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Original Article

The effect of neuro-linguistic programming on occupational stress in critical care nurses

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Abstract

Background: The use of coping strategies in reducing the adverse effects of stress can be helpful. Nero-linguistic programming (NLP) is one of the modern methods of psychotherapy. This study aimed to determine the effect of NLP on occupational stress in nurses working in critical care units of Urmia.

Materials and Methods: This study was carried out quasi-experimentally (before–after) with control and experimental groups. Of all the nurses working in the critical care units of Urmia Imam Khomeini and Motahari educational/therapeutic centers, 60 people participated in this survey. Eighteen sessions of intervention were done, each for 180 min. The experimental group received NLP program (such as goal setting, time management, assertiveness skills, representational system, and neurological levels, as well as some practical and useful NLP techniques). Expanding Nursing Stress Scale (ENSS) was used as the data gathering tool. Data were analyzed using SPSS version 16. Descriptive statistics and Chi-square test, Mann–Whitney test, and independent *t*-test were used to analyze the data.

Results: The baseline score average of job stress was 120.88 and 121.36 for the intervention and control groups, respectively ($P = 0.65$). After intervention, the score average of job stress decreased to 64.53 in the experimental group while that of control group remained relatively unchanged (120.96). Mann–Whitney test results showed that stress scores between the two groups was statistically significant ($P = 0.0001$).

Conclusions: The results showed that the use of NLP can increase coping with stressful situations, and it can reduce the adverse effects of occupational stress.

Key words: Critical care units nurse, Iran, nero-linguistic programming, occupational stress

Introduction

Although humans achieve their needs, desires, and aspirations by working, human emotions might be influenced by numerous factors, including environmental and organizational factors which are not favorable; so, the type of occupation of the person might be among the major stressors that can create a chronic stress.[1] According to the definition of Cooper, occupation stress is the result of interaction between the individual and the work environment.[2] Job stress is one of the most important issues in the field of organizational behavior, and stress is a common disease of the 21st century.[3] It causes absenteeism, labor mobility and conflicts, physical disorders, and the high cost of health care.[4] Stress has a direct relationship with job satisfaction and individual performance. In addition. stress is highly interrelated with all components of the health, safety, and convenience of the people.[5] Lazarus and Folkman define stress as a person's reaction against the environment which, according to the same person, is a threat to the resources and his abilities.[6] All kinds of professions that are concerned with health and lives are always stressful, and they threaten the physical and mental health of practitioners. Nursing is such a kind of stressful job.[5] Among nurses, ICU nurses experience a high level of stress because of special circumstances arising from the work environment and the type of patients, severe disease, higher levels of knowledge and skills needed to work in this unit, and the need to respond quickly, promptly, and accurately to urgent situations.[7] Mims and Stanford, in their study, indicated that ICU nurses are experiencing

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high level of job stress.[8] Mohammad *et al*. revealed that 92% of nurses in critical units complain of disorders and stresses related to the workplace.[9]

Researchers are trying to identify the ways of dealing with a high level of job and occupational stress in nurses. There are different medical, psychological, and psychiatric methods to deal with the problem. In recent decades, some psychologists have presented new teaching–therapeutic methods entitled Neuro-Linguistic Programming (NLP) to deal with this problem. This program emphasizes that human behavior stems from neurological processes, such that experience from the surrounding world leads to neuropsychological processes and guides practice.[10] NLP started in America in the 1970s from the collaboration of John Grinder and Richard Bundler. The term neurological denotes that all behaviors derive from the neurological processing of information provided by the five senses. The linguistic part of the title refers to the fact that language is fundamental to the organization of thoughts and communication. The term programming acknowledges the manner in which ideas and behaviors can be modified and managed to create desirable results.[11]

NLP is a powerful instrument that accomplishes psychotherapy unbelievably, and it enables a person to decode the origin of individual words and speech. By doing this way, people feel, think, speak, and thus are capable of self-management and influencing others. NLP seeks the relationship among thinking (mental), speech (linguistics), and behavior patterns (behavior).[12]

Instead of focusing on external stressful events, NLP focuses on individual reactions toward the stressful events, and it provides practical strategies to increase individual adaptation capacity and coping.[13] NLP deals with the structure of human experience subjectively, and it determines how one can organize what to see, hear, and feel, as well as how to purify one's outside world through their senses.[12]

The research findings emphasize on the effectiveness of NLP in different situations. Karunaratne investigated the application of NLP in treatment of phobia. His results showed that NLP was successful in treating fear; in particular, too little time was needed to demonstrate the effectiveness of recovery. However, despite the accounts of such methods designed to help patients who are resistant to a cure, there is little mention of cases where NLP has been completely ineffective in the literature. It is likely that such cases do exist, as few therapies or treatments are universally successful. However, deficiency of information in this area may be related to the lack of experimental evidence involving the use of NLP.[14] Bigly *et al*. showed that 75% of those who feared of MRI could undergo it without fear and anxiety by the help of NLP.[15]

Due to the obvious and damaging effects of stress on nurse's physical–psychiatric health and on the quality of nursing services, it seems that applying the principles and practical solutions of NLP can increase the nurses' adaptation capacity and improve their performance. Therefore, this study aimed to determine the effects of implementation of NLP strategies on job stress among ICU nurses.

Materials and Methods

This study carried out as a quasi-experimental (before–after) one with control and intervention groups. Among nurses working in the critical care units of Urmia Imam Khomeini and Motahari educational–therapeutic centers, 16 volunteers participated in this survey (30 in the control group and 30 in the intervention group). The inclusion criteria for the study included the following: Volunteering to participate in the study, having a bachelor's or higher degree in nursing, having a minimum of 6 months work experience in a special ward, not having a second job, not experiencing severe stress in the last 6 months (severe accident, the death of a relative, marriage separation), and not having received psychotropic medication during the last 6 months.

To access and analyze the professional stressors, the researchers applied the Expanded Nursing Stress Scale (ENSS).[16] The ENSS is an expanded and updated version of the classic Nursing Stress Scale (NSS) developed by Gray-Taft and Anderson (1981). ENSS contained 57 items in nine subscales: (a) Death and dying, (b) conflict with physicians, (c) inadequate emotional preparation, (e) problems relating to peers, (f) problems relating to supervisors, (g) workload, (h) uncertainty concerning treatment, (i) patients and their families, and (j) discrimination. All the 57 items were arranged in a 5-point Likert response scale. The offered response options were "does not apply" (0), "never stressful" (1), "occasionally stressful" (2), "frequently stressful" (3), and "extremely stressful" (4). The response (0) indicated that the respondent had never faced the situation described by the item and, therefore, the final calculation of total score for this respondent was (0). Calculation of the average value was performed by excluding zero values. The higher the score, the more the respondent agreed that the situation was stressful. The total mean score could be derived from this instrument, which ranged from 0 to 228. There are no specific cut-off scores or published mean norms for the ENSS that determine whether an individual

is stressed or not. However, higher scores indicate higher levels of stress.

Internal consistency reliability was assessed using Cronbach's coefficient alpha. The 57-item ENSS showed improved reliability ($\alpha = 0.96$) over the original NSS ($\alpha = 0.89$). Individual subscale reliability ranged from $\alpha = 0.88$ (problems with supervisors) to $\alpha = 0.65$ (discrimination).[16] The questionnaire was in this case cross-culturally adapted to meet the criteria of the research.[17] The instrument was translated into Persian and back-translated (from Persian to English) as a validity check. One author (FJ) resolved language discrepancies. In this study, a high degree of internal consistency was observed for each subscale using Cronbach's alpha values of 0.73 (problems with peers) to 0.91 ((problems with supervisors), and for the total scale, Cronbach's alpha value was 0.83.

Besides the ENSS scale, the researchers applied a supplementary questionnaire to obtain socio-demographic (gender, age, marital status, number of children) and work-related (service length, night shift work, duties, employment status, and interest in nursing jobs) data.

The NLP training program was designed as 18 three-hour (in 6 months) sessions held by a person trained for the experimental group in Motahari hospital. All NLP training sessions were facilitated by all three authors. The overall content of the training sessions is listed in Table 1.

One month later, by redistributing the questionnaires among nurses in both groups (control and experimental), their occupational stress was tested again. After data collection, SPSS16 was used to analyze the data. Descriptive statistics (frequency, mean, and standard deviation) and inferential statistics (Chi-square test, *t*-test, Mann–Whitney test) were used.

Ethical considerations

The study was approved by the research deputy and the research ethics committee of Urmia University of Medical Sciences. Before beginning the study, the researcher explained the objectives to the patients, and all participants signed a written informed consent before participation in the study. The questionnaires were anonymous and all the participants were assured about the confidentiality of their personal information. The participants were free to leave the study at any time. The researchers observed all ethical issues in accordance with the latest version of Helsinki ethical declaration.

Results

Table 2 presents the socio-demographic characteristics of the two study groups. No significant differences were

Table 1: Curriculum for training sessions of nero-linguistic program[10,18-22]

Session	Content of each session
1	The first meeting was an orientation session. In this session, the nurses were familiarized with the goals and values of nursing; then suitable feedback were given to them. Also, in this session, NLP and its benefits were explained to the nurses
2, 3	At the second and third sessions, the goal setting was presented. After stating the necessity and importance of goal setting, the nurses were asked to discuss their perspective on goal setting. Nurses were encouraged to think about the goals and to record them on worksheets. In another part of this session, Specific-Measurable-Achievable-Realistic-Timely model and the way to reach the goals were presented. After evaluating goals, the participants were asked to find out how to choose their goals based on this template. At the end, participants were given home assignments
4	In the fourth session, after reviewing the training of the last session, the participants were familiarized with the notion of time setting. After presenting the topic of timelines and a person's perception of time and time management, the trainer tried to make the participants understand the importance of time controlling. Then, the participants were given a sheet of paper to prioritize their programs according to their learning
5	At the fifth session, the daily planning forms for outside the workplace have been given to the participants. After reviewing, it has been said to the nurses to think about their needs in a week, and note them in the mentioned forms
6	In the sixth session, the ways to deal with the factors that hinder the development of programs were offered. Then more practice forms were given to the participants to be done at home as assignments
7-9	From the seventh to ninth sessions, by asking questions, the participants were made to understand the importance of assertiveness skills such as how to say "yes" or "no," depending on the situation. In addition, the nurses were explained about the reasons that preclude assertiveness, and they were asked to respond to the questions contained in the forms. To practice assertiveness skills in the workplace, nurses were placed in different positions. At the end of each session, the forms of assignment in relevant subjects were given to the nurses
10, 11	In the 10th and 11th sessions, belief change technique and its applications and processes were discussed
12, 13	In the 12th and 13th sessions, reforming techniques were presented to modify perspective and subjective interpretations and mental perceptions. This was done to gain a more positive view into the issues and events surrounding the environment
14	The 14th session tried to introduce the representation systems to the participants. After reviewing the home works from the previous session, the necessity of familiarity with representation system, subjective experience, and the perception of world through sense were discussed. Then, nurses were made to be familiar with eye movements and verbal indicators. After completing the forms and answering the questions, superior representation systems of the participants were identified. Accordingly, the participants were divided into two-person groups practically. At the end of this session, participants were able to identify self and other representations

Contd...

Table 1: Contd...

Session	Content of each session
15	In the 15th session, individual presented effective verbal and nonverbal communication topics with himself/herself and other people from NLP perspective
16, 17	In the 16th and 17th sessions, individual changes and coordination between different levels of neurological factors (environment, behavior, capabilities, beliefs, identity, and spirituality) were discussed. Then by asking questions and providing examples of the participants, the trainer asked them for the identification and determination of their status on every level. Later, the forms consisting of relevant supplementary questions for the next session were given to them. By doing practical exercises in the class, the participants learned how to identify a problem and coordinate between levels
18	In the 18th session, Disney strategy, one of the mostly used NLP strategies, was presented

NLP: Nero-linguistic programming

observed between the intervention and the control groups in terms of age, years of work experience, education, marital status, religion, employment status, work shift, interest in the job, and the number of children.

In order to compare stress between the groups, Mann–Whitney test was used, as the data results had non-normal distribution. The results showed that there were no statistically significant differences between the groups in baseline mean stress scores ($P = 0.65$). Stress scores decreased in the intervention group after applying NLP training strategies. Mann–Whitney test results showed that after the performance of NLP in the intervention group, there was a statistically significant difference in the mean stress scores of the two groups ($P = 0.0001$) [Table 3].

Table 4 shows that pre-interventionally, there was a significant difference ($P < 0.05$) between the intervention and control groups concerning the scores of the subscales of death and dying, and problems with supervisors, patients and their families. In the subscales of conflict with physicians, lack of adequate emotional preparation, problems with colleagues, workload, uncertainty about treatment, and discrimination, there were no statistically significant differences ($P > 0.05$) between the two groups before the intervention. However, there were statistically significant differences in all the subscales of stress between the intervention and control groups after implementing NLP training strategies in the intervention group ($P < 0.05$). Furthermore, after the performance of NLP in the intervention group, Mann–Whitney test showed that there was a statistically significant difference ($P < 0.05$) between the intervention and control groups concerning the mean scores of the subscales of death and dying, and problems with supervisors, patients and their families.

Table 2: Comparison of the demographic characteristics in the intervention and control groups

Qualitative variable	Number (%)		Statistical test result
	Control group	Intervention group	
Education			
Expert	26 (86.6)	23 (76.6)	χ^2=1.002
Master	4 (13.3)	7 (23.3)	df=1
			P=0.37
Marital status			
Single	10 (33.3)	17 (56.6)	χ^2=4.81
Married	20 (66.6)	12 (40)	df=2
Widow	0 (0)	1 (3.3)	*P*=0.09
Religion			
Islam	30 (100)	28 (93.3)	χ^2=2.06
Christian	0 (0)	2 (6.6)	df=1
			P=0.15
Employment status			
Contractual	10 (33.3)	6 (20)	χ^2=4.28
Engaged employee	2 (6.6)	0 (0)	df=3
Limited contract employee	11 (36.6)	17 (56.6)	*P*=0.24
Formal	7 (23.3)	7 (23.3)	
Working shift			
Morning	15 (50)	9 (30)	χ^2=3.90
Evening	1 (3.3)	0 (0)	df=2
Periodic	14 (46.6)	21 (70)	*P*=0.14
Interest in job			
Yes	23 (76.6)	20 (66.6)	χ^2=0.73
No	7 (23.3)	10 (33.3)	df=1
0	12 (40)	19 (63.3)	*P*=0.39
1	10 (33.3)	5 (16.6)	
2 and more	8 (26.6)	6 (19.9)	
	Mean (SD)		Independent *t*-test
Age	33.87 (6.80)	33.83 (6.7)	*P*=0.984
Years of work	9.5 (5.80)	9.70 (6.45)	*P*=0.984

SD: Standard deviation

Discussion

The purpose of this study was to determine the effects of NLP learning strategies on the nurses' job stress in the critical units. The findings showed that in terms of demographic variables including age, work experience, employment, work, marital status, and number of children in the intervention and control groups, there was no statistically significant difference. In other words, the control and intervention groups were homogeneous prior to the tutorial implementation; thus, in the dependent variable

Table 3: Comparison of the average stress scores between the intervention and control groups before and after the implementation of strategies for teaching NLP

Job stress	Intervention group		Control group		Mann–Whitney test
	Mean (SD)	Mean rankings	Mean (SD)	Mean rankings	
Before intervention	120.88 (18.69)	29.20	121.36 (19.88)	31.50	Z=−0.251
					P=0.65
After intervention	64.53 (6.15)	16.20	120.96 (24.99)	44.80	Z=−6.362
					P=0.0001

SD: Standard deviation, NLP: Nero-linguistic programming

Table 4: Comparison of mean scores for each of the nine subscales of stress between the two groups before and after the implementation of intervention strategies of NLP training

Subscales	Time	Intervention group		Control group		Mann–Whitney test (P)
		Mean (SD)	Mean rankings	Mean (SD)	Mean rankings	
Death and dying	Before intervention	116.80 (29.17)	23.27	140.60 (23.93)	37.73	0.001
	After intervention	106.40 (9.57)	18.47	145 (25.65)	42.53	0.001
	Change scores	−10.40 (28.96)	36.93	4.4 (15.18)	24.07	0.001
Conflict with physicians	Before intervention	124.60 (31.97)	32.93	118.20 (20.24)	28.07	0.276
	After intervention	58.80 (10.96)	15.90	120 (13.21)	10.45	0.001
Inadequate preparation	Before intervention	129.60 (22.37)	28.32	135.20 (27.46)	32.68	0.32
	After intervention	80.80 (13.34)	17.25	146.40 (29.12)	43.75	0.001
Problems with peers	Before intervention	99 (34.25)	29.82	102.30 (24.50)	31.18	0.76
	After intervention	29.10 (11.0)	15.77	96.30 (23.88)	45.23	0.001
Problems with supervisors	Before intervention	133.80 (30.61)	35.55	119.10 (21.23)	25.45	0.02
	After intervention	57.90 (15.62)	18.53	111.9 (30.51)	42.47	0.001
	Change scores	−75.90 (35.42)	44.12	−7.20 (17.27)	16.88	0.001
Workload	Before intervention	128.5 (28.23)	34.73	115.88 (23.57)	26.27	0.05
	After intervention	64. 97 (10.59)	17.57	113.31 (25.39)	43.43	0.001
Uncertainty concerning treatment	Before intervention	130.08 (21.46)	29.35	130.80 (26.74)	31.65	0.60
	After intervention	78.24 (10.13)	17.75	132.48 (31.89)	43.25	0.001
Patients and their families	Before intervention	107.20 (30.17)	25.90	122.80 (21.47)	35.10	0.039
	After intervention	51.20 (10.42)	16.17	122.40 (29.75)	44.83	0.001
	Change scores	−56 (34.46)	43.03	−0.40 (16.21)	17.97	0.001
Discrimination	Before intervention	119.40 (33.58)	33.98	103.80 (32.21)	27.02	0.12
	After intervention	42.30 (14.97)	18.95	92.10 (35.19)	42.05	0.001

SD: Standard deviation, NLP: Nero-linguistic programming

of the experimental group, the statistically significant differences that were found were due to the positive impact of implementing NLP teaching strategies.

In this study, most of the nurses had high stress level prior to the implementation of NLP teaching strategies. In the studies of Preto and Pedāro in Brazil,[23] Embriaco *et al*. in France,[24] Milutinovic *et al*. in Serbia,[25] Mohammad *et al*. at the University of Alexandria of Egypt,[9] and Mims and Stanford at the University of West Georgia in the USA,[8] most of the nurses had high stress level. In all these studies, the work environment was reported to be stressful for ICU nurses in terms of physical environment, pressure and volume of work, caring for ill and dying patients and their families, and observing the pain and suffering of the patients and their families.

The findings of this study showed that after the implementation of the NLP strategies, statistically significant differences were observed between the intervention and control groups in terms of stress, i.e., the implementation of NLP had an impact on nurses' job stress in the intervention group. Moreover, the mean scores of job stress reduced in that group. In the process of teaching NLP, several strategies such as goal setting, time management, assertiveness skills, effective communication, and representation systems had been taught to the nurses. Learning these strategies created diverse variations in the personal and interpersonal

indicators. By learning these strategies, the nurses had a realistic perception of themselves and the world around; moreover, they adjusted their personal feelings and beliefs, and controlled their emotions and behaviors. By learning these techniques, they had a purposeful life, a significant effort toward their designated goals, and an effective communication skill with others. They enhanced their ability to control themselves and others, and had a positive attitude toward self and others. They also increased their self-confidence and feelings of self-efficacy.[20]

No similar study has been conducted about the influence of NLP on job stress, while many studies have examined the impact of NLP on various topics. Harman and Oneill found in their study that consultants using representation systems can contact their clients more easily by using the meta-model (one of the techniques of NLP).[26] Prentice conducted a research to investigate the changes in achievement motivation; he noted that using self-regulatory strategies (time management and goal-setting skills) and general life skills (assertiveness skills) can push the learners toward their goals, and it can increase their motivation.[27] Biggs showed in his study that awareness of the NLP and meta-model enhanced the ability of teachers to interact with their students, and it caused the failed students to achieve greater success in the lessons; furthermore, knowledge of NLP allowed the teachers to control things from different perspectives.[28]

Stipancic *et al*. performed an experimental study on the effectiveness of neuro-liguistic psychotherapy on patients with depression. Perceptions of quality of life increased in these patients after the treatment. The researchers concluded that the effect of NLP is like that of previously approved methods such as cognitive behavioral therapy.[29] Karunaratne (2010) investigated the applications of NLP to treat fear. His results showed that in a short time, NLP was successful in treating fear.[14]

Bigly *et al*. showed that 76% of those who fear of MRI can complete it without fear and anxiety after applying NLP. NLP can reduce anxiety; subsequently, it allows MRI to be performed without resorting to general anesthesia in a high proportion of claustrophobic adults.[15]

Sorensen *et al*., in their study of weight control programs through NLP, showed that it is an effective method of weight control.[30] Scheemeister investigated and approved the effect of teaching NLP strategies on students' academic motivation and performance.[31]

Kamp used NLP techniques in his study to increase confidence and showed that it is very effective in increasing self-confidence.[32] From the perspective of NLP, human interpretation of environmental conditions can cause stress. By recognizing the mental and verbal processes that have a direct impact on thinking and behavior, it is essential to change perceptions, and finally change and modify undesirable behaviors. Using NLP strategies has changed subjective perceptions and impressions, and has caused a more positive attitude toward the problems.[10]

Conclusion

In this study, the researchers applied various strategies including goal setting and time management, assertiveness skills, belief changing techniques, reforming and reframing techniques, communication skills, understanding of the neurological level, and Disney strategy among nurses of the intervention group. By applying these techniques, changing beliefs and modifying adverse and stressful behaviors became possible. Nurses were more capable of coping with stressful situations by applying more targeted and effective time management skills to achieve their personal and social desirability. Also, by using assertiveness skills effectively and by an effective communication with self and others, changing the frames of mind, and controlling the words used in everyday life, nurses were capable of adapting themselves with stressful situations. By using NLP, teachers are expected to increase and strengthen the social interactions of nurses facing stressful events. With this technique, they could comfortably establish effective communication with their patients, families, and colleagues.

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