Original Article

Effect of Accelerated Recovery Program on Recovery from Secondary Traumatic Stress among Nurses

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ABSTRACT

Background: Nurses have distressing experiences during care provision, especially end-of-life care, which might lead to secondary traumatic stress (STS). The Accelerated Recovery Program (ARP) intends to decrease STS and promote recovery from trauma. **Objectives:** The aim of the present study was to determine the effect of ARP on recovery from STS among nurses. **Methods:** The study was carried out in Narayana Medical College Hospital, India. A pretest–posttest design with control group was adopted for the study. In the present study, 120 nurses who had STS were recruited and allocated to the intervention and control groups. Data were collected using the Trauma Recovery Scale. ARP with routine activities was implemented for nurses in the intervention group and routine activities for nurses in the control group for 5 weeks. Posttests I (5th week), II (3rd month), III (6th month), IV (9th month), and V (12th month) were conducted. Descriptive and inferential statistics were used to analyze the data. **Results:** A statistically significant difference was observed between the intervention and control groups in the mean score of trauma recovery ($P < 0.001$) (Z value: 0.102, 9.511, 9.483, 9.51, 9.439, and 9.471). The repeated measures analysis of variance revealed a statistically significant difference in trauma recovery over a period of time among nurses (F: 201.54, $P < 0.001$) in the intervention (F: 101.126, $P < 0.001$) and control groups (F: 39.29, $P < 0.001$). **Conclusions:** The results show that ARP had a significant impact on the nurses and facilitated their recovery from trauma.

KEYWORDS: *Accelerated Recovery Program, Nurses, Secondary traumatic stress, Trauma, Vicarious traumatization*

INTRODUCTION

Nurses and midwives account for half of all health-care personnel. The World Health Organization has reported that of the 43.5 million health-care workers, 20.7 million are nurses and midwives, and yet only 3 nurses per 1000 population are available to render care.[1] Nurses get a sense of gratification and contentment by way of caregiving.[2] On the other hand, observing distressing experiences during

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care provision and providing end-of-life care might lead to secondary traumatic stress (STS).[3] Prolonged experience of trauma is the source of STS, and it is the result of compassionate care.[4] All health-care personnel who constantly and closely work with a survivor of trauma undergo significant distress, which ultimately makes them the trauma victims.[5,6]

STS in nurses is a predicament as it has undesirable physical and mental health consequences, which affect the quality of care rendered to patients. Exhaustion, difficulty in sleep, rage, absent-mindedness, constant headache, loss of weight, and gastrointestinal issues are the end result of STS.[7] Prolonged hectic work conditions could be a reason for physiological, emotional, and personal distress which result in burnout (BO).[8] BO is emotional exhaustion due to excessive work which is observed by weariness, pessimistic behavior, decreased enthusiasm, thereby leading to decrease job efficiency, reduced work satisfaction, increased nurses turnover, and significant psychological pain.[9,10] A high prevalence of STS, 33% of emergency nurses, has been reported in previous studies.[11] Hinderer *et al*. reported a prevalence of 35.9% and 7% for BO and STS, respectively, among 128 trauma nurses in the Eastern United States.[12] A study found that 90.3% of Japanese nurses have STS.[13] A study carried out in India revealed that 34.5% of nurses are at risk of STS and 22.5% have STS.[14] In addition to patient factors, the work environment also contributes to the risk of STS.

Recovery from trauma is a vital factor for maintaining the quality of work, patient safety, and a sense of well-being. Therefore, a program has to be devised in this regard. There are many interventions such as meditation, visualization, guided imagery, emotional freedom technique, self-management skills, cognitive behavior therapy (CBT), and neuro-linguistic programming (NLP) to manage STS.[15] A study has reported that above-specified interventions reduce the impact of STS and promote recovery in nurses.[16] A holistic program will promote recovery in a short duration. The previous studies were conducted on the mentioned interventions where the effect of individual intervention is studied. The investigators want to find the effect of combination of interventions which can have a long-term effect in reducing compassion fatigue. Hence, the researchers took an interest in implementing the Accelerated Recovery Program (ARP) and investigating its effect on reducing STS and promoting recovery from trauma.

Objectives
The aim of the present study was to assess the effect of ARP on recovery from STS among nurses.

METHODS
Study design and participants
The present study was carried out using a pretest–posttest design with control group from April 2015 to March 2017. This study was carried out in Narayana Medical College Hospital, Nellore, India, which is a tertiary care multispecialty teaching hospital with 1750 beds. The participants of the present study were nurses. Using power analysis ($Z1\alpha/2 = 1.96$; $Z\beta1 = 0.85$; $S = 1.82$; $d = 1.60$), the sample size was estimated as 106. Considering the possibility of attrition, an increase of 10% to the calculated sample size was considered; thus, the obtained sample size was 117 and was rounded off to 120. A total of 750 nurses were screened using the Professional Quality of Life: Compassion Satisfaction and Fatigue (ProQOL) version 5 which measures compassion satisfaction, BO, and STS, and 135 nurses were found to have STS and 120 nurses were recruited for the study based on the inclusion criteria. Nurses who had STS and who scored <35 on the Trauma Recovery Scale (TRS) were recruited for the study. Nurses who had previous training in CBT, stress management, and NLP were excluded from the study. Through simple random sampling and using lottery method, 60 nurses were allotted to each of the intervention group and control group [Figure 1].
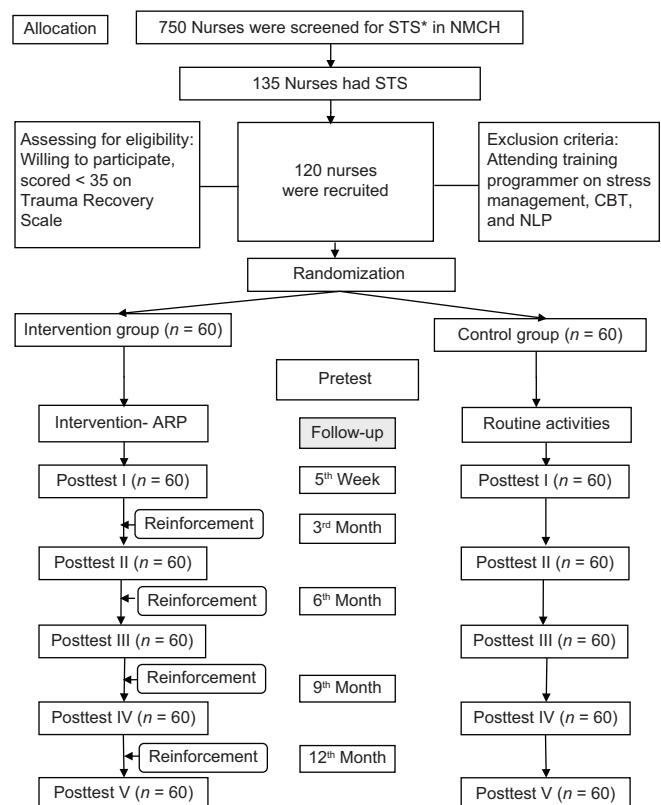

Figure 1: The study flow diagram

Instrument

The Trauma Recovery Scale (TRS; Gentry, 1996, 1998)[17] consists of 3 subscales. Subscale I has 1 item with a yes/no response. It determines the respondent's belief on whether or not they meet Criterion A (exposed directly or indirectly to a traumatic incident). The Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV) criteria for posttraumatic stress disorder (PTSD) refer to whether the individual has been exposed directly or indirectly to a traumatic incident. The experience obtained by witnessing or confronting a traumatic event can encompass the real or impending death or a serious injury that has placed the physical integrity of the self at risk, and the reaction involved might be severe fear, sense of vulnerability, or shock. Subscale II consists of 25 items which measure the history of traumatic experiences. Each item specifies the type of traumatic event, the number of times it was experienced, and the age at which it was experienced by the respondent. Subscale III consists of 10 items which measure the recovery from traumatic experiences and ability to sustain. Respondents were asked to rate on the range of points from 0 to 100 that best represents their experiences during the last week. The scale has a minimum score of 0 and a maximum score of 100. Subscales I and II do not require scoring, and the information obtained is used in the desensitization and reprocessing session of ARP. The score of subscale III is interpreted as the following: 95–100: subclinical/full recovery, 86–94: mild symptoms/significant recovery, 75–85: moderate symptoms/some recovery, 35–74: severe symptoms/minimal recovery, and <35: possible traumatic regression. Using the test–retest method, reliability of the tool was calculated using the Spearman–Brown prophecy formula and $r = 0.82$.

Data collection procedure

The nurses who met the inclusion criteria were visited by the researchers after their work schedule. The study was conducted in a separate room where nurses were seated comfortably. Privacy was maintained while carrying out the study. Pretest data were collected using the TRS on day 1. ARP with routine activities was implemented for nurses in the study group, and routine activities for nurses in the control group for 5 weeks. ARP is a 5-week program based on an individualized standard treatment protocol with 5 sessions, each lasting for 90–120 min. Audio recordings and didactic and experiential training are involved in the sessions. On the first session, a detailed assessment of the condition, life goals, and conflicts encountered, measures of self-care, and type of stressors encountered by the nurses is identified. Then, nurse's practice guided imagery. On the second session,

nurses develop their personal and professional timeline by narrating the stories of their own lives. On the third session, a trigger list is developed based on the personal and professional timeline. Moreover, a self-management plan is developed. In Thought Field Therapy (TFT), the participant's troubling memory is identified and the eyebrows, the area under the eye, underarm, the collarbone, and different points in the body located just above and between the little and ring finger knuckles are tapped 5–8 times. In NLP, safety anchors and competency anchors are created, the negative anchors I and II are identified (the traumatic memory is identified in subscale II), and then, negative anchors are released through desensitization and reprocessing. Supervising the self is performed in session 4 in which the "Letter from the Great Supervisor" is read by the nurse which is recorded and played again and again until the nurse is able to analyze and internalize the dialog. Program goals are evaluated, pathways for recovery are addressed, and closure is achieved in session 5.[17,18] Posttests I (5th week), II (3rd month), III (6th month), IV (9th month), and V (12th month) were conducted in both the intervention and control groups. Reinforcement was provided by follow-up telephone calls for the nurses in the intervention group.

Ethical consideration

The study was conducted after obtaining permission from the Institutional Ethics Committee of Narayana Medical College (IEC-NMCH-23/12/2013). The approval of the Director, Medical Superintendent, and Nursing Dean of Narayana Medical College Hospital was also obtained. The nature, purpose, aims, and benefits of the study were explained to all the participants. Informed consent was obtained from all participants, and voluntary participation was ensured. Ethical principles were followed throughout the study. Confidentiality of information was maintained. At the end of the study, nurses in the control group received the ARP.

Data analysis

Data were coded, tabulated, and sited in SPSS software (version 16.0, SPSS Inc., Chicago, IL, USA). Descriptive statistics such as mean and standard deviation were calculated and compared to assess the effect of ARP on trauma recovery. Inferential statistics Chi-square test was used to identify the homogeneity between the groups, Wilcoxon signed-rank test to determine the effect of the intervention on trauma recovery within the groups, Mann–Whitney U test to compare the effect of the intervention on trauma recovery between the groups, and repeated measures analysis of variance (ANOVA) to conduct within- and between-group comparisons on trauma recovery across

5 measurement points at posttest measured at 5 different timings. $P < 0.05$ was considered statistically significant.

RESULTS

The demographic characteristics of the nurses are presented in Table 1. Chi-square test revealed a statistically significant difference between the intervention and control groups in terms of age, gender, and marital status; however, no statistically significant difference existed between them in terms of educational qualification, area of work, years of experience, designation, and coping strategies.

Wilcoxon signed-rank test showed an improvement in the mean scores of trauma recovery in both the groups. There was a statistically significant difference in the mean scores of improvement in recovery in both the intervention ($P < 0.001$) and control ($P < 0.001$) groups; however, the difference in the intervention group was less than that observed in the control group (intervention group: Z value: 6.74, 6.739, 6.742, 6.739, and 6.74; control group: Z value: 3.143, 4.018, 6.346, 6.497, and 6.425) [Table 2]. Mann–Whitney U-test showed a statistically significant increase in trauma recovery score in the intervention group compared to the control group ($P < 0.001$; Z value: 0.102, 9.511, 9.483, 9.51, 9.439, and 9.471) [Table 3]. The results of repeated measures ANOVA illustrated a significant difference (Mauchly's test x^2 (14) = 51.433, $P < 0.000$) (within-subject interaction F (5,59) = 201.5, $P < 0.000$) in the mean scores in posttests I, II, and III but a slight decrease in posttests IV and V in the

Table 1: Distribution of nurses according to their demographic characteristics ($n = 120$)			
Demographic characteristics	Intervention group ($n = 60$), n (%)	Control group ($n = 60$), n (%)	P^a
Age (years)			
21-30	35 (58.4)	32 (53.4)	<0.001
31-40	11 (18.3)	11 (18.3)	
41-50	14 (23.3)	17 (28.3)	
Gender			
Male	6 (10)	10 (16.7)	0.012
Female	54 (90)	50 (83.3)	
Marital status			
Single	52 (86.7)	43 (71.7)	0.043
Married	8 (13.3)	17 (28.3)	
Educational qualification			
GNM	15 (25)	13 (21.7)	0.822
BSc	41 (68.3)	44 (73.3)	
MSc	4 (6.7)	3 (5)	
Area of work			
ICU	50 (83.3)	52 (86.7)	0.854
Emergency ward	7 (11.7)	6 (10)	
Other wards	3 (5)	2 (3.3)	
Work experience (years)			
<1	30 (50)	34 (56.7)	0.955
1-3	22 (36.6)	19 (31.6)	
4-6	3 (5)	2 (3.3)	
7-9	1 (1.7)	1 (1.7)	
>10	4 (6.7)	4 (6.7)	
Designation			
Staff nurse	51 (85)	54 (90)	0.504
Charge nurse	4 (6.7)	4 (6.7)	
Nursing supervisor	5 (8.3)	2 (3.3)	
Coping strategy used			
Reading books	17 (28.3)	13 (21.7)	0.780
Listening to music	29 (48.3)	28 (46.6)	
Watching TV	4 (6.7)	9 (15)	
Praying	2 (3.3)	2 (3.3)	
Sleeping	4 (6.7)	4 (6.7)	
Going to temple	4 (6.7)	4 (6.7)	

aChi-square test

intervention group ($P < 0.001$). It is also to be noted that there was an increase in the mean scores in all posttests in the control group ($P < 0.001$) [Tables 2 and 3]. However, it has to be noted that though a difference exists in the intervention group and control group, the difference in mean score was significantly higher in the intervention group compared to the control group [Figure 2].

DISCUSSION

The results of the current study illustrated that ARP had a significant impact on the nurses and helped them in recovery from trauma due to STS. In the intervention group, the mean score of trauma recovery during pre- and posttests showed a significant difference. Even the control group showed an improvement in trauma recovery, the increase in mean score was half of that of

Figure 2: Trend of changes in trauma recovery scores over a period of time

the intervention group. Nurses in the control group may have received support from their family, colleagues, or superiors which may have helped them to recover from the effect of STS.

A study in the US showed that self-regulation, self-care, and guided imagery were significantly effective in reducing STS in the second and third months postintervention.[19] It has been recognized that the millennial (21–30 years) generation is able to recover faster from trauma compared to other age groups of nurses. It is recognized that female gender is commonly affected due to the major dominance of females in the profession. Marital status also affects the trauma recovery due to the multiple stressors encountered by the nurses which could be noted in the present study. Flarity *et al*. found that compassion fatigue resiliency can be improved if it is identified at the beginning of the profession by enhancing compassion satisfaction and minimizing STS.[20] In a study on mental health workers, a significant difference was observed in STS in the study participants who listened to guided imagery for a period of 4 weeks.[21] In the present study, guided imagery was used as an intervention in which the visualization of a safe place helped the nurses to recover from STS.

In a study carried out in India, it was reported that NLP caused a significant drop in STS scores in the experimental group compared to the control group and also enhanced a change in the emotion in the NLP wheel of cycle.[22] A case study reported that NLP was effective in reducing the symptoms of PTSD.[23] The experience
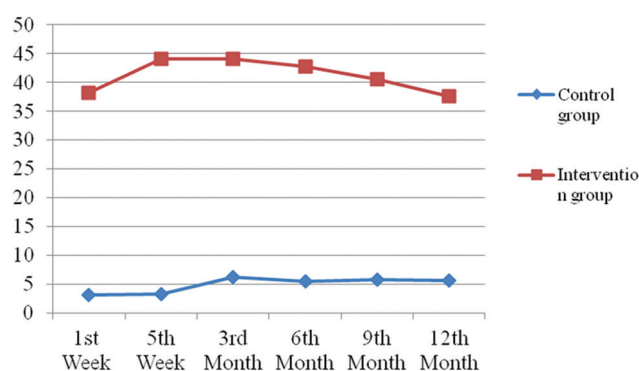
Table 2: Comparison of trauma recovery scores between the intervention and control groups ($n = 120$)

Test	Intervention group ($n = 60$)			Control group ($n = 60$)		
	Mean±SD	MD	Z (P)ᵃ	Mean±SD	MD	Z (P)ᵃ
Pretest	38.85 ± 6.49			38.70 ± 5.63		
Posttest I	82.95 ± 4.56	−44.1	6.74 (0.001)	42.08 ± 6.60	−3.3	3.143 (0.002)
Posttest II	82.95 ± 4.16	−44.1	6.739 (0.001)	44.88 ± 9.11	−6.2	4.018 (0.001)
Posttest III	81.72 ± 4.32	−42.8	6.742 (0.001)	50.20 ± 4.96	−11.5	6.346 (0.001)
Posttest IV	79.37 ± 4.71	−40.5	6.739 (0.001)	51.17 ± 6.96	−12.5	6.497 (0.001)
Posttest V	76.45 ± 4.75	−37.6	6.74 (0.001)	50.75 ± 5.93	−12.1	6.425 (0.001)
F (P)ᵇ	101.12 (0.001)			39.29 (0.001)		

ᵃWilcoxon signed-rank test, ᵇRepeated measures analysis of variance. SD: Standard deviation, MD: Mean difference

Table 3: Comparison of trauma recovery scores between the intervention and control groups ($n = 120$)

Test	Mean±SD		MD	Z (P)ᵃ	F (P)ᵇ
	Intervention group ($n = 60$)	Control group ($n = 60$)			
Pretest	38.85 ± 6.49	38.70 ± 5.63	0.15	0.102 (0.919)	201.54 (0.001)
Posttest I	82.95 ± 4.56	42.08 ± 6.60	40.87	9.511 (0.001)	
Posttest II	82.95 ± 4.16	44.88 ± 9.11	38.07	9.483 (0.001)	
Posttest III	81.72 ± 4.32	50.20 ± 4.96	31.52	9.510 (0.001)	
Posttest IV	79.37 ± 4.71	51.17 ± 6.96	28.20	9.439 (0.001)	
Posttest V	76.45 ± 4.75	50.75 ± 5.93	25.70	9.471 (0.001)	

ᵃMann-Whitney U-test, ᵇRepeated measures analysis of variance. SD: Standard deviation, MD: Mean difference

that the nurses undergo internally occurs mainly due to empathetic involvement with the trauma of the patients. The NLP intervention in this study helped the nurses to deal with their emotional changes effectively and to strengthen their coping mechanism that led to a positive transformation.

Many previous studies have found that TFT is efficient in the treatment of PTSD among the military and the veterans, but no such studies were conducted on nurses. A meta-analysis also reported that 60% of PTSD patients are fully rehabilitated following TFT.[24] Based on the results of these studies, it is recommended that TFT methods can be used in the management of STS. A qualitative study found that a multifaceted educational program is effective in reducing STS symptoms.[25] A 4-h educational program among nurses working in intensive care units also proved to be effective in lessening STS symptoms. The ARP intervention package also emphasizes education on self-care, resolving conflicts, and development of goals, which help the resolution of trauma and aid in recovery. A meta-analysis showed that group debriefing sessions are effective in reducing STS among emergency health-care providers.[15] However, the present study illustrated that individual sessions are effective in diminishing STS. A 6-week compassion fatigue resiliency program significantly reduced the symptoms of STS and BO among professional caregivers,[26] which is in line with the current study results. The present study has utilized a step-by-step approach, which may be the cause of the gradual decrease in STS symptoms and may minimize relapse. The use of ARP intervention package was effective in improving recovery from STS. Furthermore, the regular reinforcement may have motivated the nurses for a regular practice, which could have had a greater impact on promoting resiliency in nurses.

A limitation of the study was that the study did not assess the effect of individual intervention on trauma recovery. Another limitation was that the support received from colleagues and family was not controlled, which could have influenced the study. The nurses were selected from two different blocks of the hospital, but the interaction between the nurses was beyond the control of the researchers.

CONCLUSIONS

The results illustrate that ARP had a significant impact on the nurses; it facilitated recovery from trauma in the nurses. Positive lifestyle changes such as breathing exercises, guided imagery, meditation, and time for self-care are essential aspects of ARP that can be adopted by the nurses to guard them against the effects of STS.

Resiliency building is vital to bring back positivity. Debriefing sessions and support groups for nurses can help them overcome trauma in the shortest possible duration. Further research is essential to determine the efficacy of ARP in a larger population. Qualitative studies can be conducted to identify the views of nurses regarding STS. In future studies, the length of ARP can be increased and follow-up at frequent intervals. Additional studies can be conducted on health-care personnel who are at risk of STS to further investigate the effect of ARP.

Conflicts of interest

There are no conflicts of interest.

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