

**Management of Cancer-Related Pain:
Nurses' Knowledge in Bahrain and Jordan**



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**Management of Cancer-Related Pain:
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By

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DEDICATION

*To my parents for their love, caring, encouragement
and prayers over the years,*

To my husband for his support throughout my study,

*To my Lovely daughters SHATHA, DUHA, and SAJA , for their
gifts of love and understanding,*

To all cancer patients who taught me the preciousness of life

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**Management of Cancer –related pain:
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By

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Advised by

Dr. Mohammed Said Al-Khalil

Abstract

Pain is a significant health problem for cancer patients which affect overall quality of life. The purpose of this study was to explore the current knowledge of nurses at Salmaniya Medical Complex (SMC) in Bahrain and Al-Amal Cancer Center (ACC) and Jordan Hospital (JH) in Jordan regarding cancer-related pain management. This descriptive comparative study conducted using a convenient sample (n=170) of nurses working in the oncology settings. The results revealed that nurses in both countries have significant knowledge deficits that could adversely affect the care provided for cancer patients. Nurses had exaggerated fears of the side effects associated with opioid analgesics. Such fear may hinder the provision of medication in appropriate timing and doses to cancer patients. The results in both countries recommended the need to re-evaluate nursing educational training in order to improve their knowledge and skills in this area of care.

CHAPTER I

INTRODUCTION

Background and Significance:

Pain is a significant health problem for cancer patients. Cancer-related pain is a major cause of fear for some patients and is more frightening than death itself (Cleary, 2000). Cancer pain is multidimensional and a complex phenomenon requiring effective assessment and management based on current knowledge. Wall & Melzack, 1989 discussed the nature of cancer pain and described it as having dimensions: physical, emotional, social, spiritual and behavioral. Therefore, optimal cancer pain management demands careful attention to each of these dimensions of pain.

The International Association Study of Pain (IASP) defined pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (IASP, 1979 p. 249). Pain can be classified as acute, chronic or cancer pain. Acute pain indicates tissue damage and can be very severe, trigger strong autonomic arousal, and produce intense emotions such as anxiety. Chronic pain is defined as “prolonged pain, usually lasting more than six months; cause may or may not be known; has not responded to treatment and /or does not subside after injury heals; intensity may range from mild to severe.” (Spross, McGuire, & Schmitt 1990, P. 598). On the other hand cancer pain is defined as the “pain experienced by adults and children with cancer in which the pain is due to the tumor itself, to cancer therapy or to associated problems.” (Spross, McGuire & Schmitt, 1990, P. 597). Cancer

pain can last for many months or years with occasional exacerbation or progressive increase in severity such as metastatic bone pain (Devita, Helman, & Rosenberg, 2001).

The incidence of cancer-related pain is high. According to the American Cancer Society (ACS) (2002), approximately 50%-70% of people with cancer experience some degree of pain. Pain is a major symptom for 40% of patients with cancer and affects 75% of patients with advanced disease (Clearly, 2000). Furthermore, the prevalence of chronic pain among cancer patients is about 30-50% with solid tumor and 70-90% as the disease progresses (World Health Organization, 1990; Parris, Foster & Melzack, 1997; Portenoy, & Lesage, 1999). The severity and prevalence of cancer-related pain depends on many factors, including site, stage of the disease, location of metastases, treatment and other concurrent diseases (Thomas & Weiss, 2000).

The American Cancer Society (2002) considered cancer pain as a serious public health problem and a major priority for the American Cancer Society (ACS, 2002). The World Health Organization (WHO) has identified that relief of cancer pain is an international priority, recommending a stepwise pharmacological approach as a primary strategy for relieving cancer pain (WHO, 1986). Less than 50% of cancer patients get adequate relief of their pain. When pain is not treated effectively it has negative impacts on patients' quality of life (ACS, 2002).

The consequences of unrelieved pain on cancer patients may lead to major physical and psychological disabilities. Among the physical disabilities are lack of sleep, nausea, fatigue, anorexia and decreased functioning. Such consequences may require medical interventions, which may expose patient to further risks and decreased quality of life (Wells, 2000; Groenwald, Frogge, Goodman, & Yarobro, 1997, Wall & Melzack, 1989). On the other hand, psychological disturbances such as anxiety, anger, fear and depression might decrease pain tolerance, reduce coping effort and impaired immune

inadequate cancer pain management involved lack of nurses' and physicians' knowledge. Nurses lacked knowledge regarding pain assessment and management of cancer pain and often have negative beliefs and attitudes (Bauwens, Distelmans, Storme, & Kaufman, 2001; McCaffery, Ferrell, O'Neil-Page, & Lester, 1990; and Vortherms, Ryan, & Ward 1992, and McCaffery & Ferrell, 1997).

Nurses are in an important position as they are the most frequent professionals in contact with patients on different levels of care. This puts the nurses in a unique position to identify the patients who have pain, to assess and manage their pain effectively, to educate the patients who are reluctant to take pain medications, and advocate for their patients when physicians are reluctant to prescribe appropriate types or doses of analgesics. Because of this central role of responsibility in assessment and management of pain, nurses are expected to be knowledgeable about cancer pain management. Although, nurses do not have complete control over patients' pain management regimen, they are in a position to significantly influence it.

Nurses play an essential role in the development of pain management plans. Inadequate pain relief of cancer patients can be attributed to nurses' lack of knowledge about pain assessment, management and the incidence of narcotic addiction as well as the negative attitudes regarding therapeutic levels of analgesia. Under-treatment of cancer-related pain increase patients suffering and experience of pain, which is often mirrored by nurses who lacked the appropriate knowledge to assess and manage pain effectively.

Management of cancer-related pain is a major challenge for health care professionals including nurses. The unique complex nature of cancer pain puts more burdens on the staff nurses working with cancer patients. Appropriate pain management results in quicker clinical recovery, shorter hospital stays and a better

quality of life (Salerno, Willenes & Jacox, 1996). One needs to assess the knowledge and attitudes of nurses taking care of cancer patients in order to achieve optimal cancer pain management. Understanding what nurses know about cancer pain management is the first step in finding ways to improve quality of care provided to oncology patients. Thus, this study will be an attempt to explore the nurse' knowledge about cancer pain Bahrain and Jordan.

Therefore, this study is designed to assess the nurses' knowledge of cancer pain in Bahrain and Jordan. The results of the study will provide baseline information that can be used to plan interventions in order to increase nurses' knowledge and competence in taking care of cancer patients experiencing pain. Furthermore, conducting this study will identify the gap of knowledge in nursing curricula in order to incorporate the concept of pain in the curriculum and to prepare undergraduate nurses in managing patients' pain. By identifying the current level of nurses' knowledge about cancer pain and its management, deficiencies in knowledge will assist clinicians to plan educational interventions that prepare nurses to provide high quality nursing care for cancer patients in Bahrain and Jordan. Therefore, this will correct the misconceptions about pain, which has a positive impact on the quality of life of cancer patients, increase patient satisfaction, reducing further complications of pain, decreasing length of stay and a shorter recovery time. Hence, it is perceived that the overall cost of care will be reduced. In addition, findings of this study might help the nurses to be more alert for patients' pain management; and this will guide them to implement the correct measures to relieve patients' pain.

Pain management knowledge has been researched in both cancer and non-cancer patients. In the review of available literature, there was a limited number of studies

addressing nurses' knowledge about pain assessment and management in the Arabic culture.

Purpose of the Study:

The purpose of this study is to explore the current knowledge of nurses at Salmaniya Medical Complex (SMC) in Bahrain and Al-Amal Cancer Center (ACC) and Jordan Hospital (JH) in Jordan regarding cancer-related pain management.

Statement of the Problem and Study Questions:

Lack of knowledge, and misconception related to cancer pain management among health professionals is one of the major obstacles in offering high quality care to cancer patients with pain. Health professionals have many misconceptions that interfere with their management. Such misconceptions are those related to maintenance of therapeutic levels of analgesia, fear of patient addiction and narcotic induced respiratory depression.

The research questions for this study are as follows:

1. What is the Bahraini and Jordanian nurses' level of knowledge about cancer related pain management?
2. Is there any difference in the level of knowledge about cancer-related pain management between Bahraini and Jordanian nurses?
3. Is there a relationship between nurses' knowledge and selected demographic variables; i.e. age, level of education, years of experience, oncology experience, personal experience of pain and pain management education among Bahraini and Jordanian nurses.

Operational Definition of Variables:

Knowledge of pain: is operationally defined as the nurses knowledge about assessment and the pharmacological and non pharmacological management of pain as measured by McCaffery & Ferrell, (1997) Nurses Knowledge and Attitudes Survey Regarding Pain tool (NKAS) (Appendix A).

Limitations of the study:

1. The study used a convenient sample from both countries, which limits the generalizability of the results in both countries.
2. This study represents only two Arabic societies, so it cannot be generalized to all Arabic societies.
3. Elimination of the attitude questions limited the scope of the study.
4. Diverse educational background of the participants may have an influence on the results on this study.

CHAPTER II

REVIEW OF LITERATURE

This chapter contains two sections: the first one describes the theoretical framework used to guide this study. The second one reviews literature regarding cancer and cancer pain prevalence, cancer pain management, and finally nurses knowledge about cancer pain management.

Theoretical Framework

The theoretical framework for this study is based upon Melzack and Wall's the Gate Control Theory of Pain proposed in 1965. The theory describes the process of pain transduction transmission, modulation and perception in the nervous system. Transduction begins when a noxious (painful or damaging-tissue) stimulus affects a peripheral sensory nerve ending and initiates the pain. Sensitive tissues are those that contain pain receptors referred to as nociceptor. These receptors translate the painful nociceptive stimuli into an electrical impulse that is transmitted to the spinal cord at the dorsal horn. Nociceptive impulses are transmitted through the peripheral nervous system by A-delta and C fibers. The large diameter myelinated fast conducting A-delta fibers are associated with sharp pain and often respond to one sensory stimulus. On the other hand, the small diameter unmyelinated slower conducting C-fibers are the most receptors multimodal and are now believed to be responsible for central sensitization of chronic pain.

The nociceptors are stimulated substances released into the tissues where the damage or the injury takes place. These substance lead directly to nerve endings being

activated, causing the sensation of pain to be conducted by the A-delta fibers. Injury also releases chemical substances known as neuroregulators and neurotransmitters such as substance P, calcitonin gene-related peptide, somatostatin, acetylcholine, histamine, and bradykinin and prostaglandins. These various neurotransmitters chemical mediators are effective in producing nociceptive reflexes and the experience of pain by activating the peripheral nociceptors, stimulating the release of pain-producing substances, or sensitizing peripheral endings of nociceptors.

According to the gate theory noxious stimuli are transmitted by A-delta and C fibers at substantia gelatinosa in the dorsal horn of the spinal cord. They ascend or descend from one or two segments in specific lamina in the dorsal horn. The large A-Delta fibers terminate in lamina I and V and the C-fibers terminate in lamina II and possibly lamina I. Hence, the transmission of pain impulses from the spinal cord to the thalamus to brain and then to the cortex level of awareness could be inhibited (gate is closed) or facilitated (gate is open).

The descending pathways in the midbrain and medulla function as pain modulation. This modulation of the pain occurs in the early synapses in the dorsal horn of the spinal cord. The grey matter surrounding the periaqueductal gray (PAG) and many other parts of the brain stem can activate descending pathway. These pathways can inhibit the nociceptive stimulus at the dorsal horn levels. They contain many nerves that use serotonin as their neurotransmitter. The endogenous opioids are chemicals produced by the body to decrease the pain experience. The endogenous opiate-like endorphins and enkephalins, neuropeptides in the spinal cord and brain produced by the body to provide analgesia are one group of chemicals that decrease the transmission of the pain signal in the dorsal horn. Administration of the exogenous opioid produces analgesia via the specific opioid receptors of this system. The fact that there are several types of receptors

mu delta and kappa explains the differing patterns of actions of opioids. The exogenous narcotic analgesic will mimic the effect of the endorphins in the central nervous system.

Perception is a vague subjective correlation of pain that encompasses complex behavioral, psychological and emotional factors involved in transmission and modulation of pain. The degree of noxious stimulation leads an individual to interpret and report a sensation of pain. This remains the same among individuals, but the pain experience and the ability of the individual to endure pain intensity is different from one individual to another. Therefore, pain experience can be altered based on the individual belief, values, culture, and psychological and social conditions. Thus, this makes people respond to pain differently.

This theory proposes the inter-relation of the physical, psychological, and cognitive components of the dorsal horn, the brain stem, and the cerebral cortex in modulating and integrating the pain experience. We need to inhibit the signals, which arise from the thalamus and cerebral cortex, which in turn decreases the pain experience, closing the pain gate. Further, the theory supports the administration of medication before opening the gate. This will help in keeping the gate closed longer and allowing fewer pain impulses through, so less pain will be perceived by the patient (McCaffery, 1979). Furthermore, when the gate was fully opened by the rush of pain impulses, the patients needed a higher dose of pain medication to close the gate. Therefore, prevention of sudden and full opening of the gate is the key to effective pain management (Hekmat, Burke, & Howell, 1994). Our understanding of pain modulatory system and its neuroanatomic and neuropharmacologic correlates have had a major effect on the management of cancer-related pain.

Empirical Literature:

Accurate pain assessment and management are essential for nurses caring for patients with cancer. Studies of existing knowledge among nurses concerned with cancer pain assessment and management have revealed serious deficiencies, which may be due to lack of knowledge, fear, and misconceptions. This section is divided into four main headings: cancer and cancer pain prevalence; cancer pain management; nurses' knowledge and attitudes about cancer pain management; and instrumentation.

Cancer and Cancer Pain Prevalence:

Cancer is defined as "a group of diseases characterized by uncontrolled growth and spread of abnormal cells. If the spread is not controlled, it can result in death." (ACS, 2002). Cancer is being recognized as a worldwide health problem. The number of cancer patients in the world is increasing. Cancer affects at least 9 million, kills 5 million people every year and, causes about one-tenth of all deaths worldwide (WHO, 1995). More than half is in developing countries (WHO) (1996). By the year 2020, there will be 20 million new cancer patients each year (WHO, 1998). In America about 1, 284,900 new cancer cases are expected to be diagnosed in 2002 and about 555,500 Americans are expected to die of cancer, more than 1,500 people a day. Cancer is the second most common cause of death in the United States causing one of every four deaths (American Cancer Society, 2002). Bahrain is not in a better situation than other developing countries in terms of the incidence of cancer. There were 1,496 new cancer cases diagnosed among Bahrainis during 1999. A slight increase was observed in 1999 compared with previous years, as there were 1,112 cases in 1997 and 1,412 cases in 1998 (Bahrain Health Statistics Report, 1999). Furthermore, out of 1,920 total reported deaths in 1999, 233 (12%) were related to cancer. In Jordan, the total number of new cancer cases registered by Jordan National Cancer Registry in 1999 were 3,796. Of

these, 3142 (82.8%) cases were among Jordanians, and 654 (17.2%) cases were Non-Jordanians (Jordan National Cancer Registry, 1999). Cancer is the second leading cause of death in Bahrain and Jordan after coronary heart disease (Bahrain Health Statistical Report, 1998 and Jordan National Cancer Registry Report, 1999). By the time these patients are diagnosed, the majority of them are incurable

Pain is one of the most common feared symptoms associated with cancer (Regan, 2000). The World Health Organization suggests that 50% of the people diagnosed with cancer each year will suffer from cancer related pain (WHO, 1995). Howell, Butler, Vicent, Watt-Watson and Streans, 2000 estimated that approximately 60% of patients with cancer experience pain. The incidences of cancer-related pain depend on many factors: pain caused by tumor; pain caused by cancer therapy and, finally, pain that is totally unrelated to the cancer. Fifteen percent of patients with non-metastatic cancer have significant pain (Daut & Cleeland, 1982). In advanced cancer, 60%-90% of patients report debilitating pain; and up to 25% of all cancer patients die in pain (Cleeland, 1984). Chronic pain is experienced by about one-third of all cancer patients and by 70-90% of those with advanced or terminal disease (Bonica, 1985). In addition, pain is a major symptom for metastatic cancer. Daut & Cleeland, (1982) indicated that 75% suffer from pain as the disease progresses. Pain is due to the different modalities of treatment, especially surgery and radiation, as well as pain due to complications (MacMillan, Williams & Chatfield, 1988). Pain during and after cancer therapy continued to be significant. Greenwald, Francis, Bergner, Perrin & Bonica, 1982 as cited in Bonica, 1985 found patients continued to have pain in 85% of lung cancer, in 100% of patients with cancer of the pancreas, in 57% of the patients with cancer of the prostate, and in 70% of the patients with cervical cancer.

Daut & Cleeland (1982) documented the perceived meaning of pain in their study of 667 patients with painful cancer. Patients who believed the symptoms represented a worsening of their condition reported the greatest interference with activity and pleasure. The next most affected were those who regarded pain because of therapy and the least affected were those who felt that the pain was due to unrelated causes. In another study 80% of outpatients referred to pain therapy. The author indicated that 62% of patients pain was due to the tumor; 28% was due to the therapy; and 10% was unrelated to either one (Foley, 1982).

Cancer Pain Management:

Pain Management is “the treatment of pain and it is derived from the individual’s perception and experience” (Davis, 1992, P. 77-78). Cancer pain management is a serious public problem and a major priority for the American Cancer Society (ACS, 2002). For the patient with cancer, pain is one of the most feared consequences. Three critical components of cancer pain management occur on a cyclical basis. The first step in pain management is a comprehensive assessment of the pain complaint; then therapeutic opioid regimen; and lastly, integration with other therapies (Clearly, 2000).

Assessment is the cornerstone of adequate pain management and requires thorough patient evaluation and frequent monitoring. It is a challenge for nurses to understand patient’s experience of pain. The most important principle of pain assessment is realizing the subjective nature of pain and accepting the patient’s report of pain. In a study conducted in five countries: Australia, Canada, Japan, Spain and the United States, the results revealed that nurses in Canada and the United States knew that the patient, not the primary nurse or health care provider, was the best judge of pain intensity. However, more than 25% of nurses in each country suspected that patients

over report their pain. The study also indicated that approximately 11-16% of nurses from the United States, Canada, and Australia believed that a placebo could be used to determine if pain is real. A higher percentage among Japanese nurses 18.7% and 51.1% of Spanish nurses carry the same belief (McCaffery & Ferrell, 1995).

Researchers have identified that nurses are underestimating or overestimating the degree of pain experienced by their patients (Zalon, 1993; Bondestam, Hougrenk, Gaston-Jonhanson, Jern, Herlitz, & Holmberg, 1987 and Camp, 1988). This is supported by a study conducted in Kuwait by Harrison in 1993. In this study, 199 patients from medical, surgical and pediatric wards at a hospital in Kuwait were interviewed about their feeling of pain during the previous 24 hours using the Visual Analogue Scale (VAS) and to recount the outcome of any requests made for additional analgesics. The same rating scale was given to the nurses. The major finding of the study was that the nurses consistently underestimated their patients' pain.

Another study was conducted In Jordan, to describe the role of Jordanian nurses in the management of post-operative pain in the recovery room. The researchers observed 42 nurse-patient encounters in the recovery room. The results of the study indicted that Jordanian nurses lacked knowledge and skills necessary for pain assessment and management of post-operative patients. Also the majority of patients in this study did not report their pain, regardless of the fact that they were found to experience moderate to severe pain as measured by Visual Analogue Scale (VAS). This reflects that the patients were reluctant to communicate their pain. The authors indicated that the Jordanian cultural background could play a major role in the expression of patients' pain; they attribute wellness and illness to God's will. Muslims highly value patience and tolerance to different hardships (Al-Hassan, AlKhalil & Al-Ma'iatah, 1999).

Opioid therapy is the mainstay of cancer pain management (Cleary, 2000). Surveys indicate that nurses have increasingly seen morphine as the drug of choice for cancer pain, but most nurses thought oral morphine was ineffective (Fox, 1982; Watt-Watson, 1987 and Hanks & Justains, 1992). In recognizing the need for improved pain management worldwide, the World Health Organization (1986) recommendations for cancer pain management is a three-step analgesic ladder: (1) acetaminophen analgesics or NSAID +/- adjuvant for mild pain; step (2) weaker opioid (e.g. codeine) for mild to moderate pain + acetaminophen or NSAID +/-adjuvant; step (3) stronger opioid (e.g. morphine) for moderate to severe pain + acetaminophen or NSAID +/- adjuvant. Also with this ladder is considered the basic WHO recommendations for cancer pain control, by the ladder, by mouth, around the clock, and on an individual basis (WHO, 1996). The Agency for Health Care Policy and Research (AHCPR) 1994 recommended the use of the WHO ladder for cancer pain management.

Knowing the equianalgesic dose of the drugs and route of administration can ensure an appropriate drug use. Lack of attention to the drug dose is a common indicator for under medication of pain patients. Administration of analgesics for cancer patients should be given regularly in order to maintain the plasma level of the drug above the minimum effective concentration for pain relief. Therefore, patients during the initial titration should receive their analgesic as needed to determine their total 24-hours requirements (Coyle, 1985 and Devita, Helman, & Rosenberg, 2001). Treatment of the underlying cancer is an important component in management of cancer-related pain. Chemotherapy or radiotherapy is anticancer therapies, and both are useful in preventing bony metastasis and in alleviating pain (Cleary, 2000).

Nurses Knowledge about Cancer Pain Management:

Researchers provide insight into knowledge about cancer pain management. This leads us to question whether we fully understand the knowledge of nurses who care for cancer patients. Literature suggested different factors play a role in the under-treatment of cancer-related pain. Among the most frequently cited factors behind the under treatment of cancer pain are nurses lack of knowledge and negative attitudes about pain assessment and management (McCaffery & Ferrell, 1997, Bauwens et al. 2001)

Numerous studies have documented the tendency of physicians to under prescribe analgesics and nurses not administering full amount of a prescribed analgesic. One of the most frequently cited studies in the literature was done by Marks & Sachar (1973). Using a questionnaire survey of 102 physicians in two teaching hospitals, the authors found misconceptions about analgesic properties of meperidine and a major concern about addiction, leading to under-prescribing of analgesic. Only 60% of the physicians accurately identified that the chance of addiction from use of narcotic drugs for pain relief is less than 1%. About 16% of the sample thought that the chances of addiction were between 1-5%, and 22% of the sample answered that the chances are less than 6%. Data from the interviews of 37 patients on medical surgical wards (including cancer patients) being treated with narcotic analgesics indicated that severe pain was experienced by 32% of patients and 41% experienced moderate distress. Also, the authors found that physicians, prescribed amounts of meperidine (pethidine) for patients with moderate to severe pain due to cancer were about 50-65% of the established effective dose; and doses administered by nurses were at the lowest amount ordered, as little as 20-30%. Chart review showed that the physicians under-prescribed

analgesic drugs and that nurses compounded the problem by administering less opioid drug than was even prescribed for the patient.

Pritchard (1988) conducted the first international study of nurses' knowledge about cancer pain. Surveys of 669 nurses from 23 countries responded to a questionnaire mailed to them. The majority of these nurses believed that they had received little or no training in cancer pain management, and education about cancer pain was inadequate. Further, 55% felt that the patients with cancer pain received poor care and the majority (85%) thought that more emphasis should be given to management of cancer pain.

Although a number of studies have documented lack of knowledge in relation to pain management issues, few studies have assessed these issues using samples of nurses from different countries. In the study about nurses' knowledge regarding cancer pain management in five countries (Australia, Canada, Japan, Spain and the United States), the result indicated that nurses in all five countries have inadequate knowledge of the WHO publication about Cancer Pain Relief. In addition, nurses from each country hold misconception regarding the incidence of addiction; and they believe that cancer patients over-report their pain. The findings suggested that this could adversely affect the care of cancer patients with pain. Furthermore, the results revealed that nurses from countries with longer exposure to education established palliative care programs (Australia, Canada, and United States) tend to have a higher level of knowledge about cancer pain relief than nurses from countries in which palliative care was more recently developed (Japan and Spain). Thus, educational efforts do improve the level of knowledge in nurses (McCaffery & Ferrell, 1995).

Cohen (1980) found a similar finding regarding nurse' lack of knowledge about cancer pain management among American nurses. The author surveyed 121 nurses and

revealed that nurses had inadequate knowledge about the use of opioid analgesic drugs and were afraid of opioid addiction. When asked to estimate the number of persons with pain who become addicted as a result of being treated with narcotic drugs in the hospital, only 31.5% of the nurses correctly thought it was less than 1% whereas 64.8% thought it was greater. Thirteen percent of this sample estimated the chance of addiction at 26% or greater. The author concluded that nurses need more education in the pharmacology of analgesics. This conclusion was supported by Allcock (1996) who stated that lack of knowledge among nurses about pain assessment contributed to inaccurate pain management. In addition, the author suggested that continuing education might improve pain assessment and pain management.

McCaffery et al., (1990) analyzed data obtained from 27 workshops across 14 states in America. In order to determine the level of nursing knowledge regarding pharmacological management of pain, 2,459 nurses were surveyed. The findings indicated that nurses lacked knowledge in relation to the classification of opioid and the frequency of addiction in those patients with pain. Less than 25% of the respondents knew that the incidence of addiction was less than 1%, with 21.6% of the sample believing that addiction occurred in 25% or more patients receiving drugs for their pain. The authors concluded that basic nursing education has not provided nurses with the knowledge that would enable them to assume an active role in the pharmacological management of pain (McCaffery et al.1990). Thus, this may indirectly contribute to the under-treatment of pain with opioid drugs. This result is congruent with Fox, (1982); Watt Watson; (1987), and Mayer, (1985).

In a similar study, Hamilton & Edgar (1992) surveyed 318 nurses regarding their knowledge of pain assessment and management at an acute care teaching hospital in Canada with the aim of identifying the pain assessment and knowledge base of bedside

nursing care. The mean percentage of correct questions was 63.9%, and overall results indicated that the nurses were deficient in their knowledge and understanding of opioid addiction, equianalgesic dosing and differences in acute and chronic pain. This may reflect the incorrect belief and attitudinal bias nurse's hold regarding pain management.

In another study conducted in Australia, 2768 surveys were mailed to registered nurses to examine the nurses' knowledge in relation to pain management issues such as addiction, use of analgesia and assessment of pain. Findings of this survey concluded deficits in nurses' level of knowledge, as only ten of the 1,015 respondents correctly answered all knowledge items and demonstrated the least amount of knowledge about pharmacological management of pain. The results also showed that nurses who were employed for more than one year in their clinical unit knew more than nurses who were employed in their unit for 6-12 months. In addition, young nurses aged 20-29 years performed better and knew more about addiction than nurses aged 40 years and older (Van Niekerk, & Martin, 2001)

A study was conducted in Belgium of 197 health workers to investigate the knowledge and attitudes regarding cancer pain, the majority (163) were nurses. The participants were asked prior to and after an educational session, then after 3 months, to evaluate the effectiveness of education as an intervention to increase their knowledge. The results revealed that 60% of the participants believed that cancer pain could be relieved with adequate treatment. In addition, 76% agreed that the majority of patients are undertreated, 42% agreed that addiction occurs rarely, and 17% agreed that psychological pain occurs very frequently. In general, the participants had limited knowledge about morphine and its side effects before the sessions. Seventy-five percent of the participants were aware of the subjective nature of pain and that the

patient is the most accurate in reporting the pain intensity (Bauwens, Disteimans, Storme & Kaufman, 2001).

In another study Fife, Irick and Painter (1993) found only 25% of nurses' surveyed reporting fear of addiction. In addition, McCaffery and Ferrell, (1991) reported that nurses have fear of overmedication and resulting respiratory depression and sedation.

Furthermore, another three-year survey was conducted to determine the prescribing patterns of German physicians in the treatment of cancer pain. The computerized patient's records of 330 general practitioners and specialists in internal medicine, who treated a total number of 1,104,435 patients over 3-years, were analyzed. Strong opioids were prescribed to just 322 of 16,630 cancer patients (1.9%). More than 98% of cancer patients never received strong opioid pain relief. Only 99 (0.6%) of cancer patients were treated with strong opioids for longer than three weeks of treatment during a 156 -week study period. In 45% of terminal ill patients, opioid medication was stopped before death. This result led the authors to conclude that the majority of cancer patients in Germany were under-treated (Zenz Zenz, Truba, & Strumpt, 1995).

Personal meaning is a fundamental dimension of being. Human illness and suffering cannot be understood without considering personal meaning. Levin, Cleeland & Dar, 1985 examined the perception of cancer as an illness in 496 randomly selected American homes. The study found that 48% of the sample viewed cancer as a very or extremely painful disease; cancer treatment was also viewed as painful. Sixty-nine percent of the sample agreed that cancer pain could be a reason for stopping life-prolonging treatment or for committing suicide, and 57% thought that cancer patients usually die a painful death. Patients and their families were concerned with taking strong drugs. When patients were asked what concerns they might have if they need to

take opioids for cancer pain, 58% reported that they would feel much concern about mental confusion, 56% were concerned to the degree that they would have to take increasing amounts of opioids, and 45% worried about the possibility of becoming addicted. Schumacher, West, Dodd, Paul, Tripathy, Koo, & Miaskowski, 2002, indicated that the negative experiences of cancer patients with pain management was identified as a strong enduring inhibitor of opioid used. In a study involving 67 nurses, only 50% of the participants believed that patients should be pain free (Dalton, 1989). Similarly Rankin and Sinder (1984) found that the majority of nurses administered narcotics to reduce pain rather than to relive it.

Fox (1982) designed a study to investigate attitudes, knowledge and actual clinical practice in pain control for terminally ill cancer patients. Thirty charts of persons with cancer were audited to identify trends in clinical practice. The chart audits indicated the following: (a) inadequate pain assessments, (b) lack of documented plans for pain relief by nurses, (c) 67% of patients were receiving PRN analgesia despite documentation of continued pain, (d) analgesia was frequently prescribed at intervals far exceeding the pharmacological duration of the drug, and (e) nurse tendency to administer analgesia at even more prolonged intervals. A 37-item questionnaire was developed based on the trends identified in the audits. The questionnaire was given to 72 nurses. Results revealed that nurses lacked fundamental knowledge about management of pain in terminally ill cancer patients

O'Brien, Dalton, Konsler, & Carlson, (1996) surveyed 1,400 registered nurses about their knowledge and attitudes toward the management of cancer-related pain. Nurses cited inadequate pain assessment and lacked knowledge of pain management as a major barrier to optimal pain management. More than 76% of nurses reported that they would be interested in taking pain management courses. The findings also

indicated that the nurses who have cared for patients with cancer are more knowledgeable and have more liberal attitudes toward pain management than nurses who have not cared for cancer patients. This led the author to conclude that the experience of caring for cancer patients would influence the nurse's attitudes toward pain. Results of this study are similar to those in Cohen's study (1980) who reported that nurses would choose high analgesic doses, which is high enough to relieve the patient's pain.

In another study, knowledge deficits have been found regarding analgesic doses and duration of action of morphine (Watt-Watson 1987). Many nurses are not informed about the adverse effects of opioids, have exaggerated fears of addictions and respiratory depression, and do not understand the principle of scheduled administration of analgesics (Fox, 1982; Watt-Watson, 1987; Myers, 1985 and McCaffery et al. 1990). Additionally, a large body of published reports has documented deficiencies in nursing knowledge as well as inappropriate beliefs about pain. (Fox, 1982; Watt-Watson, 1987; Myers, 1985; McCaffery et al. 1990).

Another survey assessed nurses' (n =790) level of knowledge about cancer pain, opioids, and scheduling regimen; attitudes toward pain management; and adequate use of and perceived barriers to optimal pain management. Results indicated that nurses had a poor level of knowledge overall but were most uniform regarding the action and side effects of opioids (Vortherms, Ryan, & Ward, 1992).

Knowledge and attitudes have been shown to improve after an education intervention. A study of 53 nurses from different oncology units completed the knowledge, attitudes, and behaviors questionnaire 3 months after intervention. The findings indicated that nurses demonstrated significant differences in knowledge and attitudes immediately after the education intervention, but these were not maintained

when assessed 3 months later. Nor did pain documentation practices improve. In addition, there were discrepancies in nurses' responses to the knowledge and attitude questions. Nurses stated that patients' self-report of pain was the most accurate, but also they indicated that the nurses' pain rating was more valid than patients' self-report (Howell, Butler, Vincent, Watt-Watson & Stearns, 2000).

A study examined the influence of an educational program on the attitudes of nurses (n=52) and their knowledge of analgesia for the person with cancer. The author reported that scores were significantly higher for the group who attended the program. Results indicated that the educational program decreased concerns about addiction, respiratory depression and decreased conservative attitudes toward cancer pain management. This change in attitude encouraged nurses to administer more potent analgesia without the fear of the addiction or other side effects (Hauck, 1986).

Another study conducted by Myers, 1985 evaluated the effectiveness of a three-hour program about cancer pain management on changing nurse's attitude and improving knowledge. The results showed that nurse's knowledge and attitudes were improved immediately and were maintained for two weeks following the educational program. There was a positive significant correlation ($r = 0.60$) between knowledge and attitude scores prior to the educational program. This finding was congruent with Dalton, Carlson, Mann, Blau, Bernard Youngblood, 1998 results.

Previous investigators have suggested a number of variables that may account for differences between nurse's knowledge and attitudes about pain management. Dalton, 1989 suggested that age is an important factor, whereas others have not found that it is (Cohen, 1980). Moreover, Myers 1985 indicated that no relationships have been found between nurse's knowledge about pain management and their educational

level. However, experienced nurses have been found to be less knowledgeable and have less positive attitudes than younger nurses do.

Studies of existing knowledge among nurses concerning cancer pain assessment and management reveals serious knowledge deficit (McMillan, Tittle, Hagan, Laighlin & Tabler, 2000; Van Niekerk & Martin 2001; Howell, et al, 2000; McCaffery & Ferrell, 1995; Fif, Irick & Painter, 1993; Bauwens, et al., 2001; and Vortherms, Ryan & Ward, 1992). In summary, the review of literature shows that the cancer patients in pain often suffer needlessly because of nurses' reluctance to use analgesic properly and in adequate amounts. The under-treatment of cancer-related pain can be attributed to the lack of knowledge and continuing education of health care professionals in the management of cancer-related pain and the negative attitudes of health care professionals.

Instrumentation:

The literature revealed that different knowledge and attitude instrument as well as different version of the same instruments were used to measure the nurses' knowledge and attitudes regarding pain in different clinical settings such as in the emergency department, post-operative and oncology department. These instruments measure knowledge, attitudes and /or barriers. For example, Watt-Watson, 1987 developed 18 questions assessing nurses' knowledge regarding specific content about pain assessment and narcotic administration using true/false, multiple choice and fill-in-the-blank formats and two open-ended questions. No content validity or reliability of the instrument was shown in the published article.

Tanabe & Buschmann developed another instrument (2000) entitled "Emergency Department Nurses' Knowledge of Pain Assessment and Intervention Strategies." This instrument consists of 52-items measuring four domains of

knowledge: (a) pain assessment techniques, (b) definition of the terms addiction, tolerance, physical dependence, and threshold, (c) side effects and actions of analgesics, and (d) treatment interventions appropriate for emergency department use and role of the emergency nurse in pain management. Content validity was established by a panel of experts, but there was poor internal consistency and poor test-retest reliability in the study sample. Further, the questionnaire measured only nurses' knowledge. Another questionnaire was developed by Wisconsin Cancer Pain Initiative which is divided into three major areas: knowledge, attitudes and perceived barriers. The questionnaire, constructed from previous surveys, consists of 82 items measuring the nurses' knowledge, attitudes and perceived barriers. Internal consistency for the knowledge was ($\alpha r = 0.76$) and for attitudes ($\alpha r = 0.53$) (Vortherms, Ryan & Ward, 1992). Weissman and Dahl 1990 developed a questionnaire to survey the attitudes of first-year medical students. In 1993 Fife, Irick and Painter used the same questionnaire to compare the attitudes of physicians and nurses toward the management of cancer pain. The questions included in this survey concern three major areas relevant to the problem of cancer pain: (a) attitudes regarding the management of cancer pain as a health-care issue; (b) beliefs about the potential for the problems of addiction and drug misuse; (c) and attitudes toward the involvement of patients in the management of their pain. The reliability and content validity of the questionnaire were not shown in the literature.

The instrument used in current the study is the Nurses' Knowledge and Attitudes Survey Regarding Pain (NKAS). The NKAS tool was used to assess nurses in different clinical settings and as an evaluation measure following educational programs. The NKAS was first developed by Ferrell and Leek in 1987 and was revised in 1993 in a pain education course with over 800 participants (Ferrell, Grant, Ritchey, Ropchan & Revira, 1993a). The original survey consisted of 46 questions covering general pain

management, assessment, and use of analgesics and addiction. The tool was revised by McCaffery & Ferrell's (1997) (Appendix A).

The different versions of the instrument have been utilized extensively in literature in part or whole to assess nurses' knowledge, attitudes, or both. Howell, Bulter, Vincent, Watt-Watson & Stearns, 2000 used the nurses' knowledge and attitudes scale, including 46 items to assess nurses' knowledge pre and post educational intervention. Also Van Niekerk & Martin (2001) used the instrument to assess nurses' knowledge. Furthermore, the instrument has been utilized for different purposes by McCaffery, Ferrell, Page-O'Neil & Lester (1990), McCaffery & Ferrell, (1992), Ferrell, McGuire & Donovan , 1993b, Ferrell, Dean Grant & Colizzi (1995), McCaffery & Ferrell, (1995), McCaffery & Ferrell, (1997) and Mayer, Torma, Byock, & Norris, (2001). In addition, Manworren, in 1998 modified the McCaffery & Ferrell's NKAS (1997) instrument to develop the Pediatric Nurses' Knowledge and Attitudes Survey Regarding Pain (PNKAS) (Manworren, 2001). The literature revealed no instruments that quickly survey large multi-specialty nursing staff's knowledge and attitudes regarding pain as stated by Manworren, R.C.B., Hayes, Janice S., (2000). The Greek translated version of NKAS (1997) by Tasfas, Patiraki, McDonald & Lemonidou, (2002) contributes to the validity and reliability of the instrument.

CHAPTER III

METHODOLOGY

Introduction

This chapter addresses the study methods and design used to identify the current knowledge of nurses in Bahrain and Jordan. This section includes the study design, sample, setting, method of measurement, data collection procedure, protection of the human subjects, and data analysis procedure.

Design

A descriptive comparative study design was used to explore the current knowledge of nurses at Salmaniya Medical Complex (SMC) in Bahrain and Al-Amal Cancer Center (AAC) and Jordan Hospital (JH) in Jordan regarding cancer-related pain management.

Sample

The population consisted of nurses working with cancer patients in Bahrain at SMC and nurses working with cancer patients at two medical centers, ACC and JH in Jordan.

Inclusion criteria: licensed registered nurses according to Bahrain and Jordan policy; nurses who have at least six months experience in adult oncology settings and nurses who are willing to participate in the study.

Exclusion criteria: nurses working in pediatric wards and those who have less than six months experience.

Setting

The study was conducted by recruiting nurses from the Oncology Unit in Salmaniya Medical Complex (SMC) in Bahrain and Al-Amal Cancer Center (ACC) and Jordan Hospital (JH) in Jordan. These hospitals were chosen because they provide comprehensive care for oncology patients.

The Oncology Unit in SMC was opened in 1996. The SMC hospital, located in Manama, the capital of Bahrain is a governmental hospital, which provides services such as medical oncology, hematology, and radiation, including chemotherapy services and radiotherapy facilities. In-patient services include two wards with a 38-bed capacity. About 80% of the total Bahraini residents cancer patients are served by this hospital. The total number of nurses working in the adult oncology wards is 40. These wards do not include the surgical oncology. A total of 130 nurses working in the oncology surgical wards were also included in the study.

Al-Amal Cancer Center, a non-governmental oncology specialized hospital, opened in 1997 and is located in Amman the capital of Jordan. Services provided at Al-Amal Cancer Center includes outpatient clinics and services such as medical oncology, hematology oncology, radiotherapy, bone marrow transplantation, chemotherapy services and radiotherapy facilities. An in-patient service has a 128-bed capacity. Al-Amal Cancer Center is a referral center from all hospitals across Jordan and from Arab countries such as Libya, Sudan, Yemen, Palestine, and Gulf countries. A total number of 80 registered nurses work in the adult oncology wards.

Jordan Hospital is a private hospital located in Amman with 220 beds. It provides medical care for oncology patients and has a bone marrow transplant unit that

is staffed by well trained dedicated personnel. The total number of registered nurses is 98; only 55 nurses who take care of cancer patients were included in the study.

Data Collection:

1- Instruments:

In order to get data related to this study the following instruments were used:

a- Section One: Demographic Data Sheet

The demographic data sheet developed by the present researcher included: gender, religion, age, marital status, nationality, level of education, job title, years of nursing experience, years of oncology experience, personal experience with pain and pain management education (Appendix B).

b- Nurses' Knowledge and Attitudes Survey Regarding (NKAS).

The instrument used in this study was a modified version of the Nurses' Knowledge and Attitudes Survey Regarding Pain (NKAS) instrument (Ferrell & McCaffery, 1997). The NKAS instrument is a self-administered, 37 item survey. The instrument is accessible at the Web site (<http://www.prc.coh.org>), and its usage was encouraged through the City of Hope Pain Resource Center. The instrument consists of 22 true/ false questions, 13 multiple-choice questions, and two case studies with 2 questions each, for a total of 39 questions. The content includes aspects of pain assessment, pharmacological and non-pharmacologic interventions for pain, and attitudes about pain management. The questionnaire has many items related to cancer pain management. Content was derived from pain management standards from the American Pain Society, the World Health Organization, and the former Agency for Health Care Policy and Research (AHCPR), thereby establishing some measures of content validity. Construct validity has been established by comparing scores of nurses

at various levels of expertise such as students, new graduates, oncology nurses, graduate students, and senior pain experts. Content validity has been established by review of panel experts. Construct validity was established by comparing survey scores from different levels of expertise. Test-retest was established ($r = 0.80$) by repeat testing of 60 nurses in a continuing education class. Internal consistency and reliability of the tool was established using Cornbach's alpha (alpha $r = 0.70$) with items reflecting both knowledge and attitude domains. Thus, the NKAS is a reliable and valid instrument for measuring the nurses' knowledge.

Permission was obtained from the authors to use the NKAS instrument and carry out needed modification to fit Bahrain and Jordan Culture (Appendix C). The current study focused on nurses' knowledge in Bahrain and Jordan. Therefore, this instrument was utilized after the attitude questions were deleted, in order to help the researcher to identify the current nurses' knowledge regarding cancer pain management.

For the purpose of the study the following modifications were carried out on the original tool:

1. Only the knowledge questions were included. The knowledge questions were derived from literatures using the same instrument to measure knowledge which are: McCaffery & Ferrell, (1990); McCaffery & Ferrell, (1995); McCaffery & Ferrell, (1997); Niekrk & Martin, (2001); and Hamilton & Edgar, (1992). The modified instrument contained 30-items and consisted of 17 true/ false questions, 11 multiple-choice questions, and two case studies containing 2 questions each, for a total of 32 questions, The questions include general knowledge about pain management, pain assessment, and the use of analgesics, addiction, and non-pharmacological interventions for pain.

2. A written list of painkillers that are used by SMC in Bahrain and ACC in Jordan was obtained from the pharmacy departments.
3. The list was compared with the drugs mentioned in the instrument.
4. The list of painkillers and drugs mentioned in the instrument was compared with the Drug Formulary, developed by the Ministry of Health in Bahrain (2001) and Jordan National Formulary for Essential Drugs which developed by the Ministry of Health in Jordan (1998).
5. The term “narcotic” is most often used by nurses in Bahrain and Jordan and was therefore used as opposed to the preferred term “opioid.”
6. Questions number 8, 10 and 19, meperidine (demerol) was changed to meperidine (pethidine) because this is the generic name which is used in Bahrain and Jordan.
7. Question number 24:
 - a- Ibuprophen (Mortin) was changed to, Ibuprophen (Brufen) because this is the generic name used in Bahrain and Jordan.
 - b- Hydromorphone (Dilaudid) was changed to Naproxin (Nopain). The reason for this change of the drug is that neither is used in Bahrain nor in Jordan.
 - c- Amitriptyline (Elavil) was changed to Amitriptyline (Saroten) (Tryptizol) because this is the generic name used in Bahrain and Jordan.
8. Content validity for the modified questionnaire was established by a panel of experts who were familiar with cancer pain management in Bahrain and Jordan. Only one expert from Jordan suggested changing the word stoic to a

simpler word. This word was changed to suffer without pain translated from English-English dictionary.

Scoring:

All questions were equally weighted. For each item, a correct response was given a value of one; an incorrect response was given a zero. Unanswered questions were counted as zero. A total score was computed using the number of correct responses. Scores ranged from 0-32. Then the respondent's total score was divided by the maximum score of 32, and multiplied by 100 to be expressed as a percentage.

2- The Pilot Study:

A pilot study was conducted of 10 nurses from each country who met the inclusion criteria. All of the participants in the pilot study were Arabic speakers. The purposes of the pilot study were to test the time required to complete the questionnaire, the wording of the questionnaire, in addition to testing the instrument reliability.

Nurses were recruited according to the inclusion criteria. Meetings were conducted with participants to explain the purpose of the study and obtain the approval of their participation. During data collection meetings, the researcher was available to assess the time needed for filling out the questionnaire, and if the participants need any clarification. In addition, after filling out the questionnaire the researcher asked each participant if he/she prefers the questionnaire to be translated to Arabic.

The time needed to complete the questionnaire was 20-45 minutes. Nurses preferred the instrument in English language as they said they studied nursing in English. In addition participants indicated that they might not understand the Arabic medical terminology. Therefore, translation of the instrument or further modification was not indicated.

Cronbach's alpha showed that the internal consistency was ($\alpha r = 0.80$) in the items reflecting the knowledge domain. The reliability for the pilot study was compared with the original instrument as ($\alpha r > 0.70$) in the items reflecting both knowledge and attitudes domains

3- Procedure of Data Collection:

The following steps were used to collect data for the study:-

- a. To facilitate conduction of the study a letter was sent from the Dean of Faculty of Nursing at Jordan University of Science and Technology to the Ministry of Health in Bahrain, director of Al-Amal Cancer Center and Director of Jordan Hospital in Jordan (Appendix D).
- b. Approval was obtained from the Ministry of Health officials in the Kingdom of Bahrain, the Director of SMC, the Principle Nursing Officer at SMC and the Hospital Research Committee in Bahrain (Appendix E).
- c. In Jordan, approval was obtained from the ACC (Appendix F) and Jordan Hospital administrators (Appendix G).
- d. A covering letter was attached to the tool to explain the purpose of the study. The participants were assured that confidentiality and privacy of their answers would be maintained throughout the study process (Appendix B).
- e. A verbal consent was obtained from each participant.
- f. Anonymity was assured, as no name or any other identification or information was required.
- g. The purpose of the study was discussed with all potential participants and they were encouraged to participate in the study.

- h. The investigator distributed the tool to the staff nurses who agreed to participate in the study.
- i. The participants were instructed to place the completed tool in the envelope pinned to notice boards at the nurse's station.
- j. The investigator collected the completed tools from the wards every day in the morning.
- k. Upon receiving the completed questionnaire, coding was done for analysis.

Data analysis:

The Statistical Package for the Social Sciences (SPSS) program was used to analyze the data. Descriptive statistics were used to describe the characteristics of the sample frequency and percentage distributions were conducted for all variables. The Student t-test was used to examine the difference between Bahraini and Jordanian nurses' knowledge about cancer pain management. The Spearman Correlation's test was also used to identify the correlation of the demographic variable with nurses' knowledge.

CHAPTER IV

RESULTS

A total of 135 participants from each country who met the criteria of the study were selected and included in the study for a grand total of 270 participants. Only 170 participants completed and returned the forms. The response rates were 66.6% and 59.2% for Bahraini and Jordanian participants respectively.

The demographic characteristics of the sample are summarized in Table 1. The participants were predominately female (72.4%), Muslim (70%) and married (54.7%). Participants age ranged in age from 21 to 54 years (Mean = 29.99, SD = 7.49). Nursing and oncology experience of the participants ranged from 6 months to 30 years nursing experience (Mean = 7.56, SD = 6.97), and from 6 months to 16 years oncology experience (Mean = 3.06, SD 2.48) respectively. About 25% of all the participants in both countries were foreigners (30% in Bahrain and 20% in Jordan). The majority of the participants did not have any pain management education (81.2%). Only 37% of the participants had personal experiences with moderate to severe pain.

Table 1

Demographic Characteristics of Sample

Characteristic	Bahrain n=90 (%)	Jordan n=80 (%)	Total n =170(%)
Gender			
Male	17 (18.9)	30 (37.5)	47 (27.6)
Female	73 (81.1)	50 (62.5)	123 (72.4)
Religion			
Muslim	59 (65.6)	60 (75)	119 (70)
Christian	29 (32.2)	20 (25.)	49 (30)
Hindu	2 (2.2)	0 (0)	2 (1.2)
Marital Status			
Single	18 (20)	53 (66.3)	71 (41.8)

Characteristic	Bahrain n=90 (%)	Jordan n=80 (%)	Total n =170(%)
Married	70 (77.8)	23 (28.8)	93 (54.7)
Divorce	2 (2.2)	2 (2.5)	4 (2.4)
Widow	0 (0)	2 (2.5)	2 (1.2)
Nationality			
Bahraini	63 (70)	0 (0)	63 (37.1)
Jordanian	0 (0)	64 (80)	64 (37.6)
Filipino	3 (3.3)	9 (11.3)	12 (7.1)
Indian	25 (27.8)	4 (5)	29 (17)
Pakistani	0 (0)	2 (2.5)	2 (1.2)
Level of Education			
Diploma	81 (90)	23 (28.8)	104 (61.2)
Baccalaureate	7 (7.8)	52 (65)	59 (34.7)
Post basic Diploma	1 (1.1)	0 (0)	1 (0.6)
Master	1 (1.1)	5 (6.3)	6 (3.5)
Job Title			
Staff Nurse	79 (87.8)	67 (83.8)	146 (85.9)
Head Nurse	7 (7.8)	9 (11.3)	16 (9.4)
Supervisor	3 (3.3)	3 (3.8)	6 (3.5)
CNS	1(1.1)	1(1.3)	2(1.2)
Personal Experience			
Never had pain	4 (4.4)	8 (10)	12 (7.1)
Had rare or mild pain	21 (23.3)	37 (46.3)	58 (34.1)
Had sometime moderate to severe pain	42 (46.7)	21 (26.3)	63 (37.1)
Had many time moderate to severe pain	20 (22.2)	11 (13.8)	31 (18.2)
Currently moderate to severe pain	3(3.3)	3 (3.8)	6 (3.5)
Pain management Education			
Yes	17 (18.9)	15 (20)	32 (18.8)
No	73 (81.1)	65 (81.3)	138 (81.2)
Age (years)			
Mean	31.35	28.38	29.99
SD	8.22	6.2	7.49
Range	21-54	22-50	21-54
Nursing Experience (years)			
Mean	9.04	5.81	7.56
SD	7.73	5.51	6.97
Range	1-30	1-25	1-30
Oncology Experience (years)			
Mean	3.89	2.14	3.06
SD	2.85	1.57	2.48
Range	1-16	1-10	1-16

Research Question 1: “What is the Bahraini and Jordanian nurses’ level of knowledge about cancer-related pain management?”

The highest score in the instrument Nurses Knowledge Attitudes Survey Regarding Pain (NKAS) was 32. Participants’ scores in both countries ranged from 5 (15.6%) to 25 (78.13%) with a mean scores of (12.33) (38.54%) and a standard deviation of (3.46). In Bahrain participants’ score ranged from 5 (15.63%) to 22 (68.75%) with a mean of 12.81 (40.03%) and a standard deviation of 3.51. In Jordan scores ranged from 6 (18.75%) to 25 (78.13%) with a mean of 11.80 (36.87%) and a standard deviation of 3.34. As shown in Table 2, the majority of participants’ (89.4%) scores were under 50% on the NKAS instrument. Participants who scored below 50% where 90% in Bahrain and 88.7% in Jordan.

Table 2

Frequency and percentage of nurses’ overall scores:

Overall Scores	Bahrain	Jordan	Total
	n =90 (%)	n= 80 (%)	n= 170 (%)
0-25	9 (10)	8 (10)	17 (10)
26-50	72 (80)	63 (78.75)	135 (79.4)
51-75	9 (10)	8 (10)	17 (10)
76-100	0 (00)	1(1.25)	1 (.6)

Scores on each individual item are presented in Tables 3 and 4. A closer look at these tables shows that participants’ scores were low for each individual item. For example, participants in both countries were not knowledgeable enough about the non-pharmacological treatment modalities for pain.

The participants' knowledge regarding the non-pharmacological interventions revealed that more than 50% of the participants do not know about the distant heat and cold applications. Less than one-half of the participants do not know that distraction can be used as a treatment method for moderate cancer pain.

In response to the question, the most accurate judge of the intensity of the patients' pain, 65% answered the patients. Surprisingly, some nurses from both countries felt that the pharmacist and the patient's spouse or family is the most accurate judge about pain intensity. In addition, 75% from both countries expected changes in vital signs to verify the person's statement of pain.

The majority of nurses were not aware that Aspirin and other non-steroidal, anti-inflammatory agents are effective analgesics for bone pain caused by metastases. Furthermore, only 17.8% of nurses in Bahrain and 28.8% in Jordan were aware of the duration of action of narcotic analgesics (pethidine).

In addition, participants in both countries lacked knowledge regarding opioid, such as morphine. Although subjects in both countries were able to recognize morphine as the treatment of choice for cancer pain, they are not knowledgeable about the appropriate route and the frequency of administration of this drug. Only 60% and 65% in Bahrain and Jordan, respectively, were able to recognize that an increase in morphine dose will increase pain relief.

Table 3

Responses to False/True Questions

False /True Item	Answered Correctly %		
	Correct Answer	Bahrain n=90	Jordan n=80
1. Changes in vital signs verify a patient's statement that he has severe pain.	False	24.4	25
2. Children under two years of age have decreased pain sensitivity and limited memory of painful experiences.	False	46.7	50
3. The patient can be distracted from his pain; this usually means that he does not have high pain intensity.	False	48.9	61.3
4. Patients may sleep in spite of severe pain.	True	30	20
5. Comparable stimuli in different people produce the same intensity of pain.	False	72.2	72.5
6. Aspirin and other nonsteroidal anti-inflammatory agents are not effective analgesics for bone pain caused by metastases.	False	32.5	22.2
7. Respiratory depression rarely occurs in patients who have been receiving opioids over a period of months	True	53.3	61.3
8. Aspirin 650 mg PO is approximately equal in analgesic effect to meperidine (pethidine) 50 mg PO.	True	27.8	23.8
9. The World Health Organization (WHO) pain ladder suggests using single analgesic agents rather than combining classes of drugs.	False	47.8	41.8
10. The usual duration of action of meperidine (pethidine) IM is 4-5 hours.	False	17.8	28.8
11. Promethazine (Phenergan) is a reliable narcotic analgesic.	False	32.2	32.5

False /True Item	Answered Correctly %		
	Correct Answer	Bahrain n=90	Jordan n=80
12. Increases in the dosage of morphine will NOT increase pain relief.	False	60	65
13. Elderly patients cannot tolerate opioids for pain relief.	False	50	68.8
14. The patient with pain should be encouraged to endure as much pain as possible before resorting to a pain relief measure.	False	55.4	44.6
15. The patient should be advised to use non-drug techniques alone rather than concurrently with pain medications.	False	41.1	31.3
16. Giving patients sterile water by injection (placebo) is often a useful test to determine if the pain is real.	False	38.9	27.5
17. In order to be effective, heat and cold should only be applied to the painful area.	False	40	46.7

Table 4
Responses to Multiple choice questions

Multiple-Choice Items	Multiple Choice (%)	
	Bahrain (n=90)	Jordan (n=80)
18. The recommended route of administration of opioid analgesics to patients with prolonged cancer-related pain is		
a. Intravenous	63.3	56.3
b. Intramuscular	15.6	20
c. Subcutaneous	3.3	8.8
d. Oral *	17.8	12.5
e. Rectal	00	1.3
f. I do not know	00	1.3
19. Which of the following analgesic medications is considered the drug of choice for the treatment of <u>prolonged moderate to severe pain</u> for cancer patients?		
a. Brompton's cocktail	6.7	6.3
b. Codeine	3.3	21.3
c. Morphine *	80	55
d. Meperidine (pethidine)	8.9	10
e. Methadone	1.1	3.7
f. I don't know	00	3.7

Multiple-Choice Items	Multiple Choice (%)	
	Bahrain (n=90)	Jordan (n=80)
20. Analgesics for post-operative pain should initially be given		
a. Around the clock on a fixed schedule *	35.6	40
b. Only when the patient asks for the medication	37.7	37.5
c. Only when the nurse determines that the patient has moderate or greater discomfort	26.7	22.5
21. A patient with chronic cancer pain has been receiving daily opioid analgesics for 2 months. The likelihood of the patient developing clinically significant respiratory depression is:		
a. Less than 1% *	24.4	20
b. 1-10%	26.7	21.3
c. 11-20%	12.2	16.3
d. 21-40%	13.3	15
e. > 41%	23.3	27.5
22. Analgesia for chronic cancer pain should be given		
a. around the clock on a fixed schedule *	64.4	46.3
b. only when the patient asks for the medication	25.6	40
c. only when the nurse determines that the patient has moderate or greater discomfort	10	13.8
23. The <u>most likely</u> explanation for why a patient with pain would request increased doses of pain medication is		
a. The patient is experiencing increased pain. *	61.1	41.2
b. The patient is experiencing increased anxiety or depression.	8.9	22.5
c. The patient is requesting more staff attention.	6.7	10
d. The patient requests are related to addiction	23.3	26.3
24. Which of the following drugs are useful for treatment of cancer pain?		
a. Ibuprophen (Brufen)	8.9	11.2
b. Naproxin (Nopain)	20	16.3
c. Amitriptyline (Tryptizal), (Saroten), or (Prozac)	30	21.3
d. All of the above *	41.1	51.2
25. The most accurate judge of the intensity of the patient's pain is		
a. The treating physician	6.7	11.2
b. The patient's primary nurse	23.3	20
c. The patient *	65.6	65
d. The pharmacist	2.2	1.3
e. The patient's spouse or family	2.2	2.5

Multiple-Choice Items	Multiple Choice (%)	
	Bahrain (n=90)	Jordan (n=80)
26. Which of the following describes the best approach for cultural considerations in caring for patients in pain:		
a. Because of the diverse and mixed cultures in Jordan and Bahrain, there are no longer cultural influences on the pain experience.	3.3	11.3
b. Nurses should use knowledge that has defined clearly the influence of pain on culture	26.7	30
c. Patients should be individually assessed to determine cultural influences on pain. *	70	58.7
* Correct Response		

Almost all participants in both countries have misconceptions about opioid addiction and its side effects. The majority of the participants exaggerated fear of addiction caused by opioid analgesics. Only a small number of respondents 14.1% stated that they believed that opioid addiction would occur in 5% or less of patients using opioid analgesics. The result of the question: the likelihood of addiction occurring in patients receiving opioid for pain relief is presented in Table 5. However, more than one-half of the participants in both countries were able to indicate that respiratory depression rarely occur inpatients who have been receiving opioid over a period of months.

Table 5

Nurses Knowledge of the Likelihood of Addiction Occurring in Patients Receiving Opioids for Pain Relief

Response Option	Bahrain	Jordan	Total Correct
	n=90 (%)	n=80 (%)	n=170 (%)
< 1%*	06 (6.7)	02 (2.5)	08 (4.7)
5%	10 (11.1)	06 (7.5)	16 (9.4)
25%	27 (30)	35 (43.75)	62 (36.5)
50%	37 (46.3)	29 (36.3)	66 (38.8)
75%	09 (10)	06 (7.5)	15 (8.8)
100%	01 (1.1)	02 (2.5)	03 (1.8)
* Correct answer			

Despite the fact that 65% of participants in both countries indicated that the patient is the best judge of pain intensity, participants in Bahrain and Jordan responded that 90% of cancer patients over-report the amount of their pain. Possible answers ranged from zero to 100%, with zero to 10% being the correct responses.

Table 6

Percentage of Cancer Patients Believed to Over-report the Amount of Pain

Response Option	Bahrain	Jordan	Total
	n=90 (%)	n=80 (%)	n=170 (%)
0*	0 (00)	1 (1.3)	1 (.6)
10*	6 (6.7)	4 (5)	10 (5.9)
20	10 (11.1)	16 (20)	26 (15.3)
30	33 (36.6)	24 (30)	57 (33.5)
40	16 (17.8)	9 (11.2)	25 (14.7)
50	11 (11.1)	8 (10)	19 (11.2)
60	5 (5.6)	4 (5)	9 (5.3)
70	5 (5.6)	6 (7.5)	11 (6.5)
80	3 (3.3)	4 (5)	7 (4.1)
90	1 (1.1)	2 (2.5)	3 (1.8)
100	1 (1.1)	1 (1.3)	2 (1.2)
* Correct Response			

To find out the effect of patient's behavior (smiling and grimacing) on the assessment and selection of opioid dose, participants were presented with two case studies. In both case studies, the patients had received 2mg morphine intravenously, 2 hours before. A regular assessment every half hour revealed that the pain rating had ranged from 6-8 out of 10. There were no clinically significant adverse effects such as sedation. Patients' pain rating was 8 out of 10 in both case studies. Nurses were asked to rate patients' pain and given a choice of administering no morphine or 1mg, 2mg, or 3mg intravenously. A 3mg Morphine dose intravenously was the correct choice for smiling and grimacing patients. The first case study indicated that the patient was smiling while the second case study indicated that the patients was grimacing, the

results are presented in Table 7. Only 22.2% of the nurses in Bahrain and 13.8% in Jordan correctly assessed the smiling patient. Such results revealed that more than 80% of the subjects in both countries underestimated the amount of patient's pain, and selected a low dose of opioid. More than one-half of the participants selected not to give medication to a smiling patient in pain.

While in the second case study, 30% of the participants in both countries selected the accurate pain intensity. The choices morphine dose was more likely to increase for the grimacing patients than for smiling patients among Bahraini and Jordanian nurses. However, only 25.6 % of nurses from Bahrain and 20% from Jordan chose the correct morphine dose of 3mg intravenously for grimacing patients. Again participants in both countries underestimated the patients pain and selected an ineffective dose of opioid.

Table 7

Nurses Assessment and Choice of Opioid Dose (n=170)

Assessment of pain	Bahrain		Jordan	
	Smiling Patient n = 90(%)	Grimacing Patient n = 90 (%)	Smiling Patient n = 80(%)	Grimacing Patient n = 80(%)
0	19 (58.9)	0 (00)	7 (8.8)	1 (1.3)
1	4 (4.4)	1 (1.1)	6 (7.5)	4 (5)
2	13 (14.4)	1 (1.1)	16 (20)	3 (3.8)
3	9 (10)	4 (4.4)	12 (15)	3 (3.8)
4	15 (16.7)	4 (4.4)	11 (13.8)	6 (7.5)
5	9 (10)	11 (12.2)	7 (8.8)	11 (13.8)
6	1 (1.1)	18 (20)	5 (6.3)	8 (16)
7	0 (00)	16 (17.8)	5 (6.3)	11 (13.8)
8*	20 (22.2)	31 (34.4)	11(13.8)	26 (32.5)
9	00 (00)	03 (3.3)	00 (00)	06 (2.5)
10	00 (00)	01(1.1)	00 (00)	01 (1.3)
Choice of Opioid Dose				
No morphine	53 (58.9)	13 (14.4)	36 (45)	20 (25)
1mg IV now	22 (24.4)	25 (27.8)	22 (27.5)	26 (32.5)
2mg IV now	12 (13.3)	28 (31.1)	15 (18.8)	18 (22.5)
3mg IV Now *	03 (3.3)	23 (25.6)	07 (8.8)	16 (20)
* Correct Response				

Research question 2: “Is there any difference in the level of knowledge about cancer-related pain management between Bahraini and Jordanian nurses?”

To answer this research question a two tail t-test was used, and the results revealed that there was no statistically significant difference between nurses’ level of knowledge about cancer-related pain management in the two countries, ($p > 0.05$). The results are presented in Table 8.

Table 8
Comparison of scores between nurses’ in Bahrain and in Jordan using t-test

Source of Data	Mean	SD	Range	t	df	P
Bahrain (n=90)	12.81	3.51	5-22	-1.92	168	.057
Jordan (n=80)	11.80	3.34	6-25			

To compare Bahraini and Jordanian participants, foreign nurses were excluded from the two groups. A t-test indicated no statistical difference ($p > 0.05$), (Table 9).

Table 9
Comparison of scores between Bahraini nurses and Jordanian nurses (Arab) using t-test.

Source of Data	Mean	SD	Range	t	df	P
Bahraini Nurses (n=62)	13.08	3.32	6-22	-1.768	125	.080
Jordanian Nurses (n=65)	12.01	3.47	6-25			

Comparing Arab (Bahraini and Jordanian) and foreign nurses, the t-test indicted no statistical difference between them, (Table 10).

Table 10

Comparison of scores between Arab nurses and foreigners' nurses using t-test.

Source of Data	Mean	SD	Range	t	df	P
Arab Nurses (n=127)	12.53	3.42	6 - 25	1.297	168	.196
Foreigners Nurses (n=43)	11.74	3.54	5 - 21			

Research question 3: "Is there a relationship between nurses' knowledge and selected demographic variables: age, level of education, years of experience, oncology experience, personal experience of pain and pain management education among Bahraini and Jordanian nurses?"

To answer this research question, Spearman's correlation's test was used to find out the relationship between the level of knowledge and demographic variables such as age, level of education, years of nursing experience, oncology experience, personal experience of pain and pain management education. There were a positive significant correlation ($r = 0.161$) between years of experience and overall scores for the total sample. The correlations between age, level of education, personal experience and pain management education and the participants' level of knowledge was not statistically significant, Table 11.

Table 11

Correlation of demographic variables and the level of nurses' knowledge

	Age	Level of Education	Years of Experience	Oncology Experience	Personal Experience of Pain	Pain Management Education
Nurses' Scores	0.103	-0.101	0.161*	0.067	0.095	-0.073

* Correlation is significant at $p < 0.05$

CHAPTER V

DISCUSSION

The purpose of this descriptive study was to explore the current knowledge of nurses in Bahrain and Jordan regarding cancer-related pain management. The sample consisted of 170 nurses working with oncology patients in Bahrain and Jordan. The response rate was 69.2% in both countries. The Nurses Knowledge and Attitudes Survey (NKAS) was used for this purpose. Because the emphasis was on the nurses' knowledge, the attitude questions were eliminated. This chapter includes discussion, nursing implications and recommendations.

Discussion:

The study demonstrated deficits in nurses' level of knowledge regarding cancer-related pain management. This deficit is apparent in all aspects of the instrument which was derived based on cancer pain management standards from the WHO, ACS and AHCPR. These results appear to be greater than those found in the majority of studies conducted in western countries (Fox, 1982, Watt-Watson, 1987; McCaffery & Ferrell, 1990; McCaffery & Ferrell, 1992; Hamilton & Edgar, 1992; McCaffery & Ferrell, 1995; Kubecka, Simon & Boettcher, 1996; McCaffery & Ferrell, 1997; Howell, et al., 2000; McMillan et al. 2000 and Van Niekerk, & Martin, 2001). However, similar finding was reported by Bauwens, et al., 2001 who utilized a sample of Belgium nurses'.

The results of this study indicate that subjects have knowledge deficits in the following areas about cancer pain management: (a) pain assessment; (b) misconceptions

about opioid therapy; (c) pharmacological pain management and (d) the non-pharmacological interventions.

Pain Assessment:

Nurses have much of the responsibility for the assessment of pain and subsequent comfort measures for patients with pain. Due to the subjective nature of pain, nurses must accept the patient's report as a basic principle of pain assessment. Although, the majority of the participants in both countries believed that patients' self-report of pain were the most accurate judge of pain intensity, about 65% failed to assess patients accurately when presented with the case studies. This might be due to the gap between nursing education and the actual nursing practice as Garaibeh & Abu-Saad (2002) indicated. The present study findings are consistent with Belgium nurses as 75% considering the patients as the most accurate judge for their pain intensity but were unable to incorporate that in patients' care (Bauwens et al., 2001). A disturbing finding of the current study was that more than 20% of all participants have misconception about the subjectivity nature of pain. This misconception is apparent as these participants indicated that physician's or nurse's pain ratings were more valid than patient self-report. Such results are consistent with the findings of Hawell, et al., (2000). Ignoring the patient's report of pain assessment will affect the quality of care provided for cancer patients.

In addition, 90% of nurses in this study over-estimated the percentage of patients who over-report their pain. Only 25-30% of the nurses in the studies conducted in western cultures were found to believe that patients over-report their pain (McCaffery & Ferrell, 1995 and Van Niekerk, & Martin 2001). Furthermore, 75% of the participants from both countries expected that a change in vital signs is necessary to validate patient's report of pain. These results are consistent with those found in studies

conducted in western countries (Van Niekerk, Martin 2001; Hamilton & Edgar, 1992; and Watt-Watson, 1987). Also, nurses in this study were suspicious about patients' report of their pain. Sixty-one percent and 73% of participants from Bahrain and Jordan respectively believe that placebos can be used to determine if patient's pain is real or not. The percentage of nurses in western countries who believed placebos could be used to determine if patient's pain is real or not was very low, 16% of United States, 11.1% of Canadians, 14.9% of Australians, 28.2% of Japanese and 51.1% of Spanish nurses (McCaffery & Ferrell, 1995).

Nurses may administer placebos, thinking that patients are malingering or wanting for help or to relieve their patients pain without the side effects of medications. The central ethical tenets of the American Nurses Association, Code for Nurses with Interpretive Statement (1995) include truth telling, fidelity, trust and respectful care. Respectful care is the first value statement in the Oncology Nursing Society (ONS) position statement of core values. Based on this information, the ONS in 1996 issued put this position statement which includes: "placebos should not be used to assess or manage cancer pain; to determine if pain is "real" or to diagnose psychological symptoms, such as anxiety associated with pain." Thus, nurses should not administer placebos even if there is a medical order.

When nurses were asked to rate patient's pain, they underestimated as compared with patients' self reports. Underestimating the patients' pain was another major outcome of this study. Patients' behavior (smiling or grimacing) did not affect nurses' underestimation of their patients' pain. More than 80% of the nurses in both countries underestimate pain for smiling patients and 60% for grimacing patients. McCaffery & Ferrell, (1997) found that 26% of the participants underestimate pain for smiling patients and 8% for grimacing patients. Underestimation of pain usually lead to

undertreatment which will affect the quality of care and patients will continue to have pain needlessly. The results of this study indicate that nurses in both countries were found to be willing to administer morphine but in ineffective doses. Less than 6% and 23% of nurses from both countries respectively selected an accurate dose of morphine for the smiling and grimacing patients. The explanation for this result may be due to knowledge deficits about morphine and other opioid drugs. This might seriously contribute to undermedication of the patient in pain. Another explanation was provided by Fox (1982) who found that health professionals have been trained to encourage patients to bear pain without medication for as long as possible. Two decades later, this study shows that more than one-half of subjects in both countries encouraged their patients to endure pain as much as possible before resorting to a pain relief.

Another factor exacerbating this problem is that in the Jordanian culture, the majority of patients consider the health care providers as authority figures. Therefore, these patients might be reluctant to report their pain as they are concerned about not being a good patient. These patients will suffer from pain needlessly as they want to please the health professionals as indicated by Al-Hassan, et al, (1999).

Based on the researcher experiences, was that Muslims believe that the patients must not be too lethargic from medication in order to pray to Allah. Furthermore, Muslims and Christians considered painful experiences as God's punishment on earth for their sins, so they prefer to endure pain rather than report to the health professionals.

Although the majority of the participants in this study believe that cultural factors play a major role in pain perception, they often undermine patients' self report. The explanation might be that nurses are sensitive to the patient's culture, but not to their own belief and values. Nurses make personal judgments of patients suffering based on their own cultural values and beliefs. Nurses from different ethno-cultural backgrounds

perceive patients suffering differently (Affara, Azoury, Al-Drazi, Arevian, Rao, & Mohammed, 1987). As patients are looked after by nurses from a variety of ethno-cultural background, this will affect pain assessment and management. Gharaibeh & Abu-Saad (2002) indicate that nurses in Jordan lacked knowledge of culturally specific methods of pain assessment and management.

In this study participants choose to rely on vital signs or placeboes instead of the patients report or to encourage their patient to endure pain. Present researcher believed that, nurses caring for cancer patients should appreciate that the only scientific tool for measuring pain intensity is the patient's report using a pain rating scale. Therefore, nurses needed further education to emphasize the subjective nature of pain and patient self-report as the best indicator of pain intensity.

Zalon, (1993) stated that discrepancy between the nurse and patient pain intensity rating is one of the most significant predictors of inadequate analgesic therapy. The present study results indicate that nurses from both countries demonstrated a lack of knowledge in identifying the basic principle of pain management, which is accepting the patient self-report as a valid measure for pain assessment. Therefore, an accurate pain assessment by health professionals provides an appropriate intervention for pain management. Further, it is the nurse's responsibilities for teaching the patients how to use the pain scale properly in order to enhance effective pain management (Pasero, 1997).

In conclusion, the lack of ability to comprehensively assess pain is perhaps the most important cause of inadequate management of cancer pain. It might be that nurses did not learn how to empathize with patients and try to understand their patients' feelings. In addition, it might be too stressful to handle patients' pain. Under-treatment

of cancer pain will continue despite the availability of therapeutic strategies that could benefit most patients.

Misconceptions about Opioid Therapy:

Health care professional including nurses have many misconceptions about opioid; among these misconceptions are addiction and respiratory depression (Easley, & Elliott, 2001). The likelihood of addiction to occur in patients who receive opioid for the treatment of pain is less than 1% (Ferrell et al., 1992). In this study, only a few nurses (9%) are familiar with this fact. This percentage demonstrated greater fear of addiction than those found in the studies conducted in Westerns countries (McCaffery et al. (1990) 25.8%; McCaffery & Ferrell, (1992) 41%; Kubecka, et al. (1996) 29.3%). McCaffery & Ferrell, (1995) conducted a study to compare five different countries according to the percentages of nurses who know that opioids do not cause addiction in patients treated for pain. The investigators found that the percentage ranks were as follows: Canadian 51.3%; United States 43.4%; Japanese 17.2%; and Spanish 14%.

In the present study the participants exhibited fear of addiction as 11.1% of participants from Bahrain and 7.5% of the participants from Jordan reported the likelihood as 5%. The exaggerated fear of addiction is defined by McCaffery & Ferrell, (1995) as 25% or more of patients becoming addicted. This was reported by an alarming number of nurses from Bahrain 87.4% while the nurses in Jordan were even higher at 90%. Furthermore, an extremely exaggerated fear of addiction, defined as the range of 75%-100% of patients becoming addicted (McCaffery & Ferrell, 1995), was reported by 10% of participants from each country. Participants in both countries exhibited an exaggerated fear of addiction in comparison with nurses from other western countries. McCaffery & Ferrell, (1995) found that 50% or more of nurses from

each of following countries: United States, Canada, Japan, Spain, and Australia reported a greater fear of addiction.

Nurses' in both countries revealed a high degree of misunderstanding regarding psychological dependence (addiction). This suggested that nurses in both countries hold a marked inaccurate belief about addiction and they would be reluctant to use opioids to relieve cancer pain. Marks and Sachar's classic study, which indicated that health professionals had an exaggerated concern about addiction, contributed to ordering subtherapeutic doses. Therefore, no progress was made in correcting the misconception among practicing nurses about addiction for opioid drug. Nurses contribute to the under-treatment of pain with opioid drugs and fail to assume an active role in the titration of opioid drugs. Nurses continued to overestimate the incidence of psychological dependence. Therefore, cancer patients will continue to suffer needlessly or nurses might delay pain relief for their patient. Nurses in both countries need education about the usage of opioid, its doses and the incidence of addiction. McCaffery & Ferrell, (1996) suggested correcting the misconceptions of the students enrolling in nursing programs about pain assessment and use of opioid analgesics.

Terminal cancer patients with chronic pain request an increase in the analgesic doses of pain medication. In this study 61% of participants in Bahrain and 41% of participants in Jordan knew that increased pain was the most likely explanation for patients requesting an increase in the dose of analgesics. More than 20% of the participants from both countries related that request to patients becoming addicted. Also 22% of the subjects from Jordan felt that anxiety or depression was the likely reason for asking for more analgesics. In comparison with another study asking the same question as reported by Fox (1982), only 34% believed that the patient was experiencing more pain and 65% indicated that they believed the patient had developed

an addiction, unlike Fife et al, (1993) who reported that only 5% of nurses and 10% of physicians believed that increasing request for analgesics are due to addiction.

Although the findings of this study are quite encouraging for nurses in Bahrain more than the nurses in Jordan, both countries still hold inaccurate perceptions which will result in dismissing the patients' reports of pain. The consequence of these findings is inadequate pain management of the terminally ill cancer patient. Nurses should avoid labeling patients as "addict" whenever opioids are need for pain management. Rather, nurses should develop an appreciation of patients' unique perspective on pain management.

Nurses have excessive fear of respiratory depression as one of the major side effects of opioid. Participants in both countries exhibited fear of the risk side effects of opioid. This result was consistent with other western studies Hamilton & Edgar, (1992) and Van Niekerk, & Martin, (2001) Howell et al. (2000).

Participants in both countries scored low in exploring knowledge of addiction and respiratory depression; not surprising, since the literature continues to cite these as major barriers in pain management. This concluded that participants will further under-treat their cancer patients, and the quality of care provided for cancer patients in both countries is questionable. Further, when cancer patients are not free of pain, their quality of life will be affected; and many of them will die with pain.

Pharmacological Pain Management:

Morphine therapy is the drug of choice for cancer pain relief. Three study questions in the instrument addressed knowledge of chronic cancer pain being treated with oral morphine around-the-clock (ATC). Morphine is the drug of choice from the list given. Eighty percent of participants from Bahrain and 55% of participants from Jordan selected a correct response for this question. It is very encouraging to find that

nurses in Bahrain knew that morphine therapy was the drug of choice as did 87% of Canadian nurses in McCaffrey & Ferrell (1995) study. Jordanian nurses knew that morphine is the drug of choice for cancer pain as nurses in United State, Japan, Australia and Spain. It is interesting to find out that few nurses selected pethidine in both countries, indicating that nurses were aware of which opioid analgesics should be selected for the treatment of cancer pain.

Although, participants in both countries selected morphine as the drug of choice, they selected an inaccurate route, as more than one-half, chose the intravenous route instead of the oral route. This may indicate that participants are not aware that oral administration of morphine is the preferred route for cancer patients. The advantages of the oral route analgesics are safe, simple, and cost effective; and with long-acting morphine preparations now available in higher dosage these forms are very convenient for the chronically ill cancer patient. This might also reflect the belief of the participants that injections are more effective than any other route. The disadvantage of the intravenous route is that it requires continuous intravenous access, as a Port-a-Cath (Steven & Ghazi, 2000).

Regarding the need for ATC administration of analgesics for chronic cancer pain, 64% were from Bahrain believed to give morphine ATC were only 46.3% from Jordan have the same believe. Findings revealed that nurses in Jordan administered morphine as the patient needed it or when nurses determined that the patient had discomfort. This may lead to the patients experiencing anxiety before the next morphine dose, which further reduces the therapeutic benefit. While patients who receive ATC analgesia do not have recurring discomfort prior to the next dose of analgesia, it can be of great importance in reducing patient anxiety. Ferrell, Grant, Rhiner, & Padilla, (1992) indicated that anxiety reduction may itself have significant therapeutic benefit.

Usually nurses are expected to administer safely the prescribed drugs, and possess knowledge about the medication's action, usual dose, and adverse effects. Based on these data nurses in both countries demonstrated inadequate knowledge about opioid dose, frequency and adverse effects. Therefore, nursing curriculum should provide students with integrated information about cancer pain management and enhance positive attitudes about opioid action and its side effects.

Currently the scope of nursing activities is increased as more decision making has been given to nurses. For example, writing the medication on a range puts the nurses in a critical position because they have to select the dose based on assessment of the patient's responses to the drugs. Furthermore, physicians prescribing the opioid analgesic drug usually are not always present to observe the individual response and then to titrate the drug to obtain safe effective analgesia. Analgesia is considered ineffective if the patient rates his pain above 5 on a 0-to-10 pain-rating scale (Derby, 1999). The ability of the nurse to assess patient's responses to narcotics drugs and to select a safe, effective dose seems to be questionable in this study.

More than sixty-percent of participating nurses in both countries realized that there is no ceiling on morphine analgesia, which means no set maximum dose of morphine beyond which further analgesia is not possible. Interestingly, nurses in both countries scored similar to Australian nurses in Van Niekerk & Martin (2001) study and more than American nurses in the studies by Kubrcka, et al. (1996), and McCaffery & Ferrell, (1992), as well as more than Canadian nurses in the Hamilton & Edgar, (1992) study. Knowing there is no ceiling on the analgesia of morphine is critical in the care of terminally ill cancer patients. Because of the progression of the disease, cancer patients would request to increase the dose of analgesics. However, 61% of nurses in Bahrain and 41% of nurse from Jordan answered correctly the question: "Why patients with

pain request to increase the doses of pain medication?” It seems that nurses in Bahrain were more consistent in their answers than nurses in Jordan. This may explain that nurses in Jordan knew the morphine analgesia ceiling, but still they are not willing to increase the morphine dose when a patient requests it.

Participants were asked to calculate the equivalent dosage to use when converting from one drug to another or from one route of administration to another. In both countries, participants indicated lack of knowledge regarding equianalgesia. A quarter of participants in both countries knew that Aspirin (650mg orally) is approximately equal in analgesic effect to meperidine (pethidine) 50mg orally. Therefore, nurses caring for cancer patients had a serious problem calculating equianalgesic doses and titration opioid drugs. Although nurses in both countries poorly answered this question, findings were better than that found for the United State and Canadian nurses as only 11.3% and 15.4% answered correctly in Kubrcka, et al. (1996), Hamilton & Edgar, (1992) respectively. The consequences for this lack of knowledge is that patients will be under-treated since the nurses in both countries were unable to select the correct dose of opioid or other non- opioid analgesics.

Non-pharmacological Pain Management:

Even when drug therapy is clearly the first choice for cancer pain management, non-pharmacologic approaches enhance pain relief along with drug therapy. Non-invasive techniques, such as distraction and heat and cold applications are used to relieve chronic, moderate cancer pain. Participants in both countries knew that patients with low pain intensity could be distracted from their pain. The study indicated that participants believed that distraction modalities can be used for patients with low pain intensity in order to decrease their pain perception. However, in the assessment of smiling patients, nurses underestimated pain of more than 80% of the cases and under-

medicated 90% of cases. Visitors might enhance pain relief as one way of distraction for patients from pain. Apparently, these nurses do not see talking and laughing with visitors as a distraction from pain but rather as evidence that they were exaggerating pain. This is consistent with McMillan, et al. (2000), who found that 22% of the nurses pain rating would be reduced for laughing patients, even though 95% of nurses correctly answered the items about distraction. Results of this study are consistent with Hamilton & Edgar (1992) but unlike Kubrcka, et al. (1996), and Van Niekerk, & Martin, (2001) as their participants scored greater than 85%.

Heat and cold applications are commonly used with other therapy in order to reduce painful conditions. In this study 60% of the participants from both countries were unable to recognize this method for reducing cancer pain. These results could be explained by the fact that participants in both countries were not aware of basic principles of gate control theory by Melzack & Wall, (1965). Nurses from both countries lack knowledge about the physiology and the applications of gate control theory. Further heat and cold applications raised the normal pain threshold significantly (Wall, & Melzack, 1989). Nurses are the primary professional resource for patients' pain management, and failure to provide adequate pain management interventions can lead to legal and ethical liabilities. Simply, nurses might give wrong information if they were asked by their patients about heat and cold application as non-pharmacological modalities to reduce pain.

This study indicates that nurses in both countries were unaware about the fact that non-pharmacologic interventions are never the substitutes for appropriate medications. Approximately one-third from both countries knew that the participants should use the non-pharmacological interventions along with analgesics. It seems that participants were unaware about the beneficial effects of non-pharmacology treatments

when combined with opioids for cancer related pain. The non-pharmacologic interventions can be used to enhance patients' sense of perceived control and decreased anxiety that accompany pain.

Relationship of the demographic variables and overall pain management knowledge score:

The results of this study indicated that there was a significant relationship between the clinical experience and the overall pain management knowledge score ($r = 0.161$, $P < 0.05$). This finding is inconsistent with the findings of Watt-Watson, (1987); Hamilton & Edgar, (1992) and Kubecka, et al. (1996). However, data analysis did not demonstrate knowledge differences between nurses based on years of oncology nursing experience similar to Tafas et al. (2002) study findings. This might be due to lack of available of specific oncology training in Jordan and Bahrain. Another reason may be due to the fact that oncology institutions are newly developed in both countries. The results indicted that there was no significant relationship between the level of nursing education and the overall pain management knowledge score, ($r = -0.101$, $P < 0.05$). This may be due to the fact that the majority of the participants were diploma prepared 61%. Such findings may explain to some extent the lower scores obtained by the participants of this study. A larger sample size with more masters' prepared clinicians is needed to verify whether this finding would be significant. These findings supported the findings of Watt-Watson, (1987) and Kubecka, et al (1996). Furthermore, the study revealed that the nurses previous personal pain experiences are not correlated with their overall pain management knowledge score. Similar results were found previously by Wessman, & McDonald, (1999).

An explanation for the poor scores nurses had on the knowledge scale may be due to the poor response rate in this study. Another explanation is the fact that nurses in

Bahrain and Jordan are reluctant to work in oncology settings. Therefore, oncology settings in Bahrain and Jordan are left with nurses less knowledgeable in pain management who have these units as the only available job opportunity for them. This is supported by Al-Sammack, (1996) who indicated that nurses in Bahrain found that it is more stressful when caring for cancer patients than others, as well as they lacked knowledge about cancer and cancer care. Furthermore, in the current study the foreigner nurses in both countries scored the lowest on the NKAS; therefore we need to set clear criteria before recruiting foreigner nurses in both countries.

The explanation for under-treatment of cancer patient's pain in Bahrain and Jordan can be as follows:

Bahrain and Jordan, have strong legal and administrative barriers on opioid drugs. Such barriers inhibit nurses from using these drugs in cancer pain management. In addition, these barriers may limit the import or manufacturing of these drugs, which further affects drug availability.

Institutional policies in both countries help in avoiding the use of opioid drugs for cancer pain management, as nurses keep the narcotics in a double locked cupboard and the narcotic key is kept with team leaders. The record and the double check are time consuming for the puts nurses responsible for the content of this cupboard. This adds to the nurse's fear of narcotics side effects which may lead nurses to omit administration or delaying the dose as much as possible. Another factor may be related to under-medication is the shortage of nurses, since the policy for administration of opioid required two nurses to be available during the process, and many times few nurses are taking care of many patients. One nurse has to wait until the other nurse becomes available, which may lead to a delay or ignorance of giving the opioid to the patients.

Thus, nurses may choose to select other pharmacological drugs such as NSAIDs, adjuvant analgesics drugs and antidepressants.

One more explanation for this result is that the turnover is very high among nurses working in the oncology settings. This might be due to the fact that nurses perceive working with cancer patients as a very stressful job. Therefore, whenever they get a better opportunity they leave the oncology setting for another unit. This also explains the short oncology experience possessed by the participants in this study. Since the oncology field is not an attractive area for nurses so, incentive and continuing education might help to attract nurses to work in this field.

In Bahrain and Jordan, students in nursing education programs are rarely assigned in oncology setting. This lack of exposure to oncology experience may explain to some extent the poor score participants had in this study.

Conclusion:

Nurses are the cornerstones of palliative care. Therefore, nurses should assume a more significant role with cancer pain management to reduce the patients suffering and allow them to die in peace and dignity.

The results of the current study demonstrated that nurses in Bahrain and Jordan have a significant knowledge deficit of cancer pain assessment and management. Problems in cancer pain management have been identified by the participants who reflect the misconceptions and inadequate knowledge. Beck, (2000) stated that lack of knowledge by health professionals is one of the main barriers to effective cancer pain management. Nurses working with cancer patients in Bahrain and Jordan need standard education about cancer pain management. This education program should include pain assessment; pharmacological management (opioids, non-opioids, and adjuvant

medications); and non-pharmacologic intervention. In addition, these programs must emphasize misconceptions about pain and its management.

Implications:

Pain is a complex phenomenon that should be explored from multidisciplinary perspectives. The ultimate beneficiaries of research in the field of pain are cancer patients who will experience better pain management and improved quality of life. The results of this study have many implications for nurses, policy makers, nursing educators, and finally nursing researchers.

1- Nursing Administration:

Nursing administration may play a major role in the resolution of this problem by introducing new strategies to strengthen the nurses' knowledge about cancer pain management. Administrators play an important role in assisting nurses to develop protocols, sets standards to increase their nurses' skills and knowledge related to cancer pain management.

Continuing education for cancer pain management should be provided in the clinical setting to enhance the nurses' knowledge and skills regarding cancer pain management. Orientation programs for new employees should have information about pain assessment and management. Because nurses spend more time with patients in pain, up-to-date knowledge about pain is important for nurses. One important issue in educational programs is the continuity of these programs on a regular basis. Pain assessment and management needs to be emphasized in the clinical settings by standards of care.

Patients' and caregivers' education is an essential element of cancer pain management. It is the nurse's responsibility to educate the public, patients and their families about the right to be free of pain. Also, the patients now a days are eager to

learn about treatment options for pain management and opioid effects and its side effects. It is a challenge for oncology nurses to design educational programs for patients and their caregivers. Also there is a need to develop readable material for the public and make them available for patients in Arabic.

2- Implication for Nursing Education:

Nurse educators seem to be not recognizing the active role of nurses in the pharmacological control of pain. The strongest message in this study is that nurses in Bahrain and Jordan require further educational effort in cancer pain management in basic education and continuing education. Nurses' education should include the definition of pain, pathophysiology, pain assessment, pharmacologic management of pain, non-pharmacologic approach to pain management and ethical issues of pain management.

In the current core curricula at the College of Health Sciences in Bahrain, and in the nursing schools in Jordan, there is still no place for standardized courses on cancer pain management. More content in nursing curricula on cancer pain assessment, pharmacological, non-pharmacological and the ethical issues of pain management are needed.

3- Research implications:

Further studies are needed using different tools to measure the effectiveness of pain rating scales and nurses' knowledge about pharmacological and nonpharmacological interventions for the pain assessment and management. Also based on the results, we can conduct research on patients' satisfaction about cancer pain relief to assess the effect of cancer pain management educational programs on nurses' practice and behavior. Further research is also needed to develop a more reliable tool to assess the nurse's knowledge about cancer pain management in the Arabic culture.

4- Clinical Implications:

The first step in improving cancer patient care is to improve the nurses' knowledge regarding the basic principle of cancer pain management. In the absence of correct information related to pain and pain management, patient care is unlikely to improve. Assessing pain along with vital signs would ensure that pain is monitored on a regular basis. Interviewing patients during hospitalization concerning their satisfaction with pain relief efforts provided by nurses is essential for both parties. Nurses' clinical practice should be based on clearly stated guidelines in both countries for the assessment and management of cancer pain. The clinical nurse specialist in Jordan and Bahrain must understand the fact that nurses working in oncology settings are not fully aware of pain management

Recommendations:

Based on the findings of this study the following recommendations are made:

1. Replicating the study, taking into consideration nurses' knowledge, attitudes and practice (KAP) of pain assessment and management, is essential in order to get a better overall picture of this issue.
2. Replicating the study with a larger sample from different Arab countries is necessary before making any generalizations.
3. Each institution that deals with oncology patients need to provide their health professionals with continuing education programs, as well as to set a clear standard and protocols to cancer pain assessment and management.
4. The hospitals should provide opportunities for maintaining and updating clinical knowledge about pain management such as a journal club and educational seminars.

5. Nursing schools in both countries need to put more emphasis on pain and pain management in their curriculums.
6. Nurses need to educate patients and their families about reporting patient's pain.
7. Nurses in both countries have to work on establishing standards to prohibit use of placebos for pain assessment or management and ensure that policies are present within the institutions that address the use of placebos.

REFERENCES

1. Affara, F., Azoury, N., Al-Drazi, F., Arevian, M., Rao, K., & Mohammed, A. (1987). Nurses' perception of patients' pain. Unpublished study report. American University of Beirut school of nursing and College of Health sciences Bahrain, Bahrain.
2. Agency for Health Care Policy and Research (AHCPR), Publication NO. 94-0592, Rockville, MD: AHCPR. (1994). United States Department of Health and Human Services. Public Health Service.
3. Al-Hassan, M., Al-Khalil, M. S., & Al-Ma'aitah, R. (1999). Jordanian nurses' role in the management of postoperative pain in the recovery room. Journal of PeriAnesthesia Nursing, 14 (6): 1-7.
4. Allcock, N. (1996). Factors affecting the assessment of postoperative pain: a literature review. Journal of Advanced Nursing, 24, 1144-1151.
5. Al-Smamack, J.M. (1996). Nurses' attitudes and knowledge and beliefs relating to cancer and cancer care in Bahrain. Unpublished Master dissertation.
6. American Cancer Society Cancer Facts and Figures, from the World Wide Web: <http://www.cancer.org/statistics/index.html>. Retrieved April 10th 2002.
7. American Nurses Association. (1995). Code for Nurses with Interpretive Statement. American Nurses Association, Kansas City- USA.
8. American Nurses Association. (1996). Position Statements (Use of placebos for pain management in patients with cancer.) American Nurses Association and Oncology Nursing Society. USA.
9. Bahrain Cancer Registry, (1988). Cancer Incidence Summary Gulf Cooperation Council Countries, Riyadh-Saudia Arabia.
10. Bauwen, S., Disteman, W., Storme, G., & Kaufman, L., (2001). Attitudes and knowledge about cancer pain in Flanders. The educational effects of workshops regarding pain and symptom control. Palliative Medicine, 15, 181-190.
11. Beck, S.L. (2000). An ethnographic study of factors influencing cancer pain management in South Africa. Cancer Nursing, 23(2): 91-99.

12. Bondestam, E.H., Hougrenk, K., Jonhanson, G., Jern, Herlitz, M.D & Holmberg, S., (1987). Pain assessment by patients and nurses in the early phase of acute myocardial infraction. Journal of Advance Nursing, 12, 667-682.
13. Bonica, J. (1985). Treatment of cancer pain: current status and future needs. Advances in Pain Research and Therapy, 9, Edit by H.L. Fields et al., (pp. 589-616). New York, Raven Press.
14. Camp, L.D. (1988). A comparison of nurses' recorded assessments of pain with perceptions of pain as described by cancer patients. Cancer Nursing, 11(4): 237-243.
15. Cleary, J.F. (2000). Cancer Pain Management. Cancer Control, 7 (2): 120-131.
16. Cleeland, C.L. (1984). The impact on the patient with cancer, Cancer, 54, 2635-2641.
17. Cohen, F. (1980). Postsurgical pain relief: patients' status and nurses' medication choices. Pain, 9, 265-274.
18. Coyle, N. (1985). Symptom management: Pain- an overview of current concepts. Cancer Nursing, 8, 44-49.
19. Dalton, J.A. (1989). Nurses perception of their pain assessment skill, pain management practices and attitudes toward pain. Oncology Nursing Forum, 16 (2): 225-231.
20. Dalton, J.A., Carlson, J., Mann, J.D., Blau, W., Bernard, S., & Youngblood, R. (1998). An examination of nursing attitudes and pain management practices. Cancer Practice, 6(2): 115-124.
21. Daut, R.L., & Cleeland, C.S. (1982). The prevalence and severity of pain in cancer. Cancer, 50, 1913-1918.
22. Davis, G.C. (1982). The meaning of pain management: a concept analysis, Advance Nurse Society, 15(1): 77-86.
23. Derby, S.A. (1999). Opioid conversion guidelines for managing adult cancer pain, American Journal of Nursing, 99 (10): 62-65.

24. Devita, V.T., Helman, S. & Rosenberg, S. (2001). Cancer principles and practice of oncology, 6th ed. Lippincott Williams.
25. Easley, M.K., & Elliott, S. (2001). Managing pain at end of the life. Nursing Clinics Of North America, 36 (4): 779-795.
26. Ferrell, B.R., Dean G.E., Grant M., & Goluzzi, P., (1995). An institutional Commitment to pain Management, Journal of Clinical Oncology, 13(9): 2158-2165.
27. Ferrell, B.R., Grant, K.J, Ropchan, R., & Rivera, L.M., (1993a). The pain resource nurse training program: a unique approach to pain management. Journal of Pain and Symptom Management, 8, 549-556.
28. Ferrell, B.R., McGuire, D.B., & Donvan, M.L., (1993b). Knowledge and beliefs regarding pain a sample of nursing faculty. Journal of Professional Nursing, 9, 79-88.
29. Ferrell, B.R., Grant, M.M, Rhiner, M, & Padilla, G.V., (1992). Home care: Maintaining quality of life for patient and family. Oncology, 6 (suppl.), 136-142.
30. Fife B., Irick, N. & Painter J., (1993). A comparative study of the attitudes of physicians and nurses toward the management of cancer pain. Journal Pain Symptom Management, 8 (3): 132-139.
31. Foley, K. (1982). Clinical asesment of cancer pain. Acta Anaesthesiologica, 79 (suppl.), 91-97.
32. Fox, L.S. (1982). Pain management in the terminally ill cancer patients: An investigation of nurses' attitudes, knowledge and clinical practice. Military Medicine, 147, 455-459.
33. Groenwald, S., Frogge, M. H., Goodman, M., & Yarobro, C.H. (1997). Cancer nursing principle and practice. 4th ed. Jones and Bartiett.
34. Hamilton, J., & Edgar, L. (1992). A survey examining nurses knowledge of pain control. Journal Pain Symptom Management, 7(1): 8-26.

35. Hanks, G.W., & Justains, D.M. (1992). Cancer Pain: Management, Lancet, 339(25), 1031-1036
36. Harrison, A. (1993). Comparing Nurses' and patients pain evaluation: A study of hospitalized patient in Kuwaite. Social Science and Medicine, 26(50): 683-692.
37. Hauck, S. (1986). Pain: problem for the person with cancer. Cancer Nursing, 9(2): 66-76.
38. Hekmat, N., Burke, M., & Howell, S.J. (1994). Preventive pain management in the postoperative hand Surgery Patient. Orthopaedic Nursing, 13(3): 37-42.
39. Howell, D., Butler, L., Vicent, L., Watt-Watson, J. & Streans, N. (2000). Influencing Nurses' knowledge, attitudes, and practice in cancer pain management. Cancer Nursing, 23(1): 55-63.
40. International Association for the Study of Pain, (1979). Pain terms: A current list with definitions and notes on usage. Pain, 6, 249-252.
41. Jordan National Cancer Registry Report, (1999). Ministry of Health. Amman-Jordan.
42. Kubecka, K.E., Simon J.M., & Boettcher, J.H. (1996). Pain management knowledge of hospital-based nurses in a rural Appalachian area. Journal of Advanced Nursing, 23, 861-867.
43. Levin, D.N., Cleeland, C., & Dar, R., (1985). Public attitudes toward cancer pain. Cancer, 56, 2337-2339.
44. M. Gharaibeh, G., & Abu-Saad, H., (2002). Cultural validatin of pediatric pin assessment tools: Jordanian prespective. Journal of Transcultural Nursing, 13(1):12-18.
45. Manworren, R.C., (2001). Development and testing of the pediatric nurses' knowledge and attitudes survey regarding pain. Pediatric Nursing, 27(2):151-158.

46. Manworren, R.C., Hayes, & Janice, S. (2000). Pediatric nurses' knowledge and attitudes survey regarding pain. Pediatric Nursing, 26(6): 610-615.
47. Mark, R.M., & Sachar, E.J. (1973). Undertreatment of medical inpatients with narcotic analgesics. Annals of Internal Medicine. 78, 173-181.
48. Mayer, D.D., Torma, T., Byock, I, & Norris, K., (2001). Speaking the language of pain. American Journal of Nursing, 101(2): 44-49.
49. McCaffery, M. (1979). Nursing management of the patient with pain. 2nd ed. Philadelphia: Lippincott.
50. McCaffery, M.& Ferrell, B.R. (1996). Correcting misconceptions about pain assessment and use of opioid analgesics: educational strategies aimed at public concerns. Nursing Outlook, 44(4): 184-190.
51. McCaffery, M., & Ferrell, B.F. (1991). How would you respond to these patients in pain? Nursing, 21(6): 34-37.
52. McCaffery, M., & Ferrell, B.F., (1992). Opioid Analgesics Nurses' knowledge of doses and psychological dependence, Journal of Nursing Development. 77-84.
53. McCaffery, M., & Ferrell, B.F., (1995). Nurses Knowledge about Cancer Pain: A Survey of Five Countries. Journal Pain Symptom Management, 10 (5): 356-369.
54. McCaffery, M., & Ferrell, B.F., (1997). Nurses knowledge of pain assessment and management: How much progress have we made? Journal Pain Symptom Management, 14 (3):175-188.
55. McCaffery, M., & Ferrell, B.F., O'Neil-Page, E., Lester, M., & Ferrell, B., (1990). Nurses' knowledge of opiod analgesic drugs and psychological dependence. Cancer Nursing, 13(3): 21-27.
56. McMillan, S.C., Tittle, M., Hagan, S., Laughlin, J., & Table, R.E. (2000). Knowledge and attitudes of nurses in Veterans hospital about pain management in patient with cancer. Oncology Nursing Forum, 27(9): 1415-1422.

57. McMillan, S.C., Williams, F.A., Chatfield, R. & Camp, D.L. (1988). A validity and Reliability Study of Tools for Assessing and Managing Cancer Pain. Oncology Nursing Forum, 15 (6): 735-741.
58. Melzack, R. & Wall, P.D. (1965). Pain Mechanisms: A new theory. Science, 150, 971-979.
59. Ministry of Health, (1998). Bahrain Health Statistics Report, Manama- Bahrain.
60. Ministry of Health, (1999). Bahrain Health Statistics Report, Manama- Bahrain.
61. Ministry of Health, (2001). Drug Formulary 2001, Mnaman- Bahrain.
62. Myers, J.S. (1985). Cancer pain: assessment of nurses' knowledge and attitudes. Oncology Nursing Forum, 12 (4): 62-66.
63. O'Brien, S., Dalton, J.A., Konsler, G., & Carlson, J. (1996). The knowledge and attitudes of experienced oncology nurses regarding the management of cancer-related pain. Oncology Nursing Forum, 23(3): 515-520.
64. Parris, W.C., Foster, H. W., & Melzck, R. (1997). Cancer pain management: Principle and practice, Butter worth-Heinemann.
65. Pasero, (1997). Pain rating the fifths vital signs. American Journal of Nursing, 97(2): 15-16.
66. Perron, V., & Schonwetter, R. (2001). Assessment and management of pain in palliative care patients, Cancer Control, 8(1):15-24.
67. Portenoy, K., & Lesage, P., (1999). Management of cancer pain. Lancet, 353(15): 1695-1700.
68. Pritchard, A.P. (1988). Management of pain and nursing attitudes. Cancer Nursing, 11,(3), 203-209.
69. Rankin, M.A., & Snider, B., (1984). Nurses' perception of cancer patient' pain. Cancer Nursing, 149-155.

70. Regan, J.M. (2000). Neurophysiology of Cancer Pain. Cancer Control, 7 (2): 111-119.
71. Salerno, E., Willenes, J.S., & Jacox, A.K. (1996). pain management handbook (pp.39-59). Mosby.
72. Schumacher, K.L., West, C., Dodd, M., Paul, M.S., Tripathy, D., Koo, P., & Miaskowski, C.A. (2002). Pain Management Autobiographies and Reluctant to Use Opioids for Cancer Pain Management. Cancer Nursing, 25 (2): 125-133.
73. Spross, J.A. McGuire, D.D., & Schmitt, R.M. (1990). Oncology nursing society: Position paper on cancer pain Part I, II, and III. Ocology Nursing Forum, 17, 751-760.
74. Stevens, A., & Ghazi, (2000). Routes of opioid analgesic therapy in the management of cancer pain. Cancer Control, 7 (2): 132-141.
75. Tafas, C.A., Patiraki, E, McDonald, D.D., & Lemonidou, C., (2002). Testing an Instrument Measuring Greek Nurses' Knowledge and Attitudes Regarding Pain. Cancer Pain, 25 (1): 8-14.
76. Tanabe, P., & Buschmann, M., (2000). Emergency nurses' knowledge of pain management principle. Journal of Emergency Nursing, 26(4): 299-305.
77. Thomas, E.M., & Weiss, S.M.(2000). Nonpharmacological interventions with chronic Cancer pain in adults. Cancer Control, 7 (2):157-164.
78. Van Niekerk, L.M.& Martin, F. (2001). Tasmanian nurses' knowledge of pain management. International Journal of Nursing Studies, 38, 141-152.
79. Vortherms, R., Ryan, P., & Ward, S. (1992). Knowledge of, attitudes toward, and barriers to pharmacologic management of cancer pain in a statewide random sample of nurses. Research in Nursing & Health, 15, 459-466.
80. Wall, P.D., & Melzack,R., (1989). Text book of pain. New York: Basic Books.
81. Watt-Watson, J. (1987). Nurses knowledge of pain issues: a survey. Journal of Pain and Symptom Management, 2 (4): 207-211.

82. Wells, N., (2000). Pain intensity and pain interference in hospitalized patients with cancer. Oncology Nursing Forum, 27(6): 985-991.
83. World Health Organization, (1986). Cancer Pain relief. Geneva: WHO.
84. World Health Organization, (1990). Cancer pain relief and palliative care. WHO technical Report Series 804. Geneva: WHO.
85. World Health Organization, (1995). National Cancer Control programs. Geneva: WHO.
86. World Health Organization, (1996). Cancer Pain relief. 2nd, ed. Geneva: WHO.
87. World Health Organization, (1998). WHO programe on camcer pain control development a global stategy for cancer. Geneva: WHO.
88. Zalon, M.L. (1993). Nurses assessment of postoperative patients' pain. Pain, 54, 429-334.
89. Zenz, M., Zenz, T., Truba, M., & Strumpt, M. (1995). Severe undertreatment of cancer pain: A three year survey of the German situation? Journal Pain Symptom Management, 10 (3):187-191.

Appendix A

Nurses' Knowledge and Attitudes Survey

Nurses' Knowledge Regarding Pain

True/False – Circle the correct answer.

- | | | |
|----------|----------|--|
| T | F | 1. Observable changes in vital signs must be relied upon to verify a patient's statement that he has severe pain. |
| T | F | 2. Because of an underdeveloped neurological system, children under 2 years of age have decreased pain sensitivity and limited memory of painful experiences. |
| T | F | 3. If the patient can be distracted from his pain this usually means that he does NOT have high pain intensity. |
| T | F | 4. Patients may sleep in spite of severe pain. |
| T | F | 5. Comparable stimuli in different people produce the same intensity of pain. |
| T | F | 6. Aspirin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for bone pain caused by metastases. |
| T | F | 7. Respiratory depression rarely occurs in patients who have been receiving narcotic over a period of months. |
| T | F | 8. Aspirin 650 mg PO is approximately equal in analgesic effect to meperidine (pethidine) 50 mg PO. |
| T | F | 9. The World Health Organization (WHO) pain ladder suggests using single analgesic agents rather than combining classes of drugs (e.g. combining an opioid (narcotic) with a non-steroidal agent). |
| T | F | 10. The usual duration of action of meperidine (pethidine) IM is 4-5 hours. |
| T | F | 11. Research shows that promethazine (Phenergan) is a reliable potentiator of narcotic analgesics. |
| T | F | 12. Beyond a certain dosage of morphine increases in dosage will NOT increase pain relief. |
| T | F | 13. Elderly patients cannot tolerate narcotic for pain relief. |
| T | F | 14. The patient with pain should be encouraged to endure as much pain as possible before resorting to a pain relief measure. |
| T | F | 15. The patient should be advised to use non-drug techniques alone rather than concurrently with pain medications. |

- T F** 16. Giving patients sterile water by injection (placebo) is often a useful test to determine if the pain is real.
- T F** 17. In order to be effective, heat and cold should only be applied to the painful area.

Multiple Choice – Place a check by the correct answer.

18. The recommended route of administration of narcotic analgesics to patients with prolonged cancer-related pain is
- ☐ a. intravenous
 - ☐ b. intramuscular
 - ☐ c. subcutaneous
 - ☐ d. oral
 - ☐ e. rectal
 - ☐ f. I don't know
19. Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients?
- ☐ a. Brompton's cocktail
 - ☐ b. codeine
 - ☐ c. morphine
 - ☐ d. meperidine (pethidine)
 - ☐ e. methadone
 - ☐ f. I don't know
20. Analgesics for post-operative pain should initially be given
- ☐ a. around the clock on a fixed schedule
 - ☐ b. only when the patient asks for the medication
 - ☐ c. only when the nurse determines that the patient has moderate or greater discomfort
21. A patient with chronic cancer pain has been receiving daily narcotic analgesics for 2 months. The dose increased during this time period. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously for 3 hours. The likelihood of the patient developing clinically significant respiratory depression is
- ☐ a. less than 1%
 - ☐ b. 1-10%
 - ☐ c. 11-20%
 - ☐ d. 21-40%
 - ☐ e. > 41%

22. Analgesia for chronic cancer pain should be given
- ☐ a. around the clock on a fixed schedule
 - ☐ b. only when the patient asks for the medication
 - ☐ c. only when the nurse determines that the patient has moderate or greater discomfort
23. The most likely explanation for why a patient with pain would request increased doses of pain medication is
- ☐ a. The patient is experiencing increased pain.
 - ☐ b. The patient is experiencing increased anxiety or depression.
 - ☐ c. The patient is requesting more staff attention.
 - ☐ d. The patient's requests are related to addiction.
24. Which of the following drugs are useful for treatment of cancer pain?
- ☐ a. Ibuprophen (Brufen)
 - ☐ b. Naproxin (Nopain)
 - ☐ c. Amitriptyline (Tryptizol), (Saroten) or (Prozac)
 - ☐ d. All of the above
25. The most accurate judge of the intensity of the patient's pain is
- ☐ a. the treating physician
 - ☐ b. the patient's primary nurse
 - ☐ c. the patient
 - ☐ d. the pharmacist
 - ☐ e. the patient's spouse or family
26. Which of the following describes the best approach for cultural considerations in caring for patients in pain:
- ☐ a. Because of the diverse and mixed cultures in Jordan and Bahrain, there are no longer cultural influences on the pain experience.
 - ☐ b. Nurses should use knowledge that has defined clearly the influence of pain on culture (e.g. Asian patients are generally suffer without complaint, Italians are expressive and exaggerate their pain, etc.)
 - ☐ c. Patients should be individually assessed to determine cultural influences on pain.
27. What do you think is the percentage of patient who **over report** the amount of pain they have? **Circle the correct answer.**
- 0 10 20 30 40 50 60 70 80 90 100%

28. Narcotic/opioid addiction is defined as psychological dependence accompanied by overwhelming concern with obtaining and using narcotics for psychic effect, not for medical reasons. It may occur with or without the physiological changes of tolerance to analgesia and physical dependence (withdrawal).

Using this definition, how likely is it that narcotic addiction will occur as a result if treating pain with narcotic analgesics? **Circle the number closest to what you consider the correct answer.**

< 1 5% 25% 50% 75% 100%

Case Studies

Two patient case studies are presented. For each patient you are asked to make decisions about pain and medication.

Directions: Please select one answer for each question.

29. Patient A: Ali is 25 years old and this is his first day following abdominal surgery. As you enter his room, he smiles at you and continues talking and joking with his visitor. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.

A. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Ali's pain.

0 1 2 3 4 5 6 7 8 9 10

No pain/discomfort Worst Pain/discomfort

B. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." Check the action you will take at this time.

- _____ 1. Administer no morphine at this time.
_____ 2. Administer morphine 1 mg IV now.
_____ 3. Administer morphine 2 mg IV now.
_____ 4. Administer morphine 3 mg IV now.

30. Patient B: Saleem is 25 years old and this is his first day following abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.

A. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Saleem's pain:

0	1	2	3	4	5	6	7	8	9	10

No pain/discomfort						Worst Pain/discomfort				

B. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." Check the action you will take at this time:

- ☐ 1. Administer no morphine at this time.
- ☐ 2. Administer morphine 1 mg IV now.
- ☐ 3. Administer morphine 2 mg IV now.
- ☐ 4. Administer morphine 3 mg IV now.

Appendix B

Demographic Data Sheet

Participants Oral Consent Form

Dear Participants,

I am Muyassar Sabri a Master candidate at Jordan University of Science and Technology. I am conducting a study about nurses' knowledge and attitudes regarding cancer pain management in Bahrain and Jordan. Your participation in this study is highly appreciated.

Would you please answer the question on the tool, which take 25-45 minutes. After you fill the tool please put it in the envelope pinned at the notice board. Your confidentiality will be protected at all times. Please feel free to ask any question I will available at the Tel. 02-7263284 in Jordan and 780207 in Bahrain.

Thank you for your participation.

Muyassar Sabri
Jordan University of Science and Technology,
Faculty of Nursing
Irbid-Jordan

Demographic Data

Please complete the following information by filling the appropriate blank with (x) that corresponds to your answer.

1- Gender:

a- Male

☐

b. Female

☐

2- Religion:

a. Muslim

☐

b. Christian

☐

c. Others

☐

(please specify) _____

3- Age:

(please specify) _____

4- Marital status:

a. Single

☐

b. Married

☐

c. Divorced

☐

d. Widowed

☐

5- Nationality:

a. Bahraini

☐

b. Jordanian

☐

c. Others

☐

(please specify) _____

6- What is your level of education?

a. Diploma (3 years program)

☐

b. Baccalaureate degree

☐

c. Post basic Diploma

☐

d. Master degree

☐

7- What position do you currently hold?

a. Staff nurse

☐

b. Head nurse (ward supervisor)

☐

c. Supervisor (Ward Nursing officer)

☐

d. Clinical specialist

☐

e. Others

☐

(please specify) _____

8- How many years of experience in nursing you have had?

(please specify) _____

9- How many months of experience in oncology you had?

(please specify) _____

10- Have you had any personal experience with pain?

- a. Never had any pain ☐
- b. Had only rare or mild pain ☐
- c. Had sometime moderate to severe pain ☐
- d. Had many time moderate to severe pain ☐
- e. Currently living with moderate or severe pain ☐

11- Do you have any pain management education?

Yes ☐ No ☐

If yes How long _____ when _____

Appendix C

Letter of Authors Permission

Dr. Betty Rolling Ferrell
Department of Nursing Research and Education
City of Hope national Medical Center
Duarte, California
USA

Dear Dr. Ferrell,

I am a Master student at Jordan University of science and Technology in Jordan in the second year Oncology Clinical Nurse Specialist. I am doing a research project about Nurses knowledge and attitudes regarding pain management among cancer patients in Jordan. I am interested in using the instrument you use in the survey (Pain management nurses' knowledge and attitudes survey, 1992) which published in the (McGuire, D., Yarbro C.H., & Ferrell, B.R. (1995). Cancer Pain management 2nd edition pp.348-351). I would appreciate your permission to use the instrument and information how to use the instrument, in addition the correct answers of the questions on the instrument.

I would highly appreciate your assistance and I will be glad to share with you the study result.

Muyassar Sabri

Address:
MSc. Student: Muyassar Sabri
The Faculty of Nursing,
Jordan University of Science & Technology,
P.O.Box 3030
Irbid-22110
Jordan
Fax: 00962-2-7095012 C/O Muyassar Sabri
E-mail: muyassar@yahoo.com

From: "Pejsa, Stacey" <SPejsa@coh.org> | **Block Address**
To: "muyassar@yahoo.com"
<muyassar@yahoo.com>
CC: "Ferrell, Betty" <BFerrell@coh.org>
Subject: FW: instrument permission
Date: Wed, 2 Jan 2002 07:54:40 -0800

Here is the Nurses' Knowledge and Attitudes Survey Tool you requested. I am sorry that it took this long to get it to you, I have been out of the office since December 20, 2001.

Stacey Pejsa
Coordinator, Pain Resource Center
City of Hope National Medical Center

-----Original Message-----

From: Ferrell, Betty
Sent: Monday, December 24, 2001 9:27 AM
To: Pejsa, Stacey
Subject: FW: instrument permission

since we are in the midst of changing over to the new index and this is international, I hesitated to just refer her to the website. Can you communicate with her and just send the tool electronically refer her to the site that's up --BF

-----Original Message-----

From: muyassar sabri [<mailto:muyassar@yahoo.com>]
Sent: Thursday, December 20, 2001 2:58 AM
To: bferrell@coh.org
Subject: instrument permission

Dr. Betty Rolling Ferrell
Department of Nursing Research and Education
City of Hope National Medical Center
Duarte, California
USA

Dear Colleague:

We have had many inquiries regarding the need for an instrument to measure nurses' knowledge and attitudes regarding pain. Therefore, we have prepared our instrument for distribution to others. The tool can be used to assess nurses in your setting and as an evaluation measure following educational programs. The tool was developed in 1987 and has been used extensively from 1987 - present. The tool was recently revised and tested in a pain education course with greater than 800 subjects. Psychometric analysis will be conducted on this data using the updated version.

The following data was based on evaluation of the previous version.

- Regarding issues of reliability and validity: This tool has been developed over several years. Content validity has been established by review of pain experts. The content of the tool is derived from current standards of pain management such as the American Pain Society, the World Health Organization, and the Agency for Health Care Policy and Research. Construct validity has been established by comparing scores of nurses at various levels of expertise such as students, new graduates, oncology nurses, graduate students, and senior pain experts. The tool was identified as discriminating between levels of expertise. Test-retest reliability was established ($r > .80$) by repeat testing in a continuing education class of staff nurses ($N=60$). Internal consistency reliability was established ($\alpha > .70$) with items reflecting both knowledge and attitude domains.
- Regarding analysis of data: We have found that it is most helpful to avoid distinguishing items as measuring either knowledge or attitudes. Many items such as one measuring the incidence of addiction really measures both knowledge and attitude issues. Therefore, we have found the most benefit to be gained from analyzing the data in terms of the percentage of complete scores as well as in analyzing individual items. For example, we have found it very helpful to isolate those items with the least number of correct responses and those items with the best scores.

Enclosed for your use is a copy of our instrument and an answer key. You may use and duplicate the tool for any purpose you desire in whole or in part. References to some of our studies which have included this tool or similar versions are included below.

We hope that our tool will be a useful aid in your efforts to improve pain management in your setting.

Sincerely,

Betty R. Ferrell, RN, PhD, FAAN
Associate Research Scientist
8/97

Margo McCaffery, RN, MS, FAAN
Lecturer and Consultant

Appendix D

Letters to Facilitate Conduction of the Study

بسم الله الرحمن الرحيم



University of Science & Technology

Faculty of Nursing

جامعة العلوم والتكنولوجيا الأردنية

كلية التمريض

هاتف ٢٩٥١١١ (٢-٩٦٢) - فاكس ٢٩٥٠١٢ (٢-٩٦٢)

ص. ب (٣٠٣٠) إربد (٢٢١١٠) الأردن

الرقم: ١٥١/٤٦/٢٠١٨

التاريخ: ١٨/٤/٢٠١٨

الموافق: ١٨/٤/٢٠١٨

الدكتور مدير مجمع السلمانية الطبي/البحرين

تحية طيبة وبعد،

تقوم طالبة ماجستير التمريض بجامعة العلوم والتكنولوجيا الأردنية ميسر صبري عوض الله بالإعداد لبحث علمي لدرجة الماجستير في التمريض، بعنوان:

(Management of Cancer-related Pain: Nurses Knowledge and Attitudes in Bahrain and Jordan)

وتحتاج تلك الدراسة إلى جمع بعض المعلومات المتعلقة بمشروع البحث. أرجو التكرم بالموافقة والتوجيه لمن يلزم بالسماح للطالبة المذكورة بجمع المعلومات المشار إليها من قبل المرضى والممرضات العاملين والعاملات في المؤسسة لديكم.

شاكرين ومقدرين لكم حسن تعاونكم معنا.

وتفضلوا بقبول فائق الاحترام،،،

عهد كلية التمريض بالنيابة

لـ
الدكتورة ليندا حداد

بسم الله الرحمن الرحيم



University of Science & Technology

Faculty of Nursing

جامعة العلوم والتكنولوجيا الأردنية

كلية التمريض

ص.ب (٣٠٣٠) إربد (٢٢١١٠) الأردن

هاتف (٩٦٢-٢) ٢٩٥١١١ - فاكس (٩٦٢-٢) ٢٩٥٠١٢

الرقم: ١٥١/٢٤/١٦

التاريخ:

المراسل: ١٤٣١٨ هـ - ١٤٣١٩ هـ

الدكتور مدير مركز الأمل للشفاء / عمان

تحية طيبة وبعد،

تقوم طالبة ماجستير التمريض بجامعة العلوم والتكنولوجيا الأردنية ميسر صبري عوض الله بالإعداد لبحث علمي لدرجة الماجستير في التمريض، بعنوان:

(Management of Cancer-related Pain: Nurses Knowledge and Attitudes in Bahrain and Jordan)

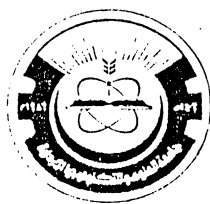
وتحتاج تلك الدراسة إلى جمع بعض المعلومات المتعلقة بمشروع البحث. أرجو التكرم بالموافقة والتوجيه لمن يلزم بالسماح للطالبة المذكورة بجمع المعلومات المشار إليها من قبل المرضى والممرضات العاملين والعاملات في المؤسسة لديكم.

شاكرين ومقدرين لكم حسن تعاونكم معنا.

وتفضلوا بقبول فائق الاحترام،،،

عميد كلية التمريض بالنيابة

الدكتورة ليندا حداد



ب. ب. ٢٠٥٧ / ٢٠١٦ / ٢٠١٧

تاريخ: ٢٠١٦ / ٢٠١٧ / ٢٠١٨

الدكتور مدير مستشفى الاردن

تحية طيبة وبعد،

تقوم طالبة ماجستير التمريض بجامعة العلوم والتكنولوجيا الاردنية ميسر صبري عوض الله بالاعداد لبحث علمي لدرجة الماجستير في التمريض، بعنوان:

(Management of Cancer-related Pain: Nurses Knowledge and Attitudes in Bahrain and Jordan)

وتحتاج تلك الدراسة الى جميع بعض المعلومات المتعلقة بمشروع البحث. أرجو التكرم بالموافقة والتوجيه لمن يلزم بالسماح للطالبة المذكورة بجمع المعلومات المشار اليها من قبل المرضى والممرضات العاملين والعاملات في المؤسسة لديكم.

شاكرين ومقدرين لكم حسن تعاونكم معنا.

وتفضلوا بقبول فائق الاحترام،،،

عميد كلية التمريض بالنيابة

لبن

الدكتورة ليندا حـداد

Appendix E

Permission Ministry of Health in Kingdom of Bahrain

STATE OF BAHRAIN

MINISTRY OF HEALTH

P. O. Box 12

Bahrain, Arabian Gulf.



دولة البحرين

وزارة الصحة

ص. ب ١٢

البحرين - الخليج العربي

٩/٢٠٠٢/١٠٩٧/ت

No.

الرقم:

١٧ نيسان ٢٠٠٢م

Date

التاريخ:

حضرة الفاضلة الدكتورة/ ليندا حداد

المحتـرمة

عميد كلية التمريض بالنيابة

جامعة العلوم والتكنولوجيا الأردنية

تحية طيبة وبعد،

عطفاً على رسالتكم المؤرخة في شهر شباط ٢٠٠٢م بخصوص السماح للطالبة ميسر صبري عوض الله القيام بجمع بعض البيانات المتعلقة بموضوع بحثها من مجمع السلمانية الطبي أود إعلامكم بأنه ليس لدينا أي مانع من السماح للطالبة ميسر لإجراء بحثها في مجمع السلمانية الطبي بعد التنسيق مع مشرفه التمريض في المستشفى.

هذا وتفضلوا بقبول وافر التحية والاحترام،،،

أمينة عبدالله محمد

مديرة ادارة التدريب بالوكالة

Appendix F

Permission from the Al-Amal Cancer Center Administrator



Ref. :

لاشارة : ٥٢٧/٢١٢/٨ هـ

Date :

لتاريخ : ٢٠٠٢/٣/٢

حضرة الدكتورة ليندا حداد المحترمة
عميد كلية التمريض بالنيابة

تحية طيبة وبعد،،

إشارة إلى كتابكم رقم ١٥١/٢٤/١٦/٢٠ تاريخ ٢٠٠٢/٢/١٨.

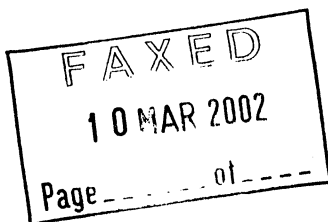
أرجو العلم بأنه لا مانع لدينا من استقبال الطالبة ميسر صبري عوض الله لجمع بعض المعلومات للبحث العلمي لدرجة الماجستير في التمريض، وعلى أن يتم ذلك بالتنسيق ما بين الطالبة ورئيسة التمريض.

وتفضلوا بقبول فائق الاحترام،،،

المدير الإداري والمالي
عبد الحليم الفوارعة

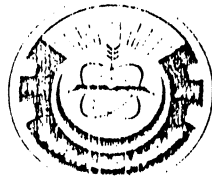
نسخة /

✓ - ر.ق التمريض



Appendix G

Permission from Jordan Hospital administrator



٢٠٢٠ / ٢٠٢١ / ٢٠٢٢

٢٠٢٠ / ٢٠٢١ / ٢٠٢٢

الدكتور مدير مستشفى الاردن

تحية طيبة وبعد،

تقوم طالبة ماجستير التمريض بجامعة العلوم والتكنولوجيا الاردنية ميسر صبري عوض الله
بالاعداد لبحث علمي لدرجة الماجستير في التمريض، بعنوان:

(Management of Cancer-related Pain: Nurses Knowledge
and Attitudes in Bahrain and Jordan)

وتحتاج تلك الدراسة الى جميع بعض المعلومات المتعلقة بمشروع البحث. أرجو التكرم
بالموافقة والتوجيه لمن يلزم بالسماح للطالبة المذكورة بجمع المعلومات المشار اليها من قبل
المرضى والممرضات العاملين والعاملات في المؤسسة لديكم.

شاكرين ومقدرين لكم حسن تعاونكم معنا.

وتفضلوا بقبول فائق الاحترام،،،

عميد كلية التمريض بالنيابة

الدكتورة ليندا حداد

السيد / ميسر صبري عوض الله

السيد / ميسر صبري عوض الله

السيد / ميسر صبري عوض الله

السيد / ميسر صبري عوض الله

السيد / ميسر صبري عوض الله

معالجة الألم عند مرضى السرطان: معلومات التمريض في البحرين والأردن

إعداد

ميسر صبري عوض الله

إشراف

د. محمد سعيد الخليل

الملخص

يشكل الألم مشكلة رئيسية لمرضى السرطان ويؤثر على جوانب الحياة المختلفة لديهم. تهدف هذه الدراسة إلى استكشاف المعرفة لدى الممرضات والممرضين عن الألم وعلاجه في البحرين والأردن. شارك في هذه الدراسة الوصفة المقارنة عينة من 170 ممرض وممرضة من البحرين والأردن والذين يعملون في مراكز السرطان. حيث دلت النتائج على نقص شديد في مستوى المعرفة لدى الممرضين والممرضات في كلا البلدين وهذا النقص يؤثر على مستوى الرعاية المقدمة لمرضى السرطان. وتدل النتائج أيضا على أن لدى الممرضين والممرضات في البلدين خوف شديد من الأعراض الجانبية لأدوية الألم مما يحول دون إعطاها بالتوقيت والجرعة المناسبة. وبناءً على هذه النتائج توصي الدراسة إلى إعادة تقييم طرق تدريس وتدريب الممرضين والممرضات في البحرين والأردن في هذا المجال من أجل رفع مستوى الرعاية التمريضية المقدمة لمرضى السرطان.