An Examination of the Efficacy of Specific Nursing Interventions to the Management of Pain in Cancer Patients

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ABSTRACT

Aim of the Study

The aim of this study was to determine if the nursing interventions of patient education and multidisciplinary coordination of care were able to improve pain control in the cancer patient in an acute hospital setting.

Background of the Study

The role of the nurse in cancer pain management has been defined as being that of an educator, coordinator of care and advocate. A nurse with adequate knowledge of pain and its application to the cancer population and functioning in the role as defined is believed to be able to overcome many of the barriers that exist in implementing adequate analgesia and improve pain management in cancer patients.

Design of the Study

A randomized experimental control group design was utilized. The study comprised 3 experimental groups and one control group incorporating pre and post testing.

The Intervention of the Study

Experimental group one: subjects received education regarding their pain management which was tailored to meet their specific needs.

Experimental group two: subjects underwent a pain assessment and construction of a care plan which was communicated verbally to the treating medical and nursing team and followed up with a written report which was documented in the history and sent to the treating medical physician.

Experimental group three: subjects received the combined interventions administered to groups one and two.

Control group four: subjects were assessed and all information was record in the same manner as for the experimental groups. The control group received their usual care during

the study and their pain scores were measured at the same time intervals as the three experimental groups.

Instrumentation

The Wisconsin Brief Pain Questionnaire was used for the assessment of all subjects.

The McGill Pain Questionnaire was used as the outcome measure following intervention.

Data Analysis

A one-way analysis of variance was used to detect the differences between the intervention groups and the control group. T-Tests were used to detect the differences between the groups incorporating a Bonferroni adjustment for frequent T tests.

Results

The main effect demonstrated a significant difference between the treatment groups and control at a significance level of 0.002.

T-Tests showed no significant difference between control and communication groups and no significant difference between education and combined groups. A significant difference was detected between education and control and between combined and control.

Conclusions

Nursing interventions of patient education, coordination of care and advocacy can significantly improve cancer pain management. Intervention was tailored to meet the specific patient needs based on findings from the assessment and was dependent upon an adequate knowledge base. The nursing intervention of education was the most powerful of the three intervention types and its success was in tailoring to each individual. However, it is believed that with further recognition of the role of the nurse as coordinator of care will lead to greater improvements in cancer pain management.

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STATEMENT OF ORIGINAL AUTHORSHIP

The work contained in this dissertation has not been previously submitted for a degree or diploma at any other tertiary institution. To the best of my knowledge and belief, the dissertation contains no material previously published or written by another person, except where due reference is made.

Signed: ……..

Date: ……

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CHAPTER ONE

ISSUES IN CANCER PAIN

1.1 Introduction

Pain is a common accompaniment of advanced cancer. It has been estimated that between 30 and 50% of patients receiving anti-neoplastic therapy and between 75 and 90% of patients with advanced disease will experience significant amounts of pain (Portnoy, 1989; Ventafridda, 1989; Bonica, 1978). Pain, when present, is reported as moderate by 40 to 50% of patients and as severe by 25 to 30% of patients (Bonica, 1990). The physiological, emotional and economical impact of unrelieved pain on these patients and their families is well documented (Ventafridda, 1989; Maisse *et al.*, 1992; Wells, 2000). Unrelieved pain diminishes activity, contributes to weakness and fatigue, diminishes appetite, and causes unnecessary suffering (Patt, 1993). These symptoms combined with the symptoms caused by the disease itself and the treatment of the disease will further weaken an already debilitated patient. The psychological consequence of unrelieved cancer pain can be devastating, as patients often lose hope once pain emerges, believing that pain signals the progress of the disease. In stable disease, uncontrolled pain prevents patients from working and enjoying recreation. Adequate pain control, on the other hand, can contribute to an improved quality of life by lessening a patient's sense of suffering, increasing activity and improving sleep and appetite (Ferrell *et al.,* 1991).

The prevalence and multidimensional nature of cancer pain has attracted a lot of attention from World Health Organisations and from professional agencies over the last few decades. These organisations have examined the efficacy of several treatment modalities for cancer pain relief (World Health Organisation (WHO), 1986; Agency for Health Care Policy and Research (AHCP&R), 1994). The World Health Organisation (WHO) developed an analgesic ladder, which has been shown to be effective in relieving pain in approximately 90% of patients with cancer and over 75% of cancer patients who are terminally ill (World Health Organisation (WHO), 1990. Ventafridda *et al.,* 1987).

In those patients who do not obtain adequate relief from pharmacological interventions alone, the multidisciplinary team approach to the management of cancer pain has demonstrated that substantial improvement in pain relief can be obtained after 1 to 2 weeks of treatment. Modalities used in pain management include analgesic tailoring, non-neurolytic blockades, epidural opioid therapy and a combination of these modalities (Banning *et al.,* 1991).

1.2 Barriers in Cancer Pain Management

In a large majority of cases, the knowledge and the technology is available to provide significant improvement in cancer pain using the WHO analgesic ladder and the interventions offered by the multidisciplinary team. Nevertheless, for a significant number of patients there are reports that document high levels of inadequate pain control (Wells, 2000; Pargeon and Hailey., 1999; Rawel *et al.,* 1993; Von Roenn *et al.,* 1993; Cleeland *et al.*, 1994; Dorrepaal *et al.,* 1989). The Cleeland and the Rawel studies, in particular, are significant because they surveyed large numbers of patients, physicians and nurses regarding patients' pain experience and pain management. Cleeland examined the pain management of 1308 cancer patients with metastatic disease from 51 different cancer centres in the United States of America and revealed that 36% (ie 475 of 1308) of patients experienced pain severe enough to impair their ability to function. Forty two percent of the patients who had pain as a symptom were under-medicated. In addition, minority group patients such as non-English speaking African American and Hispanic patients were three times more likely to be inadequately managed. The study concluded that, despite published guidelines for pain management, many patients continued to be inadequately managed and that one of the most significant contributing factors to this state of affairs was the discrepancy between the physician's and the patient's estimate of the severity of the pain (Cleeland *et al.*, 1994). Rawel *et al.,* (1993) examined the management of 3767 patients who were admitted to hospitals in Sweden with severe cancer pain and found that although nearly all Swedish physicians follow the principles of the WHO analgesic ladder they did not evaluate different pain types, nor did they use any instruments to measure pain intensity. As a result, effective pain relief for hospitalised terminal patients was far from a reality in Sweden. The inadequate pain management identified in this study resulted from the acceptance by physicians and nurses of the presence of severe pain in terminal patients.

As well as studies examining the pain experience in cancer patients, several other surveys have been conducted with nurses and oncology physicians in an attempt to identify why cancer pain continues to be inadequately managed when adequate treatment is available. The Eastern Cooperative Oncology Group (ECOG) surveyed almost 900 physicians and asked them to rank, in order of priority, barriers that they identified in their practice as impeding pain management. The physicians identified inadequate knowledge of cancer pain assessment and management and barriers related to the patient and family with the patient being reluctant to report pain and take opioids (Von Roenn *et al.*, 1993).

McCaffery and Ferrell (1990) surveyed over 650 nurses regarding barriers to cancer pain management and found problems that related to a lack of knowledge about cancer pain, its assessment and management, as well as patient and family barriers. The nurses in this study also experienced problems with inadequate medication orders and difficulty communicating with physicians. The finding of all these studies, along with the work of Von Roenn *et al* (1993), supports the idea that several identifiable barriers prevent the implementation of potentially effective treatment. These barriers can be broadly categorised into problems related to: (i) the health care professional; (ii) the patients and carers' and; (iii) the health care system (AHCP&R, 1994 page16).

1.2.1 Barriers related to the Health Care Professional

Several studies have investigated the knowledge base of health care professionals in relation to cancer pain management (Fothergill-Bourbonnais and Wilson-Barnett, 1992; Ferrell *et al.*, 1993; McCaffery and Ferrell, 1990; Furstenburg, *et al,* 1998). Ferrell *et al,* (1993) examined the adequacy of pain management content in nursing education, focusing specifically on curricular content in relation to meeting the needs of nurses who care for cancer patients with pain. The results suggested that curriculum content on pain management, when included, was sub optimal. Overall the faculty felt that pain education was only moderately effective in preparing students. Survey questions which sought to elicit faculty knowledge of pain management practice and principles found that although the faculty displayed adequate knowledge about current pain theories, there were deficiencies in their knowledge of pain goals, treatment outcomes and pharmacological actions. The results indicate that one in ten faculty members were teaching inappropriate

material related to pain. In addition to inadequate knowledge of pain management practices, the amount of time devoted to teaching about pain was insufficient with an average time of 6-8 hours of classroom and clinical education. Finally, most nursing schools reported that there was no pain expert employed in their faculty (Ferrell *et al.*, 1993).

In another comparative study by Fothergill-Bourbonnaise and Wilson-Barnett (1992) of intensive care unit (ICU) nurses and hospice nurses, aimed at identifying knowledge of beginner and expert ICU nurses and hospice nurses, found that the majority of ICU and hospice nurses believed that they needed more knowledge and skills about pain management. Although the hospice nurses rated themselves higher than ICU nurses on knowledge about analgesics there was no significant difference between the expert and the beginner hospice nurses. Twenty percent of hospice nurses rated their own knowledge as fair/poor. Overall, 65% of subjects rated their knowledge as fair/poor with 85% believing that they required more education in pain management.

McCaffery and Beebe (1989) demonstrated that health care professionals can also harbour inappropriate attitudes regarding pain. McCaffery and Beebe examined nurses' attitudes towards patients in pain and found that nurses harbour many myths and misconceptions about pain and the behavioural consequences of pain. These misconceptions include; "All 'real' pain has an identifiable physical cause"; "Psychogenic pain does not really hurt"; "The health team is the authority on the existence and nature of the patient's pain"; "Pain is largely an emotional or psychological problem, especially in the patient who is highly anxious or depressed." The authors noted that all these misconceptions undermine the patient's subjective report, leading to the development of an adversarial relationship between the health care professional and the patient, with little or no constructive intervention likely to occur in such circumstances. A further study of nurses knowledge and attitudes in Australia 10 years on revealed that nurses still have significant knowledge deficits regarding pain assessment and analgesia. In addition nurses still habour myths and misconceptions regarding how patients behave when experiencing pain that could prevent appropriate treatment being implemented (Nash., 1999).

1.2.2 Barriers related to Patient and Family

The patient, and the patient's carer, can also contribute to inadequate pain control. Problems arise if the patient and family harbour misconceptions towards use of analgesia. Some patients believe that cancer pain cannot be relieved and often do not report pain to their physician. Patients will often cease pain medication due to side effects and because of fears about respiratory depression (McCaffery and Beebe, 1989; Ward *et al.,* 1993).

Family factors have also been identified as contributing to inadequate cancer pain management. Several studies have consistently found pain to be a major concern of family caregivers (Hull, 1989; Hinds, 1985). Family members fear drug addiction, respiratory depression or drug tolerance and often under medicate patients as a direct consequence of these fears, even though the patients are experiencing unrelieved pain (Ferrell *et al.*, 1991). There also appears to be a significant discrepancy between a patient's subjective report of pain and the carer's perception of the patient's pain experience. Carers usually rate the patient's pain higher than does the patient. Ferrell *et al* (1991) suggested that there needs to be family education regarding issues such as addiction and unrealistic fears of respiratory depression.

Public attitudes towards cancer pain suggest that people perceive a strong link between cancer and pain, with most viewing the pain in cancer to be extreme. It has also been suggested that some people who suspect they have cancer maybe reluctant to seek medical attention because they fear that pain is associated with the advancement of the disease or its treatment (Levin *et al.*, 1985). Patient and family education has been identified as an important means to alleviate patients' fears and anxieties about pain.

A recent literature review of barriers in cancer pain by Pargeon and Hailey (1999) confirmed the research by the above authors regarding provider and patient barriers as well as reviewing effective interventions for such barriers. The review concluded that the barriers identified 10 years earlier still existed and that provider and patient education programs where a step in the right direction. However further research was required to demonstrate an ability to reduce the prevalence and severity of pain.

1.2.3 Barriers related to the Health Care System

Another significant institutional barrier to adequate pain management relates to the lack of interest by the health care system that does not see cancer pain as a priority. There have been few studies examining pain management in Australia. However, a 1991 survey described pain management in Australia as "islands of enlightenment in a sea of misery" (NH&MRC, 1991). This description was confirmed in a recent prevalence study of in-patients in a major Brisbane hospital. While the study did not examine the prevalence of cancer pain specifically it found that almost 80% of hospitalized in-patients reported pain during the data collection period. More importantly over 33% of the patients with pain, rated their pain as distressing, horrible or excruciating. The authors compared their findings to studies undertaken with cancer patients and post surgical patients which have previously been referred to and while there existed a slightly lower proportion, the number of patients in severe pain was felt to be unacceptably high (Yates *et al,* 1998).

To date, very few multidisciplinary pain clinics operate in Australia and of these, even fewer specialize in cancer pain. This neglect is being addressed with the rapidly increasing profile of Palliative Care Services in the health care system. The palliative care nurse, however, has many other functions other then pain management and therefore may have insufficient time and resources to devote to providing a thorough pain management service. Although such a service would appear to provide a multidisciplinary approach to pain management, its true efficacy in the area of pain management still requires careful evaluation. An electronic review of several of the nursing peak bodies in Australian failed to describe or define a position statement for cancer pain management. The web site for Royal College of Nursing Australia 2003 does not include principals or guidelines for cancer pain management, nor for non-cancer pain. Palliative Care Australia(PCA 2003) provides objectives for palliative care patients who experience pain, but does not indicate what knowledge base would be required by the health provider to meet those objectives. Nor does it list agencies that could assist in meeting the primary objectives of cancer pain management. Finally a review from the Joanna Briggs Institute web site 2003 provided no

information under best practice for pain management or cancer pain management, with best practice information dating back to 1997.

Despite the many barriers that have been outlined as obstructing the attainment of adequate pain relief may be amenable to nursing intervention. The National Institute of Health (NIH) in 1987 determined that nurses are pivotal in facilitating communication between patients and members of the health care team. Nurses teach people about pain, schedule medication relative to individual needs, and use non-pharmacological pain relief techniques such as massage, heat and cold application, relaxation and guided imagery. The NIH position statement corroborated the position of the American Nurses Association, which stated that the role of the oncology nurse in cancer pain management is that of a "*coordinator of care, an educator and an advocate"* (National Institute of Health; 1987). The Oncology Nurses Society (ONS) responded to the NIH position statement and published a three-part position paper on cancer pain management (Spross *et al.,* 1990a).

1.3 Oncology Nurses Society Guidelines in Cancer Pain Management

It was the mission of the Oncology Nursing Society to improve the care of people with cancer by improving their nursing care. A comprehensive guide for improving nursing care was detailed in the position paper. The specific purpose was to call attention to the problem of unrelieved cancer pain and to define the responsibilities of professional nurses in relation to cancer pain management. The ONS Position Paper operationalised the scope of practice for nurses by defining the knowledge and skills that would be required if nurses were to assume these ethical and clinical responsibilities. The ONS believed that nurses with such knowledge would be able to assess pain in patients with cancer, develop and implement a care plan for the management of the pain and be able to evaluate its therapeutic efficacy (Spross *et al.,* 1990a).

While nursing has responded to the increasing global awareness of inadequate cancer pain control by examining and defining the nursing role, very few controlled studies exist that validate the contribution of nursing intervention in cancer pain management. No controlled studies have been undertaken to examine the combined role of the nurse as an educator, coordinator of care and advocate, as defined by the NIH. Therefore, the ability

of the nurse to be able to assume a leadership role in cancer pain management remains unclear. Several controlled studies have examined the efficacy of isolated nursing interventions such as education and documentation; however, none of these studies were able to demonstrate a reduction in pain scores as a result of the stipulated intervention. Although there are no controlled studies that examine the efficacy of the nurse as a coordinator of care in reducing pain scores in cancer patients, several studies have examined the impact of using pain assessment tools as strategies for communicating patients' pain status. Several of these studies have demonstrated reduced pain scores with the use of this intervention. These studies will be examined in detail in the following chapter.

The major aim of this study is to examine whether nurses with the knowledge and skills as defined in the ONS position paper are able to improve pain management in cancer patients above current practice. The specific intent of the current study is to evaluate the nursing role in patient education, coordination and communication of care and the combined effect of education and coordination of care in advocating for patients to achieve their desired level of pain relief. As there are no controlled studies that have evaluated the efficacy of these combined nursing interventions in the management of cancer pain, each dimension of nursing practice will be examined separately and in combination to determine which approach is the most effective in reducing pain in cancer patients.

In overview, Chapters II - IV will examine the background literature to the study. In Chapter II the nursing role in relation to education will be examined and the available literature on the nursing role in communication and coordination of care will be evaluated. Chapter III reviews the common interventions used in cancer pain management and the link between the knowledge of pain physiology and the selection of appropriate pharmacological interventions will be made. In Chapter IV pain measurement tools are examined and a justification for the selection of the McGill Pain Questionnaire for this study is given. The methodology and study design and results are described in Chapter V. Finally, in Chapter VI a link is made between mechanisms required to improve pain management in cancer patients and the development of a new nursing role in the current hospital setting.

CHAPTER TWO

THE ROLE OF THE NURSE IN CANCER PAIN MANAGEMENT

2.1 Introduction

Nursing has responded to the increasing global awareness of inadequate cancer pain control by examining what nursing can contribute to the improved management of cancer pain. Pain is a nursing diagnosis and it is one of the most frequently identified clinical problems that nurses encounter (Hallal, 1985). Nurses have been described as the health care professional most directly responsible for the overall management of pain (Herr and Mobily, 1992). By extension, it is therefore important to examine the nursing interventions that are most likely to improve the management of pain in cancer patients.

Cancer pain relief was recognized by the World Health Organisation (WHO) as a health priority of the 1990s (Stjernsward and Teoh, 1990). Many large health care professional agencies have identified the nurse as the health care professional to assume a leadership role in overcoming the many barriers that currently impede effective cancer pain management. The National Institute of Health (NIH 1986) integrated approach to the management of cancer pain describes the role of the nurse as being pivotal in improving the management of cancer pain. Other studies have examined strategies to improve pain relief and have recommended that nurses take a more prominent role in cancer pain management (Ferrell *et al.*, 1988; Ferrell *et al.*, 1991; Miaskowski and Donovan, 1992; Ferrell *et al.,* 1994). The responsibility of the nurse in pain management stems from the primary care giving role of the nurse and the fact that the nurse is the health care provider with the most patient contact in clinical hospital settings. In addition, the wide range of dosages of analgesics prescribed by physicians implies that nurses decide how to adjust both the amount and frequency of the dosage necessary to provide adequate pain relief. Nurses not only administer pain-relieving medication but are also in the best position to evaluate the effectiveness of this intervention (Slack and Faut-Callahan, 1991).

In response to the call for nurses to take a more prominent role in cancer pain management, the NIH and the American Nurses Association (ANA) have both defined the role of the nurse in cancer pain management as being that of an educator, coordinator of care and an advocate (ANA, 1987). In considering the potential for the nurse to improve cancer pain management through the implementation of this role as described above, it is necessary to review the nursing literature on education, coordination of care and advocacy and to evaluate the efficacy of these nursing interventions in pain management.

2.2 Education: A Review of the Clinical Evidence

The ONS and other authors have recognized patient education as being a nursing responsibility (ANA, 1987; McCaffery and Beebe, 1989). The ONS (Spross *et al.,* 1990b) position paper on cancer pain management expressed the view that:

> Patient education is an essential element of cancer pain management and it is the primary responsibility of nurses. Nurses have a responsibility to educate the patient and their significant others about the right to relief from cancer pain and the resources available for assessment and treatment of cancer pain. (p 756).

The need for patient and family education is based on several surveys, which have shown that patients and their families have inadequate knowledge about how to manage pain. This inadequate knowledge causes fear and stress for patients and their caregivers and may form a barrier to implementing care. In one attitudinal survey of 496 adult control subjects undertaken by Levin, Cleeland, and Dar (1985), it was found that the public perceives cancer as an extremely painful disease relative to other medical conditions. Approximately half of the respondents indicated significant concerns about taking narcotics. In particular, they were concerned about addiction, tolerance and suffering from unwanted side effects. The fear of using narcotics combined with an over estimation of the severity of cancer pain led many patients and their families to feeling overly anxious about seeking treatment. The authors recommended that active relevant patient education was necessary to avoid patient anxiety about seeking medical advice.

Donovan and Dillon (1987) also reported on the incidence and characteristics of 454 patients who had pain as a symptom of their disease. These authors suggested that patient and family attitude and fear contributed to the under-treatment of pain. However, to what

degree such an attitude contributed to the under-recognition and under-treatment of pain was not identified. It seems, nevertheless, that knowledge deficits, negative attitudes and cultural biases interfere with pain management interventions. For example, some patients in the study stated that they felt that the health care team should know when they are in pain, but at the same time the patients did not think it appropriate for them to seek intervention for pain because they expected pain to be an inevitable part of their disease.

In an attempt to examine more specifically how family factors influence pain management, Ferrell *et al* (1991) interviewed 85 subjects with cancer pain. The aim of the study was to examine the social concerns associated with cancer pain management. These authors were particularly interested in how the knowledge base of the carer impacted on someone in pain. Although the study was not designed to measure the impact of caregivers' knowledge on pain management per se, the results showed that the greater the understanding the carer had of pain management principles the less stress carers experienced in managing their loved one's pain. The reduction in carer stress levels was reflected in lower levels of depression and less confusion about pain management regimes. Again, the study concluded that there was an urgent need for families to be educated about the principles of pain management.

Further support for the idea that patient and family factors influence pain management comes from a study undertaken by Jones *et al* (1983), which investigated the relationship between the knowledge base of the patient regarding analgesia, and the patient's compliance with analgesics in relation to pain control. Eighty-two patients were interviewed before and after an education intervention. The education package consisted of: action of medications, compliance with pain control regimes, pain intensity scores and the experience of side effects to medication. The authors found a high compliance rate with prescribed regimes; however, there was a general inability to recall any of the common side effects of medications. Of particular interest to the present study was that pain measurement scores did not appear to be related to compliance. The authors concluded that patients need more information about the possible side effects of their medication and that improved communication between the patient and the physician may further enhance pain control (Jones *et al*, 1983).

In summary, several surveys have found that patients and carers harbour many fears and anxieties regarding cancer pain and that these fears and anxieties were probably contributing to the problem of inadequate pain management. Strong recommendations have been made for improved patient and family education (Jones *et al.,* 1983; Levin *et al.,* 1985; Donovan and Dillon, 1987; Ferrell *et al.,* 1991). The content of these education programs has not been well described, nor has the impact of education on pain scores been adequately evaluated. The single study by Jones that targeted drug knowledge, side effects and compliance, did not show the expected improvement in pain control but yielded mixed results. This pattern of results suggests that patient education about pain management regimes alone does not adequately alleviate pain, and that patients may require further interventions other than pharmacological education.

2.2.1 Nurse/Patient Educational Interventions

In an attempt to further define what is the most effective educational strategy to alleviate pain in cancer patients, a number of studies have examined the relationship between different educational interventions and pain scores. However, of these intervention studies, few have produced significant reductions in pain scores, despite showing significant increases in knowledge base following the intervention (Dalton, 1987; Rimer *et al.,* 1987; Ferrell *et al.,* 1988; Clotfelter, 1999).

Dalton's study (1987) was one of the first randomized control trials for evaluating the impact of education on pain scores in cancer patients. The major aim of this study was to determine if non-pharmacological approaches to pain management could improve overall pain control. The author sought to educate patients about how the use of relaxation, distraction and cutaneous stimulation could alter their perception and reaction to pain. By understanding the role of perception in the pain experience, it was hypothesized that modifying the affective reaction to pain would in turn inhibit sensory information coming in from the periphery and this would reduce the amount of pain that the patient perceived. The results demonstrated that the knowledge base of the experimental group was significantly improved. However, there was no statistically significant difference between the control group subjects and the intervention group subjects for any of the pain rating scales. One of the explanations given by the authors for this result was the small sample

size. However, this explanation did not account for the reduction in pain scores of the control group subjects.

Rimer, Levy, Keinta, and Fox (1987) also examined the impact of enhancing cancer pain control regimes through patient education. The study used a large sample size of 230 cancer patients who received a narcotic pain prescription for pain other than pain related to post-operative surgery. Both the control and intervention groups were balanced for cancer sites, months since diagnosis and known metastases, thus overcoming some of the possible confounding problems that Dalton experienced. The study was designed to examine whether patient education improved a number of factors known to influence pain control. The results of the study showed that the patients in the experimental group were more likely to comply with their medication and were significantly less likely to cease their medication if they felt better. As well, the patients in the experimental group were more likely to believe that side effects of medication could be prevented. Despite such strong results for the effects of education, no significant difference was found in pain intensity scores between the two groups or for the experience of side effects. This result was surprising considering the sample size and the statistically significant differences on all measures of increased knowledge.

Ferrell, Wenzl and Wisdom (1988) in a retrospective study designed to evaluate the effectiveness of the Mercy Health Center Pain Management Team, examined 250 cases accumulated over a 5-year period. However even with a pain management team a number of problems precluded any valid interpretation of the nursing role in pain management. First, there was no consistent documentation of pain intensity, making it impossible to measure the outcome of the pain intervention. Second, intervention types were not documented, so it was difficult to ascertain which intervention most contributed to pain improvement when compared with other interventions. The authors concluded from their study that a further evaluation was needed to identify which specific intervention contributed to the improvement in pain management.

Clotfelter (1999) examined the impact of an educational video and booklet on decreasing pain intensities in the elderly patient with cancer. The results demonstrated significantly less pain intensity in the experimental group in comparison to the control group. However

both groups experienced an increase in post-test mean scores in comparison to pre-test scores, with the control group having a significantly greater increase in post scores. The author concluded that there needed to be an increased focus on the educational needs of the elderly patient with cancer and their carer, as they can and want to learn more about pain management, and that nurses must take a leading role in identifying and implementing educational strategies.

In summary, to the author's knowledge, all of the clinical trials undertaken to date to evaluate the impact of patient education programs given by nurses on pain outcomes have been evaluated. Despite the significant improvement in patients' level of knowledge regarding the educational content, this improved knowledge was not mirrored in a reduction in pain scores. Such a poor outcome may have resulted from implementing a structured education intervention that did not incorporate the individual needs of the patient. Inability to tailor education to specific patient needs may have been due to the nurses' inadequate knowledge of cancer pain and its management. Alternatively, the failure to obtain a significant reduction in pain scores may have been a due to education alone not being powerful enough to obtain changes to treatment, when prescribed regimes were not providing the adequate pain relief.

The inability of education alone to have a significant impact on pain scores indicates that a unilateral approach to the complex problem of pain management is an inappropriate strategy. There is an indication that more assistance is required from health care professionals to seek better pain management interventions. The ONS considers that it is the role and responsibility of the nurse in the health care system to be accountable for seeking and obtaining pain relief for cancer patients. However, an examination of the literature reveals that nurses are not realizing their role as facilitators of effective pain management.

In a study of the incidence and characteristics of pain in a sample of 459 hospitalized cancer patients, Donovan (1987) found that there was an overwhelming disregard by nurses and other health care professional in recognizing the existence of pain. Donovan found that over half of the patients who experienced pain had no record of that symptom recorded in their history. This trend in nursing documentation was confirmed in an

intervention study by Camp-Sorrel and O'Sullivan (1991). The major aim of the study was to determine if continuing education of nurses in the area of pain assessment resulted in an improvement in the documentation of pain. The study found no significant difference between the control group and the education groups in the way pain was documented (Camp-Sorrell and O'Sullivan, 1991). Similar findings were found in a recent study by Howell et al., 2000. The Howell study examined the effects of an education program on pain documentation. While the results showed that nurses knowledge regarding pain assessments significantly increased following the education intervention, it did not change how nurses documented the existence of pain (Howell *et al.,* 2000).

The important questions that emerged from these findings were: what documented information is required to effect an alteration in the treatment regime for a patient who is experiencing inadequate pain control; and, do cancer patients who have their pain assessed and regularly documented have better pain control than those who do not have their pain assessed and documented?

2.3 Coordination of Care

The Oncology Nursing Society's (ONS) position on the role of the nurse in coordination of care is as follows:

> Nurses are responsible and accountable for implementation and coordination of the plan for management of cancer pain (Spross *et al.,* 1990a p 612).

This position is based on the assumption that nurses have sustained contact with the patient and their family and that nurses are responsible for administering and communicating the effectiveness of pain interventions to other members of the health care team. The ONS uses two process criteria that they believe define the co-ordination role of the nurse. Firstly, the nurse coordinates patients' care using appropriate resources and consultative services to ensure continuity and adequate follow-up. Secondly, the nurse acts as advocate to help achieve clients' desired outcomes.

Although there are strong recommendations and indications for nurses to coordinate pain management, there are no guidelines for nursing practice that relate to coordination activities. Without such a framework of standards, it is difficult to define the nursing role

in the coordination of care in cancer pain management. At the very least, such a model of coordination would require inter and intra-disciplinary communication about pain information. For the purpose of this study, coordination of care is defined as the communication that allows all therapeutic pain reduction activities to be coordinated. Advocacy will be defined as the combination of both patient education and communication as the method best able to achieve the patients desired outcome. As pain control is the aspect of care being studied, various methods of communicating pain assessments will be examined and a rationale outlined for the use of documenting and communicating pain assessments.

2.3.1 Communication: A Nursing Intervention for Improving Pain Management.

Effective communication has been described as one of the major determinants for any successful therapy to occur. The purpose of communication in nursing is to inquire, to inform and to persuade (Ceccio and Ceccio, 1982). Ceccio believes that effective communication of information persuades the receiver to act or behave in a way that he or she may not have thought about previously. Ceccio recognizes the existence of several barriers to effective communication. These barriers include inadequate knowledge, poor planning, poor listening skills and differences in perception and language. When considering the barriers encountered in communication of information in general, and then combining this with the barriers that have already been identified in cancer pain, there is an enormous potential for communication to fail in the clinical setting. The following is an examination of various types of communicated information that is thought to effect a change in pain management practice.

Focusing on written communication, Faries, Mills, Goldsmith, Phillips and Orr (1991) examined the effect of pain assessments and documentation on the pain scores of a group of 43 hospitalized medical oncology patients. Pain scores were recorded at hourly intervals in the patients' notes to determine if this information was used to make the necessary changes in pain protocols. The study was based on the recognition that inadequate assessment has been a major contributor to inadequate management (Howell *et* al., 2000. Cohen, 1980; Rankin and Snider, 1984). The results showed that the subjects in the treatment group reported significantly lower average pain intensity ratings than did the

control subjects. The intervention comprised the use of a pain assessment tool and a flow chart for hourly monitoring of pain intensity. These results supported earlier findings by McMillan, Williams, Chatfield and Camp (1988), which examined the use of a pain assessment tool and pain flow sheet to detect differences in the level of pain that the patients recorded. The results indicated that patients in the intervention group had lower average pain intensity scores than the patients in the control group.

The results of both studies showed that the intervention group had a greater reduction in their pain intensity scores, thus supporting the notion that improved and frequent documentation of pain intensity will result in better pain control. The intervention in the studies outlined involved the use of a general pain assessment tool and a pain intensity flow chart. The flow chart in both studies requires hourly documentation, with continual nursing and medical monitoring. Many non-hospitalized patients experience pain and, therefore, the use of a pain flow sheet, which requires frequent documentation and continual nursing and medical monitoring, is not possible. What has not been adequately addressed in any studies, or noted in the literature in general, is whether patient management is altered as a result of information obtained from a single pain assessment.

2.4 Conclusions and Recommendations

Nurses have been described as the health care professional most directly responsible for the overall management of pain. The National Institute of Health and the American Nurses Association have both defined the role of the nurse in cancer pain management as being that of an educator, coordinator of care and an advocate. The Oncology Nursing Society developed a Position Paper on Cancer Pain Management and operationalised a scope of practice by outlining knowledge and skills that would be necessary for the nurse to fulfill the role of educator, coordinator of care and advocate (Spross *et al.,* 1990a. Spross *et al.,* 1990b).

In reviewing the studies that have examined the role of the nurse in education, it is interesting to note that the implementation of education interventions did result in increasing patients' knowledge in both the cause of their pain and the pharmacological management, but with little or no effect on reducing pain scores. These results suggest that

standardized education intervention of pain pathophysiology and pharmacological management may not adequately capture the needs of an individual patient. However, education that is tailored to meet the specific needs of an individual patient may have a greater effect on reducing pain scores. In addition, these results suggest that education alone may not be sufficient in obtaining changes to treatment when prescribed regimes are inadequate or inappropriate. Further intervention by the nurse in seeking and obtaining alternate pain relief interventions may be required.

Tailoring education to meet the needs of the individual would require that those needs be identified. Clearly, such need identification could be achieved through a process of patient pain assessment. Similarly, in order to seek and obtain pain relief for individuals, this would require a detailed knowledge about a patient's particular pain circumstances and their response to current management, as well as suggesting some alternative management options.

Pain assessments have been identified in the literature as being fundamental to the management of cancer pain (Twycross, 1994; McGuire, 1987; Portnoy, 1992; Patt, 1993; Donovan, 1985, de Rond M *et al.,* 1999). Inadequate assessments have been identified as a major barrier to cancer pain management (Cleeland, 1987; Von Roenn *et al.,* 1993; Cleeland *et al.,* 1994. Howell *et al.,* 2000). Pain assessments are required as a first step in tailoring education interventions in order that specific needs can be identified. Information obtained in pain assessments would form the basis for communication in seeking and obtaining further intervention and changes to management. Several studies have demonstrated that documentation and communication regarding pain scores results in lower average pain intensity when compared to patients with no documentation (McMillan *et al.,* 1988; Faries *et al.,* 1991). The results obtained in the studies reviewed here were achieved using a patient flow chart that is documented hourly and requires continual monitoring. Further examination of the efficacy of documenting and communicating pain assessments is required, as many non-hospitalized patients also experience pain and require it to be regularly assessed and monitored. However, due to the lack of continual contact, these patients' pain experience may be overlooked altogether.

Both cancer pain assessments and the tailoring of education and communication of pain related information to the treating health care team requires a very specific knowledge base. The ONS position paper on cancer pain management outlined levels of knowledge that is required by the nurse to assess pain in cancer patients and to develop a care plan for effective management.

The key to the nurse being able to function in the capacity of educator, coordinator of care and advocate is dependent upon an understanding of the factors that influence pain in cancer patients and knowledge of the most appropriate available intervention strategy.

In the following chapter an examination of the contents of education programs for patients and families will be assessed, in line with the recommendations of the ONS position paper on cancer pain. In addition, what knowledge is required in order to be able to tailor the education to meet the specific needs of the individual is also examined. The identified knowledge base will underpin the approach taken to pain assessments, tailoring of patient education and recommendations for management in coordination of care.

CHAPTER THREE

PAIN PATHOPHYSIOLOGY: A FRAMEWORK FOR NURSING INTERVENTION

3.1 Introduction

The ONS position paper on cancer pain has proposed that nurses with adequate knowledge of pain pathophysiology and its application to cancer should be able to improve the care of patients with cancer pain. The ONS proposal was extended further to suggest that nurses should assume a more pivotal role in cancer pain management. The strategic position of the nurse in the health care team suggests that the nurse should be the most suitable health care professional to coordinate care and to provide the necessary education for patients and their families. Additionally, the ONS suggests that the facilitation of appropriate communication between patient, family and for other members of the healthcare team is also a nursing function.

In order for nursing to play a pivotal decision making role in the healthcare team, a number of requirements are necessary. These requirements consist of adequate knowledge about pain pathophysiology particularly in relation to cancer. In addition, an understanding of assessment protocols that reflects an individual's pain experience from which a plan can be developed for the education of the patient and their family. Furthermore, the assessment must be consistent with current knowledge about pain and be understood by other healthcare professionals so that it could be used as a means of communicating details of the individual's current pain status to the other treating team members. As such, the assessment should function as the team's focal point for management, and again this concept is consistent with the philosophy of the ONS (Spross *et al.*, 1990a).

The purpose of this chapter, therefore, is threefold. Firstly, the purpose is to examine in more detail the precise knowledge base required for nurses about pain pathophysiology and its application to cancer, as recommended in the ONS position paper. Secondly, this chapter will demonstrate the purposeful relationship between pain knowledge base and the ONS position paper assessment protocol. As the information derived from the assessment

protocol was used in this study to develop the management plan for coordination of care in two of the four treatment conditions. Thirdly, the chapter will demonstrate how the assessment information is utilized in the development and tailoring of the education component of the treatment conditions of the study.

3.2 Pain pathophysiology and its application to cancer

The pathophysiology of the human pain experience is extremely complex. The presence of hypersensitivity, hyperalgesia, allodynia and self-propagation of pain offers one explanation of how chemical neurotransmitters and altered neuronal discharge can prolong the activation of peripheral pain pathways. Pain perception also plays a central role in the individual experience of pain. It has been observed clinically that the greater the anxiety, the greater the perception of events (Craig, 1994). Psychological variables such as "perceived control", "meaning attributed to the pain experience", "fear of death", "hopelessness", "anxiety" or "depressed mood" all appear to contribute to the experience of cancer pain (Ahles *et al.,* 1983). Melzack and Casey's (1968) model of pain emphasises the significant influence of psychological variables on a person's reaction to pain. Melzack and Casey's (1968) model states that the sensory discriminative reaction to tissue damage would concurrently activate the affective and motivational components of the experience. According to the Gate Control Theory (Melzack and Wall, 1965), sensory neurons trigger central control systems in the brain that inhibit or facilitate input. Central messages reflecting cognitive, attentional and emotional factors descend from the brain through the spinal cord and influence nociceptive messages coming from the periphery (Melzack and Wall, 1965). As patients and families harbour many fears and anxieties regarding cancer pain and its management (Ferrell *et al.,* 1991; Donovan and Dillon, 1987; Levin *et al.,* 1985), such anxieties may contribute to inadequate pain control both directly, by escalating the pain intensity or, indirectly, through inadequate knowledge about their pain and its treatment.

Melzack and Casey's (1968) model of pain provides a rational basis whereby the affective and motivational component of pain can be used to inhibit or facilitate nociceptive messages coming from the periphery and thus influence the final pain percept. Nursing intervention in the form of education may be able to reduce the perception of pain, in

addition to augmenting (via compliance) the potential effectiveness of treatment. Research has shown that education of cancer patients about the cause of their pain and how to comply with treatment regimes does increase their knowledge about pain (Dalton, 1987; Rimer *et al.,* 1987), but increasing knowledge per se has not been shown to reduce pain intensity. In the previous chapter it has been argued that this is a result of the nurse's inadequate knowledge about the mechanics of pain, and a failure of standard educational programs to meet the needs of the individual patient. Another purpose of this chapter, therefore, is to examine what is known about the pathophysiology of pain in relation to the clinical management of cancer patients.

3.3 Overview of Pain Pathophysiology

The conceptual model of pain proposed by Melzack and Casey (1968) describes the perception of pain as the total of "sensory, motivational and cognitive processes acting on motor mechanisms" (p 434). Melzack and Casey's (1968) model is composed of three components: nociception, modulation and pain behaviour. Nociception and transmission form the sensory discriminative component of pain. Modulation involves the combination of a number of physiological processes, which include the cerebral cortex and limbic system. Together, these processes produce the affective and motivational component of pain. Lastly, pain behaviour would be dependent on the individual's response to the pain experience as a result of cognitive processing. The Melzack and Casey model of pain components will be examined separately in more depth to show how the physiological effects and psychological interpretation of the pain experience are related.

3.3.1 Nociception

The sensory component of pain begins in the periphery in which nociceptors are located and activated by the presence of a noxious, or potentially noxious, stimulus. In the peripheral tissue following injury, various chemical mediators such as prostaglandins, histamine and substance P are released. The release of these chemical mediators leads to inflammation and oedema, which increases sensitivity of other nociceptors and widens the area that is perceived as painful (Payne, 1987).

Following the activation of nociceptors, noxious impulses are transmitted along the nerve to the spinal cord. The nerves are either myelinated A delta fibres or unmyelinated C fibres. The majority of pain afferents are unmyelinated C fibres. Myelinated A delta fibres transmit impulses quickly and usually carry information regarding sensation and location. Unmyelinated C fibres are usually activated as a result of the release of chemical mediators (Woolf, 1991; Dray and Perkins, 1993). Nociceptive information then enters the spinal cord via the dorsal root. The dorsal horn of the spinal cord is comprised of six laminae of which lamina II and III comprise the substantia gelatinosa. This area has been found to be an important site of integration of nociceptive and non-nociceptive input to the spinal cord (Fishman and Carr, 1992).

3.3.2 Transmission and Modulation

The substantia gelatinosa has attracted a great deal of research attention because it is the primary site at which incoming noxious and non-noxious impulses are modulated. Melzack and Wall (1965) first proposed the Gate Control theory of pain regulation at this site. It was proposed that large diameter myelinated fibres could excite inhibitory interneurons as well as the relay neurons in the spinal cord. The inhibitory interneuron could presynaptically inhibit nociceptive information transmitted to the relay neuron by the nociceptive fibres. Modulation of painful stimuli by large diameter myelinated skin fibres was, in a sense, gating painful inputs into the spinal cord. The balance of input from myelinated and unmyelinated fibres and the resultant stimulation of inhibitory interneurons determined the magnitude and duration of pain (Melzack and Casey, 1968). Persistent pain after peripheral nerve injury was explained by a predominant loss of large diameter myelinated fibres and their loss of contribution to the inhibition or gating of pain signals. Without inhibitory regulation, repeated painful stimulation of moderate intensity may escalate to unbearable levels (Fishman and Carr, 1992).

Following the processing of noxious and non-noxious information in the substantia gelatinosa, contact is also made with the secondary afferent nociceptive fibres which then cross over in the central gray of the spinal cord and travel upward towards the thalamus via several tracts. These tracts are divided into two physiologically distinct systems. The neospinothalmic tract extends to the ventrobasilar thalamic complex and, from there,

axons project to the somatosensory cortex in the parietal lobe. This is the tract that most likely sub-serves the sensory-discriminative aspects of pain perception; namely, location and intensity. The second tract is the paleospinothalmic tract, which ascends in continuity with the spinothalmic tract but sends projections to the reticular formation in the brainstem and the intralaminar thalamic nuclear complex. Projections then occur to the retro-insular cortex and other limbic cortical areas. The paleospinothalmic tracts appear to sub-serve the emotional, affective and suffering components of pain (Wall and Melzack, 1994; Payne, 1987; Fishman and Carr, 1992).

3.3.3. Pain Perception

The affective, motivational, suffering and behavioural components of pain are a result of the involvement of the cerebral cortex and the associated limbic system. Understanding the involvement of the cerebral cortex in pain provides the foundation for understanding the subjectivity that is associated with the pain experience. The cortex is the thinking, reasoning, perceptual and movement control centre. Perception takes place in the sensory area of the brain and is interpreted in the cortical association areas. Memory takes place at the same time as perception, so that past experiences and associated emotional components can influence pain perception once it reaches conscious level. For this type of integration, the cortex draws on other parts of the brain such as the limbic system and the temporal lobes. Here the final pain experience is dependent upon an intensely private background of information that makes each pain uniquely personal. Past experiences, anxiety, fear, cultural background and uncertainty will all play a role in how a patient perceives the presence of pain (Wall and Melzack, 1994).

3.4 Assessment Protocol

Clinical assessments are the fundamental key to providing appropriate pain management, as they provide an individualized account of pain perception and its effects (Twycross, 1994; McGuire, 1987; Portnoy, 1992; Patt, 1993; Donovan, 1985; de Rond M *et a.l,* 1999). A complete assessment should map for the clinician the pathophysical processes that are causing the pain, the overall impact of the pain on the individual, and perceived effectiveness of current treatment. Pain assessments in individuals with cancer require

incorporation of the knowledge of pain pathophysiology as outlined above, in addition to knowing how cancer and anticancer treatment cause pain, as well as the likely trajectory of pain for a particular individual.

The following major aspects of pain assessments have been identified in the literature as underpinning all interventions. The assessment findings form the basis of the communication with the treating staff and provide a method of ensuring that all healthcare professionals involved in the patient's care are aware of the patient's pain situation. The assessment also forms the basis for education which is tailored to meet the needs identified in the pain assessment. The major aspects of pain assessments are outlined in Table 3.1 and will be discussed in detail with an emphasis on clinical relevance, and substantiated by pathophysiological mechanisms.

Table 3.1

Location
Intensity: at present, worst, best, average
Quality
Duration
Pain Relieving Factors
Pain Aggravating Factors
Effects of Pain: on sleep, activity, relationships and emotional
Surgical Interventions
Radiation and Chemotherapy Interventions
Examination Findings

Adapted from McCaffery, M Beebe, *Pain: clinical manual for nursing practice,* St Louis, MO: C.V. Mosby Company 1989 and McGuire D, Yarbro, C, *Cancer Pain Management*, Grune & Stratton Inc, 1987.

3.4.1 Location

Patients are asked to indicate on the outline of the human body the location of their pain. The purpose of this practice is to ensure that all members of the team are dealing with the same identified pain and not different pains in the same individual. Each pain needs characterisation in its own right. The location to some degree will also assists in determining management; for example, superficial and peripheral pains may well respond

to local direct treatments, whereas deep and internal pains may require alternate treatment (Donovan, 1987).

3.4.2 Intensity

The patient is required to quantify the pain intensity. This is necessary to gauge the effectiveness of the implemented interventions. Reliability and validity of quantifying pain can be problematic (McGuire, 1984a) and the methods available to quantify pain intensity will be examined in detail in Chapter IV. Patients will be asked to quantify their pain intensity at best, worst, average and at the time of assessment. If the patient is currently on a pain management regime, these questions will provide information about the overall effect of the current management practice.

3.4.3 Quality

Tissue injury gives rise to a sharp stinging quality of pain due to the activation of small diameter A delta fibres. The damage from tissue injury activates C fibre nociceptors, with the release of chemical mediators. This pain is usually described as a dull, burning ache. Small diameter C fibre mediated pain, which is well localised, will often respond to treatment that prevents the release of further chemical mediators. Nociceptors in the connective tissue and viscera are very sensitive to stretch, torsion, distention and contraction. Pain from these sites is often described as a deep ache. Pain can also occur in the periphery as a result of some disturbed message within the central pain pathways. This pain can be differentiated from the nociceptive process as it has no independent identifiable peripheral cause and is known as neuropathic pain. Neuropathic pain, which occurs as a result of damage to the nerve itself, is characteristically constant, dull or constricting and is often complicated by sensations of burning, paraesthesia or paroxysms of electric shock sensations (Heppelmann *et al.,* 1991).

3.4.4 Duration

This information can help determine if the pain is related to the tumour, the treatment of the tumour, or if it is unrelated to both the tumour and its treatment by the temporal

association between the pain onset and duration and other events that have occurred over the same time frame (Foley, 1987).

3.4.5 Pain relieving factors

Apart from medications, patients may employ a number of techniques that they find useful in pain relief. Patients may describe pain relief from formal relaxation and distraction, suggesting good ability to utilise higher cortical control to inhibit the transmission of peripheral painful impulses.

3.4.6 Factors that aggravate pain

Nociceptors located in the connective tissue and viscera are sensitive to stretch, torsion, distention and to contraction of muscles (Cervero, 1991). Physiological changes which result in nociceptors being subjected to these changes include tumour growth (which puts pressure on surrounding organs and tissues), expansion of tumour in a hollow viscus, and osteolytic and oestoclastic changes from metastatic involvement in bone. These physiological changes can result in pain on passing urine, evacuating bowels, change in posture, trunk movement, limb movement and weight bearing (Foley, 1987).

3.4.7 Effects of Pain on Sleep, Physical Activity, Relationships and Emotions

These questions help to obtain an indirect measure of the magnitude of the pain experience and its effect on quality of life. Patients who are deprived of sleep due to pain may quickly become exhausted and sleep deprivation may reduce their emotional capacity to cope with pain. To obtain adequate sleep should be a priority of care in the management of cancer pain (Twycross, 1994).

Pain that restricts the patient's ability to mobilise and perform activities that they previously enjoyed is likely to result in social isolation and boredom. This situation can increase the perception of pain by escalating the affective component to the somatopsychic experience (Twycross, 1994). Pain can effect relationships by indirectly affecting caregivers in relation to mood change and disrupted sleep patterns. Patients in pain may become short-tempered and uninterested in the affairs of others, resulting in social withdrawal and

isolation. This emotional isolation may further lower their threshold to manage their pain (Ferrell *et al.,* 1991).

3.4.8 Surgical Interventions

It is necessary to determine if pain is associated with surgery or with cancer treatment or both. Pain in this situation may be due to severance of nerves during surgery and reinnervation with new nerve sprouts transmitting abnormal and spontaneous impulses. Persistent pain following surgery may also be the result of post operative infection or attributed directly to the surgery (Foley, 1987).

3.4.9 Radiation and Chemotherapy Interventions

Many commonly used chemotherapeutic agents cause mucositis. This pain is severe and is due to ulceration of the oral mucosa. Vinca alkaloids can cause peripheral neuropathy, which can lead to a tingling or burning sensation in the hands and feet (Patt, 1993). Withdrawal from commonly used steroid medication can lead to a general muscular and joint pain. Radiation myelopathy can result in back pain with, or without, motor and sensory symptoms (Payne, 1987). If pain is suspected to be present as a result of treatment, physicians will often cease or reduce the dosage of the agent involved (Foley, 1987).

3.4.10 Examination

Part of any pain assessment should include a physical examination of the painful region. Clinical signs that may aid in the diagnosis and treatment of pain will include the presence of obvious infection, with redness and swelling and restriction in range of movements due to pain.

3.5 Education

Many studies have identified that patient and family knowledge regarding pain management is inadequate. Further, inadequate knowledge may create barriers to implementing effective pain management strategies. As indicated in the previous chapter, educational interventions have demonstrated a significant improvement in patient and family

knowledge but failed to reduce pain scores. The inability of education to reduce pain scores may have been a result of not tailoring the education to meet the specific needs of the patient, and the identification of need would require the undertaking of a thorough pain assessment.

The ONS position paper on cancer pain provides a table for patient and family education. The list of requirements is broad based and multidimensional, incorporating medication information, self-care measures and patient and provider responsibilities, as shown in Table 3.2. To be able to tailor appropriate education requires knowledge of how pain can vary between individuals, and how cancer and anticancer treatment can impact on pain and its treatment. The education intervention tabled in the ONS position paper and used in this study will now be examined in relation to the pain pathophysiological mechanisms discussed previously in this chapter.

Table 3.2

Content Requirement of Patient/Family Education
Cause of pain
Anticipated effects of therapy on pain
What to report to Dr/RN regarding pain
Medication information
Medication side effects and how to prevent them
Self-care measures
Contraindicated treatment or activity
Information to restructure attitudes regarding addiction
Range of appropriate pharmacological and non-invasive measures
Plan for follow-up and who to call in an emergency
Patients' responsibilities and providers' responsibilities for pain management plan
Roles and contributions to interdisciplinary team members and their overall contribution to pain management.

(Spross *et al.*, 1990b)

3.5.1 Causes of Pain in Cancer

Pain syndromes in patients with cancer have been divided into three major categories that include tumour-related, treatment-related and unrelated pain. These categories can be

further subdivided into acute or chronic (Foley, 1979). Foley stresses the need to obtain a careful history, as treatment differs radically depending on how the pain is categorized.

3.5.2 Acute Tumour-Related Pain

Patients with acute tumour-related pain may first have sought medical attention because of the complaint of pain. For this group of patients, any future episodes of pain will trigger the memory of the diagnosis of cancer and may cause a great deal of anxiety and uncertainty (Twycross, 1994). Education strategies will focus on reassurance that the intensity of pain does not necessarily reflect the extent of disease. This will be explained in the context of first and second order pain and the proximity of tumours to innervated areas. In addition, the patient will be reassured that pain relief can be anticipated once treatment of the tumour takes place.

3.5.3 Acute Treatment-Related Pain

Post-operative pain or pain secondary to treatment should not cause the same amount of anxiety or stress as acute tumour-related pain. This is due to the knowledge that the cause of the pain is not due to the cancer and that the duration of the pain will be limited. Such knowledge will contribute to a more positive approach and often patients will withstand considerable pain for the chance of a cure (McGuire, 1987). Knowledge about the cause of the pain, and that pain is of a limited duration, may alter the patient's perception of the pain. This is one way that knowledge may lessen the intensity of the pain experience.

3.5.4 Chronic Tumour-Related Pain

Pain resulting from long-term tumour infiltration of bone, nerve and soft tissue can overwhelm the patient and lead to depression, anxiety and anger (Twycross, 1994). Continual chronic tumour related pain prevents daily activities and disrupts sleep, which in turn exacerbates the pain. Chronic severe pain is compounded by mental exhaustion, loss of morale and distrust of caregivers and the healthcare system in general. For these patients, past experiences and future experiences are perceived as negative. Patients lose hope and this negativity feeds the intensity of the pain until finally, life for the patient and family revolves around the pain (Cassell, 1982). Improvement for these patients will be

slow and will hinge upon the ability to manage the physiological and psychological destruction that has occurred as a result of sustained tumour related pain (Fishman, 1990). In most chronic tumour-related pain, the patient is suffering continuously.

Consequently, analgesia for these patients will not effectively treat the suffering that is sustained by perceptions rather than actual pain (Portenoy, 1992).

Education for patients in this situation would revolve around maximal pain relief in the absence of any side effects. Patients require enough knowledge about their analgesia to enable them to use it with confidence and make the adjustments that best meet their daily activities. This group of patients should understand the phenomenon of tolerance to analgesia as it will be expected that they will require to be on analgesics for protracted periods of time. The notion that increased dosage of analgesia does not mean increased disease will be explained in the context of hyperalgesia and self propagation of the pain state. Additionally, failure by some patients to respond to increasing doses of morphine may cause the patient to lose hope. Educating patients about there being no upper limit to the amount of morphine that can be administered, and that the only limiting factor to morphine dosage is the occurrence of side effects, can result in greater acceptance of the medication and its appropriate titration.

3.5.5 Chronic Treatment-Related Pain

Pain is termed chronic when it persists longer than the usual expected time (NH&MRC, 1991). When the cause has been identified as resulting from anticancer treatment it is most often secondary to nerve injury and can occur as a result of severance of nerves during an operation. This kind of pain is known as neuropathic pain and is commonly aching in character and is also not as responsive to opioid therapy as nociceptive pain (Foley, 1979). While chronic treatment-related pain can still impact on the patient's level of activity, sleep and mood, the patient can be advised that the pain does not signal tumour progression and that management and education will be similar to that of patients with non-malignant chronic pain. This knowledge can have major psychological implications for the patient, as they can sustain hope that the pain will resolve and that they can return to their previous level of health.

3.5.6 Pain Unrelated to Tumour or Treatment

The mechanisms that cause pain in cancer patients are no different from the pathophysiological and biochemical processes that cause pain in the patient without malignancy. Coyle, in a study of the incidence of pain in the cancer patient revealed that while the incidence is higher there is no significant difference in intensity in the patient without malignancy (Coyle, 1985). Patients who are educated on the sensory and affective components of pain see the need to comply with their previous therapeutic regime.

3.5.7 Anticipated Effects of Therapy on Pain

In acute tumour-related pain, the therapy is aimed at tumour reduction and to obtain a state of remission. In chronic tumour-related pain, where remission is no longer the goal of care, therapy is aimed at palliation of symptoms. Education is tailored, depending on the specific patient profile. For example, in the case of a patient who presents with acute abdominal pain, nausea and vomiting, investigations may reveal an enlarged liver, morphine is then commenced to manage the abdominal pain with good effect. Chemotherapy is also due to commence and it is anticipated that this will reduce the tumour growth and swelling in the liver. The patient is told that once chemotherapy has commenced there is likely to be a reduction in their pain, and their need to take morphine will then be reviewed.

3.5.8 Reporting of Pain

Several studies suggest that patients under-report the existence of pain (Donovan, 1987; Ferrell *et al.,* 1991). Under reporting of pain leads to under-treatment and an escalating pain state may develop. The unremitting bombardment of incoming nociceptive information in the dorsal root of the spinal cord results in hyperalgesia. In addition, an uncontrolled inflammatory reaction may lead to prolonged neural depolarisation, which can cause allodynia and hyperalgesia (Fishman and Carr, 1992). The importance of reporting the existence of pain will be explained in the context of prevention of the pain cycle. The patient will be educated about how to quantify and qualify pain. Quantifying pain is necessary to be able to gauge response to intervention. Qualifying pain helps identify if there is a neuropathic component, which will assist in the selection of an appropriate treatment.

3.5.9 Medication Information

Education will be largely dependent on what medication the physician has prescribed for the individual. Continuous pain requires continuous therapy and patients who have constant pain will be educated on the need to have a constant and regular amount of analgesia. Patients who experience "incident pain", occurring predictably prior to some action such as coughing or voiding, will need to anticipate this painful activity by taking the necessary amount of medication prior to the event. Patients who experience "breakthrough" pain, that is pain that occurs without warning, will be educated about the use of short-acting analgesic agents (Twycross, 1994).

3.5.10 Medication Side Effects and How to Prevent Them

Most of the non-narcotic analgesics are well tolerated. Non-narcotic agents, generally, have no psychotropic activity (Patt, 1993). Non-steroidal anti-inflammatory agents, on the other hand, have a number of side effects and can cause gastrointestinal irritation, acute renal failure, rashes and central nervous system side effects (Catalano, 1987). Patients will be instructed to report any of these side effects to the physician. Morphine is currently the drug of choice for cancer pain and any patient prescribed morphine will receive education about what the side effects are and how to manage them. The most commonly occurring side effects of morphine are sedation, nausea and constipation (Twycross, 1994). Each of these will be discussed with the patient as well as the management strategies for all three common side effects.

3.5.11 Self Care Measures

A rudimentary explanation of the transmission of a painful impulse is given. The explanation covers the sensory, affective and evaluative components of pain. Understanding of the affective component of pain provides a basis for introducing the patient to relaxation and distraction techniques. Further immobilisation of painful limbs and attentional posture control can minimise "incident pain" and reduce the need for patients to take strong analgesics that may outlast the period of the pain.

3.5.12 Contraindicated Treatment or Activity

Morphine is effective as an analgesic because it provides a full agonist bind to specific receptors both within and outside the central nervous system (CNS). Morphine will not antagonise the effects of other opioids within the same class when given simultaneously. However, patients should not be given analgesics that have a mixed agonist-antagonist activity. This would include pentozacine, which is an analgesic agent that when given simultaneously with morphine can cause a withdrawal syndrome and increase pain (Twycross, 1944).

3.5.13 Information to Restructure Attitudes Regarding Addiction to Medications

A survey that examined cultural attitudes towards the use of analgesics was undertaken by Ferrell *et al* (1991) and revealed that many patients and carers harboured fears and anxieties about the use of analgesics, particularly morphine. A significant percentage of the study participants thought that morphine was addictive and was only to be used close to death. These participants also thought that if morphine were commenced early in the treatment it would preclude the availability of stronger treatment if required at a later stage. As demonstrated earlier in this chapter, past experiences, anxiety, fear, cultural background and uncertainty all play a major role in how a patient perceives the presence of pain. Education of the patient will include a full explanation about the action of morphine, specifically targeting areas such as addiction and side effects. Education regarding the need to adequately control pain will be provided in the context of prevention of hyperalgesia, a phenomenon that can result from continuous nociceptive input to the dorsal horn if pain is untreated.

3.5.14 Range for Appropriate Pharmacological and Non-invasive Methods

Chemical mediators, such as bradykinin, substance P and histamine, released at the time of tissue damage are known to increase the area that is perceived as painful and can lead to hyperalgesia. These chemical mediators are more effectively reduced by the use of anti-inflammatory agents (Woolf, 1991). While morphine is effective in preventing many types of pain, it is, however, less effective at blocking the pain that arises from damage to the nerve root itself (neuropathic pain). Patient education, in this case, will consist of

discussions about the action of other pharmacological agents that do reduce or modulate pain of neuropathic origin. Understanding the possible impact of stimulating large myelinated fibres and their ability to modify the effect of nociceptive C fibre input is important for the provision of a framework for non-pharmacological interventions, such as massage and the use of transcutaneous electrical nerve stimulation (T.E.N.S). These procedures heighten background nerve activity in large myelinated nerve fibres in an attempt to decrease the relative prominence of nociceptive signals. Patient education will cover the potential use of T.E.N.S and massage as adjuvant therapy for pain management.

3.5.15 Plan for Follow-up and Who to Call for Emergency Assistance

Not knowing who to contact in an emergency can cause a great deal of anxiety, which may heighten the perception of pain. Patients are encouraged to develop a plan in case of an emergency in order to reduce and minimise the attendant anxiety. Some strategies might be to know the contact number of their GP and the out of hours service phone number, as well as family members who can be contacted, as well as access to hospital ward numbers.

3.5.16 Patients' and Providers' Responsibilities for Pain Management

The purpose of patient education is to alter the perception of pain by providing the patient with the information to understand the cause of pain and its treatment. Fundamental to the management of pain is the ability of the patient to report the existence of pain and the response of the instituted treatment to the treating medical staff. While it is largely the responsibility of the patient in pain to report all that they can about the nature of the pain to their health care provider, it is the provider's responsibility to actively pursue alternative treatment options until the patient has obtained adequate pain relief.

3.5.17 Roles and Contributions of Interdisciplinary Team Members and Their Overall Contribution to Pain Management

Pain is a complex experience in which sensory affective and evaluative components combine to present as pain behaviour. The clinical problem of pain relief is best managed within a multidisciplinary approach because different team members bring different ideas and expertise to the overall management of the patient's pain situation.

Where appropriate, and with patient consent, referral to allied health staff will occur for the purpose of providing new approaches to management.

3.7 Summary

This chapter reviewed the five major causes of pain in cancer. Pain can result from one or a combination of these causes. A review of the literature has illustrated that psychological variables such as "fear of death", "perceived control", and "meaning attributed to the pain experience" can all have a profound effect on the experience of cancer pain It has been argued in chapters 2 and 3 that a pain assessment is essential to help identify the cause or causes of the pain and the degree to which the pain is affecting the patients quality of the patient's life. It has been well illustrated in the literature review that pain assessment is the fundamental key to providing appropriate pain management and forms the basis for all education and coordination of care activities.

The major issue that emerges from this analysis of the relationship between knowledge of the pathophysiology of pain and its application to the management of cancer pain is that all pain management interventions should be tailored to meet the specific needs of the individual because of the subjective nature of the pain experience. The examination of pain pathophysiology has revealed that the involvement of the pain pathways in the cerebral cortex and the other limbic cortical areas accounts for the enormous variability in how pain is experienced. Further, this variability is a result of an individual's past experience, fears, anxiety and cultural background. When considering both the multidimensional nature of pain and the multifactorial causes of pain that can arise with a diagnosis of cancer, it is evident that there needs to be a tailored intervention for each patient.

An examination about how to measure the efficacy of the interventions and a justification for the selection of the McGill Pain Questionnaire as the dependent variable measure in this study is presented in the following Chapter.

CHAPTER FOUR

PAIN MEASUREMENT: METHODOLOGICAL CONSIDERATIONS

4.1 Introduction

Pain has been defined as "An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage" [International Association for the Study of Pain (IASP), 1979]. This definition incorporates the sensory and affective pathophysiological components of pain that have been described in the previous chapter. According to the IASP definition of pain, "Each individual learns the application of the word through experiences related to injury in early life." As well, the IASP definition avoids tying pain to a specific stimulus by recognizing that pain is the perception of nociception, not simply the noxious stimulation of a nociceptor. This approach is also supported by the National Health & Medical Research Council (NH&MRC) report (1991), which concluded that pain was always a psychological state. However, the complex nature of pain presents several measurement problems that are the subject of this chapter.

Attempts to find physiological correlates of pain have not been successful. Indices such as heart rate, blood pressure, and sweating have all been shown to abate quickly, but the sensation of pain would remain (Gracely, 1994). Moreover, these physiological responses have been shown to occur in other non-painful activities; for example, exercise and excitement. Consequently, a number of pen and paper measures have been developed because measuring pain directly has so far proved to be elusive.

4.2 Single Dimension Self Report Measures of Pain

Self-report measures of pain emerged from research in the early 1970s, which examined pain as a unidimensional experience in which the level of the stimulus was related to its intensity. Measurement focused on pain thresholds and tolerance. While it was possible to demonstrate a direct relationship between the level of stimulus and a report of pain, there

was enormous variability between individuals on the level of stimulus that was tolerated (Gracely, 1994). From this early research on pain stimulus and intensity, it was observed that individuals would give some subjective responses to the perceived intensity of the stimulus in relation to the evoked sensations. For these types of studies, several measures were shown to be both valid and reliable. These single dimension measures include: (i) Numerical Rating Scale (NRS), whereby the subject is asked to rate pain numerically in the number range of either 1 to 5 or 1 to 10 scale (Engen, 1971); (ii) Verbal Rating Scale (VRS), in which subjects are asked to select from a small number of pain descriptors, most commonly presented as mild, moderate, distressing, severe, excruciating (Engen,1971); (iii) Visual Analogue Scale (VAS), with or without verbal anchors, where subjects are asked to rate their pain on a 10cm line (Huskisson, 1974).

In the experimental laboratory setting, these single dimensional pain measurements were useful because the subjective responses correlated highly with stimulus intensity. Although the use of these measurement tools satisfied the needs of the laboratory researcher, the same reliable results were not achieved in the clinical setting.

Unlike the laboratory setting, the physiological features of clinical pain, either acute or chronic, are not the same as those evoked by a variety of experimental procedures such as electrical stimulation, heat or cold application, etc. In addition, the experimental subject is not exposed to the psychological features of pain; for example, anxiety, uncertainty, suffering and foreboding. While pain intensity is accepted as the most salient feature of the single dimension measurement of pain, other features of pain were found to be of significance in the clinical setting (Zimmerman, 1987; Turk and Melzack, 1992).

One major consequence of the clinical application of a single dimension pain measure is that, with continual use, patients may become influenced by their previous scores. The VAS was thought to overcome these shortcomings because, theoretically, there were 100 different options on the line and could therefore offer more sensitivity. The lack of verbal anchors prevented the subject from being influenced by their previous score.

Another issue related to the use of single dimension measures in clinical practice is that it forces the subject to condense several different aspects of the pain experience into one

response. As in the NRS and the VDS, there are only 5 possible choices limiting the degree of change in point selection on the scale (Twycross, 1994; Deschamps, 1988). Patients may have experienced a significant reduction in sensory pain with the use of appropriate analgesics, but the underlying cause of pain or the use of analgesics themselves may create a great deal of anxiety. This unresolved anxiety or fear may lead patients to record higher pain scores despite a reduction in the sensory component. This characteristic in particular is commonly observed in cancer patients who have shown greater affective responses to pain than patients with more benign causes of pain. It is speculated that this reflects differences in the meaning attributed to the pain (Syrjala, 1987).

Having examined a number of studies, Gracely (1978) identified the need to incorporate both sensory and affective intensities into pain scales, because manipulation of the internal state has been shown to shift the hedonic responses without altering judgments of sensory intensity. Gracely's research demonstrates the need to discriminate between the pain intensity and affective responses associated with the pain. The author further suggested that a language specific scale would best serve this purpose and that multidimensional assessments would empirically determine the number and character of relevant dimensions without prior assumptions about the structure of the pain experience (Gracely *et al.,* 1978).

4.3 Multidimensional Pain Scales

In an attempt to overcome some of the limitations that occur when treating the pain experience as a single measure, and to provide a more accurate assessment of the pain experience, several other multidimensional tools have been developed. The most common and widely used methods include 'pain questionnaires' of which the most popular choices in cancer care include the Memorial Pain Assessment Card (MPAC), the Wiscontin Brief Pain Inventory (BPI), the West Haven-Yale Multidimensional Pain Inventory (WHYMPI), and the McGill Pain Questionnaire (MPQ).

The MPAC was developed at the Memorial Sloan-Kettering Cancer Center, New York, and provides a visual analog scales for pain intensity, pain relief, and for mood. It also incorporates eight verbal pain descriptors in jumbled allocation. The MPAC was designed specifically to prevent patients becoming influenced by their previous score. This was

achieved by dividing the scale in half, with one half of the scale on the front and the other half on the back, so that the patient only sees one scale at a time. It takes approximately 20 seconds to complete and is therefore practical for repeated measures. While the MPAC is a multidimensional measure, its use as a research tool presents several problems. Firstly, the MPAC has been validated in only one study (Fishman *et al.,* 1987). Secondly, there are three interval and one categorical scale, making inferential analysis difficult. Thirdly, the use of the card requires intact visual and motor function. Fourthly, the researcher needs to be present with the patient to administer the measure.

The BPI was developed in 1983 at the University of Wisconsin for research purposes. The BPI requires the collection of demographic data including level of education, occupation and job status. Pain severity is assessed on a numerical rating scale (0-10) at three levels: worst, best and average over the last week, as well as at the time of assessment. Space is provided for responses to aggravating and alleviating factors to pain, as well as current medications for pain management. Perceived effectiveness of pain relieving treatments is measured on a 0-100 percentage relief scale. Interference scales (0 = Does Not Interfere to 10 = Completely Interferes) are used to measure the interference of pain on various aspects of daily living and quality of life. In addition, the BPI incorporates several features of the MPQ with the use of fifteen verbal pain descriptors and the use of graphic templates for pain location. However, there is no provision on the BPI to integrate all the scores to provide an overall pain measure. The BPI takes approximately 20 minutes to administer and has been validated in the assessment of cancer pain rather than measurement (Daut *et al.,* 1983). Assessment is undertaken to determine the cause or causes of pain, whereas measurement is undertaken to determine the response to intervention.

The distinction between measurement and assessment in pain has not been clearly articulated in the research literature. The majority of studies on cancer pain management include only the intensity scales as outlined in section 4.2 as a unidimensional concept and the MPQ as multidimensional measurement scales. The BPI falls into the category of an assessment tool (Twycross, 1994; Patt, 1993; McGuire, 1987) because it measures aspects of pain that can be weighted numerically and others that are only useful in assessment, such as aggravating and alleviating factors and verbal pain descriptors, which have no numerical value. As there is no provision on the BPI to sum all the scores obtained, there is a surplus

of data when used on repeated occasions. In addition, the time required to administer the BPI (approximately 30 minutes) makes it inappropriate for frequent re-evaluation.

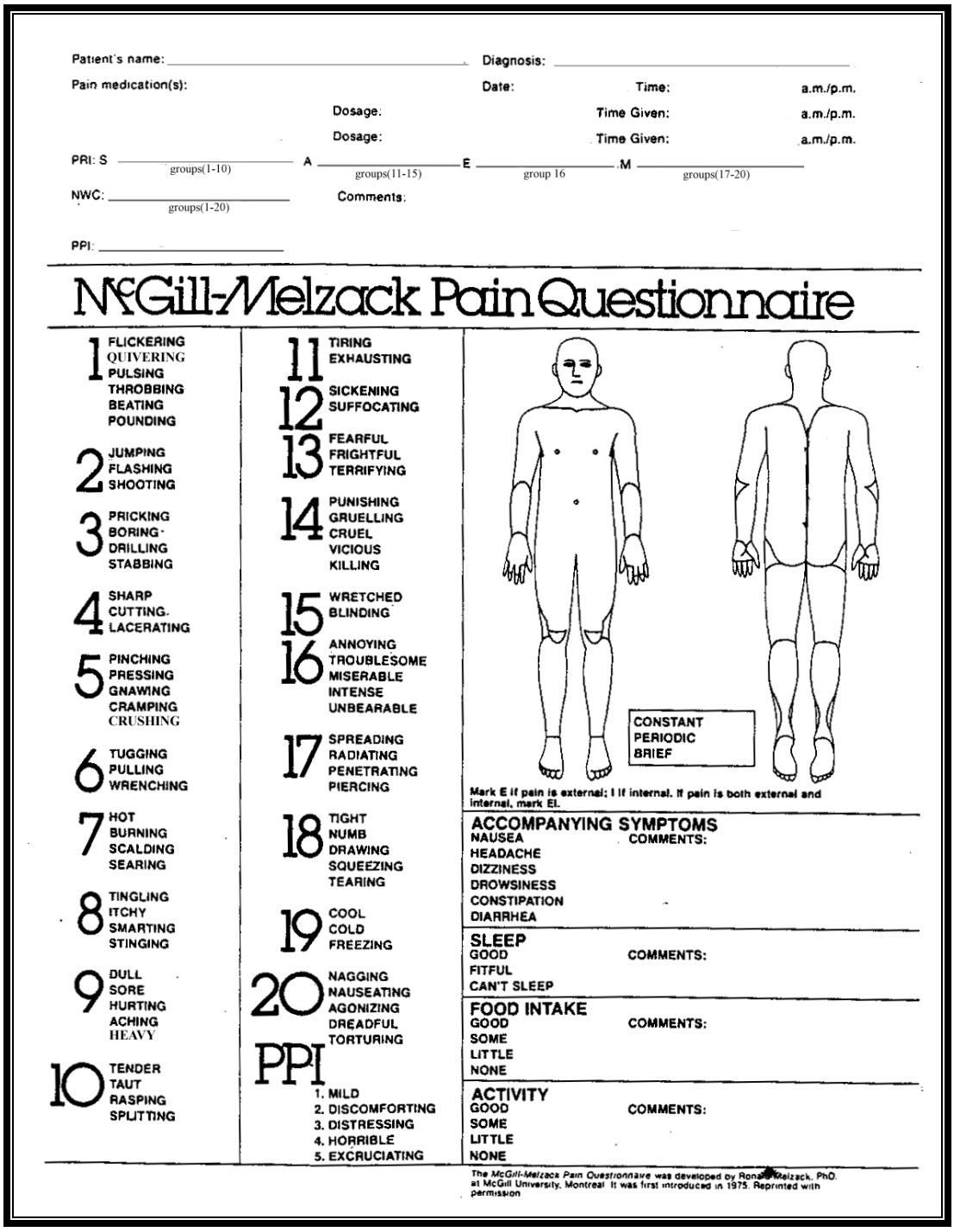
The West Haven-Yale Multidimensional Pain Inventory (WHYMPI) was developed specifically for patients with chronic pain and seems more suitable for determining pain-related problems and behaviours than a pure measure of the pain. It has been tested for reliability and validity but not with cancer patients (Kern *et al.,* 1985). The WHYMPI takes approximately 30-40 minutes to administer and is inappropriate for repeated administrations.

4.4 The McGill Pain Questionnaire

One instrument that has been used extensively to evaluate pain for both experimental and clinical purposes is the MPQ. It is the most widely studied multidimensional measure of pain available. The MPQ, first published in 1975 (Melzack, 1975), uses verbal pain descriptors to measure the sensory, affective and evaluative dimensions of pain. It was the first measurement tool developed to measure the quality of the pain experience. The MPQ integrates all scores to provide a total measure of pain and, in addition, provides information on the location of pain and how pain changes over time. It is quick to administer and can be either self-administered or completed by a second person that verbally administers the test items.

As shown in Figure 4.1, the MPQ consists of 78 verbal pain descriptors, which describe the quality of the patients pain experience. These pain descriptors are organized into three major categories of pain: *sensory* (S) which is made up of the words in groups 1-10, *affective* (A) which is made up of the words in groups 11-15 and *evaluative* (E) which is group 16. Descriptors in groups 17-20 are categorized as miscellaneous (M) and are adjectives suggested by patients who helped test the questionnaire in its research stage. Each of the twenty subclasses comprise words that are considered to be qualitatively similar but vary in intensity, for example subclass number 19, cool, cold, freezing, are words that describe a cold sensation, however freezing is felt to be are more intense sensation then cool. Therefore the words within each subclass are ranked in order of intensity, relative to each other word in that particular sub-group.

Figure.4.1



Patient's name: _____ Diagnosis: _____

Pain medication(s): Date: Time: a.m./p.m.

Dosage: Time Given: a.m./p.m.

Dosage: Time Given: a.m./p.m.

PRI: S _____ (groups(1-10)) A _____ (groups(11-15)) E _____ (group 16) M _____ (groups(17-20))

NWC: _____ (groups(1-20)) Comments:

PPI: _____

McGill-Melzack Pain Questionnaire

1 FLICKERING QUIVERING PULSING THROBBING BEATING POUNDING

2 JUMPING FLASHING SHOOTING

3 PRICKING BORING DRILLING STABBING

4 SHARP CUTTING LACERATING

5 PINCHING PRESSING GNAWING CRAMPING CRUSHING

6 TUGGING PULLING WRENCHING

7 HOT BURNING SCALDING SEARING

8 TINGLING ITCHY SMARTING STINGING

9 DULL SORE HURTING ACHING HEAVY

10 TENDER TAUT RASPING SPLITTING

11 TIRING EXHAUSTING

12 SICKENING SUFFOCATING

13 FEARFUL FRIGHTFUL TERRIFYING

14 PUNISHING GRUELLING CRUEL VICIOUS KILLING

15 WRETCHED BLINDING

16 ANNOYING TROUBLESOME MISERABLE INTENSE UNBEARABLE

17 SPREADING RADIATING PENETRATING PIERCING

18 TIGHT NUMB DRAWING SQUEEZING TEARING

19 COOL COLD FREEZING

20 NAGGING NAUSEATING AGONIZING DREADFUL TORTURING

PPI
1. MILD
2. DISCOMFORTING
3. DISTRESSING
4. HORRIBLE
5. EXCRUCIATING

CONSTANT
PERIODIC
BRIEF

Mark E if pain is external; I if internal. If pain is both external and internal, mark EI.

ACCOMPANYING SYMPTOMS
NAUSEA
HEADACHE
DIZZINESS
DROWSINESS
CONSTIPATION
DIARRHEA
COMMENTS:

SLEEP
GOOD
FITFUL
CAN'T SLEEP
COMMENTS:

FOOD INTAKE
GOOD
SOME
LITTLE
NONE
COMMENTS:

ACTIVITY
GOOD
SOME
LITTLE
NONE
COMMENTS:

The *McGill-Melzack Pain Questionnaire* was developed by Ronald Melzack, PhD. at McGill University, Montreal. It was first introduced in 1975. Reprinted with permission

When administering the MPQ, patients are asked to select only one word from each of the twenty groups of verbal pain descriptors that best describe their pain. The words selected by the patient can be scored in three different ways.

Firstly, the words can be scored by using the Pain Rating Index (PRI) based on the rank (R) value of each word chosen in each subclass. In this system the first word in each subclass represents the least painful and is given the value of 1, the next word 2, the last word implying the highest pain in that subclass has the highest numerical value depending on the number of words in that subclass. For example a patient chose the words shooting, stabbing, sharp, exhausting, and intense. The PRI(R) for the sensory words would be 8, for affective 2, for evaluative 4. This system is known as the PRI(R) index and can be used as a subclass score or as a total score.

Secondly, the words can be scored by using the total number of words chosen (NWC) for the whole questionnaire, in which each word has a value of 1 and pain is measured according to the number of words chosen over time. Using the previously chosen words the patients NWC would be 5.

Finally, a intensity score at the time of the measurement can be obtained using the Present Pain Intensity (PPI). The PPI is the same as the other single dimension intensity scales described in section 4.2. The PPI is not part of the 20 subclasses, the PPI is a measure of pain intensity rather then pain quality. The MPQ also provides a line drawing of the body and the patient is asked to locate their pain on the drawing and asked whether it is external or internal, and if it is constant, periodic or brief. There is a list of symptoms that may accompany the patient's pain, including nausea, loss of sleep and activity.

4.4.1 Validity of the McGill Pain Questionnaire

Validity studies of the MPQ have been conducted by many researchers (Melzack, 1975; Graham *et al.,* 1980; Wilkie *et al.,* 1990). In the original development of the questionnaire (Melzack, 1975), validity was tested by examining inter-correlations between the PRI(R) and the PPI as level of pain intensity. Correlations for a one-off static description of pain found significant correlations for the PRI(R) and the PPI. However, when the correlations were examined over time, that is, pre and post-intervention, the correlations were much

higher. Correlations for the PPI and PRI(R) indices were higher than 0.9 for the sensory, evaluative, miscellaneous and total subclasses and the affective sub-group had a correlation of 0.82.

In another test of validity, the MPQ was used to detect the effectiveness of several interventions. The results were based on the inter-correlations of the NWC, the PPI and the PRI total score. There was a high inter-correlation among all the scores. However, the PPI and NWC failed to show a statistically significant difference between pre and post-intervention. Nevertheless, the PRI total score was much more sensitive to change and reflected a significant difference between pre and post-interventions. The ability of the PRI to detect change was attributed to the greater sensitivity of the PRI, as patients could choose a word with a smaller rank value from the same sub-class, which would reflect more subtle increases or reductions in their pain (Melzack, 1975).

4.4.2 Reliability of the McGill Pain Questionnaire

Reliability in the original development of the MPQ (Melzack, 1975) was tested by administering the MPQ to a group of 10 patients who were suffering from a particular pain syndrome that was not expected to show much alteration. The patients answered three questionnaires over a period of 3 to 7 days. The consistency of choice of words ranged from 50% to 100% with a mean consistency of 70.3%.

One of the first independent studies to examine the reliability and validity of the MPQ in the assessment of cancer pain was conducted by Graham et al (1980). The subjects comprised thirty-six cancer patients and the aim of the study was to examine the effects of using the MPQ on repeated occasions as a summary measure of the pain experience over time and to compare that with the results from the original study.

The results found a significant correlation ($p < 0.01$) between the PRI total score and the number of words chosen (NWC), replicating the results reported by Melzack. Overall, the subjects in Melzack's original study had higher total scores. Examining the effects of repeated administration of the MPQ on consistency of words chosen revealed a high level of consistency with the mean rating ranging from between 66% to 80% over four

administrations. These results compared well to 70% consistency rating found in the original study (Graham *et al.,* 1980).

A further study examining the reliability of the MPQ in a cancer pain population was undertaken by McGuire 1984b). The results of the McGuire study examined the correlation between the PRI total score and the NWC and found a high positive correlation at $r = .89$ ($p = .0001$). All other correlations of the minor pain rating indices were significant with $p < .008$ for each of the r values. However, no correlation was found between the PPI and any of the major indices of PRI(R) and NWC.

This finding contradicted the findings in the original study by Melzack (1975) and Graham et al (1980). This result was explained to some degree by differences in the sample population. The Melzack (1975) sample comprised 248 patients of which only 23 had a diagnosis of cancer. The positive correlation in this instance may have been affected by the variance of other non-malignant subjects. The Graham study, while using cancer patients, used only outpatients who may have experienced different types and levels of pain.

Further support for the reliability of the MPQ is provided by the fact that patients in the McGuire study selected many of the same words as cancer patients to describe their pain. In both the original study by Melzack and the reliability study by Graham (1980), similar scores were found on the major indices of PRI total score, NWC and PPI, as well as on the minor indices of PRI *sensory,* PRI *affective*, PRI *evaluative*, and PRI *miscellaneous*. In commenting on patient response to the use of the MPQ, over 96% of patients said that they found the MPQ easy to use. However, McGuire thought that this was a question of satisfaction and that patients may have been responding in a socially acceptable way. McGuire found that many of the patients struggled with one or more words in the MPQ and required continual reiteration of instructions. Most patients commented that they preferred the questionnaire to be read to them. This was in keeping with Melzack's observation that many patients said that they would not wish to complete the tool more than twice a day. However, the patients commented that the time it took to administer the original MPQ was reasonable.

4.4.3 Internal Consistency of the McGill Pain Questionnaire

Several studies have replicated the original reliability and validity of the MPQ (Reading, 1979; Graham *et al.,* 1980; McGuire, 1984b). Other studies have used the MPQ to evaluate the responses of patients with pain, to determine the ability of the MPQ to differentiate between different pain syndromes. Holroyd et al (1992) found a high inter-correlation and shared variance on some dimensions of the MPQ, suggesting that the dimensions of sensory, affective, evaluative and present pain intensity are not distinct measures, but are basically measuring some of the same characteristics. The implication from this finding is that the pain rating index (PRI) total score is a more appropriate measure of the pain experience than measuring the PRI rank score, the total number of words chosen, or the present pain intensity scale (Holroyd *et al*, 1992).

4.4.4 Scoring the McGill Pain Questionnaire

Despite numerous studies that support the reliability and validity of the MPQ, several criticisms have also been made about the MPQ, which deserve comment. Deschamps and Band (1988) reviewed the shortcoming in current methods of assessing adult cancer pain and argued that although the MPQ was designed to assess the sensory, affective and evaluative components of pain, the evaluation of each modality is not equally reflected in the scoring system, since the number of words in each sub class is unequal, with a predominance of sensory words (41 sensory words, 14 affective words, 5 evaluative words). Additionally, there is no consistency in the number of pain descriptors used within a sub-class, with some sub-groups having six words and other groups having three words. Translating this uneven distribution of words within the sub-classes to the scoring system means that the second word in a group of six words would be a mild sensation, whereas the second word in a group of 2 would be a moderate sensation. Deschamps devised a mathematical strategy for correcting this scoring procedure in the MPQ. He suggested that all scores within each sub-class always fall between 0 and 1 and for each word chosen within each sub-class that it is divided by the number of words in that group. He further suggested that this result then be divided by the number of words in each particular sub-class. These totals can then be added and divided by the number of sub-classes from which words were selected.

Melzack and Katz (1992), in a reappraisal of the MPQ, responded to the issues raised regarding inequities within the sub-classes of the MPQ raised by Deschamps *et al* (1988). In order to overcome the problem in the scoring system of relative intensity of verbal descriptor being lost due to inconsistent rank values, a further computation method was devised to enhance the sensitivity of some statistical analysis. This conversion involves changing rank values to weighted rank values. The conversion values for weighted values test the sensitivity of the weighted rank method against the original rank value scoring method using two groups of patients. MPQ pain scores from 81 chronic low back pain patients and 64 patients with musculoskeletal pain were submitted to one-way repeated measurements multivariate analysis of variance using the sensory, affective, evaluative and miscellaneous indices as the dependant variable and the three different scoring methods, scale, weighted-rank and rank, as the repeated measurement factor.

The results demonstrated that for the sensory, affective, miscellaneous and total groups the weighted-rank method produced values that were statistically equivalent to the scale values and that the rank values departed in either direction from the scale value. However, for the evaluative sub-group, the rank and weighted-rank scoring methods approximated the scale values equally. Melzack concluded that the rank value scoring system was sufficiently sensitive to evaluate the effectiveness of interventions and that to correct for weighted rank was probably unnecessary. However, when results are statistically marginal, converting to weighted rank would maximise the sensitivity of the MPQ (Turk and Melzack, 1992).

4.5 Summary

The distinction between pain assessment and pain measurement is not always clear. In the tools that have been described, features of both assessment and measurement are present. In the current study, pain assessment is a lengthy process encompassing the patient's pain history and is the foundation upon which all the interventions are based. The assessment is the initial step in management and is performed at the outset of the study and if a new pain arises during the study.

In contrast, pain measurement is undertaken for research purposes to determine the effectiveness of the chosen intervention. Pain measurement needs to be performed

frequently and be completed within a reasonable time. It must also be clinically sensitive to the effects of analgesic administration. The pain measurement tool must also have demonstrated reliability and validity.

It is well accepted that pain has sensory, affective, cognitive and behavioral dimensions. While a number of valid and reliable self-report measures have emerged, most of these measures have concentrated on the recording of a single sensory dimension. Single dimensional recording can be useful only when one aspect of the pain experience is of interest (that is, intensity). However, most measures fall short of accurately reflecting the total pain experience. Measurement of multidimensional phenomena is best served by using a multidimensional measurement tool. Several assessment tools have been developed that incorporate multidimensional measures, but many of these are too lengthy for repeated administration and produce a surplus of information.

The MPQ has been identified as the most valid and reliable multidimensional pain measurement tool available. It has a good operational fit with the pain definition used to direct the current study and has been selected as an outcome measure of the efficacy of nursing interventions in cancer pain management in the current study.

CHAPTER FIVE

AN EVALUATION OF THE EFFICACY OF SPECIFIC NURSING INTERVENTIONS TO THE MANAGEMENT OF PAIN IN CANCER PATIENTS.

5.1 Aims and Designs of Study

To summarize, four issues emerge from this analysis of the management of pain in cancer patients. Firstly, pain effects up to 90% of patients with advanced cancer and, despite the available effective treatments, cancer pain continues to be poorly controlled. This situation is likely to be due to a number of barriers, including inadequate knowledge of healthcare professionals in pain pathophysiology and pain treatments, patient and family barriers with inappropriate attitudes regarding pain control and barriers within the health care system that fail to recognise pain management as a priority issue.

Secondly, it has been well documented in the literature that nurses with appropriate knowledge and skills should be able to overcome many of the barriers that impede the effective management of cancer pain. Nurses have been recognised by a number of healthcare authorities as having a responsibility in the education, coordination of care and advocacy of cancer patients who experience pain. However, despite the recognised potential for nurses to improve cancer pain management, little empirical data exists to support the efficacy of these nursing interventions.

Thirdly, in response to the call for nurses to take more of a leadership role in addressing the barriers that prevent the implementation of effective pain management, the ONS published a position paper about cancer pain management which defined the role of the nurse in education, as well as detailing the scope of practice for nurses in the coordination of care. The knowledge base required to fulfill the roles as defined by the ONS is explored in the literature, with evidence in the literature suggesting that interventions such as education should be tailored to meet the specific needs of the patient. Moreover, despite the strong recommendations for nurses to coordinate pain management, no guidelines for

nursing practice exist. Assessments are critical in providing appropriate pain management and they should form the basis of the coordination of care activities. In addition, the literature reviewed reveals that documentation and communication of pain scores does result in lower pain intensity. Both education tailoring and pain assessments require a thorough understanding of the causes of pain in cancer.

Finally, the pathophysiology of pain is well described in the literature as having sensory, affective and behavioural components. Knowledge about these three components provides the basis on which the measurement tool is selected. The McGill Pain Questionnaire is the best operational fit with pain that is conceptualised as having a sensory, affective and evaluative component. Moreover, the McGill Pain Questionnaire is a well-established pain measure in the cancer population and is a valid and reliable measure of pain.

Based on the examination of the research conducted to date, it is believed that the nursing interventions associated with education, coordination of care and the combination of education and coordination can reduce pain scores in cancer patients below that of current practice protocols.

Utilising the educational content outlined in the ONS position paper on cancer pain, shown in Table 3.2 (p 28), and tailoring it to meet the specific needs of the patient, as described in Chapter 3, it is the purpose of this study to evaluate the efficacy of these nursing interventions in reducing pain scores in cancer patients.

The ONS position on pain assessments is that it is a nursing responsibility and that it should be performed by nurses and communicated to other members of the health care team. The ONS position paper on cancer pain described the fundamental information required in a pain assessment, as detailed in Table 3.1 (p 24). The literature, as examined in Chapter 2, supported the notion that increased documentation of pain intensity will reduce pain scores. Another aim of this study is to evaluate the ability of communication of detailed pain assessments to the treating medical and nursing team to improve the management of cancer patients in pain.

The final aim of the present study is to examine the effect of sustained intervention over a one month period to determine the necessity of ongoing intervention as opposed to an initial education session and a once only nurse/nurse, nurse/physician consultation regarding pain assessment findings.

Based on the above critique of the literature regarding the nursing management of cancer patients with pain, the following three hypotheses will be tested in this study:

1. Cancer patients who receive a set of educational strategies which have been tailored to meet their individual pain relief needs will score significantly lower on the McGill Pain Questionnaire than cancer patients in the control group who receive pain interventions based on the hospitals current practice for pain relief.

2. Cancer patients who have their nursing pain assessments documented and verbally communicated to their treating medical and nursing staff will score significantly lower on the McGill Pain Questionnaire than cancer patients who do not have their pain assessments documented and communicated to their treating medical and nursing staff.

3. Cancer patients who receive a set of tailored educational strategies as well as having their pain assessments documented and verbally communicated to their treating medical and nursing staff will score significantly lower on the McGill Pain Questionnaire than cancer patients who receive either, the tailored educational strategy alone or who have only their documented pain assessments verbally communicated to the treating medical and nursing staff, or who do not receive either of these two interventions.

5.2 Methods

Subjects:

Study subjects were recruited from the Oncology ward and Oncology Day Centre of the Monash Medical Centre over an 18 month period. Only subjects with pain directly related to the diagnosis of cancer were included in the sample.

Subjects who had cancer and pain where the pain was due to recent surgery, chemotherapy or radiotherapy were excluded, as these pains were expected to abate spontaneously over the time frame of the study. Subjects with pain related to the insertion of a central venous access system or mucositis as a result of chemotherapy or radiotherapy were also excluded for the same reasons. Subjects with pre-existing pain directly related to cancer, and who in addition underwent surgery, chemotherapy, or radiation therapy, were included in the study but only the pain related to the cancer and not the treatment was the focus of the investigation. Additional selection criteria included histologically documented malignancy, English as a native language (to eliminate cultural differences related to the verbal pain descriptors used in the McGill Pain Questionnaire), age < 75 years (to eliminate age-related sensory impairments complicating pain assessments), not a recipient of domiciliary palliative care nursing support at time of recruitment (to eliminate confounding effects of a separate nursing intervention), and life expectancy > 3 months.

All eligible patients who agreed to participate in the study were asked to sign a standard consent form that outlined the study. In addition, the nature of the study was explained verbally to each subject, including their possible allocation into the control group and the fact that they would receive no extra nursing intervention in that group. It was also explained that subjects would still have access to all routine care, including all routine nursing care. Subjects were advised that they could withdraw from the study at any time and that withdrawal would not in any way effect future management. It was also explained that subjects would not be required to make extra visits to the hospital and that follow up, in most instances, would occur over the telephone. Ethical approval was obtained from the Monash Medical Centre Research and Ethics Committee prior to initiation of the study and was conducted according to the declaration of Helsinki. The subject consent form and ethics approval is illustrated in Appendices A and B respectively.

Day Centre nursing staff screened all patients who attended the Oncology Day Centre for the presence of pain by asking the questions in Table 5.1. Day Centre nurses were given an overview of the study as well as handouts, which summarised the project selection and recruitment criteria. Once a patient from the Day Centre had been identified as a possible subject for the study, the research nurse arranged to interview the patient.

The randomisation process was undertaken using four envelopes, with each one containing a number from one to four representing each of the four experimental groups:

(i.e. No.1 = Education; No. 2 = Communication; No.3 = Combined; No.4 = Control). The subject was placed in the allocated experimental group according to the number selected. This envelope was then excluded from the next selection.

The process was repeated until all experimental groups were allocated a full compliment of subjects. All four envelopes would be returned to the pile, shuffled and the process repeated until all subjects were recruited.

Instrumentation:

A modified version of Wisconsin Brief Pain Inventory (BPI) was used as the assessment tool and the McGill Pain Questionnaire long form (MPQ) was used to measure the impact of the independent variables. A copy of these two tools can be found in Appendices C and D respectively.

Procedure:

Group 1: (Education)

The content of the education intervention used in the current study comprised the curriculum described in detail in Chapter 3 and is summarized for convenient reference Table 3.2 (p 28). The results of both the MPQ and the BPI were used to tailor the education for each subject in accordance with the recommendations described in Chapter 3. The completed MPQ acted as the baseline pain score (T0) for that individual. The type of words chosen to describe the subject's pain was used to determine the likely cause of the pain and, consequently, the type of education intervention most suitable for that individual.

The initial assessment and education session was approximately 60-90 minutes. A provisional nursing diagnosis was made and the subject, and their family, were given a brief overview of the pain cycle and the importance of improved management. Key problems were identified and specific instructions given to the subject/family.

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Case Study Example 1: Pain Assessment for Educational Intervention

Subject:

62 year old female, diagnosed lung cancer, pain located back of chest, well localized, present constantly, worse on coughing and at night. Rated 10 out of 10 for intensity, rating 11 out of 10 at night, preventing sleep. MPQ selects shooting and stabbing from sensory words, exhausting, suffocating, terrifying and cruel from affective words, selects unbearable from evaluative category. Pain at time of MPQ discomforting. Further questioning regarding sleep pattern, as subject unable to sleep due to pain, revealed great fear of dying in sleep and very anxious about using morphine.

Examination:

Non tender to touch over painful region, otherwise well looking but anxious.

Medical History:

Reveals known metastases in area described as painful with no other known metastatic spread. Currently receiving chemotherapy for Ca Lung. Medications for pain; morphine slow-release 120mg b.d.

Summary and recommendations:

MPQ dominated with affective score indicating pain exacerbated by fear and anxiety. This is supported with the pain histor,y which indicates fear of dying in sleep. Pain well localized with low sensory score. Treatment recommendations; educate subject regarding the use of different analgesics and their best use and side effects; educate re the need to inform physician of difficulty sleeping and fears of dying in sleep, as current treatment could be altered to enhance effectiveness. Address subject's fear of dying and morphine use.

The above example demonstrates how education was tailored according to the assessment and measurement findings for an individual subject

All subjects are instructed on how to use the pain rating scales. The scale used was 0-10 verbal rating scale, which was selected from the BPI. Subjects were instructed on how to differentiate between worst, best and average pain intensity. All subjects were asked to keep a record of pain intensity scores if they were altering their dosages of analgesics.

When titrating analgesics, and in particular morphine, the subject was educated on its use within the dosage range prescribed by the physician.

The practice of "as required" drug scheduling is common. This particular practice of prescribing was used to increase dosages and frequency when under-medication was the suspected cause of unmanaged pain. Pain intensity on follow-up determined if and when further education was required. Follow-up time ranged from 5 to 20 minutes.

Comprehension of previous information was checked at follow-up by the researcher. Subjects were encouraged to ask questions and, if necessary, further explanations were provided. Further education on follow-up was required if pain was unrelieved despite increases in analgesic dosage, or if the presence of side effects precluded increases in analgesics to more therapeutic levels. Alternate reasons requiring further education included the occurrence of a new pain and if the subject was unable to obtain a medical review or alteration to medication. In regards to alteration to medication, subjects were educated about the necessity to inform medical receptionists of their pain because this knowledge is more likely to result in an earlier appointment. Subjects without a regular physician were educated on the importance of finding a GP and one that is preferably in close proximity to their home.

Subjects who still experienced pain despite optimising and complying with prescribed treatment regime would be followed up at two, five, nine and eleven days as further education was provided. This education usually consisted of teaching the subject how to report their pain symptoms to their physician, so that the physician could more clearly understand the pattern of the pain cycle and the response to treatment attempts. If it was believed that the subject might benefit from an alternative type of treatment, such as introducing another medication, relaxation or physiotherapy, the information on the possible pro and cons of each treatment approach would be provided. The subject was then asked to discuss each option with their physician.

The educational approach was individualised for each subject with the most necessary information introduced first and less important information provided at follow-up. In many instances, compliance to medication regime was a problem contributing to poor pain

control and this lack of compliance was firstly related to fear of narcotics and secondly, to the experience of side effects. The situation of non-compliance to narcotics required that the educational process focus on changing attitudes towards addiction, allaying fears about the anticipated effects of narcotics and reinforcing the benefits of improved pain control. A compliance regime would be negotiated with the patient and a gradual reintroduction of the prescribed medication was attempted to prevent the experience of further side effects. The side effects profile was explained and ways to manage side effects were discussed.

Morphine mixture was often used because it permitted close titration of dose to need. Education on the use of morphine followed a two day plan in which the subject was shown how to rate their pain and how to titrate the medication according to the pain rating. In most instances, the gradual introduction of morphine mixture over the two day period was suggested in order to prevent the occurrence of side effects. Persistence of pain required regular follow-up and constant emphasis on the subject to be proactive in seeking further review and instruction from their physician.

The research nurse did not have direct communication with the physician, although the physician could initiate contact with the research nurse to discuss management of the subject. The physician was able to request specific education content to be covered, such as instruction to the subject for dosage increments, or changes in frequency of a specific medication and arrangements for medical review. These instructions were then given to the subject by the nurse. It was felt that such an approach was acceptable, as it was seen as a positive and a direct result of the previous educational process.

Education was slightly modified for hospital inpatient subjects, as analgesics were administered by ward nursing staff and self-care requirements differed in a ward setting as compared to the home setting. The content of the education was identical to that of the outpatient subjects and followed the criteria outlined in table 3.2 (p 28). However, as inpatients were dependent upon ward nursing staff to administer pain relieving medication, the emphasis for inpatient subjects was to report unrelieved pain and how this pain affected activities of daily living. Inpatient subjects were advised to communicate with the staff about the differing need for mobility at home compared to the ward, and that the unmasking of pain in the home setting would require changes in the analgesia regime on

discharge. Inpatient subjects were followed up at the same intervals as outpatient subjects. The MPQ was completed at two time intervals, i.e. day 14 (T1) and day 28 (T2). The MPQ was read to the subjects and the response to each question recorded by the research nurse to avoid any confusion about the terminology and to ensure compliance.

Group 2: (Communication)

The purpose of establishing the communication group was to bring the pain experience of the subject to the attention of the treating medical and nursing staff and to determine whether the provision of such information would result in remedial intervention.

Subjects randomly assigned to the communication group would undergo the assessment procedure that included the completion of the modified BPI and the MPQ and relevant medical information. Key issues in the assessment would be identified and a care plan devised based on the assessment findings.

A provisional diagnosis for the cause of each pain site was based on information gained from the subject, medical history and conclusions drawn from the clinical assessment. Pain sites at the time of assessment were documented with additional information about the subjects' attitudes towards pain, the taking of pain relieving medications and the subjects' perceived response to currently prescribed medication was also noted.

The ward medical staff was notified verbally of the pain assessment. The registered nurse caring for the subject at the time of the assessment also received verbal communication about the pain assessment and was reminded that the assessment was documented in the history. The suggested care plan was also discussed with the registered nurse caring for the patient and any recommendations in the assessment was discussed.

Verbal communications between the research nurse and ward staff about the pain management of the subject was permitted and if the ward staff requested a discussion about the pain assessment and suggested treatment in the presence of the subject this was also provided. However, the research nurse did not implement any of the changes suggested during these communications. This verbal communication procedure took between 5-10 minutes.

Case Study Example 2: Pain Assessment for Communication Intervention

Subject:

52 year old male, Ca colon, hepatic metastases. Pain located left sided abdomen, present constantly, made worse with any pressure over painful region, ie belt, waist of pants, rest provided some relief. Pain rated 6 out of 10 for level at which pain interfered with general activity, 5 out of 10 for interference with sleep, 6-7 out of 10 for enjoyment of life. Current analgesics providing 70-80% pain relief. MPQ sensory selection includes quivering, flashing, pricking, cramping, wrenching, itchy, dull and tender. Affective word selection includes tiring, sickening, fearful. On further questioning complaints of nausea and constipated were also present

Examination:

Tender over left side of abdomen, abdomen generally distended.

Medical History:

Diagnosed 12 months previously, undergoing chemotherapy, recently admitted to ward with pulmonary embolism, anticoagulation therapy completed.

Prescribed Panadeine Forte p.r.n. for pain, patient taking two every 4 to 6 hours

Summary and Recommendations:

High sensory component to pain, low affective score, pain responsive to Panadeine Forte, as pain is reduced following medication. Patient is under-medicated, has constant pain and should be on constant analgesics, suggest going to morphine as patient currently taking almost maximum daily dose of Panadol, needs more opiate as cause of pain most likely to be visceral, which has good response to opiates. Patient constipated, causing nausea, constipation needs to be aggressively managed as it will itself cause more abdominal pain. Suggested education re bowel management and commence on morphine liquid, to go to slow-release morphine once appropriate dose determined.

The full pain assessment was documented in the progress notes for inpatients. This included a summary of the above procedures and the subjects' MPQ score for their sensory, affective, evaluative and present pain intensity. Other 0-10 numerical rating scores from the BPI would be included, indicating intensity of pain at worst, best and on average.

Inpatient subjects were reviewed at 2 days, 5 days and at 9 days. On review, worst, best and average pain intensities were measured. Perceived effect from pain relieving medications was recorded on a percentage scale. This information was documented in the pain history and communicated to the treating medical and nursing staff. At each review, if pain remained poorly controlled it would be stressed that there was no improvement and, if changes had occurred in the treatment, the response to these changes would be recorded. Alternate suggestions would be made where appropriate.

At day 14 (T1) and day 28 (T2) the MPQ was administered and a pain score was recorded. The verbal word descriptors were read to the subjects and their responses recorded by the research nurse. This information was documented in the subject's medical history and verbally communicated to the nurse caring for the subject.

Subjects who were still experiencing pain at day 28 (T2) were offered the other interventions of education and further coordination of care in the hopes of trying to achieve better pain control and continued until the subject stated that a satisfactory level of pain control had been achieved.

Procedure for recruitment and assessment was identical for outpatient subjects as for inpatient subjects. However, a variation existed with the management of outpatient subjects because of their brief admission time at the Oncology Day Centre. In this circumstance, all communication regarding a subject's pain was directed to the consultant physician who was responsible for ongoing management. Subjects who had moderate to severe pain at the time of the baseline assessment would be referred to the Day Centre medical resident following assessment and the pain assessment would be communicated to the medical resident prior to the patient being discharged. Subjects who preferred to see their oncologist were asked to make an urgent appointment so that their pain management could be reviewed. Advising the subject as to the need for an urgent review by their

consultant physician was considered to be the most efficient way in which the pain assessment could be communicated to the physician.

Initial attempts were made to telephone the oncologist regarding the pain assessment. This proved unsatisfactory, as the oncologists were difficult to contact. Therefore, all information was type written and faxed to the Oncologist prior to the subject's appointment. A further provision was made for subjects who expressed a preference to be managed by the Day Centre Medical Resident or when the subject's physician was on leave. The information communicated to the Day Centre medical staff was the same as that given to the consultant physician. The following is a sample of the information that was faxed to the oncologist on the day of the subject's appointment.

Patients would be followed-up after appointments with the oncologist. Pain measures were taken at day 14 (T1) and day 28 (T2) using the MPQ and were recorded in the same fashion as the education group.

Case Study Example 3: Communication Information to Physicians

Dear Dr

Re: Mr Smith
DOB: 01/01/01
Ca Colon and hepatic metastases

Mr Smith was referred to me by the Day Centre staff as having pain present while having recent chemotherapy but not as a result of the chemotherapy. His history revealed that he had pain located in the left side of his abdomen The pain was constant and had been present for the last 2 months and appeared to be getting worse. The pain was made worse with any pressure on the painful region and he has had some pain relief with rest.

Results from pain measurement revealed the following:

Pain was rated as 6 out of 10 for interference with general activity; 5 out of 10 for interference with sleep and 6-7 out of 10 for interference with enjoyment of life. He rates perceived effectiveness of analgesics at 70-80%. In McGill Pain Questionnaire (MPQ) scores the patient selected the following words from the sensory section; quivering, flashing, pricking, cramping, wrenching, itchy, dull and tender. Affective word selection included, tiring, sickening and fearful.

On examination he was tender over the left side of the abdomen and the abdomen was generally distended.

He was prescribed Panadeine Forte p.r.n. for pain, taking two every 4 to 6 hours.

Summary and Recommendations:

Mr Smith has a high sensory component to his pain and a low affective score. The abdominal pain appears to be opioid sensitive, as Mr Smith describes a 70-80% reduction in his level of pain with taking Panadeine Forte. However, there are many hours of the day when he is in moderate pain despite taking the maximum daily dosage of Panadeine Forte. It appears that over the last 2 months Mr Smith's level of pain has slowly increased and while he was initially able to obtain complete relief on the Panadeine Forte this is no longer the case, as he now has constant pain of moderate to severe intensity.

Do you think Mr Smith would get more relief moving from Panadeine Forte to morphine mixture? This may be more suitable, as he cannot increase his 24-hour Panadol intake beyond its current level and morphine mixture can be closely titrated according to his pain requirements. Once a suitable dosage was determined he could then switch to the slow-release morphine, which would be more convenient.

It was also noted during the pain assessment that Mr Smith was suffering from constipation. I believe that this is causing nausea and further abdominal discomfort. Mr Smith does not appear to be on any structured bowel regime but rather, waits until constipation is a problem before implementing remedial action.

If you have any queries regarding the above assessment, please do not hesitate to contact me.

Group 3: (Education and Communication Combined)

Subjects in this group were managed by the same procedure as those subjects described in both the education and communication groups. The initial assessment and education would take approximately 60-90 minutes. Documentation of pain was the same as for Group 2 subjects.

Patient advocacy was identified as the main extra feature of Group 3 subjects. Subjects were not restricted on the direction in which communication took place. The research nurse was able to provide education and communicate the subject's pain experience to the medical and nursing staff. Information could be communicated from the physician to the patient via the research nurse regarding pain management and, if the subject was experiencing persistent pain despite complying with prescribed treatment regimes, the research nurse was able to advocate for further intervention on the subject's behalf. Such advocacy on behalf of the subject was not permitted in Group 1, as the subjects were educated to advocate on their own behalf. Group 2 subjects received no education intervention and they were dependent upon the treating medical and nursing staff to provide education as a response to the documented assessment, which noted if patient and family knowledge was inadequate.

Group 4: (Control group)

Subjects who were randomly assigned into the control group were initially assessed in the same manner as those patients allocated into Groups 1, 2 and 3. All assessment information was recorded in the same manner as for the subjects in Groups 1, 2 and 3. Subjects were instructed to inform the treating medical or nursing staff, depending upon the location of management, if pain was uncontrolled. This was undertaken to comply with the ethical obligation towards control group subjects by availing themselves of current hospital practice for pain relief.

At the time of the study if a patient complained of pain current hospital practice would involved the following: For inpatients, the patient would inform the registered nurse who was roster on duty, the oncology resident and or registrar. All patients were reviewed daily by the registrar, the registrar and a consultant oncologist was always on ward service and

could be paged at any time for advice. Once a week all inpatients were reviewed by the consultant oncologist in a team meeting and pain management interventions would vary from consultant to consultant based on the consultants approach. For day centre patients, they could report pain to the day centre nurse and or day centre registrar. All day centre patients were allocated a medical consultant who could be contacted by the registrar regarding treatment.

The control group subjects were assessed at day 14 (T1) and day 28 (T2) when pain would be measured using the MPQ. Other standard review questions would be asked of the subjects at this time. All control group subjects at T2 who were still experiencing pain were offered the extra specific nursing intervention as those patients in group 3.

5.2.1 Exceptions to the procedure:

Initial randomization involved the selection of one unmarked envelope from a group of 4 for each new subject recruited into the study. The subject would be allocated according to the group number within the envelope and the envelope then returned to the pack of four. Over a 4 month period, the randomization process produced an uneven distribution of patients between the groups. To try and ensure an even or near even number of patients in each group, at the conclusion of the study the randomisation process was altered to that outlined below.

Eighteen subjects were recruited into the Education group and 16 subjects into the Communication group, with 20 subjects recruited into the Combined (Education and Communication) group and 20 Control group subjects. Further recruitment beyond these numbers was not possible due to time constraints, and the increasing presence of palliative care patients in the ward.

Although procedure stated that subjects were to complete a one month follow up period with measures at baseline, 2 weeks and 4 weeks, a number of subjects were unable to fulfill this requirement. One subject in the Education group failed to complete the week 4 follow up. In the Communication group one subject was unable to be assessed at week 2 and week 4, and a further 2 subjects were not assessed at week 4, making a total of 3 subjects in this group who failed to complete all 3 measurement times. The Combined group had one

subject failing to complete the week 2 and week 4 assessments and 3 further subjects could not complete the week 4 assessment, making a total of 4 subjects in the Combined group. One subject in the control group could not be assessed at week 2 and week 4.

A total of 74 subjects were recruited into the study and 65 subjects completed the study. Of the 9 subjects who did not complete the one month follow up, 3 subjects died, 2 subjects were admitted to another hospital and could not be contacted, 2 subjects deteriorated and were unable to complete the McGill Pain Questionnaire and 2 subjects became the recipients of palliative care nursing services and, so as not to confuse them with different or conflicting information, these subjects consented to be withdrawn from the study.

5.2.2 Missing Data:

There were 3 missing data points in the data set. Age was omitted for subject 16 in the Combined group. A further 2 subjects in the Combined group did not answer the question relating to effect of pain on quality of life.

5.2.3 Statistical Analysis:

Subject descriptive data concerning diagnosis and management prior to trial selection were classified on a two-point scale (1 = negative response; 2 = positive response) and analysed with a one-way analysis of variance (ANOVA).

Pain characteristics (score range of 0 - 10) at baseline, derived from the modified BPI, and describing effects of pain on activity, sleep and quality of life were analysed with a one-way analysis of variance (ANOVA).

The pain score derived from the MPQ was subjected to a one way analysis of variance (ANOVA) for each of its 6 sub-components as well as for the total score for each of the groups. The significance of between group differences was assessed with simple T-tests with a Bonferroni adjustment for multiple T-tests. The procedure was repeated for the different time intervals of baseline, 2 weeks and 4 weeks for each group.

5.2.4 Comments on Randomization

The random allocation of subjects into the four groups helps reduce any bias towards (or against) one group. For instance, if all subjects undergoing radiotherapy were given specific nursing intervention and all subjects undergoing chemotherapy were not given specific nursing intervention, then any significant effects between the groups could be due to the type of therapy or the specific nursing intervention. It would not be possible to conclude which intervention was contributing to the significant effect. As radiotherapy and, to a lesser degree, chemotherapy have been identified as having the ability to reduce cancer pain, there was a provision in the randomization process to block for these therapies.

As indicated in the literature, patients with advanced disease are more likely to experience pain, and more advanced disease may present more difficult to manage pain. Therefore, the groups were also examined for known metastases and time since diagnosis. However, this was a post hoc test, as the randomization process was not blocked for these factors. The study did not try to determine the difference between difficult to manage pain and pain that responded readily to treatment. Subjects only needed to have cancer-related pain to be eligible for recruitment into the study.

5.3 Characteristics of Subjects:

The characteristics of each subject by group are described in Tables 5.4 through to 5.7. Table 5.1 (p 66) provides a summary of diagnosis with Gastrointestinal carcinoma (comprised mainly of carcinoma of the colon and rectum) and carcinoma of the Breast occurring most frequently. Diagnosis has not been identified as having an impact on pain and, as such, the distribution of disease type through the four study groups was not examined.

Variables for each group included the following: age; known metastases; time since diagnosis; and the interventions of surgery, chemotherapy and radiation therapy. While the randomization process was blocked for radiotherapy and chemotherapy only, it was hoped that randomization would result in an equal, or almost equal, balance of these variables between the four groups. Table 5.2 (pg 66) provides a summary of subject characteristics.

No significant difference was detected between the groups for age ($F = 0.42$, $P < 0.73$); time since diagnosis ($F = 0.93$, $P < 0.42$); recent radiation therapy ($F = 0.645$, $P < 0.588$); recent chemotherapy ($F = 1.106$, $P < 0.35$); or known metastases ($F = 2.26$, $P < 0.9$). A near significant level was found for the variable recent surgery ($F = 2.64$, $P < 0.056$). This finding was attributed to the control group, which contained no subjects who underwent surgery.

An examination of the clinical data shows that 10 subjects had undergone minor surgical procedures such insertion of a central venous access line. In all cases, this was not the pain measured through the study period and it was not seen as having a confounding effect on the dependent variable.

In addition to the variables listed above, the subjects recruited to the study were also examined for pain characteristics other than those analysed in the MPQ. Subjects were required to rate their pain on a 0 - 10 numerical rating scale (0 = no pain, 10 = worst pain imaginable). These characteristics are listed in Tables 5.8 to 5.11 and include the effect of pain on activity, sleep and quality of life. A summary of pain scores at baseline is also listed in Table 5.3 to examine whether any of the groups had significantly high or low scores prior to the implementation of the specific nursing interventions.

Table 5.1

Summary of Disease Frequency for all Subjects

DISEASE	FREQUENCY	PERCENT
Gastrointestinal	25	33.9
Breast	11	14.9
Multiple myeloma	9	12.2
Other	9	12.2
Bronchogenic	7	9.5
Lymphoma	6	8.1
Urologic/Genital	4	5.4
Leukaemia	3	4.1

Table 5.2

Summary of Subject Characteristics for the Four Treatment Groups

VARIABLE	D.F.	F	SIGNIFICANCE	
Age	3	0.423	0.7367	NS
Time Since Diagnosis	3	0.9399	0.4262	NS
Surgery in last 2/52	3	2.646	0.056	NS
Radiotherapy in last 2/52	3	0.645	0.588	NS
Chemotherapy in last 2/52	3	1.106	0.353	NS
Known Metastases	3	2.26	0.088	NS

Table 5.3

Summary of Pain Scores at Baseline for the Four Treatment Groups

VARIABLE	D.F.	F	SIGNIFICANCE	
Pain on Activity	3	0.542	0.6551	NS
Pain during Sleep	3	0.484	0.6944	NS
Effect on Quality of Life	3	1.22	0.3065	NS

Table 5.4

Characteristics of Subjects for Education Intervention

ID	AGE	DISEASE	METASTASIS	DX/MONTHS	SURGERY	CHEMOTHERAPY	DXRT
1	52	GIT	YES	2	NO	YES	NO
2	65	Multiple Myeloma	YES	13	NO	YES	YES
3	51	GIT	YES	15	NO	YES	NO
4	42	Breast	YES	24	NO	NO	NO
5	40	Breast	YES	60	YES	YES	NO
6	52	Lymphoma	NO	1	NO	YES	NO
7	41	Leukaemia	NO	4	NO	NO	NO
8	41	Leukaemia	NO	8	NO	NO	NO
9	21	Urologic/Genital	NO	1	YES	YES	NO
10	67	GIT	YES	30	YES	NO	NO
11	67	Bronchogenic	YES	3	NO	NO	NO
12	65	Lymphoma	NO	1	YES	YES	NO
13	34	GIT	YES	15	NO	YES	NO
14	75	Other	YES	1	NO	YES	NO
15	59	Multiple Myeloma	YES	2	NO	NO	NO
16	55	Urologic/Genital	NO	1	NO	YES	NO
17	63	Lymphoma	YES	15	NO	YES	NO
18	37	GIT	YES	96	YES	YES	NO

GIT = Gastrointestinal
DX/MONTHS = Months since Diagnosis
SURGERY = Surgery in 2 weeks prior to recruitment
CHEMOTHERAPY = Chemotherapy 2 weeks prior to recruitment
DXRT = Radiation Therapy 2 weeks prior to recruitment

Table 5.5

Characteristics of Subjects for Communication Intervention

ID	AGE	DISEASE	METASTASIS	DX/MONTHS	SURGERY	CHEMOTHERAPY	DXRT
1	48	Breast	YES	48	NO	YES	NO
2	59	GIT	YES	1	NO	YES	NO
3	56	GIT	YES	12	YES	YES	NO
4	60	GIT	YES	36	NO	NO	NO
5	26	Urologic/Genital	NO	1	YES	YES	NO
6	73	GIT	YES	16	NO	YES	NO
7	65	Breast	YES	72	NO	NO	NO
8	69	GIT	NO	10	NO	NO	NO
9	60	Other	YES	8	NO	YES	NO
10	47	Multiple Myeloma	YES	12	YES	NO	YES
11	66	Breast	YES	75	NO	NO	NO
12	50	Breast	YES	108	YES	YES	NO
13	49	Multiple Myeloma	YES	18	YES	YES	NO
14	52	GIT	YES	1	NO	YES	NO
15	77	Multiple Myeloma	YES	1	YES	NO	NO
16	31	Urologic/Genital	YES	24	NO	YES	NO

Table 5.6

Characteristics of Subjects for Combined Intervention

ID	AGE	DISEASE	METASTASIS	DX/MONTHS	SURGERY	CHEMOTHERAPY	DXRT
1	34	Lymphoma	NO	1	YES	YES	NO
2	70	Bronchogenic	YES	2	NO	NO	NO
3	36	Breast	YES	16	NO	NO	NO
4	36	GIT	YES	1	NO	YES	NO
5	74	Breast	YES	39	NO	YES	NO
6	74	Breast	YES	40	NO	NO	NO
7	71	Other	NO	1	YES	YES	NO
8	64	GIT	YES	2	NO	YES	NO
9	58	Leukaemia	NO	15	NO	YES	NO
10	45	Breast	YES	23	NO	NO	NO
11	66	Bronchogenic	NO	12	NO	NO	NO
12	52	Bronchogenic	NO	1	NO	YES	NO
13	60	GIT	YES	3	NO	YES	NO
14	58	Breast	YES	108	NO	NO	NO
15	46	Bronchogenic	YES	5	NO	NO	NO
16		GIT	YES	2	NO	NO	NO
17	74	Breast	YES	42	NO	YES	NO
18	38	Other	YES	76	NO	NO	NO
19	44	GIT	NO	4	NO	YES	NO
20	48	GIT	YES	8	NO	YES	NO

Table 5.7

Characteristics of Subjects for Control Group

ID	AGE	DISEASE	METASTASIS	DX/MONTHS	SURGERY	CHEMOTHERAPY	DXRT
1	48	Other	YES	36	NO	YES	NO
2	60	Multiple Myeloma	YES	3	NO	NO	NO
3	48	Bronchogenic	YES	1	NO	YES	NO
4	69	Multiple Myeloma	YES	84	NO	YES	NO
5	76	Lymphoma	YES	13	NO	NO	NO
6	50	GIT	YES	5	NO	NO	NO
7	65	Other	YES	24	NO	NO	NO
8	60	GIT	YES	4	NO	YES	NO
9	68	Bronchogenic	NO	3	NO	NO	NO
10	30	Breast	YES	34	NO	NO	NO
11	52	GIT	YES	1	NO	YES	YES
12	71	Multiple Myeloma	YES	12	NO	YES	NO
13	60	Other	YES	7	NO	YES	NO
14	66	GIT	YES	9	NO	NO	NO
15	44	GIT	YES	1	NO	NO	NO
16	54	Multiple Myeloma	YES	3	NO	NO	NO
17	59	Other	YES	12	NO	NO	NO
18	48	GIT	YES	1	NO	YES	NO
19	39	Lymphoma	YES	9	NO	NO	YES
20	53	Other	YES	9	NO	YES	NO

Table 5.8

Pain Characteristics of Subjects in Education Group

During Activity	During Sleep	Affecting Quality of Life
1	0	1
1	0	1
3	1	2
3	1	2
4	2	3
4	2	4
6	3	4
6	3	4
6	4	5
7	4	5
7	4	5
7	4	6
7	5	7
7	5	7
8	5	9
10	7	10
10	8	10
10	10	10

Total Number of Subjects in Education Group = 18

Table 5.9

Pain Characteristics of Subjects in Communication Group

During Activity	During Sleep	Affecting Quality of Life
0	0	0
1	0	1
4	0	1
4	0	4
5	0	5
6	1	5
7	3	7
7	5	8
8	5	10
8	5	10
9	7	10
10	7	10
10	8	10
10	9	10
10	10	10
10	10	10

Total Number of Subjects in Communication Group = 16

Table 5.10

Pain Characteristics of Subjects in Combined Group

During Activity	During Sleep	Affecting Quality of Life
0	0	0
0	0	0
1	1	1
1	2	3
2	3	4
4	3	5
5	4	5
6	5	8
6	5	9
6	5	10
6	5	10
7	6	10
7	6	10
7	6	10
8	7	10
8	7	10
8	7	10
10	9	10
10	10	
10	10	

Total Number of Subjects in Combined Group = 20

Table 5.11

Pain Characteristics of Subjects in Control Group

During Activity	During Sleep	Affecting Quality of Life
0	0	0
0	0	0
1	0	0
1	0	0
2	0	1
2	1	1
3	1	2
3	3	3
3	3	5
5	3	5
5	5	6
7	5	6
8	5	8
10	6	8
10	7	10
10	8	10
10	9	10
10	9	10
10	10	10
10	10	10

Total Number of Subjects in Control Group =20

Table 5.12
Summary of Pain Characteristics

Pain During Activity	*N*	Mean	SD
Education	18	5.94	2.79
Communication	16	6.81	3.25
Combined	20	5.60	3.26
Control	20	5.50	3.94
Entire Population	74	5.91	3.32

Analysis of Variance

Criterion Variable Pain During Activity

Source	D.F.	F	Sig
Between Groups	3	0.542	0.6551

Table 5.13
Summary of Pain Characteristics

Pain During Sleep	*N*	Mean	SD
Education	18	3.77	2.69
Communication	16	4.37	3.84
Combined	20	5.05	2.94
Control	20	4.25	3.65
Entire Population	74	4.37	3.26

Analysis of Variance

Criterion Variable Pain During Sleep

Source	D.F.	F	Sig
Between Groups	3	0.484	0.6944

Table 5.14
Summary of Pain Characteristics

Pain Effect on Quality of Life	*N*	Mean	SD
Education	18	5.27	3.02
Communication	16	6.93	3.75
Combined	18	6.94	3.85
Control	20	5.25	4.06
Entire Population	72	6.05	3.72

Analysis of Variance
Criterion Variable Pain During Quality of Life

Source	D.F.	F	Sig
Between Groups	3	1.22	0.3065

CHAPTER SIX

RESULTS

6.1 McGill Pain Questionnaire:

The McGill Pain Questionnaire (MPQ) measures for each sub-class of the total score are presented in Tables 6.1 to 6.7 (pp 77-83) over the three measurement time periods of baseline, 2 weeks and 4 weeks. The sub-components of the MPQ consisted of the following entities: sensory (Table 6.1), affective (Table 6.2), evaluative (Table 6.3), miscellaneous (Table 6.4), number of words chosen (Table 6.5), present pain intensity (Table 6.6), and total pain measure (Table 6.7). A one-way analysis of variance (ANOVA) was performed for each time frame.

Table 6.1 examines the sensory sub-class component to the MPQ. The table demonstrates that there was no significant difference between the groups on the sensory sub-class at baseline MPQS1 ($F = 0.947$, $P < 0.423$). However, a significant difference between the groups was found at 2 weeks MPQS2 ($F = 5.29$, $P < 0.002$) and at 4 weeks MPQS3 ($F = 4.23$, $P < 0.009$).

Table 6.2 illustrates the data for the affective component of the MPQ with no significant difference between the groups at baseline MPQA1 ($F = 1.01$, $P < 0.39$). However, a significant change was found at 2 weeks MPQA2 ($F = 3.67$, $P < 0.016$) and again at 4 weeks MPQA3 ($F = 3.36$, $P < 0.024$).

Table 6.3 lists the data for the evaluative sub-score of the MPQ over the 3 measurement intervals. The one-way ANOVA for each measurement interval shows no significant difference between the groups at any of the measurement times over the study phase of baseline MPQE1 ($F = 0.711$, $P < 0.549$), 2 weeks MPQE2 ($F = 2.19$, $P < 0.097$) and 4 weeks MPQE ($F = 1.58$, $P < 0.201$). The failure to detect any change within this sub-class is most likely due to the small number of verbal pain descriptors available in this subclass. The total number of choices available in this sub-class is 5, compared to the sensory sub-class that has 41 choices. Inspection of the data does show a reduction in the mean scores

over time for this subclass over the three measurement intervals. However, the small SD around the mean prohibits a main effect being detected when, in fact, one might have occurred, hence making a type 11 error.

Table 6.4 lists the mean and SD for the miscellaneous sub-class of the MPQ over the three measurement intervals. The one-way ANOVA for each measurement time shows a significant difference between the four groups at baseline MPQM1 ($F = 3.1$, $P < 0.032$), 2 weeks MPQM2 ($F = 2.66$, $P < 0.055$), and 4 weeks MPQM3 ($F = 5.37$, $P < 0.002$). The words used to describe pain in the miscellaneous sub-class of the MPQ were words grouped to cover a limited number of pain syndromes that were not covered in either the sensory or affective categories of the MPQ in its development stage. Word selection from this sub-class was not common in cancer patients despite the 17 possible words available. This suggested that this sub-class was inappropriate for the cancer population in this study.

Table 6.5 summarizes the MPQ score for the sub-class of number of words chosen (NWC) over the three measurement times. As shown, there was no significant difference between the groups at baseline MPQNWC1 ($F = 0.996$, $P < 0.4$). At the 2 week interval, a significant difference was detected MPQNWC2 ($F = 5.06$, $P < 0.003$) as well as at the 4 week interval MPQNWC3 ($F = 5.76$, $P < 0.002$).

Table 6.6 summarizes the mean and SD for the present pain intensity PPI. No significant difference was detected at baseline MPQPPI1 ($P < 0.071$). The education and control groups showed almost identical means and standard deviations and these scores were lower than those of the communication and control groups. No significant difference was seen at 2 weeks MPQPPI2 ($P < 0.108$): however, a difference was seen at 4 weeks MPQPPI3 ($P < 0.051$).

The MPQ total score has been identified as being the most accurate indicator of changes in pain states, as it combines all the previously described sub-classes and best reflects the total pain experience as discussed in Chapter 4. The MPQ total score shown in Table 6.7 demonstrated a main effect between the four groups over the 4-week study period. At baseline there was no significant difference between the four groups for the total score MPQTI ($P < 0.117$). A significant difference was seen at 2 weeks (MPQT2, $P < 0.003$)

and at 4 weeks (MPQT3, $P < 0.002$). The difference between the groups over time can be appreciated on inspection of Figure 6.1, which compares the group means.

The main effect demonstrated a significant difference between the treatment groups and control at a significance level of $p < 0.002$.

T-Tests showed no significant difference between control and communication groups and no significant difference between education and combined groups. A significant difference was found between the education and control groups as well as between the combined and control groups. Furthermore, the difference in scores for these two groups was at the 2 week interval, without further decrease in scores at the 4 week interval.

Table 6.1

Analysis of Variance of Sensory Pain Measure at

Baseline (MPQS1), 2 weeks (MPQS2), 4 weeks (MPQS3)

MPQS1	***N***	**Mean**	**SD**
Entire Population	74	13.77	5.73
Education	18	12.05	5.15
Communication	16	14.75	5.60
Combined	20	14.85	6.00
Control	20	13.45	6.07
Analysis of Variance			
MPQS1 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	0.947	0.423

MPQS2	***N***	**Mean**	**SD**
Entire Population	71	9.50	6.44
Education	18	5.94	4.95
Communication	15	12.80	7.81
Combined	19	7.84	4.70
Control	19	11.94	6.14
Analysis of Variance			
MPQS2 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	5.295	0.002

MPQS3	***N***	**Mean**	**SD**
Entire Population	65	9.09	6.65
Education	17	5.82	4.86
Communication	13	10.46	6.85
Combined	16	7.31	5.66
Control	19	12.57	7.15
Analysis of Variance			
MPQS3 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	4.230	0.009

Table 6.2

Analysis of Variance of Affective Pain Measure at

Baseline (MPQA1), 2 weeks (MPQA2), 4 weeks (MPQA3)

MPQA1	***N***	**Mean**	**SD**
Entire Population	74	3.95	2.94
Education	18	2.94	2.28
Communication	16	4.50	2.96
Combined	20	4.05	3.48
Control	20	4.35	2.85
Analysis of Variance			
MPQA1 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	1.017	0.390

MPQA2	***N***	**Mean**	**SD**
Entire Population	71	2.01	2.57
Education	18	0.94	1.21
Communication	15	3.20	2.95
Combined	19	1.26	1.59
Control	19	2.84	3.37
Analysis of Variance			
MPQA2 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	3.676	0.016

MPQA3	***N***	**Mean**	**SD**
Entire Population	65	1.93	2.70
Education	17	0.76	1.03
Communication	13	2.61	3.30
Combined	16	1.18	1.75
Control	19	3.15	3.40
Analysis of Variance			
MPQA3 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	3.362	0.024

Table 6.3

Analysis of Variance of Evaluative Pain Measure at

Baseline (MPQE1), 2 weeks (MPQE2), 4 weeks (MPQE3)

MPQE1	***N***	**Mean**	**SD**
Entire Population	74	2.71	1.37
Education	18	2.50	1.24
Communication	16	3.06	1.28
Combined	20	2.50	1.50
Control	20	2.85	1.42
Analysis of Variance			
MPQE1 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	0.711	0.549

MPQE2	***N***	**Mean**	**SD**
Entire Population	71	1.63	1.25
Education	18	1.33	1.23
Communication	15	1.80	1.42
Combined	19	1.26	0.93
Control	19	2.15	1.30
Analysis of Variance			
MPQE2 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	2.190	0.097

MPQE3	***N***	**Mean**	**SD**
Entire Population	65	1.64	1.15
Education	17	5.82	4.86
Communication	13	1.69	1.10
Combined	16	1.56	1.03
Control	19	2.05	1.39
Analysis of Variance			
MPQE3 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	1.580	0.201

Table 6.4

Analysis of Variance of Miscellaneous Pain Measure at Baseline (MPQM1), 2 weeks (MPQM2), 4 weeks (MPQM3)

MPQM1	***N***	**Mean**	**SD**
Entire Population	74	4.02	2.80
Education	18	2.44	1.68
Communication	16	4.68	2.93
Combined	20	4.05	3.15
Control	20	4.90	2.71
Analysis of Variance MPQM1 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	3.100	0.032

MPQM2	***N***	**Mean**	**SD**
Entire Population	71	2.49	2.75
Education	18	1.72	2.34
Communication	15	3.20	2.73
Combined	19	1.57	1.74
Control	19	3.57	3.50
Analysis of Variance MPQM2 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	2.660	0.055

MPQM3	***N***	**Mean**	**SD**
Entire Population	65	1.81	2.40
Education	17	0.41	0.61
Communication	13	2.07	2.06
Combined	16	1.37	1.45
Control	19	3.26	3.36
Analysis of Variance MPQM3 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	5.37	0.002

Table 6.5

Analysis of Variance of Number of Words Chosen at

Baseline (MPQNWC1), 2 weeks (MPQNWC2), 4 weeks (MPQNWC3)

MPQNWC1	***N***	**Mean**	**SD**
Entire Population	74	11.55	3.67
Education	18	10.33	3.44
Communication	16	12.12	3.00
Combined	20	11.55	4.35
Control	20	12.20	3.60
Analysis of Variance			
MPQNWC1 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	0.996	0.400

MPQNWC2	***N***	**Mean**	**SD**
Entire Population	71	8.21	4.27
Education	18	5.77	3.75
Communication	15	10.00	4.94
Combined	19	7.26	3.47
Control	19	10.05	3.67
Analysis of Variance			
MPQNWC2 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	5.060	0.003

MPQNWC3	***N***	**Mean**	**SD**
Entire Population	65	7.83	4.56
Education	17	4.76	3.03
Communication	13	9.53	5.02
Combined	16	7.12	4.22
Control	19	10.00	4.22
Analysis of Variance			
MPQNWC3 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	5.760	0.002

Table 6.6

Analysis of Variance of Present Pain Intensity at

Baseline (MPQPPI1), 2 weeks (MPQPPI2), 4 weeks (MPQPPI3)

MPQPPI1	***N***	**Mean**	**SD**
Entire Population	74	2.00	0.89
Education	18	1.77	0.73
Communication	16	2.31	1.07
Combined	20	2.25	0.91
Control	20	1.70	0.73
Analysis of Variance MPQPPI1 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	2.440	0.071

MPQPPI2	***N***	**Mean**	**SD**
Entire Population	71	1.56	0.85
Education	18	1.33	0.97
Communication	15	1.80	0.86
Combined	19	1.31	0.58
Control	19	1.84	0.89
Analysis of Variance MPQPPI2 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	2.100	0.108

MPQPPI3	***N***	**Mean**	**SD**
Entire Population	65	1.46	0.83
Education	17	1.17	0.72
Communication	13	1.76	0.83
Combined	16	1.18	0.54
Control	19	1.73	0.99
Analysis of Variance MPQPPI3 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	2.740	0.051

Table 6.7

Analysis of Variance of Total Pain Measure at

Baseline (MPQT1), 2 weeks (MPQT2), 4 weeks (MPQT3)

MPQT1	***N***	**Mean**	**SD**
Entire Population	74	26.37	9.82
Education	18	21.72	7.11
Communication	16	29.31	9.73
Combined	20	27.60	11.82
Control	20	27.00	9.02
Analysis of Variance			
MPQT1 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	2.034	0.117

MPQT2	***N***	**Mean**	**SD**
Entire Population	71	17.16	12.03
Education	18	11.16	9.69
Communication	15	22.80	13.75
Combined	19	13.26	8.02
Control	19	22.31	12.49
Analysis of Variance			
MPQT2 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	5.200	0.003

MPQT3	***N***	**Mean**	**SD**
Entire Population	65	16.04	11.55
Education	17	9.35	7.15
Communication	13	18.30	11.27
Combined	16	13.31	9.66
Control	19	22.78	12.89
Analysis of Variance			
MPQT3 by Group			
Source	**D.F.**	**F**	**Sig**
Between Groups	3	5.460	0.002

CHAPTER SEVEN

DISCUSSION

In general, the results of this study support the experimental hypothesis that the nursing interventions of education, coordination of care and the combination of both education and coordination can significantly improve cancer pain management. In total, this study utilized four groups including education of patient and family, communication of pain-related data to treating health professionals, a combined group that included education, communication and and a control group that received current hospital practice. The intervention was provided subsequent to a detailed assessment and was dependent upon an adequate knowledge base of pain mechanisms, aetiology and treatment options. This strategic approach enabled the intervention to be tailored to each individual specific situation. This latter point needs to be emphasized, as previous studies that have examined single aspects of the nursing role have not tailored interventions to meet individual patients needs.

The results demonstrated a significant main effect ($P < 0.002$) in the reduction of the PRI total scores in all the intervention groups but not in the control group. The most significant reduction occurred early in the intervention period, between the baseline measurement and the first fortnightly measurement. The subsequent two weeks failed to produce any further significant reduction on pain scores. Interestingly, no significant difference was detected between the combined group and the education only group, indicating that education in this study was the most powerful intervention. Consequently, the ability of education intervention to reduce pain scores lay in tailoring the education to meet patients specific needs.

Similar randomized control studies evaluating education intervention failed to achieve reductions in pain scores and this may have been due to the use of a structured standardized education intervention. Dalton (1987) sought to alter patient perception and reaction to pain through education on the use of relaxation, distraction and cutaneous stimulation.

The results also demonstrated that the knowledge base of the experimental group had significantly improved. However, there was no statistical significance between the control group and the intervention group for any of the pain rating scales.

One explanation is that there was a small sample size. However, a number of other possible explanations exist.

It is not known whether adequate information was provided to the subject regarding medication. Medication has been shown to provide relief in up to 80% of patients and other methods such as relaxation, massage and heat or cold application can provide a further 20% relief (WHO, 1986). This study concentrated on the latter mechanisms for pain relief and may have neglected the area of drug education. Even though subjects showed improved knowledge about the cause of their pain, inadequate drug knowledge may have neutralised this effect.

A second study undertaken by Rimer (1987) used a much larger sample size of 230 cancer pain subjects. Both the control and intervention groups were balanced for cancer sites, months since diagnosis and known metastases. These controls overcame some of the possible confounding problems that Dalton (1987) experienced. The results showed a significant increase in the knowledge base of the intervention group on all measures. However, only a trend to reduced pain scores in the intervention group could be detected.

While it is unclear why there was no significant reduction in pain scores, despite the increased knowledge base of the subject, one possible explanation may relate to the nurse's lack of knowledge in the implementation of the educational intervention. The nurses implementing the education had received only minimal training themselves (approximately 1 day). It is difficult to imagine how, with such minimal training, a nurse would be able to tailor education to suit the individual needs of the subject. Support for this explanation was provided in the discussion of the results where it is noted that the impact of the intervention varied according to the setting. A significant difference between the experimental group and the control group was found on several measures at the comprehensive cancer centre but not the office based practice sites.

Figure 6.1

[This table is not available on line. Please consult the hardcopy thesis available from the QUT library]

As subjects were randomized this result indicates that some of the difference may have resulted from the knowledge and experience of the nurse providing the intervention.

An additional problem in the study design, which may have prevented the detection of a more significant reduction in pain scores, could be due to the pain measurement tool. Although Rimer (1987) utilized the McGill Pain Questionnaire in her study, only the Present Pain Intensity Index was used in the analysis. This is a six-point scale that ranges from no pain to excruciating pain. The limited number of points forces the subject to condense several aspects of the pain experience into one point on the scale and, as a result, the scale may not be sensitive enough to detect smaller changes that are still significant to the subject.

To further support the impact of tailored education, and to follow on from the Dalton (1987) and Rimer (1987) studies, de Wit *et al* (1997) evaluated a pain education program for chronic cancer pain patients. The de Wit study employed a similar methodology to this current study. A randomized and controlled trial was used to evaluate the impact of tailored patient education. De Wit used trained nurses to obtain baseline assessments and to tailor education to meet the specific needs of the subjects. The content of the education intervention was based on the educational content for subjects and families published in the ONS position paper on cancer pain, the same as for the current study. The outcome measure used in the de Wit (1997) study included the MPQ Dutch version, the European Organisation for Research and Treatment of Cancer Care Quality of Life questionnaire (EORTC QLQ-C30) and a 0-10 numerical pain rating scale.

The de Wit (1997) study, although larger than the current study (n = 383), closely resembles the aims and designs of this current study. One of the major differences was in the provision of a wide-based District Nurse program in the Netherlands. Patients in the de Wit study were divided into two groups, based on receipt and on non-receipt of district nursing. The groups were then randomized to include control and intervention groups with, and without, District Nursing services. The results are similar to this current study. A significant increase was found in pain knowledge in patients who received the pain education program and a significant decrease in pain intensity. Pain relief was mainly found in the intervention group for patients without district nursing. The reasons for this

selective effect were unclear. Apparently, subjects utilizing District Nursing were older, experienced more complex pain problems and needed more help compared to subjects not in receipt of district nursing. It was concluded that an education program alone might not be powerful enough for subjects who experience complicated pain problems (de Wit *et al.,* 1997).

The current study anticipated that education would not be powerful enough to reduce pain in more complex pain syndromes and was specifically designed to provide further intervention in the form of communication and combining communication and education to advocate for the patient to achieve pain relief. This multifaceted approach was considered necessary because Australian nurses do not prescribe medication and, therefore, have no direct capacity to alter ineffective treatment. However, despite the provision of the extra nursing intervention of documentation of pain assessments, care plans, and facilitating early medical review of subjects in pain (communication), no significant difference was detected between the communication group and the control.

Clinically, it was observed that for some subjects in the communication group the intervention had been successful, with physicians responding to the information, making contact with the subject, altering treatment and contacting the research nurse to inform of the changes. In these cases, when alternate treatments were initiated, pain relief was achieved. Statistically, however, these cases did not provide enough power and were obscured in the data by the other communication subjects which had no improvement. When examining the data for statistical significance, wide variability in the study population can obscure the clinical picture. In comparing the communication group to the control group, no statistical difference was seen. However, the communication group did demonstrate a greater score reduction from baseline to the final follow-up. Baseline MPQ total scores for communication and control groups were 29.3 and 27.0 respectively. At final follow-up, communication had an 11-point reduction with a MPQ total score of 18.3, while the control group experienced only a 4.2-point reduction with a MPQ total score of 22.78. The standard deviations for both the communication and control groups were wide, ranging from 9.7 to 13.7; however, this range was similar for both groups at all measurement points. Scores for all the sub-classes were remarkably similar with the

greatest reduction in the communication group being detected in the sensory and affective subclasses.

Despite a trend for subjects in the communication group towards reduced pain scores, this was not reflected in the overall results. Unfortunately for a significant number of subjects in the communication group, the intervention did not result in treatment changes. This lack of response occurred despite the delivery of appropriate information of unrelieved pain and severe interference on quality of life to treating physicians. The same situation occurred with inpatient subjects. In these cases, the medical resident and the nurses caring for the subjects would receive both written and verbal information relating to inadequate pain relief, in addition to a care plan. However, this rarely resulted in changes in treatment regimes.

The reasons for the lack of response to this form of intervention needs to be examined. The response to the intervention occurred at four levels. At the first level, the medical and/or nursing staff received the pain assessment and care plan information and ignored it. At the second level, the information was received, the medical and nursing staff would agree with the assessment findings, they would discuss treatment options but would not implement a change. At the third level, agreement occurred on assessment findings and alternate treatment was discussed. As a result of the assessment, appropriate treatment was implemented but no change occurred in pain scores. At the forth level, all appropriate events took place as a result of the information provided and treatment was altered continuously until the subject achieved a satisfactory outcome.

Several explanations exist to account for the first three levels of response to the communication intervention. The first explanation relates to ward staff's inadequate understanding of pain management interventions: consequently, the nursing staff were unable to make alterations in treatments or to assess their efficacy. Second time constraints, while in no way condoning inadequate pain management, may have accounted for why further monitoring and assessment did not occur. Thirdly, the lack of response may represent a low priority attached to pain control in overall cancer management. Fourth, physicians may consider that the nurse's role in coordin lyation of care in pain management is inappropriate.

The suggested reasons for a non-significant reduction in pain scores for the communication group were also supported by the subjective experience of how pain was managed in the vast majority of cases. When examining all the subjects from the intervention groups, the major alteration in treatment involved medication tailoring. For the majority of subjects, this involved morphine titration and the introduction of morphine, which was usually implemented without any difficulty. For a large percentage of subjects, this was often enough to control their pain. However, for a significant minority of subjects, the pain would not respond to morphine and management required the introduction of alternate forms of treatment. If morphine was ineffective in reducing pain, then adjuvant pharmacological therapy such as NSAID, tricyclic antidepressants and Prednisolone would be tried. These additional medications were introduced hesitantly and often at inappropriate doses. In the case of tricyclic antidepressants and anticonvulsants, introduced for suspected neuropathic pain, the starting doses were very high, were not titrated and consequently would cause severe side effects. If these interventions were also unsuccessful little else was offered to the patient. Over the course of the entire study, only one patient who failed to respond to pharmacological interventions was referred for a neurosurgical assessment. At the time this study was conducted, it was not routine practice to consider patients for pain management outside those that could be provided by the pharmacological intervention. Three patients were offered physiotherapy and occupational therapy as part of communication to an allied health care professional. This resulted in the provision of relaxation programs, TENS machines and strategies to help minimize painful movements.

The ineffectiveness of communication was also detected in the combined group, where it was expected that the combined interventions of education, communication would have had greater impact on reducing in pain scores than in the education only group. However, there was no statistical difference between these two groups.

It therefore appears that patient-driven alterations to management are more easily accepted than nurse-driven, indicating that other health care professionals do not recognize the role of the nurse as a coordinator of care. Lack of response to this intervention may have been averted if more understanding and commitment were obtained from the medical staff at the outset of the study. However, without controlling for this variable it is difficult to

determine if such commitment would have altered the outcome. It does, however, suggest that improved pain management requires a change in all team members who care for people with cancer. The nurse needs to have the appropriate knowledge base, be able to educate patients and families and also to gain recognition by other team members as a coordinator of such care. In addition, medical staff and allied health staff need to better recognize the nursing role and to utilize the information provided by the nurse to implement appropriate pain strategies. It would also be helpful if there were a commitment by all staff caring for patients who experience pain to persist with continuing treatment options and evaluation procedures until the patient reports a satisfactory outcome.

RECOMMENDATIONS:

Based on the finding of this study, education tailoring is a two step process. Firstly it is dependent upon comprehensive pain assessment and secondly, it is dependent upon being able to adapt assessment findings to meet individual patient needs. For this to occur, the nurse requires a sound knowledge base about pain pathophysiology, causes of pain in cancer and treatment options. A nurse with advanced knowledge can act as an information resource and provide expertise for patients with difficult to manage pain. While the practice of establishing a pain management team within hospitals is ideal for patients with difficult to manage pain, it is also important to ensure that the nurse at the bedside maintains a basic understanding of pain management principals. The nurse at the bedside has a role and responsibility towards providing pain relief that is not compromised. Such an approach will ensure that more patients are adequately managed.

The incorporation of a pain scale into the observation chart for any patient receiving narcotic analgesia may encourage more consistent monitoring of pain for inpatients. In addition, for patients receiving narcotics, a standard time frame should be established (i.e. 48 hours) in which the patient is fully reviewed if pain scores are not reduced and/or side effects not managed. The regime needs to be examined by the treating medical and nursing staff for efficacy and alternate therapy implemented and monitoring recommenced. This may help prevent some patients from developing chronic pain due to continual bombardment of nociceptive input to the spinal cord.

It was observed in this study that the mainstay of treatment involved medication titration, and in particular morphine. In the majority of cases, once appropriate dosages were found and side effects managed, pain would be controlled. However, a number of subjects experienced pain that was not responsive to morphine. Seeking and obtaining changes in treatment for these subjects was lengthy. Over this time, subjects would become frustrated, lose morale and pain cycles would escalate. It was the practice in the intervention groups to determine morphine response in 4 to 5 days. This would be achieved by continually titrating the dose to maximum levels where side effects precluded further increases. In these cases where dose escalation provided no meaningful reduction in the patients pain, the pain would then be considered non-morphine responsive and education and communication focused on suggesting alternate treatment. It is recommended that a protocol be developed whereby response to morphine is determined quickly and, if unresponsive, patients are referred for multidisciplinary management. It is also recommended that further research be conducted on more novel ways to manage pain that does not respond to morphine.

In addition, this study should have incorporated scales which identified easy to manage pain and difficult to manage pain. Further research is required to understand the nature of difficult to manage pain and what effective interventions may be implemented for this clinical group. Also, more accurate recording of dosages may have been helpful in explaining why there was no significant decrease in the pain scores of patients in the communication group.

Further improvement in coordination of care is likely if the nurse's role is more accepted by the other members of the health care team. This may occur if more nurses are accountable for pain relief, are knowledgeable about pain management and are involved in the evaluation of their clinical interventions to manage such pain.

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APPENDIX A

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APPENDIX B

INFORMED CONSENT

To determine whether specific nursing intervention is of value in pain control, it will be necessary to compare the outcome of this intervention with the outcome of our current techniques and facilities for pain control.

At the moment, pain in our patients is reported to the nurse or doctor concerned and treatment is given. Sometimes extra treatments such as physiotherapy or radiotherapy may be given in addition to pain controlling drugs. Patients who choose to participate in the study will be assigned randomly to receive our current best treatments for pain control, or to receive the additional intervention of the pain control nurse.

All the patients in this study will be closely monitored from the point of view of their pain for a one-month period. At the initial interview two questionnaires will be shown and read to patients and the investigator will record the results. The interview will be repeated each fortnight on the telephone to record the outcome of pain control over time. Each interview will take approximately 15 minutes.

You may of course leave the study at any time for whatever reason of your own. This would not influence the quality of your treatment in any way. If you have any questions regarding this project, please ask either Sr. Costello or Dr. Briggs.

Certification by subject:

I _____ of _____ certify

that I have the legal ability to give valid consent and that I am voluntarily giving my consent to participate in a study of the contribution of the nursing process to the management of pain in cancer patients.

I acknowledge that:

1. – the nature of the experimental interventions have been described to me
   – the possible effects of the test have been explained to me
   – I have been informed that I am free to withdraw from the project at any time
   – the project is for the purpose of teaching and research
   – I have been informed that the confidentiality of the information I provide will be safeguarded

2. – to the best of my knowledge there is no reason why I should not take part in this investigation

Signed: _____ ***Date:*** _____

(Participant)

APPENDIX C

MODIFIED BRIEF PAIN INVENTORY

BRADMA

1. Diagnosis

2. How long has it been since you first learned of your diagnosis? _____ months

3. Have you ever had pain due to your present disease?
   Yes
   No
   Uncertain

4. When you received your diagnosis, was pain one of your symptoms?
   Yes
   No
   Uncertain

5. Have you had surgery in the past month?
   Yes
   No

6. Have you had chemotherapy in the last fortnight?
   Yes
   No

7. Have you had radiotherapy in the last fortnight?
   Yes
   No

8. Throughout our lives, most of us have had pain from time to time (such as minor headaches, sprains & toothaches). Have you had pain other than these everyday kinds of pain during the last week?
   Yes
   No

9. Please rate your pain by circling the one number that best describes your pain at its worst in the last week.

   0 1 2 3 4 5 6 7 8 9 10

   no pain **pain as bad as you can imagine**

10. Please rate your pain by circling the one number that best describes your pain at its least in the last week.

    0 1 2 3 4 5 6 7 8 9 10

    no pain **pain as bad as you can imagine**

11. Please rate your pain by circling the one number that best describes your pain on average.

    0 1 2 3 4 5 6 7 8 9 10

    no pain **pain as bad as you can imagine**

12. Please rate your pain by circling the one number that tells how much pain you have right now.

0	1	2	3	4	5	6	7	8	9	10
no pain										**pain as bad as you can imagine**

13. What kinds of things make your pain feel better?

14. What kinds of things make your pain feel worse?

15. What medications are you receiving for pain?

16. Circle the one number that describes how, during the last week, pain has interfered with your: General activity

0	1	2	3	4	5	6	7	8	9	10
does not interfere										**completely interferes**

17. Mood

0	1	2	3	4	5	6	7	8	9	10
does not interfere										**completely interferes**

18. Sleep

0	1	2	3	4	5	6	7	8	9	10
does not interfere										**completely interferes**

19. Normal work

0	1	2	3	4	5	6	7	8	9	10
does not interfere										**completely interferes**

20. Enjoyment of life

0	1	2	3	4	5	6	7	8	9	10
does not interfere										**completely interferes**

21. How much relief have pain treatments or medications provided?
Please circle the one percentage that most shows how much relief you have received.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
no relief										**complete relief**

22. What do you believe is the cause of your pain?
    - **a) the treatment**
    - **b) the disease**
    - **c) a medical condition unrelated to the disease or treatment**

APPENDIX D

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