

PSYCHOLOGICAL OUTCOMES OF VERBAL AGGRESSION AMONG HOSPITAL CAREGIVERS: A STUDY OF SECOND VICTIM EXPERIENCES AND SUPPORT MECHANISMS: EMPIRICAL RESEARCH QUANTITATIVE

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Abstract: Aim: Examine the correlation among the frequency of verbal abuse, second victim distress, second victim support, psychological resilience, and anxiety levels among clinical nursing personnel in tertiary medical institutions. Design: A further analysis of cross-sectional correlation-based survey data was performed. Methods: Convenience sampling was employed to select a total of 332 nurses from a large tertiary hospital located in Chongqing. Study participants fulfilled a demographic survey, the Workplace verbal aggression Frequency Scale, the Generalized Anxiety Disorder Scale (GAD-7), the Connor-Davidson Resilience Scale (CD-RISC), as well as the Second Victims Experiences and Support Scale, so as to gauge the degree of verbal abuse, anxiety, psychological resilience, second victim distress and second victim support. Results: The average values are listed as below: verbal aggression frequency (0.89 ± 0.90), anxiety (1.85 ± 0.87), resilience (2.42 ± 0.72), second victim distress (2.90 ± 0.72), along with second victim support (2.32 ± 0.68). Independent sample t analyses and one-way ANOVA revealed that gender, age, department, educational level, marital status, and tenure significantly impacted the frequency of verbal aggression. Work unit, on-job tenure, and monthly pay notably influenced psychological distress levels. Educational attainment, professional credential, employment category, and revenue shaped resilience. Distress of the second victim correlated with age, department, job title, number of offspring, professional experience, and personal income. Different support levels showed clear disparities based on job title, work experience, and personal earnings. The Pearson correlation analysis exhibited significantly positive associations among verbal aggression frequency, anxiety, and secondary victim distress, and also between resilience and social support. Negative associations were identified linking verbal aggression and support, anxiety and resilience, as well as second victim distress with both resilience and support. Correlated multiple linear regression analyses indicated that oral aggression frequency, resilience, and second-party victims psychological distress served as significant predictors of anxiety levels (adjusted $R^2 = 0.271$, $p < 0.001$). Mediation analysis findings showed that resilience, social backing, and psychological tension partially intervened the association between verbal aggression and nervousness, possessing an overall intervening impact of 11.70%. No Patient or Public Contribution.

Keywords: Nurses; verbal aggression; Second victims; Psychological resilience; Anxiety

1 INTRODUCTION

Over the past few years, abusive language has grown steadily common in medical facilities, and is identified as the topmost and widespread type of hospital-related aggression—usually acting as a forerunner to physical attacks [1]. Given their job attributes and the frequent close contact with patients, nursing personnel exhibit notable vulnerability and are regarded as a high-risk subgroup vulnerable to verbal abuse [2-4]. Verbal aggression, categorized as a subtype of non-physical patient safety incident, refers to the application of hostile verbal or written communication targeting nurses without physical contact [5]. Verbal aggression toward healthcare workers takes many forms—ranging from insults and intimidation to prejudice, sarcasm, and ridicule [1, 6]. Although often dismissed as "just part of the job," these encounters can leave real psychological scars on the people involved. Studies of nurses in particular have found that emotional harm and threatening language are the most commonly reported types of such aggression [7]. When confronted with these incidents, nurses frequently describe feelings of anger, fear, guilt, anxiety, and emotional exhaustion [1, 4, 7], and over time such experiences may erode their commitment to the profession or even push them toward leaving [8-10].

To make sense of why the same stressful encounter can produce such different reactions, this study draws on the cognitive appraisal theory of stress, also known as the transactional model [11]. A central idea of this framework is that people do not respond to stressors directly; rather, they first appraise the situation. Depending on individual and contextual factors, an encounter may be judged as a threat or a challenge, and this judgment in turn shapes the coping

response adopted—whether emotion-focused strategies aimed at regulating feelings, or problem-focused ones aimed at changing the situation itself [12].

In light of the cognitive appraisal theory related to stress, when language abuse takes place, two cognitive processes need to happen to trigger stress in a given individual. During the initial assessment, nurses might ascribe the emergence of oral mistreatment to inherent or extrinsic elements. Should nursing staff discern that clients or their relatives utilize contemptuous or disparaging terms to assault the nursing personnel's professional standing, proficiency, or individual dignity—an interpretation they frame as a negation of their professional worth—they may categorize such verbal mistreatment as a peril. Returning to the example above: when a nurse is confronted with irrational accusations from a panicked patient, the same encounter may instead be read as an opportunity—say, a chance to practise emotional regulation or sharpen communication skills. In this case, the verbal aggression is appraised as a challenge rather than a threat. Primary appraisal is only half of the story. At the secondary appraisal stage, nurses weigh up whether they have what it takes to handle the situation: Can they keep their emotions in check? Do they feel equipped to communicate with an agitated patient? Have they dealt with something similar before? They also take stock of the resources around them—whether colleagues will step in, whether their supervisor will be understanding, and whether the hospital's reporting and response mechanisms actually work. Where nurses feel both capable and supported, they tend to respond with active, problem-focused coping; where either is lacking, defensive strategies are more likely to follow.

This framework helps explain a puzzle often observed in clinical settings: two nurses may experience the same incident of verbal abuse yet walk away with very different psychological outcomes. The difference, the theory suggests, lies in how each person appraises the event. Beyond explanation, the model also has practical value. It gives researchers a way to link appraisal processes to coping behaviour, offers a lens for evaluating whether hospital support systems are doing their job, and may even help identify nurses at heightened risk of psychological distress before problems escalate—allowing for early intervention rather than late repair.

The picture so far suggests that repeated exposure to such stressors takes a psychological toll when they are appraised as threats. It is here that psychological resilience becomes relevant. Resilience refers to the capacity to adapt positively in the face of adversity [13-14], and a growing body of evidence indicates that it buffers occupational stress and protects against burnout, compassion fatigue, anxiety, depression, and post-traumatic stress disorder (PTSD) [15-16]. Another concept worth introducing is that of the "second victim." Coined to describe clinicians who suffer emotional or physical harm in the wake of adverse events—such as unexpected patient injury or medical error—this idea captures a reality that many nurses know firsthand: even when no mistake was made, being on the receiving end of verbal aggression can leave one feeling like a victim of the encounter itself [17-18]. Yet, the second-victim construct, though, has received substantial scholarly examination within the domain of clinical mistakes, insufficient focus has been directed toward frontline care providers who turn into second victims as a result of aggressive verbal abuse.

Grounded in the cognitive appraisal theory of stress described above, this study examines how nurses' exposure to verbal aggression relates to their second-victim experiences, perceived support, psychological resilience, and anxiety—and, more importantly, what happens in between. Rather than treating these factors as isolated pieces, we focus on the pathways that link them: how support and resilience might buffer the impact of aggression, and how second-victim experiences might amplify it. In doing so, the study hopes to give hospitals something they can actually work with—a basis for designing targeted support systems and sharpening psychological interventions rather than applying them across the board. The longer-term goal is straightforward: less work-related anxiety among nurses, greater capacity to withstand pressure, and in turn, a more stable workforce and better quality of care.

2 METHODS

2.1 Design

A subsequent investigation of cross-sectional correlation-based questionnaire-derived information was performed.

2.2 Settings and Samples

This research was conducted in Chongqing, China. A purposive sampling strategy was employed to enlist participants during February 2025 at a top-tier hospital located in Chongqing, China. Eligibility standards are specified as follows: (1) Serving bedside clinical nurses with ongoing duty and direct patient interaction (excluding probationers and student interns); (2) Those who have suffered verbal aggression in the hospital environment; and (3) Individuals who have signed informed consent and willingly participated in the research. Exclusion criteria covered: nursing staff taking leave for reasons of illness, maternity, holiday, or overseas study, as well as those who declined to participate in the survey.

On the basis of the Monte Carlo indirect effect analysis, with a statistical power of 0.84 and 20-tier sample size increments, a sample count of 320 is necessary. Overall, 338 survey questionnaires were issued in this research, and all 338 questionnaires were recovered. Upon ruling out 6 invalid questionnaires, 332 valid survey instruments were retained, and the effective response rate stood at 98.22%.

2.3 Data Collection

Prior to gathering data, the study group secured authorization and partnership from the medical institution. The online survey questionnaire was created via the Questionnaire Star platform. Heads of departments helped carry out the survey.

The initial page of the survey incorporated elaborate guidelines detailing the study's objective, importance, privacy guarantees, optional involvement, and the privilege to drop out whenever needed. Respondents completed the survey through tapping a web address or checking a quick response code. Every query was compulsory, and each respondent was allowed to submit the questionnaire just one time. This research received approval from the institutional ethics committee that the authors belong to (2025-347-01). The methods deployed in this research comply with the principles outlined in the Declaration of Helsinki.

2.4 Survey Instruments

2.4.1 Demographic questionnaire

An independently created survey instrument was developed via prior scholarly works to gather essential demographic information, such as chronological age, work department, education attainment, professional designation, marital status, number of offspring, employment category, length of professional experience, monthly remuneration, and familiarity with the concept of second victim.

2.4.2 Workplace verbal aggression frequency scale

This metric was modified based on the Chinese edition of the Workplace Violence Frequency Scale translated by Peixi Wang [19]. It encompasses three distinct aspects: emotional maltreatment, menacing/intimidating conduct, and oral sexual harassment. Study subjects evaluated their experiences in the last 12 months employing a 5-point Likert scale (0–4), with elevated scores denoting increased frequency of verbal aggression. Cronbach's alpha for this research stood at 0.763.

2.4.3 Generalized anxiety disorder scale (GAD-7)

Created by RL et al., GAD-7 consists of 7 items and uses a 5-point scoring system (1 point = no relevant performance at all, 5 points = almost daily presence) to assess the severity of anxiety symptoms [20].

Elevated values signify greater levels of anxious distress. Within this research, the scale exhibited outstanding internal reliability (Cronbach's $\alpha = 0.946$).

2.4.4 Connor-Davidson resilience scale (CD-RISC)

The initial version was developed by Connor and Davidson [15], and a revised adaptation of this scale was completed by Xiao Nan and Zhang Jianxin for Chinese samples [21]. The CD-RISC comprises 25 items spanning three separate dimensions: resilience (13 items), strength (8 items), optimism (4 items). Each item is scored via a 5-level Likert scale (0 = never to 4 = almost always), and overall scores fall between 0 and 100. Elevated scores signify greater psychological resilience. The Cronbach's alpha value of this present research stood at 0.964.

2.4.5 Second victim experience and support scale

The instrument used in this study was adapted by Chen and colleagues from the original scale developed by Burlison et al., with revisions made to suit the Chinese language and cultural context [22]. It consists of 24 items across six dimensions: psychological distress, physical discomfort, practice-related strain, support from peers, support from supervisors, and support from family and friends. Each item is rated on a 5-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree). Total scores run in both directions at once: the higher the distress score, the greater the distress, while for the support items—scored in reverse—the higher the value, the less support the respondent perceived. In the present sample, Cronbach's alpha was 0.913 for the distress dimensions and 0.947 for the support dimensions.

2.5 Data Analysis

Analyses were performed with SPSS version 26.0. Classified variables were displayed as counts and proportions; sequential variables were framed via averages and standard deviations. Independent-sample t-tests and one-way ANOVA were utilized to contrast disparities among demographic categories. Pearson correlation analysis was applied to explore relationships between pivotal variables. Multiple linear regression was utilized to screen relevant influencing factors. Mediation analyses were implemented via the AMOS 26.0 software, utilizing a bootstrap sample of 5,000 to investigate the mediating functions of psychological resilience, second victim distress, and perceived support. A mediating impact was deemed statistically meaningful when the 95% confidence interval excluded zero. This cross-sectional study was reported following the STROBE 2007 (v4) statement. The detailed checklist is provided in Table A1 (Appendix).

3 RESULTS

3.1 Basic Information of Survey Respondents

Of the 332 nursing personnel that documented enduring verbal aggression within professional settings, 27 identified as male (8.13%) and 305 as female (91.87%). The largest group of participants fell in the 31–40 years age bracket ($n = 176$, accounting for 53.01%), with the next most common age range being 21–30 years ($n = 96$, 28.92%), followed by 41–50 years ($n = 52$, 15.66%), and those over 51 years ($n = 8$, 2.41%).

Altogether 252 research subjects (75.90%) possessed an undergraduate qualification or above. Regarding professional ranks, among the researched subjects, 164 individuals (accounting for 49.40%) possessed junior ranks, 153 persons (making up 46.08%) held intermediate or senior ranks, while 15 people (at 4.52%) had no professional ranks.

Most of the subjects were in a marital union ($n = 253$, 76.20%), and 234 respondents (70.48%) reported having children. In terms of employment status, 115 individuals (34.64%) are formally registered staff members, while the remaining 217 (65.36%) are contract employees or temporary workers.

The service years were mainly distributed in the 11–20 year interval ($n = 148$, 44.58%). The monthly income of 157 respondents surpassed 8,000 yuan, accounting for 47.29%.

Notably, more than half of the participants ($n=174$, 52.41%) had never encountered the concept of second victim, although no significant differences in awareness were observed across different demographic groups. All specific demographic features of the participating individuals are listed in Table 1.

Table 1 Basic Information on Survey Respondents ($n=332$)

Variables	Quantity (n)	Percentage (%)
Gender		
male	27	8.10%
female	305	91.90%
Age(years)		
21-30	96	28.90%
31-40	176	53.00%
41-50	52	15.70%
≥51	8	2.40%
Department		
Internal Medicine	68	20.50%
Surgery	111	33.40%
Gynecology	5	1.50%
Obstetrics	28	8.40%
Pediatrics	14	4.20%
Emergency Department	45	13.60%
Medical and technical departments	15	4.50%
Administrative Logistics Section	20	6.00%
other	26	7.80%
Education		
High school and below	3	0.90%
College	52	15.70%
Undergraduate	252	75.90%
Master's	25	7.50%
Professional title		
None	15	4.50%
Primary	164	49.40%
Intermediate	133	40.10%
Advanced	20	6.00%
Marital status		
unmarried	74	22.30%
married	253	76.20%
other	5	1.50%
Number of children		
0	98	29.50%
1	152	45.80%
2	79	23.80%
3 or more	3	0.90%
Employment type		
Regularized	115	34.60%
Contractual employment	201	60.50%
Other	16	4.80%
Years of experience		
<1 year	6	1.80%
1-5 years	68	20.50%
6-10 years	67	20.20%
11-20 years	148	44.60%
>20 years	43	13.00%
Income		
<3000yuan/month	13	3.90%
3,000-4,999 yuan/month	36	10.80%
5000-7999 yuan/month	126	38.00%
≥ 8000 yuan/month	157	47.30%
Do you understand the core concept of "second victim"?		
Right, I've come across that.	158	47.60%
No, I've never heard of that.	174	52.40%

3.2 Scores of verbal aggression Frequency, Second Victim Experience, Support, Psychological Resilience, and Anxiety Among Caregivers

Overall, the mean score for the occurrence of verbal aggression was 0.89 ± 0.90 . Looking at the dimensions, emotional abuse was reported most often (1.66 ± 1.28), while verbal sexual harassment was the least common (0.22 ± 0.73). Anxiety averaged 1.85 ± 0.87 . Psychological resilience had a mean total score of 2.42 ± 0.72 , with strength scoring highest (2.56 ± 0.75) and optimism lowest (2.32 ± 0.81). Second-victim distress averaged 2.90 ± 0.72 overall, and within it, psychological distress was the most prominent dimension (3.39 ± 0.73). Support averaged 2.32 ± 0.68 , with managerial support rated highest (2.36 ± 0.75) and colleague support lowest (2.24 ± 0.77). All descriptive statistics are summarised in Table 2.

Table 2 Frequency of verbal aggression, Anxiety, Psychological Resilience, Second Victim Experience and Support Scores Among Caregivers (n=332)

Variables	Aspect (mathematics discipline)	Number of entries/pc	$\bar{x}$	SD
Frequency of verbal aggression		3	0.89	0.90
	Emotional abuse	1	1.66	1.28
	menace	1	0.79	1.21
	Verbal sexual harassment	1	0.22	0.73
anxiety		7	1.85	0.87
Psychological resilience		25	2.42	0.72
	toughness	13	2.36	0.76
	strength	8	2.56	0.75
	optimism	4	2.32	0.81
Second victim distress		12	2.90	0.72
	Psychological distress	4	3.39	0.73
	Physical distress	3	2.69	0.90
	Practice Distress	5	2.63	0.93
Second victim support		12	2.32	0.68
	coworker support	3	2.24	0.77
	Management support	7	2.36	0.75
	Cuzzie support	2	2.30	0.83

3.3 Analysis of Variance

Independent-samples t-tests and one-way ANOVA were used to compare scores across demographic groups. The frequency of verbal aggression differed significantly by gender, age, faculty, education, marital status, and years of tenure ($P < 0.05$). Anxiety scores varied by department, professional tenure, and monthly income ($P < 0.05$). Psychological resilience differed by education, professional rank, employment status, monthly income, and awareness of the second-victim concept ($P < 0.05$). Second-victim distress showed significant differences across age groups, department, professional rank, number of children, tenure, and monthly income ($P < 0.05$). Similarly, second-victim support differed by professional rank, years of experience, and monthly income ($P < 0.05$). The detailed results are presented in Table 3, Table 4, Table 5, Table 6 and Table 7.

Table 3 Analysis of Variance in Frequency of verbal aggression (n=332)

Variables	Groups	$\bar{x}$	SD	T/F	p	LSD
Gender	male	1.506	1.185	2.863	0.008	-
	female	0.838	0.857			
	21-30 1	1.059	1.004			
Age (years)	31-40 2	0.837	0.829	2.235	0.084	1 > 4
	41-50 3	0.853	0.976			
	≥51 4	0.375	0.375			
	Internal medicine 1	0.755	0.928			
Department	Surgery 2	0.730	0.679	3.846	<0.001	1<6, 2<6
	Gynecology 3	1.400	1.553			
	Obstetrics 4	0.702	0.900			
	Pediatrics 5	0.595	0.718			
	Emergency Department 6	1.393	0.996			
	Medical and technical departments 7	0.778	0.793			
	Administrative Logistics Section 8	1.283	1.056			
	Other 9	1.115	1.041			
	High school and below 1	0.556	0.192			
Education	College 2	0.763	0.869	1.550	0.201	2<4
	Undergraduate 3	0.892	0.901			
	Master's 4	1.213	1.018			
Marital status	Unmarried 1	0.986	0.889	4.620	0.011	2<3
	Married 2	0.843	0.900			

Variables	Groups	$\bar{x}$	SD	T/F	p	LSD
Years of experience	Other 3	2.000	0.624	1.564	0.183	2 > 5, 3 > 5
	<1 year 1	0.611	0.712			
	1-5 years 2	1.020	0.989			
	6-10 years 3	0.990	0.901			
	11-20 years 4	0.876	0.884			
	>20 years 5	0.636	0.835			

Note: SD standard deviation, LSD Least Significant Difference.

Table 4 Analysis of Variance for Anxiety (n=332)

Variables	Groups	$\bar{x}$	SD	F	p	LSD
Department	Internal medicine 1	1.779	0.878	0.926	0.495	1 < 9, 2 < 9, 4 < 9
	Surgery 2	1.810	0.779			
	Gynecology 3	1.543	0.445			
	Obstetrics 4	1.719	0.884			
	Pediatrics 5	2.082	1.163			
	Emergency Department 6	1.838	0.705			
	Medical and technical departments 7	1.838	0.750			
	Administrative Logistics Section 8	1.993	0.962			
	Other 9	2.187	1.237			
Years of experience	<1 year 1	1.024	0.058	1.786	0.131	1 < 2, 1 < 3, 1 < 4
	1-5 years 2	1.893	0.940			
	6-10 years 3	1.885	0.823			
	11-20 years 4	1.886	0.821			
	>20 years 5	1.711	0.984			
	<3000yuan 1	1.824	1.263			
Income (/month)	3000-4999yuan 2	1.587	0.719	1.455	0.227	2 < 3
	5,000-7,999yuan 3	1.929	0.889			
	≥8,000yuan 4	1.847	0.839			

Table 5 Analysis of Variance in Psychological Resilience (n=332)

Variables	Groups	$\bar{x}$	SD	T/F	p	LSD
Education	High school and below 1	1.800	0.312	3.428	0.017	1 < 4, 3 < 4
	College 2	2.431	0.759			
	Undergraduate 3	2.381	0.699			
	Master's 4	2.800	0.707			
	None 1	2.400	0.972			
Professional title	Primary 2	2.354	0.718	3.048	0.029	2 < 4, 3 < 4
	Intermediate 3	2.425	0.673			
	Advanced 4	2.860	0.627			
	Regularized 1	2.577	0.668			
Employment type	Contractual employment 2	2.351	0.740	5.952	0.003	1 > 2, 1 > 3
	Other 3	2.058	0.435			
	<3000yuan 1	2.415	0.749			
	3000-4999yuan 2	2.332	0.791			
Income (/month)	5,000-7,999yuan 3	2.273	0.705	3.717	0.012	3 < 4
	≥8000yuan 4	2.548	0.684			
	Yeah, I do know about that.	2.528	0.757			
	No, I've never encountered that.	2.313	0.661			
Has anyone heard about the idea of the second victim.	Yeah, I do know about that.	2.528	0.757	2.76	0.006	-
	No, I've never encountered that.	2.313	0.661			

Note: SD standard deviation, LSD Least Significant Difference.

Table 6 Analysis of Variance for Second Victim Distress (n=332)

Variables	Groups	$\bar{x}$	SD	F	p	LSD
Age (years)	21-30 1	2.832	0.711	3.271	0.021	2 > 3
	31-40 2	3.005	0.659			
	41-50 3	2.679	0.854			
	≥51 4	2.813	0.809			
	Internal medicine 1	2.723	0.734			
Department	Surgery 2	2.911	0.726	1.016	0.424	1 < 6, 1 < 8, 2 < 6, 2 < 8, 2 < 9, 4 < 6, 4 < 8, 5 < 6, 5 < 8, 6 > 7
	Gynecology 3	2.950	0.477			
	Obstetrics 4	3.033	0.619			
	Pediatrics 5	2.875	0.683			
	Emergency Department 6	3.002	0.743			
	Medical and technical departments 7	2.989	0.779			
	Administrative Logistics Section 8	2.763	0.766			

Variables	Groups	$\bar{x}$	SD	F	p	LSD
Professional title	Other 9	3.048	0.667	2.839	0.038	3 > 4
	None 1	2.628	0.689			
	Primary 2	2.892	0.706			
	Intermediate 3	2.988	0.686			
	Advanced 4	2.571	0.928			
Number of children	0 1	2.923	0.694	0.549	0.649	2 < 3
	1 2	2.924	0.737			
	2 3	2.814	0.726			
	3 and more 4	3.111	0.096			
Years of experience	<1 year 1	2.542	0.880	2.213	0.067	4 > 5
	1-5 years 2	2.855	0.705			
	6-10 years 3	2.913	0.664			
	11-20 years 4	2.994	0.686			
	>20 years 5	2.671	0.854			
Income (/month)	<3000yuan 1	2.686	0.658	2.684	0.047	3 > 4
	3000-4999yuan 2	2.782	0.663			
	5,000-7,999yuan 3	3.036	0.677			
	≥8000yuan 4	2.834	0.754			

Note: SD standard deviation, LSD Least Significant Difference.

Table 7 Analysis of Variance in Second Victim Support (n=332)

Variables	Groups	$\bar{x}$	SD	F	p	LSD
Professional title	None 1	2.306	0.943	2.739	0.043	2>4,3>4
	Primary 2	2.292	0.629			
	Intermediate 3	2.414	0.662			
	Advanced 4	1.971	0.880			
	<1 year 1	2.306	0.267			
Years of experience	1-5 years 2	2.294	0.740	1.067	0.373	4 > 5
	6-10 years 3	2.301	0.681			
	11-20 years 4	2.393	0.615			
	>20 years 5	2.159	0.816			
Income (/month)	<3000yuan 1	2.462	0.607	2.536	0.057	2 > 4
	3000-4999yuan 2	2.514	0.862			
	5,000-7,999yuan 3	2.376	0.547			
	≥8000yuan 4	2.223	0.725			

Note: SD standard deviation, LSD Least Significant Difference.

3.4 Correlation Analysis

Pearson correlation analysis revealed significant associations among the main variables. The frequency of verbal aggression correlated positively with anxiety ($r = 0.361$, $p < 0.01$) and second-victim distress ($r = 0.127$, $p < 0.05$), and negatively with second-victim support ($r = -0.211$, $p < 0.01$); note that the support scale is reverse-scored. In other words, the more frequent the verbal aggression, the higher the anxiety and distress, and the lower the perceived support. Anxiety, for its part, correlated negatively with psychological resilience ($r = -0.251$, $p < 0.01$), positively with second-victim distress ($r = 0.395$, $p < 0.01$), and negatively with support ($r = -0.273$, $p < 0.01$)—nurses with lower resilience, less support, and greater distress tended to be more anxious. Finally, resilience correlated negatively with distress ($r = -0.278$, $p < 0.01$) and positively with support ($r = 0.307$, $p < 0.01$), meaning that more resilient nurses reported less distress and felt better supported. The full correlation matrix appears in Table 8.

Table 8 Correlation Analysis Between the Main Study Variables (R-Value)

Variables	Frequency of verbal aggression	anxiety	Psychological resilience	Second victim distress	Second victim support
Frequency of verbal aggression	1				
anxiety	0.361**	1			
Psychological resilience	-0.021	-0.251**	1		
Second victim distress	0.127*	0.395**	-0.278**	1	
Second victim support	0.211**	0.273**	-0.307**	0.361**	1
$\bar{x}$	0.89	1.85	2.42	2.90	2.32
SD	0.90	0.87	0.72	0.72	0.68

3.5 Multiple Linear Regression of Verbal Aggression, Psychological Resilience, and Second-Victim Distress on Anxiety

Multiple linear regression was performed with anxiety as the dependent variable and verbal aggression, psychological resilience, second-victim distress, and support as predictors. The model was statistically significant ($F = 31.744$, $p <$

0.001), with an adjusted R^2 of 0.271—together, the four predictors explained 27.1% of the variance in anxiety. All variance inflation factors were below 10, indicating no serious multicollinearity. The regression results are shown in Table 9.

Table 9 Multiple Linear Regression Analysis of Anxiety Among Caregivers

independent variables	Unstandardized B	Standardized Beta	t	p	VIF
(Constant)	0.806	-	2.802	0.005	-
Frequency of verbal aggression	0.296	0.308	6.404	<0.001	1.053
Psychological resilience	-0.175	-0.145	-2.873	0.004	1.148
Second victim distress	0.356	0.295	5.741	<0.001	1.197
Second victim support	0.073	0.057	1.087	0.278	1.259
Adjusted R2		0.271			
F		31.744***			
D-W		1.911			

a Dependent indicator: anxiety. Note: VIF Variance Inflation Factor.

3.6 Mediation Analysis

The hypothesized structural equation model is shown in Figure 1. Since the five variables were significantly intercorrelated, the conditions for path and mediation analysis were met. Based on previous research and the correlation results, a mediation model was specified with verbal aggression as the independent variable, second-victim distress, second-victim support, and psychological resilience as mediators, and anxiety as the outcome, in order to examine how workplace verbal aggression affects anxiety.

Model fit indices were acceptable: CMIN/DF = 2.677 (< 3), RMSEA = 0.071 (< 0.08), and IFI = 0.944, TLI = 0.934, CFI = 0.944, and NFI = 0.914—all above the 0.9 threshold. The model therefore fitted the data well. See Table 10 for details. All path coefficients reached statistical significance ($P < 0.05$); the full results are shown in Table 11.

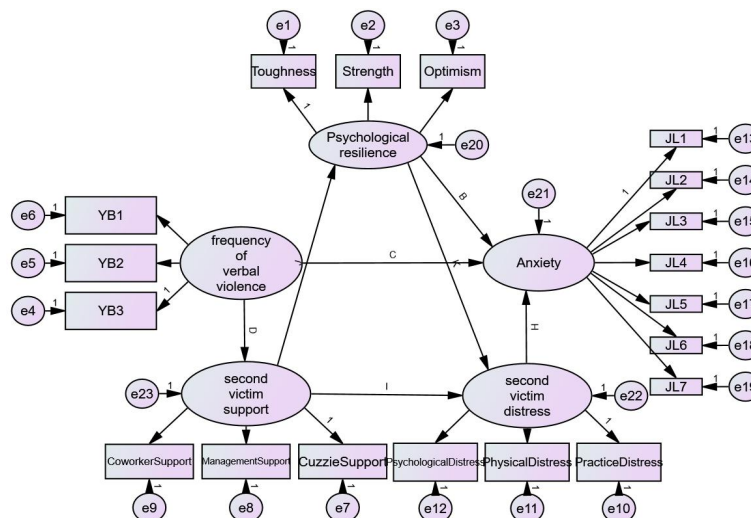


Figure 1 Structural Equation Model

Table 10 Model Fitness Analysis

norm	reference standard	Actual results
CMIN/DF	1-3 is excellent, 3-5 is good	2.677
RSMEA	A value of ≤ 0.05 is considered excellent, and a value of ≤ 0.08 is considered good	0.071
IFI		0.944
TLI		0.934
CFI	A value greater than 0.9 is the best, and a value greater than 0.8 is good	0.944
NFI		0.914

Table 11 Structural Equation Modeling Path Relationship Test Results

Path relationship test	Estimate	S.E.	C.R.	P
Second victim support <--- Frequency of verbal aggression	0.214	0.102	3.278	0.001
Psychological resilience <--- Second victim support	-0.322	0.073	-5.445	***
Second victim distress <--- Psychological resilience	-0.236	0.069	-4.07	***
Second victim distress <--- Second victim support	0.369	0.096	5.696	***
anxiety <--- Frequency of verbal aggression	0.315	0.167	5.024	***
anxiety <--- Psychological resilience	-0.117	0.073	-2.212	0.027
anxiety <--- Second victim distress	0.354	0.07	5.862	***

Note: ** $P < 0.01$, *** $P < 0.001$, standard error (S.E.) Standard error C.R. Critical Ratio.

As expected, the frequency of verbal aggression predicted lower second-victim support and higher anxiety. Moving along the model, second-victim support predicted higher psychological resilience and lower second-victim distress. Resilience, in turn, predicted lower distress as well as lower anxiety, while distress itself predicted higher anxiety. Together, the three variables—second-victim support, resilience, and distress—carried the effect of verbal aggression on anxiety, accounting for an indirect effect of 11.70%. Since the direct path remained significant, this constitutes partial mediation. The detailed coefficients are presented in Table 12.

Table 12 The Mediating Effect of Psychological Resilience, Second Victim Support and Second Victim Distress on the Relationship Between Frequency of verbal aggression and Anxiety

dependency	pathway relationship	efficiency value	Lower	Upper	P	percentage of effect
Indirect effects1	Frequency of verbal aggression → second victim support → second victim distress → anxiety	0.074	0.018	0.168	0.003	7.80%
Indirect effect 2	Frequency of verbal aggression → second victim support → Psychological resilience → anxiety	0.021	0.002	0.06	0.028	2.21%
Indirect effects3	Frequency of verbal aggression → second victim support → Psychological resilience → second victim distress → anxiety	0.015	0.003	0.037	0.005	1.58%
Total indirect effect	-	0.111	0.039	0.22	0.002	11.70%
direct effect	Frequency of verbal aggression → anxiety	0.838	0.441	1.565	<0.001	88.30%
aggregate effect	-	0.949	0.519	1.733	<0.001	-

4 DISCUSSION

4.1 Correlations Between verbal aggression, Second Victim Distress, Support, Psychological Resilience and Anxiety

Our analysis showed that the frequency of verbal aggression was positively associated with second-victim distress and anxiety, and negatively associated with psychological resilience and second-victim support. These findings are consistent with what earlier studies have reported. Shang and colleagues, in their study of psychiatric nurses, found a significant positive association between workplace violence and psychological distress, suggesting that repeated exposure to violence is a major driver of declining mental health [23]. Elsewhere, Christensen et al. documented the emotional toll on healthcare workers targeted by on-the-job aggression—feelings of sadness, anger, fear, and anxiety that can develop into longer-lasting psychological problems [24]. Bambi et al. added a somatic dimension, reporting that beyond negative emotions, the most common complaints among victimised nurses were gastrointestinal symptoms and post-traumatic stress disorder [25]. In a similar vein, Chen and Lin confirmed that verbal aggression, as one of the most common forms of workplace violence, is associated with elevated anxiety among medical staff [26-27].

Current research results likewise correspond to earlier researches indicating that recurrent verbal maltreatment coming from patients or their relatives notably raises the likelihood of anxiety among care providers. Furthermore, an unfavorable clinical atmosphere—featuring uncertainty, workplace harassment, and insufficient support—has been confirmed to erode nurses' mental resilience and general well-being [28]. Pan Hongying noted that institutional backing and proactive strategies, such as enhancing peer support and managerial focus, can mitigate the impact of workplace violence, indirectly corroborating the finding that verbal aggression frequency is inversely associated with perceived support [29]. Research teams examined cross-sectional research data and reported that nurses are unlikely to encounter workplace violence in more supportive work settings [30].

Furthermore, the present investigation identified that anxiety exhibited a negative association with psychological resilience and second-victim support, while showing a positive association with second-victim distress. These results echo those of Lin and He, whose review concludes that psychological resilience curbs the adverse consequences of occupational strain—including burnout, unease, and post-traumatic stress disorder [31]. Diao and colleagues reached a complementary conclusion: the prevalence of anxiety is closely tied to environmental and interpersonal stressors, such as insufficient family support and unmet career goals [32]. Read together, these studies suggest a plausible chain of effects—adequate support builds nurses' capacity to endure stress, eases emotional strain, and in turn reduces anxiety.

Our analysis also revealed a clear pattern among the three mediating variables: resilience correlated negatively with second-victim distress and positively with support, while distress and support were themselves inversely related. Put simply, nurses who receive genuine backing—from supervisors, colleagues, and family alike—seem better able to process negative emotions and hold onto their resilience, and are therefore less likely to develop anxiety. This is consistent with Yosep et al., who found that when nurses receive practical help such as fair workload allocation, emotional affirmation, and open communication, alongside professional intervention from psychologists or physicians, the negative impact of workplace aggression can be substantially mitigated [33].

4.2 Mediating Effects of Second Victim Support, Psychological Resilience, and Distress

The mediation analysis showed that the frequency of verbal aggression predicted lower second-victim support and higher anxiety. Support, in turn, predicted higher resilience and lower distress, while resilience predicted lower distress and lower anxiety; distress itself predicted higher anxiety. Together these pathways carried an indirect effect of 11.70%. One way to read this result is that support acts as a gateway variable. Nurses who feel backed by supervisors, colleagues, and family are more willing to seek help and to approach occupational stress flexibly and constructively; resilience then builds on this foundation, blunting the distress caused by verbal aggression and keeping anxiety in check. The practical implications follow naturally. Hospital managers would do well to invest in organizational support structures and resilience-building programmes—help that is genuinely accessible rather than merely available on paper, and training that goes beyond routine lectures. The goal is to help nurses understand how verbal aggression affects them, regulate their own emotions more effectively, and know how to seek and use support when they need it.

4.3 Applying the Cognitive Appraisal Theory of Stress to the Anxiety Mechanism

Finally, our findings lend support to the cognitive appraisal theory as an account of how nurses respond psychologically to verbal aggression. Nurses with higher resilience reported lower anxiety even when exposed to repeated aggression, plausibly because they tended to appraise such stressors as challenges to be managed rather than threats to be feared—an appraisal style that favours active coping and emotional adjustment over rumination.

Recall the logic of the theory: a person's response to stress depends on how they judge both the threat and their own resources. Resilient nurses appear to judge verbal aggression as something within their capacity to handle; less resilient nurses may see the same incident as uncontrollable and damaging, which leaves them more emotionally vulnerable and more likely to fall back on avoidance, suppression, or self-blame. This asymmetry, we would argue, is precisely why resilience-building deserves a central place in psychological support for nurses working in high-pressure clinical environments.

5 LIMITATIONS

The study has its limitations, and they are worth acknowledging openly. The data came from a single tertiary hospital in Chongqing, so the findings may not travel well to other settings—hospitals in different regions, or at different levels of the healthcare system, may tell a different story. Second, the final regression model included only a limited set of predictors and accounted for a relatively small share of the variance in anxiety. Part of this no doubt reflects the sample itself, which was fairly homogeneous, but it also points to variables we did not capture—situational and work-related factors that likely matter more than our model allowed for.

Future research could address these gaps in several ways. Recruiting more diverse samples would be a start, as would broadening the range of variables under study. Organizational culture, leadership style, and workload, for instance, rarely appear in models of this kind but plausibly shape how nurses experience and recover from verbal aggression. Finally, multi-centre and longitudinal designs would allow researchers to track changes over time rather than relying on a single snapshot. Taken together, such efforts would bring us closer to understanding how verbal aggression at work affects nurses' psychological health—and to designing interventions that genuinely work.

6 CONCLUSION

In summary, nurses who experience verbal aggression tend to report higher second-victim distress and lower perceived support, and these outcomes are shaped by a range of demographic and work-related factors. For hospital managers, the message is clear: verbal aggression is not an unavoidable side of the job, and its psychological consequences deserve to be taken seriously. Practical responses exist. Hospitals can put in place support systems that are standardised, easy to access, and—just as importantly—trusted by the staff they are meant to serve, and offer professional psychological help to those who need it. Measures of this kind strengthen nurses' psychological adaptability and their ability to seek out and use the help available to them. The payoff extends beyond the nurses themselves: better psychological wellbeing translates into safer patient care and higher-quality services.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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APPENDIX

Table A1 STROBE 2007 (v4) Statement

Section/Topic	Item#	Recommendation	Reported on page #
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	Page 3, line 15
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	Page 5, line 44-48
Background/rationale	2	Introduction	Page 5, line 52-63
		Explain the scientific background and rationale for the investigation being reported	Page 6-7
Objectives	3	State specific objectives, including any prespecified hypotheses	Page 8, line 106-116
Study design	4	Methods	Page 68, line 109-116
		Present key elements of study design early in the paper	Page 8, line 123-124
Setting	5	Define the background, specific areas, and associated timelines, encompassing phases of enrolment, exposure period, long-term observation, and data acquisition.	Page 9, line 125-127
Participants	6	(a) Provide the criteria for eligibility, along with the sources and approaches employed to select the study participants.	Page 8, line 123-124
Variables	7	Accurately specify each of these outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	Page 9, line 125-127
		For every variable of concern, supply data sources and specifics of evaluation approaches (measurement). Describe comparability of assessment methods if there is more than one group	Page 9, line 143
Data sources/measurement	8*	Describe any efforts to address potential sources of bias	Page 10
Bias	9	Explain how the study size was arrived at	Page 11, line 163-174
Study size	10	Elaborate on the approaches adopted to manage quantitative variables within the performed analytical procedures. If applicable, describe which groupings were chosen and why	Page 9, line 143
Quantitative variables	11	(a) Describe all statistical methods, including those used to control for confounding	Page 10
Statistical methods	12	(b) Describe any methods used to examine subgroups and interactions	Page 11, line 163-174
		(c) Explain how missing data were addressed	Page 11, line 176-182
		(d) If applicable, describe analytical methods taking account of sampling strategy	Page 12, line 183-184
		(e) Describe any sensitivity analyses	NO
Participants	13*	Results	Exclude missing values without processing
		(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	NO
		(b) Give reasons for non-participation at each stage	Page 9, line 128-131
Descriptive data	14*	(c) Consider use of a flow diagram	Page 8, line 123-124
		(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Page 9, line 125-127
Outcome data	15*	(b) Indicate number of participants with missing data for each variable of interest	NO
Main results	16	Report numbers of outcome events or summary measures	Page 12, line 186-201
		(a) Provide unadjusted estimates, and where applicable, confounder-adjusted estimates along with their precision (e.g., 95% confidence interval). Make clear which confounders were adjusted for and why they were included	Page 13, line 202-217

Section/Topic	Item#	Recommendation	Reported on page #
		(b) Report category boundaries when continuous variables were categorized	Page 13, line 205-217
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NO
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	No
		Discussion	Page 17, line 292-293 Page 18, line 294, 307-308
Key results	18	Summarise key results with reference to study objectives	Page 19, line 317-319, 326-328 Page 20, line 336-342 Page 21, line 356-361
Limitations	19	Elaborate on the constraints of this research, with due consideration of possible sources of bias and inaccuracy. Discuss both direction and magnitude of any potential bias	Page 21, line 371-376 Page 22, line 377-382
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Line 290-369
Generalisability	21	Discuss the generalisability (external validity) of the study results	Page 21, line 371-376
		Other information	
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	Page 22, line 393-394

Note: Checklist of items that should be included in reports of cross-sectional studies.