

Experience and Support Status of Second Victim Nurses in EENT in Shanghai and Its
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【Abstract】 Purpose: To investigate the experience and support status of the second victim among nurses in the ophthalmology, otolaryngology department in Shanghai, and analyze the influencing factors. **Methods:** A cross-sectional survey and convenience sampling method were used to select 368 EENT nurses in Shanghai from January to June 2024 as the research subjects. A general information survey questionnaire and a second victim experience and support assessment scale were used for the survey. **Results:** A total of 368 questionnaires were distributed, and 368 valid questionnaires were collected, with an effective response rate of 100%. Among them, 48.37% (178 positive cases) of nurses have experienced adverse events as clients. The total score of the Second Victim Experience and Support Scale for 178 nurses in the ophthalmology, otolaryngology department was (97.52 ± 14.21), indicating a high level of second victim effect. The results of multiple linear regression analysis showed that education, marital status, employment form, years of work experience, income, and whether they have experienced punishment are factors that affect the experience and support scores of EENT nurses as second victims ($P < 0.05$). **Conclusion:** The negative impact experienced by EENT nurses in Shanghai as the second victim is severe, and their level of support needs to be improved. Hospital managers should pay attention to the physical and mental health of this group, provide corresponding support and assistance, and reduce the harm of adverse medical events to them.

Keywords: Nurse; Ophthalmology, Otolaryngology; The second victim; Adverse events; influence factor

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In the healthcare system, the second victim is defined as any healthcare worker involved in adverse events, medical errors, and/or non-specific harm related to patients, who becomes a victim due to the trauma caused by the event ^[1]. Studies have shown that nearly 80% of healthcare workers experience at least one near-miss or adverse event during their career, and less than 25% are satisfied with the support provided by their institutions ^[2]. Among healthcare workers involved in adverse events, 12% take more than 1 year to recover or never recover at all ^[3]. The negative experiences of second victims can trigger a vicious cycle, not only affecting the physical and mental health of healthcare workers but also potentially impacting the quality of subsequent medical services and patient safety. The General Office of the State Council issued the "Opinions on Promoting the High-Quality Development of Public Hospitals" in 2021^[4], which emphasized the importance of protecting, caring for, and loving medical staff, ensuring the implementation of their rights and interests, and establishing long-term mechanisms.

In recent years, domestic attention to nurse second victims has gradually increased ^[5]. Existing studies have extensively explored the experiences and support status of nurse second victims ^[6]. However, there are still many shortcomings in current research, which mostly focuses on general

ward nurses. Studies on specialized nurses are mostly concentrated in high-conflict wards such as psychiatry and emergency departments [7-9], with relatively few studies on EENT nurses. Ophthalmology and otolaryngology diseases have complex anatomical structures, and nursing operations are highly specialized and risky. Once an error occurs, the likelihood of an adverse event is relatively high. Moreover, these diseases are often closely related to the psychological state of patients. When nursing adverse events occur, patients are more likely to experience emotional fluctuations, leading to intensified medical disputes and greater psychological pressure on nurses [10, 11].

Based on this, this study focuses on EENT nurses in Shanghai, aiming to thoroughly investigate their experiences and support status as second victims and comprehensively analyze the factors affecting this status. This study aims to fill the research gap in this field for specialized nurses, provide scientific evidence for hospital managers to formulate more targeted support strategies, improve the working environment for nurses, maintain their mental health, enhance nursing quality, and further promote patient safety.

1. Subjects and Methods

1.1 Research Subjects

Using a convenience sampling method, 368 EENT nurses from ten hospitals in Shanghai were selected as research subjects from January to June 2024. The inclusion criteria were: (1) Nurses with a nursing practice qualification certificate who are currently working in EENT; (2) Those who have been engaged in EENT nursing for more than six months; (3) Those who voluntarily participated in this study. The exclusion criteria were: (1) Nurses from other hospitals for further training and nursing students; (2) Nurses not on duty during the survey period, including those on business trips, study leave, or vacation. When determining the sample size, based on the number of items in the Chinese version of the Second Victim Experience and Support Tool (SVEST), the sample size was initially estimated to be 145-290 cases according to the standard of 5-10 times. Considering the actual needs and feasibility of the study, 368 nurses were finally selected as research subjects. Before the implementation of this study, the research team members were trained to ensure the standardization of the research process. The study began after obtaining approval from the Medical Ethics Committee of the Eye & ENT Hospital of Fudan University (No. 2024127).

During the sample screening process, the nursing departments of each hospital first provided a preliminary list of nurses who met the conditions. The research team members reviewed the nurses on the list one by one according to the inclusion and exclusion criteria. For any questionable information, they promptly communicated and verified with the head nurses of the relevant departments to ensure that all samples included in the study met the standard requirements and to avoid sample bias affecting the research results.

1.2 Methods

1.2.1 Survey Tools

1.2.1.1 General Information Survey Questionnaire

Designed by the researchers, it includes information such as age, gender, marital status, working department, clinical working time, highest education level, professional title, hospital employment

method, and characteristics of adverse events.

1.2.1.2 Second Victim Experience and Support Tool (SVEST)

This scale was compiled by Burlison et al. ^[12] and translated into Chinese by Chen Guiru et al. ^[13]. The Chinese version of the SVEST scale contains nine dimensions with a total of 29 items. Among them, psychological distress (four items) is used to assess the psychological distress of nurses after adverse events; physical distress (four items) reflects physical discomfort; colleague support (four items), superior support (four items), and institutional support (three items) measure the support from different levels; non-work-related support (two items) focuses on the support nurses receive outside of work; professional self-efficacy (four items) assesses nurses' confidence in their professional abilities; the dimensions of turnover intention and absenteeism each have two items, reflecting nurses' work attitudes and attendance. Each item uses a Likert 5-point rating method, with values ranging from 1 to 5, from "strongly disagree" to "strongly agree." After reverse scoring of reverse items, the total score of the scale ranges from 29 to 145, with higher scores indicating a more severe impact of adverse events on nurses and less support received. The scale has good reliability and validity, with a total Cronbach's α coefficient of 0.892, and Cronbach's α coefficients for each dimension ranging from 0.444 to 0.916, and a content validity index of 0.950.

1.2.2 Data Collection Method

The researchers created the questionnaire as an online survey, with a unified introduction on the first page, detailing the purpose of the survey, the method of completion, and precautions. The survey was conducted through the WJX platform. Before the survey, the head nurses of EENT departments in several hospitals in Shanghai (including general hospitals and specialized hospitals) were trained. The training content included a detailed interpretation of the questionnaire items to ensure that the head nurses could accurately understand the indicators of the questionnaire; teaching the head nurses how to explain the purpose and significance of the study to the nurses to increase their enthusiasm for participating in the survey; and simulating possible problems and solutions to ensure the effectiveness of the training.

After the training, the head nurses were responsible for distributing the questionnaires to the nurses in their departments and assisting in answering any questions. Nurses independently completed the questionnaire on their mobile phones, with each person only able to submit once to ensure the authenticity and validity of the questionnaire. After the questionnaires were collected, the researchers screened them centrally. Questionnaires with obvious abnormalities (such as too short completion time, all answers concentrated on the same option, missing key information, etc.) were considered invalid and excluded. In this study, a total of 368 questionnaires were distributed, all of which were effectively recovered, with an effective recovery rate of 100%. Finally, the questionnaires of 178 nurses who had experienced adverse events were included in the analysis.

1.2.3 Statistical Methods

SPSS 21.0 statistical software was used for data analysis. Measurement data were expressed as mean $\pm$ standard deviation ($\bar{x} \pm s$), and count data were expressed as rates. A p-value of less than 0.05 was considered statistically significant. Non-parametric tests were used to compare the second victim experience and support scores of EENT nurses with different characteristics; multiple linear

regression analysis was used for multivariate analysis to explore the main factors affecting the scores of nurses.

2. Results

2.1 General Information of EENT Nurses (See Table 2)

2.2 Experience and Support Status of EENT Nurses as Second Victims

The total score of the second victim experience and support scale for EENT nurses was (97.52 ± 14.21). The item mean scores of the dimensions from high to low were psychological distress, physical distress, turnover intention, absenteeism, professional self-efficacy, colleague support, institutional support, superior support, and non-work-related support (See Table 1).

Table 1 Scores of the Second Victim Experience and Support Scale for 178 EENT Nurses (Points)

Dimension	Score Range	Score ($x \pm s$)	Item Mean ($x \pm s$)
Psychological distress	4~20	18.22 ± 3.15	4.56 ± 0.79
Physical distress	4~20	17.10 ± 4.29	4.28 ± 1.07
Colleague support	4~20	11.90 ± 1.32	2.98 ± 0.33
Superior support	4~20	9.02 ± 2.63	2.26 ± 0.66
Institutional support	3~15	7.59 ± 1.96	2.53 ± 0.65
Non-work-related support	2~10	3.36 ± 2.08	1.68 ± 1.04
Professional self-efficacy	4~20	14.29 ± 2.91	3.57 ± 0.73
Turnover intention	2~10	8.25 ± 2.55	4.13 ± 1.28
Absenteeism	2~10	7.79 ± 3.00	3.90 ± 1.50
Total score	29~145	97.52 ± 14.21	3.36 ± 0.49

2.3 Comparison of Second Victim Experience and Support Scores Among EENT Nurses with Different Characteristics

The scores of the second victim experience and support among ophthalmology and otolaryngology nurses were statistically significant in terms of gender, age, department, hospital nature, education level, professional title, marital status, employment form, working years, and income ($P < 0.05$) (See Table 2).

Table 2 Comparison of Second Victim Experience and Support Scores Among EENT Nurses with Different Characteristics (n=178, $x \pm s$)

Item	Number	Score (Points, $\bar{x} \pm s$)	Statistical Value	P-value
Gender				
Male	58	88.98 ± 16.56	-7.604^a	0.000**
Female	120	101.64 ± 10.84		
Age (years)				
21~30	34	91.50 ± 18.86	27.554^b	0.000**
31~40	134	99.81 ± 12.07		

41~50	8	87.25±15.44		
≥51	2	87.00±8.46		
Department				
Ophthalmology ward	14	89.43±17.19	45.90 ^b	0.000**
Otolaryngology ward	121	101.26±10.53		
Emergency	4	89.25±4.03		
Outpatient	2	99.00±8.49		
Intensive care unit	7	92.00±14.47		
Operating room	24	91.42±19.53		
Others	6	76.83±19.97		
Hospital nature				
General hospital	145	99.29±11.77	12.340 ^b	0.002**
Specialized hospital	31	89.39±20.99		
Others	1	91.00±0.00		
Education level				
Associate degree	26	90.08±15.80	27.136 ^b	0.000**
Bachelor's degree	148	99.24±13.17		
Master's degree and above	4	82.00±20.49		
Professional title				
Nurse	10	85.30±27.34	47.403 ^b	0.000**
Nurse assistant	33	90.42±13.20		
Senior nurse	132	100.88±11.14		
Deputy chief nurse and above	3	68.33±6.42		
Marital status				
Married	142	99.04±13.09	18.004 ^b	0.000**
Unmarried	35	91.51±17.18		
Others	1	91.00±0.00		
Employment form				
Regular staff	24	80.29±16.37	56.810 ^b	0.000**
Contract employee	149	100.60±11.78		
Others	5	88.20±7.05		
Working years (years)				
<1	2	83.50±7.77	78.792 ^b	0.000**
1~5	20	87.55±20.37		

6~10	125	102.42±9.20		
11~20	26	84.31±16.44		
>20	5	89.00±9.27		
Work income (yuan)				
<5000	2	71.00±31.11	77.027 ^b	0.000**
5000~7999	9	93.67±11.70		
8000~10000	129	102.48±9.44		
≥10000	38	82.97±16.12		
Unplanned extubation				
No	150	100.03±12.82	-6.678 ^a	0.000**
Yes	28	84.07±14.05		
Pressure injury				
No	61	89.70±17.49	-6.854 ^a	0.000**
Yes	117	101.59±10.09		
Fall				
No	164	98.79±13.33	-4.758 ^a	0.000**
Yes	14	82.57±16.32		
Falling out of bed				
No	173	97.98±13.69	-2.573 ^a	0.01*
Yes	5	81.60±23.91		
Specimen event				
No	163	98.10±14.06	-2.311 ^a	0.021*
Yes	15	91.20±15.00		
Experienced punishment				
Yes	30	98.20±13.53	-2.759 ^a	0.006**
No	148	88.00±20.17		

Note: * represents $p<0.05$, ** represents $p<0.01$; a represents Mann-Whitney U test, b represents Kruskal-Wallis H test

2.4 Multiple Linear Regression Analysis of Factors Affecting the Experience and Support Scores of EENT Nurses as Second Victims

The total score of the second victim experience and support scale was used as the dependent variable, and the variables with statistical significance in the comparison of the experience and support scores of EENT nurses with different characteristics were used as independent variables for multiple linear regression analysis. The results showed that education level, marital status, employment form, working years, work income, and whether they had experienced punishment were influencing factors. The coding of independent variables is shown in Table 3, and the results of multiple linear

regression analysis are shown in Table 4.

Table 3 Coding of Independent Variables

Independent Variable	Coding
Gender	1=male, 2=female
Age (years)	1=<20, 2=21-30, 3=31-40, 4=41-50, 5= $\geq$ 51
Department	1=Ophthalmology ward, 2=Otolaryngology ward, 3=Emergency, 4=Outpatient, 5=Intensive care unit, 6=Operating room, 7=Others
Hospital nature	1=General hospital, 2=Specialized hospital, 3=Others
Education level	1=High school and below, 2=Associate degree, 3=Bachelor's degree, 4=Master's degree and above
Professional title	1=Nurse, 2=Nurse assistant, 3=Senior nurse, 4=Deputy chief nurse and above
Marital status	1=Unmarried, 2=Married, 3=Others
Employment form	1=Regular staff, 2=Contract employee, 3=Others
Work income (yuan)	1=<5000, 2=5000-7999, 3=8000-10000, 4= $\geq$ 10000
Working years (years)	1=<1, 2=1-5, 3=6-10, 4=11-20, 5= $\geq$ 20
Experienced unplanned extubation	0=no, 1=yes
Experienced pressure injury	0=no, 1=yes
Experienced fall	0=no, 1=yes
Experienced falling out of bed	0=no, 1=yes
Experienced specimen event	0=no, 1=yes
Experienced punishment	1=yes, 2=no

Table 4 Multiple Linear Regression Analysis of Factors Affecting the Experience and Support Scores of EENT Nurses as Second Victims

Item	Regression Coefficient	Standard Error	Standardized Regression Coefficient	t-value	P-value
Constant	83.498	20.354	—	4.102	0.000**
Education level	6.898	3.367	0.190	2.049	0.042*
Marital status	13.302	3.687	0.382	3.607	0.000**
Employment form	12.248	3.630	0.336	3.374	0.001**
Working years	6.573	2.862	0.297	2.297	0.023*

Work income	5. 627	2. 096	0. 213	2. 684	0. 008**
Experienced punishment	-8. 352	3. 634	-0. 220	-2. 298	0. 023*

Note: * represents $p < 0.05$, ** represents $p < 0.01$, $F = 7.270$, $P = 0.000$, $R^2 = 0.481$, Adjusted $R^2 = 0.415$

3. Discussion

3.1 Analysis of the Experience and Support Status of EENT Nurses as Second Victims

The results of this study show that the phenomenon of EENT nurses being second victims is relatively common in Shanghai, and their total scores for second victim experience and support are higher than those in other regions of the country [7,13-15]. Nurses have a higher degree of psychological and physical distress, which is similar to previous studies [7,16]. It is worth noting that the mean scores of these two dimensions are both >4 points, significantly higher than the survey results of general nurses by Chen Guiru et al. [17]. This is mainly attributed to the particularity of EENT nursing work. The nursing work in this department is highly risky and requires strict technical skills. Once an adverse event occurs, nurses often have to bear greater responsibility and greater psychological pressure. In addition, the dissatisfaction and complaints of patients and their families, as well as the accountability and punishment from hospital management, further increase the psychological burden of nurses.

3.2 Analysis of Factors Affecting the Experience and Support Status of EENT Nurses as Second Victims

3.2.1 Education Level

Nurses with higher education levels usually have stronger learning and information processing abilities. However, as a result, they have a more profound understanding of adverse events and are more likely to experience strong feelings of self-blame and anxiety. Studies have shown [18] that the resilience of clinical front-line nurses with master's degrees is at a low level and has room for improvement. Nurses with higher education levels are generally given more responsibilities and expectations when joining the nursing team, such as undertaking research and teaching work. They bear more responsibilities in clinical work, face greater psychological pressure when encountering adverse events, and have a more urgent demand for support. Therefore, hospitals should provide more professional and targeted psychological support services for nurses with higher education levels, such as organizing academic exchange activities to help them better cope with work challenges.

3.2.2 Marital Status

Different from previous studies [19], married nurses in this study experienced significantly higher psychological and physical distress than unmarried and other marital status nurses. Married nurses need to balance family and work, place greater emphasis on their careers, and worry that work mistakes will affect family income. In dealing with interpersonal relationships, they may be more conservative, leading to the accumulation of psychological and career pressure. Moreover, because they are worried about burdening their families, they are often reluctant to share their work troubles with family members, making the stability and reliability of social support insufficient and increasing the risk of job burnout. Hospitals can provide specialized psychological counseling and family support programs for married nurses to help them balance work and family life and relieve

psychological pressure.

3.2.3 Employment Form

The employment form has an important impact on the psychological state and support feelings of nurses. Regular staff nurses have a more stable working environment and complete career protection [7]. They have higher job security when facing adverse events and can maintain a relatively positive attitude. In contrast, non-regular staff nurses face more career uncertainties, such as contract renewal issues and limited career development. They are more likely to experience negative emotions and have lower support feelings after experiencing adverse events. Hospitals should pay attention to the psychological health differences among nurses with different employment forms, strengthen career protection and psychological support for non-regular staff nurses, such as providing more training opportunities and career advancement channels, and enhance their sense of belonging and security.

3.2.4 Working Years

Although nurses with longer working years have accumulated rich work experience, this study shows that their second victim effect worsens with increasing working years. Long-term exposure to complex nursing work can easily lead to job burnout, making them more deeply affected by adverse events and even leading to intentions to leave their jobs. This is consistent with existing related studies [19]. When work does not reflect value or meet needs, their enthusiasm tends to decline. If they experience medical adverse events, they may face dual pressures from work and family. Therefore, hospitals should pay attention to the physical and mental health of long-term working nurses, reasonably arrange work tasks, provide regular psychological relaxation activities and career development guidance, and help them relieve job pressure and regain work enthusiasm.

3.2.5 Work Income

Nurses' work income is related to their professional titles and working years. Nurses with higher incomes usually undertake more important clinical responsibilities, are more sensitive to potential risks, and are more likely to detect possible adverse events early, thus experiencing more psychological distress. Hospitals should provide more comprehensive psychological health protection for senior and high-title nurses, such as regularly organizing mental health lectures and providing one-on-one psychological counseling services, to help them relieve work pressure.

3.2.6 Experienced Punishment

Nurses who have experienced punishment bear great psychological pressure. Punishment can easily make them feel self-blame, guilt, and fear, making them more sensitive to adverse events and reducing their sense of support. Moreover, punishment may also damage nurses' professional identity and self-confidence, further increasing their psychological burden. Hospitals should establish a more humanized mechanism for handling adverse events. While ensuring medical quality, attention should also be paid to the psychological care of nurses, avoiding excessive punishment. The approach should be primarily educational and guiding, helping nurses learn from adverse events.

3.3 Implications for Nursing Staff

This study provides several implications for nursing staff. For nurses themselves, they should fully recognize the impact of different factors on the experience of second victims and take proactive

measures. For example, nurses with higher education levels should learn to regulate their emotions, avoid excessive self-blame, and participate in professional psychological training courses to enhance their psychological adjustment abilities. Married nurses should focus on balancing family and work, allocate time and energy reasonably, and seek support from family and colleagues when encountering psychological distress.

At the team level, nurses should strengthen mutual support and collaboration. Colleagues can share experiences and methods of dealing with adverse events, help each other in daily work, encourage each other, and create a positive working atmosphere. When a colleague experiences an adverse event, they should provide timely care and support to help relieve psychological pressure.

From the hospital management perspective, hospitals should develop personalized support strategies based on the results of this study. They should provide targeted training, psychological counseling, and career development plans for nurses with different education levels, marital statuses, employment forms, working years, and incomes. For example, provide more career protection and promotion opportunities for non-regular staff nurses; arrange appropriate rest and training for long-term working nurses to help them update their knowledge and skills and improve job satisfaction. At the same time, improve the adverse event reporting and handling mechanism, establish a fair, just, and humane process, and minimize the negative impact on nurses while ensuring patient safety.

4. Conclusion

This study thoroughly investigated the experience and support status of ophthalmology and otolaryngology nurses in Shanghai as second victims and analyzed the influencing factors. The results show that the negative impact of this group as second victims is severe, and their support level needs to be improved. Hospital managers should pay high attention to this issue and take effective measures to focus on the physical and mental health of nurses. At the same time, this study also has certain limitations. For example, the sample is only from Shanghai, and the relatively limited sample size may affect the universality of the research results. Future research can expand the sample size to cover different regions and types of medical institutions to improve the representativeness of the research results. Secondly, this study uses a cross-sectional survey design, which cannot determine causal relationships. Future research can use a longitudinal study design to track the psychological changes of nurses at different times to more accurately assess the mechanism of action of influencing factors. In addition, this study mainly focuses on individual characteristics and work environment factors of nurses. Future research can further explore other potential influencing factors, such as social support networks, to gain a comprehensive understanding of the experience and support status of second victims.

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