

Table 1. Comparison of mental and physical state between before and after the footbath

	Before footbath			After footbath	
	N	CgA level ^a		N	CgA level ^a
Good	2	2.04 (1.97-2.10)	→	Very good	2 0.53 (0.27-0.78)
Somewhat good	9	0.83 (0.07-1.98)	→	Very good	2 0.56 (0.55-0.57)
			→	Good	7 0.52 (0.08-1.73)
Somewhat poor	3	1.11 (0.06-3.16)	→	Somewhat good	3 0.60 (0.13-1.53)
Poor	5	0.60 (0.29-1.56)	→	Good	2 0.31 (0.23-0.38)
			→	Somewhat good	3 0.90 (0.25-1.60)
Very poor	2	0.55 (0.27-0.82)	→	Somewhat poor	1 0.48
			→	Poor	1 0.25

a: mean (range)

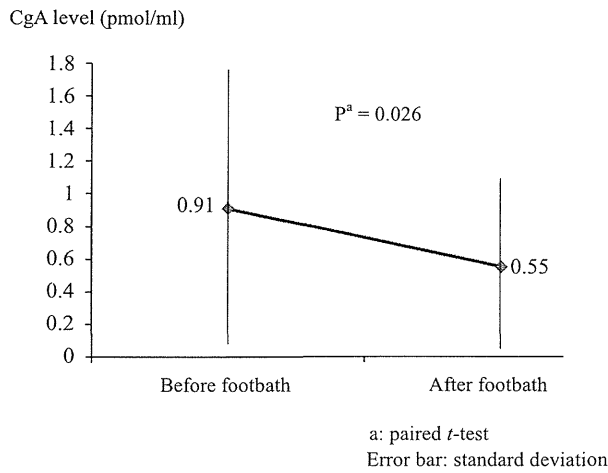


Fig. 1. Comparison of the CgA levels between before and after the footbath

subjects who evaluated their condition as “poor”, and two of them changed it to “good”, while the other three changed it to “somewhat good”. There were two subjects who rated their initial state as “very poor”. One changed it to “somewhat poor”, while the other changed it to “poor”. A comparative statistical evaluation of mental and physical states before and after the footbath showed significant changes in scores ($Z=-3.80$, $p < 0.001$) (Table 1).

Discussion

Subjective mental and physical states before and after the footbath showed improvement in all of the participants, and the fact that even those who answered “good” or “somewhat good” after duty showed a further improvement after the footbath suggests that footbaths after the completion of duty have a clear efficacy in reducing stress. In this study we filled a footbath vessel with hot water and evaluated the efficacy of the footbath by immersing the feet from the ankle to the dorsum of

the foot and the toes. That alone was sufficient to exert an effect on the mental and physical condition of nurses after the completion of their duties, suggesting that even the limited measure of taking a footbath is capable of exerting an adequate relaxation effect.

CgA is characterized by increasing during stress earlier than previously known stress indicators, such as cortisol, and also by declining sooner²⁰. It possesses the characteristic of responding to the stress that occurs as a result of everyday work, and is regarded as an indicator that is capable of specifically and very sensitively detecting stress¹⁵⁻¹⁷. In our previous pilot study, there were no significant changes in CgA levels between before and after when subjects sat down for 10 min (unpublished). These characteristics of CgA and the results of this study showing that CgA levels after the footbath significantly decreased suggest that footbaths have a stress relieving effect and are an effective means of recovering from the stress that is felt after the completion of nursing duties.

The subjective and objective efficacy of footbaths suggest that they lead to relaxation in accordance with an increase in parasympathetic response and a decrease in sympathetic response, and CgA reduction.

This study is preliminary, and has several limitations. The first limitation is that there was no control group against which to compare the intervention. The second limitation regards the assessment of stress. In this study, we did not use existing validated instruments of stress other than CgA. Lastly, we only assessed the outcomes immediately after the intervention, and could not assess how long the effects would have continued. In future research it is necessary to assess the efficacy of footbaths in a randomized controlled study using validated assessment tools of stress.

References

1. Kawano, Y.: Association of job-related stress factors with psychological and somatic symptoms among Japanese hospital nurses: effect of departmental environment in acute care hospitals. *J. Occup. Health*, 50: 79-85, 2008
2. Brown, H. and Edelmann, R.: A study of expected and experienced stressors and support reported by students and qualified nurses. *J. Adv. Nurs.*, 31: 857-864, 2000
3. Jenkins, R. and Elliott, P.: Stressors, burnout and social support. *J. Adv. Nurs.*, 48: 622-631, 2004
4. Stordeur, S., D'hoore, W. and Vandenberghe, C.: Leadership, organizational stress, and emotional exhaustion among hospital nursing staff. *J. Adv. Nurs.*, 35: 533-542, 2001
5. Tully, A.: Stress, sources of stress and ways of coping among psychiatric nursing students. *J. Psychiatr. Ment. Health Nurs.*, 11: 43-47, 2004
6. Edwards, D. and Burnard, P.: A systematic review of stress and stress management interventions for mental health nurses. *J. Adv. Nurs.*, 42: 169-200, 2003
7. Edwards, D.: Stressors, moderators and stress outcomes: findings from the All-Wales Community Mental Health Nurse Study. *J. Psychiatr. Ment. Health Nurs.*, 7: 529-537, 2000
8. Jaber, S., Bahloul, H. and Guétin, S. et al.: Effects of music therapy in intensive care unit without sedation in weaning patients versus non-ventilated patients. *Ann. Fr. Anesth. Reanim.*, 26: 30-38, 2007
9. Saeki, Y., Nagai, N. and Hishinuma, M.: Effects of footbathing on autonomic nerve and immune function. *Complement. Ther. Clin. Pract.*, 13: 158-165, 2007
10. Yamamoto, K., Aso, Y. and Nagata, S. et al.: Autonomic, neuro-immunological and psychological responses to wrapped warm footbaths - a pilot study. *Complement. Ther. Clin. Pract.*, 14: 195-203, 2008
11. Saeki, Y.: The effect of foot-bath with or without the essential oil of lavender on the autonomic nervous system: a randomized trial. *Complement Ther. Med.*, 8: 2-7, 2000
12. Sung, E.J. and Tochihara, Y.: Effects of bathing and hot footbath on sleep in winter. *J. Physiol. Anthropol. Appl. Human Sci.*, 19: 21-27, 2000
13. Blaschko, H., Comline, R.S. and Schneider, F.H. et al.: Secretion of a chromaffin granule protein, chromogranin, from the adrenal gland after splanchnic stimulation. *Nature*, 215: 58-59, 1967
14. Saruta, J.: Expression and localization of chromogranin A gene and protein in human submandibular gland. *Cells Tissues Organs*, 180: 237-244, 2005
15. Smith, W.J. and Kirshner, N.: A specific soluble protein from the catecholamine storage vesicles of bovine adrenal medulla. *Molec. Pharmacol.*, 3: 52-62, 1967
16. Toda, M., Morimoto, K. and Nagasawa, S. et al.: Effect of snack eating on sensitive salivary stress markers cortisol and chromogranin A. *Environ. Health Prev. Med.*, 9: 27-29, 2004
17. Winkler, H. and Fischer-Colbrie, R.: The chromogranins A and B: the first 25 years and future perspectives. *Neuroscience*, 49: 497-528, 1992
18. Nakane, H., Asami, O. and Yamada, Y. et al.: Effect of negative air ions on computer operation, anxiety and salivary chromogranin A-like immunoreactivity. *Int. J. Psychophysiol.*, 46: 85-89, 2002
19. Nakane, H. and Asami, O.: Salivary chromogranin A as an index of psychosomatic stress response. *Biomed. Res.*, 19: 401-406, 1998
20. Den, R., Toda, M. and Nagasawa, S. et al.: Circadian rhythm of human salivary CgA. *Biomed. Res.*, 28: 57-60, 2007
21. Uebaba, K. and XU, F.H.: Temperature-dependent physiopsychological changes by footbath - changes in electroencephalogram, cerebral circulation, R-R variability and comfort -. *J. Jpn. Soc. Balneol. Climatol. Phys. Med.*, 67: 119-129, 2004

Research Article

Evaluation of the Effectiveness of a Group Intervention Approach for Nurses Exposed to Violent Speech or Violence Caused by Patients: A Randomized Controlled Trial

Makoto Inoue,^{1,2} Fumiko Kaneko,¹ and Hitoshi Okamura¹

¹ Graduate School of Health Sciences, Hiroshima University, 1-2-3 Kasumi, Minami-ku, Hiroshima 734-8551, Japan

² Department of Nursing, Faculty of Health and Welfare, Prefectural University of Hiroshima, Mihara 723-0053, Japan

Correspondence should be addressed to Hitoshi Okamura, hokamura@hiroshima-u.ac.jp

Received 3 March 2011; Accepted 27 April 2011

Academic Editor: B. Roberts

Copyright © 2011 Makoto Inoue et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

The purpose of this study was to evaluate the effectiveness of a group intervention approach aimed at improving the mental health of psychiatric nurses exposed to violent speech/violence. Sixty-two nurses having experienced serious episodes of violent speech/violence were enrolled in this study. A group intervention approach was used in the intervention group. For both the intervention and the control groups, evaluations were conducted at three time points. Evaluations were conducted using the Impact of Event Scale-Revised (IES-R) and Profile of Mood States (POMS). The results showed that changes in the flashback, hyperarousal, avoidance behavior, and total scores on the IES-R and anxiety and depression scores on the POMS differed significantly between the two groups. These results suggest that a group intervention approach can lessen the psychological burden of nurses exposed to violence and reduce their mental stress.

1. Introduction

Nurses working in clinical practice are often exposed to violent speech and/or even actual violence [1–3]. One background factor for violent speech/violence caused by patients and affecting nurses is the fact that patients staying in hospitals (environments that are totally different from their conventional lifestyles) are likely to become irritated if their freedom is restricted or if their disease does not subside or resolve [4]. Patients often view nurses as being “persons who are willing to listen to any request” or “persons who will agree to any desire.” Under such circumstances, the above-mentioned emotions experienced by patients occasionally assume the form of violent speech/violence directed against nurses [5].

A previous study demonstrated that the risk of exposure to violent speech/violence in the workplace is higher for nurses than for any other healthcare profession [6, 7]. The frequency of exposure to aggressive speech/behavior by hospitalized patients is especially high for nurses working in psychiatric facilities, with an exposure frequency that

is twice as high as that for nurses working in other specialties [8]. When exposed to violent speech/violence, nurses often endure the abuse or violence without resistance, considering it “part of their job” [9]. The tendency of nurses to have such views leads to inadequate reports of this type of event, thereby hampering the development of effective countermeasures against violent speech/violence. When exposed to violent speech/violence, psychiatric nurses tend to avoid attracting the close attention of surrounding people to the hazards to which they have been exposed, and investigators have pointed out the need to investigate the impact of this type of event on the psychological features of psychiatric nurses exposed to violence and to devise valid means of dealing with such impacts appropriately [10]. At present, however, a system for the psychological followup of nurses exposed to violent speech/violence is lacking at many medical facilities.

In our previous study [11], 141 (62.7%) of the 225 psychiatric nurses who were surveyed responded that they “have been subjected to memorable violent speech/violence,” and a diagnosis of posttraumatic stress disorders (PTSD)

seemed possible in 21.3% of these nurses. Previous reports on interventions for such nurses include discussions of the possibility of securing the safety of patients and nurses by learning defensive techniques based on methods of protecting oneself using self-defense [12]. Another report focused on reducing the risk of violence by providing a comprehensive violence prevention program [13]. However, these analyses and evaluations involved many ambiguities and were primarily concerned with how to deal with violence or what actions are needed to prevent violent speech/violence.

Under these circumstances, we attempted a group intervention approach aiming at reducing the psychological stress of psychiatric nurses exposed to violent speech/violence and analyzed changes in the psychological impacts of violent speech/violence following this intervention.

2. Method

2.1. Subjects. Of the nurses working at five psychiatric hospitals in the Chugoku and Kyushu districts of Japan with 200–300 beds/hospital, those satisfying all the following requirements were enrolled in this study:

- (1) experience of serious violent speech/violence,
- (2) a 6-month or longer career working as a psychiatric nurse at the time of the invitation to participate in this study,
- (3) ability to participate in all the intervention programs,
- (4) provision of informed consent to participate in the study,
- (5) not in an administrative position (director of nursing department, vice director of nursing department, or chief nurse).

2.2. Definition of Violent Speech/Violence. Prior to the intervention, a definition of “violent speech/violence” by patients directed at nurses was needed. Taking into account the results of our preceding questionnaire survey of what forms of violent speech/violence were seen at psychiatric facilities (a survey involving 282 subjects) and referring to published articles and the definitions prepared by the International Council of Nurses, we defined violence from three aspects: physical violence, sexual violence, and verbal abuse. A portion of verbal abuse was viewed as violent speech. Experiencing any of these types of violence from patients was rated as “exposed to violent speech/violence.” Thus, the definition of “violent speech/violence” includes

- (1) physically violent behaviors involving physical contact (beating, kicking, biting, or scratching) and behaviors involving physical contact using pencils, eating utensils, or other objects as weapons for stabbing,
- (2) sexually violent behaviors, such as touching the nurse’s body, inappropriate hugging, genital display, indecent speech, and requests for sexual relations (such behaviors were counted regardless of whether they were made by male or female patients),

- (3) verbal abuse involving hissing, using an angry tone, or making direct or indirect threats, such as “Die,” “You’re ugly,” “You’re bald,” “You silly ass,” “I’ll beat you,” “I’ll kill you,” or “I’ll remember this” (these types of expressions are hereinafter collectively called “violent speech”) and behaviors not involving physical contact such as throwing an object at the nurse, spraying water on the nurse, spitting at the nurse and kicking/damaging/destroying the door.

2.3. Procedure. The subjects of this study were recruited by holding orientation meetings at wards for acute psychiatric care and chronic psychiatric care, with the permission of the nursing director of each facility. The orientation meetings provided detailed information about the planned study to the nurses.

The nurses who provided informed written consent at each facility ($n = 62$) were randomly allocated using the dice method to an intervention group ($n = 30$) or a control group ($n = 32$). Then, a group approach was used for the intervention group. The author, having worked as a psychiatric nurse for 11 years, served as the moderator. Each group was composed of 3–4 members who remained in the same group for all the sessions. At the end of each session, an outline of the discussion held during that session was reported to the nursing director (or vice director) of the hospital to communicate the need for systematic actions dealing with violent speech/violence.

For both the intervention and the control groups, evaluations were conducted at three time points, that is, at baseline (immediately before the start of intervention), immediately after the 6-week intervention, and 3 months thereafter. The evaluation at 3 months after the intervention was performed for the following reasons: many previous studies conducted evaluations at 3–6 months after the end of the intervention period based on the view that the influence of a group intervention approach on psychological features persists for 3–6 months after the completion of the intervention [14, 15]; an evaluation at this time point was possible in the present study.

2.4. Intervention Program. When conducting the intervention, we paid attention to group psychotherapy, which can be implemented by nurses and which has been reported to be a highly efficient means of treatment [16–19]. We thus adopted a group intervention approach previously applied to patients with psychiatric diseases and their family members [20–22] and used in our previous group work trials. The program was composed of a psychotherapy-based discussion, including topics regarding means of coping with violent speech/violence or psychological impacts and stress management, as well as behavioral therapy (progressive muscle relaxation + image therapy) for a total of four sessions (once weekly for 4 weeks, 90 minutes/session).

2.5. Measures. Based on our previous study results [11], we selected the following variables to evaluate psychological impact and stress.

2.5.1. Social and Demographic Variables. Information was collected regarding age, sex, length of nursing experience, length of work in a psychiatry department, number of persons in household, presence/absence of a spouse, presence/absence of social support, degree of satisfaction with social support, presence/absence of major episodes of violent speech/violence, and interval between the time of exposure to the violent speech/violence and the present, if any. Regarding social support, the following parameters were rated using a 4-point Likert scale: number of persons who provided social support (none to very numerous), degree of satisfaction with family support (not satisfied at all to quite satisfied), and degree of satisfaction with support from acquaintances (not satisfied at all to quite satisfied).

2.5.2. Impact of Event Scale-Revised (IES-R). The IES-R is a self-rated scale composed of 22 items designed to evaluate the effect of psychological trauma. The scale was devised by Weiss and Marmar [23] as a revised version of the Impact of Event Scale created by Horowitz et al. [24]. The IES-R enables the measurement of 3 subscales: intrusion, avoidance, and hyperarousal. The reliability and validity of the Japanese version have been confirmed [25]. Cronbach's alpha reliability for this sample was 0.859 (total score). The cutoff point in the Japanese version is set at 24/25, and a total score equal to or above the cutoff point suggests posttraumatic stress disorder (PTSD).

2.5.3. Profile of Mood States (POMS). The Profile of Mood States (POMS) is a self-assessment questionnaire composed of 65 items designed to evaluate temporary emotional states. The questionnaire was developed by McNair [26] and enables the assessment of emotional state using 6 scales: tension-anxiety, depression-depressed mood, anger-hostility, vigor, fatigue, and confusion. The reliability and validity of the Japanese version have been confirmed [27]. Cronbach's alpha reliability for this sample was 0.775 (total score). The frequency of the mood corresponding to each item during the past week is rated on a five-point scale that ranges from "never (score 0)" to "very often (score 4)." The scores of all the items for each scale are totaled [28]. A higher total score indicates a higher intensity of mood in that category.

2.6. Statistical Analysis

2.6.1. Comparison between the Intervention and Control Groups at Baseline. To compare variables and the scores for each scale at baseline between the two groups, the normality test and either the χ^2 test, *t*-test, or Mann-Whitney *U*-test were used.

2.6.2. Evaluation of Responses to Group Intervention Approach. Intergroup differences in the score for each scale immediately before, immediately after, and 3 months after the intervention were analyzed using a two-way analysis of variance (analysis of nonpaired factors and paired factors) with the magnitude of the change in each scale score [(score

immediately after intervention-baseline score) and (score 3 months after intervention-baseline score)] serving as a dependent variable.

All the *P* values were two tailed, and *P* values <.05 were considered significant. The Statistical Package for the Social Sciences (SPSS) software ver. 17.0J for Windows was used to perform all the statistical analyses.

2.7. Ethical Considerations. The protocol for this study was submitted to the nursing director of each of the five participating hospitals and was approved by the ethics committee of each hospital prior to the start of the study. Each candidate nurse was informed about the study using a leaflet stating the objectives and methods of the study, the design of the intervention, the capability and right of each nurse to refuse participation at any time, the strict protection of privacy, the lack of any disadvantage to nurses refusing to participate, the capability and right of the nurse to revoke their consent to participate in the study at any time.

3. Results

3.1. Enrollment in the Study. During the survey period, participants were recruited from among nurses working at five facilities. Sixty-two nurses who satisfied the inclusion criteria and provided their informed consent were randomly allocated to either the intervention group (*n* = 30) or the control group (*n* = 32).

Five subjects from the intervention group were unable to remain in the study until the end, and the collection of the questionnaire at 3 months after intervention was not possible for seven subjects in the control group. Thus, a final evaluation was possible for 25 subjects in the intervention group and 25 subjects in the control group.

3.2. Examples of Violent Speech/Violence Identified during Discussions with the Group Intervention Approach. The episodes of violent speech/violence experienced by nurses were summarized as follows.

(1) Physical violence:

- (i) a nurse was beaten by a dissatisfied patient using a bar or similar object,
- (ii) a patient, whose demand was not satisfied, kicked the door of the nurses' station, grabbed a nurse by the collar, and used violence,
- (iii) a patient suddenly slapped the face of a nurse when the nurse was engaged in the care of another patient,
- (iv) a patient with nocturnal delirium beat a nurse,
- (v) a patient in a borderline case threw a chair at the nurse when care was delayed.

(2) Violent speech:

- (i) a patient suddenly said "Die" or "Go away" in a loud voice.

TABLE 1: Comparison between baseline data in the intervention group and the control group.

Variables	Intervention group (<i>n</i> = 30)	Control group (<i>n</i> = 32)	<i>p</i> ^(a)
Gender			
Male	11	12	.95
Female	19	20	
Spouse			
Presence	17	18	.98
Absence	13	14	
	Median (range)		<i>p</i> ^(b)
Age (y)	33.0 (20–59)	29.0 (19–59)	.08
Length of nursing experience (months)	85.5 (14–435)	72.0 (13–469)	.94
Length of work in the psychiatry department (months)	47.5 (14–346)	54.5 (8–353)	.78
Interval between the time of exposure to the violent speech/violence and the present (months)	5.0 (1–180)	6.0 (1–36)	.64
Number of persons in the household	3.0 (1–8)	2.5 (1–6)	.18
Number of persons who provided social support	2 (1–4)	2 (1–4)	.26
Degree of satisfaction with support by family	2 (1–4)	2 (1–4)	.31
Degree of satisfaction with support by acquaintances	2 (1–4)	2 (1–4)	.70
	Mean (standard deviation)		<i>p</i> ^(c)
IES-R ^(d)			
Intrusion	4.77 (4.28)	6.62 (3.85)	.18
Avoidance	5.50 (4.13)	6.84 (4.04)	.20
Hyperactivity	5.17 (3.28)	5.43 (3.20)	.74
Total	15.43 (1.97)	18.44 (1.69)	.25
POMS ^(e)			
Tension-Anxiety	8.30 (2.70)	8.90 (4.21)	.51
Depression	15.93 (11.21)	14.91 (7.77)	.68
Anger	12.50 (10.23)	13.00 (7.03)	.83
Vigor	12.90 (7.35)	13.78 (6.17)	.61
Fatigue	13.42 (7.72)	13.13 (5.99)	.86
Confusion	11.70 (5.18)	12.09 (4.81)	.76
Total	56.80 (37.62)	58.00 (26.78)	.89

^(a) χ^2 test.^(b) Mann-Whitney *U*-test.^(c) *t*-test.^(d) Impact of Event Scale—Revised.^(e) Profile of Mood States.

The subjects exposed to these episodes judged them as being violent speech/violence if they exceeded certain levels, for example, “It went beyond the limit,” “I cannot deal with this patient any further,” “I am sure the patient is behaving this way intentionally,” or “This behavior is not acceptable.” Some nurses stated that when they reported

the event to their superior, their superior answered “That happened because you treated the patient poorly” or “Your way of dealing with the patient is problematic.” These nurses continued to experience fear or self-loathing after exposure to violent speech/violence or felt regret and intense unhappiness, depending on the attitude of their superior.

TABLE 2: Changes in the IES-R scores from immediately after completion of the intervention to 3 month after completion of the intervention.

	Time		Effects					
	Score change ^(a) (Immediately after intervention)	Score change ^(b) (1 month after intervention)	Interaction Group × time			Main effect Group		
	Mean (SD)	Mean (SD)	Freedom	F ^(c)	P	Freedom	F ^(c)	P
<i>Intrusion</i>								
Intervention group	-1.47 (2.46)	-1.70 (2.07)	2	2.90	.058	1	4.28	.040
Control group	-0.53 (1.97)	-0.38 (2.81)						
<i>Avoidance</i>								
Intervention group	-2.10 (2.71)	-2.03 (2.70)	1.58 ^(d)	6.30	.005	1	7.96	.006
Control group	-0.22 (1.67)	-0.66 (2.40)						
<i>Hyperactivity</i>								
Intervention group	-1.50 (1.73)	-2.10 (2.04)	2	8.64	<.001	1	11.55	.001
Control group	-0.59 (1.97)	0.63 (2.40)						
<i>Total</i>								
Intervention group	-5.07 (4.91)	-5.83 (5.21)	2	10.00	<.001	1	15.49	<.001
Control group	-1.34 (3.65)	-0.97 (5.00)						

^(a)[Score immediately after intervention] – [Baseline score].

^(b)[Score 3 months after the completion of the intervention] – [Baseline score].

^(c)F statistic in repeated measures analysis of variance.

^(d)Greenhouse-Geisser correction.

3.3. Comparison between the Intervention and Control Groups at Baseline. A comparison of the variables and scores for each scale at baseline between the two groups revealed no significant intergroup differences in any of the variables or scores (Table 1).

3.4. Comparison of Changes in IES-R Scores between the Two Groups. Table 2 compares the changes in the IES-R scores (intrusion, avoidance, hyperarousal and total scores) during the period from immediately after until 3 months after the end of intervention between the intervention and control groups.

In a two-way analysis of variance, significant intergroup differences in the changes in scores were noted for both the interaction and main effects on the avoidance, hyperarousal, and total score scales and for the main effect on the intrusion scale.

3.5. Comparison of Changes in POMS Scores between the Two Groups. Table 3 compares the changes in the POMS scores (tension-anxiety, depression, anger, vigor, fatigue, confusion, and TMD scores) during the period from immediately after until 3 months after the end of intervention between the intervention and control groups.

In a two-way analysis of variance, significant intergroup differences in the changes in scores were noted for both the

interaction and main effects on the tension-anxiety scale and for the main effect on the depression scale.

4. Discussion

4.1. Violent Speech/Violence Experienced by Nurses. The present results demonstrate that the nurses in the present study frequently endured violent speech/violence with no active countermeasures, endorsing the previous findings that nurses are at a high risk of exposure to violent speech/violence from patients. The present study additionally revealed that some changes occurred in the way the nurses dealt with patients or in their feelings toward the patients after being exposed to violent speech, saying "I avoided contact with the patient as much as possible," "I was distressed just to see the face of the patient," "I minimized talking with the patient," and "I avoided contact with the patient, asking other staff members to perform my role as much as possible." Thus, the events resulted in the nurses having negative stances toward services or actions related to patient care.

4.2. Efficacy of Intervention. When the changes in the IES-R scores following intervention were analyzed in this randomized controlled trial, significant intergroup differences were noted for intrusion, hyperarousal, avoidance, and total

TABLE 3: Changes in the POMS scores from immediately after completion of the intervention to 3 month after completion of the intervention.

	Time		Effects					
	Score change ^(a) (Immediately after intervention)	Score change ^(b) (1 month after intervention)	Interaction Group × time			Main effect Group		
	Mean (SD)	Mean (SD)	Freedom	F ^(c)	P	Freedom	F ^(c)	P
<i>Tension-anxiety</i>								
Intervention group	-1.87 (4.95)	-2.97 (4.16)	2	30.01	<.001	1	53.55	<.001
Control group	5.47 (5.23)	6.62 (6.10)						
<i>Depression</i>								
Intervention group	-0.07 (8.17)	-0.73 (8.19)	2	2.36	.098	1	4.64	.035
Control group	3.88 (5.23)	3.59 (9.36)						
<i>Anger</i>								
Intervention group	-2.43 (8.80)	-2.10 (9.92)	1.35 ^(d)	0.85	.845	1	0.02	.881
Control group	-2.40 (11.01)	-2.93 (10.27)						
<i>Vigor</i>								
Intervention group	-0.17 (3.94)	-1.37 (6.66)	2	1.50	.227	1	2.49	.120
Control group	1.09 (8.05)	0.50 (5.98)						
<i>Fatigue</i>								
Intervention group	-0.60 (4.43)	-1.77 (6.21)	2	0.86	.426	1	1.14	.288
Control group	-2.53 (6.90)	-2.75 (6.05)						
<i>Confusion</i>								
Intervention group	-0.47 (3.44)	-1.07 (4.33)	2	0.62	.537	1	1.14	.289
Control group	-1.40 (5.42)	-2.34 (5.17)						
<i>Total</i>								
Intervention group	-2.57 (21.00)	-3.70 (30.45)	1.76 ^(d)	0.75	.452	1	0.26	.608
Control group	-2.71 (32.20)	3.31 (27.60)						

^(a)[Score immediately after intervention] - [Baseline score].

^(b)[Score 3 months after the completion of the intervention] - [Baseline score].

^(c)F statistic in repeated measures analysis of variance.

^(d)Greenhouse-Geisser correction.

score. Intrusion and hyperarousal, as evaluated using the IES-R scales, refer to symptoms characterized by extreme cautiousness and timidity, an inability to sleep because of concern over the event, and the repeated recollection of the event during daily life. During the intervention, various measures for dealing with violent speech/violence were discussed, and participants talked freely in a friendly atmosphere about how to control posttraumatic events, emotions, and stress by themselves and obtained knowledge regarding posttraumatic events and the resulting stress. Through these steps, the participants gained confidence in

their capability to face situations or events involving violent speech/violence appropriately in the future. Furthermore, by learning relaxation techniques, the symptoms that the participants had been suffering from seemed to be alleviated.

In the analysis of the changes in the POMS scores after intervention, significant intergroup differences were noted for anxiety and depression. The POMS system is designed to evaluate emotional status at a given time. Anxiety about possible violent speech/violence in the future and depression resulting from such anxiety seems to have been alleviated through frank discussions regarding the affliction and

associated anxiety, learning about violent speech/violence, exchanging information on ways to overcome such events, and learning relaxation techniques in a group of nurses with similar experiences organized under a group intervention approach. The efficacy of the group intervention approach for group psychotherapy, which focuses on changing emotions, has been demonstrated in a previous study [17, 29, 30]. This approach seems to have yielded a similar efficacy among the nurses exposed to violent speech/violence in the present study.

4.3. Limitations of This Study. This study has several limitations. First, the analysis of differences in the characteristics, safety management system, safety practices, and other factors among the participating facilities was inadequate. Second, we cannot rule out the possibility that the subjects did not have a full understanding of the definition of violent speech/physical violence, though we endeavored to provide a very concrete definition and explanation. Third, a double-blind design could not be adopted for this study because of its nature, possibly resulting in a lack of adequate care or attention when arranging and implementing the study. That is, the authors assumed all the roles performed in the study, ranging from inviting the nurses to participate in the study to the allocation of the subjects to the intervention and control groups as well as the implementation of the intervention and evaluation. Thus, the reliability of the findings can be argued. In addition, all the study subjects were nurses working in psychiatric departments. The psychological problems arising from violent speech/violence experienced by nurses working in other specialties should also be investigated and overcome in future studies.

5. Conclusions

The present results suggest that the group intervention approach is an effective means of alleviating the psychological impact and stress of nurses exposed to violent speech/physical violence caused by patients. This approach can contribute to the improvement of the mental health of nurses, thereby improving the quality of nursing care provided to patients.

References

- [1] L. van Londen, J. P. Hes, E. H. Ameling, and M. W. Hengeveld, "Staff attitudes toward violence in the general hospital. A comparison between Amsterdam and Tel Aviv," *General Hospital Psychiatry*, vol. 12, no. 4, pp. 252–256, 1990.
- [2] I. Mackay, B. Paterson, and C. Cassells, "Constant or special observations of inpatients presenting a risk of aggression or violence: nurses' perceptions of the rules of engagement," *Journal of Psychiatric and Mental Health Nursing*, vol. 12, no. 4, pp. 464–471, 2005.
- [3] M. Omérov, G. Edman, and B. Wistedt, "Violence and threats of violence within psychiatric care— a comparison of staff and patient experience of the same incident," *Nordic Journal of Psychiatry*, vol. 58, no. 5, pp. 363–369, 2004.
- [4] M. Raja and A. Azzoni, "Hostility and violence of acute psychiatric inpatients," *Clinical Practice and Epidemiology in Mental Health*, vol. 1, article 11, 2005.
- [5] W. C. Chen, Y. H. Sun, T. H. Lan, and H. J. Chiu, "Incidence and risk factors of workplace violence on nursing staffs caring for chronic psychiatric patients in Taiwan," *International Journal of Environmental Research and Public Health*, vol. 6, no. 11, pp. 2812–2821, 2009.
- [6] H. C. Cox, "Verbal abuse in nursing: report of a study," *Nursing Management*, vol. 18, no. 11, pp. 47–50, 1987.
- [7] R. J. Snowden, N. S. Gray, J. Taylor, and S. Fitzgerald, "Assessing risk of future violence among forensic psychiatric inpatients with the classification of violence risk (COVR)," *Psychiatric Services*, vol. 60, no. 11, pp. 1522–1526, 2009.
- [8] M. Ishida, "Violence and troubles that occur in the psychiatric department ward are 2–4 times than those in the general ward," *Japanese Journal of Psychiatric Nursing*, vol. 133, p. 87, 2003.
- [9] N. Hayatoh, "My experience regarding "violence"," *Psychiatric Mental Health Nursing*, vol. 5, pp. 16–23, 2002.
- [10] P. I. Buerhaus, C. DesRoches, K. Donelan, and R. Hess, "Still making progress to improve the hospital workplace environment? Results from the 2008 national survey of registered nurses," *Nursing Economics*, vol. 27, no. 5, pp. 289–301, 2009.
- [11] M. Inoue, K. Tsukano, M. Muraoka, F. Kaneko, and H. Okamura, "Psychological impact of verbal abuse and violence by patients on nurses working in psychiatric departments," *Psychiatry and Clinical Neurosciences*, vol. 60, no. 1, pp. 29–36, 2006.
- [12] N. Yoneyama, "Special program for violence damage," *Psychiatric Mental Health Nursing*, vol. 5, pp. 56–59, 2002.
- [13] S. Shimosato, "Development of "inclusive violence prevention program"," *Japanese Journal of Nursing Administration*, vol. 14, pp. 1008–1014, 2004.
- [14] S. Fukui, A. Kugaya, H. Okamura et al., "A psychosocial group intervention for Japanese women with primary breast carcinoma: a randomized controlled trial," *Cancer*, vol. 89, no. 5, pp. 1026–1036, 2000.
- [15] D. Spiegel, J. R. Bloom, and I. Yalom, "Group support for patients with metastatic cancer. A randomized prospective outcome study," *Archives of General Psychiatry*, vol. 38, no. 5, pp. 527–533, 1981.
- [16] C. Classen, L. D. Butler, C. Koopman et al., "Supportive-expressive group therapy and distress in patients with metastatic breast cancer: a randomized clinical intervention trial," *Archives of General Psychiatry*, vol. 58, no. 5, pp. 494–501, 2001.
- [17] P. J. Goodwin, M. Leszcz, M. Ennis et al., "The effect of group psychosocial support on survival in metastatic breast cancer," *New England Journal of Medicine*, vol. 345, no. 24, pp. 1719–1726, 2001.
- [18] T. Hosaka, Y. Sugiyama, Y. Tokuda, and T. Okuyama, "Persistent effects of a structured psychiatric intervention on breast cancer patients' emotions," *Psychiatry and Clinical Neurosciences*, vol. 54, no. 5, pp. 559–563, 2000.
- [19] D. W. Kissane, S. Bloch, G. C. Smith et al., "Cognitive-existential group psychotherapy for women with primary breast cancer: a randomized controlled trial," *Psycho-Oncology*, vol. 12, no. 6, pp. 532–546, 2003.
- [20] A. Bechdolf, B. Knost, C. Kuntermann et al., "A randomized comparison of group cognitive-behavioural therapy and group psychoeducation in patients with schizophrenia," *Acta Psychiatrica Scandinavica*, vol. 110, no. 1, pp. 21–28, 2004.

- [21] M. Gledhill, F. Lobban, and W. Sellwood, "Group CBT for people with schizophrenia: a preliminary evaluation," *Behavioural and Cognitive Psychotherapy*, vol. 26, no. 1, pp. 63–75, 1998.
- [22] S. Temple and B. C. Ho, "Cognitive therapy for persistent psychosis in schizophrenia: a case-controlled clinical trial," *Schizophrenia Research*, vol. 74, no. 2-3, pp. 195–199, 2005.
- [23] D. S. Weiss and C. R. Marmar, "The impact of event scale-revised," in *Assessing Psychological Trauma and PTSD*, J. P. Wilson and T. M. Keane, Eds., pp. 399–411, Guilford Press, New York, NY, USA, 1997.
- [24] M. Horowitz, N. Wilner, and W. Alvarez, "Impact of event scale: a measure of subjective stress," *Psychosomatic Medicine*, vol. 41, no. 3, pp. 209–218, 1979.
- [25] N. Asukai, H. Kato, N. Kawamura et al., "Reliability and validity of the Japanese-language version of the Impact of Event Scale-Revised (IES-R-J): four studies of different traumatic events," *Journal of Nervous and Mental Disease*, vol. 190, no. 3, pp. 175–182, 2002.
- [26] D. McNair, *Profile of Mood States*, Educational and Industrial Testing Service, San Diego, Calif, USA, 1971.
- [27] K. Yokoyama, S. Araki, N. Kawakami, and T. Tkakeshita, "Production of the Japanese edition of profile of mood states (POMS): assessment of reliability and validity," *Japanese Journal of Public Health*, vol. 37, no. 11, pp. 913–918, 1990.
- [28] K. Yokoyama and S. Araki, *Japanese Translation of Profile of Mood States*, Kanekoshobo, Tokyo, Japan, 2004.
- [29] E. Granholm, J. R. McQuaid, F. S. McClure et al., "A randomized, controlled trial of cognitive behaviors social skills training for middle-aged and older outpatients with chronic schizophrenia," *American Journal of Psychiatry*, vol. 162, no. 3, pp. 520–529, 2005.
- [30] T. Wykes, P. Hayward, N. Thomas et al., "What are the effects of group cognitive behaviour therapy for voices? A randomised control trial," *Schizophrenia Research*, vol. 77, no. 2-3, pp. 201–210, 2005.

Relationships Between Roles and Mental States and Role Functional QOL in Breast Cancer Outpatients

Naoko Ohnishi, Tsuyoshi Kataoka and Hitoshi Okamura*

Graduate School of Health Sciences, Hiroshima University, Hiroshima, Japan

*For reprints and all correspondence: Hitoshi Okamura, Graduate School of Health Sciences, Hiroshima University, 1-2-3 Kasumi, Minami-ku, Hiroshima 734-8551, Japan. E-mail: hokamura@hiroshima-u.ac.jp

Received March 16, 2011; accepted June 23, 2011

Objective: To evaluate the degrees of role accomplishment, the importance of and satisfaction with roles, and to assess their relationships with mental states and role functional quality of life, in breast cancer patients receiving treatment on an outpatient basis.

Methods: The study was designed as a cross-sectional study. Thirty patients with primary breast cancer were evaluated using the Self-Rating Frenchay Activities Index, the Role Checklist, the Profile of Mood States and the Medical Outcome Study Short-Form 36-Item Health Survey. Spearman's rank correlation coefficients were used to analyze the relationships between each role-related item and each Profile of Mood States and Short-Form 36 subscale.

Results: A higher number of roles played was positively associated with the score for Vigor but was negatively associated with the score for physical quality of life. A higher degree of the importance of roles was negatively correlated with the score for Confusion and positively correlated with the score for mental quality of life. A higher degree of satisfaction with roles was negatively correlated with depression, tension-anxiety, confusion and the total mood disturbances score, and was positively correlated with both the physical and negative quality of life scores. No significant correlations were apparent between the degrees of role accomplishment (Self-Rating Frenchay Activities Index scores) and the Profile of Mood States and Short-Form 36 scores.

Conclusions: The results indicated that qualitative and subjective factors (i.e. the degrees of importance of and satisfaction with roles) are associated more closely with emotional states and role functional quality of life in breast cancer outpatients than quantitative and objective factors (i.e. degree of role accomplishment and the number of roles).

Key words: ADL – APDL – breast cancer – emotional state – QOL

INTRODUCTION

Recent advances in healthcare have led to the establishment of evidence-based chemotherapy for breast cancer (1). The result has been a shift in the focus of postoperative care for breast cancer patients from being based primarily on hospitalization to a new emphasis on outpatient care, while maintaining the routine aspects of each patient's daily life to the maximum extent possible (2). Breast cancer patients may be required to play various roles, including the traditional feminine roles of wife and mother, as well as professional, care

provider and other roles. Such patients need to play various roles while living with anxiety as they undergo ambulatory treatment after discharge and must undergo treatment while preserving normality in their daily lives. According to one report, breast cancer patients often resume housework by 2 weeks after discharge while complaining of symptoms associated with mental stress, fatigue, reduced vigor and physical stress (postoperative arm function disorders, etc.) (3,4). The difficulties faced by breast cancer outpatients are related to housework, child care and so on, and these

difficulties have been shown to sometimes reduce the patients' quality of life (QOL) (5). Rehabilitation covers not only the activities of daily living (ADL), such as changing locations, dressing/undressing and having meals, but activities parallel to daily living (APDL) that provide more social and advanced ADL related to role function, such as cleaning, shopping and cooking. Such rehabilitation is provided, primarily by occupational and physical therapists, to prevent decreases in QOL arising from these difficulties. Thus, patients begin to receive ADL training, housework training, instructions upon hospital discharge, etc., soon after undergoing surgical treatment for their breast cancer (6–8). However, some investigators have found that the rehabilitation provided to such patients has been inadequate because of early discharge, the difficulty of visiting the hospital frequently or the lack of visiting rehabilitation efforts (9).

The term 'role' indicates social status as well as other issues. Since people assess their own value based on an understanding of their roles in the family and society, the absence of adequate roles can cause people to lose their self-identity or daily life objectives. Disturbances in role function are considered a cause of psychosocial disorders (10). Females, particularly middle-aged women, have been reported to tend to develop depressive disorder if they lose their roles (10). Thus, these roles are significant for females and can be viewed as being closely related to their mental states. Many women with breast cancer have been reported to tend to become aware of their mental instability when they imagine the outcome of their inability to satisfactorily play the diverse roles assigned to them because of limitations imposed by the treatment of their disease (11).

Thus, an increasing number of studies focusing on the difficulties in role function encountered by breast cancer patients and in the situations related to ADL and APDL that such patients face have been conducted recently. However, these studies have only recently begun to be performed in breast cancer outpatients, and very few reports have ever been published concerning the influence of role-related difficulties and role functional status on the mental states of such patients. The present study was undertaken to investigate the degree of role accomplishment, the number of roles (quantitative role factors) and the degrees of the importance of and satisfaction with roles (qualitative role factors), and to assess their relationships with mental states and role functional QOL in breast cancer outpatients. This study was expected to demonstrate the importance of roles to breast cancer patients, as well as to identify areas that require closer attention during the rehabilitation of surgically treated patients before their discharge and to facilitate effective follow-up care of such patients, which should lead to a better QOL after hospital discharge.

PATIENTS AND METHODS

SUBJECTS

Patients were recruited in the Outpatient Clinic of Hiroshima University Hospital. We consecutively requested the

cooperation of all the patients who were eligible to participate during the study period. The eligibility criteria were as follows: (i) women over the age of 18 years, (ii) current ambulatory treatment for breast cancer after confirmation of the diagnosis, (iii) at least 2 weeks after but no more than 6 months prior to discharge from a hospital (since breast cancer patients reportedly resume housework after 2 weeks while complaining of symptoms associated with mental or physical stress, but these symptoms may continue until about 6 months), (iv) the ability to understand the purpose of the study and the questions in the questionnaire and (v) the absence of severe physical symptoms.

ETHICAL CONSIDERATIONS

This study was conducted after receiving the approval of the ethics review committee of Hiroshima University.

MEASURES

BASIC INFORMATION

- (1) Sociodemographic variables
Inquiries about age, household composition/housemate, key person and occupation were made during an interview.
- (2) Medical variables

Medical data, including surgical history and cancer stage, current ambulatory therapy, disease history, presence/absence of rehabilitation, length of stay, time since surgery and time since hospital discharge, were collected from the medical records of each subject.

ROLES

- (1) Japanese version of Self-Rating Frenchay Activities Index (SR-FAI)

The FAI is a 15-item index developed by Holbrook (12) as a means of evaluating applied activity, social activity and role activity during daily life (for example, housework, shopping and working). The SR-FAI is the Japanese version of the FAI and was prepared by Hachisuka et al. (13) as an index tailored to situations in Japan. Each activity in the index is rated on a four-grade scale that ranges from 'done every day (score 3)' to 'never done (score 0)'. The scores for all the activities are totaled. Higher total scores indicate more complete accomplishment of the activities. The index is designed for disabled individuals who are living at home and free of dementia and/or severe aphasia, sick individuals and middle-aged and elderly individuals. Its reliability and validity have been established (12–16). In this study, the total scores for all the items were used as the degree of role accomplishment.

- (2) Role Checklist

The Role Checklist is a self-assessment instrument prepared by Oakley et al. (17) and consists of two parts. Part 1 is designed to assess the status of the individual's participation in 10 roles by having the subject choose one of three possible replies: 'participated in the past', 'participating currently' and 'will participate in the future'. Part 2 identifies the degree to which each of the same 10 roles is valued, and the subject chooses one of three possible replies: 'not at all valuable', 'somewhat valuable' and 'very valuable'. The validity and reliability of the Japanese version of the Role Checklist have been demonstrated (18). In the present study, only the 'participating currently' roles were assessed in both Parts 1 and 2.

In the Part 1 assessment, the total number of roles identified as 'participating currently' was used as the number of roles (0–10). In the Part 2 assessment, to enable a numerical analysis of the degree of each role's importance, the ratings for each of the 'participating currently' roles were scored according to a 3-point system ranging from zero (not at all valuable) to two (very valuable). In addition, the total score was divided by the number of selected roles to obtain the mean importance score.

Of the 10 roles covered in the Role Checklist, those identified as 'participating currently' were selected to assess the degree of satisfaction. The degree of satisfaction with each of the roles selected was rated using a four-grade Likert scale that ranged from one (not at all satisfied) to four (very satisfied), with higher scores indicating a higher degree of satisfaction with the role that was played. The total satisfaction score was divided by the number of selected roles to obtain the mean satisfaction score.

MOOD STATES: PROFILE OF MOOD STATES

The Profile of Mood States (POMS) is a self-assessment questionnaire composed of 65 items designed to evaluate temporary emotional states. It was developed by McNair et al. (19) and enables the assessment of emotional state on six scales: tension-anxiety, depression, anger-hostility, vigor, fatigue and confusion. The reliability and validity of the Japanese version have been established (20). The frequency of the mood corresponding to each item during the past week is rated on a five-grade scale that ranges from 'never (score 0)' to 'very often (score 4)'. The scores for all the items belonging to a scale are totaled (21). Higher total scores indicate a higher intensity of mood in that category.

ROLE FUNCTIONAL QOL: JAPANESE VERSION OF MOS SHORT-FORM 36-ITEM HEALTH SURVEY

The Medical Outcome Study (MOS) Short-Form 36-Item Health Survey (SF-36) is a comprehensive health evaluation scale that was developed in the MOS conducted in the USA in the 1980s (22). The reliability and validity of this scale have been confirmed (23), and it is now being used in research in more than 15 countries (24). The scale is

designed for individuals aged 16 years and over and is composed of eight subscales. Each item is rated on a five-grade scale that ranges from 'always' (score 1) to 'never' (score 5), and the total score for each subscale is calculated. The validity and reliability of the Japanese version of this scale have been established (25,26). Two of the eight subscales [i.e. 'everyday role function (physical)' and 'everyday role function (mental)'], which are related to role functional QOL] were used in this study. The total possible scores for each of these subscales were 20 and 15, respectively. A lower score indicates a lower QOL.

ANALYSIS

After the normality of the data had been checked using the Shapiro–Wilks test, the relationships between the degree of role accomplishment assessed using the SR-FAI, the number of roles, the mean importance score and the mean satisfaction score assessed using the Role Checklist, and the emotional states assessed using the POMS and role functional QOL assessed using the SF-36 were analyzed using the Spearman's rank correlation coefficients.

In all the statistical tests, $P < 0.05$ (two-sided) was regarded as statistically significant. All the statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) 15.0J computer program.

RESULTS

SUBJECT CHARACTERISTICS

Of the 32 patients who were eligible to participate, the 30 who provided informed consent were enrolled in this study. The mean age of the subjects was 55.8 ± 11.9 years (range: 33–74 years). Many of the subjects had a spouse (27 subjects) and children (23 subjects). Twenty-five subjects lived with someone. Half (16 subjects) had an occupation. During their hospital stay, 17 subjects received rehabilitation, and the duration of the rehabilitation was 1.4 ± 1.4 days. The mean number of roles played by the subjects was 5.5 ± 2.0 (range: 2–9). The mean degree of the importance of the roles was 1.6 ± 0.3 , and the mean degree of satisfaction was 1.9 ± 0.4 . Table 1 shows the scores for each assessment. The mean score for each item assessed using the SF-36 and the mean score for each POMS subscale were lower than the national average for females.

RELATIONSHIPS BETWEEN ROLES AND POMS

The results of the analysis of the relationships between each role-related item and the score for each subscale showed a significant positive correlation between the number of roles and V (vigor) ($P < 0.001$), and significant negative correlations between the mean degree of satisfaction and D (depression-depressed mood) ($P = 0.002$), T-A (tension-anxiety) ($P < 0.001$), C (confusion) ($P = 0.001$)

Table 1. Subject demographics

	<i>n</i>	Mean ± SD
Age (year)		55.8 ± 11.9
Spouse		
Present	27	
Absent	3	
Child		
Present	23	
Absent	7	
Other family member		
Present	25	
Absent	5	
Key person		
Spouse	24	
Child	3	
Others	3	
Job		
Present	16	
Absent	14	
Tumor location		
Right lateral	10	
Left lateral	13	
Left medial	3	
Papilla	4	
Operation history		
Breast-preserving surgery + sentinel lymph node biopsy	17	
Breast-preserving surgery + axillary lymph node excision	7	
Mastectomy + sentinel lymph node biopsy	2	
Mastectomy + axillary lymph node excision	4	
Stage		
I	13	
IIA	11	
IIB	5	
IIIA	1	
Ambulatory treatment		
Radiotherapy	8	
Radiotherapy + hormone therapy	4	
Hormone therapy	10	
Chemotherapy	6	
Chemotherapy + hormone therapy	2	
Rehabilitation		
Present	17	1.4 ± 1.4
Absent	13	
Hospital stay (days)		9.6 ± 2.8

Continued

Table 1. *Continued*

	<i>n</i>	Mean ± SD
Time since surgery (days)		79.7 ± 47.5
Time since discharge (days)		74.3 ± 48.1
Number of roles		5.5 ± 2.0
Importance of roles		8.8 ± 3.3
Mean importance of role number		1.6 ± 0.5
Satisfaction with role		10.4 ± 3.6
Mean satisfaction with role		1.9 ± 0.4
SF-36 Everyday role functional QOL		
Mental		70.0 ± 20.6
Physical		58.9 ± 17.5
FAI		26.9 ± 5.5
POMS		
V		12.2 ± 5.8
D		10.9 ± 8.8
A-H		7.8 ± 7.4
F		9.2 ± 5.6
T-A		8.7 ± 4.8
C		7.9 ± 4.3
TMD		32.4 ± 29.3

V, vigor; D, depression; A-H, anger-hostility; F, fatigue; T-A, tension-anxiety; C, confusion; TMD, total mood disturbances; SF-36, Short-Form 36; QOL, quality of life; FAI, Frenchay Activities Index; POMS, Profile of Mood States.

Table 2. Correlations between roles and POMS

Factor	T-A	D	A-H	V	F	C	TMD
No. of roles							
rs	0.243	0.179	0.086	0.620	0.168	0.067	0.016
<i>P</i> value	0.196	0.345	0.678	<0.001	0.374	0.724	0.935
Total importance							
rs	0.064	0.079	-0.077	0.623	-0.013	-0.150	-0.170
<i>P</i> value	0.735	0.678	0.684	<0.001	0.947	0.429	0.370
Mean importance							
rs	-0.296	-0.105	-0.229	0.024	-0.334	-0.475	-0.317
<i>P</i> value	0.112	0.582	0.223	0.898	0.071	0.008	0.088
Total satisfaction							
rs	-0.236	-0.143	0.004	0.680	-0.019	-0.302	-0.262
<i>P</i> value	0.210	0.450	0.982	<0.001	0.920	0.105	0.161
Mean satisfaction							
rs	-0.739	-0.551	-0.189	-0.012	-0.329	-0.579	-0.446
<i>P</i> value	<0.001	0.002	0.318	0.950	0.076	0.001	0.013

T-A, tension-anxiety; D, depression; A-H, anger-hostility; V, vigor; F, fatigue; C, confusion; TMD, total mood disturbances; rs, Spearman's rank correlation coefficient.

Table 3. Correlations between roles and SF-36 scores

Factor	Role functional mental QOL		Role functional physical QOL	
	rs	<i>P</i> value	rs	<i>P</i> value
No. of roles	-0.252	0.179	-0.415	0.023
Total importance	-0.081	0.671	-0.347	0.060
Mean importance	0.366	0.047	0.091	0.631
Total satisfaction	0.031	0.871	-0.156	0.410
Mean satisfaction	0.525	0.003	0.509	0.004

and TMDs (total mood disturbances) ($P = 0.013$) as well as between the mean degree of importance and C (Confusion) ($P = 0.008$) were obtained (Table 2).

RELATIONSHIPS BETWEEN ROLES AND SF-36 SCORES

The mean SF-36 scores for everyday role functional QOL, i.e. for mental and physical, were 70.0 ± 20.6 (8–100) and 58.9 ± 17.5 (25–100), respectively. An analysis of the relationships between each role-related item and the score for each SF-36 subscale revealed a significant positive correlation between role functional mental QOL and both the mean importance ($P = 0.047$) and the mean satisfaction ($P = 0.003$), a significant negative correlation between the role functional physical QOL and the number of roles ($P = 0.023$), and a significant positive correlation between the role functional physical QOL and the mean satisfaction ($P = 0.004$) (Table 3).

RELATIONSHIP BETWEEN SR-FAI SCORES AND POMS AND SF-36 SCORES

An analysis of the relationships between the SR-FAI scores and the POMS and SF-36 scores revealed no significant correlations (Table 4).

DISCUSSION

RELATIONSHIP BETWEEN ROLES AND EMOTIONAL STATES

An analysis of the relationships between each role-related item and the POMS scores revealed several significant correlations. First, a strong positive correlation was found between the number of roles and Vigor. This means that patients tended to have greater vigor or positive emotions during their daily life as the number of roles they played increased. As stated above, roles support people's sense of identity. Playing roles means that the individual's existence is recognized or that the individual can live a unique life. It seems that playing many roles enables people to establish

Table 4. Relationship between SR-FAI scores and POMS and SF-36 scores

Factor	rs	<i>P</i> value
POMS		
V	0.286	0.124
D	0.205	0.276
A-H	0.154	0.418
F (fatigue)	0.036	0.856
T-A	-0.127	0.504
C	-0.136	0.475
TMD	-0.016	0.931
SF-36		
Role functional mental QOL	0.174	0.358
Role functional physical QOL	0.112	0.554

V, vigor; D, depression; A-H, anger-hostility; F, fatigue; T-A, tension-anxiety; C, confusion; TMD, total mood disturbances.

their identity, obtain a greater sense of achievement from their roles and achieve relief from anxiety about their existence, leading to greater mental vigor in daily life. However, some investigators have reported negative impacts of playing multiple roles, in contrast to the findings in the present study (27–29). Taken together, playing roles that are suited to the abilities of the individual may be associated with increases in vigor during daily life.

A strong negative correlation was found between the mean degree of importance and the score for confusion, and between the mean degree of satisfaction and the scores for depression, tension-anxiety and confusion. These findings indicate that a higher degree of satisfaction with roles and the value of the roles played by individuals are associated with lower negative emotions, such as depression and confusion. Oakley et al. (17) proposed the concept of 'role value'. Role value pertains to the degree of importance attached by individuals to a given role and is thought to affect decisions regarding behavior and the probability of satisfaction arising from such behaviors. People who play roles to which they attach great value reportedly tend to be satisfied with their daily lives (30). Therefore, the degree of satisfaction is closely related to the value of a given role. A previous study also showed that the magnitude of the sense of achievement or satisfaction was related to depression or anxiety (27,28). In addition, the loss of roles can sometimes trigger depression, and people who play roles rated as more important are better able to adapt to the loss of other roles (10). The present results suggest that the degree of satisfaction with given roles and the feeling that they are playing roles to which they can attach high value greatly affect the emotional states of breast cancer outpatients.

RELATIONSHIPS BETWEEN ROLES AND ROLE FUNCTIONAL QOL

The analysis of the relationships between each role-related item and the scores on the SF-36 also revealed several significant correlations. Everyday mental role function was found to be strongly positively correlated with the mean degree of satisfaction and with the mean degree of importance. Everyday physical role function was also strongly positively correlated with the mean degree of satisfaction. However, a negative correlation between the number of roles and the physical role function was observed. This relationship was the opposite of the above finding related to Vigor as assessed by the POMS. Thus, the results showed that an increase in the number of roles played increases vigor but can reduce physical QOL. Physical problems such as reduced physical strength, fatigue, and adverse reactions to treatment can cause patients considerable pain during ambulatory treatment as well (31,32). Playing many roles can result in additional vigor through a sense of achievement, but can also cause physical stress and reduce QOL in patients required to go about their daily lives while receiving ambulatory treatment. To maximize vigor through an increase in the number of roles, a support system that provides optimum environments for individual patients is needed. The spouses and children of breast cancer patients serve as their primary sources of support (27,33,34). However, in view of the report on the recent trend toward decreased familial support, future efforts to provide the support of healthcare professionals or communities may have greater significance than familial support efforts (35).

As shown above, the results of this study suggest that emotional states and QOL related to everyday role functions are affected more strongly by qualitative factors (degree of importance or satisfaction) than by quantitative factors (degree of role accomplishment or number of roles) in breast cancer outpatients. Therefore, rehabilitation approaches to enhance the degrees of importance of and satisfaction with roles may improve the emotional states or QOL of breast cancer patients.

LIMITATIONS AND PERSPECTIVES

The first limitation of this study is that it relied totally on Self-Rating scales and subjective assessments. A future study in which objective indicators are also used is needed. Second, only breast cancer outpatients receiving ambulatory treatment at one hospital were enrolled in this study, and all the patients were at least 30 years of age, making it difficult to extrapolate the results of this study to a wider population of breast cancer patients. Thus, additional systematic and random studies conducted using larger patient populations and multiple institutions are needed. Third, the questionnaire used for this study took about 15 min to complete, which may have caused fatigue or imposed other forms of stress on the outpatients. Thus, a shorter, simpler questionnaire should be designed.

Funding

This work was supported in part by the Third Term Comprehensive Control Research for Cancer from the Japanese Ministry of Health, Labour and Welfare.

Conflict of interest statement

None declared.

References

- Souhami R, Tobias J. *Cancer and its Management*. London: Blackwell 2005.
- Margolese RG, Lasry JCM. Ambulatory surgery for breast cancer patients. *Ann Surg Oncol* 2000;7:181-7.
- Hagiwara Y, Wada H, Hayashi T, Takahashi M, Kurihara Y, Ishida A. The housework activities of the breast cancer patients after the mastectomy: the first report. *J Jpn Occup Ther Assoc* 2003;22:152.
- Wada H, Hagiwara Y, Hayashi T, Takahashi M, Kurihara Y, Ishida A. The housework activities of the breast cancer patients after the mastectomy: the second report. *J Jpn Occup Ther Assoc* 2004;23:107.
- Kondo N, Shimizu S, Watanabe M, Fukuda S, Oishi F. Difficulties on life of out-patients with breast cancer who were feeling with radiotherapy by breast conservative therapy. *J Jpn Soc Cancer Nurs* 2004;18:54-9.
- Korstjens I, Mesters I, Van der Peet E, Gijsen B, Van der Borne B. Quality of life of cancer survivors after physical and psychological rehabilitation. *Eur J Cancer Prev* 2006;15:541-7.
- Gordon LG, Battistutta D, Scaffhan P, Tweeddale M, Newman B. The impact of rehabilitation support service on health-related quality of life for women breast cancer. *Breast Cancer Res Treat* 2005;93:217-26.
- Hartmann U, Ring C, Reuss Borst MA. Improvement of health-related quality of life in breast cancer patients by inpatient rehabilitation. *Med Clin* 2004;99:422-9.
- Morita N, Azuma R, Fujisawa R. The nursing management for the breast cancer patients after mastectomy and the difficulties after discharge. *Clin Exp Med* 2003;80:99-102.
- Kielhofner G. *A Model of Human Occupation: Theory and Application*. 2nd edn. Baltimore: Williams & Wilkins 1995.
- Nakao F. Relation between perceptions of unstable and coping behaviors in mastectomy patients receiving chemotherapy during transition. *J Kochi Women Univ Acad Nurs* 2005;30:32-43.
- Holbrook M, Skilbeck CE. An activities index for use with stroke patient. *Age Ageing* 1983;12:166-70.
- Shiratsuchi M, Saeki S, Hachisuka K. Japanese version of Self-Rating Frenchay Activities Index and its clinical application and standard values. *Sogo Rehabil* 1999;27:469-74.
- Han CW, Yajima Y, Nakajima K, Lee EJ, Meguro M, Kohzuki M. Construct validity of Frenchay Activities Index for community-dwelling elderly in Japan. *Tohoku J Exp Med* 2006;210:99-107.
- Suenaga H, Miyanaga K, Chisaka H, Kawzu T, Hachisuka K. Modified version of the Self-Rating Frenchay Activities Index and its reliability and validity. *Jpn J Occup Med Traumatol* 2000;48:55-60.
- Cairl RE, Pfeiffer E, Keller DM, Burke H, Samis HV. An evaluation of the reliability and validity of the Functional Assessment Inventory. *J Am Geriatr Soc* 1983;31:607-12.
- Oakley F, keilhofner G, Reichler RK. The Role Checklist; development and empirical assessment of reliability. *Occup Ther J Res* 1986; 6:157-70.
- Yamada T, Takehara S, Ishii Y, Ishikawa T. Some empirical evidence of the Japanese Version of Role Checklist. *Jpn J Occup Behav* 2002;6:62-70.
- McNair D. *Profile of Mood States*. San Diego: Educational and Industrial Testing Service 1971.
- Yokoyama K, Araki S, Kawakami N, Thakeshita T. Production of the Japanese edition of profile of mood states (POMS): assessment of reliability and validity. *Jpn J Public Health* 1990;37:913-8.

21. Yokoyama K, Araki S. *Japanese Translation of Profile of Mood States*. Tokyo: Kanekoshobo 2004.
22. Hays RD. RAND 36-item health survey 1.0. *Health Econ* 1993;; 2:217–27.
23. Mchorney CA, War JF, Raczek AE. The MOS 36-item Short-Form Health Survey (SF-36) II. Psychometric and clinical tests of validity in measuring physical and mental health constructs. *Med Care* 1992;31:349–51.
24. Aaronson NK, Acquadro C, Alonso J. International quality of life assessment (IQOLA) project. *Qual Life Res* 1992;1:349–51.
25. Fukuhara S, Ware JE, Jr, Kosinski M, Wada S, Gandek B. Psychometric and clinical tests of validity of the Japanese SF-36 Health Survey. *J Clin Epidemiol* 1998;51:1045–53.
26. Fukuhara S, Bito S, Green J, Hsiao A, Kurokawa K. Translation, adaptation, and validation of the SF-36 Health Survey for use in Japan. *J Clin Epidemiol* 1998;51:1037–44.
27. Barnett GC, Baruch GK. Women's involvement in multiple roles, role strain and psychological distress. *J Pers Soc Psychol* 1985;49:135–45.
28. Fukumaru YX. Relationships between multiple roles of dual-career couples and depression. *Jpn J Fam Psychol* 1985;14:151–62.
29. Noor NM. Work-family conflict, work-and family-role salience, and women's well-being. *J Soc Psychol* 2004;144:389–405.
30. Yamamoto M, Yamada T. A study of the relationship among role performance, role value and life satisfaction of the persons with cerebral vascular accidents. *Jpn J Occup Behav* 1997;4:1–5.
31. Hayashida Y, Okamitsu K, Mimaki Y. Difficulties and management of cancer patients receiving outpatient chemotherapy. *J Hiroshima Prefect Coll Health Sci Hum Sci* 2005;5:67–76.
32. Yen JU, Ko CH, Yen CF, Yang MJ, Wu CY, Juan CH, et al. Quality of life, depression, and stress in breast cancer women outpatients receiving active therapy in Taiwan. *Psychiatry Clin Neurosci* 2006;60: 147–53.
33. Esbensen BA, Osterlind K, Hallberg IR. Quality of life of elderly persons with cancer. *Cancer Nurs* 2006;29:214–24.
34. Akaishi M, Ishida J, Ishida K, Uehara S, Kanada K. A feeling of the breast cancer patients with radiotherapy progress. *Kitakanto Med J* 2005;55:105–13.
35. Kakikawa F, Suishu I, kimura H. Research of daily life disability for breast and colorectal cancer patients. *Med J Kobe Univ Sch Health Sci* 2002;18:105–13.

Psychological Factors and Characteristics of Recurrent Breast Cancer Patients with or without Psychosocial Group Therapy Intervention

Masami Chujo, Junzo Kigawa and Hitoshi Okamura*

*Tottori University Hospital Cancer Center, Yonago 683-8504 and *Hiroshima University Graduate School of Medicine, Department of Public Health, Hiroshima 834-8551, Japan*

To clarify psychological factors of patients with recurrent breast cancer, we examined their interest in group intervention and studied the characteristics of participants and non-participants in an intervention program. Using several self-administered assessment scales to evaluate the quality of life (QOL) of cancer patients and the symptoms specific to breast cancer patients, we compared sociomedical variables and QOL scores between participants and non-participants. Inter-group differences were significant in the scores for constipation, body image and future perspectives, suggesting the QOL to be higher among participants than non-participants. Interest in group intervention was identified as a major reason for participation in this type of program. Not only physical but also psychological factors were shown to be the reasons for deciding not to participate in group intervention. It is now desirable that efforts be made to stimulate greater understanding of group intervention as a means of psychosocial support for patients with recurrent breast cancer and that social environments be arranged so that these patients are supported by an approach tailored to individual cases, involving both group and individual intervention.

Key words: participant and non-participant; psychological factor; psychosocial group intervention; recurrent breast cancer patient

It is essential to nurse individual cancer patients in terms of not only their physical problems but also in terms of psychological factors. For patients with cancer, we have aimed at psychosocial intervention for reducing psychological stress and raising the Quality of Life (QOL), and performed studies to test the effectiveness of psychosocial group intervention (Goodwin et al., 2001; Fukui et al., 2001). In studies on breast cancer patients, 40% to 80% of eligible patients were enrolled (Spiegel et al., 1981; Edmonds et al., 1999; Goodwin et al., 2001). Several previous studies compared the characteristics of patients participating in the studies to those not participating in an attempt to examine the clinical

applicability of psychosocial group intervention.

In Western countries, cancer patients who gave consent to group intervention were suffering from some psychosocial problems other than depression (Taylor et al., 1986; Berglund et al., 1997), desired to explore or experience support services (Taylor et al., 1986; Bauman et al., 1992), were encouraged by medical staff (Taylor et al., 1986), expected mutual support (Thiel de Bocanegra, 1992), and had the following characteristics: below the age of 50, unmarried (Bauman et al., 1992), middle class, predominantly female (Taylor et al., 1986) and recently diagnosed with cancer (Thiel de Bocanegra, 1992).

Abbreviations: EORTC, European Organization for Research and Treatment of Cancer; QLQ-Br23, QOL questionnaire-breast cancer module 23; QLQ-C30, QOL questionnaire-cancer 30; QOL, quality of life

As to the characteristics of Japanese patients with breast cancer who participated in group intervention, some investigators reported that many had surgery within the previous 12 months, had strong anxiety and were between 50 and 65 years of age (Fukui et al., 2000). However, no such survey has been conducted on patients with recurrent or metastatic cancer, which has a particularly strong impact and causes patients considerable psychological stress (Okamura et al., 2000).

The present study was undertaken to analyze the interest of patients with recurrent breast cancer in psychosocial group intervention and to analyze the characteristics of these patients. They were divided into 2 groups, intervention participant and non-participant. We anticipate that the results of this study will contribute to raising the QOL of patients with recurrent breast cancer and promoting group intervention for patients with this type of cancer.

Subjects and Methods

Of the patients with recurrent breast cancer followed-up at the Department of Surgery of the National Hospital Organization Shikoku Cancer Center who were diagnosed 3 to 12 months previously, those who satisfied the following requirements were rated as eligible for this study: i) adult women over 20 years of age, ii) patients with histologically established breast cancer which showed histological and/or clinical recurrence, iii) women who had not developed recurrence before, iv) women for whom information on recurrence had been disclosed, v) patients whose general condition was not severe, vi) patients without active double cancer, vii) patients not requiring psychiatric treatment of depression, adjustment disorder, etc. and viii) patients able to understand the purpose of the study without difficulty.

A request to participate in the study was made to each candidate between 2002 and 2003 at the National Hospital Organization Shikoku Cancer Center. In a room that allowed protection

of individual privacy, each patient was asked in the absence of other patients to participate in the study after having been informed of the design of the study.

After access to the medical records of patients was approved by the National Hospital Organization Shikoku Cancer Center, we selected patients satisfying the inclusion criteria. Of the patients rated as eligible to participate in the study, those who were interested in group intervention and gave written consent to participate in all 6 sessions of intervention (once a week for 6 weeks) were assigned to the intervention group. Of the patients who decided not to participate in group intervention, those who had an interest in intervention and gave consent to answering the questionnaire were assigned to the non-intervention group, and those who agreed to an interview but did not consent to answering the questionnaire survey were assigned to the refusal group.

In the present study, group intervention was carried out by 2 group leaders (a nurse and a psychiatrist both experienced in group therapy). One group was composed of 4 to 8 patients. Six group intervention sessions, each lasting 90 min, were held (1 session/week). Each session included 20 min of teaching about how to cope with stress related to psychosocial problems of individual patients with recurrent breast cancer and how to resolve these problems, 50 min of discussion about coping and 20 min of learning about progressive muscle relaxation.

Variables evaluated

Sociomedical variables

Information about age, performance states (criteria determined by the Eastern Cooperative Oncology Group), date of diagnosis of recurrence, disease-free period and history of cancer treatment was collected from medical records combined with the responses to the questionnaire. The following information was entered by each patient into the self-administered questionnaire: educational history, disease history, occupation, marital status,

psychological status, occupational status and the date they went to the hospital.

QOL

Profile of mood states: The profile of mood states is a self-administered assessment scale for temporary emotional states composed of 65 items (McNair, 1971). It allows evaluation of 6 emotional states (tension-anxiety, depression-dejection, anger-hostility, vitality, exhaustion and confusion) and the total mood disturbance. The reliability and validity of its Japanese version have also been verified (Yokoyama et al., 1990).

Impact of event scale-revised: Impact of event scale-revised (Weiss and Marmer, 1997) is a self-administered scale for assessment of the influence of mental trauma. It is composed of 22 items. This scale was a modification of the impact of event scale (Horowitz, 1979). It allows evaluation of the subscales of the 2 conventional categories (symptoms of intrusion and avoidance) plus a new category (over-arousal), and the reliability and validity of its Japanese version have been verified (Asukai et al., 2002).

Mental adjustment to cancer scale: The mental adjustment to cancer scale (Watson et al., 1988) is a self-administered scale for assessment of the psychological attitudes of individuals to cancer, composed of 40 items. It is composed of 5 items (fighting spirit, hopelessness, anxious preoccupation, fatalism and avoidance). It evaluates individual patients from 2 aspects: i) evaluation of psychological responses to the diagnosis of recurrent cancer, and ii) patient's recognition of the cancer and actions she took to alleviate the threat. The reliability and validity of its Japanese versions have been verified (Akechi et al., 2000).

EORTC QLQ-C30/Br23: European Organization for Research and Treatment of Cancer QOL Questionnaire-Cancer 30/Breast cancer module 23 (EORTC QLQ-C30/Br23) is a 53-item self-administered scale for evaluation of the physical, psycho-

logical and social QOL of patients with breast cancer, composed of a combination of EORTC QLQ-C30 (a 30-item scale for evaluation of the QOL of cancer patients) and EORTC QLQ-Br23 (a 23-item scale for evaluation of symptoms specific to breast cancer patients).

EORTC QLQ-C30 (Aaronson et al., 1993) is a self-administered assessment scale. It is composed of 30 items, i.e., subscales of function of cancer patients (physical function, role-playing function, emotional function, social function and cognitive function), symptom scales, comprehensive health/QOL, economic impulses and symptoms (difficulty breathing, sleep disorder, appetite, diarrhea and constipation). The reliability and validity of its Japanese version have been analyzed (Kobayashi et al., 1998), and the reliability and validity of the English version in patients with metastatic breast cancer have been tested (Kobayashi et al., 1998).

EORTC QLQ-Br23 (Sprangers et al., 1996) is a 23-item self-administered scale for assessment of patients with breast cancer. The EORTC has authorized the use of its Japanese version (EORTC Group for research into Quality of Life, http://groups.eortc.be/qol/questionnaires_downloads.htm).

Rosenberg self-esteem scale: This is a 10-item self-administered scale for assessment of self-esteem (Rosenberg, 1965) designed to allow subjects to evaluate their own degree of self-esteem and self-value. Differences in scores are considered to reflect differences in cognition and behaviors. The reliability and validity of its Japanese version have been verified (Suga, 1984).

General self-efficacy scale: This is a 16-item self-administered scale for assessment of general self-efficacy during one's daily life (Sakano and Tojo, 1986). They subsequently tested its reliability and validity. This scale is designed to evaluate the confidence of individuals in the extent to which they can appropriately take an action needed to achieve a given goal.