

## Research Article

## Related Factors of Health-Related Quality of Life in Female Nurses with In-Service Training Program

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## Abstract

**AIM:** This study aimed to investigate the related factors of the health-related quality of life among female nurses in in-service training programs.

**METHOD:** In this cross-sectional study, purpose and snowball sampling methods were employed. Three-hundred thirty eligible individuals enrolled to participate in this study at the four universities in Taiwan. Data were collected from March 2019 to February 2020, and the instruments were the Chinese health questionnaire-12 for measuring self-perceived general health, the Resilience Scale for measuring resilience, the Chinese version of the Maslach Burnout Inventory-Human Service Survey for measuring burnout, and the World Health Organization Quality of Life Questionnaire for measuring health-related quality of life.

**RESULTS:** Three hundred nineteen female nurses participated in this study. Participants self-perceived a moderate level of general health, burnout, and health-related quality of life, but good resilience. The scores of health-related quality of life were significantly different on chronic disease status and regular exercise ( $t = 2.813, p = .005$ ) as well as the significant correlation between health-related quality of life and age ( $r = -0.160, p = .004$ ), years working as a nurse ( $r = -.204, p < .001$ ), self-perceived general health ( $r = -.544, p < .001$ ), burnout ( $r = -.649, p < .001$ ), and resilience ( $r = .325, p < .001$ ). However, only years of working as nurse, self-perceived general health, resilience, and burnout were shown to predict health-related quality of life, explaining 53.5% of the total variance (adjusted  $R^2 = .438, p < .001$ ), with burnout having the highest  $\beta$  value ( $\beta = -.453, p < .001$ ).

**CONCLUSION:** The related factors of quality of life in female nurses with in-service training program were work year, self-perceived general health, resilience, and burnout. Managers and educators should cooperate to implement strategies that support female nurses, improve resilience, alleviate burnout, and ultimately increase the health-related quality of life of female nurses those in Registered Nurses-Bachelor of Science in Nursing programs.

**Keywords:** Burnout, female nurses, health-related quality of life, resilience

## Introduction

Nurses represent the largest number of patient caregivers in both healthcare settings and healthcare system service providers worldwide (Farrokhian et al., 2016; International Council of Nurses (ICN), 2023). Emerging issues in healthcare such as population aging and new infectious disease epidemics such as the coronavirus disease 2019 pandemic are making public health problems more complex and diverse and increasing the workplace challenges and hazards for nurses (Chiou et al., 2013; ICN, 2023).

Health-related quality of life (HQOL) in nurses is a major factor known to positively affect personal well-being, quality of care, job satisfaction, and job retention (Asante et al., 2019; Farahaninia et al., 2019). Health-related quality of life is a multidimensional concept that is affected by physical-mental health, social relationships, and the environment

(Farahaninia et al., 2019; World Health Organization [WHO], 2023). Asante et al. (2019) investigated 873 healthcare workers using the abbreviated World Health Organization Quality of Life Questionnaire (WHOQOL-BREF) and reported that 74.6% self-reported as having a "low" quality of life, and it was associated positively with being burned out and having poor psychological health (Asante et al., 2019). However, resilience has been recognized as a crucial concept for nurses in both clinical and academic settings (Hart et al., 2014) and has been defined as the ability to overcome adversity, successfully cope, strengthen personal growth, and bounce back from adversity (Hart et al., 2014; Stephens, 2013; Thomas & Revell, 2016). Notably, registered nurses (RNs) are the most important workforce in clinical practice. Raising a bachelor's degree of standard educational level for RNs is a global concern, and RNs who feel highly satisfied with their choice of nursing as a professional career tend to advance their education to the RN-Bachelor of Science in Nursing (BSN) level, which is an

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in-service training program for most of the RNs (Kunaviktikul et al., 2019; Merrell et al., 2020).

These nursing students are at high risk of experiencing multiple role stresses that impact HQOL. Additionally, nurse educators are optimally positioned to investigate the HQOL of these students and develop appropriate preventive interventions.

### Research Question

1. What were related factors of HQOL in female nurses currently enrolled in BSN in-service training programs?

### Method

#### Study Design

This was a cross-sectional study.

#### Sample

Female nurses who graduated from junior colleges and were currently enrolled in in-service training programs at any one of the several universities in southern Taiwan were approached as potential participants. Eligible individuals were invited to participate in this study. Eligibility criteria included: (1) being a woman and a registered nurse, (2) having in-service training programs for BSN, and (3) currently working as a nurse. Otherwise, eligible individuals were excluded if any of the following criteria applied: (1) currently pregnant, (2) diagnosed with a psychiatric disorder, or (3) diagnosed with a significant illness such as cancer, renal failure, or heart failure. Using G-Power 3.1.2, a sample size of 157 was determined as necessary to obtain a medium effect ( $f^2 = 0.15$ ) with an alpha of .05 and a power of 0.80 (Polit & Beck, 2019). Based on an average number of 52.7% response rate for individuals survey (Baruch & Holtom, 2008), a minimum sample size of 297 was suggested for this study. Data were collected from March 2019 to February 2020.

#### Data Collection Tools

The demographic data were collected on age, marital status, living status, religion, years of working as a nurse, chronic disease, and regular exercise habits. One open question was asked to be answered by participants: "What is the impact of attending in-service education of a bachelor's degree?" Four questionnaires, including the WHOQOL-BREF Taiwan version, Chinese Health Questionnaire 12 (CHQ-12), the Chinese version of Maslach Burnout Inventory-Human Service Survey (C-MBI-HSS), and Resilience Scale (RS), were completed by all of the participants.

Health-related quality of life was assessed using the WHOQOL-BREF Taiwan version, which had been previously tested in healthy and unhealthy samples (Yao et al., 2002). This culture-specific instrument uses 28 items to measure the four domains of physical health, psychological health, social relationships, and environment. Each item is scored using a five-point scale, and the mean score of items within each domain is used to calculate a domain score, with a total possible score for each domain of 4–20 (Yao et al., 2002) and higher scores indicating better HQOL. The WHOQOL-BREF Taiwan version has shown good

construct validity and test-retest reliability (Chien et al., 2007). The Cronbach's alpha for the WHOQOL-BREF Taiwan version in this study was .93.

The CHQ-12, developed by Cheng and Williams (Cheng & Williams, 1986), has been widely used to assess self-perceived general health. The questionnaire was derived from the General Health Questionnaire (Goldberg, 1972) with six additional items incorporating Taiwanese terms and phrases added. Chinese Health Questionnaire 12 is used to assess five dimensions: somatic symptoms, anxiety and worry, social dysfunction, family relationships, and depression. Each item is scored binary with a 0 or 1, with a total score of two points or less indicating that the respondent is in good general health and total scores of three points or higher indicating that the respondent is unhealthy (Cheng et al., 1990). Chinese Health Questionnaire 12 has been shown to have acceptable validity and reliability in both hospital and community settings (Cheng et al., 1990; Chen et al., 2000). The Cronbach's  $\alpha$  was .81 in this study.

The 20-item MBI-HSS Chinese version, modified by Lee et al. (2013), has been used to measure burnout in healthcare providers (Lee et al., 2013). The MBI-HSS Chinese version uses a seven-point Likert scale to assess the frequency of burnout experiences, ranging from never (0) to every day (6). The three subscales in the MBI-HSS address emotional exhaustion (EE, 8 items), low personal accomplishment (LPA, 8 items), and depersonalization (DP, 4 items). The LPA is reverse scored. Higher total scores on the MBI-HSS Chinese version indicate more burnout, with total possible scores ranging from 0 to 120. The Cronbach's  $\alpha$  was .85, .91, .86, and .65 for the total scale, EE, LPA, and DP respectively. Based on Lee et al. (2015), low, moderate, and high levels of burnout are indicated by scores of < 44, 45–62, and > 63 (Lee et al., 2015), respectively.

The 25-item RS used to measure resilience in this study was initially developed by Wagnild and Young, with all items scored using a seven-point scale ranging from one (disagree) to seven (agree). The total possible score range for this scale is 25 to 175, with higher scores reflecting better resilience in facing dilemmas (Wagnild & Young, 1993). The RS has been used with a wide range of study populations, has been translated into a Chinese version, and is a reliable and valid tool for use in ethnic Chinese populations (Yang et al., 2015). The Cronbach's  $\alpha$  for the RS was .94 in this study. The validity was examined using criterion validity, and the correlation was significant between WHOQOL-BREF and three scales (CHQ-12, Resilience, and Burnout).

#### Statistical Analysis

The Statistical Package for Social Sciences version 22.0 software (IBM Corp.; Armonk, NY, USA) was used in all analyses. Descriptive statistics were described using frequency (percentage) and mean (standard deviation). In addition, two-sample *t*-tests were used to examine the relationships between categorical variables and HQOL, and Pearson's correlations were used to investigate relationships between continuous variables and HQOL, and multiple hierarchical regression with ENTER type analyses were used to explore the predictors of HQOL. All results with  $p < .05$  were considered statistically significant.

**Ethical Considerations**

The ethics committee approval was obtained from the National Cheng Kung University (Approval No: NCKU HREC-E-317-2, Date: March 1, 2019). All participants were provided written, informed consent after receiving a comprehensive explanation of the purposes and procedure.

**Results**

Three hundred thirty eligible individuals enrolled to participate in this study. A total of 319 participants completed the measures. The response rate was 96.6%. As shown in Table 1, the mean age of the participants was 30.6 years (SD=7.8) and over half were unmarried or single ( $n=211$ , 66.1%). Moreover, the participants had worked as nurses for an average of 8.1 years and over two-thirds (75.9%) currently worked in teaching hospitals. Most self-reported as having no diagnosed chronic disease ( $n=291$ , 91.2%). Most of the participants lived with their family (81.3%), professed a religious faith (72.7%), and did not exercise regularly (68.7%). The mean score on the CHQ-12 was  $2.06 \pm 2.49$ , indicating that the self-perceived general health of the participants

**Table 1.**  
*Descriptive Statistics of the Participants (N = 319)*

| Categorical variable                                | n      | %     |
|---|--------|-------|
| Marital status                                      |        |       |
| Married   | 108    | 33.9  |
| Unmarried/single                                    | 211    | 66.1  |
| Living status                                       |        |       |
| With family   | 252    | 81.3  |
| Not with family                                     | 58     | 18.7  |
| Religion  |        |       |
| No  | 87     | 27.3  |
| Yes   | 232    | 72.7  |
| Chronic disease                                     |        |       |
| No  | 291    | 91.2  |
| Yes   | 28     | 8.8   |
| Regular exercise                                    |        |       |
| No  | 219    | 68.7  |
| Yes   | 100    | 31.3  |
| Continuous variable                                 | Mean   | SD    |
| Age   | 30.62  | 7.80  |
| Years working as nurse                              | 8.10   | 6.92  |
| Self-perceived general health (CHQ-12, 0–12)        | 2.06   | 2.49  |
| Resilience (25–175)                                 | 124.75 | 18.77 |
| Burnout (MBI-HSS, 0–120)                            | 55.77  | 9.69  |
| Health-related Quality of Life (WHOQOL-BREF, 16–80) | 55.64  | 7.65  |

Note: CHQ-12 = Chinese Health Questionnaire 12; RS = Resilience Scale; MBI-HSS = Maslach Burnout Inventory—Human Service Survey; WHOQOL-BREF = World Health Organization Quality of Life Brief Version.

**Table 2.**  
*Relationships Between Categorical Variables and Health-Related Quality of Life (N = 319)*

| Variable         | Health-Related Quality of Life (WHOQOL-BREF) |       |        |        |
|------------------|--|-------|--------|--------|
|                  | Mean   | SD    | t      | p      |
| Marital status   |  |       | 1.707  | .093   |
| Married          | 54.64  | 7.39  |        |        |
| Unmarried/single | 56.16  | 7.75  |        |        |
| Living status    |  |       | 0.043  | .840   |
| With family      | 55.35  | 7.56  |        |        |
| Not with family  | 55.58  | 7.73  |        |        |
| Religion         |  |       | -0.853 | .702   |
| No               | 69.52  | 10.63 |        |        |
| Yes              | 55.91  | 8.34  |        |        |
| Chronic disease  |  |       | -4.471 | < .001 |
| No               | 56.14  | 7.50  |        |        |
| Yes              | 50.51  | 7.46  |        |        |
| Regular exercise |  |       | 2.813  | .005   |
| No               | 54.83  | 6.77  |        |        |
| Yes              | 57.42  | 7.90  |        |        |

Note: <.05 means a significant difference between groups. SD = Standard deviation; t = t-value.

was moderate. The mean score on the RS was 124.75 points, indicating good resilience. The mean score on the MBI-HSS was 55.68, indicating moderate burnout. The mean total score on the WHOQOL-BREF was 55.64, indicating a moderate level of HQOL (Table 1).

Differences in WHOQOL-BREF scores by demographic variables are shown in Table 2. The WHOQOL-BREF total score differed significantly between those with and without regular exercise ( $t=2.813$ ,  $p = .005$ ), indicating that those who exercised regularly had a better HQOL than those who did not. In addition, chronic disease status (yes/no) had a significant impact on WHOQOL-BREF scores ( $t=-4.471$ ,  $p < .001$ ).

**Table 3.**  
*Relationships Between Continuous Variables and Health-Related Quality of Life (N = 319)*

| Variable               | Health-related Quality of Life |       |
|------------------------|--------------------------------|-------|
|                        | r                              | p     |
| Age                    | -0.160                         | .004  |
| Years working as nurse | -0.204                         | <.001 |
| CHQ-12                 | -0.544                         | <.001 |
| Resilience             | 0.325                          | <.001 |
| Burnout                | -0.649                         | <.001 |

Note: r means the correlation between health-related quality of life and variables;  $p < .05$  means a significant difference between groups.

**Table 4.**  
Hierarchical Regression of Predictors of Health-Related Quality of Life

| Predictor Variable            | Model 1 |       |          | Model 2 |        |          |
|-------------------------------|---------|-------|----------|---------|--------|----------|
|                               | B       | SE    | β        | B       | SE     | β        |
| Constant                      | 68.336  | 3.727 |          | 87.063  | 4.945  |          |
| Chronic disease (ref. no)     | -7.114  | 1.947 | -.209*** | -3.508  | 1.445  | -.103*   |
| Regular exercise (ref. no)    | 2.893   | 1.174 | .138*    | -0.020  | 0.865  | -.001    |
| Age                           | 0.088   | 0.163 | .070     | -0.098  | 0.117  | -.078    |
| Years working as nurse        | -0.304  | 0.184 | -.215    | 0.016   | 0.135  | .011     |
| Self-perceived general health |         |       |          | -1.050  | 0.185  | -.270*** |
| Resilience                    |         |       |          | 0.100   | 0.023  | .188***  |
| Burnout                       |         |       |          | -0.455  | 0.047  | -.453*** |
| R <sup>2</sup>                |         | .108  |          |         | .546   |          |
| Adjusted R <sup>2</sup>       |         | .096  |          |         | .535   |          |
| Δ R <sup>2</sup>              |         | .108  |          |         | .438   |          |
| F change                      |         | 8.840 |          |         | 93.302 |          |
| p                             |         | <.001 |          |         | <.001  |          |

Note: B = Unstandardized beta; β = Standardized coefficients beta; SE = Standard error.

\*p < .05.

\*\*\*p < .001.

Furthermore, age ( $r = -0.160, p = 0.004$ ) and years working as a nurse ( $r = -.204, p < .001$ ) were found to correlate negatively with HQOL. Self-perceived general health was found to correlate moderately negatively with HQOL ( $r = -.544, p < .001$ ), and burnout was found to correlate significantly negatively with HQOL ( $r = -.649, p < .001$ ). Resilience was found to correlate moderately positively with HQOL ( $r = .325, p < .001$ ; see Table 3).

The results of the hierarchical regression model used in this study to predict HQOL are shown in Table 4. After the demographic characteristics were entered into Model 1, hierarchical linear regression analysis showed chronic disease status and regular exercise to be the most significant predictors of HQOL, explaining 9.6% of the total variance (adjusted  $R^2 = 0.096$ ), with chronic disease having the highest  $\beta$  value ( $\beta = -.209, p < .001$ ). In Model 2, years of working as a nurse, self-perceived general health, resilience, and burnout were shown to be the most significant determinants, explaining 53.5% of the total variance (adjusted  $R^2 = .438, p < .001$ ), with burnout having the highest  $\beta$  value ( $\beta = -.453, p < .001$ ). We collected qualitative data through an open question. More than 99% of participants in our study reported experiencing stress, tiredness, and insufficient sleep due to their work and academic workload.

### Discussion

In this study, the participants were found to have a moderate level of self-perceived general health, burnout, and quality of life, and a good level of resilience. Those who exercised regularly and did not have a diagnosed chronic disease were shown to enjoy a significantly better HQOL. Years working as a nurse, self-perceived general health, resilience, and burnout were found to

be significant predictors of HQOL, with burnout being the most significant determinant.

Despite the important and positive impact of regular exercise on HQOL, the percentage of participants who exercised regularly was found to be low in this study, which is similar to previous studies (Alkatheri et al., 2020; Mills et al., 2020). In the study by Mills et al. (2020), exercise was found to improve HQOL, although few nursing student participants exercised regularly, possibly because of their heavy workloads and multiple roles. Nevertheless, they were aware of the positive relationship between exercise and HQOL. In addition, in this study, although the prevalence of chronic disease was found to be low, it was an important factor affecting HQOL. Many studies have documented that chronic disease affects HQOL negatively (Emem & Hassan, 2017; Mohamed & Isa, 2020; Traino et al., 2019). Therefore, strategies for disease management and coping should be developed and promoted to improve HQOL.

In the current study, nurses' years of work experience were positively correlated with HQOL. This indicates that as nurses' working experience increases, they perceive a higher level of HQOL. Labrague et al. (2018) found that people who are older have a greater tendency to use more positive approach coping strategies (Labrague et al., 2018). These results were inconsistent with Wang et al. findings that senior nurses are more likely to experience burnout (Wang et al., 2019). The inconsistency in the results may be attributed to senior nurses having more utilizing positive coping strategies according to their work experiences.

The participants self-reported as having a moderate mean level of general health, with a moderately negative correlation found between self-perceived general health and HQOL in the present

study. This supports a positive correlation between general health and HQOL. This result is similar to a prior study (Wang et al., 2019). Self-perceived health status is closely related to functioning abilities, and shift work is linked to increased job stress and negative impacts on physical-mental health in nurses (Çilingir & Aydın, 2017; Özyürek et al., 2021). However, participants in our study took on both nursing and student loads.

A moderate–high negative correlation was found in this study between burnout and HQOL. A negative correlation between burnout and HQOL in nursing students has been reported in previous studies (Jeong & Jung, 2020; Suleiman-Martos, 2020). Possible factors contributing to burnout in nursing students include: (1) the high professional knowledge and skills expectations in advanced-education programs, (2) the stress of time management, and (3) the heavy workload resulting from diverse, multi-role expectations. Similar results for professional competence were found in other fields at higher levels of education (Cruz et al., 2018). In a previous study, students in healthcare fields with lower self-perceived stress were found to have a better quality of life (Alkatheri et al., 2020) primarily because they adopted active coping strategies (Kupcewicz et al., 2020). Therefore, strategies that include stress and time management, communication skills enhancement, counseling programs, and exercises should be enacted to decrease burnout and improve the quality of life in nursing students (Kupcewicz et al., 2020).

Our study found that nursing students with good resilience reported enjoying a better HQOL, which is similar to the findings of previous studies (Keener et al., 2021; McDermid et al., 2016; Tseng et al., 2018). In facing stressful situations, resilience is an important psychological resource that helps affected individuals adjust their psychological status and effectively manage their stress (Wojujutari et al., 2019). Resilience may help individuals prepare psychologically to maintain balance in life and serve as a protective factor for HQOL (Tseng et al., 2018). However, factors associated with social support have been shown to affect resilience (Ariapooran, & Khezeli, 2018), with individuals experiencing extended periods of stress less able to achieve adequate levels of resilience. Thus, decreasing stress should be prioritized to build the resilience necessary to improve HQOL.

### Conclusions and Recommendations

The related factors of HQOL in female nurses with an in-service training program were years of working as a nurse, self-perceived general health, resilience, and burnout. Female nurses in RN-BSN programs should be supported by their managers and educators by implementing strategies that enhance resilience, alleviate burnout, and ultimately improve their HQOL.

**Ethics Committee Approval:** Ethics committee approval was received for this study from the ethics committee of National Cheng Kung University (Approval No: NCKU HREC-E-317-2, Date: March 1, 2019).

**Informed Consent:** Written informed consent was obtained from the female nurses who participated in this study.

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