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Impact of a nursing education program about caring for patients in Japan with malignant pleural mesothelioma on nurses' knowledge, difficulties and attitude: A randomized control trial

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SUMMARY

Purpose: In Japan nursing care lags behind the growing population of patients with malignant pleural mesothelioma. This study evaluated an educational program for nurses about caring for patients with malignant pleural mesothelioma in Japan.
Method: In this randomized controlled study relative to care for malignant pleural mesothelioma, Knowledge, Difficulties and Attitude were measured at baseline, at post-test and at follow-up one month later. The two-day program with a half-day follow-up program included lectures, group work, role-playing and group discussion. 188 participants were randomly assigned to the intervention group (program, n = 96) and control group (n = 92; *self-study by a similar content handbook*). At baseline the groups showed no statistical differences in Knowledge (p = 0.921), Difficulty (p = 0.458) and Attitude (p = 0.922). Completing the study were 177 participants yielding 88 in the intervention group and 89 in the control group. Human rights and privacy of participants were protected.
Results: The Knowledge score was significantly higher in the intervention post-test (t = 14.03, p = 0.000) and follow-up test (t = 8.98, p = 0.000). Difficulty score was significantly lower in the intervention at post-test (t = −3.41, p = 0.001) and follow-up test (t = −3.70, p = 0.000). The Attitude score was significantly higher in the intervention post-test (t = 7.11, p = 0.000) and follow-up test (t = 4.54, p = 0.000). The two-way analysis of variance with repeated measures on time showed an interaction between time and group; the subsequent simple main effect test found significant differences (p = 0.000–0.001) between groups for after-program and at follow-up and a significant difference (p = 0.000) in time only within the intervention group.
Conclusion: The educational program was effective in improving the nurses' knowledge and attitude toward malignant pleural mesothelioma care and decreasing the difficulty in MPM care, therefore this program has potential for nurses' in-service education throughout Japan.

Introduction

Mesothelioma is a rare malignancy that can affect the pleura, peritoneum and pericardium (Gibbs and Craighead, 2008). It is casually linked to asbestos exposure (Wagner et al., 1960; Selikoff et al., 1965; Yang et al., 2008). The World Health Organization (WHO) reported that there were 92,253 deaths by mesothelioma between 1994 and 2008 and that the number is growing especially in those countries that continue to use asbestos (Delgermaa et al., 2011). In taking measures to prevent exposure to asbestos, Japan is about 20 years behind the United States of America and European countries in banning the use of asbestos. Malignant pleural mesothelioma (MPM), the most common type of mesothelioma in Japan, caused 1200 deaths in 2010 and the number of deaths is growing since the first case of MPM was reported in 1973 (Japan Ministry of Health, Labor and Welfare, 2012). Based on exposure and current prevalence rates, it is estimated that from 2000 to 2040 there would be about 100,000 deaths in Japan due to MPM (Murayama et al., 2006).

MPM has a poor prognosis (Aisner, 1995) and causes debilitating physical symptoms such as pain, dyspnea, fatigue, loss of appetite and sweating (Ahmedzai and Clayson, 2006). The management of symptoms in MPM is complicated because symptoms are multi-causal and often appear simultaneously (Ahmedzai and Clayson, 2006; Wickersham et al., 2005). Like other patients with cancer, patients with MPM experience emotional difficulties such as the shock of diagnosis (Clayson et al., 2005), anxiety and depression (Knudsen, 1989).

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In addition, patients with MPM experience anger toward their employers who did not alert them to the hazard of asbestos (Knudsen, 1989), ambivalence about working in an unhealthy environment versus supporting their family (Knudsen, 1989), and the stress of dealing with lawsuits (Hughes and Arber, 2008; Knudsen, 1989; Clayson, 2003). There is wide agreement (Clayson et al., 2005; Darlison, 2010; Department of Health, 2007; Hawley and Monk, 2004; Knudsen, 1989) that MPM patients and care-givers need to be supported physically, mentally, socially and spiritually. Nurses' role in MPM care is to maximize the quality of life (QOL) of MPM patients and caregivers by provision of information (Darlison, 2010), elicitation of care preference (Darlison, 2010), symptom management (Cordes and Brueggen, 2003) and management of the care pathway throughout the illness (British Thoracic Society Standards of Care Committee, 2007). However, MPM patients' needs are not being met because nurses have little understanding of MPM patients' perspective (Clayson et al., 2005) and little experience and expertise in MPM care (Moore and Darlison, 2011). Improvement of MPM care requires nurses gaining knowledge of and skill in caring for patients with MPM. Since nurses have less opportunity to learn about MPM in clinical situations because it is still rare, education is recommended. Educational resources about MPM are very limited. However, the Mesothelioma UK and the School of Cancer Nursing and Rehabilitation at the Royal Marsden NHS Foundation Trust offer e-learning educational programs about mesothelioma care and management for nurses (Moore et al., 2012).

MPM in Japan

The research showed that MPM patients have little information about their disease and treatment options therefore they suffered from the pain of untreated symptoms and their needs were ignored (Nagamatsu et al., 2012a). Nurses who cared for MPM patients also experienced difficulties such as groping for care, failure of introducing palliative care, limitation of support for patients' decision making, difficulty in dealing with families, unsuccessful communication, and emotional distress from being with MPM patients who were in pain (Nagamatsu et al., 2012b). The health centers in Japan assigned nurses and other staff for asbestos health consultation services, but 76.2% of consultants were not confident about their knowledge of asbestos-related diseases (Nagamatsu, 2011). Difficulties experienced by Japanese nurses were mainly due to a shortage of knowledge about MPM and lack of experience in care of MPM. The need to gain knowledge about MPM and develop care skills was urgent. However, there were neither educational resources nor programs about MPM for nurses in Japan. Unfortunately the e-learning educational program about mesothelioma care and management by Mesothelioma UK and the School of Cancer Nursing and Rehabilitation at the Royal Marsden NHS Foundation Trust (Moore et al., 2012) was not relevant for Japanese nurses for several reasons, primarily due to the language barrier and secondly due to an insufficiency of content about extra pleural pneumonectomy which is not a common treatment in the UK but it is in Japan. In response to the educational needs of nurses in MPM care in Japan our team, including an oncology nurse, home visiting nurse, respiratory physician and liaison nurse developed an educational program.

The program was developed using the instructional system design (ISD) method and was designed to resolve the difficulties experienced by nurses in providing MPM care. This approach was based on Nagamatsu et al. (2012a, 2012b) research findings. The aim of this study was to assess the impact of the Educational Program about Nursing Care of Patients with MPM on nurses' (a) knowledge about MPM and its care, (b) difficulties in care for patients with MPM and (c) attitude toward care for patients with MPM.

Methods

This was a Randomized Control Trial (RCT) with base-line, post-test and follow-up test. The study had two arms comparing a control and intervention group. The intervention group attended the educational program and the control group received a handbook with similar content. This trial was carefully designed to conform to the CONSORT statement (Schulz et al., 2010).

Samples and Recruitment

Nurses with approximately two years of clinical experience were recruited as participants. A total of 4224 advertisement letters were sent nationwide to the heads or nursing directors of health care facilities targeting hospitals with respiratory wards or palliative care wards, cancer hospitals, home visiting nurse stations and health care centers. Recruitment was also conducted through the Mesothelioma Nursing Japan website established by the researchers.

Randomization

An independent statistician with no connection to the program and its evaluation managed the randomization process. This research measured the effectiveness of the program in terms of differences in scores based on knowledge, difficulty and attitude taken before and after training. To ensure that the treatment arms were balanced with respect to predefined patient factors as well as for the number of patients in each group the minimization method was adopted (Fernandes, 2005). This would help to ensure there would be no significant differences between these three scores before the program began. Therefore, the baseline test was conducted with preliminary testing by mail prior to random allocation, ensuring that there was no imbalance between the intervention group and control group in terms of the number of participants achieving high and low scores.

Hypothesis

The "Educational Program about Nursing Care of Patients with MPM" will increase knowledge, decrease difficulty with care and improve nurses' attitude compared to self-study with a handbook.

Intervention

A two-day program (14.5-h) and a follow-up program (3-h) were developed for this study (Nagamatsu, 2013). The contents of the program are displayed in Table 1. The lectures were given by pulmonologists, a thoracic surgeon, oncology nurses, a home visiting nurse and a liaison nurse. The three main programs were held from October to December in 2011. Each group had a maximum of 30 participants. A facilitator was assigned for every five to six participants. One month after the main program, the three-hour follow-up programs were held. There were 10 follow-up programs held from November 2011 to January 2012.

Outcome Measures

Three primary outcomes were measured: (a) knowledge of and treatment of MPM, (b) difficulties in caring for patients with MPM and (c) attitude toward care for patients with MPM.

The first two tools are original 10-item self-report inventories that were developed for this study. To assure content relevance, five nurses with clinical expertise in MPM reviewed the content and based on their comments, the necessary modifications were made. A pilot study was done on 10 nurses to test clarity and applicability of the tool and to determine the amount of time-on-task. The necessary modifications were then made to adjust to the nurses' level of understanding. The third tool regarding attitude was modified from an existing valid tool to become relevant for this study.

Knowledge and Treatment of MPM Scale

The Knowledge and Treatment of MPM Scale (Knowledge Scale) consists of 10 statements to measure knowledge about MPM such as

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