking for a workplace that has high job satisfaction and a culture that supports them in having a good WLB. Healthcare organizations worldwide have tried to be 'Magnet' hospitals as it is recognized as having the best patient outcomes and the best workplace environment (American Nurses Credentialing Center 2017). Hence, identifying factors related to nurses' QoL will help healthcare policymakers to create a culture that involves nurses in determining good support, work environment, WLB and job satisfaction, which will in turn increase nurses' QoL. This study is part of an international collaboration from Japan, Malaysia, Thailand, Bhutan and Singapore. Similar surveys were used to investigate nurses' QoL in each country. However, Japan and Malaysia have published their results regarding nurses' QoL (Makabe et al. 2015; Nurumal et al. 2017). The key determinates of nurses' QoL in Singapore are described and discussed in this study.

Aim of the study

The aim of the study was to investigate the key determinants of nurses' QoL and to assess the balance of time spent on the work and private lives of nurses in a tertiary hospital in Singapore.

Methods

Design, setting and participants

In this study, a descriptive quantitative study design was adopted. The convenience sampling method was used for recruiting participants. Data were collected from both inpatient and outpatient departments at a 600-bed tertiary hospital in Singapore. All registered nurses and enrolled nurses (nurse assistants) who had been working in the hospital for at least 6 months were eligible to participate in the study. A total of 1040 nurses participated in the study (79.1% return rate).

Instruments

The following questionnaires were utilized in this study:

I A demographic data consisting of 18 items that asked for background information and general job information such as age, gender, working status and shift rotation.

2 A measurement of WLB was adopted from the WLB Charter by the Japanese Cabinet (Makabe et al. 2015). WLB in this study was determined by the balance between the actual percentage of time spent on work and the percentage of time spent on private life. The total of work proportion and private life proportion is 100%, with a unit of 10. The participants were asked to estimate their WLB proportions based on their perceptions at the time of filling out the questionnaires.

3 The Job Satisfaction Questionnaire was used to measure nurses' job satisfactions. It was developed by the National Institute for Occupational Safety and Health (NIOSH) and consists of four items (National Institute for Occupational Safety and Health 2014). One example question is 'How satisfied would you say you are with your job?'. The total score ranges from 4 to 13, with a higher score indicating greater job satisfaction. In this study, the Cronbach's alpha of the scale is 0.7.

4 The Social Support Questionnaire was used to measure nurses' social support from their supervisors, bosses, co-workers, family members and friends. It was developed by the NIOSH (National Institute for Occupational Safety and Health, 2014) and consists of 12 questions on a 5-point Likert scale. One example question is 'How easy is it to talk with each of the following people?'. The total score ranges from 12 to 60. A higher score indicates higher social support. In this study, the Cronbach's alpha of the scale is 0.89.

5 The SoC questionnaire was used to measure a nurse's ability to cope with stress. It was originally developed by Antonovsky in 1987 (Eriksson & Mittelmark 2016) and consists of 13 items on a 7-point Likert scale. One example question is 'Do you feel that you don't really care about what goes on around you?'. The total score ranges from 13 to 91. A higher score indicates a greater ability to cope with stress. In this study, the Cronbach's alpha of the scale is 0.79.

6 The World Health Organization Quality of Life (WHO-QOL)-BREF 26 questionnaire was used to measure nurses' QoL. The scale was developed by the WHOQOL Group (1998). Two of the questions were set to answer the overall QoL and general health of the participants, while the rest of the 24 questions were categorized into four domains: physical, psychological, environmental and social relationships. One example question in the physical domain is 'To what extent do you feel that physical pain prevents you from doing what you need to do?'. The total score of each domain is converted to 0 to 100. According to Abraham & D'Silva (2013), the QoL scores are interpreted as 0 to 33 = poor QoL, 34 to 67 = moderate satisfactory QoL and 68 to 100 = good QoL.

In this study, the total Cronbach's alpha of the scale is 0.92 and the Cronbach's alpha of the subscales ranged from 0.70 to 0.82.

Data collection and ethical considerations

The ethics committee at the National Health Group approved the study (Ref: 2013/01197) before data collection. An invitation email was sent out to the nurse managers of outpatient, clinics, general wards and critical care units. The researcher of this study met each unit manager and staff nurse to explain the purposes of the study. The questionnaires and information sheet were given to potential participants. Potential participants who had agreed to participate in the study filled out the questionnaires and placed their completed questionnaire in a data collection box at the nursing station. There was no identifier in the completed questionnaires. The researcher collected the completed questionnaires once a week. The data were collected in a period of 3 months (March to May 2014), and all data were kept in a locked drawer.

Data analysis

The IBM SPSS program (version 22.0) was used for data analysis. Descriptive statistics were carried out to analyse the demographical data of the participants. The differences in the overall participants' QoL by various demographic variables and the four groups of proportions percentage of time spent on work and private life were examined using Independent *t*-test and one-way ANOVA statistics. A multiple logistic regression analysis was conducted to examine the key determinants of each domain of the QoL scale to address research question number 4. Each domain score was categorized into two groups (1 = score <68 and 2 = score ≥ 68). The chosen cut-off was based on a previous study (Abraham & D'Silva 2013) in which a score of less than 68 indicates poor to moderate QoL and a score of more than or equal to 68 indicates good QoL. Only variables that achieved $P < 0.1$ in the univariate analysis were included as explanatory variables in the logistic regression.

Results

Demographic characteristics and differences for overall QoL and general health

The participants' demographic characteristics and differences for overall QoL and general health are presented in Table 1. The average age of all participants was 30 years old. Most of the participants were female and single, which includes being divorced, widowed and separated. The majority of the participants completed a bachelor's degree, followed by a diploma

Table 1 Demographic data and differences on general QoL and health ($n = 1040$)

Characteristics	Number (%)	Overall QoL		
		Mean (SD)	Test statistic	Significance (P)
Age (range = 19–68 years old)		30.6 (8.5)		
Gender				
Male	69 (6.6)	6.8 (1.7)	$t = -1.1$	0.27
Female	955 (91.8)	6.9 (1.7)		
Missing data	16 (1.5)			
Marital status				
Married	433 (41.6)	7.2 (1.4)	$t = 5.1$	0.001**
Single (including never married, divorced, widowed and separated)	603 (58.0)	6.7 (1.6)		
Missing data	4 (0.4)			
Religion				
Buddhism	221 (21.3)	6.4 (1.5)	$F = 9.3$	0.001**
Christianity	365 (35.1)	7.2 (1.5)		
Muslim	158 (15.2)	6.8 (1.4)		
Hindu	64 (6.2)	7.2 (1.4)		
Others	227 (21.8)	7.1 (1.4)		
Missing data	5 (0.5)			
Educational level				
Certificate	105 (10.1)	6.9 (1.4)	$F = 9.3$	0.001**
Diploma	338 (32.5)	6.7 (1.5)		
Advanced diploma	78 (7.5)	6.7 (1.5)		
Bachelor's degree	495 (47.6)	7.1 (1.5)		
Master's degree	13 (1.3)	6.9 (1.5)		
Doctor of Philosophy (PhD)	0			
Missing data	11 (1.1)			
Job title				
Nurse manager	24 (2.3)	7.4 (1.4)	$F = 3.0$	0.03**
Senior staff nurse (includes clinician and APN)	234 (22.5)	6.8 (1.4)		
Staff nurse	594 (57.1)	6.9 (1.5)		
Enrolled nurse	184 (17.7)	7.2 (1.3)		
Missing data	4 (0.4)			
Working status				
Full time permanent	969 (93.2)	6.9 (1.5)	$F = 0.5$	0.69
Full time temporary	34 (3.3)	7.1 (1.7)		
Part-time	14 (1.3)	6.9 (1.7)		
Others	18 (1.7)	7.3 (1.8)		
Missing data	5 (0.5)			
Shift rotation				
Rotation eight hours	768 (73.8)	6.9 (1.5)	$F = 1.0$	0.39
Permanent shift	67 (6.4)	7.2 (1.3)		
Office hours	177 (17.0)	6.9 (1.4)		
Others	26 (2.5)	7.2 (1.1)		
Missing data	2 (0.2)			
Fixed shift				
Yes	349 (33.6)	6.9 (1.4)	$T = 0.03$	0.37
No	649 (63.5)	6.9 (1.5)		
Missing data	31 (3.0)			
Unit/department				

Table 1 Continued

Characteristics	Number (%)	Overall QoL		
		Mean (SD)	Test statistic	Significance (P)
General ward	564 (54.2)	6.8 (1.5)	F = 1.0	0.11
OPD	78 (7.5)	7.0 (1.4)		
Critical care (e.g. ICU, OR)	243 (23.4)	7.1 (1.5)		
Others (e.g. clinic)	155 (14.9)	7.0 (1.6)		
Missing data	0			

QoL, quality of life; SD, standard deviation; APN, advanced practice nurse; OPD, outpatient department; ICU, intensive care unit; OR, operative room.
 **= $p < 0.01$

in a nursing programme. More than 90% of the participants worked full time and 73.8% were on eight-hour rotation shifts. According to the differences in demographic characteristics, the results showed that there were statistically significant differences in marital status, religion, educational level and job title ($P < 0.05$) on overall QoL and general health. There was no statistically significant difference in gender, working status, shift rotation, type of working shift and units/department where nurses worked.

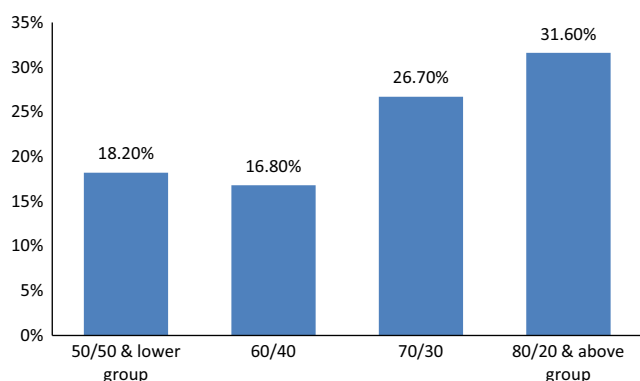
According to time spent on break, number of working hours and QoL scores, most of the participants ($n = 769$) had an average of 43 (range = 10–60) minutes of break during the day shift and 45.6 (range = 0–120) minutes of break during the night shift ($n = 495$). The normal working hours (including overtime) per week were 43.3 (ranges = 7–84) hours, and the average overtime was 5.1 (range = 0–48)

hours per week. On average, 91% of the participants' annual leaves were taken by the participants in 2013. This indicates that most of the participants did not take their full annual leave. The average overall QoL of the participants was 6.94 (± 1.5). This indicates that the participants had an above average overall QoL. According to all domains in the QoL scale, the psychological domain had the highest score (61.4 ± 14.6) and the environment domain had the lowest score (59.6 ± 13.6). Physical and social relationships were 59.9 (± 13.6) and 60.0 (± 19.5), respectively. This indicates that the participants perceived moderate satisfaction on all domains of the WHOQOL-BREF scale.

Proportions of percentages of time spent on work and private life

The actual proportions of percentages of time spent on work and private life in this study were divided into four groups, as presented in Fig. 1. The majority of the participants spent more than 80% of their time on work and only 20% on their private lives. Participants who spent 70% of their time on work and 30% of their time on their private lives accounted for 26.7% of the participants. The least number of participants (16.8%) spent their time on work 60% and 40% on their private lives. Participants who could balance their work time and private life accounted for 18.2% of the participants.

Table 2 represents the comparison of proportions of percentages of time spent on work and private life on social support, job satisfaction, SoC and QoL. Among the four groups of proportions of percentages of time spent on work and private life, there were statistically significant differences in SoC, overall QoL and general health, QoL physical domain and QoL environment domain. In terms of SoC, the participants in the 50/50 and below and 60/40 groups had higher scores



50/50 and below = Spent time on work 50% and private life 50% or less than 50/50
 60/40 = Spent time on work 60% and private life 40%
 70/30 = Spent time on work 70% and private life 30%
 80/20 and above = Spent time on work 80% and private life 20% or above 80/20

Fig. 1 Proportions of percentages of time spent on work and private life ($n = 971$).

Table 2 Comparison of proportions percentage of time spent on work and private life on social support, job satisfaction, SoC and QoL

Content	Proportion percentage of time spent on work and private life				F-Test	ANOVA (P-value)
	50/50 & lower group (n = 179)	60/40 group (n = 181)	70/30 group (n = 283)	80/20 & higher group (n = 286)		
Social support (e.g. boss, peer, spouse. <i>n</i> = 954)	26.4 (8.4)	25.8 (8.5)	26.3 (8.0)	26.9 (8.1)	0.6	0.593
Job satisfaction (<i>n</i> = 982)	11.6 (1.5)	11.8 (1.4)	11.7 (1.4)	11.9 (1.3)	2.0	0.107
SoC (<i>n</i> = 913)	55.7 (9.5)	56.0 (9.6)	54.5 (9.2)	52.4 (10.8)	6.4	<0.001**
Quality of life (<i>n</i> = 1040)						
Overall QoL and general health	7.2 (1.2)	7.0 (1.3)	6.9 (1.4)	6.7 (1.6)	4.0	0.008**
Physical health	53.5 (11.7)	52.2 (11.0)	50.9 (11.8)	49.3 (12.1)	5.2	0.001**
Psychological	58.5 (12.6)	59.0 (10.3)	58.1 (11.5)	57.2 (12.9)	0.9	0.444
Social relationship	65.6 (17.5)	65.5 (15.7)	62.2 (17.3)	62.3 (18.2)	2.3	0.075
Environment	61.2 (13.6)	61.4 (11.9)	59.1 (13.4)	57.3 (13.9)	4.7	0.003**

** $P < 0.01$.

SoC, sense of coherence; QoL, quality of life.

than the other two groups. The lowest SoC scores were found in the 80/20 and above group. For overall QoL and general health, participants in the 50/50 and below group had the highest scores, and participants in the 80/20 and above group had the lowest scores. Moreover, participants in the 80/20 and above group had the lowest scores in the physical health domain of the QoL questionnaire. For QoL in the environment domain, participants in the 50/50 and below and 60/40 groups had higher scores than the other two groups, and participants in the 80/20 and above group had the lowest scores. Interestingly, there was no statistically significant difference among the four groups in terms of social support, job satisfaction, and the psychological and social relationship domains of the QoL questionnaire.

Key determinants of high QoL

Regarding the multiple logistic regression analysis, the results showed that social support and SoC were found to be significant predictors ($P < 0.05$) for all QoL domains. For social support, the odds ratios (OR) were 0.97 (CI = 0.94–0.99), 0.97 (CI = 0.94–1.00), 0.98 (CI = 0.96–1.00) and 0.97 (CI = 0.95–1.00) in the physical, psychological, social relationship and environment domains, respectively. However, the OR for the SoC (OR range 1.06–1.12) indicated that a unit increase in the ability to cope with stress would result 6%–12% more likely of having high QoL for all domains. Age was a significant predictor for QoL in the physical domain (OR = 1.07, $P < 0.01$). Lastly, job satisfaction was a significant predictor for QoL in the psychological domain

(OR = 1.20, CI = 1.02–1.42, $P < 0.05$). Being married was a significant predictor for high QoL in the social domain ($P < 0.01$). It also indicated that married participants were 3.14 times more likely to have high QoL in the social domain than single participants (OR = 3.14, CI = 2.24–4.40).

Discussions and nursing implications

The study aimed to investigate the key determinants of nurses' QoL and WLB statuses in a tertiary hospital in Singapore. The key determinants of nurses' high QoL were social support and SoC. However, social support has influence on nurses' QoL more than their ability to cope with stress. This result is similar with that of Sun et al.'s study (2016), which found that social support from family members and people at work influenced nurses' QoL in China. In this study, social support from supervisors, bosses, co-workers, family members and friends was a significant factor that influenced nurses' QoL. With regard to SoC, the results were similar to that of Malinauskiene et al. (2011), as SoC was a predictor of QoL. Nurses have to deal with different types of stressful situations in healthcare working environments. Social support can act as a stress buffer to help an individual cope with stress by reducing the stress on his/her psychological and physical health, which will, in turn, improve well-being and QoL (Sun et al. 2016). Hence, the ability to cope with stress might depend on social support. This can explain why the ability to cope with stress has less influence on QoL than social support in this study.

Married nurses in this study had higher QoL than single nurses in the social domain. This might be related to social support from their family members and spouses, which influenced their QoL in this study. However, the majority of the nurses in this study were single, with a mean age of 30.63 years, which is younger compared to the national mean age of 37 and 34 years for registered nurses and enrolled nurses, respectively (Singapore Nursing Board 2013). The median age for marriage has increased nationwide. Lee et al. (2013) found that being single was a predictor of nurses' intentions to leave their healthcare organizations. Hence, receiving support from supervisors, co-workers and friends for single nurses is important in enhancing their QoL to prevent them from leaving the hospital. In addition, the 'non-full-time' working status is a significant predictor of high QoL in the psychological domain. Similar to Oyama et al.'s literature review study (Oyama & Fukahori 2015), this study found that there was a significant relationship between longer working hours and worse physical and mental health. Hence, to enhance QoL in the psychological domain, the number of working hours should be considered.

According to WLB, the majority of the nurses spent more time on work than on their private lives. However, these nurses were still satisfied with their jobs. During the period of data collection, the hospital was preparing for a major external audit. As part of the process, there was a series of internal audits and preparation work that could have imposed additional workload to the staff. However, good teamwork and motivating nursing staff can enhance job satisfaction (Opollo et al. 2014). In this study, the nursing staff had good team spirit, staff sense of loyalty, accountability, and wanting to contribute to make sure the hospital passed the audit, might have accounted for their job satisfaction despite their long working hours. Similar to Thein et al.'s study (2010), they found that Singaporean professional women spent most of their time in paid work and had little time for leisure activities. However, those participants perceived no WLB issues because they needed to provide for financial and material needs to their family members. This was one of the cultural forces for professional women to engage with their work and make themselves feel satisfied (Thein et al. 2010). In this study, the same finding was recognized. However, further exploration on the cultural forces and WLB of healthcare professionals is highly recommended for a more in-depth understanding.

According to the workplace environment, despite having green and calming spaces around the hospital, nurses still rarely spent time outdoors for leisure-physical activities. This might be because of the humidity and hot weather in

Singapore. To enhance QoL, physical health and the working environment, the hospital has several staff welfare benefits, schemes and activities, such as flexible working hours and job redesigning, to maintain and sustain a healthy workforce. Easily accessible gym facilities and in-house events such as fitness challenges, sport tournaments, lunchtime and after work yoga, and dancing are available to encourage the staff to engage in regular exercises. The staff are also encouraged to embrace a healthy lifestyle, including eating right and attending relaxation courses.

Limitations

Even though this study had a large sample size and almost 80% of the nurses in the hospital participated in the study, the results only represent nurses who worked at an acute care hospital setting. Mental health hospitals have different patient populations and settings. Hence, the key determinants of nurses' QoL in mental health hospitals might be different. Another limitation was that the proportions of percentages of actual time spent on work and private life were from the participants' perceptions. Hence, these percentages might be underestimated or overestimated. Furthermore, the data were collected during the preparation for an external audit. Therefore, the result might be different after the audit.

Conclusion and recommendations

Nurses play a significant role in providing direct care to patients. To provide quality of patient care, nurses' QoL and WLB are crucial factors. Our study found that the key determinants for nurses' high QoL in the physical, psychological, social and environment domains were social support and the ability to cope with stress. Social support was the strongest factor that influences nurses' QoL. Cultivating social support from family, friends, colleagues and supervisors can help an individual cope with stress and enhance nurses' QoL. Further investigation on the factors that affect nurses' physical health and healthy workplace environments is highly recommended. Moreover, the implementation of health promotion programmes for nurses in the hospitals and studying its effectiveness is recommended for future studies.

Implications for nursing policy and practice

In this study, the results showed that nurses who spent more than 60% of their time on work were still satisfied with their job. Nurses are required to work a maximum of 40 hours per week per hospital policy. However, nurses in the study were willing to stay at work overtime to get their work done. This was one of the work cultures that made professional women

satisfied (Thein et al. 2010). Nevertheless, this group of nurses needs to be aware of their physical health because they had lower overall QoL and physical health than nurses who spent their time on work less than 60%. A literature review study (Hewison & Sawbridge 2015) found that the recognition of staff support and interventions such as mindfulness and supervision were very important for patient care. Nursing policy can focus on strengthening the organizational supportive system at the workplace, such as support from supervisors and administrators, and encouraging nurses to embrace support from their family members and friends. Regarding work environment, healthcare organizations can design health promotion programmes such as aerobic dance, yoga, mindfulness interventions and breeze walks, during breaks or after work for 30 to 45 min for nurses who spend more than 50% of their time working. This will help to promote QoL, physical and mental health, and a good workplace environment.

Author contributions

Study design: YK, SFY, SM, SC, JT, WWST and MSN

Data collection: SFY

Data analysis: YK, SK, JT and WWST

Manuscript writing: YK, SFY, SK, SC, JT, WWST and MSN

Critical revisions for important intellectual content: YK, SC and WWST

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