

# Pain Management for Older Persons Living in Nursing Homes: A Pilot Study

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## ■ ABSTRACT:

Because the prevalence of chronic pain among the elderly in nursing homes is high and decreases their quality of life, effective nonpharmacologic pain management should be promoted. The purpose of this quasiexperimental pretest and posttest control design was to enhance pain management in nursing homes via an integrated pain management program (IPMP) for staff and residents. Nursing staff and residents from the experimental nursing home were invited to join the 8-week IPMP, whereas staff and residents from the control nursing home did not receive the IPMP. Baseline data were collected from nursing staff and residents in both groups before and after the IPMP. The IPMP consisted of eight lectures on pain assessment, drug knowledge, and nondrug strategies for the nursing staff, and 8 weeks of activities, including gardening therapy and physiotherapy exercise, for the residents. There were 48 and 42 older people in the experimental and control groups, respectively. No significant differences were found in their educational level, sleep quality, bowel habits, past and present health conditions, pain conditions and psychologic well-being parameters ( $p > .05$ ) at baseline. After the IPMP, the experimental nursing staff showed a significant improvement in their knowledge of and attitudes to pain management ( $p < .05$ ), and the experimental residents reported significantly lower pain scores and used more nondrug strategies for pain relief compared with the control group ( $p < .05$ ). Moreover, the psychologic well-being parameters, including happiness, loneliness, life satisfaction, and geriatric depression, had significantly improved among the experimental residents ( $p < .05$ ). The IPMP was effective in enhancing the knowledge and attitudes of nursing staff, as well as reducing pain conditions and enhancing psychologic well-being for older persons in nursing homes.

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With the increase in average life expectancy, the impact of disease, and the increase in the prevalence of disabilities (LEGCO Panel on Welfare Services, 2005), older adults are in increasing need of some form of accommodation

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and/or residential care facilities (Sandberg et al., 2001). In Hong Kong, 13.5% of people aged  $\geq 65$  years need institutionalized care, and 95% of institutionalized older people have one or more chronic diseases (Census and Statistics Department, 2004).

Nursing homes serve the needs of disabled older people who are unable to function independently and who will benefit from 24-hour access to personal and professional care from nursing staff. Yet life in nursing homes can mean very limited physical and social activity, leading to a further decline in function for many older people (Lassey & Lassey, 2001). Pain is common in our aging population and even more common among older adults living in nursing homes: One-half of community-dwelling adults aged 60 or over have been found to experience pain, and this number increases to 45%-80% in the nursing home population (American Geriatric Society Panel on Chronic Pain in Older Persons, 1998; Donald & Foy, 2004; Ferrell et al., 1990; Ferrell, 1991; Soldato et al., 2007; Won et al., 2004). Pain disrupts and influences daily lives to a greater extent in older age (Reyes-Gibby et al., 2002; Won et al., 2004). Pain is often ineffectively managed, especially among older adults (Herr, 2010). The present paper reports the pilot phase of a research study attempting to explore the effectiveness of an integrated pain management program (IPMP) in enhancing the knowledge and attitudes of nursing staff regarding pain management and relieving pain and enhancing psychologic well-being for older persons in nursing homes.

## BACKGROUND

The establishment of nursing homes serves older individuals who are unable to function independently (Lassey & Lassey, 2001). Moving to and living in a nursing home is a difficult experience for many people. Indeed, it represents an alteration of living environment, leading to reduced socialization with family and community, a decrease in physical activity, and an increased perception of loneliness (American Geriatric Society Panel, 2002; d'Amico-Panomeritakis & Sommer, 1999). Nursing home residents have expressed loss of freedom, loss of control, feelings of unhappiness, loneliness, depression, and a sense of failure at having to stay in nursing homes (Kellett, 1999; Tse, 2007). Living in a nursing home is regarded as "living in a jail" (Tse, 2007, p. 913), where there is no freedom of movement, a lack of privacy, and a loss of control over many things (Thompson & Gessert, 2006; Wilson, 1997). Such negative feelings about life in a nursing home have detrimental effects on their health status, leading to a poor quality of life.

In addition, nursing home residents suffer from pain. It has been found that 49%-84% of older people living in nursing homes had suffered from pain of moderate to severe intensity over the previous 3 months (Tse et al., 2005; Won et al., 2004). In Won et al.'s (2004) study, a total of 21,380 nursing home residents were examined, 10,372 (48.5%) of whom had persistent pain. The prevalence of persistent pain was very high in those with musculoskeletal pain and those with a history of falls, fractures, or surgery. Pain in older adults tends to be constant in nature, moderate to severe in intensity, and lasting for several years. Chronic shoulder pain, low back pain, and knee pain predominate as the causes of chronic pain (Baumann, 2009). As a result of chronic pain, activities of daily living are hindered, and older persons have less desire to participate in exercise and social events. Unrelieved chronic pain may lead to decreased physical activity, depression, anxiety, and even suicidal thoughts (Fisher et al., 2001; Tang & Crane, 2006; Smith et al., 2004).

In spite of the severity of the pain, the majority of older people choose not to take any oral medication for pain relief (American Geriatric Society Panel, 2002; Ferrell et al., 1990; Tse et al., 2005; Schofield, 2007; Won et al., 2004), and there is a reluctance among physicians, nurses, and older people to use prescription drugs in chronic pain management. Of the ~50% of nursing home residents with persistent or recurring pain, 38% received opioids, 37% received nonopioid analgesics, and 25% did not receive any analgesics (Won et al., 2004).

It has been suggested that health care providers believe that older people are less sensitive to pain than their younger counterparts (Gagliese & Melzack, 1997), leading to undermedication, which in turn contributes to inadequate pain management (Eun-Ok et al., 2007; Melzack, 1990). Physicians are often reluctant to prescribe adequate analgesics due to knowledge deficits and poor attitudes to pain management (Carr, 2007; Elliott et al., 1999; von Roenn et al., 1993). Nurses in Hong Kong, like their counterparts in the USA, Australia, and Finland, are found to have inadequate knowledge of and negative attitudes toward pain management (Brown et al., 1999; Carr, 2007; Dalton et al., 1996; Lui et al., 2008; McCaffery et al., 1990; Tse & Chan, 2004; Vortherms et al., 1992). To make matters worse, nursing home staff are mainly composed of health workers and personal care workers who receive minimal education and training regarding pain education and pain management in client care.

Alternative therapies for pain management, including the psychologic, social, emotional, and

spiritual areas, can be explored for older people in nursing homes and in the community (Schofield, 2008). Indeed, it is vital to consider all psychosocial and cultural factors related to pain in the older population, so that appropriate interventions, including cognitive-behavioral strategies such as hypnosis, relaxation with guided imagery, distraction, the use of support groups, and physical exercise, can be delivered accordingly (Bruckenthal, 2010; Kwekkeboom, 1999; Schofield, 2008; Tsai, 2009).

Schofield and Bryn (1998) defined the use of the sensory environment for the management of chronic pain as *snoezelen*, a term that is reportedly a contraction of two Dutch words meaning “to sniff” and “to doze.” Thus it was a place for interaction within an engaging environment, which can facilitate rest and help to overcome fatigue (Schofield, 1996). The original concept was developed using simple effects, such as colored paper and light bulbs with tin foil, music and textures such as a heated waterbed, a ball pool and a vibrating massage bed designed to stimulate all of the primary senses—vision, hearing, touching, taste, and smell—simultaneously. These approaches can create a peaceful and tranquil experience for the elderly, encouraging them to feel safe (Kewin, 1991). There has been widespread interest in the use of *snoezelen* to enable relaxation, psychologic promotion, and pain reduction (Schofield & Hutchinson, 2002).

Indeed, pain is a complex experience that is made up of physical, psychologic, social, and spiritual components, i.e., the total pain experience introduced by Dame Cicely Saunders (Clark, 1999; International Association for the Study of Pain, 2009). The new paradigm for the care of older people focuses on the primary and secondary prevention of functional morbidity and premature mortality, as well as enhancing the quality of life for older people (Gill & Kurland, 2003); as such, pain management and social support networks are important initiatives for older adults living in nursing homes.

In Hong Kong, the prevalence of pain was 50% among older adults (Chung & Wong, 2007), and 80% for older adults living in nursing homes (Tse et al., 2005). Therefore, the purpose of the present pilot study was to explore the effectiveness of an IPMP. The additional aims of were to relieve pain and enhance psychologic well-being for older persons living in nursing homes. This pilot study reports the implementation of the IPMP in two nursing homes. The objectives of the present study were: 1) to increase knowledge of and attitudes to pain management among nursing staff in nursing homes; and 2) to reduce pain and enhance psychologic well-being for older persons living in nursing homes.

## METHODS

### Design, Sample

This research was a quasiexperimental pretest and posttest control group study design. After gaining approval from the Ethics Committee of the university, we approached two private nursing homes and invited them to participate in the study; they were randomized into an experimental group with the IPMP and a control group with regular care but without the IPMP. The control group was similar to the experimental group regarding patient-to-staff ratio, spacing, overall layout of the nursing home environment, and its facilities. The staff and residents were recruited by convenience sampling.

Written consent was obtained from all participants. All staff from nursing homes in the experimental group were invited to attend the IPMP, including registered nurses, enrolled nurses, and personal care attendants. As for residents, the inclusion criteria were being  $\geq 60$  years old, being able to communicate in Cantonese, and being oriented as to time and place. Those who were bed bound and those with a history of mental disorders were excluded from the study.

### Procedure

The demographic data, pain situations (including pain site, severity, use of nonpharmacologic methods for pain relief), activities of daily living, and psychologic parameters of the older persons were collected from the two nursing homes before and after the IPMP. Also, staff from the experimental nursing home were invited to complete a survey to learn about their knowledge and attitudes to pain management before and after the IPMP.

### Intervention: Integrated Pain Management Program

The IPMP consisted of two target groups (nursing staff and older persons) in the nursing homes; activities were carried out simultaneously for the nursing staff and the older persons.

For the nursing staff, an 8-week pain education program was conducted as shown in Table 1. The pain education program was offered twice per week (about 1 hour per session), an identical session being conducted within the same week to provide the maximum chance of attendance to nursing staff who were mainly on shift duty in the nursing home. Details of the teaching are given in Table 1.

The older persons received instruction in gardening activities and physiotherapy activities for 8 weeks, as shown in Table 1. Various types of plants and seedlings that were suitable for gardening activities in the

**TABLE 1.**  
**Schedule of the 8• Week Integrated Pain Management**

| Week | Pain Program for Staff<br>(2 Concurrent Sections Weekly)   | Program for Elderly   |                                       |
|------|--|---|---------------------------------------|
|      |  | Gardening Program   | Physiotherapy                         |
| 1    | <ul style="list-style-type: none"> <li>• What is the pain situation in your own nursing home?</li> <li>• The knowledge and attitude survey</li> <li>• The top 5 wrong answers</li> </ul>                                     | <ul style="list-style-type: none"> <li>• Introduce gardening by demonstration</li> <li>• Teach the use of planting diary</li> <li>• Distribute soil, tools, &amp; seeds</li> </ul>                              | Shoulder and neck exercise            |
| 2    | <ul style="list-style-type: none"> <li>• Definition of pain</li> <li>• Pain assessment</li> </ul>  | <ul style="list-style-type: none"> <li>• Discuss gardening skills</li> <li>• Reinforcement: water, sunlight, ventilation</li> </ul>   | Back muscle strengthening exercise    |
| 3    | <ul style="list-style-type: none"> <li>• Use of analgesics for mild pain relief, effects &amp; side effects, e.g., NSAIDs &amp; aspirin</li> <li>• Health assessment: abdominal examination</li> </ul>                       | <ul style="list-style-type: none"> <li>• Add fertilizers</li> <li>• Add soil &amp; water to those that are budding well</li> </ul>  | Knee exercise                         |
| 4    | <ul style="list-style-type: none"> <li>• Use of analgesics for moderate to severe pain relief, effects &amp; side effects, e.g., codeine, morphine</li> <li>• Health assessment: neurologic examination</li> </ul>           | <ul style="list-style-type: none"> <li>• Reinforce gardening skills</li> <li>• Cook and eat vegetables</li> <li>• Take photos for the planting diary</li> <li>• Record reflections in planting diary</li> </ul> | Hip exercise                          |
| 5    | <ul style="list-style-type: none"> <li>• Psychological well-being for older persons</li> <li>• Relationship between pain and psychologic well-being</li> <li>• Use of nonpharmacologic strategies for pain relief</li> </ul> |   | Massage technique, balancing exercise |
| 6    | <ul style="list-style-type: none"> <li>• Understanding and managing knee &amp; back pain</li> <li>• Pain assessment &amp; treatment</li> <li>• Exercise for nurses</li> </ul>  |   | Massage technique, acupressure        |
| 7    | <ul style="list-style-type: none"> <li>• Understanding and managing shoulder pain</li> <li>• Exercise for nurses</li> </ul>  |   | Acupressure, revision                 |
| 8    | <ul style="list-style-type: none"> <li>• Revision &amp; reflection on the pain management program</li> <li>• Questionnaire &amp; short interview</li> </ul>  |   | Revision                              |

nursing home environment were introduced. There were tomato, chili, Chinese choi sum, hyacinth, mint plants, and lettuce seedlings, from which the participants could choose two for their own planting. Each participant's plants were placed along the window side of the multiple function room, and each participant was responsible for his or her own planting, while the research team facilitated and discussed the proper care of the plant, preparing the soils, watering, and adding fertilizers. The older persons were reminded to keep their plants sheltered from strong winds and heavy rainfall, and this was accomplished with the help of the nursing home staff. They were encouraged to smell the plants, such as the mint leaves, which gave off a pleasant and refreshing aroma. Photos of residents with their plants were taken at the end of each week.

The older persons were also invited to join an 8-week physiotherapy program consisting of 1 hour of instruction per week conducted by a physiotherapist. Each week, there were 15 minutes of warm-up exercises at the beginning, followed by muscle strengthening and stretching, balance, acupressure, and massage. There were specific exercises to help older adults to relieve pain conditions by themselves, including in the shoulder, neck, back, and knee areas.

## Instruments

**Nurses' Knowledge and Attitude Survey Regarding Pain—Chinese Version (NKASRP-C).** The demographic data of the nursing staff were recorded. Also, a self-administered questionnaire was used to measure the knowledge and attitudes of nurses in pain management. The Nurses' Knowledge and Attitudes Survey Regarding Pain (NKASRP) questionnaire was developed by McCaffery and Ferrell (1987). Test-retest reliability was established ( $r > 0.80$ ) by repeated testing in a continuing education class of staff nurses ( $n = 60$ ). Internal consistency reliability was established ( $\alpha r > 0.70$ ) with items reflecting both knowledge and attitude domains.

Used with permission (Tse & Chan, 2004), the English version of the NKASRP was translated into Chinese and then back-translated into English by an experienced nurse and a Chinese nurse with a degree in translation. The translated English version was compared with the original and all inconsistencies in meaning and grammar discussed and resolved. The two English versions were compared to establish uniformity and consistency. To address the content validity among Hong Kong Chinese nurses, five experts including nurse specialists in a hospice unit, a pain clinic, and an oncology unit, an anesthesiologist, and the physician in charge of the pain clinic reviewed the Chinese version of the NKASRP. Fourteen items regarded as not

representing the clinical practice of nurses in Hong Kong were deleted after the expert review of the survey questionnaire.

The Chinese version of NKASRP (NKASRP-C) consists of 25 items about general pain management, pain assessment, and the use of analgesics. Items 1-16 are "true or false" questions that assess general knowledge of pain, its manifestation, and treatment. Items 17-25 are multiple-choice questions that deal primarily with pharmacotherapeutics. One mark is gained for one corrected answer. Total maximum score is 25. Higher marks indicate better knowledge of and attitudes to pain management. The content validity was 0.87. Also, the test-retest reliability of NKASRP-C was established ( $r = 0.812$ ) by repeated testing among 20 registered nurses in Hong Kong. There were 678 nurses being studied using the NKASRP-C (Tse & Chan, 2004). The percentage of correctly answered questions was 44%. There was statistical significant in educational preparation and clinical experiences with correct scores. The findings of that study support the concern of inadequate knowledge and attitudes in relation to pain management. NKASRP-C was also studied among 143 nurses and deficit in knowledge and attitudes regarding pain management were reviewed (Lui et al., 2008). Those with a higher percentage of correct scores in NKASRP-C were those having more clinical working experiences and able to apply knowledge of pain in their daily work (Lui et al., 2008).

**Pain and Psychologic Well-Being for Older Persons.** Demographic data were collected, including age, gender, educational level, past health, and length of stay in nursing homes. In addition, pain situations and psychologic well-being were measured before and upon completion of the IPMP for older persons. Pain situations were measured by Geriatric Pain Assessment, which included assessing pain intensity using a 0-10-point scale, pattern and location of pain, exacerbating and relieving factors, sleep quality, and bowel habits (American Geriatrics Society Panel, 2002). The psychologic well-being of older persons included happiness (assessed by the Subjective Happiness Scale, life satisfaction (assessed by the Life Satisfaction Index-A form), loneliness (assessed using the Revised UCLA Loneliness Scale), and depression (assessed by the Geriatric Depression Scale). The number of nondrug methods used were counted.

The Subjective Happiness Scale (Lyubomirsky & Lepper, 1999) consists of a 4-item measure of global subjective happiness. Items are rated on a 7-point Likert scale with different descriptors for each item. The Cronbach alpha was 0.79-0.94 (Lyubomirsky & Lepper, 1999). The test-retest reliability ranged from 0.55 to 0.90. The total range of the scores was 4-28,



with higher scores reflecting greater happiness. The Chinese translation of the Subjective Happiness Scale was developed (Chen et al., 2008) with a Cronbach alpha of 0.69 for reliability (Chen et al., 2008). Tse et al. (2010) used the Chinese version of the Subjective Happiness Scale to measure the happiness level of older persons living in nursing homes.

The Revised UCLA Loneliness Scale, version 3, is a standard scale for measuring loneliness (Russell, 1996). The scale consists of 20 items assessed using 9 positively worded items and 11 negatively worded items to measure the feelings of loneliness and social isolation of the participants. Interviewees are asked to rate how frequently they feel as described, from “never” to “often.” Each of the 20 items is rated on a scale of 1 (never), 2 (rarely), 3 (sometimes), and 4 (often). After reverse-scoring appropriate items, loneliness scores are calculated by summing all of the items. The range of possible scores is 20-80, with higher scores signifying greater loneliness. Scores from 30 to 40 are considered to be a normal experience of loneliness, and scores >60 indicate that a person is experiencing severe loneliness. Reliability testing has indicated that the scale has an internal consistency ranging from 0.89 to 0.94 and a test-retest reliability of 0.73. Convergent validity has been demonstrated by a significant correlation with the NYU Loneliness Scale (0.65) (Rubenstein & Shaver, 1982) and the Differential Loneliness Scale (0.72) (Schmidt & Sermat, 1983). A Chinese version of the Revised UCLA Loneliness Scale was validated (Chou et al., 2005) and used, with a Cronbach alpha of 0.90 (Chou et al., 2005).

The Life Satisfaction Index-A (Neugarten et al., 1961) form consists of 18 questions related to five different components: zest, resolution and fortitude, congruence between desired and achieved goals, positive self-concept, and mood tone. Items score 1 point for agree and 0 for disagree. Reverse-scoring of appropriate items provides a score range of 0-18, with the highest scores indicating the greatest satisfaction. A Chinese version of the Life Satisfaction Index-A form was developed by Chi and Boey (1992), with a Cronbach alpha of 0.7 for reliability and split half-value of 0.62 for internal consistency (Chi & Boey, 1992). The Chinese version of the Life Satisfaction Index-A form was used.

The Geriatric Depression Scale was used to measure depression in the older adults (Yesavage et al., 1983). The scale consists of 15 yes/no questions asking the participants how they feel using a yes/no format. A “yes” response for a negatively phrased question is given 1 point, as is a “no” response for a positively phrased question, with higher total scores indicating

more depression. The Cronbach alpha of internal consistency was 0.89, and the test-retest reliability was 0.85. Those who reported  $\leq 4$  fewer symptoms were considered to be normal, those with 5-9 symptoms mildly depressed, and those with  $\geq 10$  moderately to severely depressed. A final Chinese version of the Geriatric Depression Scale was developed in Hong Kong (Chiu et al., 1994). It was internally consistent, with Cronbach alpha of 0.92. The Guttman split-half reliability was 0.89. The test-retest reliability was  $r = 0.84$ . The Chinese version of the Geriatric Depression Scale was used (Chan, 1996; Mui, 1996).

**Use of Nonpharmacologic Interventions.** An information sheet was used and the older persons were asked the frequency of use and the different types of nonpharmacologic interventions used to relieve pain.

## Data Analysis

Several statistical methods were used in data analysis. Descriptive statistical analysis of the quantitative data was conducted using the Statistical Package for the Social Sciences version 13.0. Chi-squared tests were used to determine any differences between the experimental and control groups, and the paired-sample  $t$  test and independent-sample  $t$  test were used to examine differences in pain scores and psychologic well-being parameters within groups and between groups over two occasions. A  $p$  value of  $<.05$  was considered to be statistically significant.

## RESULTS

### Demographic Data

There were 33 nursing staff in the experimental group who joined the IPMP. All were female, and their average age was from 36 to 45 years. The nursing team was mainly composed of personal care workers (60.6%), health workers (24.2%), enrolled nurses (6.1%), and registered nurses (9.1%). Around 50% of them had been working for 6-10 years in nursing homes. Regarding educational qualifications, only 3% had a bachelor's degree, and 15.2% had attended courses related to pain management (Table 2).

The study recruited 90 older people to participate, 48 in the experimental group and 42 in the control group. Table 3 shows the demographic data. The ages ranged from 60 to >80 years, with the median age >80-89 years. Their major underlying medical problems included hypertension, diabetes mellitus, history of stroke, and heart disease. No significant differences were found in the educational level, sleep quality, bowel habits, and characteristics of the older persons in the experimental and control groups ( $p < .05$ ).

**TABLE 2.**  
**Demographics, Practice Descriptors, and**  
**Education of the 33 Study Participants**

|   | %    |
|---|------|
| Gender                                  |      |
| Female                                  | 100  |
| Male                                    | 0    |
| Age, y                                  |      |
| 26-35                                   | 27.3 |
| ≥36-45                                  | 39.4 |
| >45                                     | 33.3 |
| Position                                |      |
| Registered nurse                        | 9.1  |
| Enrolled nurse                          | 6.1  |
| Health worker                           | 24.2 |
| Personal care worker                    | 60.6 |
| Experience since training, y            |      |
| 0-5                                     | 39.4 |
| ≥6-10                                   | 48.5 |
| ≥11-15                                  | 6.1  |
| ≥16-20                                  | 3    |
| ≥30-35                                  | 3    |
| Specialty experience                    |      |
| M&G                                     | 12.1 |
| Surgery                                 | 9.1  |
| Orthopedics                             | 9.1  |
| Neurosurgery                            | 0    |
| Oncology                                | 0    |
| Operation theater                       | 9.1  |
| Pediatrics                              | 0    |
| Outpatient department                   | 6    |
| Accident & emergency                    | 3    |
| None                                    | 51.6 |
| Nursing home experience, y              |      |
| 0-5                                     | 51.5 |
| ≥6-10                                   | 48.5 |
| Educational level                       |      |
| Certificate                             | 87.9 |
| Diploma                                 | 9.1  |
| Undergraduate                           | 3    |
| Attending pain course                   |      |
| Yes                                     | 15.2 |
| No                                      | 84.8 |
| Pain frequency of patients in your care |      |
| No                                      | 12.1 |
| Less than once a week                   | 15.2 |
| Several times a week                    | 36.4 |
| Once a day                              | 6.1  |
| More than once a day                    | 30.3 |

M&G = Medical & Geriatric.

### **Nursing Staff: Improvement of Knowledge and Attitudes in Pain Management**

At baseline, the knowledge and attitudes in pain management in the experimental and control groups were similar, with mean NKASRP-C scores of correct responses  $8.7 \pm 4.03$  and  $8.4 \pm 4.03$ , respectively ( $p < .05$ ); staff in the experimental group received

the IPMP, and staff in the control group did not receive the IPMP. On completion of the IPMP, there was a significant increase in the mean score of correct responses to the NKASRP-C, from  $8.7 \pm 4.03$  to  $19.9 \pm 3.68$  ( $p < .05$ ), in the experimental group, but no such increase in the control group. Nursing staff showed a positive attitude and more confidence in pain management and the use of nonpharmacologic interventions. The concept of pain as a subjective experience had been wrongly answered by the majority of participants at baseline, but on completion of the IPMP they all agreed with the subjective experience of pain and that they had to listen to what the client said. Correct responses regarding knowledge of nonpharmacologic treatment—"Nonpharmacological interventions may decrease the need for analgesics" and "the combination of pharmacologic and nonpharmacologic methods of pain control yields the most effective pain relief for the elderly"—were increased. However, little improvement was noted in the pharmacologic knowledge after the IPMP.

### **Pain Scores and Uses of Nonpharmacologic Methods in Pain Relief**

Table 4 shows the pain scores of the experimental and control groups at baseline and after IPMP. The common pain locations among both groups were the shoulders, back, knees, and hips. At baseline (week 1), the pain scores were  $3.66 \pm 1.74$  and  $4.92 \pm 2.94$  among the experimental and control groups, respectively, and there was no significant difference ( $p > .05$ ). On completion of the IPMP (week 8), there was a reduction of pain scores to  $2.88 \pm 2.02$  in the experimental group, whereas the control group showed an increase in pain scores to  $5.31 \pm 2.31$ . After IPMP, there were significant differences in the pain scores among the experimental and control groups ( $p < .05$ ), and older persons in the experimental group reported significantly lower pain scores compared with the control group.

In terms of the use of nonpharmacologic methods in pain relief, as shown in Table 5 there were no significant differences between the experimental and control groups in the number of participants using nonpharmacologic interventions as pain relief at baseline ( $p > .05$ ). On completion of the IPMP, there was a significant difference between the groups, with participants in the experimental group using more nonpharmacologic interventions ( $p = .05$ ).

As for the total number of nonpharmacologic methods used by the two groups of older persons, a significant increase was found in the experimental group ( $p < .05$ ) in week 8 compared with the control group, and the total number of methods used by the control group actually decreased.

**TABLE 3.**  
**Demographic Data (Experimental Group vs. Control Group)**

|                                  | Experimental Group (n = 48) |      | Control Group (n = 42) |      | p Value |
|----------------------------------|-----------------------------|------|------------------------|------|---------|
|                                  | n                           | %    | n                      | %    |         |
| Gender                           |                             |      |                        |      |         |
| Male                             | 13                          | 27.1 | 21                     | 50   | .04*    |
| Female                           | 35                          | 72.9 | 21                     | 50   |         |
| Age, y                           |                             |      |                        |      |         |
| 60-70                            | 6                           | 12.4 | 3                      | 7.1  | .05*    |
| 71-80                            | 9                           | 18.8 | 19                     | 45.2 |         |
| 80-89                            | 33                          | 68.8 | 20                     | 47.6 |         |
| Education level                  |                             |      |                        |      |         |
| No formal education              | 24                          | 50   | 11                     | 26.2 | .07     |
| Primary school                   | 19                          | 39.6 | 24                     | 57.1 |         |
| Secondary school                 | 5                           | 10.4 | 7                      | 16.7 |         |
| Sleep quality                    |                             |      |                        |      |         |
| Good                             | 26                          | 54.2 | 27                     | 64.6 | .45     |
| Bad                              | 22                          | 45.8 | 15                     | 35.7 |         |
| Bowel habit                      |                             |      |                        |      |         |
| Use of bowel medication          | 14                          | 29.2 | 5                      | 11.9 | .08     |
| No use of bowel medication       | 34                          | 70.8 | 37                     | 88.1 |         |
| Past and present medical history |                             |      |                        |      |         |
| Stroke                           | 15                          | 31.3 | 8                      | 19   | .28     |
| Hypertension                     | 30                          | 62.5 | 16                     | 38.1 | .04*    |
| Diabetes mellitus                | 13                          | 27.1 | 9                      | 21.4 | .71     |
| Heart disease                    | 14                          | 29.2 | 4                      | 9.5  | .04*    |
| Time spent in nursing homes, y   |                             |      |                        |      |         |
| ≤1-3                             | 25                          | 52.1 | 24                     | 57.1 | .082    |
| ≤4-6                             | 16                          | 33.3 | 10                     | 23.8 |         |
| ≤7-9                             | 5                           | 10.4 | 6                      | 14.2 |         |
| ≤10                              | 2                           | 4.2  | 2                      | 4.7  |         |

Chi-squared was used.

\*A *p* value of <.05 was considered to be statistically significant.

### Psychologic Parameters of Older Adults

No significant differences were observed in any of the psychologic well-being parameters, including subjective happiness, loneliness, life satisfaction, and geriatric depression at the baseline ( $p > .05$ ) for both

groups. On completion of the IPMP, there was a significant difference between the experimental and control groups ( $p < .05$ ), with the experimental group showing a significant improvement in loneliness, life satisfaction, and depression scores ( $p < .05$ ); only the

**TABLE 4.**  
**Pain Scores Among Older Persons in the Experimental and Control Groups: Baseline (Week 1) vs. Post-IPMP (Week 8), Mean ± SD**

|            | Experimental Group |                  | $\beta^*$ | Control Group   |                  | <i>p</i> Value, $\beta^{\dagger}$ | <i>p</i> Value, $\chi^{\ddagger}$ | <i>p</i> Value, $\chi^{\S}$ |
|------------|--------------------|------------------|-----------|-----------------|------------------|-----------------------------------|-----------------------------------|-----------------------------|
|            | Baseline (wk 1)    | Post-IPMP (wk 8) |           | Baseline (wk 1) | Post-IPMP (wk 8) |                                   |                                   |                             |
| Pain score | 3.66 ± 1.74        | 2.88 ± 2.02      | .08       | 4.92 ± 2.94     | 5.31 ± 2.31      | .7                                | .06                               | .00 <sup>  </sup>           |

\*Baseline and post-IPMP for experimental group (paired-sample *t* test).

<sup>†</sup>Baseline and post-IPMP for control group (paired-sample *t* test).

<sup>‡</sup>Baseline: experimental and control group (independent-sample *t* test).

<sup>§</sup>Post-IPMP: experimental and control group (independent-sample *t* test).

<sup>||</sup>A *p* value of <.05 was considered to be statistically significant.



TABLE 5.

**Nonpharmacologic Intervention in the Experimental vs Control Group: Baseline (Week 1) vs. Post-IPMP (Week 8), Mean  $\pm$  SD**

|   | Experimental Group |                  |                           | Control Group   |                  |                           |                           |                           |
|---|--------------------|------------------|---------------------------|-----------------|------------------|---------------------------|---------------------------|---------------------------|
|   | Baseline (wk 1)    | Post-IPMP (wk 8) | <i>p</i> Value, $\beta^*$ | Baseline (wk 1) | Post-IPMP (wk 8) | <i>p</i> Value, $\beta^†$ | <i>p</i> Value, $\beta^‡$ | <i>p</i> Value, $\beta^§$ |
| <sup>#</sup> Number of participants using nonpharmacological intervention | 21                 | 27               | .31                       | 17              | 14               | .65                       | .92                       | .05 <sup>  </sup>         |
| <sup>¶</sup> Total number of nonpharmacological methods used              | 1.1 $\pm$ 0.3      | 1.62 $\pm$ 0.92  | .01 <sup>  </sup>         | 2.29 $\pm$ 0.47 | 2.43 $\pm$ 0.51  | .55                       | .00 <sup>  </sup>         | .00 <sup>  </sup>         |

\*Baseline and post-IPMP for the experimental group.

†Baseline and post-IPMP for the control group.

‡Baseline: experimental and control groups.

§Post-IPMP: experimental and control groups.

<sup>||</sup>A *p* value of  $<.05$  was considered to be statistically significant.

<sup>#</sup>Chi-squared was used for persons using nonpharmacologic interventions.

<sup>¶</sup>*t* test was used for the total number of nonpharmacologic methods used.

subjective happiness scale did not show a significant increase, as shown in Table 6.

## DISCUSSION

The present study demonstrates the effectiveness of the IPMP in enhancing the knowledge and attitudes of nursing staff in pain management. Pain scores were also reduced significantly, and the older persons were happier, more satisfied, and less lonely and depressed. Indeed, the present study was a pilot study to test the feasibility, protocol, and implementation of the IPMP, which will be used in more nursing homes in the main study.

The finding of the present study regarding knowledge and attitude scores among nursing staff was low (only 8.7 correct responses) compared with local and overseas studies (Liu et al., 2008; Tse & Chan, 2004; Wilson, 2007). Nevertheless, it was consistent with literature that reported inadequate knowledge and poor attitudes in pain management among nursing staff (Liu et al., 2008; Wilson, 2007). Health workers and personal care workers are the key nursing staff providing direct care for the elderly in nursing homes in Hong Kong. Indeed, given their educational level and lack of relevant in-service training and education, it was not surprising to find such a low mean score at baseline. However, it was encouraging to find that

TABLE 6.

**Psychological Parameters of Older Persons in Experimental and Control Groups: Baseline (week 1) vs Post-IPMP (week 8), Mean  $\pm$  SD**

|                            | Experimental Group |                  |                           | Control Group   |                  |                           |                          |                          |
|----------------------------|--------------------|------------------|---------------------------|-----------------|------------------|---------------------------|--------------------------|--------------------------|
|                            | Baseline (wk 1)    | Post-IPMP (wk 8) | <i>p</i> Value, $\beta^*$ | Baseline (wk 1) | Post-IPMP (wk 8) | <i>p</i> Value, $\beta^†$ | <i>p</i> Value, $\chi^‡$ | <i>p</i> Value, $\chi^§$ |
| Subjective Happiness Scale | 16.2 $\pm$ 4.5     | 17.9 $\pm$ 4.7   | .81                       | 16.07 $\pm$ 6.6 | 15.5 $\pm$ 6.8   | .14                       | .91                      | .06                      |
| UCLA Loneliness Scale      | 49.7 $\pm$ 8.8     | 41.0 $\pm$ 9.2   | .00 <sup>  </sup>         | 46.0 $\pm$ 13.4 | 50.4 $\pm$ 14.1  | .08                       | .14                      | .00 <sup>  </sup>        |
| Life Satisfaction Index    | 7.7 $\pm$ 4.1      | 10.3 $\pm$ 4.6   | .00 <sup>  </sup>         | 8.8 $\pm$ 4.6   | 7.4 $\pm$ 4.7    | .21                       | .21                      | .00 <sup>  </sup>        |
| Geriatric Depression Scale | 8.1 $\pm$ 3.8      | 5.7 $\pm$ 3.1    | .00 <sup>  </sup>         | 7.1 $\pm$ 4.2   | 7.6 $\pm$ 4.3    | .49                       | .23                      | .02 <sup>  </sup>        |

\*Baseline and post-IPMP for the experimental group (paired-sample *t* test).

†Baseline and post-IPMP for the control group (paired-sample *t* test).

‡Baseline: experimental and control groups (independent-sample *t* test).

§Post-IPMP: experimental and control groups (independent-sample *t* test).

<sup>||</sup>A *p* value of  $<.05$  was considered to be statistically significant.

the postintervention score was significantly increased, that all the nursing staff expressed more confidence in caring for older clients in chronic pain and that they would use more nonpharmacologic interventions in the course of their care.

As for the residents in nursing homes, it was found that all of the psychologic parameters in both groups were below the cutoff points at baseline. Also, the pain scores of 3.66-4.92 (on an 11-point scale) were considered to be moderate. These findings were consistent with the literature regarding the prevalence of pain and poor psychologic status among older persons living in nursing homes. On completion of the IPMP, it was encouraging to find that pain scores were decreased significantly, and that almost all psychologic parameters had been improved; the older persons in the experimental group were happier, more satisfied, less lonely, and less depressed.

In the present study, the gardening program provided benefits for the older participants in coping with pain. In the process of growing their plants, they watched the colorful flowers and leaves, touched and felt the plants, were encouraged to smell the odor of mint and other plants, and consumed the vegetables they grew. This created a sensory environment that provided stimulation to the older persons. It was Schofield et al. (1998) who pioneered the use of a multisensory environment for treating elderly people with chronic pain. This concept will help to refine the IPMP in future studies. Indeed, the use of multisensory therapies as a nonpharmacologic pain management ap-

proach was proven to be effective and less expensive (Keefe et al., 1992).

The older people chose to use more nonpharmacologic interventions as pain relief. Examples included listening to music, reading, watching TV, the use of hot and cold pads, resting, deep breathing, and talking to friends. They were also very positive about participating in the exercise program. Indeed, the therapeutic effects of exercise programs on pain relief are well documented (Hernandez-Molina et al., 2008; Moseley, 2002; O'Reilly et al., 1999; Ross et al., 1999).

## CONCLUSIONS

The total pain concept as introduced by Dame Cicely Saunders described the physical, psychologic, social, and spiritual components of pain. Given the moderate to high prevalence of pain among older persons living in nursing homes, and the longevity of the older population, the new paradigm for older people's care should focus on holistic approaches to pain management and recognize that an integrated pain management program is important to both staff and older persons in the nursing home environment.

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## REFERENCES

- American Geriatrics Society Panel (1998). The management of chronic pain in older persons. *AGC Panel on Chronic Pain in Older Persons*, 46(5), 635-651.
- American Geriatrics Society Panel on Chronic Pain in Older Persons (2002). The management of chronic pain in older persons. *Journal of American Geriatric Society*, 50, s205-s224.
- American Geriatrics Society Panel on Persistent Pain in Older Persons (2002). The management of persistent pain in older persons. *Journal of the American Geriatrics Society*, 46, 635-651.
- Baumann, S. (2009). A nursing approach to pain in older adults. *Medsurg Nursing*, 18(2), 77-82.
- Brown, S. Y., Bowman, J. M., & Eason, F. R. (1999). Assessment of nurses' attitudes and knowledge regarding pain management. *Journal of Continuing Education in Nursing*, 30, 132-139.
- Carr, E. (2007). Barriers to effective pain management. *Journal of Perioperative Practice*, 17(5), 200-209.
- Chan, A. C. M. (1996). Clinical validation of the Geriatric Depression Scale (GDS). *Journal of Aging and Health*, 8(2), 238-253.
- Census and Statistics Department (2004). Hong Kong population projection 2004-2033. *Demographic Statistics Section, Census and Statistics Department*, 1-32.
- Chen, S. X., Benet-Martinez, V., & Bond, M. H. (2008). Bicultural identity, bilingualism, and psychological adjustment in multicultural societies: Immigration-based and globalization-based acculturation. *Journal of Personality*, 76(4), 1-35.
- Chi, I., Boey K. W. (1992). Validation of measuring instruments of mental health status of the elderly in Hong Kong. Department of Social Work and Social Administration, University of Hong Kong, Hong Kong.
- Chui, H. F. K., Lee, H. C. B., Wing, Y. K., Kwong, P. K., Leing, C. M., & Chung, D. W. S. (1994). Reliability, validity and structure of the Chinese Geriatric Depression Scale in Hong Kong context: A preliminary report. *Singapore Medical Journal*, 35, 477-480.
- Chou, K. L., Jun, L. W., & Chi, I. (2005). Assessing Chinese older adults' suicidal ideation: Chinese version of the geriatric suicide ideation scale. *Aging and Mental Health*, 9(2), 167-171.
- Chung, J. W. Y., & Wong, T. K. S. (2007). Prevalence of pain in a community population. *American Academy of Pain Medicine*, 8(3), 235-242.

- Clark, D. (1999). "Total pain," disciplinary power and the body in the work of Cicely Saunders, 1958-1967. *Social Science & Medicine*, 49, 727-736.
- Dalton, J. A., Blau, W., Carlson, J., Mann, D., Bernard, S., Toomey, T., Pierce, S., & Germino, B. (1996). Changing the relationship among nurses' knowledge, self-reported behaviour, and documented behaviour in pain management: Does education make a difference? *Journal of Pain & Symptom Management*, 12(5), 308-319.
- d'Amico-Panomeritakis, D., & Sommer, J. (1999). Promoting and maintaining mobility in the homebound elderly client. In S. Zang & J.A. Allemer (Eds.), *Home care of the elderly* (ch. 5). Philadelphia: Lippincott.
- Donald, I. P., & Foy, C. (2004). A longitudinal study of joint pain in older people. *Rheumatology*, 43, 1251-1260.
- Elliott, A. M., Smith, B., Penny, K., Smith, W., & Chambers, W. (1999). The epidemiology of chronic pain in the community. *Lancet*, 354, 1248-1252.
- Eun-Ok, I., Enrique, G., & Wonshik, C. (2007). The pain experience of Hispanic patients with cancer in the United States. *Oncology Nursing Society*, 34(3), 861-868.
- Ferrell, B. A., Ferrell, B. R., & Osterweil, D. (1990). Pain in the nursing home. *Journal of American Geriatric Society*, 38, 409-414.
- Ferrell, B. (1991). Pain management in the older people. *Journal of American Geriatric Society*, 39, 64-73.
- Fisher, B. J., Haythornthwaite, J. A., Heinberg, L. J., Clark, M., & Reed, J. (2001). Suicidal intent in patients with chronic pain. *Pain*, 89, 199-206.
- Gagliese, L., & Melzack, R. (1997). Chronic pain in older people. *Pain*, 70, 3-14.
- Gill, T. M., & Kurland, B. (2003). The burden and patterns of disability in activities of daily living among community-living older persons. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences*, 58A, M70-M75.
- Hernandez-Molina, G., Reichenbach, S., Zhang, B., LaValley, M., & Felson, D. T. (2008). Effect of therapeutic exercise for hip osteoarthritis pain: Results of a meta-analysis. *Arthritis Rheum*, 59(9), 1221-1228.
- Herr, K. (2010). Pain in the older adults: An imperative across all healthcare settings. *Pain Management Nursing*, 11(2), S1-S10.
- International Association for the Study of Pain (2009). *Global year against cancer pain. October 2008-October 2009. Total pain concept*. Retrieved November 8, 2010, from <http://www.iasp-pain.org/AM/Template.cfm?Section=Home&Template=/CM/ContentDisplay.cfm&ContentID=8705>.
- Keeffe, F. J., Salley, A. N., & Lefebvre, J. C. (1992). Coping with pain: Conceptual concerns and future directions. Guest editorial. *Pain*, 5(2), 131-134.
- Kellett, U. (1999). Transition in care: Family carers' experience of nursing home placement. *Journal of Advanced Nursing*, 29, 1474-1481.
- Kewin, J. (1991). *Snoezelen User Guide*. Chesterfield: North Derbyshire Health Authority, Rompa-Winslow Publications.
- Kwekkeboom, K. L. (1999). A model for cognitive-behavioral interventions in cancer pain management. *Image of Journal Nursing Scholarship*, 31, 151-155.
- Lassey, W. R., & Lassey, M. L. (2001). *Quality of life for older people: An international perspective*. New Jersey, NJ: Prentice Hall.
- LEGCO Panel on Welfare Services (2005). Public services. Services for the elderly. Retrieved July 18, 2009, from [http://www.swd.gov.hk/en/index/site\\_pubsvc/page\\_elderly/](http://www.swd.gov.hk/en/index/site_pubsvc/page_elderly/).
- Liu, L. Y. Y., So, W. K. W., & Fong, D. Y. T. (2008). Knowledge and attitudes regarding pain management among nurses in Hong Kong medical units. *Journal of Clinical Nursing*, 17, 2014-2021.
- Lyubomirsky, S., & Lepper, H. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research*, 46, 137-155.
- McCaffery, M., & Ferrell, B. (1987). *Knowledge and attitudes survey regarding pain*. Retrieved June 19, 2009, from <http://prc.coh.org>.
- McCaffery, M., Ferrell, B., O'Neil-Page, E., & Lester, M. (1990). Nurses' knowledge of opioid analgesic drugs and psychological dependence. *Cancer Nursing*, 13, 21-27.
- Melzack, R. (1990). The tragedy of needless pain. *Scientific American*, 262, 27-33.
- Moseley, L. (2002). Combined physiotherapy and education is efficacious for chronic low back pain. *Australian Journal of Physiotherapy*, 48, 297-302.
- Mui, A. C. (1996). Geriatric depression scale as a community screening instrument for elderly Chinese immigrants. *International Psychogeriatrics*, 8(3), 445-458.
- Neugarten, B. L., Havighurst, R. J., & Tobin, S. S. (1961). The measurement of life satisfaction. *Journal of Gerontology*, 16, 134-143.
- O'Reilly, S. C., Muir, K. R., & Doherty, M. (1999). Effectiveness of home exercise on pain and disability from osteoarthritis of the knee: A randomised controlled trial. *Ann Rheum Dis*, 58, 15-19.
- Reyes-Gibby, C. C., Adey, L., & Cleeland, C. (2002). Impact of pain on self-rated health in the community-dwelling older adult. *Pain*, 95, 75-82.
- Ross, M. C., Bohannon, A. S., Davis, D. C., & Gurchiek, L. (1999). The effects of a short-term exercise program on movement, pain, and mood in the elderly: Results of a pilot study. *Journal of Holistic Nursing*, 17, 139-147.
- Rubenstein, C. M., & Shaver, P. (1982). The experience of loneliness. In L. A. Pepi, & D. Perlman (Eds.), *Loneliness: A sourcebook of current theory, research and therapy* (pp. 206-223). New York: Wiley.
- Russell, D. W. (1996). UCLA Loneliness Scale (version 3): Reliability validity and factor structure. *Journal of Personality Assessment*, 66(1), 20-40.
- Sandberg, J., Lundh, U., & Nolan, M. R. (2001). Placing a spouse in a care home: The importance of keeping. *Journal of Clinical Nursing*, 10, 406-416.
- Schmidt, N., & Sermat, V. (1983). Measuring loneliness in different relationships. *Journal of Personality and Social Psychology*, 44, 1038-1047.
- Schofield, P. A. (1996). Snoezelen: Its potential for people with chronic pain. *Complementary Therapies in Nursing & Midwifery*, 2, 9-12.
- Schofield, P. A., & Bryn, D. (1998). Sensory deprivation and chronic pain: A review of the literature. *Disability and Rehabilitation*, 20(10), 357-366.
- Schofield, P., & Drago, R. (2007). The anatomy and physiology of pain. In P. Schofield, *The management of pain in older people*. (pp. 1-23). England, UK: John Wiley & Sons.
- Schofield, P. A., & Hutchinson, R. (2002). *Snoezelen: The evidence from practice*. London: Free Association Books.

- Schofield, P., Davies, B., & Hutchinson, R. (1998). Evaluating the use of Snoezelen and chronic pain: The findings of an investigation into its use (Part II). *Complementary Therapies in Nursing & Midwifery*, 4, 137-143.
- Schofield, P., O'Mahony, S., Collett, B., & Potter, J. (2008). Guidance for the assessment of pain in older adults: A literature review. *British Journal of Nursing*, 17(14), 914-918.
- Smith, M. T., Edwards, R. R., Robinson, R. C., & Dworkin, R. H. (2004). Suicidal ideation, plans, and attempts in chronic pain patients: Factors associated with increased risk. *Pain*, 111, 201-208.
- Soldato, M., Liperoti, R., Landi, F., Finne-Soveri, H., Carpenter, I., Fialova, D., Bernabei, R., & Onder, G. (2007). Nonmalignant daily pain and risk of disability among older adults in home care in Europe. *Pain*, 129, 304-310.
- Tang, N. Y., & Crane, C. (2006). Suicidality in chronic pain: A review of the prevalence, risk factors and psychological links. *Psychological Medicine*, 36(5), 575-586.
- Thompson, S. E., & Gessert, C. E. (2006). Nursing homes and suffering: Part of the problem or part of the solution? *Journal of Applied Gerontology*, 25, 234-253.
- Tsai, P. F., Beck, C., Chang, J. Y., Hagen, J., Kuo, Y. F., Roberson, P. K., Beuscher, L., Doan, C. L., & Anand, K. J. S. (2009). The effect of Tai Chi on knee osteoarthritis pain in cognitively impaired elders: Pilot study. *Geriatric Nursing*, 30(2), 132-139.
- Tse, M. M. Y. (2007). Nursing home placement: Perspectives of community dwelling older persons. *Journal of Clinical Nursing*, 16, 911-917.
- Tse, M. M. Y., Pun, S. P. Y., & Benzie, I. F. F. (2005). Pain relief strategies used by older people with chronic pain: An exploratory survey for planning patient-centred intervention. *Journal of Clinical Nursing*, 14, 315-320.
- Tse, M. Y., & Chan, S. H. (2004). Knowledge and attitudes in pain management: Hong Kong nurses' perspective. *Journal of Pain & Palliative Care Pharmacotherapy*, 18, 47-58.
- Tse, M.Y.M., Lo, A.P.K., Cheng, T.L.Y., Chan, E.K.K., Chan, A.H.Y., & Chung, H.S.W. (2010). Humor therapy: Relieving chronic pain and enhancing happiness for older adults. *Journal of Aging Research*. June 28, 2010 Retrieved from <http://www.sage-hindawi.com/journals/jar/2010/343574.html>.
- Von Roenn, J. H., Cleeland, C. S., Gonin, R., Hatfield, A. K., & Pandya, K. J. (1993). Physician attitudes and practice in cancer pain management: A survey from Eastern Cooperative Oncology Group. *Annals of Internal Medicine*, 119, 121-126.
- Vortherms, R., Ryan, P., & Ward, S. (1992). Knowledge of, attitudes toward, and barriers to pharmacological management of cancer pain in a statewide random sample of nurses. *Research in Nursing & Health*, 15, 459-466.
- Wilson, B. (2007). Nurses' knowledge of pain. *Journal of Clinical Nursing*, 16, 1012-1020.
- Wilson, S. A. (1997). The transition to nursing home life: A comparison of planned and unplanned admissions. *Journal of Advance Nursing*, 26, 864-871.
- Won, A. B., Lapane, K. L., Vallow, S., Schein, J., Morris, J. N., & Lipsitz, L. A. (2004). Persistent nonmalignant pain and analgesic prescribing patterns in elderly nursing home residents. *Journal of American Geriatrics Society*, 52(6), 867-874.
- Yesavage, J. A., Brink, T. L., Rose, T. L., Lum, O., Huang, V., Adey, M., & Leirer, V. O. (1983). Development and validation of a geriatric depression screening scale: A preliminary report. *Journal of Psychiatric Research*, 17(1), 37-49.