# THE RELATIONSHIP BETWEEN COPING STYLES AND PROFESSIONAL QUALITY OF LIFE AMONG NURSES IN CHINA WITH SECOND VICTIM EXPERIENCE

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FACULTY OF MEDICINE
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**THE RELATIONSHIP BETWEEN COPING STYLES AND PROFESSIONAL QUALITY OF LIFE AMONG NURSES IN CHINA WITH SECOND VICTIM EXPERIENCE**

## ABSTRACT

Second-victim experiences can heighten the risk of compassion fatigue, while support from both individuals and organizations tends to serve as a protective factor. However, the potential for poor compassion satisfaction and increased compassion fatigue among nurses, resulting from adverse events, is still an underestimated problem. Additionally, limited knowledge exists regarding the influence of positive and negative coping styles among nurses with second victim experience. Moreover, it is important to recognize that second-victim experiences can have enduring effects on the personal and professional well-being of nurses. Given this, it is crucial to provide individual-centred support to assist nurses in coping with of the second-victim experience. This study aims to examine the impact of second-victim experiences on the professional quality of life among nurses, while also investigating the mediating role of coping styles in the relationship between second-victim experiences and professional quality of life. Furthermore, to explore personal and workplace factors that facilitate or hinder coping styles for second victim experiences, from the perspectives of both frontline nurses and nurse managers. This study was divided into two phases. In phase I, a cross-sectional survey was conducted using a self-administered questionnaire to collect the data consists of demographic data, Second Victim Experience and Support Tool, Simplified Coping Styles Questionnaire, and Professional Quality of Life Scale. Multistage sampling was used to recruit registered

nurses from Hunan province in China. There are 899 registered nurses who identified themselves as experiencing adverse events from nine tertiary hospitals were included in this study. Participants were recruited to complete a survey on the second victim experience and support tool, the simplified coping style questionnaire, and the professional quality of life scale. The stress coping theory was used to develop the framework in this study. The structural equation modelling approach was used for conducting the mediating effects analysis via IBM SPSS Statistics 26.0 and Mplus 8.3. In Phase II, Semi-structured interviews were used to collect the data. Purposive sampling was used to recruit 8 nurses and 7 nurse managers from 5 tertiary hospitals located in four cities of varying income levels. The data collected was analysed using thematic analysis in NVivo V.12. In total, 67% (n = 899) of nurses reported a second victim experience during their careers. In a bivariate analysis, both second-victims experiences and coping styles were significantly associated with their professional quality of life. The results showed that the effects of second victim experiences on their professional quality of life were fully mediated by coping styles (95% Bias-corrected bootstrap confidence interval did not contain 0), while the effects varied based on the type of coping styles. The analysis revealed four main themes that influenced nurses' ability to cope with second victim experiences: "Type of emotional trauma exposure," "Personal characteristics," "Workplace environment," and "Social support system." This study reveals that second-victim experiences are prevalent among nurses, necessitating acknowledgment and attention. Disregarding the escalating compassion fatigue and declining compassion satisfaction observed in nurses who have encountered adverse events is both impractical and infeasible. The findings of this study shed light on the mediating effects of coping

styles, emphasizing the critical importance of implementing support programs and self-care initiatives specifically tailored to nurses. Moreover, this study uncovers the facilitators and barriers that nurses encounter while coping with second-victim experiences, providing valuable insights for the development of targeted interventions aimed at supporting nurses' well-being and mitigating the negative consequences of such experiences. Recognizing the significance of a comprehensive approach, it is imperative to implement strategies that effectively support nurses in coping with second-victim experiences, ultimately enhancing patient safety and improving the quality of care delivered.

**Keywords:** Second victim experience, Coping styles, Professional quality of life, Nurse, Adverse Event

**HUBUNGAN ANTARA GAYA MENGHADAPI DENGAN KUALITI HIDUP PROFESIONAL DALAM KALANGAN JURURAWAT DI CHINA DENGAN PENGALAMAN MANGSA KEDUA**

## ABSTRAK

Pengalaman mangsa kedua boleh meningkatkan risiko keletihan kasih sayang, manakala sokongan daripada individu dan organisasi cenderung berfungsi sebagai faktor perlindungan. Namun, potensi kepuasan kasih sayang yang kurang baik dan peningkatan keletihan kasih sayang di kalangan jururawat, akibat daripada peristiwa-adverse, masih merupakan masalah yang dianggap rendah. Selain itu, terdapat pengetahuan terhad mengenai pengaruh gaya-cara positif dan negatif di kalangan jururawat yang mengalami pengalaman sebagai mangsa kedua. Selain itu, penting untuk diakui bahawa pengalaman sebagai mangsa kedua boleh memberi kesan yang berpanjangan terhadap kesejahteraan peribadi dan profesional jururawat. Oleh itu, adalah penting untuk menyediakan sokongan berpusat individu untuk membantu jururawat dalam menghadapi pengalaman sebagai mangsa kedua. Kajian ini bertujuan untuk mengkaji kesan pengalaman sebagai mangsa kedua terhadap kualiti kehidupan profesional di kalangan jururawat, sambil juga menyiasat peranan pengantara gaya-cara dalam hubungan antara pengalaman sebagai mangsa kedua dan kualiti kehidupan profesional. Selanjutnya, untuk meneroka faktor-faktor peribadi dan tempat kerja yang memudahkan atau menghalang gaya-cara dalam menghadapi pengalaman sebagai mangsa kedua, dari perspektif jururawat garis hadapan dan pengurus jururawat. Kajian ini dibahagikan kepada dua fasa. Dalam Fasa I, satu tinjauan rentas-seksyen telah

dijalankan menggunakan soal selidik yang diurus sendiri untuk mengumpul data yang terdiri daripada data demografi, Alat Pengalaman dan Sokongan Mangsa Kedua, Soal Selidik Gaya-Cara Ringkas, dan Skala Kualiti Kehidupan Profesional. Pemilihan pelbagai peringkat digunakan untuk mengambil sampel jururawat berdaftar dari wilayah Hunan di China. Terdapat 899 jururawat berdaftar yang mengalami peristiwa-adverse dari sembilan hospital tertier yang terlibat dalam kajian ini. Peserta telah diambil untuk melengkapkan soal selidik mengenai alat pengalaman dan sokongan mangsa kedua, soal selidik gaya-cara yang disederhanakan, dan skala kualiti kehidupan profesional. Teori penanggulangan tekanan digunakan untuk membangunkan kerangka kajian ini. Pendekatan pemodelan persamaan struktur digunakan untuk menjalankan analisis kesan pengantara melalui IBM SPSS Statistics 26.0 dan Mplus 8.3. Dalam Fasa II, temubual separa berstruktur digunakan untuk mengumpul data. Pemilihan bertujuan digunakan untuk mengambil sampel 8 jururawat dan 7 pengurus jururawat dari 5 hospital tertier yang terletak di empat bandar dengan tahap pendapatan yang berbeza. Data yang dikumpul dianalisis menggunakan analisis tematik di NVivo V.12. Secara keseluruhan, 67% (n = 899) jururawat melaporkan pengalaman sebagai mangsa kedua dalam kerjaya mereka. Dalam analisis bivariat, kedua-dua pengalaman mangsa kedua dan gaya-cara penanggulangan berkaitan secara signifikan dengan kualiti kehidupan profesional mereka. Keputusan menunjukkan bahawa kesan pengalaman mangsa kedua terhadap kualiti kehidupan profesional mereka diantara pengantara gaya-cara (95% selang keyakinan Bootstrap dengan pindaan kecenderungan tidak mengandungi 0), manakala kesan tersebut berbeza berdasarkan jenis gaya-cara. Analisis mendedahkan empat tema utama yang

mempengaruhi keupayaan jururawat untuk menghadapi pengalaman sebagai mangsa kedua: "Jenis pendedahan trauma emosi," "Ciri-ciri peribadi," "Persekitaran tempat kerja," dan "Sistem sokongan sosial." Kajian ini mendedahkan bahawa pengalaman sebagai mangsa kedua adalah lumrah di kalangan jururawat, memerlukan pengiktirafan dan perhatian. Mengabaikan keletihan kasih sayang yang meningkat dan kepuasan kasih sayang yang menurun yang diperhatikan di kalangan jururawat yang mengalami peristiwa-adverse adalah tidak praktikal dan tidak layak. Hasil kajian ini menyoroti kesan pengantara gaya-cara, menekankan kepentingan pentingnya melaksanakan program sokongan dan inisiatif penjagaan diri yang khusus disesuaikan untuk jururawat. Selain itu, kajian ini mendedahkan faktor-faktor yang memudahkan dan menghalang jururawat ketika menghadapi pengalaman sebagai mangsa kedua, menyediakan panduan berharga untuk pembangunan intervensi yang tertumpu untuk menyokong kesejahteraan jururawat dan mengurangkan akibat negatif pengalaman tersebut. Mengenali kepentingan pendekatan menyeluruh, adalah penting untuk melaksanakan strategi yang efektif untuk menyokong jururawat dalam menghadapi pengalaman sebagai mangsa kedua, dengan hasilnya meningkatkan keselamatan pesakit dan meningkatkan kualiti penjagaan yang disampaikan.

**Kata kunci:** Pengalaman mangsa kedua, Gaya-cara penyesuaian, Kualiti kehidupan profesional, Jururawat, Kejadian Advers

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| | | |
|---|---|---|
| SV | : | Second victim |
| SVE | : | Second victim experience |
| SVEST | : | Second victim experience and support tool |
| RNs | : | Registered nurses |
| DON/DONs | : | Director of nursing |
| SOPS | : | Survey on patient safety |
| PTSD | : | post-traumatic stress disorder |
| MOH | : | Ministry of Health |
| WHO | : | World Health Organization |
| SD | : | Standard Deviation |
| CFA | : | Confirmatory Factor Analysis |

# CHAPTER 1: INTRODUCTION

## 1.1 Introduction

As primary healthcare providers, Nurses play a crucial role in providing quality care to patients (Li et al., 2021). However, growing expectations of nurses have been observed, driven by advancements in healthcare that require nurses to take on roles as effective educators and advocates. Additionally, changing patient demographics and evolving healthcare policies necessitate that nurses stay updated with the latest research and incorporate evidence-based interventions into their practice (Yin & Zeng, 2020). Particularly when they work in a complex and stressful environment, which can make them prone to mistakes, leading to a vicious cycle of adverse events (Mottaghi et al., 2020; Ruiz-Fernández et al., 2020). Although there have been ongoing efforts to enhance patient safety, the occurrence of adverse events remain a significant challenge worldwide, with 134 million occurring annually in low- and middle-income countries (The Lancet, 2019). In China, where reporting systems often lack effective support for nurses, leading to punitive measures instead of encouragement (Huang, 2022; Liu, 2020). Limited organizational resources and growing expectations further contribute to compassion fatigue and impact the professional quality of life (Parveen et al., 2017).

The concept of second victims (Wu, 2000), referring to nurses who experience emotional distress following adverse events, has gained attention. Nurses with second victim experiences may struggle with guilt, self-doubt, and emotional exhaustion, leading to decreased satisfaction in their work and can significantly affect nurses' professional lives, leading to exhaustion (Jones & Treiber, 2018).

Coping styles, involving adaptive or maladaptive strategies, play a crucial role in managing stress and adversity. Positive coping styles, such as seeking support and maintaining a positive outlook, enable effective stress management and work-life balance (Zhou et al., 2022). On the other hand, negative coping styles, like avoidance or substance abuse, can lead to increased stress, burnout, and compromised well-being (Agbaria & Mokh, 2022). The mediating effect of coping styles on the relationship between second-victim experiences and nursing practice changes has been reported (Jeong & Jeong, 2021), but the specific interaction between second-victim experiences, coping styles, and professional quality of life is not well understood.

To address this gap, this study aims to examine the influence of second-victim experiences on nurses' professional quality of life while also exploring the mediating role of coping styles. Furthermore, the study aims to investigate the personal and workplace factors that either facilitate or impede coping styles in the context of second victim experiences. By adopting a comprehensive approach, this research seeks to enhance our understanding of how nurses cope with second-victim experiences, allowing us to better prepare and support them in effectively managing second-victim experience. Ultimately, to contribute to improved patient safety and the provision of high-quality care.

## 1.2 Background

This section provides comprehensive background information on the key topics that are addressed in this study. Firstly, provide Chinese cultural context to help

understanding the unique challenges for nurses in the Chinese healthcare system. Secondly, human resource dilemmas for nurses are also a prevalent issue in China. Lastly, a longstanding challenge for nurse in second victim experience, coping styles, and professional quality of life in Chinese cultural context.

China's collectivist culture places an emphasis on group harmony. As a result, nurses may tend to prioritize collective goals over their personal needs, potentially leading to increased workloads and burnout (Zhang et al., 2020). Additionally, the cultural value of "saving face" is crucial in Chinese society, where individuals strive to avoid embarrassment or damage to their reputation (Liang & Xue, 2022). In healthcare settings, this cultural norm may lead to underreporting of mistakes or errors among nurses who are reluctant to admit fault, either to protect themselves or their colleagues. Furthermore, the healthcare system in China, where doctors hold authoritative positions. This can present challenges in communication for nurses, as they may hesitate to speak up or report mistakes to their superiors (Liu et al., 2016). Addressing issues such as medical errors may also be challenging, as nurses might be hesitant to confront senior healthcare professionals due to cultural norms and expectations. Taking these cultural factors into account, nurses in China encounter unique challenges.

**Table 1.1** provides a quantitative overview of different types of institutions in Hunan Province, including hospitals, primary medical institutions, professional public health agencies, and other miscellaneous institutions. It reveals that there are a total of 57,232 medical institutions in the province. Among these institutions, hospitals represent a relatively small proportion, accounting for only 2.8% of the

total. On the other hand, primary medical institutions dominate the healthcare landscape, constituting the majority share at 95.8%. Professional public health agencies and other types of institutions make up 1.2% and 0.2% respectively, indicating their limited presence. However, when examining the role of registered nurses and treatment, a different pattern emerges. Despite hospitals accounting for only 2.8% of the total institutions, they employ a significant proportion of registered nurses, with 69.3% of nurses working in hospitals. Furthermore, hospitals shoulder a substantial workload in terms of treatment, accounting for 41.0% of the total treatment tasks.

This information highlights the importance of hospitals in terms of the nursing workforce and treatment responsibilities. Despite their smaller proportion among medical institutions, hospitals play a crucial role in delivering healthcare services and are key providers of treatment in Hunan province.

**Table 1.1: Medical institutions in Hunan province**

| Item | Total | Hospital (%) | PMI (%) | PPHA (%) | Others |
|---|---|---|---|---|---|
| MO | 57232 | 2.8 | 95.8 | 1.2 | 0.2 |
| TT | 281131600 | 41.0 | 53.6 | 5.2 | 0.1 |
| RN | 240570 | 69.3 | 23.8 | 6.7 | 0.2 |

MO: Medical Organization; TT: Treatment; RN: Registered Nurse; PMI: Primary Medical Institutions; PPHA: Professional Public Health Agency;
Sources: Hunan Provincial Health Commission, 2019

### 1.2.1 Nurses in China

As of the end of 2019, the total number of nurses in China was 4.45 million, representing a significant increase in growth with three nurses per 1,000 population. Between 2010 and 2015 (Su Binbin, 2018), the proportion of registered nurses in China holding graduate degrees remained at 0.1%, but the total number increased by approximately 10,000. The proportion of nurses with undergraduate degrees increased from 8.7% to 14.5%, representing a growth of about 292,000. The largest increase was observed in the proportion of nurses with associate degrees, which rose from 42.5% to 47.9%. However, the proportion of nurses with technical certificates or below decreased. However, the Health China 2030 Plan has set a target of achieving 4.7 registered nurses per 1,000 resident population by 2030, which would require the recruitment of an additional 2.4 million nurses (Council & China, 2016).

Currently, nurses in China benefit from a range of support mechanisms aimed at enhancing their professional growth, well-being, and job satisfaction. These initiatives encompass continuous education and professional development opportunities that allow nurses to update their knowledge and skills (Yu et al., 2022). Workshops, seminars, conferences, and online courses are organized by nursing associations, hospitals, and educational institutions to facilitate learning and growth. Nurses are encouraged to pursue higher education, such as bachelor's and master's degrees, to advance their careers, and hospitals and healthcare organizations often provide incentives and assistance for nurses seeking further education and obtaining advanced nursing degrees (Ma et al., 2023). Those programs play a crucial role by

connecting experienced nurses with novice nurses, fostering guidance, support, and knowledge sharing.

Nevertheless, it is important to acknowledge that high levels of job dissatisfaction and burnout persist among nurses in China. High turnover rates within the profession are primarily attributed to issues related to human resources and the working environment (Xueqing et al., 2020). Research indicates that approximately one in seven nurses in China considers a career change due to these challenges (Luan et al., 2017). It is crucial to continue addressing these issues and implementing measures to improve nurses' job satisfaction, retain experienced professionals, and attract new talent to the field.

### 1.2.2 Second victim experiences among nurses in China

A study conducted in China has revealed that medication use and administration errors and basic nursing practice and administration errors were the most frequently reported adverse events, accounting for 30.04% and 15.51%, respectively, out of 820,000 reported events between 2017 and 2018 (Jishan et al., 2020). Because nurses are directly involved in patient care, they are more likely exposed to medical errors and adverse events or witness traumatic events, which can have a significant negative impact on them (Werthman et al., 2021). Second victims in China may experience both acute short-term and chronic long-term stress trauma (Jing et al., 2017). After experiencing an adverse event, nurses may experience distress, self-doubt, lack of coping strategies, and organizational support, which may lead to an intention to leave (Yongli et al., 2020). A study involving

1,422 respondents showed that psychological distress was highest in the distress dimension, while college support was the lowest in the support dimension (Jiajiao et al., 2020). Nurses exhibit 30% higher perfectionism than the general population (Bohomol, 2019) and suffer adverse event-related effects, which are commonly acknowledged in healthcare organizations (Yumei & Xiaojun, 2019). Nursing managers often lack awareness of second victims and are unsure whether second victims should be held responsible for adverse nursing events (Yuxin et al., 2020).

### 1.2.3 Coping style

The stress coping theory developed by Lazarus (1966) has been widely used to understand the coping process in response to stressful situations. This model highlights that evaluations and reactions follow stressful events, and a framework has been developed to identify coping styles and perceived support that have beneficial effects on stress. Research has shown that coping styles play a significant role in mediating the relationship between stress and distress (Won et al., 2021). For nurses who are involved in the second victim experience, stress refers to unanticipated adverse patient events, including medical errors, non-error events, patient-related injuries, and near-miss events (Burlison et al., 2021). Yoo (2019) emphasizes the importance of considering both positive and negative dimensions of cognitive appraisal, which can help individuals maintain a degree of control over the situation. Nurses experiencing adverse events must evaluate the effects of second victim-related stress and available resources for second-victim support, followed by making decisions on which coping styles to employ. Overall,

understanding the relationship between stress and coping styles is crucial for developing effective support and interventions for nurses who are involved in second victim experience.

### 1.2.4 Professional quality of life

The concept of professional quality of life, proposed by Stamm (2005) in 2005, encompasses two key elements: compassion satisfaction and compassion fatigue. Compassion satisfaction refers to the positive feelings of happiness and fulfilment experienced by individuals who provide help and support to others. In contrast, compassion fatigue is a negative outcome resulting from exposure to the suffering of others. A recent systematic review and meta-analysis of professional quality of life among nurses conducted by Xie et al. (2021) revealed that nurses working in the Asian region experience higher levels of compassion fatigue and lower levels of compassion satisfaction compared to their counterparts in other regions. Compassion fatigue manifests in two distinct forms - burnout and secondary traumatic stress. Burnout is a reaction to the stresses of the work environment, while secondary traumatic stress arises from exposure to trauma. Although secondary traumatic stress is less common than burnout, its impact is more profound, as it is often associated with fear, a common symptom experienced after exposure to adverse events (Kakemam et al., 2021a). Recent research by Steven et al. (2023) emphasizes the significance of professional quality of life for nurses working in clinical settings. However, the existing literature only marginally addresses the second victim experiences among nurses and their tendency to delay accessing

support programs, which can have a detrimental effect on their professional quality of life and potentially compromise patient safety (Gerven et al., 2016).

### 1.3 Problem statement

The second victim experience is a phenomenon where healthcare providers involved in adverse events suffer emotional and physical trauma. As nursing is the largest healthcare provider group, it faces higher risks of medical errors leading to adverse events. In China, basic nursing practice and management errors are one of the main reasons for adverse events, along with medication use and administration errors and medical record documentation errors (Jishan et al., 2020). Medical errors not only to jeopardize patient safety but can also make nurses a significant part of the second victim experience.

The second victim experience is multi-layered and can lead to various emotional traumas such as guilt, professional incompetence, self-doubt, and physical symptoms. The emotional burden of the second victim experience can result in shame, fear, guilt, and even post-traumatic stress disorder symptoms for nurses (Mok et al., 2020). Nurses may be unaware of their negative emotions, which can harm their well-being. However, the traditional Chinese culture tends to blame healthcare professionals for adverse events, which makes it challenging for nurses to maintain their commitment, patience, and compassion towards their patients. The tendency in this culture to assign blame or responsibility for adverse events to healthcare professionals can be a double-edged sword. On one hand, the deep-rooted sense of accountability can drive healthcare providers to be diligent and

meticulous in their practices. On the other hand, this cultural tendency to attribute blame can create an environment where nurses grapple not only with their own emotional responses but also with external pressures that foster a sense of guilt and self-blame (Liang & Xue, 2022). The negative perception of the second victim experience among healthcare professionals and the lack of support could lead to poorer quality care and even more harm to patients (Jiajiao et al., 2020).

Nurses with effective coping strategies tend to manage workplace stress more efficiently. They may use problem-solving techniques, seek social support, or engage in relaxation techniques to deal with stress. This can lead to a reduced likelihood of burnout and a better ability to handle high-pressure situations, resulting in improved professional quality of life (Alharbi et al., 2020). Certain coping styles can influence how individuals balance their work and personal lives. Furthermore, coping styles can affect how individuals perceive and react to challenges at work. Employees who use positive coping strategies, such as seeking social support or reframing problems positively, are more likely to experience higher job satisfaction (Lee et al., 2019). They may view difficulties as opportunities for growth rather than insurmountable obstacles. On the other hand, maladaptive coping styles, such as avoidance or substance abuse, can have negative effects on physical and mental health. Over time, this can lead to increased absenteeism, decreased productivity, and a lower professional quality of life. On the other hand, adaptive coping styles can contribute to better health outcomes and overall well-being (Barmawi et al., 2019). Coping styles play a mediating role in the relationship between second-victim experiences and nursing practice changes

without significantly interacting with them (Hanxi et al., 2016; Kakemam et al., 2021b). However, there is a lack of information to determine the impact of coping styles on the professional quality of life resulting from second victim experience (Jeong & Jeong, 2021). The unclear effects of coping styles on the relationship between second victim experience and professional quality of life could become a barrier to providing effective training programs for nurses.

A systematic review conducted by Pollock et al. (2020) found that awareness of the needs of nurses and locally adapted interventions can facilitate mental health support. However, there has been minimal research conducted on the coping process of second victim experiences, particularly from the perspectives of nurses and nurse leaders. Studies have shown that nurse managers play a critical role in maintaining a positive work environment and the well-being of patients and nurses. However, constraints such as time, workload, and resources can lead to poor communication, condescending attitudes, and bullying towards nurses (Darbyshire et al., 2019; Younas et al., 2021). Additionally, nurse managers themselves can also experience second-victim effects when supporting nurses involved in adverse events (Edrees et al., 2017), underscoring the importance of nurse managers' well-being in providing support to their staff. The experiences of stress and emotional challenges of nurse managers may exacerbate the causes of poor professional quality of life among nurses. It is essential to acknowledge and address the challenges that nurse managers face in their role, as these challenges can have a ripple effect on their staff's mental health and well-being. Therefore, research should focus on the coping process of second victim experiences, including the

experiences of nurse managers, to develop tailored interventions that address the unique needs of nurses and nurse leaders.

## 1.4 Research questions

1. What is the prevalence of the second victim experience among nurses?

2. What are the coping styles among nurses with second victim experience?

3. What is the level of professional quality of life among nurses with second victim experience?

4. What is the relationship between socio-demographic characteristics and second victim experience among nurses?

5. What are the relationships between second victim experience, coping styles and professional quality of life among nurses?

6. What are the personal and workplace factors that facilitate or hinder coping styles among nurses suffering from second victim experiences?

## 1.5 Objectives

### 1.5.1 General objective

The general objective of this study is to determine the relationships between second victim experience, coping styles and professional quality of life among nurses in China.

### 1.5.2 Specific objectives

1. To determine the prevalence of the second victim experience among nurses in China.

2. To assess the coping styles among nurses with second victim experience.

3. To assess the level of the professional quality of life among nurses with second victim experience.

4. To examine the relationship between socio-demographic characteristics and second victim experience.

5. To examine the relationships between second victim experience, coping styles and professional quality of life among nurses in China.

6. To explore personal and workplace factors that facilitate or hinder coping styles among nurses who have second-victim experiences.

## 1.6 Significance of the study

As healthcare providers, nurses are subjected to high levels of emotional and physical stress, which can result in adverse events that negatively impact patient outcomes. This study is significant for clinical practice, education, research, and policymaking, as it sheds light on the prevalence and impact of second-victim experiences among nurses. Nurses face high levels of emotional and physical stress, often leading to adverse events that negatively impact both patient outcomes and their well-being. By elucidating the relationship between coping behaviors and the professional quality of life of nurses who have experienced adverse events, this

study underscores the importance of addressing the second-victim phenomenon comprehensively.

In clinical practice, the findings highlight the necessity for hospitals and nurse leaders to implement support programs that promote positive coping mechanisms and provide comprehensive care for nurses, especially after adverse events. Training programs should be developed to educate nurses on effective coping strategies, emphasizing the disadvantages of negative coping styles and the benefits of positive behaviours. This approach can help mitigate the increasing compassion fatigue and decreasing compassion satisfaction observed among nurses, ultimately enhancing their professional quality of life.

For education, integrating the insights from this study into nursing curricula is crucial. By preparing nursing students for the realities of their profession, including the potential impacts of adverse events and effective coping mechanisms, we can better equip future nurses to handle the emotional and physical stresses they will face. This proactive approach in education can foster resilience and improve the overall quality of care provided by nurses.

From a research perspective, this study provides a foundation for further exploration into the nuances of coping styles and their effects on the professional quality of life in different nursing contexts and specialties. The identification of facilitators and barriers that nurses face when coping with second-victim experiences offers valuable insights for developing targeted interventions that support nurse well-being and mitigate negative impacts. Ultimately, this study's results could lead to better care and safer patient outcomes.

Policymakers can leverage the knowledge derived from this study to advocate for systemic changes that support nurse well-being. Implementing mandatory support programs for healthcare workers and establishing guidelines for addressing second-victim experiences can create a safer and more supportive work environment for nurses. A comprehensive approach, informed by perspectives from frontline nurses and nurse managers, can enhance patient safety and the overall quality of care.

In conclusion, this study highlights the urgent need for a multifaceted approach to support nurses in coping with second-victim experiences. By addressing the emotional and physical stresses faced by nurses, we can improve their professional quality of life, enhance patient outcomes, and elevate the standard of care in healthcare settings. The insights gained from this research have the potential to drive significant improvements in clinical practice, education, research, and policymaking, ultimately leading to better care and safer patient outcomes.

## 1.7 Definition

### 1.7.1 Second victim experience

The theoretical definition: The second victim aims at the healthcare provider suffering from adverse events. Scott (2009) defined it as follows: Second victims are healthcare providers who are involved in an unanticipated adverse patient event, in a medical error and/or a patient-related injury and become victimized in the sense that the provider is traumatized by the event. Frequently, these individuals feel

personally responsible for the patient outcome. Many feel as though they have failed the patient, unsure of their clinical skills and knowledge base. The second victim experience refers to healthcare providers experience psychological trauma and defined stages of recovery as they process the adverse events. It is believed to be an under-recognized, yet prevalent phenomenon(Amit Aharon et al., 2021).

The operational definition: In this study, the second victim experience will be measured by The Second Victim Experience and Support Tool (SVEST) developed by Burlison (2017). Items include self-reported feelings of guilt, anxiety, depression, or other forms of emotional distress as well as support perceived related to adverse events.

### 1.7.2 Coping styles

The theoretical definition: Coping styles are crucial in understanding how individuals manage stressors and challenges in their lives. As noted by Folkman (1985), coping styles refer to the cognitive and styles changes that occur in response to external or internal stressors. The ability to cope effectively is essential for maintaining good mental health and well-being.

The operational definition: To measure coping styles, the simplified coping style questionnaire is commonly used. It is a self-report questionnaire designed to assess an individual's coping style. It was developed by Xie (1998) and is widely used in China. This 20-item self-report scale assesses individual coping styles and is divided into two dimensions: positive coping style and negative coping style. The positive coping style includes 12 items that reflect adaptive coping styles, such as

problem-solving and seeking social support. On the other hand, the negative coping style includes 8 items that reflect maladaptive coping styles, such as avoidance and substance use. The use of the simplified coping style questionnaire provides a standardized way to assess coping styles, which can inform support strategies for individuals experiencing stress.

### 1.7.3 Professional quality of life

The theoretical definition: The concept of professional quality of life (PQL) is a critical component in understanding the impact of work on healthcare providers. Stamm (2005) expanded on this idea by introducing the concepts of compassion satisfaction and compassion fatigue as dimensions of PQL. Compassion satisfaction refers to the positive aspects of caregiving, such as feeling fulfilled and satisfied with the work, while compassion fatigue refers to the negative aspects, such as emotional exhaustion and burnout.

The operational definition: In this study, the Professional Quality of Life Scale developed by Stamm (2005), measures three dimensions of PQL: compassion satisfaction, burnout, and secondary traumatic stress. The use of the Professional Quality of Life Scale ensures that results can be compared across studies, leading to a better understanding of the factors that contribute to nurses' well-being.

## 1.8 Framework

### 1.8.1 Lazarus 's stress coping theory

The stress coping theory (Lazarus & Folkman, 1984) shown in **Figure 1.1**, a widely accepted theory in the field of psychology that explains how individuals cope with stressors. According to this theory, stress is not an objective state, but rather a subjective experience that arises from the interaction between an individual and their environment. The theory proposes two key processes: primary appraisal and secondary appraisal. During the primary appraisal, individuals assess the significance and meaning of a particular stressor. They evaluate whether the stressor is irrelevant, benign-positive, or stressful. If the stressor is perceived as stressful, secondary appraisal follows, where individuals evaluate their coping resources and options for dealing with the stressor. Coping strategies are the next crucial aspect of the stress coping theory. The theory has practical implications for helping individuals manage stress effectively, promoting adaptive coping strategies, and improving overall well-being.

Overall, the stress coping theory provides a comprehensive understanding of how individuals manage stress. The theory suggests that individuals engage in a coping process that involves the evaluation of their resources and abilities to manage the stressor and the use of coping strategies to manage the stress. Understanding this process can help individuals develop effective coping strategies to manage stress and improve their overall well-being. The framework suggests that coping styles may mediate the relationship between stress and adaptational outcomes. By

understanding the effects of coping styles on the relationship between second victim experience and professional quality of life, organizations can develop effective interventions to support the professional quality of life of nurses who experience second victim distress. Hence, this study was aimed to investigate the perceived facilitating factors in coping styles that have the most beneficial effects on the professional quality of life among healthcare providers who have experienced second-victim experiences, based on Lazarus's stress coping theory.

In this study, nurses' cognitive appraisal refers to how they assess and interpret the second victim experience in adverse events, such as medical errors and patient-related injuries. It includes their subjective evaluation of the stress they experience during the second victim experience and the level of support they perceive. The coping styles employed by nurses in response to second victim experience are of particular interest. Lastly, the outcomes under consideration are the components of professional quality of life among nurses.

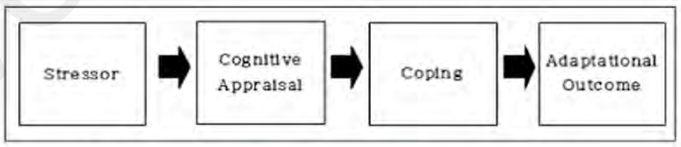



**Figure 1.1: Lazarus and Folkman Stress coping model (1984)**

### 1.8.2 Conceptual framework in this study

Lazarus and Folkman's model provides a comprehensive framework that considers the cognitive appraisal of stressors, coping strategies employed, and the dynamic interaction between individuals and their environment. Lazarus and

Folkman's model recognizes coping strategies as key mediators between stress and outcomes (Lazarus & Folkman, 1984). By focusing on coping styles as mediators, researchers can investigate how different coping styles (e.g., positive coping styles, negative coping styles) influence the relationship between the second victim experience and professional quality of life. This provides insights into the underlying mechanisms through which coping styles mediate the effects of the second victim experience on professional well-being. The model acknowledges that individuals may employ different coping strategies based on their appraisal of stressors and personal characteristics. This allows for the examination of individual differences in coping styles and how these differences influence the relationship between the second victim experience and professional quality of life.

Stressors in the second victim experience encompass adverse events, such as medical errors, workplace accidents, or traumatic incidents. Cognitive processes involve perceiving, interpreting, and responding to these stressors, shaping individuals' coping styles. The impact of stressors differs among nurses, leading to varying levels of psychological, physiological, and professional distress, resulting in the second victim experience.

The second victim experience refers to the psychological and emotional repercussions nurses face after a stressful event, including stress, guilt, shame, fear, and self-doubt. However, second victim support encompasses emotional support, practical assistance, empathy, understanding, and resources from colleagues, supervisors, friends, and family. Within the stress coping theory, coping styles are categorized as positive or negative. Positive coping entails active problem-solving,

seeking social support, utilizing effective coping mechanisms, and engaging in self-care activities. Negative coping, on the other hand, involves avoidance, denial, substance abuse, or unhealthy behaviours. Meanwhile, based on previous literature reviews, income, duration of work, work hours, and education have been found to be significantly related to second victim distress and coping styles (Kappes et al., 2021; Quillivan et al., 2016). This study collected demographic information, including age, gender, working length, position, education, which may be related to the effects of coping styles.

The hypothesis in this study is: 1) The stress and support experienced by second victims directly impact the professional quality of life. 2) High levels of stress, inadequate support, maladaptive coping strategies, and low level of demographic data can lead to decreased professional quality of life. 3) Both personal factors (such as resilience and previous experience) and workplace factors (such as availability of support systems and organizational culture) will significantly influence the coping styles of nurses who experience second victim phenomena.

Furthermore, studies have shown that nurse managers play a crucial role in maintaining a creative work environment and the well-being of patients and nurses, but constraints such as time, workload, and resources can lead to poor communication, condescending attitudes, and bullying towards nurses (Younas et al., 2021).This study provides insights into the significance of implementing a comprehensive understanding from a qualitative study of the factors that influence coping styles in nurses who have experienced second-victim experiences, from the perspectives of both nurses and nurse managers. Overall, the conceptual framework

of this study draws on Lazarus's stress coping theory to investigate the complex relationship between second victim experience, coping styles, and professional quality of life in a mixed-method study **(Figure 1.2)**. By adopting a comprehensive approach, this research seeks to enhance our understanding of how nurses cope with second-victim experiences, allowing us to better prepare and support them in effectively managing second-victim experience.

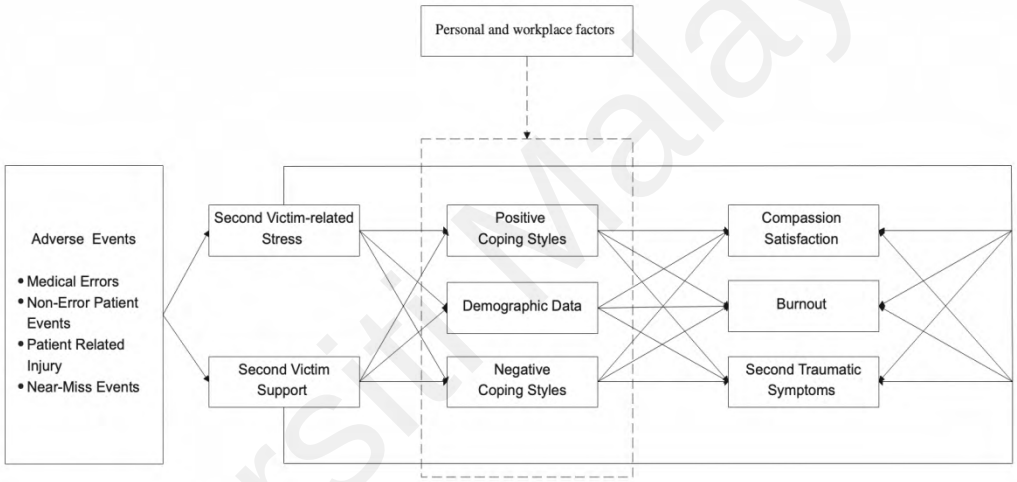



**Figure 1.2: Conceptual framework of the study**

## 1.9 Structure of thesis

To enhance clarity, this thesis is organized into six distinct chapters.

**Chapter One:** This chapter provides a thorough background and presents the research objectives in a comprehensive manner. It sheds light on the current state of nurses, both on a national and international level, while emphasizing the impact of second victim experiences on their professional quality of life. Furthermore, the chapter identifies gaps in the existing literature concerning coping styles and their

influence on second victim experiences. The problem statement and research objectives are articulated clearly, underscoring the interplay between second victim experiences, support, coping styles, and professional quality of life. To ensure clarity, the definitions of key terms and frameworks employed in the study are provided.

**Chapter two:** In this chapter, a total of 22 articles meeting the review criteria are analysed, encompassing research background, design, participants, measurements, and results. The review of coping strategies among nurses as second victims highlights the significance of proactive coping in managing adverse events and addressing the psychological and physical distress experienced by second victims. However, the impact of coping strategies on the quality of work life for nurses as second victims remains uncertain. While studies suggest a potential link between being a second victim and nurse burnout, the precise relationship between professional quality of life and second victim experiences requires further investigation. Furthermore, the factors that may either facilitate or hinder effective coping among nurses involved in second victim experiences are not yet fully elucidated. A comprehensive understanding of these factors could contribute to the development of more effective support systems for nurses who have encountered second victim experiences.

**Chapter three:** This chapter presents the research methodology employed in the study, covering design, sample, tools, ethics, pilot study, and data collection and analysis. The study comprises two phases: a cross-sectional survey examining the

relationship between second victim experience, coping styles, and professional quality of life among nurses, and a qualitative study exploring nurses' perceptions and influencing factors. The aim is to recruit 1240 nurses using multistage cluster sampling. Ethics are paramount, ensuring written informed consent, anonymity, confidentiality, and the right to withdraw without consequences. Data collection involves a self-administered questionnaire in phase one, developed through literature review and expert input. Phase two includes individual interviews, recorded with consent. Quantitative and qualitative analysis methods was used, such as descriptive statistics, correlation analysis, structural equation modelling, and thematic analysis.

**Chapter four:** This study employed statistical analyses to examine the relationship between nurses' social demographic characteristics and second victim experience, support, coping styles, and professional quality of life. Data management involved outlier and missing data detection, normality testing, single-factor analysis, collinearity assessment, and multicollinearity tests, confirming data met normality assumptions without multicollinearity issues. Significant differences based on sociodemographic factors were assessed using independent t-tests and one-way ANOVA. Instruments' reliability and validity were tested using measures like Item-Total Statistics, Rotated Component Matrix, Model residuals, and Convergent validity, indicating their reliability and validity. The hypothesis model was tested using structural equation modelling, evaluating goodness-of-fit measures including Chi-Square/df, RMSEA, CFI, TLI, and SRMR, indicating a good fit to the data.

Personal and workplace factors influencing coping styles for second victim experiences were explored from the perspectives of frontline nurses and nurse managers. Four main themes (emotional trauma, personal factors, workplace environment, and support systems) and related subthemes were identified. These included sources of emotional trauma, personal factors such as mental health symptoms and effects, workplace environment factors including workload and organizational culture barriers. The importance of a support system comprising a network of colleagues, continuous professional development, referral resources, and family/community support was also emphasized.

**Chapter five:** This chapter presents a comprehensive analysis and interpretation of the research findings, integrating both the quantitative and qualitative studies. The results highlight the prevalence of second-victim experiences among nurses and the associated emotional toll, including compassion fatigue and decreasing compassion satisfaction. The mediating role of coping styles emphasizes the importance of support programs and self-care initiatives for nurses following adverse events. The study identifies facilitators and barriers in nurses' coping with second-victim experiences, offering valuable insights for targeted interventions to support nurse well-being and mitigate negative impacts. A comprehensive approach is necessary to effectively support nurses, enhance patient safety, and improve overall care quality. By recognizing the prevalence and impact of second-victim experiences and addressing the coping styles, facilitators, and barriers identified, healthcare organizations can implement strategies prioritizing nurse well-being.

**Chapter six:** This chapter examines the strengths, limitations, implications, and recommendations based on the research on the relationship between second-victim experiences and professional quality of life. The study's strengths include the use of a reliable analysis method and a diverse sample representing different economic development levels. It demonstrates that second-victim experiences significantly impact professional quality of life, highlighting the importance of positive coping and the detrimental effects of negative coping. The findings underscore the need for interventions and support programs to address these experiences. However, limitations such as the cross-sectional survey design and potential reporting deviations call for caution in interpreting the results. The study's focus on tertiary hospitals and predominantly female participants also limits generalizability. The implications for nursing education involve incorporating second-victim experiences into curricula to promote understanding and positive coping strategies among future nurses. Longitudinal research is needed to explore the long-term effects of coping styles on second-victim experiences and patient outcomes. Nursing research should investigate the mediating effects of coping styles and evaluate the effectiveness of coping interventions. Nursing management and practice should prioritize comprehensive support interventions, including training programs, supportive organizational cultures, and stakeholder perspectives. To address limitations, future research should employ longitudinal designs, include diverse hospital levels and male nurses, develop coping strategy interventions, and evaluate their impact on professional quality of life and patient outcomes. By addressing these

recommendations, nursing can better understand and support nurses in coping with second-victim experiences.

## 1.10 Summary

This chapter provides a comprehensive background and outlines the research objectives. It highlights the current situation of nurses, both nationally and internationally, and the impact of second victim experiences on their professional quality of life. The chapter also identifies research gaps in the literature regarding coping styles and their effects on second victim experiences. The problem statement and research objectives are clearly stated, emphasizing the relationship between second victim experiences, support, coping styles, and professional quality of life. The definitions of key terms and frameworks used in the study are provided, giving the reader a clear understanding of the concepts and their relevance to the research. The definition of terms is addressed overtly to make their importance clear. Finally, the conceptual framework of the study and the structure thesis are described.

# CHAPTER 2: LITERATURE REVIEW

## 2.1 Introduction

This The objective of this literature review is to conduct a comprehensive analysis of the existing research on second victim experience, coping styles, and professional quality of life among nurses. This chapter delves into the prevalence and impact of second victim experiences, elucidating the psychological and physical effects on healthcare providers involved in adverse events. Additionally, it examines the various factors that influence these experiences, including individual characteristics and organizational support systems. Understanding these dynamics is critical for developing interventions that can mitigate the negative outcomes associated with second victim experiences.

Furthermore, this review explores the coping styles employed by nurses when facing adverse events, evaluating the effectiveness of different strategies in enhancing professional quality of life. The chapter also assesses the instruments used to measure second victim experiences, coping styles, and professional quality of life, providing insights into their strengths and limitations. Theoretical frameworks underpinning the literature are analyzed to offer a robust understanding of the conceptual foundations guiding current research. By identifying gaps in the existing literature, this review highlights areas requiring further investigation, aiming to inform clinical practice, education, research, and policymaking. Addressing these gaps is crucial for developing effective support mechanisms for nurses, ultimately improving their well-being and the quality of patient care they provide.

## 2.2 Search strategy

The review was conducted using several databases including CINHAL, EMBASE, Medline, PubMed, and CNKI with the latest search date being in the Chinese database. Truncation symbols and database headings (MeSH) are used to determine keywords. The literature search was conducted using specific keywords such as "Adaptation, Psychological [MeSH] "AND "second victim" OR "patient-related injury" OR "unintended event" OR "medical error" OR "missed care" OR "unfinished nursing care" OR "adverse event" OR "patient safety incident" OR "clinical incident" OR "implicit rationing of care" AND "Quality of Life"[Mesh] AND "nurs*". The search was limited to articles published in English and Chinese, conducted in a hospital setting for nurses as second victims, and original research articles that were published from 2012 to 2023, and had a full-text available.

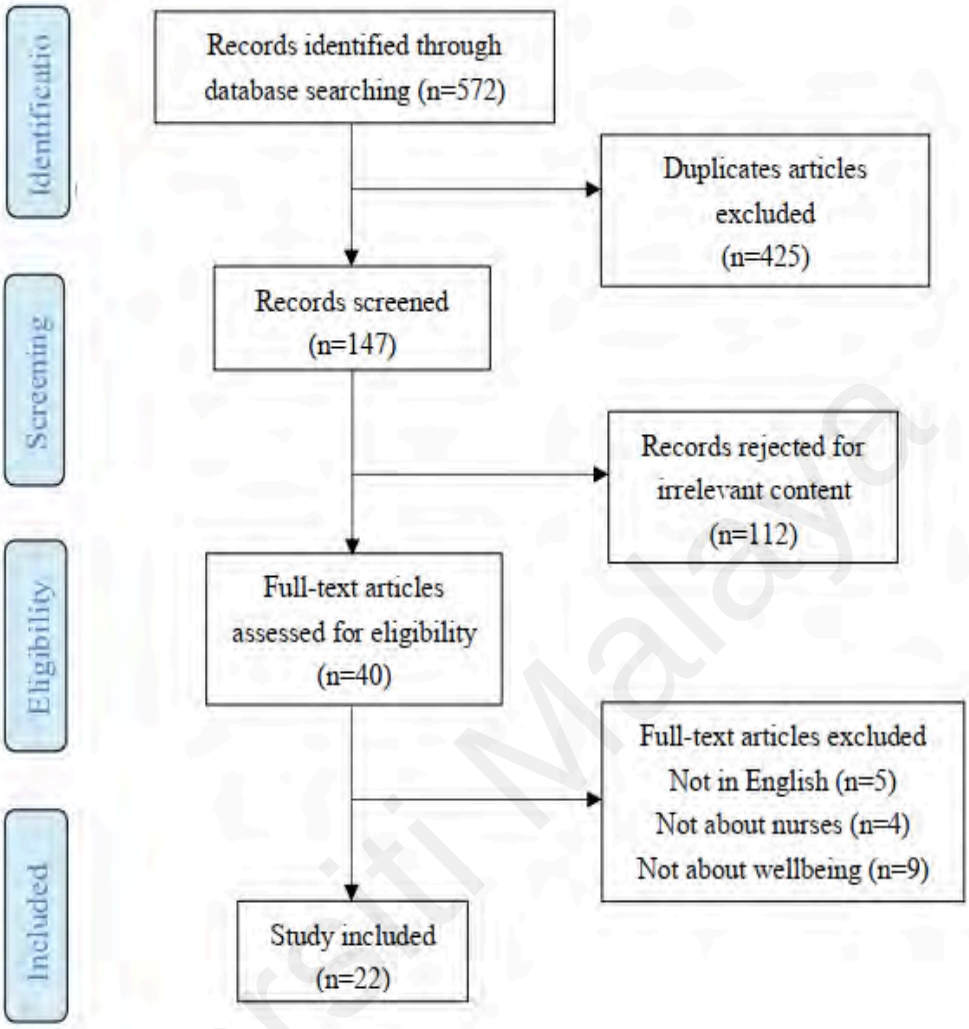



**Figure 2.1: PRISMA identification and screening process**

Exclusion criteria were studies published in other languages, studies that included doctors and other healthcare professions, psychometric articles, and guidelines. The article selection process is illustrated in Figure 2-1, and a total of 22 articles met the inclusion criteria for this review, as shown in **Table 2.1**. This literature review provides a conceptual framework for the study and serves as a foundation for further research on patient safety culture among nurses as second victims.

## 2.3 Search result

After implementing the research strategy, a total of 572 papers were retrieved, and an additional 15 articles were found through Google Scholar. After removing 425 duplicate articles, the remaining 147 articles were screened by titles and abstracts, resulting in the exclusion of 112 irrelevant articles. Of the remaining 35 articles, 26 examined the association between coping styles, adverse events, and healthcare providers, while 19 studies focused on interventions for adverse event reporting and training programs. Four articles were not clinical research, and 14 types of research analysed the factors of second victim experience and coping skills. After downloading and reviewing the full text of 40 articles, four were excluded due to the lack of nurse participants, and nine were excluded for reasons such as participants' professional seniority, leadership, staffing, attitude, or characteristics, which were not related to the well-being of nurses. Furthermore, five articles were not written in English. Finally, 22 empirical studies were included in the review, which focused on the relationship between coping styles, adverse events, and the professional quality of life among nurses. No review articles were included in this study.

In **Table 2.1**, all the studies were conducted on patient safety culture and nurses as the second victim that mainly come from the United States, with seven articles in total. There are three studies from Iran China and Israel, two studies in Singapore, one study from each of the flowing country: Spain, Korea, Brazil, Canada, Italy, and Oman. The developed countries dominate, and more and more developing countries are beginning to pay attention to the role of patient safety

culture for nurses as second victims. All the studies were carried out in clinical settings, three of which were carried out in the intensive care unit as well as the emergency department, paediatrics, and surgery, six were conducted in a multi-recentre study. The studies included in this review focused on the effect of coping styles among nurses who suffered from second victim experiences in recent years. The research focuses on the impact of coping styles on the incidence and reporting of adverse events, the level of education of nurses, and the relationship of coping styles to team building and nurse burnout. However, no study about the relationship between coping styles and the professional quality of life among the nurses involved in the second victim experience. We have included secondary sources in our literature search to provide a comprehensive understanding of the field. Secondary sources, such as review articles and meta-analyses, offer synthesized insights, highlight research gaps, and discuss theoretical frameworks, enhancing the robustness of our analysis. They also provide critical methodological insights, allowing us to triangulate findings and improve the validity and reliability of our conclusions. We believe this approach ensures a well-rounded and insightful literature review, aligning with the goals of our study.

Assessing the quality of available evidence is crucial for enhancing the scholarly rigor of this chapter. The reviewed studies vary widely in their methodologies, sample sizes, and contexts, which impacts the generalizability of their findings. Many studies employ cross-sectional designs, which are useful for identifying correlations but limited in establishing causality. The reliance on self-report measures, while providing valuable insights, may introduce biases such as

social desirability and recall bias. Furthermore, the heterogeneity in measurement instruments used to assess second victim experiences, coping styles, and professional quality of life complicates the comparison of results across studies. Meta-analyses and systematic reviews offer higher levels of evidence by synthesizing findings from multiple studies, yet they also highlight inconsistencies and gaps in the primary research. To advance the field, future studies should prioritize longitudinal designs, standardized measurement tools, and diverse, representative samples. Rigorous methodological approaches and transparent reporting are essential for producing high-quality evidence that can inform effective interventions and policy decisions.

**Table 2.1: The summary of studies on the relationship between coping styles and second victim experience (n= 22)**

| NO | Author(s) (year) | Research method | Tools | Participants | Findings |
|---|---|---|---|---|---|
| 1 | Y. Zhou.et al. (2022) | Cross-sectional study | CPSS<br>SCSQ<br>SCL-90 | Nurses (n= 381) | The structural equation model used in the analysis revealed that occupational stress mediates the relationship between coping styles and mental health. |
| 2 | E. Choi.et al. (2022) | Cross-sectional survey | / | Nurses (n= 378) | Severe symptoms linked to low org. support, high non-work-related support, and temporary harm incidents. Psychological support is useful, and coping strategies are valued. Time off clinical duties are most useful. |
| 3 | Q. Shao.et al. (2021) | Meta-synthesis of qualitative studies | JBI Critical Appraisal Checklist | 11 studies | Nurses experience negative emotions after inpatient suicide. The hospital must acknowledge their trauma and provide education, training, and psychological support. Patient safety management is crucial. |

Chinese Perceived Stress Scale (CPSS), Simplified Coping Style Questionnaire and Symptom-Checklist 90(SCL-90), Joanna Briggs Institute (JBI)

**Table 2.1 Continued**

| NO | Author(s) (year) | Research method | Tools | Participants | Findings |
|---|---|---|---|---|---|
| 4 | N. Serou.et al. (2021) | Qualitative descriptive study | Semi-structured interview guide | Operating room staff (n= 45) | Support structures are essential for operating room staff after surgical incidents. Health organizations should provide timely support and encourage senior clinicians to offer empathy and create a culture of openness. |
| 5 | E. Quadrado.et al. (2021) | Scoping review | / | 64 studies | International studies suggest support strategies for second victims through programs and interventions. |
| 6 | M. Kappes.et al. (2021) | Systematic review | JBI Critical Appraisal Checklist | 16 studies | Strategies for coping with the second victim phenomenon include peer support and learning from adverse events. Personal strategies include self-analysis, while organizational strategies value support programs with rapid response teams. |

**Table 2.1 Continued**

| NO | Author(s) (year) | Research method | Tools | Participants | Findings |
|---|---|---|---|---|---|
| 7 | S. Jeong.et al. (2021) | Cross-sectional survey | / | Nurse (n= 218) | Support structures are essential for operating room staff after surgical incidents. Health organizations should provide timely support and encourage senior clinicians to offer empathy and create a culture of openness. |
| 8 | A. Aharon.et al. (2021) | Mixed method study | SVEST | Nurse (n= 150) | Nurses who witness their patients attempting suicide often experience emotional distress and may be considered "second victims." The resulting symptoms can lead to increased rates of nurse absenteeism and turnover. |
| 9 | M. Liukka.et al. (2020) | Integrative review | / | 25 studies | The current situation reveals a dearth of comprehensive models for acting after adverse events. This deficit underscores the need for more robust frameworks that can guide organizations and individuals on how to respond to such incidents effectively. |

SVEST: The Second Victim Experience and Support Tool

**Table 2.1 Continued**

| NO | Author(s) (year) | Research method | Tools | Participants | Findings |
|---|---|---|---|---|---|
| 10 | H. Huang.et al. (2020) | Mixed methods study | SVEST | Nurse (n= 337) | The quantitative results indicate that "second victim" phenomena are significantly affected by psychological distress and professional efficacy. The qualitative data revealed four distinct stages of rehabilitation experiences. |
| 11 | H. Habibzadeh.et al. (2020) | Cross-sectional survey | HSOPSC MBI SVEST | Nurse (n= 298) | The establishment of a safety culture is critical in reducing job burnout, and the second victim experience plays an important intervening role in clarifying how a high level of safety culture can reduce burnout. |
| 12 | L. Cheng.et al. (2020) | Cross-sectional survey | Coping Inventory for Stressful Situations | Nurse (n= 363) | The study found that positive coping strategies and high levels of empathy being protective against burnout. Additionally, coping strategies were found to play a partial mediating role between empathy and burnout in this group of nurses. |

HSOPSC: Hospital Survey on Patient Safety Culture; MBI: Maslach Burnout Inventory; SVEST: The Second Victim Experience and Support Tool

**Table 2.1 Continued**

| NO | Author(s) (year) | Research method | Tools | Participants | Findings |
|---|---|---|---|---|---|
| 13 | I. M. Busch.et al. (2020) | Meta-analysis | / | 14 studies | Second victims frequently used task- and emotion-oriented coping strategies and, to a lesser degree, avoidance-oriented strategies. |
| 14 | K. Vanhaecht.et al. (2019) | Cross-sectional survey | The Stressful Life Events Scale | Nurse (n= 2750) Doctor (n= 1619) | The duration of symptoms increases with the severity of harm caused by PSIs. Therefore, the longer-term effects of PSIs on patients and healthcare professionals may be more severe than previously acknowledged. |
| 15 | M. Liukka.et al. (2018) | Qualitative study | Semi structured interview guide | Nurse (n= 18) | The mismanagement, cultural barriers, inadequate information, and legal barriers represent the primary obstacles to supporting nurses. Addressing these barriers is crucial for promoting better working conditions, reducing nurse burnout, and improving patient care quality. |

PSIs: Patient Safety Incidents

**Table 2.1 Continued**

| NO | Author(s) (year) | Research method | Tools | Participants | Findings |
|---|---|---|---|---|---|
| 16 | L. J. Labrague.et al. (2018) | integrative review | / | 22 studies | Four themes related to stress among nurse managers were identified. The primary sources of stress were heavy workloads, lack of resources, and financial responsibilities. |
| 17 | A. Kable.et al. (2018) | Qualitative study | Semi structured interview guide | Nurse (n= 10) | The study identified four key themes related to the experiences of nurses after adverse events. Analysis revealed that nurses require robust organizational responses as the provision of information and collegial support following such incidents. |
| 18 | R. Delacroix. (2017) | Phenomenological approach | Interview guide | NPs (n= 10) | The study identified four overarching themes related to the experiences of (NPs) who have made errors. Highlight the safe environment in which NPs can candidly share their feelings, reflect on the experience, and ascertain the cause. |

NPs: Nurse practitioners

**Table 2.1 Continued**

| NO | Author(s) (year) | Research method | Tools | Participants | Findings |
|---|---|---|---|---|---|
| 19 | C. J. Cabilan.et al. (2017) | Qualitative systematic review | JBI QARI | 9 studies | Highlights the need to provide effective support systems for nurses who make adverse errors. The lack of support can hinder the disclosure process, prolong the emotional burden, and impede reconciliation. |
| 20 | E. Van Gerven.et al. (2016) | Cross-sectional survey | The Stressful Life Events Scale | Physicians (n=186) nurses (n= 682) midwives (n=45) | Organizations should provide appropriate and timely support structures that are tailored to the specific situation of the incident. To promote a supportive culture and reduce blame and consider the individual coping strategies and needs. |
| 21 | J. Fornés-Vives.et al. (2016) | Longitudinal study | The Stressful Life Events Scale, NEO-FFI, and COPE questionnaire | nurses (n= 199) | The coping and personality changes experienced by nursing students throughout their degree program may reflect the professional competences needed by future licensed nurses. |

JBI QARI: Joanna Briggs Institute Qualitative Assessment and Review Instrument

**Table 2.1 Continued**

| NO | Author(s) (year) | Research method | Tools | Participants | Findings |
|---|---|---|---|---|---|
| 22 | J. J. Mira.et al. (2015) | Cross-sectional survey | / | Health professionals (n= 1087) | Most health professionals will be involved in at least one adverse event in their career. Unfortunately, there is a lack of training and education on coping strategies for the second victim phenomenon, leaving health professionals to cope on their own. |

## 2.4 Literature review

The objective of this literature review was to conduct an analysis of the current research on second victim experience, coping styles, and professional quality of life among nurses. In addition, this chapter also explored the instruments used to measure these constructs and the theoretical frameworks employed in the literature. The aim was to identify the gaps or areas where further research is needed in the existing literature.

### 2.4.1 Prevalence and effects of second victim experience among nurses

The term "second victim" was coined by Wu (2000) to describe healthcare providers who experience psychological and physical effects following adverse events, while patients are considered the first victims. This terminology underscores the dual impact of adverse events, affecting not only patients but also the healthcare providers involved. Scott (2009) expanded on this definition, reporting that the prevalence of second-victim experiences globally ranges from 30% to 60%. This significant prevalence indicates that a substantial proportion of healthcare providers are affected by the second-victim phenomenon, highlighting the urgent need for effective support systems. The wide range also suggests variability in reporting practices and awareness across different regions and healthcare settings, emphasizing the necessity for standardized approaches to identify and support second victims.

Nurses, in particular, are at a higher risk due to the nature of their work, which involves frequent interruptions and the management of multiple responsibilities

simultaneously(Choi et al., 2022). This increased risk is likely due to the high-stress environment nurses operate in, often dealing with life-and-death situations, which can amplify the psychological burden when adverse events occur. Nurses' close patient interactions and the emotional investment in patient outcomes make them particularly vulnerable to the impacts of adverse events.

The effects of second-victim-related stress are profound and multifaceted, encompassing psychological, emotional, and physical symptoms. Common symptoms include fear, anxiety, guilt, loss of confidence, flashbacks, rapid heart rate, and sleep disturbances (Cabilan & Kynoch, 2017). These symptoms can severely impact the well-being and performance of healthcare providers, leading to a decline in the quality of patient care. The broad range of symptoms indicates that the impact of second-victim experiences is not just limited to the immediate aftermath of an event but can have long-lasting effects, potentially affecting a healthcare provider's ability to function effectively in their role.

Despite adverse events related to unsafe care being a leading cause of death and disability globally (World Health Organization, 2019), there remains a limited understanding of the second victim experience and its symptoms. This gap in knowledge is concerning, given the potential scale and severity of the issue. The lack of comprehensive understanding suggests that many healthcare systems may not have adequate measures in place to support healthcare providers, exacerbating the emotional toll and possibly leading to higher rates of burnout and turnover. Studies indicate that between 10% and 86% of medical staff experience trauma related to adverse events, with approximately 50% of nurses being affected (Chen

et al., 2022). This wide range in prevalence rates underscores the need for more standardized measures and consistent reporting methods. The high prevalence among nurses is particularly alarming, as they are essential to the functioning of the healthcare system and are often the first responders in critical situations. The significant variation also points to differences in institutional cultures, support systems, and individual coping mechanisms, suggesting that tailored interventions may be necessary to address the needs of different groups effectively. Nurses who experience second-victim-related stress report intense negative emotions, such as humiliation, embarrassment, guilt, self-blame, loss of confidence, and self-doubt. These symptoms can persist for up to ten years, illustrating the long-term impact of second-victim experiences (Amit. et al., 2021; Huang et al., 2022). The persistence of these symptoms highlights the need for long-term support mechanisms, not just immediate interventions following an adverse event. The enduring nature of these impacts can affect career longevity and job satisfaction, further contributing to the challenges faced by healthcare systems in maintaining a stable and motivated workforce.

Moreover, healthcare providers suffering from second-victim-related stress often face stigmatization and criticism, which can further diminish the quality of care they provide. The stigma associated with second-victim experiences can lead to isolation and reluctance to seek help, exacerbating the emotional toll and potentially leading to burnout and turnover. These findings highlight a critical gap in support systems, as the stigma and lack of resources exacerbate the emotional toll on affected individuals. The presence of stigmatization indicates that healthcare

institutions may not fully acknowledge or address the issue, leaving second victims without adequate support. Creating a supportive and non-punitive environment is crucial for encouraging healthcare providers to seek help and for fostering a culture of safety and learning.

It is important to note that these findings are based on studies conducted in specific departments or hospitals, and generalizing these results to other settings should be done with caution. The variability in reported prevalence and the severe long-term impacts on nurses underscore the urgent need for more comprehensive research and better support mechanisms for second victims in healthcare. Addressing these issues is essential for improving the well-being of healthcare providers and the quality of care they deliver. Effective interventions, such as debriefing sessions, peer support programs, and psychological counseling, should be implemented to support second victims. Additionally, fostering a non-punitive culture that encourages open communication and learning from adverse events can help reduce the stigma and promote a more supportive environment for healthcare providers. By addressing the second victim phenomenon comprehensively, healthcare systems can enhance the resilience and well-being of their staff, ultimately leading to better patient outcomes.

The work unit, duration of work, work hours, and education were significantly related to second-victim distress (Labrague et al., 2018). Researchers find that the second victim support is related with the day-shift workers, diversity in years of experience, speciality, and shift length (Choi et al., 2022). The perceptions of poor institutional support for second victims could affect the outside and inside culture

(Jeong & Jeong, 2021). The study examined data from 1087 healthcare providers from different wards, understanding the impact of errors, while respondents indicated errors had a significant emotional and professional impact and female respondents were found to experience increased distress as compared to males (Mira et al., 2015). Support for second victims is provided at both individual and organizational levels, but nurses still struggle with a lack of assistance after adverse events, leading to burnout, family strife, and turnover intentions (Kappes et al., 2021). Studies show an association between second-victim experiences and professional quality of life, including positive aspects such as the effects of second-victim support on compassion satisfaction, and negative aspects such as the effects of second-victim-related stress, for example, burnout and secondary traumatic stress (Yesilyaprak & Demir Korkmaz, 2021).

Support from supervisors, peers, and a caring environment is essential for healthcare professionals to recover from second-victim-related stress (Vanhaecht et al., 2019). However, studies have reported challenges with recruitment and reaching data saturation in studies exploring the impact of adverse events on healthcare professionals. Nursing students are also vulnerable to second-victim-related stress, which can impact their professional efficacy and cause psychological distress (Luk et al., 2021). In conclusion, second victim experience is prevalent among healthcare providers and can have long-lasting physical and psychological effects. Supporting healthcare providers through individual and organizational interventions is crucial for improving the quality of care and reducing the negative impact of adverse events on healthcare professionals (H. Huang et al., 2020). Further research is needed to

explore the impact of adverse events on healthcare providers and identify effective interventions to support them.

### 2.4.2 Factors affecting second victim experience

The type and severity of the adverse event can significantly impact the second victim experience. Events that involve harm to patients, medical errors, or traumatic incidents tend to have a more profound impact on nurses, increasing the likelihood of experiencing distress and negative emotions (Quillivan et al., 2016). Individual characteristics, such as personality traits, coping styles, resilience, self-efficacy, and prior experience with adversity, can influence the second victim experience. For example, individuals with high levels of self-efficacy and resilience may be better equipped to cope with and recover from a stressful event, whereas those with certain personality traits may be more prone to experiencing intense negative emotions (Hernandez, 2019; McDaniel & Morris, 2020).

The availability and adequacy of support from colleagues, supervisors, and the healthcare organization play a crucial role in shaping the second victim experience. Supportive environments that prioritize open communication, debriefing, peer support programs, and psychological resources can mitigate the negative effects of the event and facilitate recovery (Busch et al., 2021). The culture and response of the healthcare organization to adverse events can impact the second victim experience. Organizational factors such as blame culture, punitive actions, lack of reporting systems, and inadequate psychological support can exacerbate distress and impede the recovery process (McDaniel & Morris, 2020). Conversely, an

organizational culture that promotes a learning environment, emphasizes patient safety, and provides resources for emotional support can contribute to a more positive second victim experience (White & Delacroix, 2020). Effective and empathetic communication about the adverse event, disclosure practices, and involvement in subsequent investigations can influence the second victim experience. Clear and transparent communication, involvement in the review process, and opportunities for reflection and feedback can help nurses make sense of the event and facilitate their recovery (Edrees & Wu, 2021). The overall work-life balance of nurses can impact the second victim experience. Factors such as workload, staffing levels, job demands, and organizational support for work-life balance can influence the individual's ability to cope with and recover from second victim (Dukhanin et al., 2018).

It's important to recognize that these factors interact and can have varying degrees of influence on the second victim experience. Addressing these factors and can contribute to mitigating the negative impact of second victim experience and promoting the well-being of nurses.

### 2.4.3 The coping styles in adverse events among nurses.

Coping strategies are essential for nurses when it comes to dealing with challenging situations that are emotionally demanding and stressful. Studies demonstrate how nurses who use problem-focused and cognitive restructuring coping strategies have better outcomes, including lower levels of burnout and higher levels of job satisfaction (Zhou et al., 2022). On the other hand, nurses who

use emotion-focused coping strategies, such as avoidance and denial, have been found to experience higher levels of burnout and lower levels of job satisfaction (Cheng et al., 2020). Positive thinking and a combination of problem-solving and emotion-focused coping strategies have also been linked to better outcomes (Busch et al., 2020). Furthermore, while the previous study shown that problem-focused and cognitive restructuring coping strategies are associated with better outcomes, it is important to note that these coping strategies may not always be feasible or appropriate in all situations. For instance, in cases where there are limited resources or support, emotion-focused coping strategies, such as seeking social support or engaging in self-care, may be more effective (Mokhtari et al., 2018). Therefore, healthcare organizations must provide training and support to enable nurses to develop and implement effective coping strategies that improve their well-being and the quality of care they provide.

Coping styles play a critical role in how nurses deal with adverse events, and healthcare organizations can support nurses in developing and implementing effective coping strategies to improve their well-being and the quality of care they provide (Gerven et al., 2016; H. Huang et al., 2020). By understanding the relationship between sociodemographic variables and coping styles, healthcare organizations can create better support and preparation for nurses, ultimately leading to better patient outcomes (Mokhtari et al., 2018). It is important to recognize that nurses play a critical role in the healthcare industry, and their well-being and ability to manage adverse events have a direct impact on patient outcomes

(Quadrado et al., 2021). Therefore, it is essential to prioritize the development and implementation of effective coping strategies to support nurses in their work.

Lazarus's stress coping theory provides a theoretical framework that explains the overall coping process, which shows that a stressful situation should be followed by evaluations and determination of reactions (Lazarus, 1966). The mediator variables in the relationship between stress and distress are coping styles, and the selection of coping styles depends on the perceived support and resources available for second-victim support (Shao et al., 2021). These variables contribute to compassion satisfaction, burnout, and secondary traumatic stress via coping styles (Won et al., 2021), resulting in a hypothesis model being constructed to examine the effects of coping styles in facilitating professional quality of life from a second victim experience. The nurse work environment is evaluated as mixed, represented by the nurse manager's ability, leadership, and support (Burlison et al., 2021). Significant differences in the choices on the hospital survey on coping styles are found according to nurses' age, marital status, years of nursing experience, and job position, along with the hospital type, teaching status, bed size, and nurse staffing (Hwang & Park, 2014). The role of healthcare organizations in providing training and support for nurses to develop and implement effective coping strategies. While this is essential, it is equally important to address the root causes of stress and burnout in the nursing profession. Healthcare organizations must prioritize measures that reduce the workload of nurses, provide adequate staffing levels, and ensure a supportive work environment (Habibzadeh et al., 2020). The studies relied on self-report measures, which may be subject to biases and may not fully capture

the complexity of coping strategies. Additionally, the studies reviewed were conducted in different settings and populations, which may limit the generalizability of the findings.

### 2.4.4 Coping styles and professional quality of life among nurses

Nurses experience high levels of stress and burnout due to the nature of their work, which can negatively impact their professional quality of life. Studies have shown that nurses as the second victim are influenced by the workplace, where teamwork and patient handover have a significant impact on nurses as second victims (Guiru et al., 2020). However, only 7% to 35% of the second victim received proper support from their superiors or colleagues which sometimes proves to be inadequate or unqualified. The treatment of the second victim is not always pleasant, because some people can make it feel worse (Sexton et al., 2021). A systematic review and meta-analysis of professional quality of life among nurses show that the lowest levels of compassion satisfaction and highest levels of compassion fatigue are reported in the Asian region (Xie et al., 2021). Compassion fatigue consists of burnout and secondary traumatic stress, which are two different aspects – secondary traumatic stress is less common than burnout; however, it is more powerful in its effect due to its relationship with fear, which is examined as a typical symptom after adverse events (Kakemam et al., 2021) High workload (high nurse–patient ratio), staff and hospital shortage, the imbalance between workload and salary, and lack of timely payment are among the contributing factors to a high prevalence of stressful in nurses (Habibzadeh et al., 2020). There are comments

showing that relatively poor pay and conditions have led to high levels of emigration among Nurses.

Coping styles play a crucial role in how nurses manage work-related stressors and understanding their effectiveness in enhancing the professional quality of life is essential (H. Huang et al., 2020). Problem-focused coping, which involves taking active steps to address the source of stress, has been found to be effective in reducing stress and improving the professional quality of life among nurses (Liukka et al., 2020). Seeking social support, prioritizing tasks, and developing a plan of action are some examples of problem-focused coping strategies that have been found to be effective (Kable et al., 2018). However, one study found that problem-focused coping was only effective in reducing stress and improving the professional quality of life among nurses who had high levels of job control, which suggests that the effectiveness of this coping style may be context-dependent (Delacroix, 2017; Vanhaecht et al., 2019). Despite the existing literature on coping styles among nurses, there are still several deficiencies in understanding their effectiveness in enhancing the professional quality of life. First, most studies have focused on the effectiveness of coping styles in reducing stress, rather than improving the professional quality of life. While stress is a significant predictor of burnout, professional quality of life is a broader concept that includes job satisfaction, compassion satisfaction, and burnout.

Emotion-focused coping, which involves regulating emotions and reducing negative feelings associated with stress, has also been found to be effective in reducing stress and improving the professional quality of life among nurses

(Cabilan & Kynoch, 2017). Relaxation techniques, mindfulness, and cognitive restructuring are examples of emotion-focused coping strategies that have been found to be effective (Cheng et al., 2020; Gerven et al., 2016). However, some studies have suggested that emotion-focused coping may be less effective than problem-focused coping in reducing stress and improving the professional quality of life among nurses (Amit. et al., 2021). Avoidance coping, which involves withdrawing from stressors, has been found to be ineffective in managing work-related stressors and can lead to negative outcomes such as burnout (Serou et al., 2021). Most studies have relied on self-report measures of coping styles, which can be subject to social desirability bias and may not accurately reflect the coping strategies used by nurses in real-life situations. Future research should incorporate observational and qualitative methods to provide a more comprehensive understanding of coping styles among nurses.

In conclusion, coping styles play a critical role in how nurses manage work-related stressors, and understanding their effectiveness in enhancing professional quality of life is essential.

### 2.4.5 Instruments used to measure second victim experience, coping styles, and Professional quality of life.

In **Table 2.2**, this study compares various instruments used to examine the second victim experience, coping styles, and professional quality of life among nurses. Each instrument is described with its unique strengths and emphasis on different aspects.

In terms of examining the second victim experience, the Second Victim Experience and Support Tool (SVEST) is specifically designed to assess the emotional and psychological impact of adverse events on healthcare professionals. It captures the unique challenges faced by healthcare professionals in coping with the aftermath of adverse events (Burlison et al., 2017). The SVEST assesses both the second victim-related symptoms and the quality of support resources, providing a comprehensive understanding of nurses' experiences. It targets healthcare professionals and their unique challenges, making it highly relevant for studying nurses in the context of the second victim phenomenon. On the other hand, the Impact of Event Scale was originally developed for post-traumatic stress disorder and measures distress experienced by traumatic events in a general sense. The IES focuses on symptoms such as intrusive thoughts, avoidance, and hyperarousal (Horowitz et al., 1979), without specifically examining the challenges faced by healthcare professionals in the aftermath of adverse events.

When comparing the instruments to assess coping styles, the Simplified Coping Style Questionnaire provides a comprehensive evaluation for a nuanced understanding of both positive and negative coping styles employed by nurses in response to the second victim experience (Xie, 1998). The Brief Cope provides insights into coping strategies but may not fully capture the coping style used by nurses with the second victim experience (Carver, 1997). The Coping Inventory for Stressful Situations measures specific dimensions of coping but may not provide a comprehensive evaluation of coping styles (Endler & Parker, 1990). Considering

these factors, the Simplified Coping Style Questionnaire is the best instrument for studying the coping styles used by nurses with the second victim experience.

In the context of studying the professional quality of life among nurses with second victim experience, the Professional Quality of Life Scale (Pro-QoL) offers several advantages. It covers a range of dimensions, including compassion satisfaction, burnout, and secondary traumatic stress, allowing for a more nuanced understanding of nurses' professional experiences and their impact on overall quality of life. The Pro-QoL is tailored to measure the professional quality of life of individuals in caregiving or helping professions, making it highly relevant for studying nurses (Stamm, 2005). Importantly, the Pro-QoL includes the dimension of secondary traumatic stress, which examines the psychological effects related to the second victim experience which is particularly relevant in understanding the impact of second victim experience on nurses' well-being (Kim et al., 2019). Additionally, the inclusion of compassion satisfaction is crucial as it measures the positive aspects of caring for others and allows researchers to understand the fulfillment and rewards associated with nursing, in addition to potential negative effects such as burnout. On the other hand, the Work-related Quality of Life scale measures job satisfaction, work-life balance, and professional fulfillment. It provides insights into the general well-being and fulfillment of nurses in their professional roles, including aspects beyond the immediate caregiving context (Van Laar et al., 2007). The Maslach Burnout Inventory specifically focuses on burnout and assesses emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach & Jackson, 1981). Considering these factors, the

Professional Quality of Life Scale is the most suitable instrument for examining the professional quality of life among nurses with second victim experience.

**Table 2.2: Instruments used to measure second victim experience, coping styles, and professional quality of life**

| Variable | Instrument | Author (Year) | Characteristics |
|---|---|---|---|
| Second victim experience | Second Victim Experience and support tool (SVEST) | Jonathan D. Burlison et al.(2017) | Assesses second victim–related psychological and physical symptoms and the quality of support resources |
| | Impact of Event Scale (IES) | Horowitz et al. (1979) | Originally for post-traumatic stress disorder, measures distress experienced by traumatic events |
| Coping Styles | Simplified coping style questionnaire (SCSQ) | Xie et al. (1998) | Assesses positive and negative coping styles |
| | Brief Cope | Carver (1997) | Measures various positive and negative coping strategies |

**Table 2.2 Continued**

| Variable | Instrument | Author (Year) | Characteristics |
|---|---|---|---|
| | Coping Inventory for Stressful Situations (CISS) | Endler & Parker (1990) | Measures task-oriented, emotion-oriented, and avoidance-oriented coping |
| Professional quality of life | Work-related Quality of Life (WR-QoL) scale | Darren et al. (2007) | Measures job satisfaction, work-life balance, and professional fulfillment |
| | Professional Quality of Life Scale (Pro-QoL) | Stamm (2005) | Measures compassion satisfaction, burnout, and secondary traumatic stress |
| | Maslach Burnout Inventory (MBI) | Maslach & Jackson (1981) | Assesses emotional exhaustion, depersonalization, and reduced personal accomplishment |

### 2.4.6 Theory related coping styles.

It is important to acknowledge that these theories possess their respective advantages and disadvantages, all of which contribute to our understanding of coping processes. Researchers can draw from multiple theories to gain a more comprehensive understanding of coping styles that can be applied to meet the unique needs of nurses with second victim experience.

Lazarus and Folkman's Model of Stress and Coping proposes that individuals engage in a cognitive appraisal process to evaluate the stressfulness of a situation and select appropriate coping styles (Lazarus & Folkman, 1984). This model emphasizes the dynamic nature of coping, highlighting the comprehensive understanding of coping that considers both individual and environmental factors. It recognizes the subjective nature of stress appraisal and underscores the significance of coping styles in effectively managing stress (Folkman, 2012).

Carver, Scheier, and Weintraub's Conceptualization of Coping distinguishes between problem-focused coping and emotion-focused coping. It suggests that individuals may use different coping strategies based on their assessment of the controllability of the stressor. Coping flexibility is also emphasized to adapt coping strategies to different situations (Carver et al., 1989). This model offers a practical framework for understanding coping by categorizing strategies into problem-focused and emotion-focused. It highlights the importance of flexibility in coping and tailoring strategies to fit specific situations (Carver & Connor-Smith, 2010). However, the model may oversimplify coping strategies by categorizing them into two broad categories. It may not fully capture the complexity and nuance of coping

responses. The model may also be limited in its applicability to certain contexts or populations.

The Dual Process Model of Coping suggests that individuals experience both loss-oriented coping (grief and loss focus) and restoration-oriented coping (building a new life) when facing bereavement (Schut, 1999). It recognizes the importance of balancing both processes for effective adaptation. The model provides a comprehensive framework for understanding the bereavement process, acknowledging the need to address both the emotional aspects of grief and the practical aspects of moving forward (Stroebe & Schut, 2010). It highlights the importance of supporting individuals in both grieving and rebuilding their lives. But the model is specific to the context of bereavement and may have limited applicability to other types of stressors. It may not fully capture the individual variability in coping responses and may not account for cultural or contextual differences.

The Conservation of Resources (COR) Theory suggests that individuals strive to acquire, retain, and protect personal and social resources to cope with stress. Coping is seen to prevent the loss or depletion of resources. The COR theory offers a valuable perspective on coping by emphasizing the importance of resources in managing stress. It recognizes the proactive nature of coping and the role of resource investment in enhancing resilience (Hobfoll et al., 2000). However, the theory may focus primarily on the role of resources and may not fully capture other psychological and cognitive aspects of coping.

Skinner and Zimmer-Gembeck's (2007) Coping Theory highlights the development of coping skills and strategies across the lifespan. It emphasizes the influence of personal characteristics, social support, and the nature of the stressor on coping. This theory recognizes the developmental aspect of coping and provides insights into how coping strategies evolve over time. It highlights the interaction between individual factors and the social environment in coping processes (Zimmer-Gembeck & Skinner, 2011). However, this theory lacks specific guidelines for selecting or implementing coping strategies in practice.

Previous research has shown that coping styles play a crucial role in mediating the relationship between stress and distress (Won et al., 2021). For second victim experience, stress arises from unanticipated adverse patient events resulting from medical errors, non-error events, patient-related injuries, and near-miss events (Burlison et al., 2021). The cognitive appraisal of these situations involves considering both the positive and negative dimensions of the appraisal process (Yoo, 2019). Nurses with second victim experience must evaluate both the negative effects of second-victim related stress and the resources available for second-victim support. Overall, Lazarus and Folkman's Model of Stress and Coping offers a robust framework for studying the mediating effects of coping styles in the relationship between the second victim experience and professional quality of life. It provides a comprehensive understanding of the cognitive appraisal process, coping strategies, and their dynamic interaction, enabling researchers to gain valuable insights into the underlying coping process.

## 2.5 Literature gap

The literature review revealed mixed results of perception, current situation，attitudes, and knowledge about nurses as second victims as well as the coping styles and professional quality of life among nurses. Most of the studies adopted the cross-sectional design with factor analysis used to identify underlying latent factors or constructs that explain the correlations among observed variables. However, they have limitations when it comes to establishing cause-and-effect relationships and understanding the mechanisms by which variables influence each other. In other words, the mediator variable helps us understand how and why the independent variable affects the dependent variable. Some of the study findings might lack generalizability due to small sample sizes, convenience sampling, and single-setting research conduct. Different kinds of measurement instruments make it difficult to compare research findings. The review highlights the need for better-designed mixed-method studies.

Another limitation of the existing literature is the lack of attention paid to the role of personal and organizational factors in shaping coping styles and their effectiveness. Personal factors such as gender, age, and education, as well as organizational factors such as leadership, support systems, and workload, can all influence the coping style and their effectiveness in reducing stress and improving the professional quality of life. Future studies should explore the role of these factors in shaping coping styles.

## 2.6 Summary

In this chapter, there are a total of 22 articles that meet the review criteria, including research background, design, participants, measurements, and results. The review on coping strategies and nurses as the second victim indicates that proactive coping is important for nurses who experience adverse events, as well as for the second victims who experience psychological and physical distress. However, it is unclear how coping strategies affect the quality of work life for nurses as second victims.

Despite studies suggesting that experiencing being a second victim can lead to burnout among nurses, the relationship between professional quality of life and second victim experience among nurses remains unclear. Additionally, the factors that may facilitate or hinder nurses involved in a second-victim experience from coping effectively are still not fully understood. Understanding these factors could help to develop more effective support systems for nurses who have second victim experience, ultimately improving the well-being of both the nurses and the patients under their care.

# CHAPTER 3: RESEARCH METHODOLOGY

## 3.1 Introduction

This chapter aims to describe the methodology used. Firstly, the mixed-method research employed was described, followed by a discussion of the research setting, population sample, and sampling method. The instruments employed to collect data were subsequently delineated. The ethical considerations surrounding the study were then explained in detail. Finally, the plan for data analysis was highlighted.

## 3.2 Research design

### 3.2.1 Mixed method

In this study, a mixed-method design was employed to allow the strengths of each method to compensate for the possible limitations of the other. The quantitative component of the study provided statistical data that can be analysed using various statistical techniques to identify patterns, relationships, and trends. On the other hand, the qualitative component allowed for a deeper exploration of participants' experiences, perceptions, and meanings associated with the research topic(Creswell, 2015). Furthermore, the mixed method approach promoted the strengths of each method to interact in a complementary manner with the other. Three approaches were usually implemented in nursing research, including the exploratory sequential strategy, explanatory sequential strategy, and convergent concurrent strategy (Creswell, 2014). The explanatory sequential design was deemed the most suitable approach for this study. The researcher initially collected and analysed quantitative

data and then collects and analyses qualitative data to explain the quantitative findings (**Figure 3.1**).

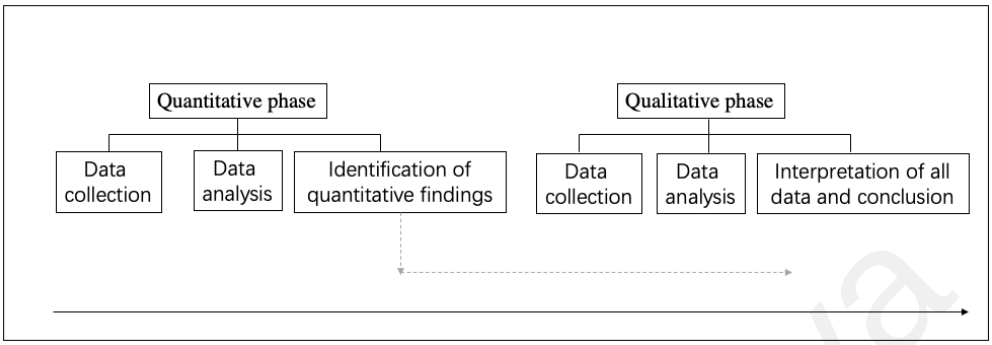



**Figure 3.1: Explanatory sequential mixed method**

The key characteristic of an explanatory sequential design was that the qualitative phase was conducted after the quantitative phase, with the goal of providing a deeper understanding and interpretation of the quantitative results. The explanatory sequential design was particularly useful when researchers want to go beyond the surface-level findings of quantitative data and gain a richer understanding of the research topic(Creswell, 2014). It provided a systematic and rigorous approach to exploring and interpreting the relationships and contextual factors that may underlie the quantitative results (Östlund et al., 2011).

### 3.2.2 Study design in this research

The explanatory sequential mixed-method approach employed in this study involved an analytical cross-sectional survey and a descriptive qualitative research design. The analytical cross-sectional survey was chosen because it allows for the examination of relationships between variables at a single point in time, providing valuable insights into the prevalence of second victim experiences, coping styles, and

the level of professional quality of life among nurses. This design is particularly useful for identifying patterns and associations that can inform subsequent phases of research. On the other hand, the descriptive qualitative research design was selected for its strength in capturing the complexity and richness of human experiences, particularly in understanding the nuanced factors influencing coping styles in second victim experiences, which might not be fully captured through quantitative methods alone.

In the first phase, a cross-sectional survey **(Figure 3.2)** was conducted to explain and describe the prevalence of second victim experiences, coping styles, and the level of professional quality of life among nurses with second victim experience. This phase also examined the relationships between second victim experience, coping styles, and professional quality of life. The survey aimed to fill the knowledge gap by determining the prevalence of these experiences and assessing their impact on nurses' well-being. Consistent with the principles of cross-sectional research, this study answered the "what" and "to what extent" questions, providing a snapshot of the current state of affairs (Grove et al., 2012). The data collected in phase one served as the foundation for the second phase, which focused on investigating the relationships between second victim experiences, coping styles, and professional quality of life using structural equation modelling. This approach provided a comprehensive understanding of the interplay between second victim experiences, coping styles, and professional quality of life among nurses, thereby informing strategies to support their well-being and ultimately improve patient outcomes.

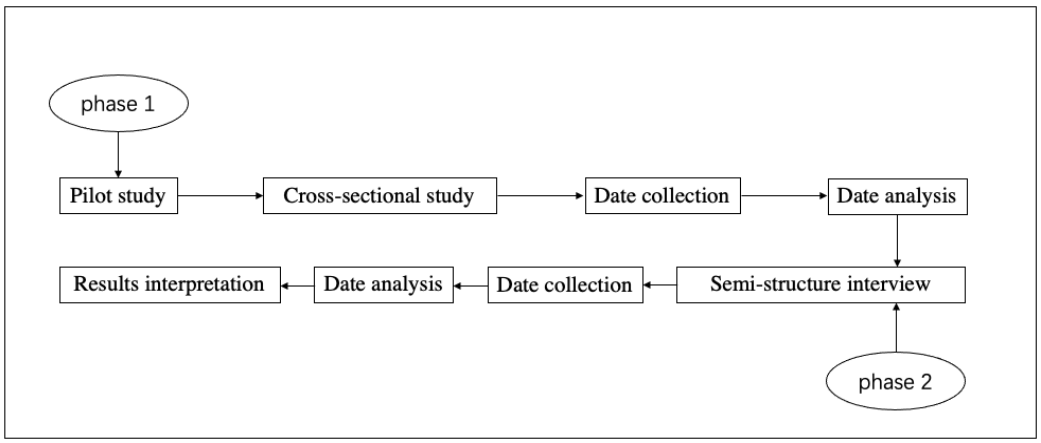



**Figure 3.2: Flowchart of the study**

In the second phase, a semi-structured interview was conducted to gain a deeper understanding of the factors influencing coping styles in second victim experiences among nurses, beyond what could be gleaned from the cross-sectional survey. This qualitative method was particularly valuable for exploring the complexity and richness of human experiences and perspectives in natural settings (Miles et al., 2014; Munhall, 2012). The semi-structured interview approach enabled an exploration of personal and workplace factors that facilitate or hinder coping styles for second victim experiences.

## 3.3 Research setting

This study was conducted in hospitals located in Hunan Province, one of the most populous provinces in China. Hunan Province is comprised of four regions and 14 cities, with a total population of approximately 69,183,800 as of 2019, ranking 7th in China (Qing, 2021). Due to its high population density, the demand for medical services is substantial.

**Table 3.1** provides information on medical institutions and registered nurses in Hunan Province. General hospitals make up only 2.8% of all medical institutions. However, general hospitals take responsibility for 41.0% of all medical treatments in the province and general hospitals also have most registered nurses, with 69.3% of all registered nurses. General hospital as a minority among medical organizations but handling a significant proportion of treatments underscores the importance of general hospitals in the healthcare system.

Within the health system, the Classification of Chinese hospitals is a 3-tier system according to the Ministry of Health of the People's Republic of China (World Health Organization, 2015). Further, based on the level of service provision, size, medical technology, medical equipment, and management and medical quality, these 3 grades are further subdivided into 3 subsidiary levels: A, B and C (甲[jiǎ], 乙[yǐ], 丙[bǐng]). The A level tertiary hospital is comprehensive, referral, general hospitals at the city, provincial or national level with a bed capacity exceeding 500 (Li et al., 2008). They are responsible for providing specialist health services, perform a bigger role regarding medical education and scientific research and they serve as medical hubs providing care to multiple regions. It also highlights the challenges faced by healthcare providers working in these settings, emphasizing the need for support, resources, and attention to ensure their well-being and the quality of care provided to patients. In this study, A level tertiary hospitals in Hunan Province were included.

**Table 3.1: Medical institutions and registered nurses in Hunan Province**

| Type of institution | Quantity | Treatment | Registered Nurse |
|---|---|---|---|
| General hospital | 2.8% | 41.0% | 69.3% |
| Primary institutions | 95.8% | 53.7% | 23.8% |
| Public health agency | 1.2% | 5.2% | 6.7% |
| Others | 0.2% | 0.1% | 0.2% |
| Total | 57232 | 281131600 | 240570 |

Sources: Hunan Provincial Health Commission, 2019

### 3.4 Population and sampling

#### 3.4.1 Quantitative sampling methods

A population was a particular group of people or type of element that was the focus of the study. The target population for this research comprised registered nurses working in general hospitals in Hunan province. The study employed a multistage cluster sampling method, as depicted in Figure 3.3. Cluster sampling was a probability sampling technique that is akin to stratified random sampling, but it leveraged the natural clusters or groups of population units (Mascha & Vetter, 2018). In some cases, the random selection continues across several stages, referred to as multistage cluster sampling (Grove & Gray, 2018).

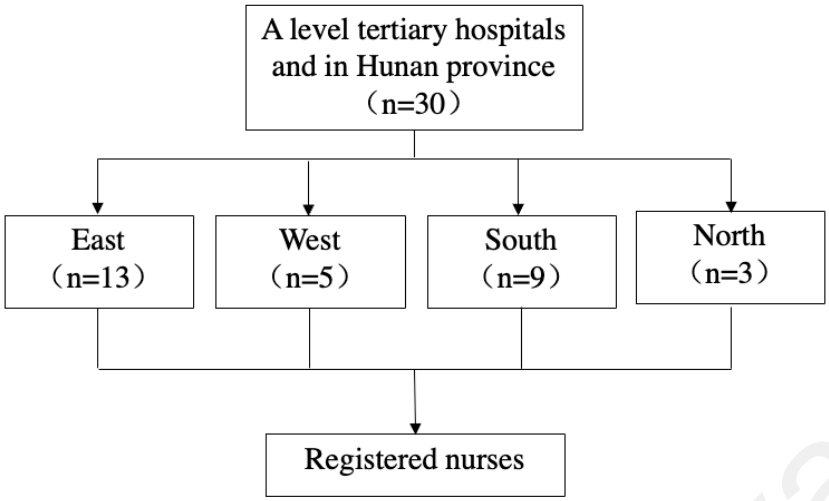



**Figure 3.3: Stages of cluster sampling**

As shown in **Figure 3.3**, the sampling was conducted in three stages. In the first stage, the 14 cities in Hunan province was be divided into four regions, namely the north (Changde, Yiyang, Yueyang), south (Shaoyang, Hengyang, Yongzhou, Chengzhou), east (Changsha, Zhuzhou, Xiangtan), and west (Huaihua, Zhangjiajie, Xiangxi, Loudi), as depicted in **Figure 3.4**. To maintain proportional representation, four hospitals were selected from the east, two from the west, two from the south, and one from the north. This approach ensured that the selection of hospitals reflected the distribution of healthcare institutions across different regions, providing a comprehensive overview of the second victim phenomenon among nurses in diverse settings.

Within each selected hospital, a proportional sampling method was applied to determine the number of nurses to be included in the study. This method ensured that the sample size from each hospital was proportional to the total number of nurses employed there, allowing for a balanced and representative data collection.

The total number of questionnaires collected amounted to 1,335. By using proportional sampling at both the hospital and nurse levels, the study achieved a robust sample that accurately represents the experiences and coping mechanisms of nurses across various regions and hospital environments. This detailed sampling process enhances the validity and generalizability of the study findings.

Inclusion criteria**:**

1. Minimum junior high school education

2. Minimum work experience of three months

3. Full-time work in the hospital

Exclusion criteria**:**

1. Staff who is on leave

2. Staff who is unwilling to participate in all phases of the research

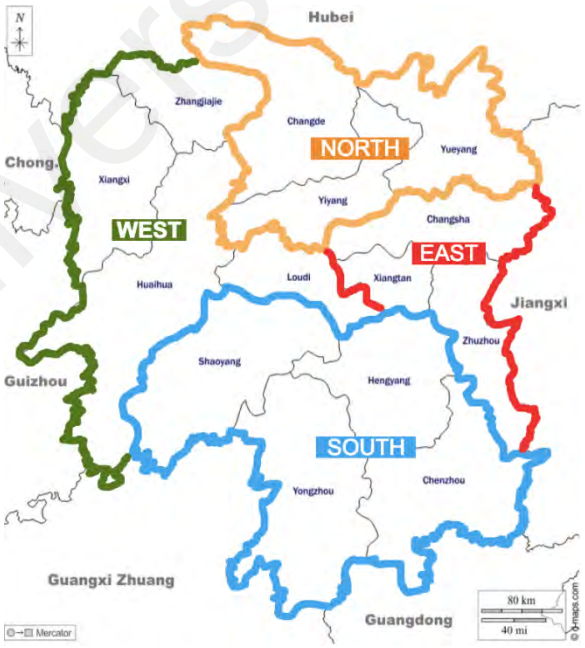



**Figure 3.4: Hunan province**

### 3.4.2 Qualitative sampling methods

In this study, purposive sampling was employed to select participants for the qualitative phase. First, it allowed us to identify and include nurses who have firsthand experience with being second victims, thereby ensuring the relevance and specificity of the data. Second, this approach facilitated the exploration of a wide range of coping strategies and needs, as participants could provide detailed accounts of their personal coping processes and the types of support they found most helpful. Lastly, purposive sampling enabled us to capture the diversity of experiences among second victims, including variations in how different individuals and healthcare environments influence the coping process and support needs. This targeted approach ultimately enhances the validity and depth of our findings, providing valuable insights that can inform the development of effective interventions and support mechanisms for second victims in healthcare.

Inclusion criteria**:**

1. As a respondent in the quantitative phase
2. Respondents who have second victim experience.
3. Want to share their second victim experience in general hospitals.

## 3.5 Sample size

### 3.5.1 Quantitative sample size

The first phase of this study aims to investigate the status of nurses' second victim experience, coping styles, and professional quality of life. Based on prior

research, the standard deviation of the Second Victim Experience and Support Tool was found to be 0.82 (X. Zhang et al., 2019). The sample size calculation formula was used to determine the required sample size, as per Ping et al. (2010).The formula includes four parameters: (1) "n" represents the sample size, (2) "δ" denotes the allowable error, which is generally half of the confidence interval of the population rate, (3) "σ" signifies the standard deviation, and (4) the Z-value is obtained from the Z-value table. For this study, a significance level (α) of 0.05 and a tolerance error of 0.05 were chosen, resulting in a sample size of 1034. Accounting for a 20% sample dropout rate, an additional 206 participants were added to the sample size, bringing the total required sample size to 1240. The reference formula used in this calculation was Kotrlik and Higgins (2001):

$$n = \left( \frac{Z_{1-\alpha/2}\sigma}{\delta} \right)^2 = \left( \frac{1.96 * 0.82}{0.05} \right)^2 \approx 1034$$

A structural equation model is constructed to examine the relationship between the second victim experience, coping styles, and professional quality of life. To determine the sample size required for this phase, the rule for calculating the sample size of structural equations was utilized. The questionnaire comprises a total of 74 items, with 24, 20, and 30 items in each respective subscale. As Bentler and Chou's recommendation (1987), the sample size should be 5-10 times larger than the number of items, resulting in a minimum sample size of 415 participants. To account for potential missing data and sampling error, a 10% buffer was added to the sample size, resulting in a total sample size of 462. Combining the sample size

from the previous quantitative phase (1240), the total number of participants in this phase is 1240.

### 3.5.2 Qualitative sample size

Qualitative research often seeks to gain rich insights and discover new meanings in a particular field of study by collecting data from participants (Elo & Kyngäs, 2008) . The adequacy of the sample size in a qualitative study should be justified by the researchers. In such studies, data saturation is a widely accepted criterion for determining the adequacy of the sample size. Saturation of data occurs when additional sampling does not yield new information but only redundancy of previously collected data (Munhall, 2012; Ponterotto, 2006). Marshall and Rossman (2014) suggest a range of 12 to 25 participants as a generous estimate for sample size in qualitative research, although the actual number of participants may depend on the study design and the timing of data saturation. The point of data saturation is reached when new data become redundant with what has already been found, and no new themes can be identified (Bryman & Cramer, 2004).

## 3.6 Research instruments

### 3.6.1 Quantitative study

The self-administered questionnaire consists of four parts. Part A included socio-demographic characteristics and working conditions of nurses. Part B is Second Victim Experience and Support Tool. Part C is Simplified Coping Style

Questionnaire. Part D is Professional Quality of Life Scale. Chinese version of the questionnaires was adopted.

**Part A: Socio-demographic characteristics and working condition**

This section of the study instrument includes a questionnaire aimed at gathering demographic data such as gender, age, years of working experience, marital status, work position, education, work unit, duration of work, patient-to- nurse ratio, bed capacity, average weekly work hours, and income. This questionnaire is based on the relevant literature.

**Part B: The Second Victim Experience and Support Tool (SVEST)**

The Second Victim Experience and Support Tool (SVEST) was developed by Burlison (2017) to measure the suffering and support quality of second victims, i.e., healthcare providers such as doctors, nurses, and pharmacists who have been involved in an adverse event. The survey dimensions of the scale have Cronbach reliability scores ranging from 0.61 to 0.89 (Burlison et al., 2017). The Chinese version of the scale (Chen et al., 2019a). was used in this study, and it has a Cronbach's alpha coefficient of 0.892. The scale includes a total of six dimensions and 24 items that are rated on a 5-point Likert scale. Examples of items from each construct are provided below:

- psychological distress- *I have experienced embarrassment from these instances*.
- physical distress- *the mental weight of my experience is exhausting.*
- colleague support- *I appreciate my coworkers' attempts to console me, but their efforts can come at the wrong time, management support like my supervisor's responses are fair.*

- relatives and friends support- *the love from my closest friends and family helps me get over these occurrences, and practice troubles as my experience makes me wonder if I am not really a good healthcare provider.*
- Non–Work-Related Support– *I look to close friends and family for emotional support after one of these situations happens.*
- Professional Self-efficacy– *Following my involvement I experienced feelings of inadequacy regarding my patient care abilities.*

To calculate the total score for the SVEST, the individual item scores are summed together. The SVEST items are rated on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Once the reverse item scores of the support dimensions were converted, the total score of the SVEST ranged from 24 to 120 (Chen et al., 2019b). Higher scores on the SVEST indicate a greater severity of the impact of the patient safety incident on the second victim, and a lower level of support received by the second victim.

**Part C: Simplified coping style questionnaire (SCSQ)**

The Simplified Coping Style Questionnaire (SCSQ) is a self-report questionnaire designed to assess an individual's coping style. It was developed by Xie (1998) and is widely used in China. The SCSQ consists of 20 items, each of which is rated on a 4-point Likert scale ranging from 0 (never) to 3 (always). It includes a positive coping style (12 items) and a negative coping style (8 items), which were measured using a 4-point Likert scale (0 = never, 1 = seldom, 2 = often, 3 = always). Higher scores of the dimension reflected preferences for the coping style. Cronbach's alpha

for the negative coping style and the positive coping style were 0.89 and 0.78, respectively (Xie, 1998). Item examples from each of constructs are as follows:

Positive coping style - *Change your mind and rediscover what is important in life.*

Negative coping style - *Accept reality because there is no other way.*

**Part D: Professional quality of life scale (Pro-QoL)**

Professional Quality of Life (Pro-QoL) is a widely used tool to measure the level of job-related stress, compassion fatigue, and burnout among individuals who work in high-stress professions such as healthcare, social work, emergency services, and education. The Pro-QoL consists of 30 questions, which are divided into three subscales: compassion satisfaction, burnout, and secondary traumatic stress. Compassion satisfaction is the positive aspect of working with individuals who have experienced trauma, while burnout and secondary traumatic stress are negative aspects that can arise from exposure to trauma (Stamm, 2005).

The Chinese is a 5-point Likert scale ranging from 1 = Never to 5 = Very often, while items 1, 4, 15, 17, and 29 in the dimension of burnout were reversed when scored, then the items were summed by subscale and the original score was converted to a t-score (t-score = z-score *10) + 50. A high level referred to a t-score above 57 and below 43 meant a low level. The Cronbach's alphas of the three subscales were 0.88, 0.81, and 0.75 for compassion satisfaction, burnout, and secondary traumatic stress, respectively (Stamm, 2010). Item examples from each of constructs are as follows:

- I get satisfaction from providing medical care.
- I feel connected to others (patients, colleagues, friends, etc.)

- Sudden noises startle me.
- I feel refreshed after being with someone who needs my lifesaving care.
- I find it difficult to separate my personal life from my hospital work.
- I lose sleep because of a traumatic experience with someone I have treated and cared for, so I cannot work productively.

### 3.6.2 Qualitative study

This study employed a semi-structured interview approach to gather qualitative data on the second victim experience among nurses in various positions, including frontline nurses, and nurse managers. The semi-structured interview questions are specifically designed to explore second victim experience, the impact of recent second-victim experiences, the process of management, and the factors influencing coping styles. Examples of interview questions include:

- *What are some of the most challenging adverse events you have experienced in your career?*
- *How did it affect you?*
- *How did you cope with the events?*
- *How did the organization manager manage the events?*
- *How did interactions between you and your team influence your experiences?*
- *What are the advantages and disadvantages about using the item "second victim" and are you willing to accept it.*

### 3.7 Data collection

#### 3.7.1 Quantitative data collection

The proposed research commenced following the receipt of ethical approval from the Medical Research Ethics Committee, the Second Xiangya Hospital of Central South University. The research team communicated with the heads of each hospital to obtain information on nurses.

In this study, the hospital is divided into four directions: East, West, South, and North. There are 13 tertiary hospitals in the East, 5 in the West, 9 in the South, and 3 in the North. In the first stage, a proportional sampling method is used, where the number of selected hospitals in each direction is: 4 in the East, 2 in the West, 2 in the South, and 1 in the North. To randomly select hospitals from each direction, a random number generator was used to assign a unique number to each hospital in the East, ranging from 1 to 13. Then, four unique identifiers are chosen randomly from the range of 1 to 13. This process ensures that each hospital has an equal chance of being selected. After the first stage of sampling, a total of 9 hospitals are selected: 4 from the East, 2 from the West, 2 from the South, and 1 from the North. The nurse populations in these selected hospitals are 2708, 4938, 4500, 3441, 2640, 2409, 2743, 3826, and 2594 respectively.

In the second stage, a proportional sampling method was applied to randomly select nurse samples from each of the 9 selected hospitals. With the support of hospital management, nurse lists are obtained, and a random number generator is

used in each hospital to sample nurses. The proposed sample sizes for each hospital are as follows: 108, 198, 180, 138, 106, 96, 110, 153, and 104.

The participants were informed that the research is divided into two phases, both of which are voluntary, and that they may withdraw at any time. Participants were invited to complete an online questionnaire through a link in WeChat. Participants were provided with an information sheet detailing the purpose, duration, and potential benefits of the study, as well as the contact information of the researcher. Additionally, participants received a briefing from the researcher regarding the information sheet, and the importance of voluntary participation and confidentiality was emphasized. Prior to beginning the survey, participants signed a consent form indicating their willingness to participate. The researcher reviewed all returned questionnaires to ensure the completeness of the data, and each questionnaire can only be submitted once per IP address. As a result, a total of 1335 questionnaires are collected from the 9 hospitals.

### 3.7.2 Qualitative data collection

In qualitative research, data collection and analysis occur simultaneously and are not a completely predetermined process (Miles et al., 2014). As such, for this study, the researcher must address data collection issues related to the relationships between the researcher and participants, reflect on the meanings obtained from the data, and manage and synthesize large volumes of data. The researcher used semi-structured interviews to explore the perception of second victim experiences among nurses. The interviews conducted in a meeting room, and each meeting taken 30-45

minutes for every respondent. The first part of the meeting explained the objectives and obtain consent, followed by scheduling an appointment. The second part of the meeting involved the actual interview, during which the researchers explored the effects and needs of nurses with second victim experience.

In this stage, the interviewers investigated the details of the experiences to reconstruct the process. The third part of the meeting aims to validate clarification and discuss the topic in the future, such as the perception of the development. The conversation was recorded in both audio and text. The researchers collected data on the role, support, and needs among the items of second victim experience, coping styles, and professional quality of life. The data was analysed using thematic analysis, which involved identifying patterns and themes in the data.

To ensure the effectiveness of the interview, researchers should thoroughly familiarize themselves with the research topic, relevant literature, and the purpose of the study. This preparation allowed researchers to develop insightful and relevant interview questions. It is also vital that ensure a clear understanding of the research objectives and the specific information they seek to gather from participants (Clarke & Braun, 2013). Secondly, conducting a pilot interview with a small number of participants who resemble the study population can be helpful. Piloting helps refine the interview guide, identify potential issues or ambiguities in the questions, and assess the clarity and comprehensibility of the interview process (Guest et al., 2006).

At the beginning of interviews, building a rapport with participants is crucial for creating a comfortable and trusting environment. Researchers should introduce themselves, explain the purpose of the study, and assure participants of

confidentiality and anonymity. They should actively listen, show empathy, and validate participants' responses to foster trust and openness. Open-ended questions encourage participants to provide detailed and descriptive responses. Researchers should design questions that allow participants to share their experiences, opinions, and perspectives freely. Open-ended questions typically begin with phrases like "Can you describe...," "Tell me about...," or "What was it like..." (Glesne, 2016). Researchers should employ probing techniques to encourage participants to elaborate on their responses, clarify ambiguous statements, and provide more in-depth information. Probing can involve asking follow-up questions, seeking specific examples, or requesting further clarification. Researchers should allocate an appropriate amount of time for interviews to ensure comprehensive data collection. Rushing through interviews may limit participants' ability to express themselves fully. Creating a relaxed and unhurried atmosphere allows participants to reflect on their experiences and provide thoughtful responses (Clarke & Braun, 2013).

Taking detailed field notes during or immediately after the interview is essential. Field notes capture observations, non-verbal cues, contextual information, and researchers' reflections on the interview process. These notes contribute to the analysis and interpretation of the data and help researchers remember important details. After completing the interview, researchers can engage in member validation or member checking. This involves sharing interview transcripts or summaries with participants to verify the accuracy of the collected data (Clarke et

al., 2015). Member validation allows participants to provide additional insights, clarify any misunderstandings, or correct any inaccuracies.

By considering these strategies and paying attention to the dynamics of the interview process, researchers can ensure the effectiveness of qualitative interviews in gathering rich, in-depth, and meaningful data for this study.

### 3.8 Ethical Consideration

To ensure that the proposed study adheres to ethical considerations, the researchers obtained ethical approval from the ethics committee at the Second Xiangya Hospital of Central South University. The study was designed to protect the rights of participants, including their privacy, anonymity, and the right to be protected from harm. The researchers obtained written informed consent from participants, which included detailed information about the study's purpose, procedures, and risks. Confidentiality of the study was ensured by using passwords to protect electronic data and establishing anonymity using codes rather than participants' names.

Potential participants were informed about the purpose and benefits of the study, as well as any potential risks, prior to agreeing to participate. They were also be informed that their participation is voluntary, and they have the right to withdraw from the study at any time without penalty. The researchers ensured that the study does not cause any harm to the participants and that the data collected is used for research purposes only. The data was securely stored and destroyed after a reasonable period, as per the university's guidelines.

Since qualitative studies involve extensive interactions and personal disclosures, participants need to understand the open-ended nature of the study, data usage, and reporting. Establishing trust and rapport is vital to create a safe environment for sharing experiences, while being sensitive to emotional impacts and providing support if needed. In qualitative research, participants are often identified by pseudonyms to protect confidentiality. Researchers must avoid inadvertently disclosing information leading to identification. Being respectful and non-judgmental towards participants' viewpoints is essential, avoiding exploitation or treating them merely as study subjects. Researchers should be self-aware, acknowledging biases that may influence data collection and interpretation. Accurately presenting participants' words and experiences is crucial, avoiding misrepresentation or sensationalism in findings reporting. Interviewers require training to recognize signs of distress or potential harm during interviews. If necessary, interviews may be stopped, with appropriate assistance or referrals to mental health professionals. Psychiatric doctors were prepared to offer referrals and support services if participants experience emotional distress beyond the study's scope.

The researchers adhered to the guidelines set by the Declaration of Helsinki and other relevant ethical guidelines. In addition, they ensured that the study complies with local laws and regulations governing research involving human subjects. Any ethical concerns or issues that arise during the study was reported to the ethics committee for review and resolution.

### 3.9 Pilot study

In this study, the pilot study was an essential step to test the validity and reliability of the instruments under different subtopics, removing items that cannot be effectively measured. The pilot study assessed the feasibility, adequacy of instrumentation, problems of data collection strategies, and proposed methods to plan a larger study (Park et al., 2020). The researcher made necessary modifications based on the pilot results before initiating data collection. All scales used in this study are classical and mature and the variables were adjusted to maintain optimal levels for structural equation modelling, as too many items would be detrimental to the model analysis (Kline, 2023).

The pilot study's sample size was approximately 10% of the final study size, which is recommended by previous studies (Viechtbauer et al., 2015), Therefore, the sample size of the pilot study in this study was 124. The pilot study's ethical considerations followed the same guidelines as the larger study, ensuring the participants' privacy, anonymity, and right to withdraw from the study at any time without penalty. The informed consent form explained the purpose of the pilot study in detail and guarantee the confidentiality of the study data. Additionally, electronic data was protected by password, establishing anonymity using codes, rather than the names of participants.

In the pilot study, the Cronbach's α values for the Second Victim Experience and Support Tool, Simplified Coping Style Questionnaire, and Professional Quality of Life Scale were 0.892, 0.932, and 0.921, respectively. Additionally, this study conducted a mediating model that included coping styles and demographic data as

mediators. **Table 3.3** presents the fit indices of the model in the pilot study. Analysis of the fit indices reveals that all model fit indices meet the threshold criteria, indicating a satisfactory fit and acceptability of the model. **Table 3.4** displays the results of the indirect effects for the paths "Second victim-related stress - Demographic Data - Professional quality of life" and "Second victim support - Demographic Data - Professional quality of life." The indirect effect for the former path is 0.03, with a 95% bias-corrected percentile method confidence interval of (-0.004, 0.022). Similarly, the indirect effect for the latter path is -0.006, with a 95% bias-corrected percentile method confidence interval of (-0.007, 0.015). As the confidence intervals include 0, both indirect effects are considered non-significant.

The decision to remove the demographic data from the model was based on the understanding that these variables may not have a direct impact on the examined variables or relationships. When characteristics lack a strong theoretical foundation or previous research supporting their relevance, their exclusion from the model becomes justifiable (Loehlin & Beaujean, 2016). Eliminating non-significant variables simplifies the model and improves interpretability, allowing a focus on variables with substantial impact on the relationships of interest. This approach promotes parsimony and clarity in the structural equation model (Kline, 2023).

**Table3.2: The mediated test for nurses with second victim experience (n=124)**

| | Chi-Square | df | Chi-Square/df | RMSEA | CFI | TLI | SRMR |
|---|---|---|---|---|---|---|---|
| Results | 2898.513 | 1734 | 1.672 | 0.027 | 0.907 | 0.902 | 0.069 |

**Table 3.3: Bootstrap analyses of magnitude and statistical significance (n=124)**

| Pathway | Estimate | 95% BCBCI Lower 2.5% | 95% BCBCI Upper 2.5% |
|---|---|---|---|
| Total | -0.254 | -0.377 | -0.216 |
| SVRS-PC-PQL | 0.027 | 0.009 | 0.062 |
| SVRS-NC-PQL | -0.107 | -0.170 | -0.085 |
| SVRS-DD-PQL | 0.003 | -0.004 | 0.022 |
| SVRS -PQL | -0.176 | -0.284 | -0.149 |
| Total | -0.312 | -0.408 | -0.225 |
| SVSU-PC-PQL | -0.214 | -0.325 | -0.174 |
| SVSU-NC-PQL | -0.043 | -0.082 | -0.008 |

**Table 3.4 Continued**

| Pathway | Estimate | 95% BCBCI Lower 2.5% | 95% BCBCI Upper 2.5% |
|---|---|---|---|
| SVSU-DD-PQL | -0.006 | -0.036 | 0.007 |
| SVSU-PQL | -0.049 | -0.132 | 0.092 |

SVRS, second victim-related stress; SVSU, second victim support; PC, positive coping styles; NC, negative coping style; PQL: Professional quality of life; DD: Demographic Data; BCBCI, bias-corrected bootstrap confidence interval.

In qualitative study, a semi-structured interview guide was improved in **Table 3.5**. This allowed for flexibility during interviews while ensuring consistency in the areas explored. Conduct the semi-structured interviews with the selected participants. During the pilot study, pay close attention to the interview process, the flow of questions, and the participants' responses to identify any potential improvements.

**Table 3.5: Semi-structured interview guide**

| Question |
| --- |
| 1. Second victim experience |
| Prompts: Introduce second victim experience and adverse events |
| 1.1 How do you understand adverse events in your clinical work or which events are adverse events? |
| 1.2 Can you describe an strong second victim experience? |
| Prompts: Event process, patient outcome, whether a lawsuit, feelings |
| 2. Analysis and coping process |
| 2.1 Please describe the process of event management |
| Prompts: Participants in the discussion, form, cause analysis |
| 2.2 What is the impact aftermath second victim experience? |
| Prompts: Immediate, long term, positive, negative |
| 2.3 What would you do to cope with it |
| Prompts: Whether these measures effective or not |
| 3. Support perceived and needs |

**Table 3.5 continued**

| Question |
|---|
| 3.1 How do you seek help? |
| Prompts: Colleagues, relatives, organization |
| 3.2 How effectively does the organization handle and provide support? |
| Prompts: Identify both strengths and areas of improvement |
| 3.3 What kind of support do you expect to? |
| Prompts: Current barriers |

## 3.10 Data analysis

### 3.10.1 Quantitative data analysis

In this study, the measurement data between two groups and multiple groups were analysed using various statistical methods to determine significant differences and correlations in **Table 3.6**

**Table 3.6: Summary of research questions and analysis method**

| Research questions | Analysis method |
|---|---|
| 1. The prevalence of the second victim experience. | Descriptive statistics (percentage and frequency count) |
| 2. The coping styles among nurses with second victim | Descriptive statistics, one-way ANOVA (for multiple groups of normal measurement data), Kruskal-Wallis H test (for non-normal |

**Table 3.6 continued**

| Research questions | Analysis method |
|---|---|
| experience | measurement data), SNK method for pairwise comparison, Welch test for overall mean comparison with uneven variance, Dunnett T3 test for pairwise comparison |
| 3. The level of professional quality of life among nurses with second victim experience. | Descriptive statistics, one-way ANOVA (for multiple groups of normal measurement data), Kruskal-Wallis H test (for non-normal measurement data), SNK method for pairwise comparison, Welch test for overall mean comparison with uneven variance, Dunnett T3 test for pairwise comparison |
| 4. The relationship between socio-demographic characteristics and second victim experience among nurses? | T-test (for mean differences between two independent groups), one-way ANOVA (for mean differences among three or more independent groups), Pearson correlation (for relationships between variables) |

**Table 3.6 continued**

| Research questions | Analysis method |
|---|---|
| 5. The relationships between second victim experience, coping styles, and professional quality of life among nurses? | Pearson correlation (for relationships between variables), linear regression (for data analysis of influencing factors of professional quality of life), structural equation modelling (SEM) using Mplus 26.0 (to test structural validity, discriminative validity, measurement model, and path analysis), Cronbach alpha coefficient (to assess the reliability of the scale), model fit indices ($\chi^2$/df, SRMR, CFI, TLI, NFI, RMSEA) |

For two groups of normal measurement data, a small sample Shapiro-Wilk or a large sample Kolmogorov-Smirnov normal distribution test was conducted to check the normality assumption. If both groups followed a normal distribution, an independent sample t-test was employed. Then, an F-test was performed to assess the homogeneity of variance. If the variance was uniform, the t-test was applied; if not, a modified t-test was used. For non-normal measurement data, the Mann-Whitney U test was utilized.

For multiple groups of normal measurement data, a one-way analysis of variance was employed. The Levane Statistic homogeneity of variance test was conducted first, followed by the F test for total mean comparison. The SNK method was used for pairwise comparison, and the Welch test was used for overall mean comparison when the variance was uneven. The Dunnett T3 test was used for pairwise comparison. For

non-normal measurement data of multiple groups, the Kruskal-Wallis H test was utilized. Descriptive statistical parameters and their statistical symbols as below：

**Table 3.7: Summary of statistical tests used**

| Statistical symbols | Descriptive statistical parameters |
|---|---|
| $\overline{x} \pm s$ | the mean plus and minus standard deviation |
| $P_{25}$, $P_{50}$, $P_{75}$ | quartiles |
| $f$ | frequency |
| P | percentage |
| $\overline{R}$ | average rank-sum |

The correlation between variables was analysed using the Pearson correlation. Linear regression was used for data analysis of the influencing factors of professional quality of life. The reliability of the scale used in the study was assessed through the application of the Cronbach alpha coefficient, a widely accepted measure of internal consistency. A Cronbach alpha coefficient value of ≥ 0.70 was considered indicative of acceptable internal consistency, indicating that the items within the scale are reasonably related to each other. All statistical analyses were performed using SPSS version 26.0. Descriptive statistics, such as percentage and frequency count, were calculated for the sample populations' demographics. The t-test and single-factor analysis of variance was utilized to determine the association between dependent variables and demographics. To determine associations between dependent variables and demographics, the study utilized both the t-test and single-factor analysis of variance (ANOVA). The t-test

assessed mean differences between two independent groups, while the single-factor ANOVA examined mean differences among three or more independent groups. The choice of these tests allowed for the identification of statistically significant differences among the groups. In assessing the significance of results, a significance level of $p \leq 0.05$ was adopted.

Structural equation modelling (SEM) was employed to analyse the data. Mplus 26.0 was used to test the structural validity and discriminative validity of each scale and to test the measurement model. The path analysis method was used to test the structural model, and the full model was employed to test the structural equation model. A good degree of adaptation for each model was indicated by a Chi-square value divided by degrees of freedom ($\chi$^2/df) of less than 5, a standardized root means square residual (SRMR) of less than 0.08, comparative fit index (CFI) greater than 0.9, Tucker-Lewis Index (TLI) greater than 0.9, normed fit index (NFI) greater than 0.9, and root mean square error of approximation (RMSEA) less than 0.08.

Overall, this study utilized a range of rigorous statistical methods to ensure the reliability and validity of the results.

### 3.10.2 Qualitative data analysis

In qualitative research, data analysis involves the coding and interpretation of data to derive meaningful insights. This study follows a four-step approach to thematic analysis proposed by Ponterotto (2006) as follows:

Step1: data preparation involves the collection of interview data using a recording pen and notes. The collected data is then transcribed into verbatim records, which are typed in Microsoft Office Word while listening to the recording 2-3 times. Chinese is used in the initial transcription, which is then translated into English by the researcher and two translators. The data is then advanced translated from word-for-word, field notes, and meanings into English, and word-by-word translation, field notes, and meanings into Chinese. The researchers examined and discussed differences in both languages to ensure the same interpretation.

Step 2: Reading. The researcher read the content 2-3 times to obtain a general understanding of the information and generate the phenomenon of what the participants say. Then, the researchers note reflecting the cognition of the second victim experience and coping strategies.

Step 3: Coding. The data was coded, which is a means of naming, labelling, and later sorting data elements, allowing the researcher to find themes and patterns while making full use of the participants' views and excluding all researchers' knowledge, assumptions, and experience.

Step 4: The researcher generates and forms topics and subtopics by analysing and discussing the relationship among the code and grouping similar meanings into one topic, which refers to themes. The process to determine themes is always complex, including the situations, indications, and periods. The researcher then integrates each topic into a complete description.

This process was crucial in analysing and interpreting qualitative data, enabling the researcher to identify patterns and themes in the data, and ultimately draw meaningful conclusions.

### 3.11 The trustworthiness of qualitative data

The rigour of qualitative research lies in its ability to confirm the information it uncovers. Guba's model suggests that ensuring the trustworthiness of research is vital for all research methods. In qualitative research, trustworthiness is evaluated through four criteria: credibility, dependability, confirmability, and transferability (Creswell, 2015). In this study, Guba's model was employed to evaluate the trustworthiness of the qualitative data.

Credibility is the degree of confidence in the truthfulness of the information. It is essential to strengthen and demonstrate credibility in research findings (Creswell, 2015). Triangulation and peer debriefing was used to enhance credibility in this study. This includes combining interviews and archival data to support each other, using two observers to obtain a common view, and analysing data through an interactive discussion among three interpreters. In addition, the research group, which comprises two doctoral students from nursing and a therapist from psychology, were involved in all discussions, reviewing, and exploring different aspects of the study, providing feedback, and reducing researcher bias.

Dependability refers to the consistency and stability of the data. This study used stepwise replication, like the half-and-half technique used in quantitative research. The study group were divided into two groups to study and compare the data

independently. Continuous intergroup communication ensured the success of the process (Creswell, 2015).

Confirmability refers to the objectivity of the information and the agreement of independent researchers on the relationship or meaning of the information (Östlund et al., 2011). In this study, an inquiry audit was performed through an audit trail, using an open approach and systematic documentation in the collection and analysis of data. Another reviewer can replicate and validate the findings by using the documentation, which includes primary sources such as field notes and interview transcripts, products of data induction and analysis, such as theoretical notes and documents on hypotheses, and process notes, such as methodological notes, peer-checked notes, translations, logs, memos during analysis, and personal notes on intentions and preferences.

Transferability refers to the extent to which the findings are applicable to other groups in similar situations and is also known as suitability, which implies the generalizability of the information (Creswell, 2015). In this study, a thick description was used to present the details of the information, rather than a focused record. This provided enough information and evidence of the research site or context, as well as the research process, to judge the similarity of the context. By adhering to these trustworthiness criteria, this study aims to ensure the validity and reliability of its findings.

## 3.12 Summary

This chapter presents a comprehensive overview of the research methodology adopted in this study, encompassing its design, setting, sample, tools, ethical considerations, pilot study, and data collection and analysis procedures. The study consists of two phases: the first phase utilizes a cross-sectional survey design to examine the association between second victim experience, coping styles, and professional quality of life among nurses. In the second phase, a qualitative study was conducted to explore the perceptions of the second victim experience and factors influencing coping styles among nurses. The study aims to recruit 1240 nurses as participants using multistage cluster sampling techniques.

Ethical considerations were paramount importance throughout the research process. Written informed consent was obtained from all participants, and their anonymity and confidentiality were guaranteed. Participants were informed of their right to withdraw from the study at any time without any adverse effects.

To collect data, a self-administered questionnaire was used in the first phase, which has been developed based on a review of the literature and consultation with experts. In the second phase, individual interviews were conducted with the nurses, which were audio-recorded with their consent. Data was analysed using both quantitative and qualitative methods. Descriptive and inferential statistics, including correlation and structural equation modelling, were utilized to analyse survey data. A thematic analysis approach was used to identify themes and patterns in the data collected from interviews in the second phase. To ensure rigor in the analysis process, the research team included doctoral students in nursing and a

therapist from psychology. Before the actual study, a pilot study was conducted to test the feasibility and validity of the survey instrument and interview guide.

# CHAPTER 4: RESULTS OF MIXED METHOD STUDY

## 4.1 Introduction

This chapter presents the findings of the statistical analysis conducted as part of the research methodology. The first section describes the data management and distribution procedures and presents demographic information of the nurses. The subsequent sections present the results of the study objectives, which include: (1) assessing the levels of second victim experience, coping styles, and professional quality of life among nurses; (2) examining the associations between demographic characteristics and the levels of second victim experience, coping styles, and professional quality of life among nurses; (3) determining the relationship among second victim experience, coping styles, and professional quality of life among nurses; (4) investigating the mediating effects of coping styles on second victim experience and professional quality of life. 5) and exploring personal and workplace factors that facilitate or hinder coping styles for second victim experiences, from the perspectives of both frontline nurses and nurse managers. The inclusion of qualitative results provides a comprehensive understanding of the factors influencing the choice of coping styles among nurses. These qualitative findings are organized into themes and subthemes, such as sources of emotional trauma, personal factors, workplace environment, and support systems, offering valuable insights into the lived experiences of nurses and the complex interplay of factors that impact their coping mechanisms.

## 4.2 Date screening and management

### 4.2.1 Detection of outlier and missing data

Outliers are values that lie outside the possible range of a variable and can significantly impact the normality of data. In this study, an outlier was defined as a value with a standard score (Z-score) of ±4. The Z-scores for all variables are presented in Table 1, and ranged from -3.894 to 3.527, indicating the absence of any outliers in the data. Prior to conducting statistical analysis, it is crucial to ensure that there are no missing values or outliers that could influence the results. Thus, frequency distribution tables were utilized to check for possible missing values and data entry errors, which were found to be within the normal range of highest and lowest values. Negative items were transformed by reversing the scores, and data distribution was checked and corrected as necessary.

**Table 4.1: Result of outlier test**

| Standardized Variable | Minimum | Maximum |
|---|---|---|
| Z score: SVEST | -3.272 | 3.610 |
| Z score: PSYD | -3.581 | 1.024 |
| Z score: PHYD | -1.831 | 1.668 |
| Z score: PRAD | -1.966 | 1.770 |
| Z score: COSU | -1.299 | 3.378 |
| Z score: MASU | -1.255 | 3.527 |
| Z score: NWS | -1.313 | 2.236 |
| Z score: SCSQ | -3.905 | 2.654 |
| Z score: SCSQ | -3.905 | 2.654 |
| Z score: PC | -3.849 | 1.897 |

**Table 4.1 Continued**

| Standardized Variable | Minimum | Maximum |
|---|---|---|
| Z score: NC | -2.404 | 2.568 |
| Z score: PQL | -3.662 | 3.559 |
| Z score: CS | -3.423 | 3.461 |
| Z score: BO | -3.410 | 3.492 |
| Z score: STS | -3.138 | 3.189 |

SVEST: Second victim experience and support. PSYD: psychological stress. PHYD: Physical stress. COSU: Colleague support. MASU: Manager support. NWS: Non-working support. PRAD: Professional stress. SCS: Simplified copying style. AR: Positive coping style. NR: Negative coping style. PQL: Quality of professional life. CS: Compassion satisfaction. JB: Burnout. STS: Secondary traumatic.

### 4.2.2 Normality test of data

A normality test is performed to ascertain whether a sample data set is drawn from a population with a normal distribution. The Shapiro-Wilk test is a formal test for normality and is highly sensitive to large sample sizes. Based on the absolute value of skewness and kurtosis, it can be inferred that the data closely approximates a normal distribution (Das & Imon, 2016). Specifically, for the data to be considered normally distributed, the absolute value of skewness should be less than 3, and the absolute value of kurtosis should be less than 10 (Blanca et al., 2013).

**Table 4.2: Result of Normality Test**

| | Skewness | Std. Error | Kurtosis | Std. Error |
|---|---|---|---|---|
| SVEST | -0.193 | 0.082 | 0.152 | 0.163 |
| PSYD | -1.189 | 0.082 | 1.545 | 0.163 |
| PHYD | -0.111 | 0.082 | -0.817 | 0.163 |
| PRAD | -0.13 | 0.082 | -0.686 | 0.163 |

**Table 4.2 Continued**

| | Skewness | Std. Error | Kurtosis | Std. Error |
|---|---|---|---|---|
| COSU | 0.771 | 0.082 | 0.665 | 0.163 |
| MASU | 0.745 | 0.082 | 0.562 | 0.163 |
| NWS | 0.445 | 0.082 | -0.48 | 0.163 |
| SCS | -0.004 | 0.082 | 1.06 | 0.163 |
| PC | -0.265 | 0.082 | 0.605 | 0.163 |
| NC | 0.29 | 0.082 | -0.038 | 0.163 |
| PQL | 0.906 | 0.082 | 2.085 | 0.163 |
| CS | 0.338 | 0.082 | 0.66 | 0.163 |
| BO | 0.7 | 0.082 | 1.531 | 0.163 |
| STS | 0.909 | 0.082 | 1.844 | 0.163 |

SVEST: Second victim experience and support. PSYD: psychological stress. PHYD: Physical stress. COSU: Colleague support. MASU: Manager support. NWS: Non-working support. PRAD: Professional stress. SCS: Simplified copying style. PC: Positive coping style. NC: Negative coping style. PQL: Quality of professional life. CS: Compassion satisfaction.BO: Burnout. STS: Secondary traumatic stress.

### 4.2.3 Common method bias

Common method bias (CMB) occurs when the variation in responses is attributable to the measurement instrument rather than the actual predispositions of the respondents that the instrument seeks to capture (Podsakoff et al., 2003). Essentially, the instrument introduces bias, resulting in variances that produce systematic covariation that exceeds or falls short of the actual relationship between the constructs. To address CMB in this study, a measurement variance-covariance (MVC) test was conducted, as a self-administered questionnaire with a multidimensional structure was utilized to collect data at a single point in time. The cumulative variance of the first variable was found

to be 23.297, which is less than 50%. This finding indicates that there was no evidence of common method bias present in the data.

**Table 4.3: Single-factor analysis**

| Component | Initial Eigenvalues | | |
|---|---|---|---|
| | Total | % Of Variance | Cumulative % |
| 1 | 3.307 | 30.065 | 30.065 |

### 4.2.4 Multicollinearity Analysis

Multicollinearity is the presence of correlation between predictors (independent variables) in the model, which can lead to unstable and unreliable regression results. Variance Inflation Factor (VIF) was used to detect multicollinearity in this study. The VIF of each variable is less than 10, indicating that there is no multicollinearity.

In this study, the Pearson correlation coefficient was used to calculate the bivariate correlation matrix of the exogenous variables (pressure, support, AR, and NR). In **Table 4.5**, the correlation coefficients between the variables ranged from -0.546 to 0.202, all of which were less than 0.8 indicating the absence of multicollinearity.

**Table 4.4: Collinearity Assessment based on VIF**

| Variables | OPL |
|---|---|
| Second victim related stress | 1.178 |
| Second victim support | 1.494 |
| Positive coping style | 1.703 |
| Negative coping style | 1.327 |

**Table 4.5: Multicollinearity test based on correlation coefficients**

| | SVRS | SVSU | PC | NC |
|---|---|---|---|---|
| SVRS | 1 | | | |
| SVSU | -0.104** | 1 | | |
| PC | -0.009 | -.555** | 1 | |
| NC | .328** | -.130** | .349** | 1 |

SVRS: Second victim related stress. SVSU: Second victim support. PC: Positive coping style. NC: Negative coping style.

## 4.3 Descriptive analysis of sociodemographic and measures

### 4.3.1 Social demographic characteristics of nurses

A total of 1335 responses were collected, and 13 incomplete responses were removed, resulting in 1322 valid questionnaires for analysis, yielding a questionnaire validity rate of 99.0%. **Table 4.6** presents the sociodemographic characteristics of the nurses. The mean age of the nurses was 36.25 years (SD=9.22, range 35). Of the nurses, 52.3% (n=470) were between 30 and 40 years old, while 13.3% (n=120) were over 40 years old. Female nurses accounted for 94.9% (n=853) of the total participants. Most of the nurses were married (70.2%, n=165). The average income was 2800 RMB (approximately 1000 USD), with 40% (n=359) of the sample earning more than 3000 RMB (approximately 714 USD). Most nurses (87.3%, n=785) had a bachelor's degree. Nearly half of the nurses (48.5%, n=436) had less than five years of work experience. Only 19.3% (n=174) of the nurses held a management-level position.

**Table 4.6: Social demographic characteristics among nurses with reported second victim experience (N=899)**

| Variable | Category | N(%) |
|---|---|---|
| Gender | Male | 46(5.1) |
| | Female | 853(94.9) |
| Age(years) | ≤30 | 309(34.3) |
| | 31-40 | 470(52.3) |
| | ＞40 | 120(13.3) |
| Department | 1.00: Internal Medicine | 377(41.9) |
| | 2.00: Surgery | 279(31.0) |
| | 3.00: Paediatrics, Obstetrics and Gynaecology | 126(14.0) |
| | 4.00: Acute and Critical Care | 117(13.0) |
| Education level | Certification | 70(7.8) |
| | Bachelor | 785(87.3) |
| | Master and above | 44(4.9) |
| Marital status | Single | 187(20.8) |
| | Married | 691(76.9) |
| | Divorced | 21(2.3) |
| Length of service (years) | ≤5 | 436(48.5) |
| | 6-10 | 248(27.6) |
| | 10-15 | 101(11.2) |
| | ＞15 | 114(12.7) |
| Title | Junior | 354(39.4) |

**Table 4.6 Continued**

| Variable | Category | N(%) |
|---|---|---|
| | Intermediate grade | 407(45.3) |
| | Advanced title | 138(15.4) |
| Position | Non-position | 725(80.6) |
| | Head of nurse | 174(19.3) |
| MI | ≤5000 | 79(8.8) |
| | 5001-10000 | 695(77.3) |
| | ＞10001 | 125(13.9) |
| WH | ≤35 | 40(4.4) |
| | 35～44 | 565(62.8) |
| | ＞44 | 294(32.7) |

MI: Monthly Income (RMB). WH: WH: Working hours (weekly).

### 4.3.2 Level of second victim experience and support

In the study, a total of 899 nurses reported experiencing adverse events, which significantly impacted their psychological, physical, or professional well-being. As a result, the prevalence rate of second victim experience was found to be 68.0%. To measure adverse event experiences and support, the Second Victim Experience and Support Tool (SVEST), a 24-item questionnaire with six sub-domains, was used. These sub-domains included psychological stress, physical stress, professional stress, colleague support, management support, and family support, and were scored using a 5-point Likert scale. The overall mean score for nurses' adverse event experience and support was 66.89 ± 12.50. In terms of specific stress types, psychological stress showed 4.11 ± 0.87, physical stress was 3.09 ± 1.14, and professional stress has a mean

of 3.10 (SD = 1.07). Based on the reversed calculation on the dimension of support in this questionnaire, the scores for colleague support (2.11 ± 0.86) and manager support (2.05 ± 0.84) were found and family support was 2.48 ± 1.13. The reversed calculation means that lower scores represent higher levels of perceived support, and higher scores represent lower levels of perceived support.

**Table 4.7: Descriptive statistics of Second victim experience and support (N=899)**

| Variables | Mean ± SD | Range |
|---|---|---|
| Total | 66.89 ± 12.50 | 26-112 |
| Psychological stress | 4.11 ± 0.87 | 1-5 |
| Physical stress | 3.09 ± 1.14 | 1-5 |
| Professional stress | 3.10 ± 1.07 | 1-5 |
| Colleague support | 2.11± 0.86 | 1-5 |
| Manager support | 2.05 ± 0.84 | 1-5 |
| Non-working support | 2.48 ± 1.13 | 1-5 |

### 4.3.3 Level of coping styles

The coping style adopted by nurses after experiencing an adverse event was measured by the Simplified Coping Style Scale (SCS), a 20-item questionnaire involving 2 main dimensions, namely positive coping containing 12 questions and negative coping containing 8 questions, scoring 0-3 on the Likert scale. The score for the positive coping style (24.12 ± 6.27) was found to be higher than that of negative coping styles (11.6 ± 4.83) showed in **Table 4.8**, suggesting that nurses tend to prefer adopting a positive coping style following their second victim experience.

**Table 4.8: Descriptive statistics of Simplified copying style (N=899)**

| Variables | Mean ± SD | Rang |
|---|---|---|
| Positive coping style | 24.12 ± 6.27 | 0-36 |
| Negative coping style | 11.6 ± 4.83 | 0-24 |

### 4.3.4 Level of quality of professional life

The professional quality of life of nurses after experiencing an adverse event was assessed using the Pro-QOL, which comprises 30 items divided into three subscales: compassion satisfaction (10 items), burnout (10 items), and secondary trauma (10 items). Emotional fatigue is a negative aspect of professional quality of life and includes job burnout and secondary trauma, which refer to the negative reactions of caregivers after providing care to people experiencing traumatic stress and distress. A Likert 5-point scale was used to rate the items. The results of the study indicated that nearly 80% (n=719) of nurses experienced medium to high levels of compassion satisfaction, job burnout, and secondary trauma, which suggests that nurses had high levels of compassion satisfaction but also high levels of empathic fatigue and overall professional quality of life.

**Table 4.9: Descriptive statistics of Quality of professional life (N=899)**

| | Original score | Level(%) | | |
|---|---|---|---|---|
| | (Mean ± SD) | Low | Middle | High |
| CS | 34.12 ± 7.69 | 18.4% | 54.3% | 27.4% |
| BO | 32.01 ± 5.31 | 19.0% | 61.7% | 19.2% |
| STS | 28.88 ± 7.10 | 21.9% | 57.6% | 20.5% |

CS: Compassion satisfaction. BO: Burnout. STS: Secondary traumatic stress.

## 4.4 Association between demographic characteristics and second victim experience, coping styles, and professional quality of life

This section addresses the second objective of the study, which is to examine the relationship between sociodemographic characteristics and second-victim experiences, support, coping styles, and quality of professional life among nurses. To assess whether there were significant differences in these variables based on sociodemographic factors, independent t-tests, and one-way ANOVA were conducted.

### 4.4.1 Association between demographic characteristics and second victim experience

A statistical analysis was performed to investigate the relationship between sociodemographic characteristics and second victim experiences. The results are presented in the **Table 4.10**. Marital status exhibited significant effect on second victim experiences among nurses (F = 4.97, p = 0.007). When comparing the three categories of marital status (i.e., single, married, and divorced), nurses in the single situation reported the highest scores (2.49± 0.64) in second victim experiences.

**Table 4.10: Demographic characteristics and second victim experiences (N=899)**

| Variables | N | Mean (SD) | t / F | *P* |
|---|---|---|---|---|
| Gender | | | 0.961 | 0.337 |
| Male | 46 | 2.46(0.60) | | |
| Female | 853 | 2.37(0.59) | | |
| Age(years) | | | 2.376 | 0.094 |

**Table 4.10 Continued**

| Variables | N | Mean (SD) | t / F | *P* |
|---|---|---|---|---|
| ≤30 | 309 | 2.43(0.60) | | |
| 31-40 | 470 | 2.34(0.59) | | |
| ＞40 | 120 | 2.35(0.58) | | |
| Department | | | 0.925 | 0.428 |
| Internal Medicine | 377 | 2.39(0.60) | | |
| Surgery | 279 | 2.34(0.56) | | |
| POG | 126 | 2.34(0.60) | | |
| ACC | 117 | 2.43(0.66) | | |
| Education level | | | 0.993 | 0.371 |
| Certification | 70 | 2.38(0.63) | | |
| Bachelor | 785 | 2.37(0.59) | | |
| Master and above | 44 | 2.49(0.61) | | |
| Marital status | | | 4.957 | 0.007 |
| Single | 187 | 2.49(0.64) | | |
| Married | 691 | 2.34(0.58) | | |
| Divorced | 21 | 2.29(0.54) | | |
| Length of service (years) | | | 0.588 | 0.623 |
| ≤5 | 436 | 2.40(0.59) | | |
| 6-10 | 248 | 2.36(0.59) | | |
| 10-15 | 101 | 2.34(0.64) | | |

**Table 4.10 Continued**

| Variables | N | Mean (SD) | t / F | *P* |
|---|---|---|---|---|
| ＞15 | 114 | 2.34(0.57) | | |
| Title | | | 2.610 | 0.070 |
| Junior | 354 | 2.42(0.59) | | |
| Intermediate grade | 407 | 2.32(0.59) | | |
| Advanced title | 138 | 2.40(0.61) | | |
| Position | | | -0.961 | 0.380 |
| Non-position | 725 | 2.36(0.59) | | |
| Head of nurse | 174 | 2.41(0.62) | | |
| MI | | | 1.192 | 0.304 |
| ≤5000 | 79 | 2.46(0.73) | | |
| 5001-10000 | 695 | 2.36(0.57) | | |
| ＞10001 | 125 | 2.39(0.65) | | |
| WH | | | 1.374 | 0.254 |
| ≤35 | 40 | 2.50(0.67) | | |
| 35～44 | 565 | 2.38(0.55) | | |
| ＞44 | 294 | 2.34(0.67) | | |

POG: Paediatrics, Obstetrics and Gynaecology. ACC: Acute and Critical Care. MI: Monthly income (RMB). LS: Length of service(years). WH: Working hours (weekly).

### 4.4.2 Association between demographic characteristics and dimensions of coping styles

**Table 4.11**. displays the associations between demographic variables and positive coping styles, while not indicating any significant effects on negative coping styles. The analysis reveals that age (F=14.120, P=0.000), marital status (F=7.747, P=0.000), length of service (F=12.141, P=0.000), title (F=22.340, P=0.000), monthly income (F=15.630, P=0.000), and working hours (F=5.363, P=0.005) significantly influence positive coping styles. Specifically, nurses originating from high-income cities (M=3.06± 0.51) exhibit the highest positive coping scores when facing second victim experience, as compared to those from low- and middle-income cities. Nurses aged 40 years and above (M=3.16± 0.51) attain higher scores compared to their younger counterparts. Single nurses (M=2.87± 0.57) demonstrate the lowest positive coping scores among their peers. Moreover, nurses with a length of service exceeding 15 years (M=3.18± 0.51), advanced titles (M=3.22± 0.48), and monthly incomes above 10001 (M=3.02± 0.47) report the highest positive coping scores when encountering second victim experience. Lastly, working between 35 and 44 hours per week is associated with the highest positive coping scores.

**Table 4.11: Demographic characteristics and dimensions of coping styles (N=899)**

| Variables | N | Positive coping style | | Negative coping style | |
|---|---|---|---|---|---|
| | | Mean (SD) | **t / F(*P*)** | Mean (SD) | **t / F(*P*)** |
| Gender | | | -1.605 (0.109) | | 1.106 (0.269) |
| Male | 46 | 2.90 (0.47) | | 2.48 (0.55) | |
| Female | 853 | 3.00 (0.52) | | 2.39 (0.64) | |
| Age(years) | | | 14.120 (0.000) | | 1.641 (0.194) |
| ≤30 | 309 | 2.89 (0.53) | | 2.41 (0.65) | |
| 31-40 | 470 | 3.03 (0.49) | | 2.40 (0.63) | |
| ＞40 | 120 | 3.16 (0.51) | | 2.30 (0.62) | |
| Department | | | 2.140 (0.093) | | 0.187 (0.905) |
| Internal Medicine | 377 | 3.02 (0.53) | | 2.39 (0.65) | |
| Surgery | 279 | 3.00 (0.47) | | 2.38 (0.60) | |

**Table 4.11 Continued**

| Variables | N | Positive coping style | | Negative coping style | |
|---|---|---|---|---|---|
| | | Mean (SD) | t / F(*P*) | Mean (SD) | t / F(*P*) |
| POG | 126 | 3.03 (0.49) | | 2.43 (0.66) | |
| ACC | 117 | 2.89 (0.58) | | 2.39 (0.65) | |
| Education level | | | 0.478 (0.620) | | 1.443 (0.237) |
| Certification | 70 | 2.96 (0.54) | | 2.51 (0.67) | |
| Bachelor | 785 | 3.00 (0.52) | | 2.38 0.64() | |
| Master and above | 44 | 2.95 (0.44) | | 2.37 (0.58) | |
| Marital status | | | 7.747 (0.000) | | 0.837 (0.433) |
| Single | 187 | 2.87 (0.57) | | 2.44 (0.67) | |
| Married | 691 | 3.03 (0.49) | | 2.38 (0.63) | |
| Divorced | 21 | 3.10 (0.54) | | 2.42 (0.65) | |

**Table 4.11 Continued**

| Variables | N | Positive coping style | | Negative coping style | |
|---|---|---|---|---|---|
| | | Mean (SD) | **t / F(*P*)** | Mean (SD) | **t / F(*P*)** |
| Length of service (years) | | | 12.141 (0.000) | | 1.706 (0.164) |
| ≤5 | 436 | 2.91 (0.52) | | 2.40 (0.64) | |
| 6-10 | 248 | 3.00 (0.49) | | 2.43 (0.61) | |
| 10-15 | 101 | 3.15 (0.47) | | 2.39 (0.69) | |
| ＞15 | 114 | 3.18 (0.51) | | 2.27 (0.62) | |
| Title | | | 22.340 (0.000) | | 1.431 (0.242) |
| Junior | 354 | 2.89 (0.52) | | 2.39 (0.65) | |
| Intermediate grade | 407 | 3.02 (0.49) | | 2.42 (0.64) | |
| Advanced title | 138 | 3.22 (0.48) | | 2.31 (0.58) | |
| Position | | | -4.392 (0.881) | | 2.613 (0.056) |

**Table 4.11 Continued**

| Variables | N | Positive coping style | | Negative coping style | |
|---|---|---|---|---|---|
| | | Mean (SD) | t / F(*P*) | Mean (SD) | t / F(*P*) |
| Non-position | 725 | 2.96 (0.51) | | 2.42 (0.64) | |
| Head of nurse | 174 | 3.15 (0.48) | | 2.28 (0.59) | |
| MI | | | 15.630 (0.000) | | 1.899 (0.150) |
| ≤5000 | 79 | 2.69 (0.60) | | 2.46 (0.71) | |
| 5001-10000 | 695 | 3.03 (0.50) | | 2.4 (0.64) | |
| ＞10001 | 125 | 3.02 (0.47) | | 2.30 (0.58) | |
| ≤35 | 40 | 2.82 (0.57) | | 2.23 (0.64) | |
| 35～44 | 565 | 3.04 (0.49) | | 2.40 (0.61) | |
| ＞44 | 294 | 2.95 (0.55) | | 2.41 (0.67) | |

POG: Paediatrics. Obstetrics and Gynaecology. ACC: Acute and Critical Care. MI: Monthly income (RMB). LS: Length of service(years). WH: Working hours (weekly).

### 4.4.3 Association between demographic characteristics and professional quality of life

**Table 4.12** reveals the impact of gender (t= 2.058, p= 0.041) and title (F=3.940, p=0.021) on compassion satisfaction among nurses with second victim experience. The results indicate that males (3.23± 0.73) achieve higher scores in compassion satisfaction compared to females. Additionally, when comparing different job titles, nurses holding advanced titles (3.26± 0.59) attain the highest score in compassion satisfaction, surpassing those with junior and intermediate grades.

**Table 4.13** illustrates the impact of various factors on burnout among nurses who have experienced second victimization. The results indicate that Age (F= 3.524, P=0.030), Length of service (F= 3.463, P= 0.016), Title (F= 4.952, P= 0.011), and Monthly income (F=3.495, P= 0.031) significantly contribute to the experience of burnout. Specifically, individuals aged between 31 to 40 years old (3.23± 0.60) and those with a length of service between 10 to 15 years exhibit the highest scores in burnout. Conversely, junior nurses (3.14± 0.59) and those with a monthly income below 5000 demonstrate the lowest scores in burnout. Furthermore, concerning Secondary traumatic stress, males (3.34± 0.64) score higher than females, with a significant difference observed (t= 2.306, p= 0.021)

**Table 4.12: Demographic characteristics and compassion satisfaction (N=899)**

| Variables | N | CS | |
|---|---|---|---|
| | | Mean (SD) | t / F *(p)* |
| Gender | | | 2.058 (0.041) |
| Male | 46 | 3.23 (0.73) | |
| Female | 853 | 3.14 (0.59) | |
| Age(years) | | | 1.602 (0.202) |
| ≤30 | 309 | 3.09 (0.61) | |
| 31-40 | 470 | 3.16 (0.60) | |
| ＞40 | 120 | 3.18 (0.56) | |
| Department | | | 0.169 (0.918) |
| Internal Medicine | 377 | 3.13 (0.61) | |
| Surgery | 279 | 3.13 (0.56) | |
| POG | 126 | 3.18 (0.57) | |
| ACC | 117 | 3.14 (0.68) | |

**Table 4.12 Continued**

| Variables | N | CS | |
|---|---|---|---|
| | | Mean (SD) | t / F *(p)* |
| Education level | | | 1.053 (0.349) |
| Certification | 70 | 3.13 (0.65) | |
| Bachelor | 785 | 3.13 (0.60) | |
| Master and above | 44 | 3.27 (0.61) | |
| Marital status | | | 0.812 (0.444) |
| Single | 187 | 3.09 (0.66) | |
| Married | 691 | 3.15 (0.59) | |
| Divorced | 21 | 3.16 (0.52) | |
| Length of service (years) | | | 1.949 (0.120) |
| ≤5 | 436 | 3.11 (0.62) | |
| 6-10 | 248 | 3.14 (0.57) | |
| 10-15 | 101 | 3.26 (0.61) | |

**Table 4.12 Continued**

| Variables | N | CS | |
|---|---|---|---|
| | | Mean (SD) | t / F *(p)* |
| ＞15 | 114 | 3.17 (0.59) | |
| Title | | | 3.940 (0.021) |
| Junior | 354 | 3.09 (0.61) | |
| Intermediate grade | 407 | 3.14 (0.59) | |
| Advanced title | 138 | 3.26 (0.59) | |
| Position | | | -1.043 (0.152) |
| Non-position | 725 | 3.13 (0.61) | |
| Head of nurse | 174 | 3.18 (0.56) | |
| MI | | | 1.827 (0.162) |
| ≤5000 | 79 | 3.06 (0.69) | |
| 5001-10000 | 695 | 3.13 (0.59) | |
| ＞10001 | 125 | 3.22 (0.62) | |

**Table 4.12 Continued**

| Variables | N | CS | |
|---|---|---|---|
| | | Mean (SD) | t / F *(p)* |
| WH | | | 1.277 (0.280) |
| ≤35 | 40 | 3.01 (0.81) | |
| 35～44 | 565 | 3.14 (0.58) | |
| ＞44 | 294 | 3.17 (0.60) | |

POG: Paediatrics. Obstetrics and Gynaecology. ACC: Acute and Critical Care. MI: Monthly income(RMB). LS: Length of service(years). WH: WH: Working hours (weekly).

**Table 4.13: Demographic characteristics and burnout and secondary traumatic stress (N=899)**

| Variables | N | Burnout | | Secondary traumatic stress | |
|---|---|---|---|---|---|
| | | Mean (SD) | t / F *(p)* | Mean (SD) | t / F *(p)* |
| City | | | 0.229 (0.795) | | 1.030 (0.358) |
| Low Income | 216 | 3.22 (0.64) | | 3.21 (0.61) | |
| Middle Income | 337 | 3.19 (0.59) | | 3.14 (0.58) | |
| High Income | 346 | 3.20 (0.55) | | 3.15 (0.55) | |
| Gender | | | 1.777 (0.076) | | 2.306 (0.021) |
| Male | 46 | 3.38 (0.71) | | 3.34 (0.64) | |
| Female | 853 | 3.19 (0.58) | | 3.15 (0.57) | |
| Age(years) | | | 3.524 (0.030) | | 1.702 (0.183) |
| ≤30 | 309 | 3.14 (0.59) | | 3.12 (0.58) | |
| 31-40 | 470 | 3.23 (0.60) | | 3.19 (0.59) | |
| ＞40 | 120 | 3.28 (0.53) | | 3.14 (0.52) | |
| Department | | | 0.404 (0.750) | | 0.581 (0.627) |

**Table 4.13 Continued**

| Variables | N | Burnout | | Secondary traumatic stress | |
|---|---|---|---|---|---|
| | | Mean (SD) | t / F *(p)* | Mean (SD) | t / F *(p)* |
| Internal Medicine | 377 | 3.20 (0.58) | | 3.16 (0.59) | |
| Surgery | 279 | 3.18 (0.55) | | 3.13 (0.52) | |
| POG | 126 | 3.25 (0.57) | | 3.22 (0.55) | |
| ACC | 117 | 3.21 (0.70) | | 3.16 (0.70) | |
| Education level | | | 0.302 (0.739) | | 0.752 (0.472) |
| Certification | 70 | 3.23 (0.69) | | 3.17 (0.65) | |
| Bachelor | 785 | 3.19 (0.57) | | 3.15 (0.57) | |
| Master and above | 44 | 3.37 (0.63) | | 3.28 (0.54) | |
| Marital status | | | 2.650 (0.071) | | 2.172 (0.115) |
| Single | 187 | 3.12 (0.66) | | 3.09 (0.62) | |
| Married | 691 | 3.22 (0.57) | | 3.18 (0.57) | |
| Divorced | 21 | 3.29 (0.35) | | 3.04 (0.41) | |

**Table 4.13 Continued**

| Variables | N | Burnout | | Secondary traumatic stress | |
|---|---|---|---|---|---|
| | | Mean (SD) | t / F *(p)* | Mean (SD) | t / F *(p)* |
| Length of service (years) | | | 3.463 (0.016) | | 2.020 (0.110) |
| ≤5 | 436 | 3.16 (0.59) | | 3.13 (0.57) | |
| 6-10 | 248 | 3.20 (0.60) | | 3.18 (0.59) | |
| 10-15 | 101 | 3.35 (0.57) | | 3.28 (0.58) | |
| ＞15 | 114 | 3.26 (0.54) | | 3.14 (0.56) | |
| Title | | | 4.952 (0.011) | | 1.243 (0.290) |
| Junior | 354 | 3.14 (0.59) | | 3.13 (0.57) | |
| Intermediate grade | 407 | 3.21 (0.58) | | 3.17 (0.59) | |
| Advanced title | 138 | 3.32 (0.56) | | 3.22 (0.55) | |
| Position | | | -2.143 (0.232) | | -0.685 (0.187) |
| Non-position | 725 | 3.18 (0.60) | | 3.15 (0.59) | |

**Table 4.13 Continued**

| Variables | N | Burnout | | Secondary traumatic stress | |
|---|---|---|---|---|---|
| | | Mean (SD) | t / F *(p)* | Mean (SD) | t / F *(p)* |
| Head of nurse | 174 | 3.29 (0.53) | | 3.19 (0.53) | |
| MI | | | 3.495 (0.031) | | 0.977 (0.377) |
| ≤5000 | 79 | 3.08 (0.72) | | 3.07 (0.68) | |
| 5001-10000 | 695 | 3.20 (0.57) | | 3.17 (0.56) | |
| ＞10001 | 125 | 3.30 (0.55) | | 3.18 (0.59) | |
| WH | | | 0.525 (0.592) | | 0.744 (0.475) |
| ≤35 | 40 | 3.12 (0.73) | | 3.05 (0.78) | |
| 35～44 | 565 | 3.20 (0.55) | | 3.16 (0.56) | |
| ＞44 | 294 | 3.22 (0.63) | | 3.16 (0.58) | |

POG: Paediatrics, Obstetrics and Gynaecology. ACC: Acute and Critical Care. MI: Monthly income (RMB). LS: Length of service(years). WH: WH: Working hours (weekly).

### 4.4.3 Correlations among subconstructs

**Table 4.14** presents the correlations among subconstructs including second victim related stress, second victim support, positive coping style, negative coping style, compassion satisfaction, burnout, and secondary traumatic stress. It can be observed that second victim-related stress is negatively correlated with second victim support ($r = -0.10$, $p < 0.01$). Additionally, second victim support is negatively correlated with a positive coping style ($r = -0.56$, $p < 0.01$). Negative coping style shows positive correlations with both second victim-related stress ($r = 0.33$, $p < 0.01$) and burnout ($r = 0.35$, $p < 0.01$). Compassion satisfaction is negatively correlated with second victim-related stress ($r = -0.07$, $p < 0.05$) and negative coping style ($r = -0.50$, $p < 0.01$), but positively correlated with positive coping style ($r = 0.63$, $p < 0.01$). Burnout is positively correlated with second victim-related stress ($r = 0.34$, $p < 0.01$), negative coping style ($r = 0.40$, $p < 0.01$), positive coping style ($r = 0.56$, $p < 0.01$), and secondary traumatic stress ($r = 0.53$, $p < 0.01$). Lastly, secondary traumatic stress is positively correlated with all other subconstructs: second victim-related stress ($r = 0.47$, $p < 0.01$), second victim support ($r = -0.06$, $p < 0.01$), positive coping style ($r = 0.15$, $p < 0.01$), negative coping style ($r = 0.56$, $p < 0.01$), compassion satisfaction ($r = 0.25$, $p < 0.01$), and burnout ($r = 0.78$, $p < 0.01$).

**Table 4.14: The correlations among subconstructs**

| Dimension | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 1 Second victim related stress | 1 | | | | | | |
| 2 Second victim support | -0.10** | 1 | | | | | |
| 3 Positive coping style | -0.01 | -0.56** | 1 | | | | |
| 4 Negative coping style | 0.33** | -0.13** | 0.35** | 1 | | | |
| 5 Compassion satisfaction | -0.07* | -0.50** | 0.63** | 0.18** | 1 | | |
| 6 Burnout | 0.34** | -0.24** | 0.40** | 0.56** | 0.53** | 1 | |
| 7 Secondary traumatic stress | 0.47** | -0.06 | 0.15** | 0.56** | 0.25** | 0.78** | 1 |

*p < 0.05 (two-tailed), **p < 0.01 (two-tailed)

### 4.5 Reliability of the measurement model in this study

In this study, the Structural Equation Model (SEM) was used to test the mediating effect of coping style between second victim experience and professional quality of life. Reliability and validity tests are essential to assess the quality of the measurement instruments used in the model. Reliability is the consistency and stability of the measurement model. It refers to the extent to which the measurement model can produce consistent results when used repeatedly. Cronbach's alpha was used in this study. These measures assess the internal consistency of the measurement items.

#### 4.5.1 Reliability of the second victim experience and support

**Table 4.15** displays a reliability coefficient of 0.866 for this scale, with reliability coefficients for each dimension ranging from 0.854 to 0.930. These findings suggest that the research instrument and its dimensions exhibit high levels of reliability, demonstrating good stability and consistency. Furthermore, the inter-correlation values of the items, even after deletion, range from 0.385 to 0.593, indicating a strong correlation between the items.

**Table 4.15: Item-Total Statistics of second victim experience and support**

| Item | SMI | SVI | CIT | CID | DA | QC |
|---|---|---|---|---|---|---|
| SVEST1 | 54.47 | 177.223 | .492 | .881 | .854 | .866 |
| SVEST2 | 54.81 | 179.430 | .454 | .882 | | |
| SVEST3 | 54.32 | 173.082 | .593 | .878 | | |
| SVEST4 | 54.42 | 174.706 | .578 | .879 | | |
| SVEST5 | 53.95 | 171.947 | .572 | .878 | .893 | |

**Table 4.15 Continued**

| Item | SMI | SVI | CIT | CID | DA | QC |
|---|---|---|---|---|---|---|
| SVEST6 | 53.17 | 175.310 | .450 | .882 | | |
| SVEST7 | 53.36 | 172.701 | .516 | .880 | | |
| SVEST8 | 54.19 | 179.372 | .458 | .882 | .867 | |
| SVEST9 | 54.27 | 179.325 | .438 | .882 | | |
| SVEST10 | 54.40 | 179.179 | .462 | .882 | | |
| SVEST11 | 54.37 | 179.602 | .439 | .882 | .930 | |
| SVEST12 | 54.31 | 178.682 | .464 | .882 | | |
| SVEST13 | 54.26 | 178.125 | .450 | .882 | | |
| SVEST14 | 54.04 | 178.940 | .400 | .883 | | |
| SVEST15 | 54.49 | 178.647 | .487 | .881 | | |
| SVEST16 | 54.59 | 179.416 | .477 | .881 | | |
| SVEST17 | 54.37 | 180.360 | .385 | .883 | | |
| SVEST18 | 53.87 | 177.852 | .391 | .884 | .916 | |
| SVEST19 | 53.97 | 178.053 | .411 | .883 | | |
| SVEST20 | 53.65 | 174.731 | .517 | .880 | .928 | |
| SVEST21 | 53.58 | 174.212 | .518 | .880 | | |
| SVEST22 | 53.49 | 176.359 | .437 | .882 | | |
| SVEST23 | 53.36 | 176.641 | .412 | .883 | | |
| SVEST24 | 53.44 | 176.382 | .412 | .883 | | |

SVEST: The second victim experience and support tool. SMI: Scale Mean if Item Deleted. SVI: Scale Variance if Item Deleted. CIT: Corrected Item-Total Correlation. CID: Cronbach's Alpha if Item Deleted. DA: Dimension Cronbach's Alpha. QC: Questionnaire Cronbach's Alpha

### 4.5.2 Reliability of the coping style

**Table 4.16** illustrates that this scale has a reliability coefficient of 0.892, with reliability coefficients for each dimension ranging from 0.824 to 0.892. These results indicate that the research instrument and its dimensions have high levels of reliability, demonstrating good stability and consistency. Moreover, even after deletion, the inter-correlation values of the items range from 0.351 to 0.629, indicating a strong correlation between the items.

**Table 4.16: Item-Total Statistics of coping style**

| Item | SMI | SVI | CIT | CID | DA | QC |
|---|---|---|---|---|---|---|
| SCSQ1 | 52.72 | 76.433 | .537 | .887 | .915 | .892 |
| SCSQ2 | 52.61 | 75.934 | .550 | .886 | | |
| SCSQ3 | 52.54 | 76.374 | .570 | .886 | | |
| SCSQ4 | 52.58 | 76.394 | .567 | .886 | | |
| SCSQ5 | 52.89 | 76.104 | .530 | .887 | | |
| SCSQ6 | 52.94 | 75.356 | .581 | .885 | | |
| SCSQ7 | 52.68 | 75.863 | .621 | .885 | | |
| SCSQ8 | 52.84 | 74.231 | .616 | .884 | | |
| SCSQ9 | 52.66 | 76.044 | .629 | .885 | | |
| SCSQ10 | 52.57 | 76.330 | .604 | .885 | | |
| SCSQ11 | 52.85 | 75.224 | .575 | .885 | | |
| SCSQ12 | 52.66 | 76.519 | .546 | .886 | | |
| SCSQ13 | 52.86 | 75.585 | .537 | .886 | | |
| SCSQ14 | 53.81 | 76.719 | .335 | .894 | .824 | |

**Table 4.16 Continued**

| Item | SMI | SVI | CIT | CID | DA | QC |
|---|---|---|---|---|---|---|
| SCSQ15 | 53.30 | 74.302 | .537 | .886 | | |
| SCSQ16 | 53.28 | 74.923 | .515 | .887 | | |
| SCSQ17 | 53.68 | 76.536 | .407 | .891 | | |
| SCSQ18 | 53.07 | 77.325 | .351 | .893 | | |
| SCSQ19 | 53.54 | 76.189 | .390 | .892 | | |
| SCSQ20 | 52.62 | 76.577 | .469 | .888 | | |

SCSQ: Simplified coping style questionnaire. SMI: Scale Mean if Item Deleted. SVI: Scale Variance if Item Deleted. CIT: Corrected Item-Total Correlation. CID: Cronbach's Alpha if Item Deleted. DA: Dimension Cronbach's Alpha. QC: Questionnaire Cronbach's Alpha

### 4.5.3 Reliability of the professional quality of life

**Table 4.17** illustrates that this scale has a reliability coefficient of 0.949, with reliability coefficients for each dimension ranging from 0.879 to 0.882. These results indicate that the research instrument and its dimensions have high levels of reliability, demonstrating good stability and consistency. Moreover, even after deletion, the inter-correlation values of the items range from 0.636 to 0.795, indicating a strong correlation between the items.

**Table 4.17: Item-Total Statistics of professional quality of life**

| Item | SMI | SVI | CIT | CID | DA | QC |
|---|---|---|---|---|---|---|
| PQLN1 | 44.4477 | 58.052 | .782 | .944 | .882 | .949 |
| PQLN2 | 44.4833 | 58.010 | .766 | .945 | | |

**Table 4.17 Continued**

| Item | SMI | SVI | CIT | CID | DA | QC |
|---|---|---|---|---|---|---|
| PQLN3 | 44.4516 | 60.079 | .667 | .947 | | |
| PQLN4 | 44.2297 | 58.760 | .693 | .947 | | |
| PQL27 | 44.2286 | 58.530 | .669 | .947 | | |
| PQLN5 | 44.0473 | 58.618 | .638 | .948 | .879 | |
| PQLN6 | 44.2942 | 58.546 | .774 | .945 | | |
| PQLN8 | 44.3699 | 58.627 | .771 | .945 | | |
| PQLN9 | 44.5857 | 57.334 | .784 | .944 | | |
| PQLN10 | 44.2319 | 60.296 | .718 | .946 | | |
| PQLN11 | 44.5406 | 57.704 | .776 | .945 | .882 | |
| PQLN12 | 44.3593 | 57.897 | .795 | .944 | | |
| PQLN13 | 44.2959 | 59.369 | .750 | .945 | | |
| PQLN14 | 44.3966 | 59.218 | .693 | .946 | | |
| PQLN15 | 44.1546 | 60.095 | .636 | .948 | | |

PQLN: Professional quality of life scale new. SMI: Scale Mean if Item Deleted. SVI: Scale Variance if Item Deleted. CIT: Corrected Item-Total Correlation. CID: Cronbach's Alpha if Item Deleted. DA: Dimension Cronbach's Alpha. QC: Questionnaire Cronbach's Alpha



## 4.6 Exploratory Factor Analysis of the measurement model in this study

Validity in structured equation model refers to the extent to which the model accurately represents the underlying data. The process of assessing the validity of a SEM typically involves multiple steps, including exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). A split-sample technique was employed for the data analysis. The first-split sample (n=449) was used to conduct the exploratory

factor analysis, wherein the underlying factor structure was explored. Subsequently, the second-split sample (n=450) was utilized for confirmatory factor analysis to assess reliability, convergent validity, and discriminant validity of the identified factors. By using different samples, it helps prevent overfitting, as the EFA model is identified in one subset and then confirmed in the other, unseen subset and it provides a more robust test of the model's generalizability.

Exploratory factor analysis (EFA) is often used as an initial step to identify the underlying latent variables and to assess the degree of correlation between them. In EFA, the researcher identifies the number of latent factors that best explain the correlations among a set of observed variables. EFA is an exploratory technique, which means that it does not test any specific hypotheses, but rather seeks to uncover patterns in the data (Kim et al., 2011).

### 4.6.1 The second victim experience and support

The analysis conducted in this study was found to be valid with a validity coefficient of 0.880, which suggests that the data was appropriate for factor analysis. Furthermore, the Bartlett's sphericity test yielded a chi-square value of 16823.926 with $p<0.01$**(Table 4.18),** indicating presence of underlying factors that can be extracted and thus suitable for factor analysis. Communalities **(Table 4.19)** range from 0 to 1, with higher values indicating that a larger proportion of the variable's variance is accounted for by the factors. The extraction of six factors through factor analysis explained 77.551% of the total variance (**Table 4.20**), exceeding the recommended threshold of 50%. The eigenvalue curve indicated that including the first seven factors

was appropriate, as the curve became smooth from the 8th point. The rotated component matrix shows the pattern of loadings (correlations) for each dimension were greater than 0.5 **(Table 4.21),** and each item loaded on its respective originally defined dimension, indicating that no confounding of variables occurred. The rotated component matrix helps interpret the factor structure by indicating which variables are most strongly related to each factor.

**Table 4.18: KMO and Bartlett's Test of second victim experience and support tool**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .880 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 16823.926 |
| | df | 276 |
| | Sig. | .000 |

**Table 4.19: Communalities of second victim experience and support tool**

| Item | Initial | Extraction |
|---|---|---|
| svest1 | 1.000 | .707 |
| svest2 | 1.000 | .695 |
| svest3 | 1.000 | .774 |
| svest4 | 1.000 | .690 |
| svest5 | 1.000 | .770 |
| svest6 | 1.000 | .862 |
| svest7 | 1.000 | .878 |

**Table 4.19 Continued**

| Item | Initial | Extraction |
|---|---|---|
| svest8 | 1.000 | .775 |
| svest9 | 1.000 | .815 |
| svest10 | 1.000 | .789 |
| svest11 | 1.000 | .706 |
| svest12 | 1.000 | .665 |
| svest13 | 1.000 | .682 |
| svest14 | 1.000 | .748 |
| svest15 | 1.000 | .761 |
| svest16 | 1.000 | .724 |
| svest17 | 1.000 | .765 |
| svest18 | 1.000 | .924 |
| svest19 | 1.000 | .918 |
| svest20 | 1.000 | .789 |

**Table 4.19 Continued**

| Item | Initial | Extraction |
|---|---|---|
| svest21 | 1.000 | .819 |
| svest22 | 1.000 | .769 |
| svest23 | 1.000 | .807 |
| svest24 | 1.000 | .779 |

SVEST: second victim experience and support tool

**Table 4.20: Total variance explained of second victim experience and support tool**

| | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| Component | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 6.869 | 28.619 | 28.619 | 6.869 | 28.619 | 28.619 | 5.210 | 21.709 | 21.709 |
| 2 | 5.899 | 24.578 | 53.197 | 5.899 | 24.578 | 53.197 | 4.089 | 17.038 | 38.748 |
| 3 | 1.870 | 7.793 | 60.989 | 1.870 | 7.793 | 60.989 | 2.938 | 12.241 | 50.989 |

**Table 4.20 Continued**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 4 | 1.644 | 6.851 | 67.840 | 1.644 | 6.851 | 67.840 | 2.329 | 9.706 | 60.695 |
| 5 | 1.201 | 5.006 | 72.846 | 1.201 | 5.006 | 72.846 | 2.206 | 9.190 | 69.885 |
| 6 | 1.129 | 4.704 | 77.551 | 1.129 | 4.704 | 77.551 | 1.840 | 7.666 | 77.551 |
| 7 | .685 | 2.854 | 80.405 | | | | | | |
| 8 | .557 | 2.319 | 82.724 | | | | | | |
| 9 | .444 | 1.850 | 84.574 | | | | | | |
| 10 | .433 | 1.805 | 86.380 | | | | | | |
| 11 | .405 | 1.687 | 88.067 | | | | | | |
| 12 | .337 | 1.404 | 89.471 | | | | | | |
| 13 | .299 | 1.244 | 90.715 | | | | | | |
| 14 | .293 | 1.220 | 91.935 | | | | | | |
| 15 | .278 | 1.158 | 93.093 | | | | | | |

**Table 4.20 Continued**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 16 | .271 | 1.130 | 94.223 | | | | | | |
| 17 | .263 | 1.096 | 95.319 | | | | | | |
| 18 | .246 | 1.026 | 96.345 | | | | | | |
| 19 | .198 | .824 | 97.169 | | | | | | |
| 20 | .175 | .729 | 97.898 | | | | | | |
| 21 | .148 | .618 | 98.516 | | | | | | |
| 22 | .137 | .569 | 99.085 | | | | | | |
| 23 | .118 | .492 | 99.577 | | | | | | |
| 24 | .101 | .423 | 100.000 | | | | | | |

**Table 4.21: Rotated Component Matrixa of second victim experience and support**

| | Component 1 | Component 2 | Component 3 | Component 4 | Component 5 | Component 6 |
|---|---|---|---|---|---|---|
| SVEST17 | .856 | | | | | |
| SVEST15 | .850 | | | | | |
| SVEST14 | .832 | | | | | |
| SVEST16 | .827 | | | | | |
| SVEST13 | .789 | | | | | |
| SVEST11 | .782 | | | | | |
| SVEST12 | .781 | | | | | |
| SVEST21 | | .872 | | | | |
| SVEST20 | | .853 | | | | |
| SVEST23 | | .845 | | | | |
| SVEST22 | | .838 | | | | |
| SVEST24 | | .832 | | | | |
| SVEST1 | | | .807 | | | |

**Table 4.21 Continued**

| | Component 1 | Component 2 | Component 3 | Component 4 | Component 5 | Component 6 |
|---|---|---|---|---|---|---|
| SVEST1 | | | .807 | | | |
| SVEST2 | | | .802 | | | |
| SVEST3 | | | .760 | | | |
| SVEST4 | | | .757 | | | |
| SVEST6 | | | | .865 | | |
| SVEST7 | | | | .850 | | |
| SVEST5 | | | | .693 | | |
| SVEST9 | | | | | .829 | |
| SVEST8 | | | | | .793 | |
| SVEST10 | | | | | .764 | |
| SVEST18 | | | | | | .932 |
| SVEST19 | | | | | | .909 |

SVEST: Second victim experience and support tool. Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 6 iterations.

### 4.6.2 The coping styles

The analysis conducted in this study was found to be valid, with a validity coefficient of 0.916, suggesting that the data was suitable for factor analysis. Moreover, the Bartlett's sphericity test yielded a chi-square value of 8126.196 with $p<0.01$ (**Table 4.22)**, indicating presence of underlying factors that can be extracted and thus suitable for factor analysis. Communalities **(Table 4.23)** range from 0 to 1, with higher values indicating that a larger proportion of the variable's variance is accounted for by the factors. The factor analysis extracted a total of two factors **(Table 4.24)**, which explained 54.634% of the total variance, exceeding the recommended threshold of 50% and satisfying the requirements of factor analysis. The rotated component matrix shows the pattern of loadings (correlations) for each dimension were greater than 0.5 **(Table 4.25),** and each item loaded on its respective originally defined dimension, indicating that no confounding of variables occurred. The rotated component matrix helps interpret the factor structure by indicating which variables are most strongly related to each factor.

**Table 4.22: KMO and Bartlett's test of simplified coping style questionnaire**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .916 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 8126.196 |
| | df | 153 |
| | Sig. | .000 |

**Table 4.23: Communalities of simplified coping style questionnaire**

| Item | Initial | Extraction |
|---|---|---|
| scsq1 | 1.000 | .550 |
| scsq2 | 1.000 | .484 |
| scsq3 | 1.000 | .662 |
| scsq4 | 1.000 | .647 |
| scsq5 | 1.000 | .383 |
| scsq6 | 1.000 | .430 |

**Table 4.23 Continued**

| Item | Initial | Extraction |
|---|---|---|
| scsq7 | 1.000 | .669 |
| scsq8 | 1.000 | .500 |
| scsq9 | 1.000 | .640 |
| scsq10 | 1.000 | .609 |
| scsq11 | 1.000 | .512 |
| scsq12 | 1.000 | .436 |
| scsq14 | 1.000 | .500 |
| scsq15 | 1.000 | .598 |
| scsq16 | 1.000 | .574 |
| scsq17 | 1.000 | .588 |
| scsq18 | 1.000 | .404 |
| scsq19 | 1.000 | .648 |

**Table 4.24: Total variance explained of simplified coping style questionnaire**

| | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| Component | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 6.736 | 37.422 | 37.422 | 6.736 | 37.422 | 37.422 | 6.369 | 35.383 | 35.383 |
| 2 | 3.098 | 17.212 | 54.634 | 3.098 | 17.212 | 54.634 | 3.465 | 19.250 | 54.634 |
| 3 | .970 | 5.389 | 60.022 | | | | | | |
| 4 | .864 | 4.798 | 64.820 | | | | | | |
| 5 | .728 | 4.046 | 68.867 | | | | | | |
| 6 | .683 | 3.794 | 72.660 | | | | | | |
| 7 | .596 | 3.311 | 75.971 | | | | | | |
| 8 | .557 | 3.096 | 79.068 | | | | | | |
| 9 | .527 | 2.926 | 81.994 | | | | | | |
| 10 | .512 | 2.842 | 84.836 | | | | | | |
| 11 | .470 | 2.612 | 87.448 | | | | | | |

**Table 4.24 Continued**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 12 | .424 | 2.355 | 89.803 | | | | | | |
| 13 | .387 | 2.150 | 91.953 | | | | | | |
| 14 | .364 | 2.022 | 93.976 | | | | | | |
| 15 | .347 | 1.929 | 95.905 | | | | | | |
| 16 | .291 | 1.615 | 97.520 | | | | | | |
| 17 | .235 | 1.305 | 98.825 | | | | | | |
| 18 | .211 | 1.175 | 100.000 | | | | | | |

**Table 4.25: Rotated Component Matrixa of coping styles**

| | Component 1 | Component 2 |
|---|---|---|
| SCSQ7 | .817 | |
| SCSQ3 | .812 | |
| SCSQ4 | .803 | |
| SCSQ9 | .796 | |
| SCSQ10 | .779 | |
| SCSQ1 | .742 | |
| SCSQ11 | .705 | |
| SCSQ2 | .691 | |
| SCSQ8 | .668 | |
| SCSQ12 | .651 | |
| SCSQ5 | .581 | |
| SCSQ6 | .580 | |
| SCSQ19 | | .805 |

**Table 4.25 Continued**

| | Component 1 | Component 2 |
|---|---|---|
| SCSQ17 | | .765 |
| SCSQ15 | | .742 |
| SCSQ16 | | .733 |
| SCSQ14 | | .707 |
| SCSQ18 | | .634 |

SCSQ: Simplified Coping Style Questionnaire

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

### 4.6.3 The professional quality of life

CFA is the technique of parcelling the indicator items. Parcelling is a technique where items are grouped together into new variables or parcels. These parcels are then used as observed variables in the CFA analysis. The main goal of parcelling is to reduce the number of observed variables in the CFA model, which can help improve model estimation and reduce measurement error. Random parcelling was used in this scale which involves randomly grouping the items together into new variables.

The validity of this analysis was 0.940, indicating that the data were suitable for factor analysis; The Bartlett's sphericity test yielded a chi-square value of 6649.051 with $p<0.01$(**Table 4.26)**, indicating presence of underlying factors that can be extracted and thus suitable for factor analysis. Communalities **(Table 4.27)** range from 0 to 1, with higher values indicating that a larger proportion of the variable's variance is accounted for by the factors. The factor analysis extracted three factors **(Table 4.28)**, which explained 74.509% of the total variance, exceeding the recommended threshold of 50% and meeting the requirements of factor analysis. The rotated component matrix shows the pattern of loadings (correlations) for each dimension were greater than 0.5 **(Table 4.29),** and each item loaded on its respective originally defined dimension, indicating that no confounding of variables occurred. The rotated component matrix helps interpret the factor structure by indicating which variables are most strongly related to each factor.

**Table 4.26: KMO and Bartlett's test of professional quality of life scale**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .940 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 6649.051 |
| | df | 55 |
| | Sig. | .000 |

**Table 4.27: Communalities of professional quality of life scale**

| Item | Initial | Extraction |
|---|---|---|
| pql49 | 1.000 | .656 |
| pql110 | 1.000 | .696 |
| pql65 | 1.000 | .752 |
| pql27 | 1.000 | .784 |
| pql1613 | 1.000 | .755 |
| pql1714 | 1.000 | .754 |

**Table 4.27 Continued**

| Item | Initial | Extraction |
|---|---|---|
| pql1219 | 1.000 | .836 |
| pql2423 | 1.000 | .760 |
| pql2221 | 1.000 | .758 |
| pql2726 | 1.000 | .704 |
| pql2928 | 1.000 | .741 |

Pql: professional quality of life

**Table 4.28: Total variance explained of professional quality of life scale**

| | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| Component | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 6.686 | 60.779 | 60.779 | 6.686 | 60.779 | 60.779 | 2.970 | 27.001 | 27.001 |
| 2 | .839 | 7.624 | 68.403 | .839 | 7.624 | 68.403 | 2.907 | 26.427 | 53.428 |
| 3 | .672 | 6.106 | 74.509 | .672 | 6.106 | 74.509 | 2.319 | 21.081 | 74.509 |
| 4 | .552 | 5.021 | 79.530 | | | | | | |
| 5 | .458 | 4.167 | 83.697 | | | | | | |
| 6 | .380 | 3.451 | 87.149 | | | | | | |
| 7 | .366 | 3.328 | 90.477 | | | | | | |
| 8 | .330 | 3.002 | 93.479 | | | | | | |
| 9 | .273 | 2.485 | 95.964 | | | | | | |
| 10 | .238 | 2.162 | 98.127 | | | | | | |
| 11 | .206 | 1.873 | 100.000 | | | | | | |

**Table 4.29: Rotated Component Matrixa of professional quality of life**

| | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| PQLN1 | .803 | | |
| PQLN2 | .707 | | |
| PQLN3 | .702 | | |
| PQLN4 | .698 | | |
| PQL27 | | .808 | |
| PQLN5 | | .764 | |
| PQLN6 | | .701 | |
| PQLN8 | | .605 | |
| PQLN9 | | | .884 |
| PQLN10 | | | .653 |
| PQLN11 | | | .638 |

PQLN: Professional quality of life scale new. Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 6 iterations.

## 4.7 Confirmation factor analysis of the measurement model in this study

In this study, the underlying latent variables have been identified through EFA, the next step is to test the validity of the SEM through confirmatory factor analysis (CFA). In CFA, the researcher specifies a hypothesized model that includes the identified latent variables and their relationships to the observed variables. The model is then tested against the data to determine the degree to which it fits the data.

The validity can be assessed using various fit indices, which indicate how well the model fits the observed data. Common fit indices include the chi-square test, the comparative fit index (CFI), and the root mean square error of approximation (RMSEA). A well-fitting model will have a non-significant chi-square test, a CFI value close to 1.0, and an RMSEA value close to 0.05 or lower. The fit indices obtained from CFA are used to evaluate the validity of the SEM.

### 4.7.1 The second victim experience and support

**Figure 4.1** and **Table 4.30** show that the model of the second victim experience and support tool fits well, it can be used to draw conclusions about the relationships between latent and observed variables.

Based on the **Table 4.31**, all variables reached a significance level of 0.001, indicating that their coefficients were significantly different from 0. In **Table 4.32**, the factor loadings for all variables ranged from 0.753 to 0.955, exceeding the recommended threshold of 0.7. The Composite Reliability (CR) ranged from 0.853 to 0.927, also exceeding the recommended threshold of 0.7. Additionally, the average variance extracted (AVE) ranged from 0.593 to 0.850, exceeding the recommended

threshold of 0.5. These findings suggest that the parameters of the structural model met the recommended standards for internal model quality, indicating a good internal quality of the model. **Table 4.33** shows the estimates of the variance of the measurement residuals of the model latent and error variables were all positive and significant at the 0.05 level. Moreover, the estimates of the standard errors of their variances were all small, ranging from 0.027 to 0.068, indicating no model definition error. The absence of negative error variances in the estimated parameters and the small values of standard errors of error indicate good basic model fitness.

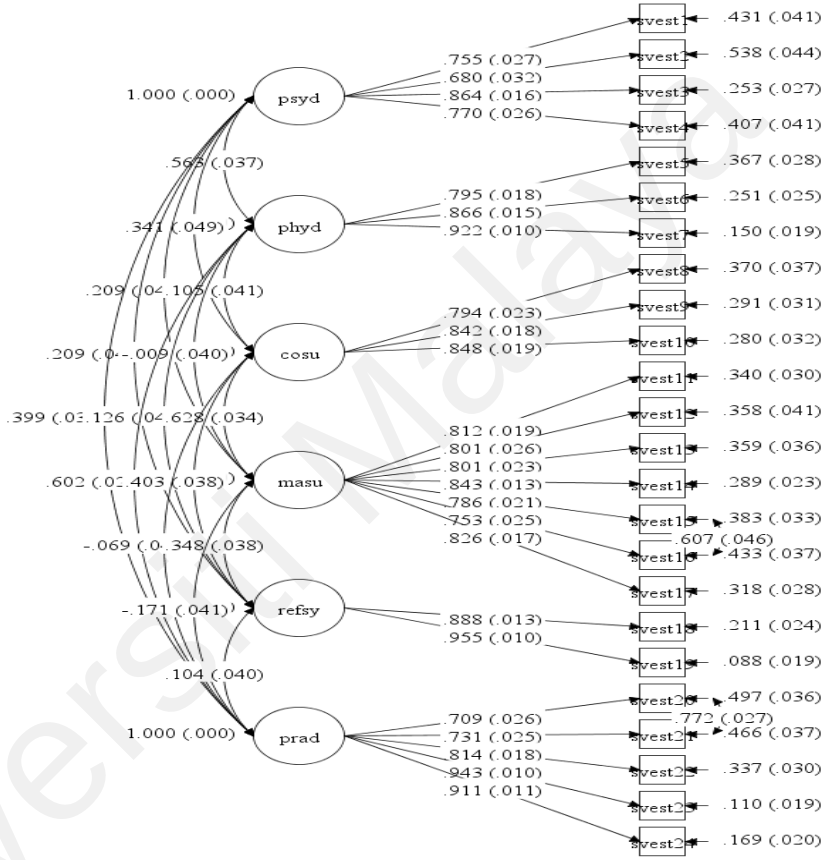



**Figure 4.1 Model of second victim experience and support tool**

**Table 4.30: God of fit of second victim experience and support tool**

| | Chi-Square | df | Chi-Square/df | RMSEA | CFI | TLI | SRMR |
|---|---|---|---|---|---|---|---|
| Standard | | | <3 | <0.08 | <0.9 | <0.9 | <0.08 |
| Model Value | 970.122 | 235 | | 0.059 | 0.935 | 0.924 | 0.057 |

**Table 4.31: Pathway analysis of second victim experience and support tool**

| | | Estimate | S.E. | Est./S.E. | P-Value |
|---|---|---|---|---|---|
| PSYD | SVEST1 | 1.000 | | | |
| | SVEST2 | 0.825 | 0.046 | 17.845 | 0.000 |
| | SVEST3 | 1.243 | 0.056 | 21.994 | 0.000 |
| | SVEST4 | 1.036 | 0.051 | 20.215 | 0.000 |
| PHYD | SVEST5 | 1.000 | | | |
| | SVEST6 | 1.115 | 0.044 | 25.109 | 0.000 |
| | SVEST7 | 1.219 | 0.043 | 28.293 | 0.000 |

**Table 4.31 Continued**

| | | Estimate | S.E. | Est./S.E. | P-Value |
|---|---|---|---|---|---|
| COSU | SVEST8 | 1.000 | | | |
| | SVEST9 | 1.109 | 0.041 | 27.272 | 0.000 |
| | SVEST10 | 1.079 | 0.050 | 21.406 | 0.000 |
| MASU | SVEST11 | 1.000 | | | |
| | SVEST12 | 1.008 | 0.033 | 30.423 | 0.000 |
| | SVEST13 | 1.077 | 0.050 | 21.707 | 0.000 |
| | SVEST14 | 1.181 | 0.046 | 25.767 | 0.000 |
| | SVEST15 | 0.951 | 0.042 | 22.571 | 0.000 |
| | SVEST16 | 0.876 | 0.042 | 21.016 | 0.000 |
| | SVEST17 | 1.069 | 0.043 | 24.907 | 0.000 |
| REFSY | SVEST18 | 1.000 | | | |
| | SVEST19 | 1.134 | 0.059 | 19.111 | 0.000 |
| PRAD | SVEST20 | 1.000 | | | |

**Table 4.31 Continued**

| | | Estimate | S.E. | Est./S.E. | P-Value |
|---|---|---|---|---|---|
| | SVEST21 | 1.057 | 0.025 | 42.595 | 0.000 |
| | SVEST22 | 1.200 | 0.048 | 24.907 | 0.000 |
| | SVEST23 | 1.436 | 0.065 | 22.111 | 0.000 |
| | SVEST24 | 1.409 | 0.063 | 22.246 | 0.000 |

PSYD: psychological stress. PHYD: Physical stress. COSU: Colleague support. MASU: Manager support. REFSY: Non-working support. PRAD: Professional stress.

**Table 4.32: Convergent validity of second victim experience and support tool**

| | | Factor loadings | R2 | Observational error | CR | AVE |
|---|---|---|---|---|---|---|
| PSYD | SVEST1 | 0.755 | 0.570 | 0.430 | 0.853 | 0.593 |
| | SVEST2 | 0.680 | 0.462 | 0.538 | | |
| | SVEST3 | 0.864 | 0.746 | 0.254 | | |
| | SVEST4 | 0.770 | 0.593 | 0.407 | | |
| PHYD | SVEST5 | 0.795 | 0.632 | 0.368 | 0.897 | 0.744 |
| | SVEST6 | 0.866 | 0.750 | 0.250 | | |
| | SVEST7 | 0.922 | 0.850 | 0.150 | | |
| COSU | SVEST8 | 0.794 | 0.630 | 0.370 | 0.868 | 0.686 |
| | SVEST9 | 0.842 | 0.709 | 0.291 | | |
| | SVEST10 | 0.848 | 0.719 | 0.281 | | |
| MASU | SVEST11 | 0.812 | 0.659 | 0.341 | 0.927 | 0.646 |
| | SVEST12 | 0.801 | 0.642 | 0.358 | | |
| | SVEST13 | 0.801 | 0.642 | 0.358 | | |

**Table 4.32 Continued**

| | | Factor loadings | R2 | Observational error | CR | AVE |
|---|---|---|---|---|---|---|
| | SVEST14 | 0.843 | 0.711 | 0.289 | | |
| | SVEST15 | 0.786 | 0.618 | 0.382 | | |
| | SVEST16 | 0.753 | 0.567 | 0.433 | | |
| | SVEST17 | 0.826 | 0.682 | 0.318 | | |
| REFSY | SVEST18 | 0.888 | 0.789 | 0.211 | 0.919 | 0.850 |
| | SVEST19 | 0.955 | 0.912 | 0.088 | | |
| PRAD | SVEST20 | 0.709 | 0.503 | 0.497 | 0.914 | 0.684 |
| | SVEST21 | 0.731 | 0.534 | 0.466 | | |
| | SVEST22 | 0.814 | 0.663 | 0.337 | | |
| | SVEST23 | 0.943 | 0.889 | 0.111 | | |
| | SVEST24 | 0.911 | 0.830 | 0.170 | | |

PSYD: psychological stress. PHYD: Physical stress. COSU: Colleague support. MASU: Manager support. REFSY: Non-working support. PRAD: Professional stress.

**Table 4.33: Model residuals of second victim experience and support**

| Variances | Estimate | S.E. | Est./S.E. | P-Value |
|---|---|---|---|---|
| PSYD | 0.610 | 0.059 | 10.335 | 0.000 |
| PHYD | 0.953 | 0.066 | 14.466 | 0.000 |
| COSU | 0.561 | 0.047 | 11.841 | 0.000 |
| MASU | 0.612 | 0.046 | 13.308 | 0.000 |
| REFSY | 1.024 | 0.078 | 13.134 | 0.000 |
| PRAD | 0.674 | 0.060 | 11.291 | 0.000 |
| SVEST1 | 0.462 | 0.049 | 9.466 | 0.000 |
| SVEST2 | 0.483 | 0.043 | 11.239 | 0.000 |
| SVEST3 | 0.320 | 0.035 | 9.139 | 0.000 |
| SVEST4 | 0.448 | 0.048 | 9.427 | 0.000 |
| SVEST5 | 0.553 | 0.039 | 14.044 | 0.000 |
| SVEST6 | 0.396 | 0.038 | 10.394 | 0.000 |
| SVEST7 | 0.250 | 0.031 | 8.168 | 0.000 |

**Table 4.33 Continued**

| Variances | Estimate | S.E. | Est./S.E. | P-Value |
|---|---|---|---|---|
| SVEST8 | 0.332 | 0.035 | 9.523 | 0.000 |
| SVEST9 | 0.283 | 0.031 | 9.120 | 0.000 |
| SVEST10 | 0.253 | 0.027 | 9.214 | 0.000 |
| SVEST11 | 0.316 | 0.029 | 10.728 | 0.000 |
| SVEST12 | 0.347 | 0.042 | 8.252 | 0.000 |
| SVEST13 | 0.397 | 0.040 | 9.813 | 0.000 |
| SVEST14 | 0.347 | 0.027 | 12.627 | 0.000 |
| SVEST15 | 0.343 | 0.030 | 11.383 | 0.000 |
| SVEST16 | 0.358 | 0.033 | 10.939 | 0.000 |
| SVEST17 | 0.326 | 0.031 | 10.432 | 0.000 |
| SVEST18 | 0.428 | 0.068 | 6.326 | 0.000 |
| SVEST19 | 0.114 | 0.025 | 4.505 | 0.000 |
| SVEST20 | 0.665 | 0.049 | 13.491 | 0.000 |

**Table 4.33 Continued**

| Variances | Estimate | S.E. | Est./S.E. | P-Value |
|---|---|---|---|---|
| SVEST21 | 0.657 | 0.052 | 12.611 | 0.000 |
| SVEST22 | 0.492 | 0.042 | 11.632 | 0.000 |
| SVEST23 | 0.172 | 0.029 | 5.988 | 0.000 |
| SVEST24 | 0.272 | 0.030 | 8.954 | 0.000 |

PSYD: psychological stress. PHYD: Physical stress. COSU: Colleague support. MASU: Manager support. REFSY: Non-working support. PRAD: Professional stress. SVEST: Second victim experience and support tool.

### 4.7.2 The coping Style

**Figure 4.2** and **Supplement Table 4.34** show that the model of the second victim experience and support tool fits well, it can be used to draw conclusions about the relationships between latent and observed variables.

Based on the **Table 4.35**, all variables reached a significance level of 0.001, indicating that their coefficients were significantly different from 0. In **Table 4.36**, The factor loadings of all variables ranged from 0.631 to 0.825, which were higher than 0.7. The CR ranged from 0.830 to 0.914, which was also higher than 0.7. The AVE ranged from 0.494 to 0.518, which was almost higher than 0.5. These results indicate that the parameters met the requirements of the structural model, which suggests good internal quality of the model. In **Table 4.37**, the estimates of the variance of the measurement residuals of the model latent and error variables were all positive and significant at the 0.05 level. The estimates of the standard errors of their variances were all small, ranging from 0.010 to 0.040, indicating that there was no model definition error. The absence of negative error variances in the estimated parameters and the small values of standard errors of error suggest good basic model fitness.

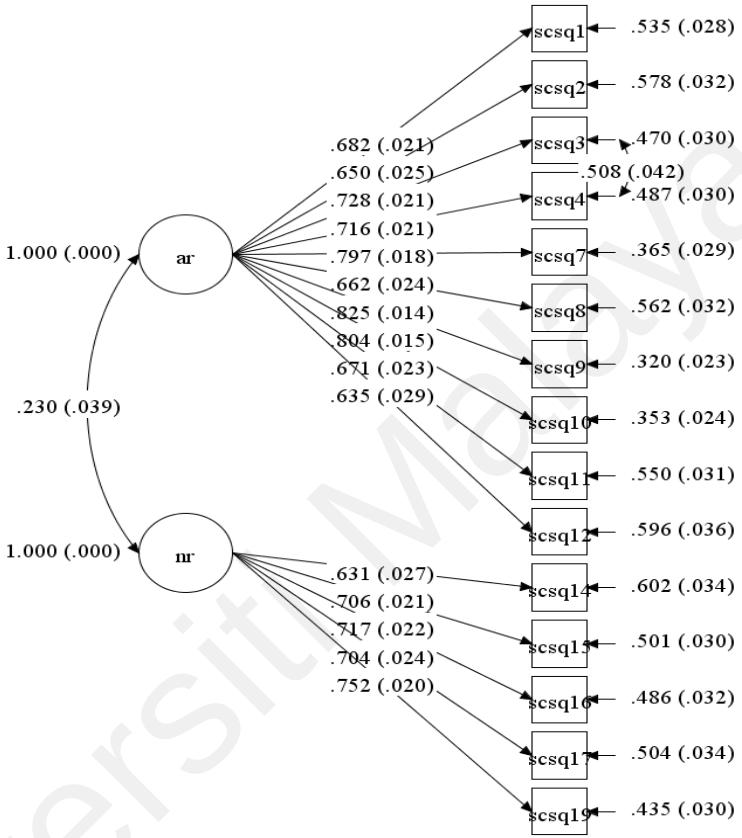



**Figure 4.2: Model of simplified coping style questionnaire**

**Table 4.34: God of fit of simplified coping style questionnaire**

| | Chi-Square | df | Chi-Square/df | RMSEA | CFI | TLI | SRMR |
|---|---|---|---|---|---|---|---|
| Standard | | | <3 | <0.08 | <0.9 | <0.9 | <0.08 |
| Model Value | 428.461 | 88 | | 0.066 | 0.922 | 0.907 | 0.059 |

**Table 4.35: Pathway analysis of simplified coping style questionnaire**

| | | Estimate | S.E. | Est./S.E. | P-Value |
|---|---|---|---|---|---|
| PC | SCSQ1 | 1.000 | | | |
| | SCSQ2 | 0.997 | 0.048 | 20.973 | 0.000 |
| | SCSQ3 | 1.023 | 0.042 | 24.268 | 0.000 |
| | SCSQ4 | 1.007 | 0.042 | 23.862 | 0.000 |
| | SCSQ7 | 1.109 | 0.046 | 23.988 | 0.000 |
| | SCSQ8 | 1.118 | 0.056 | 19.885 | 0.000 |
| | SCSQ9 | 1.108 | 0.044 | 24.906 | 0.000 |
| | SCSQ10 | 1.078 | 0.045 | 23.882 | 0.000 |
| | SCSQ11 | 1.079 | 0.048 | 22.383 | 0.000 |

**Table 4.35 Continued**

| | | Estimate | S.E. | Est./S.E. | P-Value |
|---|---|---|---|---|---|
| | SCSQ12 | 0.909 | 0.054 | 16.864 | 0.000 |
| NC | SCSQ14 | 1.000 | | | |
| | SCSQ15 | 1.019 | 0.057 | 17.980 | 0.000 |
| | SCSQ16 | 1.003 | 0.055 | 18.144 | 0.000 |
| | SCSQ17 | 0.985 | 0.056 | 17.449 | 0.000 |
| | SCSQ19 | 1.136 | 0.059 | 19.141 | 0.000 |

PC: positive coping style. NC: negative coping style

**Table 4.36: Convergent validity of simplified coping style questionnaire**

| | | Factor loadings | R2 | Observational error | CR | AVE |
|---|---|---|---|---|---|---|
| PC | SCSQ1 | 0.682 | 0.465 | 0.535 | 0.914 | 0.518 |
| | SCSQ2 | 0.650 | 0.423 | 0.578 | | |
| | SCSQ3 | 0.728 | 0.530 | 0.470 | | |
| | SCSQ4 | 0.716 | 0.513 | 0.487 | | |
| | SCSQ7 | 0.797 | 0.635 | 0.365 | | |
| | SCSQ8 | 0.662 | 0.438 | 0.562 | | |
| | SCSQ9 | 0.825 | 0.681 | 0.319 | | |
| | SCSQ10 | 0.804 | 0.646 | 0.354 | | |
| | SCSQ11 | 0.671 | 0.450 | 0.550 | | |
| | SCSQ12 | 0.635 | 0.403 | 0.597 | | |
| NC | SCSQ14 | 0.631 | 0.398 | 0.602 | 0.830 | 0.494 |
| | SCSQ15 | 0.706 | 0.498 | 0.502 | | |
| | SCSQ16 | 0.717 | 0.514 | 0.486 | | |

**Table 4.36 Continued**

| | Factor loadings | R2 | Observational error | CR | AVE |
|---|---|---|---|---|---|
| SCSQ17 | 0.704 | 0.496 | 0.504 | | |
| SCSQ19 | 0.752 | 0.566 | 0.434 | | |

PC: positive coping style. NC: negative coping style

**Table 4.37: Model residuals of coping style**

| Variances | Estimate | S.E. | Est./S.E. | P-Value |
|---|---|---|---|---|
| PC | 0.239 | 0.021 | 11.246 | 0.000 |
| NC | 0.406 | 0.040 | 10.072 | 0.000 |
| SCSQ1 | 0.274 | 0.015 | 17.810 | 0.000 |
| SCSQ2 | 0.324 | 0.019 | 17.131 | 0.000 |
| SCSQ3 | 0.221 | 0.015 | 15.128 | 0.000 |
| SCSQ4 | 0.230 | 0.015 | 15.060 | 0.000 |

**Table 4.37 Continued**

| Variances | Estimate | S.E. | Est./S.E. | P-Value |
|---|---|---|---|---|
| SCSQ7 | 0.169 | 0.014 | 12.067 | 0.000 |
| SCSQ8 | 0.383 | 0.025 | 15.092 | 0.000 |
| SCSQ9 | 0.137 | 0.010 | 14.178 | 0.000 |
| SCSQ10 | 0.151 | 0.010 | 15.515 | 0.000 |
| SCSQ11 | 0.340 | 0.022 | 15.566 | 0.000 |
| SCSQ12 | 0.291 | 0.021 | 13.595 | 0.000 |
| SCSQ14 | 0.615 | 0.035 | 17.433 | 0.000 |
| SCSQ15 | 0.424 | 0.026 | 16.209 | 0.000 |
| SCSQ16 | 0.387 | 0.026 | 14.686 | 0.000 |
| SCSQ17 | 0.401 | 0.027 | 15.104 | 0.000 |
| SCSQ19 | 0.404 | 0.029 | 13.960 | 0.000 |

PC: positive coping styles. NC: negative coping style. SCSQ: simplified coping style questionnaire

### 4.7.3 The professional quality of life

**Figure 4.3** and **Table 4.38** show that the model of the second victim experience and support tool fits well, it can be used to draw conclusions about the relationships between latent and observed variables.

Based on the **Table 4.39**, all variables reached a significance level of 0.001, indicating that their coefficients were significantly different from 0. In **Table 4.40**, The factor loadings of all variables ranged from 0.631 to 0.825, which were higher than 0.7. The factor loadings of all variables ranged from 0.666 to 0.837, which is higher than 0.7. The CR ranged from 0.823 to 0.853, which is higher than 0.7, and the AVE ranged from 0.576 to 0.593, which is higher than 0.5. These results show that all parameters meet the requirements of the structural model, indicating good internal quality of the model. **Table 4.41** displays that the estimates of the variance of the measurement residuals of the model latent and error variables were all positive and significant at the 0.05 level. The estimates of the standard errors of their variances were all small, ranging from 0.010 to 0.027, indicating no model definition error. The absence of negative error variances in the estimated parameters and the small values of standard errors of error indicate good basic model fitness.

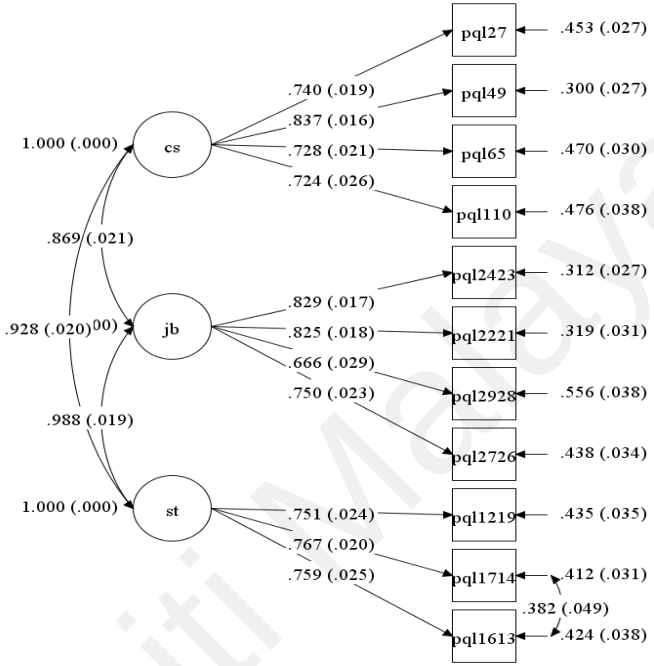



**Figure 4.3: Model of professional quality of life scale**

**Table 4.38: God of fit of professional quality of life scale**

| | Chi-Square | df | Chi-Square/df | RMSEA | CFI | TLI | SRMR |
|---|---|---|---|---|---|---|---|
| Standard | | | <3 | <0.08 | <0.9 | <0.9 | <0.08 |
| Model Value | 196.227 | 40 | | 0.066 | 0.963 | 0.949 | 0.029 |

**Table 4.39: Pathway analysis of professional quality of life scale**

| | | Estimate | S.E. | Est./S.E. | P-Value |
|---|---|---|---|---|---|
| CS | PQL27 | 1.000 | | | |
| | PQL49 | 1.065 | 0.037 | 28.545 | 0.000 |
| | PQL65 | 0.929 | 0.034 | 27.441 | 0.000 |
| | PQL110 | 0.807 | 0.043 | 18.871 | 0.000 |
| BO | PQL2423 | 1.000 | | | |
| | PQL2221 | 0.880 | 0.024 | 36.424 | 0.000 |
| | PQL2928 | 0.746 | 0.035 | 21.134 | 0.000 |
| | PQL2726 | 0.875 | 0.032 | 27.560 | 0.000 |
| STS | PQL1219 | 1.000 | | | |
| | PQL1714 | 1.353 | 0.058 | 23.265 | 0.000 |
| | PQL1613 | 1.186 | 0.047 | 25.319 | 0.000 |

CS: Compassion satisfaction.BO: Burnout. STS: Secondary traumatic stress.

**Table 4.40: Convergent validity of professional quality of life scale**

| | | Factor loadings | R2 | Observational error | CR | AVE |
|---|---|---|---|---|---|---|
| CS | PQL27 | 0.740 | 0.548 | 0.452 | 0.844 | 0.576 |
| | PQL49 | 0.837 | 0.701 | 0.299 | | |
| | PQL65 | 0.728 | 0.530 | 0.470 | | |
| | PQL110 | 0.724 | 0.524 | 0.476 | | |
| BO | PQL2423 | 0.829 | 0.687 | 0.313 | 0.853 | 0.593 |
| | PQL2221 | 0.825 | 0.681 | 0.319 | | |
| | PQL2928 | 0.666 | 0.444 | 0.556 | | |
| | PQL2726 | 0.750 | 0.563 | 0.438 | | |
| STS | PQL1219 | 0.751 | 0.564 | 0.436 | 0.803 | 0.576 |
| | PQL1714 | 0.767 | 0.588 | 0.412 | | |
| | PQL1613 | 0.759 | 0.576 | 0.424 | | |

STS: Secondary traumatic stress.

**Table 4.41: Model residuals of professional quality of life**

| | Estimate | S.E. | Est./S.E. | P-Value |
|---|---|---|---|---|
| CS | 0.337 | 0.027 | 12.687 | 0.000 |
| BO | 0.361 | 0.027 | 13.504 | 0.000 |
| STS | 0.195 | 0.023 | 8.636 | 0.000 |
| PQLN1 | 0.164 | 0.015 | 10.985 | 0.000 |
| PQLN2 | 0.199 | 0.013 | 14.867 | 0.000 |
| PQLN3 | 0.258 | 0.017 | 15.500 | 0.000 |
| PQLN4 | 0.279 | 0.019 | 14.638 | 0.000 |
| PQL27 | 0.202 | 0.019 | 10.540 | 0.000 |
| PQLN5 | 0.250 | 0.019 | 13.470 | 0.000 |
| PQLN6 | 0.150 | 0.010 | 15.382 | 0.000 |
| PQLN8 | 0.164 | 0.016 | 10.382 | 0.000 |
| PQLN9 | 0.131 | 0.012 | 11.206 | 0.000 |
| PQLN10 | 0.215 | 0.016 | 13.266 | 0.000 |
| PQLN11 | 0.252 | 0.018 | 14.216 | 0.000 |

CS: compassion satisfaction. BO: burnout. STS: secondary traumatic stress. PQLN: professional quality of life new

## 4.8 Convergent validity for the model

In this study, convergent validity was used to assess whether the observed variables that measure a latent construct are highly related to one another, as expected. Convergent validity is typically evaluated by examining the factor loadings, composite reliability (CR), and average variance extracted (AVE) for each latent variable. CR measures the degree to which the observed indicators consistently measure the same construct, while AVE measures the amount of variance in the indicators that is explained by the latent construct. **Table 4.42** shows that the CR values are above 0.7 and AVE values are above 0.5, indicating that the observed variables converge and measure the same construct. This suggests that the latent variable is being measured well by the observed indicators, providing support for the convergent validity of the structured equation model. In other words, the results of the study suggest that the variables are accurately measuring the underlying construct they were intended to measure.

**Table 4.42: Convergent validity of variables in this study**

| Dimension | CR | AVE |
|---|---|---|
| PSYD | 0.853 | 0.593 |
| PHYD | 0.897 | 0.744 |
| COSU | 0.868 | 0.686 |
| MASU | 0.927 | 0.646 |
| REFSY | 0.919 | 0.850 |
| PRAD | 0.914 | 0.684 |

**Table 4.42 Continued**

| Dimension | CR | AVE |
|---|---|---|
| PC | 0.914 | 0.518 |
| NC | 0.830 | 0.494 |
| CS | 0.844 | 0.576 |
| BO | 0.853 | 0.593 |
| STS | 0.803 | 0.576 |

PSYD: psychological stress. PHYD: Physical stress. COSU: Colleague support. MASU: Manager support. REFSY: Non-working support. PRAD: Professional stress. PC: Positive coping style. NC: Negative coping style. CS: Compassion satisfaction.BO: Burnout. STS: Secondary traumatic stress.

## 4.9 Testing the hypothesis model

The fit indices of the final model (Chi-Square/df = 4.29; RMSEA = 0.06; CFI = 0.90; TLI = 0.90), as shown in **Figure 4.4**, suggest an acceptable fit, indicating that the model adequately represents the data. The path estimates in **Figure 4.4** reveal important insights into the dynamics between second victim-related stress, coping styles, and professional quality of life. Specifically, second victim-related stress is associated with a reduction in positive coping styles and an increase in negative coping styles. Furthermore, due to the reversed scoring method of the second victim experience and support tool, a higher score indicates less support, which is found to exacerbate both positive and negative coping styles. This complex relationship suggests that second victim support—or the lack thereof—affects how individuals cope, with implications for their overall professional quality of life.

**Table 4.43** provides further clarity by showing that statistically significant effects are identified where the lower 2.5% and upper 2.5% of the bias-corrected bootstrap confidence interval (BCBCI) do not include zero. For instance, the path from second victim-related stress to compassion satisfaction has an estimated value of -0.126 (95% BCBCI -0.208 to -0.047), indicating a significant negative impact of second victim-related stress on compassion satisfaction. However, while these effects are statistically significant, it is important to critically assess their magnitude. The observed effect sizes, as reflected by the path coefficients (β), are relatively small, which suggests that although the relationships are significant ($P < 0.05$), the actual influence of these factors is modest.

For example, the indirect effect of positive coping styles on compassion satisfaction, with an estimated value of -0.044 (95% BCBCI -0.084 to -0.009), is significant but small. This indicates that while positive coping styles might paradoxically contribute to negative outcomes under the stress of second victim experiences, the actual impact is limited. This small effect size may reflect the complexity of human coping mechanisms, where positive coping strategies, though generally beneficial, might have unintended adverse effects in certain stressful situations. It also suggests that other factors, possibly unmeasured in this model, might play a more substantial role in influencing compassion satisfaction.

Similarly, in examining the relationship between second victim support and secondary traumatic stress, the total effects are not statistically significant (Estimate = -0.002, 95% BCBCI -0.102 to 0.096), which might initially suggest that support does not have a direct impact. However, a closer inspection of the direct and indirect effects

reveals a more nuanced picture. The indirect effects, particularly through coping styles, show significant negative outcomes, with estimates such as -0.096 (95% BCBCI -0.188 to -0.202) and -0.061 (95% BCBCI -0.109 to -0.006). These results imply that while the overall direct effect of second victim support on secondary traumatic stress might be minimal, the pathways through coping styles are critical in mitigating secondary traumatic stress. This finding highlights the pivotal role of coping mechanisms as mediators and suggests that interventions aimed at enhancing both positive and negative coping strategies could be essential in leveraging support to reduce secondary traumatic stress.

**Table 4.43: Bootstrap analyses of magnitude and statistical significance**

| Model pathways | Estimate | 95% BCBCI | |
|---|---|---|---|
| | | Lower 2.5% | Upper 2.5% |
| Standardized total effects | | | |
| SVRS→CS | -0.126 | -0.208 | -0.047 |
| SVRS→BO | 0.374 | 0.277 | 0.472 |
| SVRS→STS | 0.551 | 0.459 | 0.635 |
| RSVSU→CS | -0.623 | -0.698 | -0.539 |
| RSVSU→BO | -0.257 | -0.360 | -0.155 |
| RSVSU→STS | **-0.002** | **-0.102** | **0.096** |
| Standardized direct effects | | | |
| SVRS→CS | -0.101 | -0.191 | -0.022 |
| SVRS→BO | 0.257 | 0.163 | 0.344 |

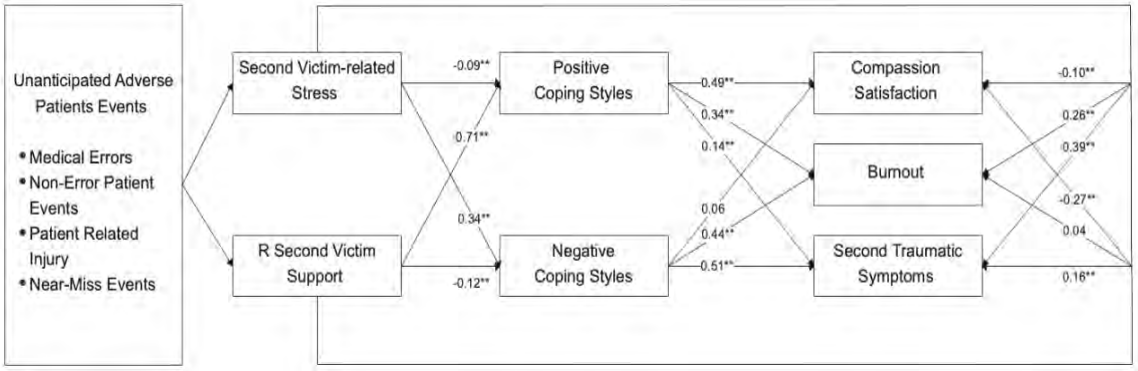
**Table 4.43 Continued**

| Model pathways | Estimate | 95% BCBCI | |
|---|---|---|---|
| | | Lower 2.5% | Upper 2.5% |
| SVRS→STS | 0.39 | 0.304 | 0.465 |
| RSVSU→CS | -0.272 | -0.405 | -0.149 |
| RSVSU→ BO | **0.038** | **-0.103** | **0.164** |
| RSVSU→STS | 0.155 | 0.033 | 0.289 |
| Standardized indirect effects | | | |
| SVRS→PC→STS | -0.012 | -0.036 | -0.001 |
| SVRS→NC →STS | 0.173 | 0.126 | 0.225 |
| RSVSU→PC→CS | -0.344 | -0.438 | -0.267 |
| RSVSU→NC→CS | **-0.007** | **-0.023** | **0.001** |
| RSVSU→PC→ BO | -0.243 | -0.340 | -0.161 |
| RSVSU→NC→ BO | -0.052 | -0.094 | -0.007 |
| RSVSU→PC→STS | -0.096 | -0.188 | -0.020 |
| RSVSU→NC→STS | -0.061 | -0.109 | -0.006 |

Note: Standardized estimating of 1,000 bootstrap resample.

SVRS, second victim-related stress; RSVSU, reversed second victim support; PC, positive coping styles; NC, negative coping style; CS, compassion satisfaction; BO, burnout; STS, secondary traumatic stress; BCBCI, bias-corrected bootstrap confidence interval.

**Bold text** refers to not statistically significant when the 95% BCBCI contains 0.




(R second victim support: items have been reversed). **p < 0.01, *p < 0.05. Model fit: Chi-Square/df = 4.29; RMSEA = 0.06; CFI = 0.90; TLI = 0.90

**Figure 4.4: Path model linking second victim experience components and coping styles with the professional quality of life**

## 4.10 Summary of quantitative results

This study conducted various statistical analyses to evaluate the relationship between social demographic characteristics of nurses and second victim experience and support, coping styles, and quality of professional life. Data management involved the detection of outliers and missing data, followed by normality testing, single-factor analysis, collinearity assessment, and multicollinearity tests. The results indicated that the data met the assumptions of normality and did not have issues with multicollinearity.

The study also assessed whether significant differences existed in the variables based on sociodemographic factors, using independent t-tests and one-way ANOVA. The reliability and validity of the instruments used in the study were also tested using various measures, including Item-Total Statistics, Rotated Component Matrix, Model residuals, and Convergent validity. The results suggested that the instruments used in the study were reliable and valid.

Finally, the study presented a comprehensive analysis of the relationships between second victim experiences, coping styles, and professional quality of life among healthcare professionals. Using Structural Equation Modelling, it examined both direct and indirect effects of key variables, including the second victim experience, coping styes, and professional quality of life. Significant findings indicate that higher scores second victim experience are positively associated with increased levels of burnout and secondary traumatic stress, highlighting the adverse impact of second victim experiences on professional well-being. Conversely, higher support is associated with a reduction in reliance on certain coping styles and lower levels of burnout, underscoring the protective role of support in mitigating the negative effects of second victim experiences. These results underscore the importance of support systems in enhancing the professional quality of life among nurses. The chapter concludes by emphasizing the need for targeted strategies to support nurses in managing the psychological impacts of second victim experiences, ultimately contributing to improved patient care and outcomes.

### 4.11 The results of the qualitative study

Th findings were explored at the qualitative research stage through semi-structured interviews of tertiary hospital nurses and nurse managers who participated in the first quantitative research stage. The themes and subthemes were analysed using the NVIVO 12 which provides a deep understanding of the results that emerged from the quantitative data, which aims to explore the factors that can influence the choice of coping style on second victim experience among nurses and the challenges they face

in dealing with second victim experience. Based on the thematic analysis yield 4 themes, and 18 subthemes. The four themes emerged in this stage: trauma exposure, personal characteristics, workplace environment, and social support systems. A more comprehensive analysis will be presented below.

### 4.12 Demographic characteristics of participants

**Table 4.44** presents the demographic characteristics of the participants in this study, including 15 participants who were from two groups: frontline nurses and nurse managers. The table shows the distribution of the participants by city, gender, age, years of working, title, department, and education level. Among the participants, 88% of the frontline nurses and 100% of the nurse managers were female. The mean age of the frontline nurses was 34±5.4, while the nurse managers had a mean age of 43±8.2. In terms of years of working, the frontline nurses had a mean of 10±7.5 years, whereas the nurse managers had a mean of 23±9.8 years. Regarding their titles, 75% of the frontline nurses had an intermediate grade title, while 86% of the nurse managers had an intermediate grade title. Additionally, most of the participants had a master's degree. Finally, the participants were distributed across various departments, with the largest proportions working in internal medicine and surgery.

**Table 4.44: Demographic details of participants (N=15)**

| Variable | Category | Frontline Nurse (N=8) | Nurse Manager (N=7) |
|---|---|---|---|
| | | N(%)/Mean ± SD | |
| City | Low Income | 1(13) | 2(29) |
| | Middle Income | 3(38) | 2(26) |
| | High Income | 4(50) | 3(43) |
| Gender | Female | 7(88) | 7(100) |
| | Male | 1(13) | |
| Age | | 34±5.4 | 43±8.2 |
| Years of working | | 10±7.5 | 23±9.8 |
| Title | Junior | 2(25) | |
| | Intermediate grade | 6(75) | 6(86) |
| | Advanced title | | 2(26) |
| Department | Internal Medicine | 3(38) | 2(26) |
| | Surgery | 2(25) | 3(43) |
| | Pediatrics, Obstetrics and Gynecology | 1(13) | |
| | Acute and intensive Care | 2(25) | 1(14) |
| Education level | Bachelor | 2(25) | 1(14) |
| | Master | 6(75) | 6(86) |

### 4.13 Themes and subthemes

This study aimed to explore personal and workplace factors that facilitate or hinder coping style among nurses who have second victim experience among. The research employed a thematic analysis of semi-structured interview transcripts, which resulted in four main themes and twelve subthemes that are illustrated in **Table 4.45**. The four main themes that emerged from the analysis were Source of emotional trauma, Personal factors, workplace environment, and support systems. Each theme was further divided into subthemes, providing more specific information on the factors that serve as facilitators and barriers in coping with second-victim experiences among nurses from both nurse and nurse manager perspectives.

**Table 4.45: Themes and subthemes of factors that can influence the choice of coping style on second victim experience among nurses**

| Themes | Subthemes |
|---|---|
| Theme 1. Source of emotional trauma | 1.1 Patients' consequence |
| | 1.2 Response of patients' relatives |
| Theme 2. Personal factors | 2.1 Personality |
| | 2.2 Health and Well-being |
| | 2.2.1 Mental health symptoms |
| | 2.2.2 Physical symptoms |
| | 2.2.3 Occupational effects |
| | 2.2.4 Long-term effects |
| | 2.3 Mental health literacy |

**Table 4.45 Continued**

| Themes | Subthemes |
|---|---|
| Theme 3. Workplace environment | 3.1 Workload and job stress |
| | 3.2 Ineffective management |
| | 3.3 Organizational culture barriers |
| | 3.3.1 Inadequate awareness |
| | 3.3.2 Responsibility avoidance |
| | 3.3.3 Punishment effects |
| Theme 4. Support system | 4.1 Supportive network of colleagues |
| | 4.2 Continuous professional development |
| | 4.3 Availability of referral resources |
| | 4.4 Family and community support |

### 4.13.1 Source of emotional trauma

When nurses suffer from the second victim experience, they may be exposed to direct or indirect trauma that can significantly impact their psychological well-being and coping styles. Direct trauma exposure refers to the different patient consequences that can act as sources of emotional trauma for nurses, while indirect trauma exposure refers to the response of patient's relatives, and both can significantly impact their coping styles.

#### 4.13.1.1 Patients' consequence

The consequences of adverse events for the patient can greatly impact the emotional well-being of the nurse involved. For example, if the adverse event results in a near

miss or a less severe outcome, the nurse remains experience emotional distress due to the potential for harm. Alternatively, if the adverse event results harm or caused death to the patient, the nurse will experience feelings of guilt, shame, and grief. They may also experience anxiety or fear about potential legal or professional consequences.

*NL02: Oh man, it's because their blood pressure is sky high! That can make it more likely for their blood vessels to start bleeding, and then, er… the patient told me, uncomfortable and crappy, you know what I mean? It's so dangerous…If it is not dealt with in time, the consequences will be disastrous.*

*NL04: That is, er, it's a patient who left the hospital. Then after leaving the hospital, the patient took extreme and extreme action, suicided…Then, the processing of such a thing. Because of the last matter, it was a legal procedure for him to go through. In this end, our hospital will pay compensation... At the same time, the medical staff were also punished, and we were not at fault. The psychological impact on our entire team is very large...*

#### 4.13.1.2 Response of patients' relatives

The response of patients' relatives can also have a significant impact on the emotional well-being of the nurse involved. Patient's relatives espond in various ways, including hostility, blame, denial, or lack of cooperation. These responses can increase the nurse's stress and emotional distress, leading to feelings of anger, resentment, and burnout. Alternatively, if patients' relatives respond with support and empathy towards the nurse, it can help alleviate their emotional distress.

*RN03: We went to change it, but the family knew about it and suspected that it was a problem with the medication, so they withheld the bottle of water for a while, and after that, they kept the bottle of water, thinking that it would be used as evidence in court, so that if the patient had any accidents or adverse consequences, they would come to us for trouble.*

*NL05: The family, in fact, had similar views to his, that is, they didn't understand, and then the family couldn't understand, and the family was also very anxious and didn't understand all kinds of things, Er… like Can't listen to the explanation, very angry.*

*NL02: It is, you know, the family members who are very grateful for the incident handled by our nurse. She said, because of this, he said that it is not a one-time or two-time thing, er… to fall, when at home, but as us, the medical staff helped her deal with it so hard. wound, they felt that this matter was dealt with in a timely manner and in place…Still wrote us a thank you letter.*

### 4.13.2 Personal factors

It refers to individual traits, experiences, abilities, and attributes that influence how a nurse copes with second victim experience.

#### 4.13.2.1 Personality

Personality can influence how nurses cope with second victim experience. Sensitivity lead to increased emotional distress. Extroversion lead to seeking social support. Positive thinking can help nurses find meaning and purpose in their work, contributing to well-being.

*RN07: Both, having worked for over ten years, but I'm just a relatively sensitive and fragile person at heart, just because of the way I deal with this, it can be very impressive in my mind.*

*RN02: I'm also the kind of person who can't keep things to myself, I just talk a lot, and I would say the first thing I would do is to talk to someone, someone I'm good with, is to talk to them.*

*RN05: I was definitely shocked, and I have learned a lesson from this incident, so I will not handle this pipeline problem recklessly again. In the future, I will take the initiative to ask the seniors to take a look at any problem that I think I am not sure about, or any problem of this kind.*

*NL02: After all these years, it is a constant warning. We have been warned about this fall, so, in fact, this is something that has happened. For my nurse, it's a special reminder to pay attention to safety.*

#### 4.13.2.2 Health and well-being

It refers to the physical, mental, and emotional health can all impact how nurses cope with second victim syndrome following adverse events.

**Mental health symptoms**

When nurses go through the second victim experience, it can really mess with their heads and make them feel all sorts of emotions. They might fear getting punished, feel ashamed of themselves, and even be guilty of what happened to the patients.

*RN07: Um... After the incident, but er... There was, at the time, a lot of nerves, and although the medication hadn't been administered, the family found out that there was*

*a problem with the bottle label……It's just, you know, the family can be overly worried or exaggerate, and when I'm wrong, it's really aggravating and scary and helpless.*

*NL02: When my nurse found out, she was very anxious, and then, when this kind of adverse event happened, it was still really very nervous and frightening for us nurses, and that nurse had been working for 6 years, and she was still very frightened at first.*

**Physical symptoms**

In addition to psychological symptoms, the second victim experience can also result in physical symptoms among nurses, referring to bodily sensations.

*RN04: Would go on about what was posted yesterday, like sometimes spilling the beans to a colleague, was literally just sitting on the floor crying ah. Sometimes, sometimes sitting on the bed without moving, can really sit for 12 hours without eating or drinking*

*NL02: For example, one of our adverse events, for our nursing staff, happened to a colleague on the evening shift, who sometimes dreamt about it that day, had nightmares and was in a hurry.*

**Occupational symptoms**

Occupational symptoms associated with second victim syndrome include feelings of exhaustion, job dissatisfaction, and even considering a career change.

*RN02: Er... After the work is also still a bit affected, maybe sometimes I may doubt this work of this this this this, what is my value, I obviously is to complete the process, I am not wrong, and then you on the contrary after the incident, I must face these things, will be on their own value of work there is a is to deny it.*

*NL03: Eventually, for a while, I did notice that she was kind of wandering around at work, and she would slowly tell her partner that she was sorry for the patient. Then she said she wasn't right for the position..... She mentioned resigning later. She wrote her resignation letter anyway, and it was a bunch.*

**Long term effects**

The long-term effects of second victim experience on nurses can be significant and include unresolved anger, persistent feelings of distress, and even insomnia. Nurses who have experienced adverse events carry the emotional burden of these events for years, causing them to feel angry and upset even when discussing the events years later.

*RN05: At that time, it was about, like, a couple of years, 13 years or so, about 10 years ago, and I am still really so angry, every time I mentioned it, and then people were probably mainly complaining, oh my God...how could I meet such a person?*

*NL02: But, that long process is really completely insomnia, that is the bad event for her to cause this kind of damage, she said she now until now, this should also have nearly 2 ~ 3 years, and then, this event for her this life is really to be engraved in the heart, and, so painful for that period of time back, back after afraid to mention to anyone to talk about.*

**4.13.2.3 Mental health literacy**

The ability to understand and follow guidelines and protocols related to second victim experience. It includes understanding the signs and symptoms of mental health conditions, knowing how to seek help for oneself or others, and recognizing the importance of wellness.

*RN06: Every time, well, it's that adverse events happen, then we must be summing up the causes, and at the same time we must be saying that we must strengthen our own work, which aspects of our own things, is more positive or will we strengthen a little to face the problem, how to better prevent, deal with patients.*

*NL05: You analyze it, you analyze it all, you do it all, and the next time he'll know how, yeah…How to understand this matter. I'm going to handle it, how I'm going to do it. I'm not going to be passive, and I'm going to be proactive... Especially, I can accept myself as a nurse, and I also need to seek help.*

### 4.13.3 Workplace environment

The physical and psychological conditions of the work setting that can affect their ability to cope with and respond to second victim experience, including organizational culture, job demands, and workload.

#### 4.13.3.1 Workload and job stress

The type and level of stress experienced in the workplace can impact a nurse's choice of coping style. For example, high levels of job stress lead to maladaptive coping strategies, such as substance abuse or avoiding the stressor

*RN01: Some time ago, because of the lack of manpower and the seriousness of the patient's condition, during the New Year, there were more unplanned extubation, for example, and there was a faster rotation of patients, so we often had to do this more in terms of links and records.*

*NL04: There is still time. It must be done, for example, in our late-night shift during holidays, especially when there is no one to stare at or shout during holidays, this time is most likely to happen.*

#### 4.13.3.2 Ineffective management

It refers to a situation where the management fails to provide adequate resources, support, and guidance to nurses in dealing with adverse events.

*RN07: Report to the head nurse, um, and then the head nurse will report to the head nurse, uh... Oral reports and online reports will be carried out, and sometimes it may not go well, or it may be like a dispute with the patient, uh, this Some, there will be a judgment, and then it will be tracked according to the process of adverse events in the hospital, and then uh...the last feedback, and then analyzed and discussed at the quality control meeting. Sometimes it is PPT, er..., PPT to explain, and then, er, all the nurses in the whole department.*

*RN01: To report adverse events, you must do courseware and PPT, and all subjects should report. This matter will be more stressful for everyone... It will increase the workload, it feels a bit like doing self-examination, and everyone will be very stressful about the report for a while.*

*NL01: During the discussion, he may not be so deep, that is, he did not find the fundamental reason, because recently, we have had several cases today, and it is also like this. In fact, I also reported it to the director. It happened twice, we didn't remove the root for this fundamental reason, and we didn't analyse it.*

#### 4.13.3.3 Organizational culture barriers

The cultural factors within the healthcare organization that hinder the ability of nurses to report or manage adverse events effectively.

**Inadequate awareness**

A lack of knowledge or understanding of the factors that contribute to the effects of second victim experience leads to an increase in the risk of adverse events and impedes effective management of adverse events when they occur.

*RN02: I think this thing is to be overcome by the individual, it depends on the individual's face, because our department is really bad, and I'm going to complain about our department again, because it's really too busy, and there are few staff…*

*NL03: Regardless of whether there are consequences or not, it really feels like an adverse event, and an adverse event is that I did not do well.*

**Responsibility avoidance**

A nurse or healthcare provider avoids taking responsibility for adverse events that occur under their care.

*RN04: If it's not his fault or more of the fault is the other party's rather than his, then the damage to his mental health may be slightly greater. But if it was his fault that caused this bad incident, if you still think he is such a victim, does he think that this fault can be magnified next time? I personally think so.*

*NL07: This person will be lazy. After a long time, you will feel, "Oh! Anyway, if I make a mistake, the head nurse can help me solve it, and others can solve it.*

**Punishment effects**

Negative consequences that result when healthcare providers are punished or penalized for errors or adverse events.

*RN03: In fact, at that time, I felt that when the penalty was imposed, whether there were rules and regulations for the penalty, it felt a little unfounded, just follow your department! and Nursing Department thoughts.*

*NL01: It seems that no one would object to the punishment, and he said that he would repeatedly rectify and continue to improve, because this repeated cycle, because of his personal experience, he felt very tired, and then, what should he do? I said that of course I must be responsible, so I must bear this responsibility. I am an adult, and I must bear this responsibility. I said that it is 2000 yuan, no problem. Then, he said that we are all fine.*

### 4.13.4 Support systems

Support systems can play a critical role in how nurses cope with second victim experience, and it refer to networks of individuals, groups, and organizations that provide emotional, practical, and informational support to nurses.

#### 4.13.4.1 Colleague network

A colleague network for nurses who have second victim experience refers to a group of colleagues who can provide support to the nurse after experiencing an adverse event. This support can come in the form of practical advice, emotional support, or both.

*RN07: The support of the head nurse and the doctor, for example, the doctor went to help the patient, and after explaining and apologizing together, the attitude of the patient eased up. My, this emotion, this nervous anxiety, this helpless emotion, There is a noticeable decline.*

*NL02: Because everyone really puts their minds in one place, and really puts their energy together. It can be said that every time, no matter which nurse encounters any problems, or even anything in the department, everyone will deal with it as a whole. face, no one thought it had nothing to do with me, no..*

#### 4.13.4.2 Continuous professional education

It refers to ongoing education and training that nurses can receive to improve their skills and knowledge related to reviewing and discussing adverse events. Such education can help nurses gain a better understanding of what happened during the event, why it happened, and how it can be prevented in the future.

*RN04: So, for this situation, as a nurse, I mean, I hope he can guide me in the future, when I encounter such accompanying family members, guide nurses on how we should skillfully resolve this conflict*

*NL01: If the nurses involved in my case are concentrated on a few people, then it must be a human problem. Is it related to people? If so, we must analyze his age? Its seniority? And how is he working normally? His knowledge structures. Like these things, business level? Like these places, or the status of a job where he works*

#### 4.13.4.3 Availability of referral resources

The presence of adequate and appropriate resources is essential to help nurses effectively manage and cope with the second victim experience. it is critical for nurses is time. Adequate time allows nurses to properly attend to their patients, perform necessary tasks, and take time for self-care and reflection. Time can also be crucial for nurses to process their emotions and feelings related to adverse events and receive

support from colleagues, managers, or mental health professionals. Mental health services are also a crucial resource for nurses. These services can provide nurses with counselling and support to help them deal with the emotional toll of adverse events. Mental health services include individual or group counselling, access to mental health professionals, and peer support groups.

*RN04: Now the director has changed the policy and strategy, I think it is very good... If I want to take two or three days off in the future, I just need to adjust it, or take a break, it is all okay*

*NL03: During the rest time, she didn't want to go to see a doctor either, or we would accompany her to see a doctor later... After talking with the director, I also talked to a few members of our nursing core team about this matter. Everyone also feels that since we have been protecting her and helping her*

#### 4.13.4.4 Family and community support

The Family members and the community can play an important role in supporting nurses who are experiencing the second victim phenomenon. One way that family members can help is by providing emotional support and a safe space for nurses to process their emotions and feelings. This include listening to the nurse's concerns, providing words of encouragement, and offering practical support, such as help with household chores or childcare responsibilities. Community support can also be critical in helping nurses cope with the second victim experience. This includes support from colleagues, managers, and other healthcare professionals, as well as access to counselling services or other mental health resources.

*RN08: But in the end, I still face it by myself. Of course, my family has always supported me. Even if they don't study medicine, they are not very capable. They are very clear about the whole process, but they will accompany me. Basically, I don't need to do any housework at all.*

*NL06: Then there was a mother in the same training class, who was actually not very familiar with me, but she was very enthusiastic. She called me and asked where I was, but she didn't answer the phone, and then because I went back suddenly The department handled that incident, so our cub was left alone, and then he took it to his home, brought it to me after eating, and then sent it to the department*

**4.14 Summary of qualitative results**

This study included demographic information for the participants, including city income, gender, age, years of working, job title, department, and education level. Furthermore, this study explored exploring personal and workplace factors that facilitate or hinder coping styles for second victim experiences, from the perspectives of both frontline nurses and nurse managers. The study identified four main themes and several subthemes related to emotional trauma, personal factors, workplace environment, and support systems. In theme one, the study found that patients' consequences and the response of patients' relatives were sources of emotional trauma. Theme 2 focused on personal factors, such as personality, mental health symptoms, physical symptoms, and long-term effects. Mental health literacy was also found to be important. Theme 3 highlighted the importance of the workplace environment, including workload, job stress, ineffective management, and organizational culture

barriers. Inadequate awareness, responsibility avoidance, and punishment effects were subthemes within the organizational culture barriers.

Finally, Theme 4 emphasized the importance of a support system that includes a supportive network of colleagues, continuous professional development, availability of referral resources, and family and community support.

# CHAPTER 5: DISCUSSION

## 5.1 Introduction

This chapter explores the self-reported second victim experience, coping styles, and professional quality of life among nurses. It investigates the association between demographic characteristics and various variables within the study, aiming to assess the mediating effects of coping styles. To comprehensively analyse the research questions and objectives, the chapter examines a range of personal and workplace factors that either facilitate or hinder coping styles in second victim experiences. These factors are pivotal in understanding the coping strategies employed by nurses when faced with challenging situations, and in identifying the aspects that support or impede their ability to cope effectively.

Additionally, the integration of both quantitative and qualitative study results provides a well-rounded perspective and a more comprehensive understanding of the subject matter. By combining these two methodologies, the study aims to capture a broader range of experiences and gain deeper insights into the multifaceted aspects of coping styles among nurses who have encountered the second victim experience.

## 5.2 Self-reported second victim experience among nurses

The total mean score in this study, indicating a moderate level of second victim experience and support. These findings suggest that nurses, on average, experience a considerable degree of distress and require support following adverse events. Researches indicate that approximately 50% of all healthcare providers reported the second victim experience at least once during their professional careers. (Coughlan et

al., 2017; White & Delacroix, 2020). However, it is crucial to interpret it, as the ongoing COVID-19 pandemic has placed an unprecedented strain on healthcare systems and personnel worldwide (Preti et al., 2020; Raudenská et al., 2020). The COVID-19 pandemic has created unique challenges nurses, with increased workloads, limited resources, and heightened exposure to the virus(Baskin & Bartlett, 2021). These factors can exacerbate the second victim experience, leading to higher levels of stress and lower levels of support. Therefore, while the mean scores obtained in this study indicate a moderate level of second victim experience and support, it is important to recognize that the current global situation may contribute to more severe second victim experiences among nurses compared to non-pandemic periods (Thompson et al., 2022).

Among the sub-domains of the Second Victim Experience and Support Tool, the highest mean score was found for psychological stress. This finding highlights the significant impact of adverse events on the mental well-being of nurses. The experience of being a second victim can lead to a range of psychological responses, including feelings of guilt, self-doubt, anxiety, and depression (McDaniel & Morris, 2020). These emotional and psychological stressors can have long-lasting effects on nurses' mental health and overall well-being. Nurses have been at the forefront of the healthcare response, witnessing significant patient suffering and death, and experiencing fear and uncertainty related to their own health and that of their loved ones (Akkuş et al., 2022). Moreover, the ethical dilemmas and moral distress arising from resource allocation decisions and providing care under challenging

circumstances have added to the psychological burden faced by nurses (Lake et al., 2022).

The findings emphasize the urgent need for healthcare organizations to prioritize mental health support services and interventions for nurses worldwide. Recognizing the psychological toll of second victim on nurses is essential for developing effective strategies to address their mental health needs (Busch et al., 2021). Healthcare organizations should provide access to mental health resources, such as counselling services, psychological support programs, and debriefing sessions, to help nurses cope with the psychological impact of second victim experience (Marran, 2022). These interventions should focus on building resilience, developing healthy coping mechanisms, and destigmatizing seeking help for mental health concerns (Connors et al., 2020). Additionally, promoting a culture of psychological safety, where nurses feel comfortable discussing their emotions and seeking support, is crucial in reducing the psychological stress associated with the second victim experience (Habibzadeh et al., 2020). Moreover, it is important for organizations to implement preventive measures and create supportive work environments to mitigate the occurrence of second victim experience and minimize their impact on nurses' mental well-being.

The mean scores for physical stress and professional stress among nurses experiencing second victim phenomena were notable in this study. These findings highlight the tangible consequences that adverse events have on the physical and professional well-being of nurses. Extended work hours, inadequate rest, and exposure to infectious diseases have become common challenges faced by nurses worldwide (Torbenson et al., 2021). The COVID-19 pandemic has necessitated rapid adaptations

in healthcare protocols and guidelines, creating a dynamic and challenging work environment for nurses (Marran, 2022). The fear of making mistakes, concerns about personal and patient safety, and the emotional toll of witnessing significant patient suffering in second victim experience have all contributed to the professional stress experienced by nurses (White & Delacroix, 2020). The evolving nature of the pandemic and the uncertainty surrounding it further exacerbate the professional stressors faced among nurses with second victim experience (Huanhuan Huang et al., 2020).

Considering these findings, healthcare organizations need to prioritize comprehensive support systems that address the physical and professional well-being of nurses in second victim experience (Mok et al., 2020). It is crucial for organizations to recognize the additional burden imposed by the current global circumstances. Strategies should be implemented to mitigate physical stress aftermath adverse events, such as ensuring adequate staffing levels, providing opportunities for rest and recovery, and implementing measures to prevent and manage second victim experience (Bleazard, 2019). Moreover, addressing professional stress in second victim experience requires organizational support and resources. This includes clear communication channels, access to up-to-date information and guidelines, opportunities for professional development and training, and initiatives that promote well-being in the workplace (S Miller et al., 2019).

The findings of this study regarding the relatively low level of colleague support reported by participants align with previous research. The presence of systemic barriers or a lack of awareness among colleagues regarding the importance of

providing support to second victims may contribute to the limited colleague support reported in these studies (Christoffersen et al., 2020; Mohamadi-Bolbanabad et al., 2019). Moreover, there be organizational or cultural factors that discourage open discussions about second victim experience and inhibit the establishment of supportive environments (White & Delacroix, 2020). These findings highlight the importance of raising awareness among nurses about providing support to their colleagues who have second victim experience (Connors et al., 2020). It is crucial to foster a culture of support, empathy, and open communication within healthcare organizations to ensure that second victims receive the necessary assistance and validation. Future interventions and policies aimed at improving colleague support should focus on education and training programs to enhance colleagues' understanding of the second victim phenomenon and equip them with the necessary skills to provide effective support. Creating safe platforms for knowledge sharing, peer mentoring, and debriefing sessions for second victim experience can also contribute to a supportive environment that encourages colleague support and enable nurses to learn from each other's experiences (Steven et al., 2023).

The findings of this study indicate that managers play a more active role in providing support to nurses who are suffering from second victim experience compared to colleagues. This finding is consistent with previous studies, where participants reported higher levels of support from their immediate supervisors or managers. it highlights that managers have a crucial role in supporting nurses who have second victim experience (Marran, 2022). However, there is room for improvement in enhancing managerial support to better meet the needs of nurses in second victim

experience (Mohamadi-Bolbanabad et al., 2019). To enhance managerial support for second victim experience, it is essential to implement supportive policies and establish training programs for managers. Training programs can equip managers with the necessary skills and knowledge to effectively respond to and support nurses in second victim experience. These programs can focus on building empathy, active listening, and providing appropriate resources and referrals for mental health support.

The findings of this study regarding the relatively low level of non-working support highlight that nurses often experience a lack of support from sources outside of their workplace, including family, friends, or support networks. The lack of support from external sources can further compound the emotional burden and stress from second victim experience, making it crucial to address this issue. Recognizing the importance of family support aligns with the recommendations put forth by the World Health Organization (2020) in their guidelines for the mental health and psychosocial support of nurses during the COVID-19 pandemic. The WHO emphasizes the need to involve families in support programs and interventions, acknowledging the potential benefits of family involvement in promoting the well-being of nurses. Different individuals may have varying levels of support from their family, friends, or support networks, indicating that there is no one-size-fits-all solution (Mok et al., 2020). This highlights the importance of developing personalized support strategies that take into account the unique needs and circumstances of each nurse with second victim experience (Finney, 2021). Targeted interventions to improve non-working support systems can involve various approaches (Morales & Brown, 2019; Ozeke et al., 2019). Educating and raising awareness among family members, friends, and support networks about the

challenges faced by second victim experience can help foster understanding and empathy.

In conclusion, the findings of this study reveal moderate levels of second victim experiences and support among nurses. The presence of psychological, physical, and professional stressors underscores the comprehensive challenges faced by nurses. The comparison with existing research worldwide highlights the global nature of limited support for nurses who have second victim experience. Enhancing colleague support, manager support, and non-working support are crucial areas that require attention to provide comprehensive support to nurses.

### 5.3 Self-reported coping styles among nurses with second victim experience

In this study, the findings indicate that nurses who have second victim experience exhibit a higher mean score for positive coping styles compared to negative coping styles. These results align with previous research that suggests nurses tend to utilize positive coping styles to deal with the challenges.

Researchers found that nurses commonly employ positive coping strategies (Busch et al., 2020), such as seeking social support, engaging in problem-solving, and using positive reframing techniques. These strategies enable nurses to effectively navigate the emotional and psychological impacts of second victim experience, fostering resilience and enhancing emotional well-being (Xu et al., 2022). The utilization of positive coping styles can also contribute to effective adaptation to stressful situations. Nurses who engage in problem-solving and seek social support are more likely to actively address the challenges they encounter and access the resources necessary for

recovery and growth (Sastrawan et al., 2019). Additionally, adopting a positive reframing approach enables nurses to reinterpret and find meaning (Munroe et al., 2022), in their second victim experience to leading to a sense of empowerment and personal growth.

However, the presence of negative coping styles among nurses with second victim experiences indicates the need for further support and interventions. Negative coping styles, including avoidance, denial, and self-blame, may offer temporary relief but can hinder long-term emotional healing and recovery (Stovall et al., 2020). These maladaptive coping styles may result from the overwhelming nature of adverse events and the emotional burden associated with them. To address negative coping styles, interventions should focus on providing education and resources to help nurses develop healthier coping strategies (Edrees & Wu, 2021). A previous study in support program, researchers  demonstrated the effectiveness of interventions such as peer support groups in promoting positive coping styles and reducing negative coping styles (El Hechi et al., 2020). These interventions provide nurses with the necessary tools and support to navigate the challenges of second victim experience, promote self-care, and enhance their overall well-being.

The findings of this study and previous research indicate that nurses with second victim experiences tend to employ more positive coping styles compared to negative coping styles. Positive coping styles contribute to resilience, enhance emotional well-being, and facilitate effective adaptation to stressful situations. However, the presence of negative coping styles emphasizes the importance of further support and interventions to address maladaptive coping styles. Healthcare organizations should

provide education, resources, and a supportive work environment to promote positive coping styles and mitigate the impact of negative coping strategies among nurses (Moran et al., 2020).

### 5.4 Self-reported professional quality of life among nurses with second victim experience

The findings of the study shed light on the complex professional quality of life experienced by nurses with second victim experience. While nurses reported relatively high levels of compassion satisfaction, indicating a sense of purpose and fulfilment derived from helping patients, they also reported high levels of job burnout and secondary traumatic stress.

Compassion satisfaction is a crucial aspect of nurses' professional quality of life, as it reflects the positive outcomes and rewards associated with their caregiving role (Wang et al., 2020). The high mean score for compassion satisfaction suggests that nurses derive satisfaction from their work and experience a sense of fulfilment in making a positive impact on patients' lives. This finding is consistent with previous research emphasizing the intrinsic rewards and satisfaction derived from nursing care (Xie et al., 2021). Maintaining high levels of compassion satisfaction is important for nurses' well-being and can contribute to their overall professional quality of life.

However, the study also revealed high levels of job burnout among nurses with second victim experience. Job burnout encompasses physical, emotional, and mental exhaustion resulting from chronic work-related stressors. Nurses often face emotionally challenging situations, such as witnessing patient suffering and dealing

with emergencies, which can contribute to the development of burnout (Alharbi et al., 2020). The high mean score for job burnout in this study indicates that nurses with second victim experience may be at risk of experiencing significant burnout. Addressing the factors contributing to burnout, such as workload, work-life balance, and organizational support, is crucial to improve nurses' professional quality of life.

In addition to burnout, nurses in the study also reported high levels of secondary traumatic stress. This type of stress arises from the exposure to the traumatic experiences of others, such as patients. Nurses often empathize with patients and may internalize their emotional pain, leading to distress and emotional exhaustion in second victim experience (Wade et al., 2022). Recognizing the impact of secondary traumatic stress on nurses and implementing strategies to provide support and promote emotional resilience is essential to enhance their professional quality of life.

These findings underscore the importance of healthcare organizations prioritizing the professional quality of life of nurses with second victim experience and implementing targeted interventions to address burnout and secondary traumatic stress while enhancing compassion satisfaction. Creating a supportive work environment that fosters well-being, implementing self-care strategies, and providing opportunities for debriefing and emotional support are crucial steps (Huey & Palaganas, 2020). Moreover, healthcare organizations should promote a culture that values nurses' well-being and offers accessible channels for communication and support. Strategies such as workload management, job crafting, and professional development opportunities can empower nurses in second victim experience, promote a sense of control and autonomy in their work, and contribute to their overall professional quality of life.

## 5.5 Association between demographic characteristics among second victim experience, coping styles, professional quality of life

### 5.5.1 The association between demographic characteristics and second victim experience.

This study examines the relationship between sociodemographic characteristics and second-victim experiences among nurses. This finding suggests that nurses who are single may be more vulnerable to experiencing second victim phenomena compared to their married or divorced counterparts. Single nurses may have less emotional support available to them, as they do not have a spouse or partner to lean on during challenging times (Rivera-Chiauzzi et al., 2022). The absence of a marital relationship may increase the feelings of distress and isolation experienced by single nurses when they encounter second victim experience. Furthermore, single nurses may have fewer personal commitments or distractions outside of work, which can result in a greater focus on second victim experience (Almudena et al., 2020). This heightened focus on work-related events may intensify the impact of adverse events, leading to higher scores in second victim experiences.

### 5.5.2 The association between demographic characteristics and coping styles among nurses have second victim experience.

Findings in this study indicate the associations between demographic variables and positive coping styles among nurses, while not indicating any significant effects on negative coping styles. The analysis revealed several demographic variables that significantly influenced positive coping styles. These variables include city, age,

marital status, length of service, title, monthly income, and working hours. This finding suggests that the availability of resources, infrastructure, and support systems in high-income cities may contribute to higher levels of positive coping among nurses (Sastrawan et al., 2019). Age was also found to be a significant factor influencing positive coping styles. This finding may be attributed to the accumulation of experience, resilience, and maturity that comes with age, enabling older nurses to employ more effective coping strategies when confronted with second victim experiences (Al Barmawi et al., 2019). Single nurses reported the lowest positive coping scores among their peers. This finding suggests that having a supportive partner or spouse may contribute to higher levels of positive coping among nurses. The emotional and instrumental support provided by a significant other may enhance their ability to navigate and cope with the challenges associated with the second victim phenomenon.

Length of service was another influential factor, with nurses having a length of service exceeding 15 years reporting the highest positive coping scores. This finding suggests that experience gained over time in the healthcare profession may equip nurses with a repertoire of coping strategies (Alkhawaldeh et al., 2020), enabling them to effectively manage and overcome the impact of second victim experiences. The analysis also revealed that nurses with advanced titles and higher monthly incomes above 10001 reported the highest positive coping scores when encountering second victim experiences. This finding may be associated with factors such as increased autonomy, job satisfaction, and access to resources and support systems that come with higher professional positions and income levels (Labrague et al., 2018). These factors

can contribute to higher levels of positive coping among nurses with advanced titles and higher monthly incomes. Lastly, working between 35 and 44 hours per week was associated with the highest positive coping scores. This finding suggests that maintaining a balanced workload within a moderate range may promote better coping strategies and resilience when facing second victim experiences.

This results indicate that various demographic variables significantly influence positive coping styles among nurses facing second victim experiences. The findings suggest that nurses originating from high-income cities, older nurses, those with longer lengths of service, advanced titles, higher monthly incomes, and moderate working hours demonstrate higher levels of positive coping. These findings underscore the importance of considering demographic factors in understanding and supporting nurses' coping strategies and resilience. Healthcare organizations should take these factors into account when designing interventions and support systems to promote positive coping among nurses experiencing the second victim phenomenon.

### 5.5.3 The association between demographic characteristics and professional quality of life among nurses have second victim experience.

Findings in this study shown higher levels of compassion satisfaction among male nurses who have second victim experience. The gender difference in compassion satisfaction may stem from a combination of factors, including societal expectations, cultural norms, and individual coping mechanisms (Kober & Abello, 2021). However, both males and females can experience a reasonable level of compassion satisfaction, underscoring the critical need for providing comprehensive support and resources to

nurses following second victim experiences. Furthermore, higher title benefit from greater autonomy, and decision-making authority, which could help them to cope with second victim experience, resulting in increased satisfaction (Terri Hinkley, 2022). These findings emphasize the importance of supporting nurses in second victim experience to foster a sense of fulfilment and satisfaction in providing care. By creating a supportive environment that enables professional growth, healthcare organizations can better equip nurses to cope with and overcome the emotional and psychological impact of adverse events.

The analysis conducted in this study sheds light on the influence of various demographic factors on burnout among nurses who have experienced second victimization. The results reveal that age, length of service, job title, and monthly income significantly contribute to the experience of burnout in this population. These findings suggest that mid-career nurses may face unique challenges, such as increased responsibilities, higher workloads, and accumulated stress, which contribute to their susceptibility to burnout (Koyle, 2020). In terms of job title, the results indicate that junior nurses demonstrate lower burnout scores compared to those with advanced titles. This finding suggests that nurses in more senior positions may have developed the better coping styles and received additional support (Wei et al., 2019), which may act as protective factors against burnout. Furthermore, monthly income emerges as a factor influencing burnout, with nurses earning a monthly income below 5000 demonstrating lower burnout scores. This finding suggests that financial stability and job security may act as protective factors against burnout (Galanis et al., 2021). To foster the resilience of nurses in the face of second victim experience, it is essential to

provide mentoring, professional development opportunities, and job security that nurtures their growth(Boamah et al., 2017). In relation to secondary traumatic stress, the findings are consistent with previous research that has reported higher levels of secondary traumatic stress among male healthcare professionals. The reasons behind this gender difference may include variations in exposure to traumatic events, coping styles, and social support networks(Gupta et al., 2019). By implementing gender-sensitive interventions and providing adequate support, healthcare organizations can effectively address the impact of secondary traumatic stress on nurses.

These results underscore the importance of considering demographic factors and tailoring interventions to address the unique challenges faced by nurses who have second victim experience. By providing targeted support, fostering professional growth, ensuring fair compensation, and addressing the specific needs of each gender, healthcare organizations can promote the well-being and resilience of nurses and mitigate the negative effects of burnout and secondary traumatic stress.

### 5.6 The relationship between second victim experience and professional quality of life.

The findings in this study contribute to the understanding of the impact of second victim experiences on the professional quality of life among nurses. Experiencing stress related to second victim experience can have significant consequences. Specifically, this study highlights that such stress can lead to an increase in symptoms of burnout and secondary traumatic stress, while also decreasing compassion satisfaction. These findings align with previous research, which has consistently

demonstrated that second-victim experiences can evoke feelings of anxiety, fear, exhaustion, and loss of hope (Busch et al., 2021). The combination of the stress caused by second victim experiences following crisis events and the daily pressures faced by nurses can result in a diminished sense of compassion satisfaction. Nurses who are exposed to second victim experience may find themselves expending more psychological and physical energy, which can contribute to heightened mental and emotional fatigue, ultimately leading to burnout (Kim et al., 2019). Importantly, the experience of secondary traumatic stress among nurses in response to adverse events deserves attention. This form of stress is triggered by exposure to adverse events and can pose additional risks to patient safety, creating a detrimental cycle that may even give rise to suicidal ideation (Jones & Treiber, 2018). Overall, these findings underscore the importance of recognizing and addressing the impact of second victim experiences on nurses' professional quality of life. It is crucial to implement strategies and interventions that promote well-being and resilience among nurses, with a focus on mitigating burnout, managing secondary traumatic stress, and fostering compassion satisfaction. By doing so, healthcare organizations can enhance the overall quality of patient care and support the overall well-being of nurses in their demanding roles.

In terms of second victim support, this study provides evidence that it serves as an immediate protective factor for the professional quality of life among nurses. It effectively reduces symptoms of compassion fatigue and promotes compassion satisfaction. Specifically, the availability of support from managers is a crucial determinant of nurses' levels of compassion satisfaction and compassion fatigue. When managers provide inadequate support, nurses experience lower levels of compassion

satisfaction and higher levels of compassion fatigue (Shao et al., 2021). On the other hand, positive relationships with colleagues have a positive impact on compassion satisfaction. These findings highlight the importance of interventions aimed at preventing nurses from second victim experience, as such interventions play a key role in enhancing professional quality of life and the overall quality of care provided. However, many nurses continue to struggle with feelings of shame and stigma associated with second victim experience. This struggle is often exacerbated by a lack of financial and systemic support, as well as by an organizational culture that does not sufficiently address the needs of second victim experience (Mokhtari et al., 2018). As the exhaustion stage sets in, psychological, physical, and professional stressors further erode nurses' confidence and may increase their intention to leave their positions (Xin Zhang et al., 2019). Therefore, following second victim experience, organizations and managers must recognize the costs associated with fatigue and take proactive measures to improve the well-being of nurses.

### 5.7 The mediating effects of coping style in the relationship between second victim experience and professional quality of life.

The results of this study provide valuable insights into the role of coping styles in the context of second victim experiences, offering a nuanced understanding of how these coping mechanisms influence both positive and negative outcomes for nurses. Specifically, the study found that positive coping styles act as significant mediators in the relationship between second victim experiences and compassion satisfaction. These coping strategies not only mitigate the negative effects of second victim-related

stress but also enhance the protective effect of second victim support on compassion satisfaction. This finding is critical as it underscores the dual role of positive coping styles in both buffering against stress and amplifying the benefits of support systems. The consistency of these findings with previous research conducted in China suggests that positive coping styles can indeed help individuals perceive and buffer the negative effects of second victim experiences, leading to increased job satisfaction, higher employee retention rates, and overall well-being (Li et al., 2021).

An important finding of this study is the identification of positive coping styles as having an active, albeit indirect, effect on burnout and secondary traumatic stress following second victim experiences. This suggests that while positive coping styles generally contribute to resilience, they may also lead to unintended challenges in particularly difficult situations, where the stress is profound and pervasive. This aligns with existing concerns about the fear of disclosure errors and near-miss events among nurses, who often manage their feelings of sadness, depression, and anxiety in isolation, without adequate external support (Yan et al., 2022). Additionally, the study demonstrates that positive coping styles mediate the relationship between perceived support and secondary traumatic stress, highlighting the complex interplay between individual coping mechanisms and the social support structures available to healthcare professionals. However, it is also notable that no direct effects on burnout were observed, indicating that certain positive coping styles, particularly when employed in a poor team environment, may not effectively reduce stress and could potentially exacerbate the situation (Mokhtari et al., 2018). Overall, both support and positive coping styles contribute to the promotion of compassion satisfaction among nurses

involved in second victim experience. However, it is important to note that an overemphasis on positive coping styles and individual responsibility may prove counterproductive in an inadequate organizational culture and environment.

On the other hand, negative coping styles are found to act as mediators between second victim experiences and compassion fatigue. These styles, characterized by adopting negative strategies to deal with second victim experiences, are associated with increased risks of burnout and secondary traumatic stress. This pattern of negative coping aligns with previous research indicating that although negative coping styles may temporarily alleviate symptoms, they can be detrimental in the long term (Kappes et al., 2021). Negative coping may involve engaging in unhealthy behaviors such as drinking or smoking, avoiding seeking support from individuals or organizations, and choosing an escape route. These behaviors can further increase the risk of compassion fatigue instead of effectively overcoming the negative effects of second victim experience (Quadrado et al., 2021).

Overall, this study underscores the critical importance of coping styles in managing second victim experiences among nurses. Positive coping styles play a crucial role in promoting compassion satisfaction and mitigating the negative effects of second victim-related stress. However, their effectiveness is highly contingent upon the presence of a supportive team environment and a positive organizational culture. Conversely, the reliance on negative coping styles contributes to increased risks of burnout and secondary traumatic stress, underscoring the need for healthcare organizations to discourage these maladaptive strategies. By recognizing the powerful influence of coping styles and ensuring the availability of appropriate support and

resources, healthcare organizations can better support the well-being of nurses involved in adverse events. This, in turn, can lead to improved patient care, as nurses who are well-supported and equipped with effective coping strategies are better able to manage the emotional and psychological demands of their roles. Therefore, a comprehensive approach that includes fostering a supportive workplace culture, providing access to professional development, and encouraging positive coping mechanisms is essential for enhancing the resilience and well-being of healthcare professionals.

### 5.8 Personal and workplace factors that facilitate or hinder coping styles for second victim experiences

The findings of this study shed light on the multifaceted factors that influence nurses' coping with second victim experiences. By considering the perspectives of both nurses and nurse managers, the study identified various dimensions that impact coping, such as the source of emotional trauma, personal factors, the workplace environment, and support systems. Recognizing and addressing these factors is crucial for organizations and healthcare providers to effectively support nurses who have experienced adverse events and enhance their overall well-being. The study emphasizes that nurses' coping styles with second victim experiences are influenced by underlying sources of emotional trauma and personal traits (Nydoo et al., 2020). Additionally, deficiencies in the work environment and the lack of support systems can further impede a nurse's ability to cope. Qualitative studies conducted in different countries, including Australia, Switzerland, and the United Kingdom, have also

highlighted the importance of individual-cantered coping strategies tailored to the different stages of the second victim experience (Barrow et al., 2022; Biquet et al., 2021; Buhlmann et al., 2022). However, there is still a need for more comprehensive evidence on the facilitators and barriers to these coping strategies.

In addition to the factors influencing nurses' coping with second victim experiences, the study identified subthemes related to the response of patients' relatives, organizational culture barriers, and ineffective management. These factors pose significant challenges to frontline nurses and nurse managers simultaneously. These findings contribute to the existing literature and emphasize the importance of further research and improvements in these areas to provide better support to nurses and enhance the role of nurse managers, who play a critical role in nurse development (Younas et al., 2021).

The theme of the source of emotional trauma examined in this study reveals a complex relationship between patients' outcomes, relatives' responses, and the second victim experience among nurses. The discussion of this theme emphasizes that patients' consequences directly impact the nurses involved in adverse events. These findings align with previous studies indicating that nurses may feel a sense of responsibility for patient outcomes and fear potential disciplinary actions, leading to negative coping strategies such as avoidance, denial, or self-blame, which can undermine their confidence in their abilities (Busch et al., 2020).

Furthermore, the study highlights the intrinsic connection between patients' relatives and the second victim experience of nurses. Participants in this study reported that relatives may experience anger, grief, and loss following adverse events, and may

direct these emotions towards the nurses involved, sometimes resulting in legal action that further intensifies the second-victim symptoms experienced by nurses. These findings underscore the importance of providing support that addresses the impact of adverse events on both nurses and patients' families, including communication training and early disclosure practices (Ghezeljeh et al., 2021). It is worth noting that nurses and nurse managers often avoid disclosure due to concerns about potential litigation, despite patients and their relative's requiring information (Rutledge et al., 2018). Other studies have demonstrated significant differences in the understanding of patient safety among nurses, staff, managers, patients, and families (Lyndon et al., 2023; Villar et al., 2020). Difficulties in conducting disclosure have also been described in qualitative meta-ethnographic syntheses (Sattar et al., 2020). This study emphasizes that a lack of skills in conducting disclosure can contribute to mistrust, anger, and frustration from patients and their relatives. Additionally, a lack of effective communication with nurse managers can leave nurses feeling isolated and unsupported, further exacerbating the second-victim symptoms experienced by nurses involved in the event and potentially leading to negative coping strategies (Chan et al., 2017).

This study sheds light on the factors that influence coping styles among nurses, including personality traits, health and well-being, and mental health literacy. The results indicate that individuals with a positive thinking style, who tend to focus on the positive aspects of a situation, are more likely to cope effectively with second victim experiences (Rodríguez-Rey et al., 2019). Previous research has shown that nurses generally exhibit higher levels of extroversion compared to professionals in other fields, and personality can play a role in coping strategies (Barr, 2018). However, the

findings suggest that extroversion can have both positive and negative effects, as nurses' outgoing and expressive nature may contribute to burnout due to the emotional demands of their work. Furthermore, individuals who are highly sensitive may experience greater emotional distress in response to second victim experiences. These findings align with previous research, which suggests that nurses can feel threatened when there is a significant mismatch between their expectations and the reality of their experiences (Sastrawan et al., 2019).

The study participants shared their experiences, revealing that the emotional impact of adverse events can persist for many years, as evidenced by the vivid recollection of their experiences by three nurses and two nurse managers. Consistent with prior research, inadequate coping with second victimization experiences can have devastating effects on nurses, who are considered invaluable resources within healthcare organizations (Kappes et al., 2021). Some nurse managers disclosed that they lacked effective coping mechanisms and support, leading to long-lasting symptoms of depression and changes in their careers. These findings contribute to the growing body of evidence highlighting the significant influence of poor health and well-being on individuals' ability to flexibly process and elaborate on negative information, with well-being being recognized as one of the most important resources for coping strategies (Agbaria & Mokh, 2022). Furthermore, the study found that higher levels of mental health literacy increase the likelihood that nurses will seek resources or develop new coping skills to deal with second victim experiences. This can empower them to feel more in control and better equipped to manage stress and challenging situations, which is consistent with previous research highlighting the role

of mental health literacy as a buffer against perceived stress and associated with greater problem-solving abilities (Heinen et al., 2017). Additionally, mental health literacy can benefit nurse managers in providing support to nurses in complex situations. Younas et al. (2021) suggest that mental health literacy plays a crucial role in helping nurse managers effectively address their own emotions and better support their colleagues, thereby reducing ineffective management practices.

The findings underscore the significance of nurses' personality traits in shaping their coping strategies, with certain traits acting as facilitators while others act as hindrances. Additionally, the study highlights the importance of the workplace environment and support systems, which will be discussed further. The results also emphasize the lasting impact of compromised health and well-being on nurses. Conversely, the study demonstrates that mental health literacy can serve as a valuable resource for managing second victim experiences. It can aid nurse managers in effectively addressing their own emotions and providing enhanced support to their colleagues. Therefore, healthcare organizations should prioritize promoting mental health literacy among nurses through educational initiatives and training programs that aim to destigmatize mental health. By enhancing mental health literacy, nurses can be better equipped to cope with the emotional toll of second victim experiences (Shao et al., 2023).

Theme three in this study sheds light on the perspectives of nurses regarding the support provided by organizations to cope with second victim experiences. The participants highlighted the importance of prioritizing appropriate care for nurses over the mere provision of support. They expressed that the effectiveness of coping strategies can be compromised when nurses are burdened with high workloads and

excessive stress. This finding aligns with other qualitative studies that have shown how heavy workloads can contribute to unsafe practice and hinder nurses from carrying out their duties safely and effectively (Blair et al., 2022). Significantly, the study revealed that ineffective management practices, such as inadequate staffing levels, can exacerbate nurses' stress levels, leading to an increased reliance on negative coping strategies when dealing with second victim experiences.

When management decisions result in insufficient resource allocation and ineffective communication, nurses may feel unsupported and undervalued. Policymakers have a crucial role to play in addressing barriers within healthcare infrastructure, increasing resources and support for nurses, and implementing policies and strategies that prioritize timely communication (Gadeka & Esena, 2020). A ten-year national survey, for example, recommended the increased presence of senior nurses during overnight shifts and holidays to ensure effective fulfillment of their duties (Urquhart et al., 2021). Furthermore, previous studies have highlighted the detrimental impact of a poor organizational culture on nurses' stress levels and the quality of care provided. This underscores the importance of fostering a supportive work environment where nurses feel valued, heard, and encouraged to openly discuss their experiences. Such an environment should also provide appropriate support mechanisms to help nurses cope with the emotional impact of second victim experiences.

On the contrary, theme four of this study highlights a significant finding that facilitates coping strategies for nurses experiencing second victim syndrome. The establishment of a colleague network emerges as a beneficial intervention, providing

a safe space for nurses to express their emotions without fear of judgment and validating their experiences (Kappes et al., 2021). The study participants emphasized that a supportive network among colleagues can empower nurses and enhance coping skills. This network can be fostered through debriefing sessions and educational mechanisms that allow nurses to reflect on their experiences and normalize their emotions. Previous studies have recommended close collaboration between organizations and staff to develop practical, feasible, and effective policies and procedures for managing adverse events (Biquet et al., 2021; Kaplan & Klein, 2021).

Continuous professional education also emerged as a crucial aspect in this study, supported by Goh et al. (2022) and Davis et al. (2021), highlighting its role in maintaining resilience, promoting collaborative practice, and ensuring patient safety. Continuous professional education helps nurses develop resilience, which enables them to adapt and cope effectively with challenges and adversity. By continually learning and enhancing their skills, nurses become better equipped to handle the demands and stressors associated with second victim experiences.

Furthermore, organizations must provide ongoing support to nurses coping with the effects of their experiences (Hood & Copeland, 2021). Establishing a referral system is essential to promptly identify and provide mental health services to nurses who have experienced second victimization (Norvell et al., 2023). This ensures that nurses receive timely and appropriate care and support to cope with the emotional and psychological effects of their experiences. Implementing a referral system also helps reduce the stigma surrounding seeking mental health services, making it easier for nurses to access the care they need. Additionally, family and community are

considered integral parts of an individual's support system in Chinese culture (Huang, 2022; Shuangjiang et al., 2022), and in this study, they are recognized as facilitators of coping strategies. Social support from family and community can mitigate some of the negative effects of second victim syndrome on nurses. By leveraging the power of these support systems, we can ensure that nurses receive the necessary support to facilitate coping strategies and continue delivering high-quality care to their patients.

In conclusion, the second victim experience is a complex issue that profoundly impacts nurses. By considering insights from frontline nurses and nurse managers, this study comprehensively examines the factors that promote or hinder coping strategies, including the source of emotional trauma, personal factors, the workplace environment, and the support system. Emphasizing the importance of a supportive colleague network, continuous professional education, organizational support, and the involvement of family and community, these findings provide valuable insights for healthcare organizations seeking to better support nurses coping with the effects of second victim experiences.

## 5.9 Integrating quantitative and qualitative study results

When utilizing an explanatory sequential design, the researcher first gathers and analyses quantitative data. Subsequently, they collect and analyse qualitative data to provide explanations for the quantitative findings (Creswell, 2014). The resulting findings represent a synthesis of the data. A qualitative examination of the phenomenon contributes to deeper comprehension and is particularly useful for explaining and interpreting relationships. Integrating the outcomes of quantitative and

qualitative studies involves the process of merging and analysing data from both research methods to obtain a more comprehensive understanding of a particular research topic (Gray et al., 2016). This approach entails combining the numerical data derived from quantitative studies with the rich and descriptive data obtained from qualitative studies. The objective is to develop a more holistic and nuanced understanding of the phenomenon under investigation by capitalizing on the strengths of both approaches. In the context of second victim experiences among nurses, integrating quantitative and qualitative findings can yield a more complete understanding of the factors influencing coping mechanisms and the effectiveness of various interventions.

Through the integration of quantitative and qualitative findings, a more comprehensive understanding of the factors impacting coping styles among nurses who have experienced second victimization emerges. The quantitative analysis furnishes statistical evidence regarding the relationships between demographic factors, coping styles, and outcomes related to professional quality of life. On the other hand, the qualitative analysis provides valuable insights into the intricate aspects of emotional trauma, personal influences, the workplace environment, and the support system. Following the completion of the quantitative survey, qualitative data was collected to delve into the personal and workplace factors that either facilitate or impede coping styles in response to second victim experiences among nurses. This data integration process is depicted in Figure 5.1, illustrating the connection between the quantitative and qualitative data.

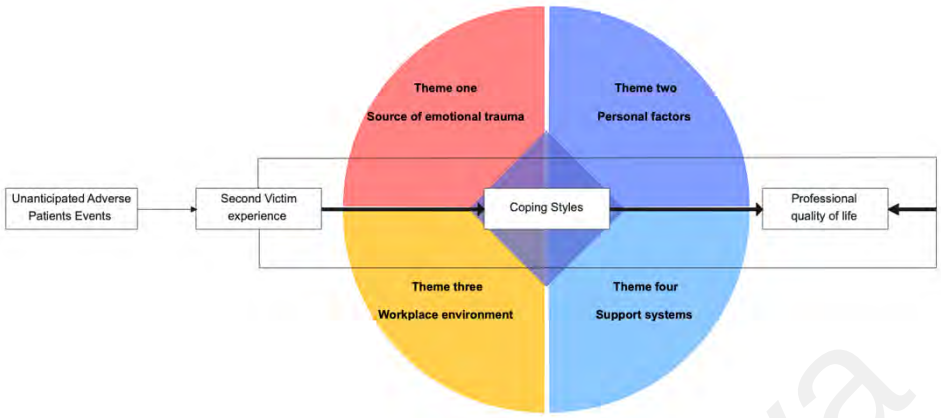



**Figure 5.1: Integration between quantitative data and qualitative data**

The results of the quantitative study indicate that second-victim related stress negatively impacts positive coping styles while increasing negative coping styles. The scoring method used for the second victim experience and support tool indicates that higher scores indicate lower levels of support. Therefore, both positive and negative coping styles are influenced by second-victim support. Second-victim related stress indirectly affects outcomes through both positive and negative coping styles, except for the indirect effect of negative coping styles on compassion satisfaction (95% BCBCI -0.005 to -0.051). The direct effect of second-victim support on burnout was not found to be significant (95% BCBCI -0.103 to 0.164). However, positive coping styles (standardized indirect effects -0.243, 95% BCBCI -0.340 to -0.161) and negative coping styles (standardized indirect effects -0.052, 95% BCBCI -0.094 to -0.007) significantly contributed indirectly to burnout.

To summarize, this study highlights the high prevalence of second victim experience among nurses and underscores the significance of coping styles in the context of

nurses' professional quality of life. Positive coping styles play a crucial role in promoting compassion satisfaction and mitigating the negative effects of second victim-related stress. Conversely, negative coping styles contribute to an increased risk of burnout and secondary traumatic stress, emphasizing the need to discourage these maladaptive strategies. A recent study by Steven et al. (Steven et al., 2023) underscores the importance of coping as a significant professional practice for nurses in managing emotional and relational tension in clinical settings. However, existing literature has only briefly addressed the coping process of second victim experiences among nurses and the tendency to delay accessing support programs, which can lead to a worsened professional quality of life and negative consequences on patient safety (Chan et al., 2017). To address this gap, the qualitative study conducted interviews to explore the coping process of nurses with second victim experiences, building upon the quantitative findings.

The experiences of nurses facing direct or indirect trauma in relation to coping with the second victim experience are frequently described in the interviews. Direct trauma exposure refers to the emotional trauma experienced by nurses due to the consequences faced by patients, such as witnessing patient deterioration or experiencing the loss of a patient. These experiences can have a profound impact on nurses' coping styles. This aligns with the survey findings where the psychological distress score was notably high ($4.11 \pm 0.87$), highlighting the intense emotional burden nurses face.

On the other hand, indirect trauma exposure refers to the influence of patients' relatives on nurses' emotional well-being. Reactions and responses from patients' relatives, including anger, blame, or legal actions, can contribute to the emotional

trauma experienced by nurses (Lyndon et al., 2023). Notably, patients' relatives play a critical role in patient safety, and their reactions significantly influence nurses' coping styles in the second victim experience (Villar et al., 2020). These challenging interactions contribute to the lower mean scores for colleague support (2.11 ± 0.86) and manager support (2.05 ± 0.84) compared to family support (2.48 ± 1.13), as nurses often find themselves isolated or unsupported in the workplace when dealing with the repercussions of such incidents. The qualitative data underscore how the emotional toll of both direct and indirect trauma complicates nurses' ability to effectively cope, emphasizing the need for stronger support systems within healthcare environments to mitigate the psychological distress associated with second victim experiences.

Previous studies have predominantly focused on examining the consequences of patient outcomes and their influence on nurses' coping styles in the second victim experience. However, there is a growing recognition of the importance of considering the role of patients' relatives as a crucial component of patient safety. Consistent with the findings of this study, nurses also emphasized the significant impact of patients' relatives, such as receiving complaints or facing legal suits. This underscores the necessity of involving patients' relatives in discussions and interventions pertaining to coping styles among nurses experiencing the second victim phenomenon. Furthermore, it deeper into the coping process of nurses confronting second victim experiences and explore potential strategies for timely support and intervention implementation.

Nurses have also described several personal factors that can influence their coping with the second victim experience. These factors include personality traits, health and well-being, and mental health literacy. It is important to acknowledge the significance

of these personal resources in supporting nurses as they navigate the challenges associated with the second victim phenomenon.

Personality traits play a crucial role in how individuals respond to and cope with second victim experience. Certain personality traits, such as resilience, optimism, and self-efficacy, have been found to be associated with more adaptive coping strategies and better psychological well-being among nurses facing the second victim experience (Barr, 2018). Nurses with these positive personality traits may be more equipped to handle the emotional toll and stress associated with the second victim experience. Furthermore, the physical health and overall well-being of nurses are essential considerations when exploring the coping process. Good physical health can provide a solid foundation for effective coping, as it contributes to overall resilience and enhances the ability to manage stress (Han et al., 2017). Another personal factor that influences coping is mental health literacy, which refers to the knowledge and understanding of mental health issues and available resources. Nurses who possess a higher level of mental health literacy are more likely to seek appropriate support, recognize the signs of distress, and employ effective coping strategies (Stehman et al., 2019). Mental health literacy empowers nurses to proactively address their emotional well-being and seek professional help in second victim experience.

In addition to the factors discussed earlier, nurses have described several workplace-related factors that can influence their coping with the second victim experience. These factors include workload and job stress, ineffective management practices, and organizational culture barriers.

Workload and job stress play a pivotal role in nurses' ability to cope with the emotional and psychological impact of the second victim experience. High workloads, excessive demands, and limited resources can create a stressful work environment, making it more challenging for nurses to effectively manage second victim experience (Sexton et al., 2021). Job stressors such as time pressure, work overload, and lack of control can further exacerbate the difficulties faced by nurses in coping with the second victim experience. Ineffective management practices can also hinder nurses' coping styles. Poor communication, lack of support, and absence of clear protocols or guidelines for addressing the second victim phenomenon can undermine nurses' ability to cope effectively (Yuxin et al., 2020). Adequate support and guidance from management are crucial in assisting nurses in navigating the emotional challenges associated with the second victim experience. Furthermore, organizational culture barriers can significantly impact nurses' coping styles. An unsupportive or blame-oriented culture can create additional stress and emotional burden for nurses experiencing the second victim experience. Conversely, a supportive and nurturing organizational culture that promotes open communication, psychological safety, and a learning-oriented approach can foster resilience and facilitate more adaptive coping styles among nurses (Kakemam et al., 2021a). Previous studies have consistently emphasized the importance of workplace environment resources in enabling nurses to cope with the challenges of the second victim experience (Yesilyaprak & Demir Korkmaz, 2021). Resources such as adequate staffing, support from colleagues and superiors, clear policies and procedures, and a positive organizational culture are

essential for nurses to effectively manage the emotional impact of adverse events and enhance their well-being.

Lastly, nurses identified several factors related to support systems that can influence their coping with the second victim experience. Resources provided by support systems, such as a supportive network of colleagues, continuous professional development opportunities, availability of referral resources, and family and community support, are essential in facilitating effective coping with second victim experience among nurses.

A supportive network of colleagues plays a vital role in nurses' ability to cope with the emotional and psychological impact of the second victim experience. Having colleagues who can empathize, provide emotional support, and share similar experiences can help alleviate feelings of isolation and facilitate coping (Choi et al., 2022). Peer support programs, mentorship, and debriefing sessions have been shown to be valuable resources in promoting nurses' well-being and resilience in the face of the second victim phenomenon. Continuous professional development is another essential component of support systems for nurses. Access to ongoing training, education, and skill-building opportunities can enhance nurses' coping abilities by equipping them with the necessary knowledge and resources to navigate challenging situations effectively (Shuangjiang et al., 2022). Professional development programs that focus on resilience, self-care, and emotional well-being are particularly relevant in the context of the second victim experience. The availability of referral resources is crucial for nurses seeking additional support and assistance. Having access to mental health services, counseling, and employee assistance programs can provide nurses with

a safe space to address their emotional needs and seek guidance in coping with the second victim experience (Werthman et al., 2021). Timely referrals to specialized support services can contribute to better mental health outcomes and improved coping strategies among nurses. Furthermore, family and community support are significant sources of support for nurses facing the second victim experience. The understanding, encouragement, and validation from loved ones and the broader community can have a positive impact on nurses' coping abilities. Social support networks outside of the workplace can provide an additional layer of emotional support and contribute to nurses' overall well-being.

These qualitative findings suggest that the interaction between personal attributes, support systems, and the broader workplace environment encourages nurses to adopt positive coping styles, even in the face of significant emotional and professional challenges. This tendency towards positive coping not only helps in managing immediate stress but also contributes to the long-term sustainability of their professional roles.

In conclusion, quantitative studies can provide numerical data that allow researchers to identify patterns, trends, and correlations. For example, quantitative research can examine the relationship between personality traits and coping styles among nurses, or the impact of workload on the effectiveness of coping strategies. By analysing large-scale data sets, quantitative studies can provide statistical evidence and generalizability to a larger population. On the other hand, qualitative studies offer rich, in-depth insights into the lived experiences, perspectives, and emotions of nurses facing second victimization. Through interviews, observations, and thematic analysis, qualitative

research can capture the complexity and nuances of coping strategies. It can explore the role of social support, the importance of communication, and the impact of organizational culture on nurses' coping experiences. Qualitative studies can provide context and mean to quantitative findings, shedding light on the underlying factors and processes that quantitative data alone may not capture. Integrating the results of quantitative and qualitative studies can enhance the overall understanding of coping strategies for second victim experiences among nurses. Researchers can triangulate the findings, comparing the quantitative patterns with the qualitative narratives to gain a more comprehensive understanding of the phenomenon(Morse, 2016). By integrating the strengths of both approaches, researchers can provide a more robust and nuanced interpretation of the coping with second victim experience among nurses.

## 5.10 Summary

This chapter has provided a thorough analysis and interpretation of the research findings from both the quantitative and qualitative studies, as well as their integration. The results reveal that second-victim experiences are prevalent among nurses, and the emotional toll they experience, including compassion fatigue and decreasing compassion satisfaction, cannot be overlooked. The mediating effects of coping styles have been elucidated, underscoring the importance of support programs and self-care initiatives for nurses, particularly in the aftermath of adverse events. The study has shed light on the facilitators and barriers that nurses encounter when coping with second victim experiences. This understanding provides valuable insights for the development of targeted interventions aimed at supporting nurses' well-being and

mitigating the negative impacts of these experiences. A comprehensive approach is needed to effectively support nurses in coping with second victim experiences, ultimately improving patient safety and enhancing the overall quality of care provided. By recognizing the prevalence and impact of second-victim experiences, and by addressing the specific coping styles, facilitators, and barriers identified in this study, healthcare organizations can implement strategies that prioritize the well-being of nurses. Such initiatives can contribute to a healthier and more resilient nursing workforce, ultimately benefitting both nurses and the patients they care for.

# CHAPTER 6: CONCLUSION

## 6.1 Introduction

This chapter presents a comprehensive analysis of the strengths, limitations, implications, and recommendations derived from the study on second-victim experiences among nurses. The research utilized a robust methodology, employing a structural equation model through Mplus and employing proportional-to-size cluster sampling to determine the sample size across diverse regions and hospitals with varying levels of economic development. The study revealed a significant relationship between second-victim experiences, coping styles, and professional quality of life, providing valuable insights into the challenges faced by nurses in healthcare settings.

However, it is essential to acknowledge the limitations inherent in the study design, including the reliance on self-reporting questionnaires and potential deviations in reporting. Furthermore, the underreporting of second-victim experiences due to zero-tolerance policies and limited understanding may have influenced the comprehensiveness of the findings. The generalizability of the results is limited as they primarily reflect tertiary hospitals, emphasizing the need for surveys across different hospital levels and the integration of mixed methods research approaches. The implications of this study highlight the importance of addressing second-victim experiences to safeguard the well-being of healthcare professionals and improve patient care outcomes. To further advance this field of research, recommendations include promoting a culture of psychological safety, conducting surveys across diverse healthcare settings, standardizing data collection timeframes.

## 6.2 Strengths of the study

One of the major strengths of this study is the utilization of a reliable analysis conducted through a structural equation model using Mplus. This statistical approach ensures a rigorous examination of the relationships between the variables under investigation. Furthermore, the sample size employed in the study was determined using proportional-to-size cluster sampling, encompassing regions and hospitals with varying levels of economic development. This sampling technique enhances the generalizability of the findings to a diverse range of contexts. The study identified a robust relationship between second victim experiences, coping styles, and professional quality of life. Notably, second-victim experiences were found to have a detrimental impact on professional quality of life, resulting in reduced compassion satisfaction and increased risks of burnout and secondary traumatic stress. This finding emphasizes the significance of addressing second-victim experiences to safeguard the well-being of healthcare professionals.

Another strength lies in the use of a rigorous qualitative design and triangulation. Given the intricate nature of factors impacting nurses' well-being, a qualitative approach was necessary to gain an in-depth understanding of the barriers and facilitators to coping strategies among nurses involved in second-victim experiences. Incorporating perspectives from frontline workers and nurse managers from different income cities was particularly valuable, as it provided first hand experiences and insights into the challenges and opportunities faced by nurses in these situations. This comprehensive approach allowed for a more nuanced explanation of key issues,

including the need for coping with second-victim experiences and the barriers within the management process.

By addressing these factors, nurses can develop more effective coping strategies to manage second-victim experiences, leading to improved patient care, better outcomes, increased job satisfaction, and enhanced well-being for nurses. The robust qualitative design and triangulation employed in this study provide a solid foundation for understanding the challenges faced by nurses when coping with second-victim experiences.

### 6.3 Limitations of the study

While this study provides valuable insights into the experiences of second victims among nurses, it is essential to acknowledge and address potential limitations. One limitation stems from the cross-sectional survey design, which relies on self-reporting questionnaires. As a result, deviations in reporting are inevitable, and the accuracy and reliability of the collected data may be subject to individual perceptions and recall biases. Additionally, the zero-tolerance policy on adverse events and a lack of understanding about second-victim experiences may have led to underreporting among nurses. This underreporting could potentially limit the comprehensive understanding of the prevalence and impact of second-victim experiences in healthcare settings. Furthermore, it is important to recognize that the results of this study primarily reflect the situation in tertiary hospitals only. Therefore, the generalizability of these findings to hospitals at different levels may be limited. To broaden our understanding in this field of research, it is crucial to conduct surveys across various hospital levels and

combine mixed methods research approaches. This will provide a more comprehensive perspective on the experiences of second victims among nurses and enhance the applicability of the findings to diverse healthcare settings.

Another potential limitation is the possibility of selection bias. The varying time since the second victim experience, ranging from 1 month to 15 years, might have influenced the sensitivity of the experiences reported by participants and their willingness to discuss those experiences. This variation in time frames could impact the accuracy and consistency of the data collected, affecting the overall interpretation of the results.

Furthermore, while this research explored both facilitators and barriers to coping with second-victim experiences, there was a greater emphasis on the barriers, and the facilitators received comparatively less attention. This imbalance in focus may limit the comprehensive understanding of the factors that contribute to effective coping strategies among nurses. Lastly, it is important to note that the majority of participants in this study were female nurses. Therefore, caution should be exercised when generalizing the findings to male nurses, as their experiences and coping mechanisms may differ. Further research is necessary to explore and understand the unique experiences of male nurses in the context of second-victim encounters.

## 6.4 Implications

### 6.4.1 Nursing Practice and Management

The study's findings illuminate the mediating role of coping styles, underscoring the urgent requirement for targeted support initiatives, and self-care programs tailored specifically for nurses. Furthermore, the study's identification of facilitators and barriers in nurses' coping with second-victim experiences furnishes invaluable insights for the formulation of focused interventions, dedicated to sustaining nurses' well-being and mitigating the adverse effects of such occurrences. Acknowledging the multifaceted nature of this issue, it is paramount to implement strategies that effectively support nurses in handling second-victim experiences. By doing so, healthcare establishments can ultimately augment patient safety and elevate the quality of care dispensed.

Insights gained from the study involves the introduction of training programs designed to equip nurses with the requisite knowledge and coping skills for second-victim experiences. These programs can educate nurses on effective strategies, encompassing seeking social support, embracing self-care techniques, and accessing mental health resources. Equally significant is the cultivation of a supportive organizational culture. Nurse leaders and administrators must cultivate an environment that promotes open communication and psychological safety. This entails establishing platforms for nurses to candidly discuss their experiences, express their emotions, and seek support devoid of apprehension of judgment or backlash. By fostering such a

supportive atmosphere, healthcare organizations can abate the isolation and stigma often linked with second-victim encounters.

Leveraging insights gleaned from qualitative research and the viewpoints of frontline staff and nurse managers is vital for healthcare organizations. By involving these stakeholders in the formulation of support interventions, organizations can ensure tailored solutions aligned with nurses' unique needs and experiences. This collaborative approach not only heightens the relevance and efficacy of the interventions but also instils a sense of ownership and involvement among nurses. Prioritizing these interventions enables nursing management and practice to establish an affirmative and supportive milieu that empowers nurses to thrive professionally.

### 6.4.2 Nursing Research

The findings of this study have significant implications for nursing research, advocating for a strategic evolution of research approaches in line with the research outcomes. For the advancement of our understanding of second-victim experiences among nurses, nursing research should embrace longitudinal designs. By embarking on research that examines the enduring effects of coping styles on second-victim experiences, researchers can illuminate the trajectory of nurses' adaptation and recovery over an extended period. This longitudinal perspective promises to unravel the nuanced evolution of second-victim encounters, providing a profound insight into their profound impact on nurses' well-being.

Moreover, delving into the mediating effects of coping styles between second-victim experiences and patient outcomes holds the potential to cast light on the intricate mechanisms through which coping strategies exert influence. This understanding of the mediating effects offers the potential to identify specific coping strategies that foster positive outcomes. These insights can then guide the formulation of interventions aimed at enhancing nurses' well-being and elevating the quality of patient care. Furthermore, an exploration of the effectiveness of interventions targeting coping strategies is pivotal for advancing the evidence base in this domain. Through rigorous evaluation of interventions that champion positive coping styles and establish support mechanisms for nurses grappling with second-victim experiences, researchers can discern effective strategies to counteract the adverse effects of these encounters. Such research endeavours significantly contribute to the cultivation of evidence-based practices and interventions, empowering nurses to effectively navigate the emotional and psychological challenges entailed by second-victim experiences.

Findings in this study resonate deeply with the realm of nursing research. By embedding the insights gained from the study into the research landscape, nursing researchers can cultivate a more enlightened approach. This approach, rooted in empirical findings, holds the potential to propel the nursing profession towards a more resilient and empowered future.

### 6.4.3 Nursing Education

The implications of this study advocating for a transformative approach closely aligned with the research's revelations. An integral step in this direction is the

incorporation of education and training programs that squarely address second-victim experiences within nursing curricula. By infusing specific content on this subject, nursing students can cultivate a deeper insight into the emotional and psychological trials confronted by healthcare professionals who find themselves as second victims. This enriched understanding extends to recognizing the detrimental impact of maladaptive coping styles, such as avoidance or self-blame, and accentuates the value of embracing positive coping strategies.

Educational interventions wield the potential to equip students with the knowledge and skills essential for identifying and managing their own emotional responses in the face of second-victim experiences. By imbibing effective coping strategies, such as seeking support from peers, engaging in self-care practices, or accessing counselling services, prospective nurses can foster resilience and adeptly navigate the emotional aftermath of such incidents. Additionally, education centred on second-victim experiences nurtures empathy and compassion among nursing students. Through a comprehensive grasp of the challenges encountered by nurses who experience second-victim scenarios, students cultivate a heightened appreciation for the significance of offering emotional support to their peers and advocating for an environment that fosters support.

The study's findings significantly influence the realm of nursing education, urging for an evolution aligned with the research's insights. By grounding nursing education in these empirical revelations, educators can play an instrumental role in preparing future nurses to navigate the emotional complexities of their profession adeptly. This transformative approach has the potential to engender emotionally resilient nursing

professionals, fostering a culture of support and well-being that reverberates through patient care, enhancing both patient safety and the quality of care delivered.

### 6.5 Recommendations and further research

Based on the identified limitations, several recommendations and areas for further research can be proposed to advance the understanding of second-victim experiences among nurses. Firstly, to overcome the potential underreporting resulting from zero-tolerance policies and limited understanding of second-victim experiences, efforts should be made to create a culture of psychological safety and open communication in healthcare settings. Encouraging nurses to report their experiences and providing education and support regarding second-victim phenomena can help enhance reporting rates and contribute to a more comprehensive understanding of these experiences.

To improve the generalizability of findings, it is recommended to conduct surveys across hospitals at different levels, including primary and secondary healthcare facilities. This approach will enable a broader representation of the diverse healthcare contexts and allow for a comparison of experiences across various settings. To mitigate the potential bias resulting from variations in the time since the second-victim experience, future research should consider implementing a standardized timeframe for data collection. This will ensure consistency and comparability among participants, facilitating a more accurate interpretation of the findings. Longitudinal studies could also be conducted to explore the evolution and long-term impact of second-victim experiences over time. By investing in the training and development of managers, healthcare organizations can ensure that they are well-equipped to provide

comprehensive support to second victims (Sexton et al., 2021). Furthermore, organizational leaders should actively promote a culture that values the well-being and emotional support of nurses. This can be achieved by recognizing and addressing the stigma associated with seeking help, encouraging open communication, and providing resources for emotional support and counselling (Werthman et al., 2021). By strengthening managerial support for second victim experience, organizations can create a supportive ecosystem that acknowledges and addresses the challenges faced by nurse in the aftermath of adverse events. This not only contributes to the well-being of the affected individuals but also has the potential to enhance patient safety and improve overall organizational resilience (Xu et al., 2022).

In terms of coping with second-victim experiences, future studies should strive for the development of comprehensive support programs and interventions for nurses. This approach can lead to the identification of best practices and the enhancement of coping strategies to mitigate the negative effects of such experiences. Lastly, to ensure a comprehensive understanding of second-victim experiences, it is crucial to include a diverse sample of participants, including male nurses. Further research is needed to explore the unique experiences, coping strategies, and support needs of male nurses in relation to second-victim encounters. By capturing a more inclusive representation of the nursing population, the findings can be more applicable and relevant to a broader range of healthcare professionals. This highlights the importance of developing personalized support strategies that take into account the unique needs and circumstances of each nurse with second victim experience (Finney, 2021). Targeted interventions to improve non-working support systems can involve various approaches

(Morales & Brown, 2019; Ozeke et al., 2019). Educating and raising awareness among family members, friends, and support networks about the challenges faced by second victim experience can help foster understanding and empathy.

By incorporating these recommendations and conducting further research in these areas, the field can advance its understanding of second-victim experiences among nurses, leading to the development of evidence-based interventions and support systems that effectively address the challenges faced by healthcare professionals in these situations.

## 6.6 Summary

In this chapter, strengths, limitations, implications, and recommendations were explored, based on the research on the relationship between second-victim experiences, and professional quality of life.

The study's strengths lie in the use of a reliable analysis method and a sample size that represented different levels of economic development. It revealed that second-victim experiences significantly impacted professional quality of life, emphasizing the importance of positive coping and the detrimental effects of negative coping. The findings underscore the need for interventions and support programs to address these experiences. In terms of limitations, the cross-sectional survey design and potential for reporting deviations call for caution in interpreting the results. Moreover, the study focused on tertiary hospitals and predominantly female participants, limiting generalizability. The implications for nursing education are twofold. Firstly, incorporating second-victim experiences into nursing curricula can enhance

understanding and promote positive coping strategies among future nurses. Secondly, longitudinal research should explore the long-term effects of coping styles on second-victim experiences and patient outcomes. Nursing research can further investigate the mediating effects of coping styles and evaluate the effectiveness of interventions targeting coping strategies. By developing evidence-based practices, researchers can support nurses in coping with these experiences and improving patient care outcomes. The implications for nursing management and practice emphasize the importance of comprehensive support interventions. Nurse leaders and administrators should prioritize training programs, foster supportive organizational cultures, and utilize qualitative research and stakeholder perspectives to develop targeted interventions.

These measures will support nurses in coping with second-victim experiences, promoting their well-being and enhancing patient safety and care quality. To address the limitations, future research should employ longitudinal designs, investigate mediating effects, and include diverse hospital levels and male nurses. Additionally, interventions targeting coping strategies should be developed, and their impact on professional quality of life and patient care outcomes should be evaluated. By addressing these recommendations, nursing can better understand and support nurses in coping with second-victim experiences, ultimately improving their well-being, patient care, and the overall resilience of the nursing profession.

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