Stress and coping behaviors of nurses performing chemotherapy

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Abstract

This descriptive study was conducted on 41 oncology nurses to explore their stress perceptions and coping behaviors during performing chemotherapy. The Nurse Stress Checklist (NSC) and Coping Behavior Questionnaire (CBQ) were used to measure the stress and coping among nurses. The average of stress score was 1.85 (from “occasional stress” to “frequent stress”). The results showed that the stress for oncology nurses derived from different aspects, including : performing chemotherapy by nurses themselves, concerning the health impact of the chemotherapy agents, and being unfamiliar with the knowledge and technique of chemotherapy. The lists of top items of stress perception were: preparation of chemotherapy agents by themselves, concerning the pollution of the agents while performing chemotherapy, and concerning the extravasation of the agents. The coping behaviors used most often by the nurses were problem-oriented which were positive to the professional development of nurses. Other oftenly used coping behavior included trying to face and understand the problem, hoping for a better working environment, trying to perform the chemotherapy in no rush. A positive correlation ($r=.746$, $r=.541$, $p<.01$) existed between high level stress and coping behaviors. A positive correlation ($r=.690$, $p<.01$) existed between low level stress and problem-oriented coping behaviors. There was no significant difference between the characteristics of demographic data and stress or coping behavior.

Key words: stress, coping behavior, nurse, chemotherapy.

護理人員執行化學治療的壓力及因應行為

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摘　要

本研究係一描述性研究，主要目的在探討護理人員對執行化學治療的壓力及因應行為。本研究對象以參加化學治療在職教育訓練課程之 41 位護理人員為對象。研究方法採問卷調查法，研究工具包括個人基本資料、壓力及因應行為量表。研究結果顯示：護理人員對執行化學治療壓力的平均得分是 1.85，介於「偶爾有壓力」至「經常是有壓力」間。壓力源包括：執行化學治療工作的壓力、擔心化學藥物對護理人員健康的影響、護理人員對化學治療的知識與技術不熟練等方面。壓力較大的事項依序排列是：需自己配置化學藥物、稀釋或配製化學藥物時擔心受到污染、擔心化學藥物外滲。護理人員較常採用以「問題取向」的因應行為，以「瞭解並面對問題」、「希望自己處於更好的工作環境」、「作事不要慌張」為使用頻率最高的前三項。在壓力與因應行為的相關性方面，高壓力與問題取向及情緒取向之因應行為成正相關 (r=.746, r=.541 p<.01)，低壓力則與問題取向之因應行為成正相關 (r=.690, p<.01)。在各項人口學特性及工作經歷方面，對壓力及因應行為之影響均未達顯著差異。

關鍵字：壓力、因應行為、化學治療

INTRODUCTION

Stress is a natural phenomenon that everyone experiences in life. Oncology nursing is widely considered as a particular vulnerable and occupationally stress profession (Hinds, Sanders, Srivastava, & Hickey, 1998). Nursing personnel has the responsibility to realize the pain of cancer patients, and assist patients in adapting to the stress of disease. The consequences of the job-related stress have been theorized to be negative; those identified in previous studies have been professional burn-out, absenteeism, turnover, mood swings, errors in patients care, and patient neglect (Cavanagh,1989; Fochtman, Foley, & Mooney, 1995; Goodall,1987). The coping behavior of nurses to the stress also affects the health of themselves and the quality of taking care of patients. Therefore, for a responsible professional, learning to cope effectively with the stresses of oncology care is the part of nursing.

Not infrequently, nurses are expected to or they expect themselves to provide highly skilled care and comfort to the patients. In clinical settings, they experience an unpleasant, distasteful and frightening daily life. Understanding the nature of stress experienced by the nurses in oncology setting is essential for planning supportive programs effectively to enhance the care for patients. With the advancement of chemotherapy, the learning needs for both patients and the nurses have increased dramatically. The sophisticated process of chemotherapy, the worry about the toxin of chemical agents, the ability of handling the problems and the self- preparation are especially the sources of stress on nursing personnel. Many essays have already explored the stress and the coping behavior on the nursing

personnel working in different units (Foxall, Zimmerman, Standley, & Captain, 1990). We have not yet seen the similar research on the nursing personnel during cancer chemotherapy. The purpose of this study was to explore the stress perceptions and the coping behavior of oncology nurses during chemotherapy.

Literature Review

Stress

Stress is a natural phenomenon that everyone experiences in his or her work. Stress is defined as a broad of experiences in which tension occurs when demanding situations tax the resources, coping, and level of adaptation of the individual (Beare & Myers, 1994). Stress may not be always negative or undesirable. However, the ability of the individual to control the stressful events is critical (Haack, 1988).

Stress can be defined as (a) a stimulus producing a disrupted response (b) the disruption caused by a noxious stimulus, (c) a transaction that arises out of interchanges between a person and the environment (Beare & Myers, 1994). According the Lazarus's transactional model (1966), stress is defined by an individual and varies in their judgments about whether or not different stimuli are stressors (Benoliel, McCorkle, Georgiadou, Denton, & Spitzer, 1990). The psychometric properties of the factor scores are supportive to the potential of the instrument as a measure of nurse stress.

Job stress

Job stress in oncology specialist nurses is direct and result in negative influences on nurse' job satisfaction and, in turn, job satisfaction influences nursing

turnover. Cunningham (1993) indicated that the stress experienced by cancer nurses including: interpersonal (self-concept, motivation, personal need), interpersonal (relationship with recipients of care and co-workers and the nature of cancer care, death) and environmental factors (role stress, work environment, organizational climate). Lees & Ellis (1990), DesCamp & Thomas (1993) and Beare et al. (1994) summarized the nurses' stress as understaffing, conflict with other nurses, dealing with death and dying, heavy workload, conflict with doctor, and inadequate preparation to meet the emotional needs of patients and family. Specialty-related factors are those that specially characterize oncology and cancer care. For example, treatments are often difficult for the patient and frustrating for the treatment team. Scientific articles regarding potential or actual hazards of cytotoxic agents exposure have point out that these effects of cytotoxic agents can occur during admixture, administration, or handling and involve inhalation, ingestion, or absorption. The technical demands of oncology care are tremendous, clinical schedules are frequently busy, and staff members often feel stress by the pressure from both the sides.

Coping behavior

Coping is a person's constantly charging cognitive and behavioral effect to manage a stressful situation. It provides two global functions: to alter or mitigate the source of the stress (problem-focused coping) and to control the emotional reaction generated (emotion-focused). Coping is also a constantly changing process. Therefore, people cope differently at different time, depending on the situation (Lazarus & Folkman, 1984). Moreover, coping is a product of both personal and situation factors, and complex interrelationships exist among coping strategies.

The characteristics of effective coping strategies are recognizing stress responses, setting realistic goals, time management, tuning into inner dialogue, accentuating the positive, compartmentalizing work and life, creating balance, creating control of one's practice, relaxation, adopting a wellness philosophy, organizational flexibility, social support, work team development (Cunningham, 1993). Demographic characteristics such as age, education, previous experience, and personal resilience influence one's ability to cope with stress.

According to the literature review, the framework is follow: (Fig 1).

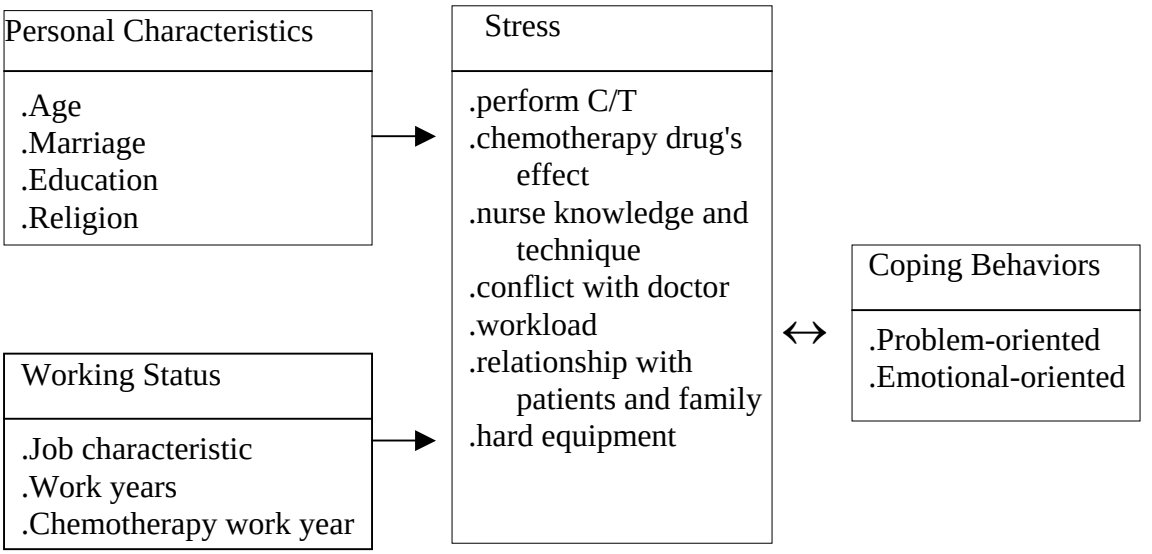

Fig 1: Research framework

METHOD

Sample

A sample of 48 female registered nurses was chosen. All participants were working in 6 hospitals and attending a chemotherapy training program.

Instruments

Three instruments were administered to nurses for data collection. A background questionnaire was used to gather demographic information and work experiences. Nurse Stress Checklist (NSC) and Coping Behavior Questionnaire (CBQ) were used to identify nurses' stressful events and coping behaviors.

Questionnaire was defined into two phases. In the first phase, an open-ended questionnaire was used. The more experienced nurses were asked to: what are the problems and distress, physiological and psychological response during performing chemotherapy, the stressful events and coping behavior, and suggestions. In the second phase, the researcher summarized the above results and referred to essays to complete the Nurse Stress Checklist and Coping Behavior Questionnaire. Issues of content validity were addressed by expert opinion.

Nurse Stress Checklist was a 35-items, 4-point Likert-type scaleform ranged from 3 (strongly effective) to 0 (not effective). A higher score indicated more perceived stress during performing chemotherapy. Internal consistency of the instrument in this study was 0.42 to 0.83 and the total was 0.90. Workload's Cronbach alpha (subscale of NSC) was 0.42, which might have because of the lesser item number. Nurse Stress Checklist included performing chemotherapy

itself, the chemotherapy drugs' impact, nurse's knowledge and technique, conflict with doctor, workload, relationship between patient and family, and hard equipment.

Coping Behavior Questionnaire was a 43-items, 5-point Likert-type scale ranged from 4 (almost) to 0 (never). A higher score indicated more coping behaviors. Coping behavior questionnaire included, problem-oriented (total 14 items) and emotional-oriented (total 29 items). Internal consistency of the instrument in this study was 0.64 to 0.85 and the total was 0.88.

Internal consistency reliability of factor subscale scores was estimated with Cronbach's coefficient alpha (Table 1). Demographic data: age, marriage, education, religion, work years, professional year (chemotherapy) and frequency of performing chemotherapy.

Table 1: Factor names, number of items, and reliability coefficient

Factor	No. of items	Reliability coefficient
* Nurse Stress Checklist(total scale)	35	0.90
performing chemotherapy	10	0.76
chemotherapy drug's impact	5	0.72
nurse's knowledge and technique	3	0.75
conflict with physician	5	0.67
workload	2	0.42
relationship with patient and his family	7	0.83
hard equipment	3	0.63
*Coping Behavior Questionnaire(total scale)	43	0.88
emotional-oriented	29	0.85

problem-oriented	14	0.64

Procedure

Data were collected from self-administered questionnaires which distributed to the group of members attended the conference. First, researcher explained the purpose of the study. They were also informed that they could refuse to participate the study. After getting their agreement we let them fill out the questionnaires and collected back on the spot.

Data Analysis

The SPSS/windows were used for computation and analysis of data. Descriptive statistics were computed on each item of demographic data, background of nursing experiences. To determine if there were differences of stress and coping between the depending variable and the test, One Way Analysis of Variance (ANOVA) and Pearson's correlation were used.

RESULT

The returning rate is 85.4% (n=41). All subjects were female. Their mean age was 28.53 and ranged from 21 to 47, with 68.3% of the sample under 30. Twenty-four (58.5%) of the sample were not married; thirty-six (87.8%) people were staffs; thirteen (31.7%) people had no religion; twenty-eight (68.3%) people had not yet received any formal chemotherapy training course and the working experience in chemotherapy of twenty-two (53.7%) people were less than one year (Table 2). The average professional period of chemotherapy is 6.87 years.

Table 2: Characteristics of sample (N=41)

Item		No.	%
age	21-29	28	68.3
	30-39	8	19.5
	40-47	5	12.2
marriage	yes	17	41.5
	no	24	58.5
education	vocational school	4	9.8
	junior college	30	73.1
	college	7	17.1
frequency of performing			
	almost every day C/T	4	9.8
	every week	2	4.9
	every month	18	43.9
	every 2 to 3 months	8	19.5
	over 3 months	9	22
chemotherapy training			
	yes	13	31.7
	no	28	68.3
years of chemotherapy			
	under 1 year experience	22	53.7
	over 1 year to 4 years	15	36.5
	over 4 years	4	9.8

Table 3 shows the descriptive statistics of stress and coping scale. The total scale mean score for the NSC was 1.85 (range=0-3), indicating a moderate intensity of chemotherapy-related stress in participants. The highest mean item subscales were chemotherapy drug's impact and hard equipment. The common sources of stress on chemotherapy nurses included preparing chemotherapy drug by oneself, concerning the pollution during performing chemotherapy and concerning the extravasation. The most stresses and coping behaviors are reported in table 4 and table 5. Stress and coping behavior are significantly correlated. All the staff reported more problem-oriented coping behavior than emotional-oriented coping behavior. There are no significant relationship between any demographic variables and scores on stress and coping behavior. A correlation matrix incorporating the nurse stress level and the coping behavior score were created. The high level stress was the mean score of stress plus 1 standard deviation. The low level stress was the other. Table 6 shows the relationship between stress and coping. The high level stress was associated with problem-oriented and emotional-oriented coping behavior($r=0.746$, $r=0.541$ $P<0.01$). The low level stress was associated with problem-oriented coping behavior($r=0.690$, $P<0.01$). The stresses were found to be significantly and positively associated with the coping behavior.

The analysis of variance test (ANOVA) indicated that there was no significant relation between Nurse Stress Checklist and Coping Behavior Questionnaire by age, education and professional experiences ($P>.05$).

Table 3: Descriptive statistics of stress and coping scale　(N=41)

Item	mean
Nurse Stress Checklist (Range 0-4)	1.85
chemotherapy drugs' impact	2.17
hard equipment	2.01
conflict with physician	1.89
workload	1.84
performing chemotherapy	1.77
nurse's knowledge and technique	1.73
relationship with patient and family	1.70
Coping Behavior Questionnaire (Range 0-5)	2.34
problem-oriented	2.79
emotional-oriented	2.13

Table 5 ：The most commonly reported coping behavior (N=41)

Ordinal	Item	Mean
1	try to realize the probable facts of problems	3.27
2	hope for a better work environment	3.20
3	try to perform chemotherapy in no rush	3.17
4	discuss the problems with other staff	3.12
5	communicate carefully with patients	3.10
6	counsel the problems with physician	3.05
7	adjust emotional response to avoid its impact to nursing care	3.02
8	hope for being more optimistic	2.98
9	solve the problem from past experience	2.93

Table 4: The most commonly reported sources of stress (N=41)

Ordinal	Item	Mean
1	prepare chemotherapy drugs by oneself	2.46
1	concern being polluted during performing chemotherapy	2.46
3	concern the extravasation	2.27
3	prepare chemotherapy drugs without laminar airflow	2.27
5	taking care of many patients at the same time	2.24
5	be powerless in the death of patient	2.24
7	the impact to conceiving or to the fetus	2.17
8	can not handle the severe side-effects of the chemotherapy to patients	2.12
9	physician is unfamiliar to the protocol of chemotherapy	2.05
10	concern being pierced by the used needles	2.02

10	hope for the ability to lessen stress	2.90

Table 6: Pearson's correlation for stress and coping behaviors (N=41)

Item	Problem-oriented Coping behavior	Emotional –oriented Coping behavior
High level stress	.746**	.541**
Low level stress	.690**	.271

**p<.01

DISCUSSION

These findings provide support to the potential of the Nurse Stress Checklist as a measure of stress in clinical setting. The significant correlation between stress and coping suggested that these factors present the difference in chemotherapy. Studies have demonstrated that stress influences on a person's performance (Mahat, 1996).

The level of stress found in this study was to a moderate intensity. One of the challenges to nurses who administer chemotherapy in cancer treatment is to realize that several most commonly administered drugs are vesicant. Nurses need a formal chemotherapy education program. Nurses gain competency by developing professional skills through formal education programs, establishing goals, and testing competencies in clinical situations (Cunningham, 1993; Creaton, Leonard,

& Day, 1991). Developing a specialized role can give nurses the sense of control and pleasure in working.

Educational guidelines for nurses' administering chemotherapy have been in existence and almost universally implemented in a variety of practices setting. The guidelines from Oncology Nursing Society (ONS) regarding the preparation and handling of antineoplastic agents recommend the following: using a biologically safety cabinet, using protective clothing, surgical latex gloves, disposable and long-sleeved gowns (Reymann, 1993; Smeltzer & Bare, 1996). Basic qualifications for administering chemotherapy agents include: as a registered nurse, certification in CPR, intravenous therapy skills, educational preparation and demonstration of knowledge in all areas related to chemotherapy drugs, demonstration of the skill of drug administration, ongoing acquisition of updated information and verification of continuing knowledge and skills, and policies and procedures to govern specific actions (Reymann, 1993). However, neither educational guidelines nor qualification of basic training was required in our country. The government required that the chemotherapy agents should be prepared under protection environment such as laminar flow equipment. Thus, nurses should not do the preparation without proper protection.

In this study, problem-oriented coping behavior was more useful than the emotional-oriented coping behavior. Trained staffs showed more use of problem-focused ways of coping (Lees & Ellis, 1990; Chiriboga, Jenkin, & Bailey, 1983; Jones & Johnson, 1997). Although there is no "the best coping behavior", problem-oriented coping behavior is better suited and focus on the problem. Coping with the stresses during performing chemotherapy is crucial to the survival of the committed oncology professional.Problem solving is known to relate negatively to distress in medical student (Vitaliano, Maiuro, Russo, Mitchell, Carr, & Citters,

1988) and to reduce the perceived effects of work stress in first level nurses (Bouman, & Landeweerd, 1992). The difference may be caused by the culture.

Conclusion

Results of the study support those reports in the literature that nursing is a stressful profession. Common sources of stress are self preparation of chemotherapy drugs, concern being polluted during performing chemotherapy, concern of extravasation, prepare chemotherapy drugs without laminar airflow, taking care of many patients at the same time, being felt powerless during the death of patient.

Problem-oriented coping behaviors were used by nursing personnel frequently. It is probably more positive to the development of oncology nursing professional. However, a multidimensional stress management approach using physiological, behavioral and cognitive approaches is needed.

Limitation of the study

The limitation of the study was that the sample came from the conference's member. Many other factors were not addressed may affect stress such as physical and emotional health of nurses, organizational impact as absenteeism and job turnover, and the quality of the care to patients and their family. There was no significant relationship between any demographic variables, working status and scores on stress and coping behavior. The relative small sample size may be one of the possible reasons.

Implication

Despite the limitation of the study, research finding may be useful to nurse managers and educators in several ways. First, the results suggest that oncology nursing is a very stressful profession. It is therefore recommended that stress management and technique of chemotherapy programs related to these areas be

designed for oncology nurses. Such programs should be implemented and evaluated to determine the influence of these stress factors on nurses. Second, oncology nurses also demonstrated some significant differences on some stress subscales and the rank ordering of stress. Therefore, stress management programs should be flexible enough to be individualized. Any such intervention must be concentrated on helping the staffs to develop and apply a set of comprehensive coping strategies, and encourage the use of direct coping. Individual counseling for nurse on particular concerns may also be appropriate. Third, nursing and hospital administrators should be aware of the aspects of the work environment which result in stress. The hard equipment should be good enough to let the working personnel perform chemotherapy under safe environment. Nurses should always perform chemotherapy carefully, keep in stable mood, and avoid rashness and impatience.

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