

Original Article

# Effect of a Compassion Fatigue Intervention on Nurses' Professional Quality of Life: A Single Group Study

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## ABSTRACT

**Objectives:** The objective is to assess the effectiveness of a structured compassion fatigue (CF) Educational Self-Help Module in improving the professional quality of life (ProQOL) among nurses. CF is a decline in a caregiver's ability to empathise and be compassionate, resulting from prolonged, continuous and repeated caregiver stress. It is a recently recognised but significant problem in the nursing field worldwide.

**Materials and Methods:** An experimental single-group pre-test and post-test design was employed with a quantitative evaluative approach. Of the 528 eligible nurses, 42 were randomly selected using a computer-generated random numbers and 39 completed the intervention. Data were collected using a socio-demographic pro forma and the ProQOL Scale for Health Workers (ProQOL Health, Version 1), measuring compassion satisfaction (CS), perceived support (PS), burnout (BO), secondary traumatic stress (STS) and moral distress (MD). A validated, 4 h educational self-help module was delivered, with follow-up reinforcement through daily WhatsApp messages and weekly self-study materials. ProQOL scores were assessed at baseline, day 30 and day 60. Statistical analysis was performed using the Friedman test and the Wilcoxon signed-rank test.

**Results:** Significant improvements were observed post-intervention in CS (from  $22.67 \pm 3.48$  to  $26.62 \pm 2.96$ ) and PS (from  $20.90 \pm 4.07$  to  $26.97 \pm 4.04$ ). Concurrently, BO, STS and MD scores significantly declined. The number of participants classified as resilient increased from 2.6% to 17.9% by Day 60.

**Conclusion:** The CF Intervention Module effectively enhanced nurses' professional well-being by increasing positive ProQOL components and reducing CF-related vulnerabilities. The study supports the integration of self-help modules into staff development programmes to improve emotional well-being, reduce BO, and ultimately enhance patient care outcomes.

**Keywords:** Burnout, Compassion fatigue, Compassion satisfaction, Nurses, Professional quality of life, Secondary traumatic stress

## INTRODUCTION

In recent years, growing attention has been directed towards a critical occupational hazard known as compassion fatigue (CF), a condition that significantly impacts the well-being of nurses and, by extension, the quality of care they provide.<sup>[1,2]</sup> CF refers to the physical, emotional and spiritual exhaustion resulting from prolonged exposure to the suffering of others, particularly in caregiving roles. Trauma expert Figley described it as 'the cost of caring'.<sup>[3]</sup> Scholars like Potter *et al.* (2010) characterise CF as 'the traumatisation of helpers through their effort at helping others'.<sup>[4]</sup> Persistent self-sacrifice, high emotional labour and continual exposure to distressing patient situations can deplete a nurse's emotional reserves, reducing empathy and eventually impairing the ability to offer compassionate care.<sup>[5]</sup>

While CF is increasingly acknowledged in high-income countries, the psychological dimensions of occupational health are often under-recognised in many developing nations, including India.<sup>[6]</sup> Challenges such as inadequate staffing, long shifts and lack of support overshadow emotional well-being in the workplace. Consequently, burnout (BO) and emotional distress may go unnoticed or unaddressed within hospital systems and policy frameworks.<sup>[7]</sup> The professional quality of life (ProQOL health) framework is widely used to assess healthcare professionals' well-being. Conventionally, it encompassed three dimensions: compassion satisfaction (CS), BO and secondary traumatic stress (STS). However, in response to the increasing complexity of emotional challenges faced by healthcare workers, recent studies have expanded this framework to

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include moral distress (MD) and perceived support (PS) as well [Figure 1].<sup>[8]</sup>

Global research suggests that CF and related stressors are widespread among nurses, with those in Asian settings often reporting higher fatigue and lower job satisfaction.<sup>[4,9]</sup> A study in India showed that oncology nurses experience notably more BO and CF than clinical oncologists and psychologists.<sup>[10]</sup>

Although international interventions—such as mindfulness, self-care and resilience training show promise, structured, context-appropriate strategies are limited in developing countries. Barriers such as mental health stigma, lack of psychological training and limited institutional resources hinder the implementation of supportive measures.<sup>[2,11,12]</sup> Moreover, educational self-help interventions, which empower healthcare workers to manage emotional health independently, have not been adequately explored in India or similar contexts. Much of the research still centres on prevalence and risk factors rather than testing the effectiveness of interventions.<sup>[5,9,13]</sup> There are relatively few studies evaluating intervention outcomes using validated tools. Intervention-focused research in this domain is still in its early stages.<sup>[14,15]</sup>

To address this critical gap, the present study aims to evaluate the effectiveness of an educational self-help module designed to reduce CF among nurses. The intervention seeks to foster resilience, enhance emotional well-being and ultimately improve ProQOL within resource-constrained healthcare environments by equipping them with self-guided tools.<sup>[16,17]</sup>

## MATERIALS AND METHODS

### Objectives

Primary objective: To assess the effectiveness of a structured CF Educational self-help module in improving ProQOL among nurses.

Secondary objectives: To evaluate the trends in ProQOL subscales over time (baseline, day 30, day 60) and to explore correlations among ProQOL components.

### Hypotheses

The study hypothesised that implementing the CF Educational Self-Help Module would lead to significant improvements in ProQOL subscale scores (i.e., increased CS and PS and reduced BO, STS and MD).

### Design

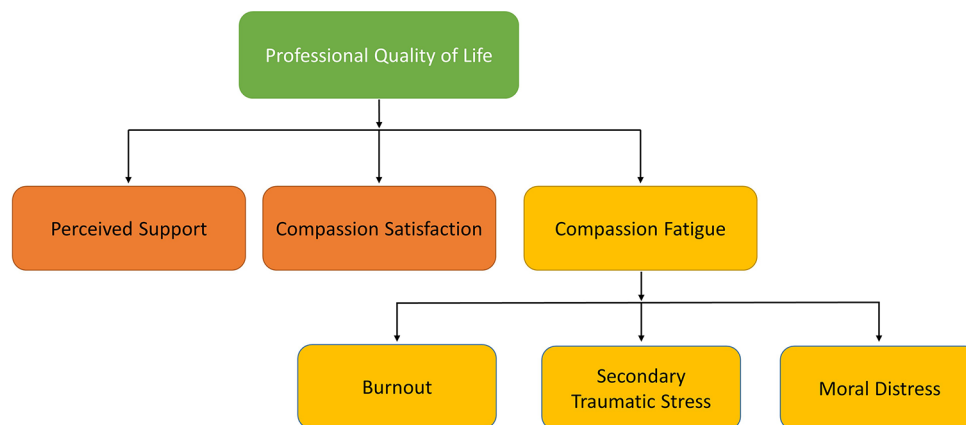
The experimental study utilises a single-group pre-test and post-test method to assess the impact of a CF educational self-help module on the ProQOL of working nurses working at a tertiary care hospital in Eastern India. A quantitative evaluative approach was used in this study. This study specifically aimed to develop evidence on the effectiveness of a structured CF Educational Self-Help Module in improving the ProQOL among nurses. It is anticipated that the implementation of the CF intervention module will lead to improved scores of the ProQOL subscales.

### Study setting and sampling

The study was conducted at a tertiary care hospital in eastern India. The sample size for the study was calculated using G\*Power 3.1.9 for repeated measures, with an effect size of 0.50, an alpha level of 0.05 and a power of 0.80. Based on these parameters, the required sample size was determined to be 35, accounting for a 20% attrition rate; a total of 42 participants were selected for the study. This approach ensured that the study maintained adequate statistical power to detect meaningful outcome differences.

### Inclusion and exclusion criteria

A total of 1204 registered nurses working in various departments at a tertiary care hospital in eastern India were assessed for eligibility. Nurses with clinical experience of more than 2 years, regular staff, and nurses working in wards and intensive care units were only included in the study to ensure that the nurses with prolonged and constant



**Figure 1:** Components of professional quality of life-health.

exposure to the patients were participants. Hence, nurses posted in the outpatient departments and operation theatres, relieving staff/contractual staff, nursing superintendents and assistant nursing superintendents were excluded (676). Of the remaining 528 eligible nurses, a simple random sampling technique using a computer-generated random number was used to recruit 42 participants; 39 nurses received the intervention, while three were on leave. None of the participants dropped out after the intervention was implemented [Figure 2].

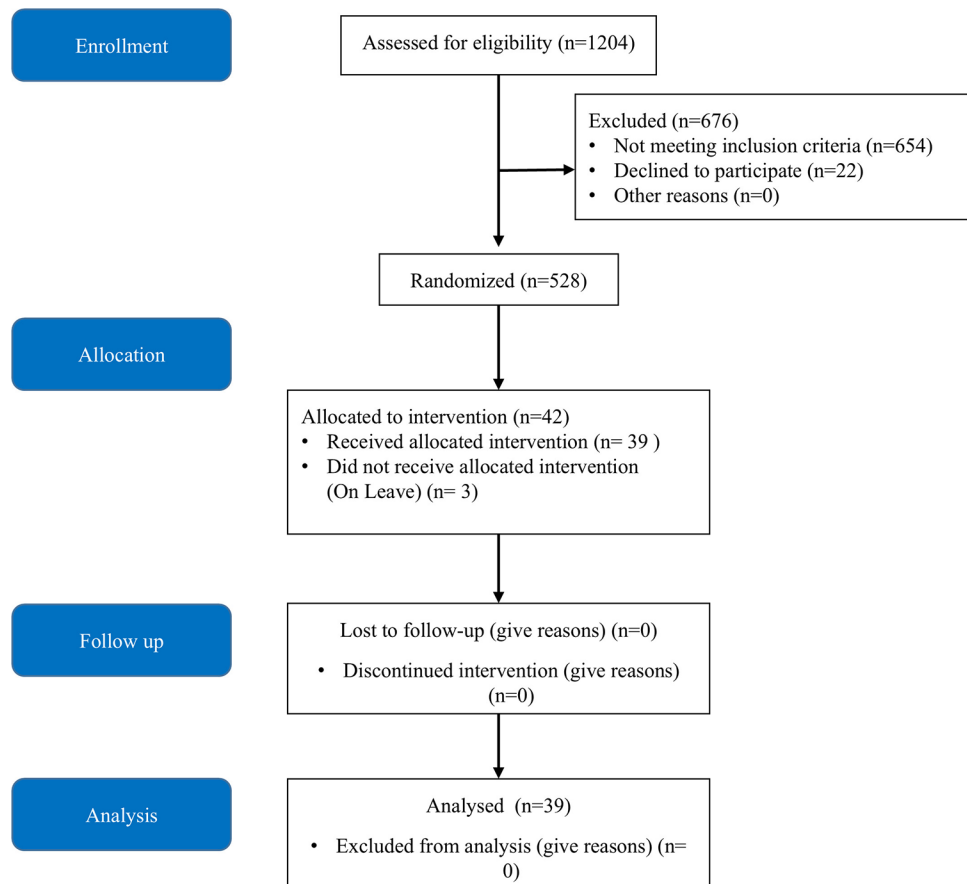
### CF intervention module (developed by researcher)

The intervention was developed following a comprehensive review of the literature on CF, its causes, signs, symptoms and various prevention and management strategies. The review highlighted successful interventions aimed at reducing CF in healthcare professionals, particularly nurses. Works of Perregrini combating CF,<sup>[18]</sup> Stoewen moving from CF to Resilience,<sup>[19-22]</sup> Gentry-Resilience building programme,<sup>[23]</sup> and contributions from Figley<sup>[3]</sup> and Stamm,<sup>[24,25]</sup> significantly influenced the development of this intervention. Based on this review, a tailored CF intervention module was created,

incorporating interactive exercises and group discussions to enhance participant engagement and learning. To ensure relevance and appropriateness, the draft module was reviewed by a multidisciplinary panel of five subject experts, including one psychiatrist, two psychiatric nurses and two clinical psychologists. Their feedback led to key refinements: The module duration was reduced from 5 h to 4 h to enhance feasibility and participant attention and additional content was added to elaborate on the development process of CF. The experts also endorsed the inclusion of interactive activities, such as self-reflective exercises and resilience-building tasks, which were retained in the final version.

The final intervention consisted of a structured four-hour educational self-help session. The session included a variety of activities, each with a specific time duration, which the researcher delivered. The topics covered were as follows:

- Concepts of CF, its meaning, causes (both organisational and individual), signs and symptoms (30 min). This session is expected to reduce BO and STS.
- 'My Mission Statement' activity to encourage self-reflection (30 min). This is expected to increase CS and reduce MD.



**Figure 2:** Consolidated standards of reporting trials flow diagram for one-group study on the compassion fatigue intervention module.

- CF as a component of ProQOL, the process of CF development (30 min). This is expected to enhance CS and reduce BO and STS.
- 'A Letter from the Great Supervisor' activity to promote insight and empathy (30 min). This is expected to enhance PS and reduce MD.
- Managing my CF, including preventive strategies such as identifying triggers, setting boundaries and work-life balance (45 min). This is expected to reduce BO and STS.
- 'Understanding My Compassion' worksheet for further personal reflection (30 min). This is expected to improve CS and reduce BO.
- Resilience-skill-building activities ('Compassion Fatigue Antibodies') to improve self-awareness, self-monitoring, self-regulation and self-compassion (45 min). This is expected to reduce BO, STS and MD.

Throughout the session, videos were shown, and group discussions were held to reinforce the material.

In addition to the in-person session, a structured digital follow-up was implemented through a WhatsApp group over 1 month to reinforce key learning points and sustain participant engagement. This included:

- Daily motivational messages ( $n = 30$ ): Sent every morning, these brief prompts included affirmations, reminders to apply resilience strategies, and reflection cues.
- Weekly digital self-help materials ( $n = 4$ ): Delivered every 7 days, these included short readings, guided journaling tasks and practical tools to help integrate self-care practices into daily life.

The WhatsApp follow-up, while not explicitly based on a theoretical framework, was designed to extend the intervention by encouraging continuity, motivation and reflective practice. All content was reviewed by experts in mental health and nursing for relevance and psychological safety. The group format allowed for consistent delivery without requiring individual responses. Although active participation was not mandated, some participants voluntarily reacted or replied to posts, indicating informal engagement. No additional worksheets or self-monitoring forms were collected.

### Instruments

Data were collected using two primary instruments: A self-developed pro forma for gathering socio-demographic information and the ProQOL Scale for Health Workers (ProQOL Health, Version 1) to assess the professional well-being of nurses.

### Demographic proforma

The socio-demographic variables assessed in the study included the participants' age, total working experience,

experience in their current area of work, gender, relationship status, type of family, professional education, area of current posting, prior work experience in another institution, history of psychiatric consultation, prior awareness of CF, and whether the participants had previously undergone any CF training.

### ProQOL health scale

The ProQOL Health scale, developed by Stamm in 1996<sup>[24]</sup> is a well-established tool used to evaluate healthcare workers' quality of professional life. The scale consists of five subscales: CS, PS, BO, STS and MD.<sup>[25]</sup> Each of these subscales includes six items that are measured on a five-point Likert scale, with responses ranging from 'Never' (1) to 'Very Often' (5). The ProQOL Health, Version 1, Based on Stamm, has demonstrated a Cronbach's alpha coefficient for BO ( $\alpha = 0.80$ ), STS ( $\alpha = 0.84$ ) and CS ( $\alpha = 0.90$ ), indicating high internal consistency and reliability.

For each subscale, scores are interpreted as follows: a score between 6 and 12 indicates low levels, a score between 13 and 23 reflects average levels, and a score between 24 and 30 suggests high levels of the respective domain. The tool also helps to interpret the overall risk of CF. If CS is low, OR High BO/STS/MD, it indicates overall High Risk; If CS is high and BO, STS, and MD are low, it indicates the individual is Resilient; any other combination indicates moderate risk of having or developing CF.

### Data collection

Before the intervention, participants were provided with a patient information sheet detailing the study and asked to sign an informed consent form. Socio-demographic data were collected from each participant, followed by completing the ProQOL Scale for Health Workers (ProQOL Health, Version 1) for the baseline assessment. After the baseline assessment, all participants received the intervention together. The intervention involved a 4 h educational self-help module, which included discussions, exercises and videos to address CF and promote resilience. To reinforce learning, daily motivational messages and weekly self-help materials were sent to participants via a WhatsApp group for 1 month after the intervention. Post-test data on the ProQOL were collected 1 month and 2 months after the intervention to assess its impact. Ethical considerations were diligently followed throughout the study to uphold participant rights and confidentiality.

### Plan for data analysis

Statistical analyses were conducted using Statistical Package for the Social Sciences Version 21. Descriptive statistics were computed to summarise the demographic and baseline characteristics of the participants, including frequencies, percentages, means and standard deviations. The Normality test (Kolmogorov-Smirnov) indicated that the data are not

normally distributed ( $P < 0.05$ ). The Friedman test was used to assess differences in functional fitness across multiple test attempts, while the Wilcoxon signed-rank test was employed as a *post hoc* analysis. All statistical tests were considered significant at an alpha level of 0.05.

## RESULTS

### Socio-demographic profile of participants

Table 1 presents the key demographic characteristics of the study sample. A majority of participants (64.1%) reported living in nuclear families. Regarding educational qualifications, most nurses (71.8%) held a Bachelor of Science in Nursing. The majority (89.7%) had between 2 and 7 years of overall work experience, while a smaller portion (10.3%) had 8–14 years of experience. Regarding experience in their current work areas, 74.4% had been in their roles for 1–3 years and 25.6% for 4–7 years. Notably, none of the participants had sought psychiatric consultations. Awareness of CF was limited; 69.2% had never heard of the term, while 30.8% had some awareness, though none had received any formal training on the subject.

### Correlation between ProQOL components

The correlation matrix [Table 2] reveals several significant relationships among the study variables. CS showed a strong positive correlation with PS ( $r = 0.665$ ,  $P < 0.001$ ) and a modest negative correlation with MD ( $r = -0.316$ ,  $P < 0.05$ ). BO was strongly associated with both STS ( $r = 0.633$ ,  $P < 0.001$ ) and MD ( $r = 0.682$ ,  $P < 0.001$ ), indicating that higher levels of BO tend to co-occur with increased traumatic stress and MD. In addition, MD was significantly related to STS ( $r = 0.541$ ,  $P < 0.001$ ). These findings highlight essential interrelationships between occupational stressors and well-being among nurses.

### Trend of ProQOL health components

Table 3 highlights ProQOL components trends and the overall risk of CF over time. There was a notable improvement in CS, with the proportion of participants in the high category increasing from 46.2% at baseline to 79.5% on day 30 and maintaining at 64.1% on day 60. PS also improved steadily, with high levels rising from 28.2% to 79.5% by day 60.

BO showed a marked reduction, with high BO decreasing from 5.1% to 0% and low BO increasing to 59% by day 60. Similarly, STS improved, with 56.4% of participants in the low category by Day 60, up from 20.5% at baseline. MD showed a modest positive shift, with a slight increase in the low category and a stable, low percentage in the high category.

In terms of overall CF risk, the number of participants classified as resilient rose from 2.6% at baseline to 17.9% by day 60, while the high-risk group decreased to 0%. These findings suggest that the intervention or time-related factors

**Table 1:** Frequency and percentage distribution of socio-demographic characteristics ( $n=39$ ).

S. No.	Variables	Frequency	Percentage
1	Age in years (Mean±SD)	30.15±3.28	
2	Total working experience (Mean±SD)	4.55±2.53	
3	Experience in current area (Mean±SD)	2.99±1.57	
4	Gender		
	Male	19	48.7
	Female	20	51.3
5	Relationship status		
	Married	22	56.4
	Single	17	43.6
6	Type of family		
	Nuclear	25	64.1
	Joint	14	32.9
7	Professional education		
	GNM/Diploma Course	2	5.2
	Post Basic B.Sc Nursing	1	2.6
	B.Sc Nursing	28	71.8
	M.Sc Nursing	8	20.4
8	Area of current posting		
	ICU	9	20.5
	Ward	20	51.3
	Oncology unit	10	28.2
9	Previously worked in another institute		
	Yes	20	51.3
	No	19	48.7
10	Psychiatric consultation taken		
	Yes	0	0
	No	39	100
11	Heard of compassion fatigue		
	Yes	12	30.8
	No	27	69.2
12	Undergone any compassion fatigue training		
	Yes	0	0
	No	39	100

SD: Standard deviation, ICU: Intensive care unit, GNM: General Nursing and Midwifery

may have positively influenced the participants' professional well-being.

### Effectiveness of CF intervention module

Table 4 presents the effectiveness of the CF Intervention Module, administered after the baseline assessment,

**Table 2:** Correlation matrix among compassion satisfaction, perceived support, burnout, secondary traumatic stress and moral distress.

ProQOL components	Compassion satisfaction	Perceived support	Burnout	STS	Moral distress
Compassion satisfaction	1				
Perceived support	0.66**	1			
Burnout	-0.23	0.19	1		
STS	-0.08	0.08	0.63**	1	
Moral distress	-0.31*	0.04	0.68**	0.54**	1

\* $P < 0.05$ , \*\* $P < 0.001$  significant. STS: Secondary traumatic stress

**Table 3:** Changes in the level of ProQOL components and overall risk of compassion fatigue from baseline to day 60.

S. No.	ProQOL components	Baseline	Day 30	Day 60
		f (%)	f (%)	f (%)
1	Compassion satisfaction (CS)			
	Low	0 (0)	0 (0)	0 (0)
	Average	21 (53.8)	8 (20.5)	14 (35.9)
	High	18 (46.2)	31 (79.5)	25 (64.1)
2	Perceived support (PS)			
	Low	1 (2.6)	0 (0)	0 (0)
	Average	27 (69.2)	12 (30.8)	8 (20.5)
	High	11 (28.2)	27 (69.2)	31 (79.5)
3	Burnout (BO)			
	Low	12 (30.8)	6 (15.4)	23 (59)
	Average	25 (64.1)	31 (79.5)	16 (41)
	High	2 (5.1)	2 (5.1)	0 (0)
4	Secondary traumatic stress (STS)			
	Low	8 (20.5)	17 (43.6)	22 (56.4)
	Average	31 (79.5)	22 (56.4)	17 (43.6)
	High	0 (0)	0 (0)	0 (0)
5	Moral distress (MD)			
	Low	12 (30.7)	12 (30.8)	18 (46.1)
	Average	26 (66.7)	25 (64.1)	20 (51.3)
	High	1 (2.6)	2 (5.1)	1 (2.6)
6	Overall: Risk of compassion fatigue <sup>#</sup>			
	Resilient	1 (2.6)	0 (0)	7 (17.9)
	Moderate risk	35 (89.7)	34 (87.2)	32 (82.1)
	High risk	3 (7.7)	5 (12.8)	0 (0)

<sup>#</sup>If CS is low, OR High BO/STS/MD: High Risk, If CS is high, and BO, STS and MD are low, then Resilient, any other combination is moderate risk  
ProQOL: Professional quality of life, f: frequency

in improving the ProQOL among participants. CS was significantly increased, with mean scores rising from  $22.67 \pm 3.48$  at Baseline to  $26.62 \pm 2.96$  by Day 60, indicating enhanced personal fulfilment and positive engagement in caregiving roles. PS also showed a substantial improvement, increasing from  $20.90 \pm 4.07$  to  $26.97 \pm 4.04$ , reflecting a

stronger emotional and professional support perception. Concurrently, notable reductions were observed in the Vulnerabilities. BO scores decreased from  $15.23 \pm 4.51$  to  $8.18 \pm 3.85$ , STS from  $15.18 \pm 3.55$  to  $8.26 \pm 3.60$  and MD from  $14.59 \pm 3.96$  to  $9.92 \pm 3.72$ . These improvements, all statistically significant ( $P < 0.01$ ), highlight the effectiveness of the intervention in enhancing psychological well-being and reducing CF. The trends in these changes over the 60 days are visually represented in Figure 3, which shows a clear upward trajectory in positive components and a decline in negative stress indicators.

The results from Table 5 demonstrate significant changes in the ProQOL components between the Baseline (T1) and follow-up time points (day 30 and day 60). CS showed a significant decline from T1 to T3 (mean difference =  $-1.92$ ,  $P < 0.001$ ) and from T2 to T3 (mean difference =  $-1.85$ ,  $P = 0.014$ ). However, no significant difference was found between T1 and T2 (mean difference =  $0.08$ ,  $P = 1.000$ ). PS decreased significantly between T1 and T3 (mean difference =  $-8.87$ ,  $P < 0.001$ ) and between T2 and T3 (mean difference =  $-8.62$ ,  $P < 0.001$ ), while no significant change was observed between T1 and T2 (mean difference =  $-0.26$ ,  $P = 1.000$ ). BO levels significantly increased from T1 to T3 (mean difference =  $3.85$ ,  $P < 0.001$ ) and from T2 to T3 (mean difference =  $4.69$ ,  $P < 0.001$ ), indicating worsening BO over time. STS and MD both showed significant increases from T1 to T3 and from T2 to T3 ( $P < 0.001$ ), while no significant changes were observed between T1 and T2 for either component. These findings suggest that, despite some early improvements, participants experienced increasing levels of BO, STS and MD as the study progressed, particularly between day 30 and day 60.

## DISCUSSION

The present study revealed statistically significant differences in the mean scores of the assessment done at baseline, day 30 and day 60 across all ProQOL dimensions, with  $P < 0.001$ . *Post hoc* analysis further confirmed significant differences at all time points (baseline vs. day 30, and baseline vs. day 60) for each dimension, underscoring the sustained effectiveness of the CF intervention module.

**Table 4:** Effectiveness of the compassion fatigue intervention module: Comparison of mean ProQOL scores from baseline to day 60 (n=39).

ProQOL components	Observation	Mean±SD	Median	IQR (q1, q3)	Chi-square <sup>#</sup>
Compassion satisfaction	Baseline	22.67±3.48	23	20.5, 26	17.1**
	Day 30	23.87±3.30	23	22, 25	
	Day 60	26.62±2.96	25	23, 26	
Perceived support	Baseline	20.90±4.07	22	18.5, 24	35.3**
	Day 30	23±2.77	21	19, 24	
	Day 60	26.97±4.04	25	24, 26	
Burnout	Baseline	15.23±4.51	15	12, 18	32.1**
	Day 30	12.44±3.36	16	14, 18	
	Day 60	8.18±3.85	12	10, 13	
Secondary traumatic stress	Baseline	15.18±3.55	15	13.5, 18	35.4**
	Day 30	9.97±3.302	17	13.5, 19	
	Day 60	8.26±3.60	12	10, 14	
Moral distress	Baseline	14.59±3.958	15	11.5, 17	28.1**
	Day 30	11.77±3.710	16	12, 20	
	Day 60	9.92±3.716	13	8.5, 14	

<sup>#</sup>Friedman test, \*\*P<0.001, Significant. IQR: Interquartile range, SD: Standard deviation

**Table 5:** Post hoc analysis of ProQOL components: Pairwise comparisons between baseline, day 30 and day 60.

ProQOL component	Time 1 versus Time 2	Mean difference	Test statistics	P-value Bonferroni	95% CI	
					Lower bound	Upper bound
Compassion satisfaction	T1 versus T2	0.08	-0.21	1.000	-1.84	1.69
	T1 versus T3	-1.92	-0.85	<0.001*	-3.69	-0.16
	T2 versus T3	-1.85	-0.64	0.014*	-3.61	-0.08
Perceived support	T1 versus T2	-0.26	-0.15	1.000	-10.27	9.76
	T1 versus T3	-8.87	-1.19	<0.001*	-18.89	1.15
	T2 versus T3	-8.62	-1.03	<0.001*	-18.63	1.40
Burnout	T1 versus T2	-0.85	-0.07	1.000	-2.92	1.23
	T1 versus T3	3.85	1.03	<0.001*	1.77	5.92
	T2 versus T3	4.69	1.11	<0.001*	2.62	6.76
Secondary traumatic stress	T1 versus T2	-1.21	0.09	1.000	-3.13	0.72
	T1 versus T3	3.38	1.17	<0.001*	1.46	5.31
	T2 versus T3	4.59	1.09	<0.001*	2.66	6.52
Moral distress	T1 versus T2	-1.31	0.20	1.000	-3.63	1.02
	T1 versus T3	2.97	1.10	<0.001*	0.65	5.30
	T2 versus T3	4.28	0.89	<0.001*	1.96	6.61

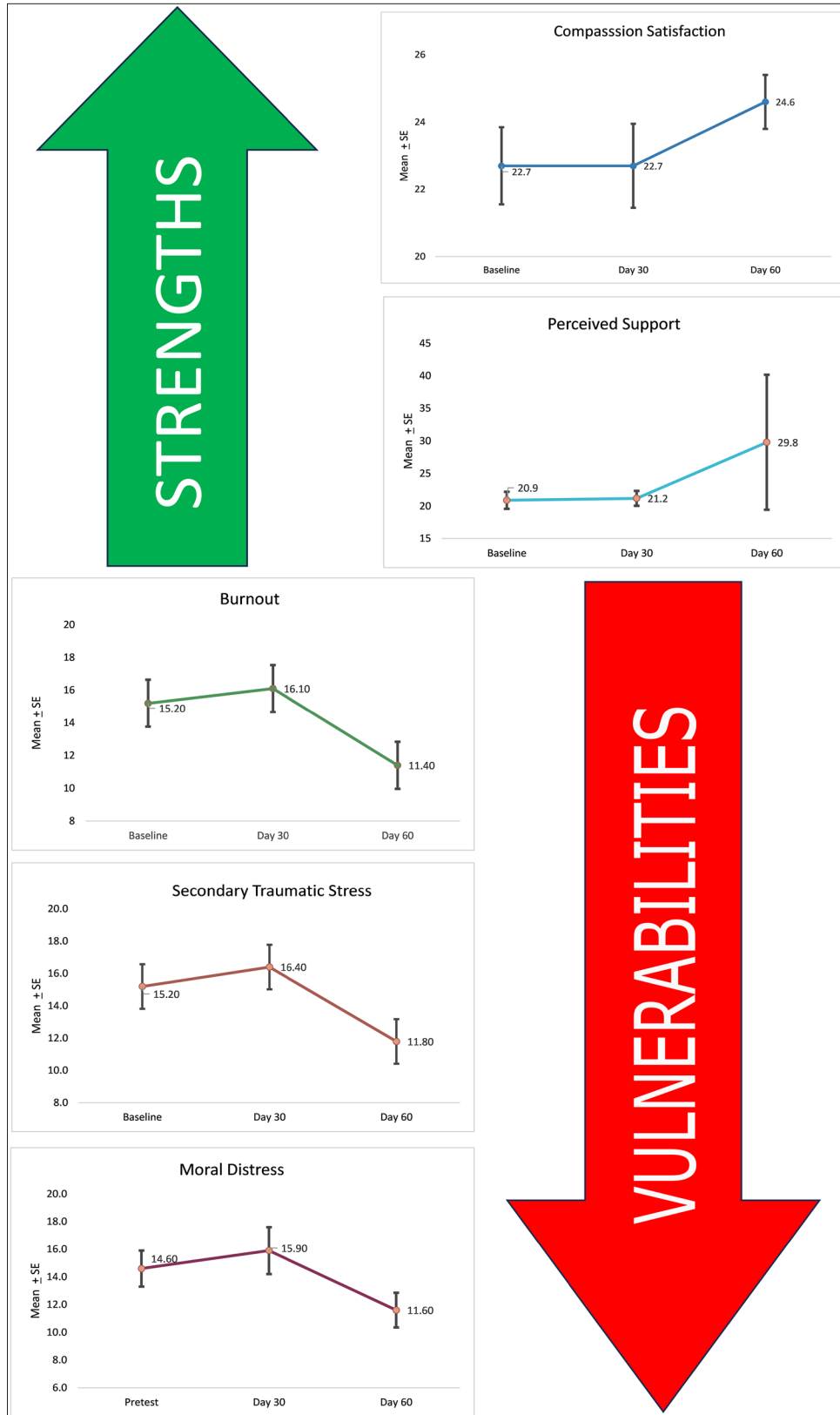
\*Significant, T1: Baseline, T2: Day 30, T3: Day 60. ProQOL: Professional quality of life, CI: Confidence interval

### CS and PS

After the intervention, significant improvements were observed in CS and PS scores,  $P < 0.001$ . *Post hoc* analysis consistently demonstrated significant differences at all measured time points. The upward trajectory of CS scores suggests that participants experienced enhanced personal and professional fulfilment in their caregiving roles after

completing the intervention. These findings mirror those from a study in South India<sup>[26]</sup> which also used a face-to-face educational approach with active engagement, contributing to significant improvements in CS ( $P < 0.001$ ).

Similarly, a multimodal educational programme for emergency nurses,<sup>[14]</sup> included interactive learning and stress-reduction strategies, highlighting the value of participatory methods and emotional skill-building in



**Figure 3:** Changes in professional quality of life component scores over time following the intervention. SE: Standard error.

improving CS. However, a U.S. study on oncology nurses reported no statistically significant changes in CS, with scores remaining stable post-programme.<sup>[27]</sup> The difference in results may be due to the longer follow-up period (6 months) and how their intervention was designed. Their programme was more lecture-based and lacked follow-up support. In contrast, our intervention included an interactive 4 h session, daily WhatsApp messages and weekly self-help materials for 1 month, which helped reinforce learning and encouraged participants to apply the real-life strategies. This continued support may have played a key role in our observed improvement.

A mindfulness-based intervention in Northern India demonstrated large effect sizes for CS improvement ( $P < 0.001$ ), reinforcing the value of culturally tailored interventions for Indian nurses.<sup>[28]</sup> In contrast, a Spanish randomised controlled trial showed no significant changes in CS, possibly due to the online nature of their intervention, as in-person programmes typically foster stronger interpersonal support and engagement.<sup>[29]</sup> In addition, their intervention lacked structured follow-up support, suggesting that content, delivery format and post-session reinforcement are critical in producing meaningful outcomes.

While early increases in CS might have been influenced by heightened awareness of CF, the sustained improvement across ProQOL dimensions at 30 and 60 days points to deeper psychological and professional development. The structured follow-up support likely played a critical role in reinforcing key messages, promoting self-reflection and encouraging the integration of coping strategies into daily practice.

### Components of CF: BO, STS and MD

Significant reductions were noted in BO, STS and MD following the intervention, with  $P < 0.001$  across all dimensions. *Post hoc* analysis confirmed consistent improvements between the baseline, day 30 and day 60 scores, suggesting that the module effectively equipped participants with coping strategies for CF.

These outcomes are in line with findings from a South Indian study, which implemented a multi-session psychoeducational programme targeting self-care and mindfulness among healthcare professionals and reported similar reductions in BO and STS. While the objectives of both studies were aligned, the South Indian intervention involved a longer duration and face-to-face delivery, whereas the present study utilised a brief 4 h session supported by a 2-month digital follow-up, suggesting that even time-efficient formats can yield meaningful outcomes.<sup>[26]</sup>

In contrast, a quality improvement initiative in Memphis, Tennessee, introduced systemic workflow changes and emotional support strategies within an oncology setting. Although it reported a significant reduction in STS ( $P = 0.029$ ), no improvement in BO was observed, potentially due to the high emotional burden associated with oncology

care. This difference in outcomes highlights the importance of tailoring interventions to population needs and clinical context. The success of the current brief, low-resource model underscores its potential transferability to other high-stress healthcare environments, though factors such as professional role, exposure level and work setting should be considered when adapting the intervention for broader use.<sup>[30]</sup>

The reduction in BO and STS seen in our study aligns with findings from a similar intervention with emergency nurses<sup>[14]</sup> which emphasised active participation and skill development. In contrast, a study conducted in Korea<sup>[31]</sup> found no significant changes in STS ( $P = 0.35$ ) and BO ( $P = 0.91$ ). This may have been limited by a less interactive format and the absence of post-intervention reinforcement, highlighting the importance of delivery method and continued participant engagement.

A mindfulness-based programme in Northern India showed moderate-to-large effect sizes for BO and STS reduction, reinforcing our findings and emphasising the effectiveness of holistic interventions in Indian clinical contexts.<sup>[28]</sup> Conversely, a study by Gabele reported no significant changes in BO and STS over 5 months, possibly due to the passive delivery method (email and online resources without structured engagement).<sup>[32]</sup>

Interestingly, a Canadian study involving medical trainees showed increased BO and decreased CS over time, with no change in STS. The contrasting pattern may be explained by the lower exposure to secondary trauma in medical trainees compared to nurses in clinical care.<sup>[33]</sup>

In addition, a Spanish study reported significant reductions in CF and BO, though CS remained stable. The online nature of their intervention may explain the limited changes in positive components such as CS and PS.<sup>[29]</sup>

### Strengths and limitations

A key strength of this study is its focus on an under-researched area in India, offering culturally relevant insights into CF interventions for nurses, an area dominated by Western literature. It provides foundational evidence for developing support systems tailored to the Indian healthcare context. The use of multi-timepoint data collection (baseline, day 30, day 60) strengthens internal validity by capturing both immediate and sustained intervention effects.

However, the lack of a control group limits the ability to attribute outcomes solely to the self-help module, as external factors may have influenced results. In addition, since the intervention included both an in-person session and WhatsApp follow-up, the individual contribution of each component could not be isolated, making it difficult to determine which aspect drove the effect. This design choice was made to avoid contamination between participants. In addition, the small sample size ( $n = 39$ ) and single-site setting constrain the generalisability of the findings.

### Recommendations for further research

While the ProQOL scale offers a comprehensive measure encompassing BO, STS and CS, the study did not incorporate other mental health metrics such as perceived stress or resilience. Including such tools could have provided a broader understanding of participants' psychological well-being and coping capacities. Future studies can incorporate larger, more diverse samples across multiple healthcare institutions to enhance generalisability. Including a control group would strengthen causal inferences regarding the intervention's effectiveness. In addition, qualitative research could offer deeper insights into nurses' experiences and perceptions of self-help interventions. Comparative studies examining the effectiveness of different approaches across diverse clinical settings will provide valuable insights into best practices.

### Implications for policy and practice

The findings of this study can be used to conduct new research with a larger sample size. These findings can also support the need to design new interventions for prevention and management. Healthcare institutions can implement staff development programmes that provide tools and assistance to nurses to help them cope with stress and preserve their well-being. The creation of focused initiatives to improve nurses' well-being could lead to better patient care and overall health outcomes. Implementation of CF interventions for nurses - integrating similar educational modules into nursing training programmes and providing ongoing support and resources for managing CF in the workplace, will foster a culture of self-care and emotional well-being within nursing teams.

### CONCLUSION

This one-group pre-test and post-test experimental study confirms the positive impact of an educational self-help module on working nurses' ProQOL. CS and PS improved significantly, while BO, STS and MD showed notable reductions over time. These findings suggest that educational interventions tailored for nurses can enhance coping mechanisms, foster resilience and mitigate the adverse effects of CF.

However, while individual-focused programmes such as this module show promise, addressing systemic workplace challenges such as understaffing, high patient loads and resource limitations remains essential to reduce CF and sustain long-term nurse well-being comprehensively.

**Ethical approval:** The research/study was approved by the Institutional Review Board at All India Institute of Medical Sciences, Bhubaneswar, approval number IEC/AIIMS BBSR/NUR/2022-23/04, dated 3rd August 2023.

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