Nursing Interventions and Science

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Symposists
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Introduction
The theme of this Ekiden symposium II is the methods or techniques for nursing intervention. The nursing world is now asked to make it clear what results the professional and technical nursing intervention would bring to the care receivers. The nursing techniques are not simply mastering skills but deeply related to science or intellectual ability.

A Concentric Circle Model as Indicator of Outcome Followed by Intervention
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Purpose and Method
Nursing interventions need to be evaluated as a part of scientific process of problem solving. In my research, I have used a concentric circle model and the data calculated from the model as indicator of outcome followed by the intervention or rationale. Here, the model is introduced as “the tool used beyond the culture”, and the rationale of use is discussed as indicators to verify whether the intervention was effective or not.

The concentric circle model is based on the premise that the body extremities (upper arm or femur) consist of bone at center, a variety of muscles or muscle mass around the bone, and fatty tissue. The length of circumference of the extremity and the thickness of the fatty tissue are easily measured with a tape and skinfold calipers, respectively, without invasion to the human body.

The model was used for the purpose of estimation of muscle strength and nutritional status. Concerning the former, the theory of physiological muscle strength in kinesiology was used, that is, muscle strength per 1 cm² is dependent on the specific value of each subject. Therefore the muscle strength changes in proportion to the size of muscle mass; cross-sectional area of muscle. For the latter, the size of cross-sectional area or the length of circumference of the body extremities was used as an indicator of volume of body protein, that is a kind of nutritional index.

Result
Seven original papers were produced
using the concentric circle model. Concerning the early phase of postoperative period, 3 studies showed that the earlier the patient ambulate, the lesser decrease of cross-sectional area of femoral muscle; this was markedly so in aged patients. This finding was verified in two case-control studies and one study using multiregression analysis. In these studies, it was indicated that reduction of muscle strength was shown as the change in muscle mass quantitatively, and that the ambulatory behavior was mainly facilitated by nurses’ intervention.

The other theme in a series of studies was the recovery of nutritional status after gastrectomy in long-term care. After gastrectomy, decrease of nutritional intake is the common problem. 64 patients were followed from before surgery to 1 year after discharge, and upper arm measurements were done four times for each patients. The skinfold thickness of the upper arm was depleted in relation to a decrease of nutritional intake, and it was demonstrated that the arm muscle circumference was more appropriate as the indicator of recovery.

The recovery index (RI) was developed to assess the degree of recovery comparative to before surgery, which was calculated using the data of 3 times: before surgery, at the time at discharge, and 6 months after discharge. To identify the factors to the RI and to study the relative magnitude of that effect, pass analysis was done.

Affecting factors to RI were dietary intake, time spent in postprandial rest, frequency of ileus attacks, patients’ age, extent of gastrectomy, and preference of fatty foods.

Dietary intake was affected by a variety of factors: patients attitude and behavior toward meal, extent of gastrectomy, and complications or disorders after gastrectomy related to ineffective eating patterns of patient; that patterns could be changed to effective ones by nursing intervention.

Conclusion

A concentric circle model is not influenced by difference of cultural background, although a variety of factors do influence the data value of the model; these factors relate human behavior which reflects the psychosocial background of the patient, and nurses need to understand the information underlying background of the patient.

Cancer Receiving Chemotherapy

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Background and Significance

Currently, little attention—clinically or in research—is being paid to the biobehavioral issues of young premenopausal women undergoing adjuvant chemotherapy (ACTX) for breast cancer. However, it has been clearly documented that these women often experience menopausal like symptoms during ACTX and problems with intimate relationships and satisfaction with sexual performance after they have completed ACTX.

Purpose and Method

The purpose of this longitudinal, descriptive study of premenopausal women, diagnosed with localized (node-negative) or regional (node-positive) early stage operable breast cancer was to describe, at the
beginning (T1), during (T2/3 months), and following a course of ACTX (T3/6 months), their: 1) menstrual cycle characteristics (serum FSH, cycle length, days of menses, and menstrual flow patterns); and, 2) biobehavioral symptom experiences (related to symptoms experienced and changes in sexual functioning and intimate relationships).

Result

Demographic Data: 12 women, meeting the study criteria, participated in the study. Four were in their 30’s (the youngest being 32) and the oldest was 49. The great majority were married and had children. They were well educated, employed or on leave of absence and economically secure. Their cultural diversity (seven Caucasians; three Japanese-Americans; two others) is reflective of the San Francisco Bay Area population.

Biological Data: Eight participants, with complete FSH data for T1, T2 and T3, met or exceeded FSH levels (p < 0.0002), indicative of a postmenopausal status (≥ 27.6-132.9mIU/ml) by T3/6 months compared to their beginning (T1) FSH levels (range: 5-17mIU/ml). The majority of these women also experienced hot-flashes and night sweats.

Cares Data: At the beginning of ACTX (T1) participants did not report very symptoms or problems related to their psychosocial, marital, sexual, physical, and medical interactions. Likewise, at the end of ACTX (T3) they did not indicate many problems related to these dimensions.

Summary

Participating subjects, who began their ACTX with normal menstrual phases FSH levels and no notable hot flashes and night sweats, soon (some by T2/3 months) began to experience biobehavioral body changes more common to postmenopausal women than to women of their own age. Six months after beginning ACTX (T3) their FSH levels were at postmenopausal status levels. To date, this is one of the first studies that has documented the FSH changes associated with ACTX in premenopausal women with breast cancer.

Exploring Scientific Bases of Holistic Nursing Interventions

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Background

In the last three decades, there has been an increased interest in a more holistic and humanistic approach for controlling various health problems. Sometimes, this change referred to as a paradigm shift. This paradigm shift offers opportunities for increasing the use of holistic types of care in practice to the benefit of both patient and caregiver.

The discipline of nursing has been currently incorporating many of the concepts of a holistic paradigm into nursing as a means of integrating the profession's conceptual frameworks for theory, research, and practice. In viewing patients, nurses try to observe them in terms of wholeness of mind, body, and spirit, and the relationship of these dimensions is reciprocal.

Understanding of these principles forms the foundation of many nursing activities in practice and research. Holistic interventions such as relaxation, imagery, autogenic training, biofeedback, therapeu-
tic touch, humour, and music have been practised by nurses and regarded as useful interventions.

**Purpose and Method**

The purpose of this paper is to describe the effects of holistic types of interventions which have been verified through scientific studies in both Japan and the United States, and to present an example of holistic type of intervention which is adopted to cross-culture.

Computer searches of the nursing literature from 1970 to 1997 were conducted to identify that muscle relaxation, imagery, meditation, breathing, autogenic training, hypnosis, or biofeedback had been used as relaxation therapies. Those studies were restricted in the field of nursing.

**Result**

In the United States, a total of 44 studies was identified. The first study was published in 1971. The studies focused on patients with various health problems such as cancer, surgery, cardiac patients, chronic obstructive pulmonary disease, hypertension, psychiatric patients, and non-patient population. Nine types of relaxation techniques including progressive muscle relaxation (PMR) guided imagery (GI), Benson’s method were utilized. As to research design, two-thirds of studies were conducted with the use of an experimental or quasi-experimental design. Many physiological measures and/or psychological measures have been obtained from a variety of relaxation therapies. The results showed that 24 studies demonstrated the significant effects of relaxation technique. The other 20 studies did not verify the significant effects of intervention. However, many of these studies suggested the usefulness of interventions in reducing clinical signs and symptoms. There was no study which reported an adverse effect of relaxation therapies.

In Japan, 22 studies were selected. The first nursing study with relaxation therapy was reported in 1980. These studies focused on surgery, maternity/delivery, cardiac catheterization, spinal cord injury, cancer, and non-patient population. With regard to types of relaxation, seven types of techniques were utilized. They included autogenic training, PMR, GI, Benson’s method, deep breathing, and “Jico shikan hou” which was developed by Japanese psychologist. Of 22 studies, 9 were conducted with experimental design. Physiological measures and/or psychological measures were examined. The results showed that 5 of 22 studies verified the significant effect of intervention and that the other 17 studies suggested some effects of relaxation in alleviating signs or symptoms of subjects.

In sum, relaxation studies in the US were published 9 years earlier than in Japan. Through the review of the studies in both countries, some similarities as well as differences were identified. First of all, studies in the United States focused on a wide variety of population, but, the Japanese studies focused on mainly maternity/delivery, surgery, and non-patient population. Second, the PMR and/or GI were used in 60% of studies in the US, while an autogenic training was often used in Japanese studies. Finally, the effects of relaxation therapy with chemotherapy patients were often examined in the United States. However, any study was not conducted for chemotherapy patient in Japan.

The author conducted a study to examine the effects of relaxation therapies. The author conducted a study to examine the effects of...
PMR with Japanese chemotherapy patients. In this study, four hypotheses were proposed regarding nausea, vomiting, and anxiety. The pretest - posttest control group design with repeated measures was utilized. The results showed that while three hypotheses were supported, one hypothesis was not. That is, nausea and state-anxiety scores in the experimental group were lower than the control group. However, the effects of relaxation on vomiting were not verified because mean scores on vomiting were extremely low in both groups.

This study was an initial work at investigating the effects of PMR on decreasing the nausea, vomiting, and anxiety induced by chemotherapy in Japanese patients. The results suggest important implication for nursing practice. For Japanese nurses, the relaxation measures can be incorporated into routine care as an effective nursing intervention for chemotherapy patients. From the viewpoint of professional nursing, relaxation intervention based on scientific knowledge leads to professional autonomous independent functioning.

**Conclusion**

Over all, relaxation therapies as holistic nursing interventions might be identified as useful modalities based on scientific studies. However, methodological problems of studies can not be ignored. Based on these problems, some recommendations are made for future research. Recently, the effects of relaxation therapies have been also reported in other countries such as Australia, Sweden, England, and Korea. Thus, the effects of relaxation therapy is promising, but, utilization of these techniques might be different from countries to countries on the basis of various factors such as health care system, nurses’ knowledge and skills, health behaviour and beliefs and values of people based on individual cultural background.

**Types of Touch**

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**Touch**

One major category of nursing interventions is touch. Touch is an important component of human interactions, development, and ongoing well-being. Touch has been an integral, while often intuitive, part of nursing. Because touch seems like such a simple intervention, nurses rarely give thought to its impact on patients. Touch is holistic in nature as it promotes the integration of the mind, body and spirit. (Wells-Federman, 1995). Touch is an umbrella category for a number of specific interventions. Three of these interventions - purposeful touch, massage, therapeutic touch - will be briefly addressed.

**Types of Touch**

Different types of touch : procedural or instrumental, protective, and purposeful. Instrumental or procedural touch is used when nurses take temperatures, apply dressings, etc. Protective touch is used when a nurse reaches to restrain a patient from pulling out his/her intravenous tubing. Purposeful touch is the intentional physical contact with the patient by the nurse with the intent of helping (Snyder & Nojima, 1998). It is this latter type of touch that is truly a nursing intervention.
The body of research supporting the use of purposeful touch is increasing. Touch has been found to decrease stress in persons with head injuries and thus reduce intracranial pressure (Walleck, 1982), to reduce arousal (Weiss, 1990), and to increase relaxation (Snyder, Egan & Burns, 1995). When used as a means of communication, touch has resulted in a sense of emotional support (Schoenhofer, 1989), improved attitude toward a task (Lange-Alberts & Shott, 1994), increased feelings of affection (Moore & Gilbert, 1995) and more positive expectations (Morales, 1994). Triplett and Arneson (1979) found that use of touch reduced distress in hospitalized children. Cultural differences in touch exist. Thus, research on touch in other cultures is important (Eguchi, Kitahara, & Hanada, 1996).

**Massage**

Massage is the manipulation of soft tissue for therapeutic purposes (Barr & Taslitz, 1970) or a stroking of tissue to produce comfort and relaxation. Studies on the use of massage have focused on the outcomes of pain reduction, relaxation, and improved well-being. Males experienced a significant decrease in pain while this was not true for female patients. Meek (1993) reported that use of slow back massage with hospice patients produced relaxation. Snyder, Egan, and Burns (1995a, 1995b) used hand massage to produce relaxation in patients with dementia. In the initial study, relaxation was produced following a 10-minute massage as evidenced by decreases in pulse rate and increases in behaviors indicative of relaxation. Subsequently it was found that when nursing assistants administered a five minute hand massage prior to cares, a reduction in the frequency and intensity of aggressive behaviors during cares occurred. Research is needed to determine the length of time for administering massage that is needed to produce positive outcome.

**Therapeutic Touch (TT)**

Therapeutic touch is one of the many forms of healing touch being used by nurses. Therapeutic touch is a process by which energy is transmitted from one person to another for the purpose of potentiating the healing process of one who is ill or injured (Egan, 1998).

A growing body of research on TT is developing so as to provide a scientific basis for its use. Heidt (1981), Snyder, Egan, and Burns (1995b), Olson and colleagues (1992), and Quinn (1984) have examined the impact that TT had on reducing anxiety. In all of these studies, a reduction in anxiety or a relaxation response occurred. However, other investigators found no significant decrease in anxiety following the administration of TT. Because of the diverse techniques used, the length of administration of TT, and other factors it is difficult to compare findings across studies. Other investigators have examined the impact that TT had on pain reduction. Peck (1996) found that TT resulted in a reduction of pain in elders with arthritis. Keller and Bzdek (1986) reported that administration of TT to patients with tension headaches resulted in a reduction of pain. Other investigators, however, have not found a significant reduction in pain following the administration of TT. TT has also been shown to reduce symptom severity in patients receiving chemotherapy (Sodergren, 1994) and to speed the healing of wounds (Wirth, 1990).
Conclusion

Touch is only one of a myriad of nursing interventions that nurses have traditionally used and continue to incorporate into their practice. The touch interventions described are congruent with nursing’s holistic perspective of human beings. Studies on the efficacy of touch interventions in diverse cultures and populations are sorely needed. International conferences provide opportunities for nurses across the world to meet, learn about the intervention research being conducted in other countries, and to plan collaborative projects.

Report to the Symposium II

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The four speakers presented their research results regarding the tangible effects of nursing intervention. The nursing interventions which were presented by each speaker are very unique and effective. Also those intervention are developed by the nurses.

These days, solving the rising medical cost along with advancements of medical technology and aging population is an important task for every nation. The various solutions including managed care, shorter hospital stay, hospital restructuring and/or care mix, are being implemented. Under these circumstances, more efforts to clarify what roles nursing has and what outcomes nursing activities will bring to patients, their families and/or health care systems, are being made today than ever.

Nurses have an important responsibility for the outcome of nursing intervention. Nursing intervention is on the verge of demand, not by trial-and-error but based on evidences, and the researches to verify the effect of nursing intervention will be more important from now.

The nursing is done in the patient-nurse relationship, and a nurse executes multiple acts concurrently, rather than a single isolated nursing act. However, we should overcome these hurdles and research more to evaluate the outcome of nursing.