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# SECONDARY TRAUMATIC STRESS AND ASSOCIATED FACTORS AMONG NURSES IN HOSPITALS IN CAN THO CITY

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## ABSTRACT

**Background:** Secondary traumatic stress (STS) among nurses can negatively affect mental health and the quality of patient care, yet studies on this issue in Vietnam remain limited.

**Objective:** To determine the prevalence of STS and its associated factors among nurses in several hospitals in Can Tho City.

**Methods:** A cross-sectional study was conducted among 267 nurses. Data were collected using the 10-item STS scale (ProQOL R-V) via an electronic questionnaire from July to August 2025. Demographic, occupational, and work environment factors were surveyed. Multivariate logistic regression was applied to identify associated factors.

**Results:** The prevalence of high, moderate, and low STS was 6.4%, 46.8%, and 46.8%, respectively. The mean STS score was 24.36 ± 11.6 (SE = 0.71). Significant associated factors included caring for young children, working department (nurses in Pediatrics were at higher risk than those in other departments), years of experience, and occupational stress level ($p < 0.05$).

**Conclusion:** STS among hospital nurses is a considerable concern with a notable prevalence. Identifying associated risk factors provides a foundation for developing appropriate interventions.

*Keywords:* Stress, secondary traumatic stress, STS, ProQOL R-V, nurses, hospital.

## 1. INTRODUCTION

Nurses are the backbone of the healthcare system, directly involved in patient care, support, and companionship throughout the treatment process. Secondary Traumatic Stress (STS), considered a form of "indirect trauma," arises when caregivers are affected by the pain and traumatic experiences of others. Kellogg's analysis of studies from 2010 to 2020, using Walker and Avant's concept analysis framework, indicated that STS is distinct from burnout and compassion fatigue, as the latter do not require the prerequisite of caring for individuals who have experienced traumatic events[1]. Moreover, compassion fatigue and burnout do not share the same psychological health consequences as STS[1]. Gusler, through correlation and network analyses, further demonstrated that STS and vicarious trauma are related yet distinct constructs[2].

In Japan, a cross-sectional study conducted at a general hospital in August 2006 reported that 90.3% of participants experienced secondary trauma[3]. In most studies, the prevalence of STS among nurses working in emergency departments was over 60%, while in pediatrics it was above 50%[4].

STS not only affects the mental health and professional quality of life of nurses but may also reduce the quality of care, increase the risk of medical errors, and compromise patient safety. In Vietnam, research on this topic remains limited. In response to this practical need, we conducted the study titled "Secondary Traumatic Stress and Associated Factors among Nurses in Selected Hospitals in Can Tho City."

## 2. SUBJECTS AND METHODS

### 2.1. Study subjects

The study population included nurses working at public hospitals in Can Tho City from July to August 2025.

Inclusion criteria: nurses who had been working for at

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least 6 months and agreed to participate in the survey.

**2.2. Study design:** A cross-sectional descriptive study.

**2.3. Sample size:** The sample size was calculated using the formula for estimating a single proportion:

$$n = Z^2_{1-\alpha/2} \frac{p(1-p)}{d^2}$$

Where: n = required sample size; α = 0.05 (level of significance); d = 0.06 (desired precision); $Z_{1-\alpha/2}$ = 1.96 (standard normal value corresponding to the selected α); p = 0.5, the estimated prevalence of STS among nurses (since there has been no similar study in Vietnam, p was set at 0.5). Substituting into the formula, the required sample size was calculated as n = 267.

**2.4. Sampling method**

Data collection tool: The "Secondary Traumatic Stress" scale, a 5-point Likert scale (0 = never stressed → 5 = very stressed), consisting of 10 items (items 2, 5, 7, 9, 11, 13, 14, 23, 25, 28) selected from the Professional Quality of Life Scale – Version 5 (ProQOL R-V)[5]. The instrument was translated into Vietnamese, back-translated, and its reliability was reassessed (Cronbach's alpha).

Data collection method: Convenience sampling was applied using an online survey. An electronic questionnaire link (Google Forms) was distributed to nurses working at public hospitals in Can Tho City. Those who consented to participate completed the survey. A total of 267 valid responses were obtained during the study period.

**2.5. Study contents**

Assessment of STS among nurses: The total score of the 10-item scale ranged from 0 to 50. Based on the scoring system, STS levels were categorized into three groups: Low (≤22 points), Moderate (23–41 points), and High (≥42 points).

Factors related to STS among nurses: demographic and occupational characteristics such as gender, age, economic status, marital status, occupational stress (measured by the "Emergency Nurse Stress Questionnaire"–ENSQ-12, consisting of 12 items, 7-point Likert scale: 1 = not stressful at all → 7 = very stressful), years of service, and department of work[6].

**2.6. Data processing and analysis**

Data were analyzed using SPSS version 22.0. Reliability of the scales was assessed with Cronbach's alpha. Descriptive statistics (frequencies and percentages) were used to present demographic and occupational characteristics and the prevalence of STS among nurses. Associations between STS and related factors were examined using Odds Ratios (OR) and Chi-square ($\chi^2$) tests. A p-value < 0.05 was considered statistically significant.

**2.7. Ethical considerations**

Participants were informed about the study objectives, contents, and potential benefits. Anonymity was guaranteed, and participants retained the right to withdraw at any time without consequences. Online informed consent was obtained before completing the questionnaire.

## 3. RESULTS

**3.1. Secondary Traumatic Stress among nurses**

The level of STS was measured using a 10-item scale, with each item rated on a 5-point Likert scale (0–5). The total score ranged from 0 to 50, with higher scores indicating greater levels of stress.

**Table 1. Reliability testing, mean scores, and standard deviations for the 10-item Secondary Traumatic Stress Scale (n = 267)**

| Item | Item–total correlation | Cronbach's Alpha | Mean | SD |
|---|---|---|---|---|
| I often think or worry a lot about patients, even after working hours | 0.81 | 0.96 | 2.76 | 1.31 |
| I am easily startled or frightened by unexpected sounds | 0.84 | 0.96 | 2.45 | 1.37 |
| I find it challenging to separate work from my personal life | 0.89 | 0.96 | 2.51 | 1.37 |
| I feel affected by the stress or psychological trauma of patients | 0.90 | 0.95 | 2.48 | 1.29 |
| My work often makes me feel anxious or tense | 0.85 | 0.96 | 2.54 | 1.34 |
| I feel sad or depressed due to exposure to patients' painful situations | 0.88 | 0.96 | 2.37 | 1.30 |
| I feel as if I am personally experiencing the pain or trauma of patients | 0.88 | 0.96 | 2.48 | 1.27 |
| I avoid certain activities or situations because they remind me of patients' pain or trauma | 0.91 | 0.95 | 2.31 | 1.39 |
| I often have frightening images suddenly appear in my mind after contact with patients | 0.88 | 0.96 | 2.37 | 1.37 |
| I cannot clearly remember some important parts of caring for or treating traumatized patients | 0.84 | 0.96 | 2.07 | 1.42 |
| Total | | 0.96 | 24.36 | 11.66 |

*Note: SD = standard deviation*

The internal consistency of the STS scale was evaluated using Cronbach's alpha. Results showed an alpha coefficient of 0.96, with item–total correlations ranging from 0.81 to 0.91. No items required removal (cut-off < 0.3), indicating acceptable reliability according to Nunnally & Bernstein (1994). The mean scores ranged from 2.07 to 2.76, with an overall mean total score of 24.36 (SD = 11.66, standard error = 0.71).

The proportions of nurses experiencing STS at low, moderate, and high levels were 46.8%, 46.8%, and 6.4%, respectively.

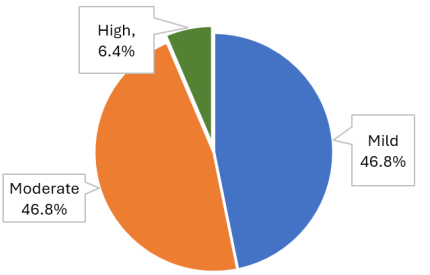


**Figure 1. Classification of Secondary Traumatic Stress levels among nurses (n = 267)**

### 3.2. Factors associated with secondary traumatic stress among nurses

**Table 2. Demographic characteristics and secondary traumatic stress among nurses**

| Demographic characteristics | Total | Moderate–High (n = 125) | | Mild (n = 142) | | OR (95% CI) | p |
|---|---|---|---|---|---|---|---|
| | n | n | % | n | % | | |
| **Sex** | | | | | | | |
| Male | 48 | 22 | 45.8 | 26 | 54.2 | 1 | |
| Female | 219 | 120 | 54.8 | 99 | 45.2 | 1.4 (0.8-2.7) | 0.261 |
| **Age group** | | | | | | | |
| < 30 | 40 | 16 | 40.0 | 24 | 60.0 | 1 | |
| 30 - 40 | 173 | 98 | 56.6 | 75 | 43.4 | 2.0 (0.9-3.9) | 0.060 |
| > 40 | 54 | 28 | 51.8 | 26 | 48.2 | 1.6 (0.7-3.7) | 0.256 |
| **Marital status** | | | | | | | |
| Married | 248 | 130 | 52.4 | 118 | 47.6 | 1 | |
| Single | 19 | 12 | 63.2 | 7 | 36.8 | 1.6 (0.6-4.1) | 0.369 |
| **Currently caring for young children** | | | | | | | |
| No | 70 | 30 | 42.9 | 40 | 57.1 | 1 | |
| Yes | 197 | 112 | 56.8 | 85 | 43.2 | 1.8 (1.1-3.1) | 0.045 |

*n: frequency; %: Percentage; CI: Confidence Interval*

The results showed that the proportion of moderate-to-high STS was higher among females (54.8%) compared to males (45.8%), although this difference was not statistically significant (p = 0.261). Nurses aged 30–40 tended to have higher stress compared to those under 30 (56.6% vs. 40.0%; OR = 2.0; p = 0.060), but the difference did not reach statistical significance. Marital status was not clearly associated with STS (p = 0.369). Notably, nurses who were caring for young children had a significantly higher risk of STS compared to those without childcare responsibilities (56.8% vs. 42.9%; OR = 1.8; p = 0.045).

**Table 3. Occupational characteristics and secondary traumatic stress among nurses**

| Occupational characteristics | Total | Moderate–High (n = 125) | | Mild (n = 142) | | OR (95% CI) | p |
|---|---|---|---|---|---|---|---|
| | n | n | % | n | n | | |
| **Working department** | | | | | | | |
| Other/administrative | 254 | 131 | 51.6 | 123 | 48.4 | 1 | |
| Pediatrics | 13 | 11 | 84.6 | 2 | 15.4 | 5.2 (1.1-23.8) | 0.035 |

| Occupational characteristics | Total | Moderate–High (n = 125) | | Mild (n = 142) | | OR (95% CI) | p |
|---|---|---|---|---|---|---|---|
| | n | n | % | n | n | | |
| **Years of experience** | | | | | | | |
| < 5 years | 31 | 11 | 35.5 | 20 | 64.5 | 1 | |
| ≥ 5 years | 236 | 131 | 55.5 | 105 | 44.5 | 2.3 (1.1-4.9) | 0.039 |
| **Working hours/day** | | | | | | | |
| ≤ 8 hours | 146 | 74 | 50.7 | 72 | 49.3 | 1 | |
| > 8 hours | 121 | 68 | 56.2 | 53 | 43.8 | 1.3 (0.8-2.0) | 0.369 |
| **Occupational stress level** | | | | | | | |
| None- Mild | 106 | 34 | 32.1 | 72 | 67.9 | 1 | |
| Moderate | 99 | 61 | 61.6 | 38 | 38.4 | 3.4 (1.9-6.0) | <0.001 |
| High | 62 | 47 | 75.8 | 15 | 24.2 | 6.6 (3.3-13.5) | <0.001 |

*n: frequency; %: percentage; CI: Confidence*

The analysis indicated that nurses working in pediatrics had a markedly higher proportion of moderate-to-high STS (84.6%) compared to those in other departments (51.6%), with statistical significance (OR = 5.2; p = 0.035). Nurses with ≥ 5 years of experience were at higher risk of STS than those with < 5 years (55.5% vs. 35.5%; OR = 2.3; p = 0.039). Longer working hours (>8 hours/day) showed a tendency toward higher stress, but this was not statistically significant (p = 0.369). Importantly, occupational stress was strongly and significantly associated with STS: nurses with moderate occupational stress had a 6.6-fold higher risk compared to those without stress (p < 0.001).

## 4. DISCUSSION

### 4.1. Secondary traumatic stress among nurses

The reliability test indicated that the Secondary Traumatic Stress scale (STS – ProQOL R-V) had very high internal consistency, with Cronbach's Alpha of 0.96. All items–total correlations exceeded the recommended threshold, confirming that the tool was valid and appropriate for the nursing population in this study. The mean item scores suggested that the most common manifestations of STS were persistent concern about patients even after working hours, difficulty separating work from personal life, and prolonged stress. These signs highlight how occupational trauma has partly intruded into nurses' private lives, directly affecting their mental health and quality of life.

This finding is consistent with the report of B. Hudnall Stamm (2010), the developer of ProQOL, who noted that anxiety-related manifestations and challenges in work–life balance often scored highest among healthcare workers dealing with critically ill patients[5]. A study in China also documented that nurses frequently carried concerns about patients outside of working hours, which constituted a significant risk factor for occupational stress and burnout[4]. In the present study, the overall mean score of STS was 24.36 ± 11.67, within the moderate range, aligning with the findings of Tran et al. (2023), who assessed ProQOL among physicians and nurses in Vietnam[7]. The proportion of nurses with high STS levels was lower than in some international studies, such as Mohammad Ali Zakeri et al. in Iran during the COVID-19 pandemic (2020), which reported a higher mean score of 27.71 ± 7.10[8]. This difference may be explained by the pandemic's reduced impact and variations in working environments and human resource support policies. Nevertheless, the fact that nearly half of the nurses experienced moderate STS remains a warning sign, as this group is at risk of progressing to severe levels under increasing occupational pressures.

### 4.2. Factors associated with secondary traumatic stress among nurses

The study also revealed several factors associated with occupational stress. Nurses caring for young children were more likely to experience higher STS, reflecting the double burden of professional and family responsibilities. This result is consistent with both domestic and international studies, which have identified family as a significant source of stress but also a potential protective factor when adequate support is available [4,7]. Furthermore, pediatric nurses demonstrated higher STS levels, likely due to frequent exposure to critically ill or terminally ill children and the necessity of extensive communication with their families. A study by Ya Wang et al. (2025) in China similarly reported that pediatric and intensive care nurses had higher stress levels compared to those in other departments[9].

Another factor was work experience: nurses with ≥ 5 years of experience were at greater risk of STS, possibly due to the cumulative effect of occupational stress over time. This is in line with Tran et al. (2023) in Vietnam, who demonstrated that longer working duration was

associated with anxiety and burnout[7]. Notably, the strong correlation between occupational stress and STS was clearly evident in this study. This finding concurs with Asma Alneyadi et al. (2025), who reported that high occupational stress significantly increased the risk of psychological disorders among nurses[10].

Taken together, STS is a prevalent issue among nurses, with moderate levels being most common, reflecting the inherent pressures of the profession. Related factors include family burden, work environment, and years of service. These findings provide substantial evidence to inform the design of psychological support programs, stress management interventions, and workplace improvements to safeguard nurses' mental health.

## 5. CONCLUSION

This study revealed that secondary traumatic stress among hospital nurses was predominantly at a moderate level (46.8%), underscoring the significant impact of occupational pressure on mental health. Associated factors included caring for young children, working in pediatrics, years of professional experience, and overall occupational stress level. These results highlight the importance of early identification of high-risk nursing groups to develop psychological support programs, improve working conditions, and promote work–life balance. Such measures not only help reduce secondary traumatic stress but also enhance the quality of patient care and ensure the sustainability of the healthcare workforce.

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