Jordanian Nurses' Knowledge and Attitudes Regarding Pain Management Principles for Hospitalized Patients

معرفة وتوجهات الممرضين الأردنيين فيما يتعلق بأساليب إدارة الألم للمرضى بالمستشفيات

Dr. Eman Khamis Alnazly
Al-Ahliyya Amman University
emanalnazly@hotmail.com

Dr. Amjed Ahmed Abojedi
Al-Ahliyya Amman University
dr.amjedabojedi@gmail.com

Abstract

The aim of this study was to assess a sample of Jordanian nurses' knowledge and attitudes towards pain management. A convenience sample of 202 Jordanian registered nurses with a baccalaureate degree in nursing was studied. Data were collected using Ferrell and McCaffery's Knowledge and Attitudes Survey Regarding Pain and a self-report general nursing information form. The data were analyzed by using descriptive statistics and one-way analyses of variance in order to determine differences in survey scores in accordance with the subjects' demographic, behavioral, and work-related characteristics. The overall percentage of correct responses to the KASRP was 41.41%. The difference in the overall KASRP score was statistically significant in the aspect of nurses' use of objective tools ($F = 3.593$, $p < .05$). Our results suggest that continuing educational programs on pain management for nurses would be useful to increase nurses' pain-related knowledge and attitude.

Keywords: pain management, attitudes, knowledge, Jordanian nurses, Knowledge and Attitudes Survey Regarding Pain

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الملخص

يعد الشعور بالألم من العوامل المزعجة للمرضى وبالإمكان التخفيف منه باستخدام الممرضين لأساليب إدارة الألم لدى المرضى، فكلما زادت معرفة الممرضين بخصائص الألم وطرق علاجه، أسهم ذلك في التخلص منه لدى المرضى. هدفت الدراسة تقييم معرفة واتجاهات الممرضين الأردنيين لإدارة الألم واتجاهاتهم. تم اختيار 202 ممرض وممرضة قانونيين للمشاركة بالدراسة. جمعت البيانات باستخدام مقياس فيرل ومكفيري للمعرفة والاتجاهات عن الألم (KASRP) .بالإضافة إلى استبانة معلومات شخصية ديموغرافية عن الممرض. تم تحليل الإجابات باستخدام تحليل التباين الأحادي لتحديد الفروقات الدالة بالاستجابات الخاصة ب(KASRP) في إطار الخصائص الديموغرافية لمكان العمل .كان معدل الإجابات الصحيحة لمقياس (KASRP) 41.41% ، وكانت الفروقات بالإجابة ذات دلالة احصائيا تعزى إلى استخدام أدوات قياس موضوعية (F=3.593, P<0.5). بسبب التدني النسبي لنتائج الدراسة. وفيما يتعلق بالمعرفة والاتجاهات عن الألم يجب أن تؤخذ النتائج بعين الاعتبار في برامج التعليم المستمر لتحسين طرق ادارة الألم.

الكلمات المفتاحية: أساليب إدارة الألم، توجهات، معرفة، ممرضين، KASRP

1. Introduction and Background

Pain management is an important component of nursing practice that requires effective training and considerable knowledge of the physiological and psychological bases of pain. Knowledge deficits regarding the principles of pain assessment and management have been cited as the main barrier to optimal pain management in Jordan (Al Qadire & Al Khalaileh, 2014; Batiha, 2014). Most surveys of nurses' pain knowledge have focused on cancer pain management; little effort has been directed towards other medical illnesses. The aim of the present study is to investigate the knowledge and attitudes of nurses working in different units regarding pain management to provide a broader understanding of its current level in the healthcare system in Jordan.

The main goals of medical treatment are to reduce pain, improve patients' ability to function, and enhance their quality of life (Gordon et al., 2005). To reduce pain, nurses must provide adequate pain management, which requires an appropriate quantity and quality of knowledge and attitudes towards pain management (Yildirim, Cicek, & Uyar, 2008). Many studies have explored nurses' lack of knowledge and poor attitudes towards pain management. Wallace, Reed, Pasero, & Olsson (1995) found that nurses, troublingly, might be unaware of just how inadequate their knowledge and attitudes are, which prevents them from improving. The three most frequent inadequacies reported by Wallace et al. (1995) were (1) under medication of patients, (2) inadequate education on pain preparation, and (3) poor work relations among medical teams. A Turkish study (Yildirim et al., 2008), which used the nursing Knowledge and Attitudes Survey Regarding Pain (KASRP) to quantify oncology nurses' knowledge of pain management, found that the average correct response rate was 35.41%, which indicates a knowledge deficit. Specifically, most nurses incorrectly answered items regarding (1) the effectiveness of placebo injection to assess the pain, (2) recommended opioid administration route for prolonged pain, (3) over-reporting of pain, (4) possibility of opioid addiction, and (5) lack of analytic and integration abilities in making clinical pain judgments. These findings demonstrated that there are serious pain management issues among Turkish nurses. Similarly, Al Qadire and Al Khalaileh (2014) found that Jordanian nurses' average number of correct answers on the KASRP was 19.3 out of 40 and that nurses with previous exposure to pain education had

a higher mean score.

As noted above, a major problem arising from poor knowledge and misconceptions related to pain is that it prevents adequate pain management (Al Khalaileh & Al Qadire, 2012). Wang and Tsai (2010) explored Taiwanese nurses' knowledge and barriers regarding pain management in intensive care units (ICUs) and found an average correct answer rate of 53.4% on the entire pain scale. Similarly, a number of investigators have indicated that nurses are often concerned about the possibility of patients developing an opioid addiction; consequently, nurses are hesitant to administer opioids, and many have a negative attitude toward this drug class despite its necessity in pain management (Al Qadire & Al Khalaileh 2014, Pretorius, Searle, & Marshall, 2014). Furthermore, many nurses hold the misconception that higher opioid doses lead to addiction, which can result in patients receiving inadequate pain management (McMillan, Tittle, Hagan, Laughli, & Tabler, 2000).

Pain is typically treated with analgesics, particularly opioids. Investigators who employed the KASRP or various adapted surveys found that many nurses lack knowledge of pain physiology and analgesic pharmacology. For instance, McMillan et al. (2000, p. 1417) explored nurses' knowledge and attitudes regarding pain along with patients' pain using an original tool called the Pain Management Knowledge Test, which they described as "a 31-item, multiple choice test that covers physiology and characteristics of pain, addiction, dependence, tolerance, goals of pain management, and principles of pain assessment and management." They found that most negative attitudes were related to who controlled analgesic scheduling. The majority of nurses believed that the healthcare provider should be in control of the blood level of analgesics, not the family or patient. In addition, 82% of nurses believed that administering pain medication around the clock might put patients at risk of sedation or respiratory distress. A Korean study investigated nurses' willingness to maximize opioid analgesia in cancer patients (Chang et al., 2005), and found that nurses' lack of knowledge about opioids affected their attitudes towards cancer pain, with many nurses being specifically reluctant to maximize the doses; only 27.4% of nurses were willing to give the maximum morphine dose for effective pain management. Importantly, these nurses had prior experience with pain management; they were confident older nurses who were familiar with pain assessment tools, knew the effectiveness of opioids, were caring for cancer patients, and were not concerned about addiction.

Pain knowledge varied among nurses with regards to their age, years of experience, education, and clinical settings. Nurses working in oncology (Al-Shaer, Hill, & Anderson, 2011) and ICU (Yava et al., 2013) were more confident of pain knowledge. Researchers who investigated pain knowledge among oncology nurses found they were more knowledgeable, because these nurses focused on caring for the patients and not curing the patients (Al-Shaer et al., 2011). The years of experience could reflect both structured pain education and the effect of clinical practice. Experienced nurses of 16 or more years, compared with nurses having less than one year experience, achieved a higher score regarding pain knowledge (Al-Shaer et al., 2011). On the other hand, there are conflicting results regarding nurses' experience and pain knowledge. Research by Yildirim et al. (2008) supported the premise that pain knowledge increased with nursing experience in contrast to research by Tufekci, Ozlu, Arslan, and Gumus (2013) that showed that years of experience did not make a difference. This last study found that nurses with five years or less experience seemed noticeably knowledgeable about pain medications. The length of experience in the same unit also correlated with knowledge of pain assessment and intervention (Al-Shaer et al., 2011). Education level could further reflect a nurses' pain knowledge. Nurses with higher education level generally have better pain knowledge. According to Yava et al. (2013), nurses in a graduate masters program scored higher in pain knowledge. The combination of years of experience and age was also studied. Fairbrother, Jastrzab, Kerr, and McInerney (2003) supported this premise when they found that younger nurses with less experience and working in critical care units were more knowledgeable of pain management. However, pain knowledge by age group did not show any differences (Yildirim et al., 2008). With respect to the nurses' pain education, Jordanian nurses who had been educated previously scored higher on the sur-

vey (Al Qadire & Al Khalaileh, 2014).

In Jordan, there have been few studies regarding nurses' pain knowledge and attitudes. Batiha (2014) reported that the most common pain management barriers for Jordanian nurses were related to the patients, hospital policies, and the nurses themselves. The most common barriers related to nurses were an insufficient number of staff, a high patient-to-nurse ratio, and the limited time spent with patients. These barriers resulted in inadequate pain assessment, the inability to provide good quality care, and lack of pain assessment tools. Batiha's study highlighted the key role of the organization and policy makers in developing appropriate strategies and policies for nurses to implement effective pain management. Recent research has shown that Jordanian nursing staff lack adequate knowledge and management of pain (Al Qadire & Al Khalaileh, 2014; Omran, Al Qadire, Ali, & Hayek, 2014). Pain-management treatments are well below international standards in Jordan (Jordan Pain Society, 2012), and many hospitalized patients in Jordan reported suffering from severe pain during medical treatment (Darawad, Al-Hussami, Saleh, & Al-Sutari, 2014).

We assessed Jordanian nurses' knowledge and attitudes regarding pain management for hospitalized patients. Two questions were addressed: Firstly; what are the knowledge and attitudes of Jordanian nurses regarding pain management principles for hospitalized patients? Secondly; are there significant differences in nurses' knowledge and attitudes about pain associated with demographic variables? (Recently read a book on pain, attended a course on pain management, applied pain knowledge in practice, years of experience, objective tool use, areas of practice, work place type and gender.)

2. Material and Methods

2.1. Study design

Descriptive surveys were used to measure nurses' knowledge and attitudes towards pain management. A cross-sectional survey design was applied to explore the participants' level of knowledge and attitude towards pain in hospitalized patients.

2.2. Instruments

The KASRP was the main instrument, and each participant completed a self-report nursing information form. The KASRP was originally developed by Ferrell and McCaffery (2008) and is available online (http://prc.coh.org). It is a self-administered survey with 38 items, including 22 true/false items, 14 multiple choice questions, and two patient-care scenarios, each asking two questions that require nurses to assess and re-assess a patient in terms of pain (Ferrell & McCaffery, 2008). According to Ferrell and McCaffery, the survey was developed over several years and its content was derived from current pain management guidelines and standards from the American Pain Society, Agency for Health Care Policy and Research, and the World Health Organization. Ferrell and McCaffery recommended avoiding the use of specific questions distinguishing between knowledge and attitudes towards pain since many items measure both. The authors further recommended reporting the scoring as a percentage of correct responses. Correctly answered items are given a score of 1, and incorrect or unanswered items are given a score of 0. Total scores can range from 0 to 40. A higher score indicates a higher number of correct responses in the survey. A minimum score of 70% is considered satisfactory.

The reported internal consistency reliability (Cronbach's alpha) of the KASRP was > .70, with items reflecting both attitudes and knowledge in the development study, while the test-retest reliability, which was established on a class of 60 nurses, was > .80 (Ferrell & McCaffery, 2008). The Cronbach's alpha of the KARSP Turkish version was .74 (Yildi-

rim et al., 2008), and of the Greek version > .88 (Tafas, Patiraki, McDonald, & Lemonidou, 2002). In the present study, the Cronbach's alpha was > .79. The survey was administered in English. Ferrell and McCaffery permitted the use and modification of the survey (available at: http://PRC.coh.org in the Research Instruments section).

We also devised a self-report form to assess the characteristics of the respondents. These characteristics were as follows: (1) recently read a book about pain, (2) attended a course for training on pain and pain management, (3) applied knowledge about pain, (4) used tools to assess pain, (5) years of experience in nursing, (6) area of nursing practice, (7) workplace type, and (8) gender.

2.3. Study sample

The convenience sample consisted of nurses working in the hospital in different units. A convenience sample is easily accessible and readily available (Gerrish & Lacey, 2010). To be included in this study, nurses had to agree to participate, be registered nurses with at least a bachelor's degree in nursing, and currently providing bedside care at the hospital where they were employed. This excluded administrators and nurses who were enrolled in or had graduated from a graduate program. Study participants were selected and contacted by their nurse managers to arrange a suitable date and time for the researcher to come in and begin data collection procedures. We used convenience sampling to invite nurses to participate in the study after explaining its background and purpose, as well as the content of the survey, and ensuring that their confidentiality would be maintained.

2.4. Data collection procedure

We disseminated the KASRP, a cover letter explaining the study content, a consent form, and a return envelope to nurses in different units who agreed to participate. The study participants were also given a short presentation on the study that included an introduction, background, purpose and research objectives, information about the requirements of respondents who consented to participate, and assurances that their confidentiality and anonymity would be maintained and that their participation was strictly voluntary.

A clearly identifiable survey return box was placed at each nursing station ensuring that completed surveys could be returned when a researcher was not on-site. The researchers returned to the nursing stations regularly to collect the completed surveys. Among the 225 surveys distributed over a 2-month period, 202 (89.78%) were returned. The study was conducted in June and July 2014.

2.5. Data analysis

All statistical data were analyzed using SPSS version 22.0 (IBM Corp., Armonk, NY, USA). Following the recommendations of Ferrell and McCaffery (2008), the KASRP data were analyzed in terms of percentages of the total possible score and the correct answer rate of each item (i.e., the number of participants who answered it correctly). The items with the lowest correct answer rates were further explored. The KASRP scores were calculated by giving 0 for each incorrect or unanswered item and 1 for each correct answer. The total scores were summed and ranged from 0 to 40 (0–100%).

Descriptive statistics included frequencies, percentages, means, ranges, and standard deviations (SDs), and were used to describe the demographic, behavioral, and work-related variables and KASRP scores. A one-way analysis of variance (ANOVA) was conducted to determine if there were any significant differences in overall KASRP scores according

to the demographic, behavioral, and work-related variables. An ANOVA was appropriate because the dependent variable consisted of interval data (participants' mean pain knowledge and attitudes scores), and the independent variable consisted of more than two independent groups (e.g., age, years of experience, etc.; Tabachnick & Fidell, 2012). Post-hoc least significant difference (LSD) tests were conducted to precisely identify the variables resulting in significant differences in KASRP scores.

2.6. Ethical consideration

Prior to the commencement of data collection, a formal request for ethical approval was submitted to the ethics committee of each of the four hospitals. The researchers distributed a letter to the manager of each participating unit and requested permission to conduct the study. A copy of the research proposal accompanied each letter and the researchers' phone numbers were made available to the managers. The researchers re-assured the participating nurses that confidentiality and anonymity would be maintained at all times.

3. Results

Since the KASRP instructions encourage researchers not to distinguish between survey items measuring knowledge or attitudes (Ferrell & McCaffery, 2008), we made no distinction between them in the following analyses. The frequencies and percentages of correct answers for each survey item were calculated, and the results are shown in Table 1. Correct answer rates for all items ranged from 0.0 to 75.7%, with only item 22 exceeding 75.0%. Table 1 also shows that 13 items were answered correctly by 50.5–67.3% of nurses; the majority of items had correct answer rates of less than 50.0%, including two items (items 25 and 26) with 0 correct responses. The overall mean total score was 41.41%, which suggests that nurses had a low level of knowledge regarding pain.

Data from a total of 202 nurses were analyzed. The sample was compromised of 53% male and 47% female nurses. Overall, 40% of the participants worked at public hospitals, and 60% worked at private hospitals (Table 2). The completion rates of the KASRP survey and self-report form on nursing characteristics were 100% and 97% (202 and 196), respectively. The descriptive statistics of the self-report form are listed in Table 2. We found that 62.9% (n = 127) of nurses had not recently read a book about pain, 65.7% (n = 132) had not attended a course in pain education in the past, and 51% (n = 102) had not applied pain knowledge in practice. Slightly more than half of participants had less than 5 years of experience in nursing (57.4%; n = 116), and a minority (18.8%, n = 38) used objective pain assessment tools every time they performed pain management.

Notably, the means and SDs of the overall KASRP scores for the listed characteristic nurse groups were all relatively low. The highest mean score was 18.16 (for ICU/critical care unit [CCU] nurses); the other means ranged from 15.64 (for orthopedics nurses) to 17.87 (for nurses who used tools every time they performed pain management).

The means of the KASRP scores were relatively low and were analyzed in terms of their relation to the self-report form variables (i.e., recently read a book about pain, attending a course for training about pain, applied knowledge about pain, years of experience in nursing, using tools to assess pain, area of nursing practice, workplace type, and gender). A univariate ANOVA was conducted to examine differences in the overall KASRP score according to each variable. The results are shown in Table 3. We found no significant main effects for the variables of workplace type, area of nursing practice, recently read a book about pain, attending a course for training about pain, applied knowledge about pain, years of experience in nursing, or gender. However, the variable of using objective tools had a significant main effect ($F = 3.593$, $p < .05$). The LSD multiple comparison test identified the precise categories of using objective tools that dif-

fered in terms of KASRP scores. The results are shown in Table 4. Nurses who used objective tools every time they engaged in pain management had higher KASRP scores than nurses who seldom used these objective tools, while the latter group had higher KASRP scores than nurses who had never used these tools.

4. Discussion

Our main purpose was to assess Jordanian nurses' pain management knowledge and attitudes. The used KASRP survey should enable us to describe findings from a large group of participating nurses. The survey initially served as a tool to assess nurses' pain knowledge and attitudes; in this study, it was also used to predict, identify, and provide researchers and hospitals with plans for interventions to improve nurses' knowledge and attitudes regarding pain management.

Using the KASRP, we found an average correct answer rate of 41.41% (range: 0.0–75.7%), suggesting that the sample overall had a weak-to-moderate pain-related knowledge and attitudes. These findings are consistent with those of previous studies that used the KASRP to investigate various nursing populations. Among Turkish nurses, the overall correct answer rate was 39.65% (range: 7.7–80.1%; Yava et al., 2013), whereas a previous study in Jordan reported a mean correct answer rate of 19.3% (range: 10–72%; Al Qadire & Al Khalaileh, 2014). In a study comparing oncology and non-oncology nurses using the KASRP, the mean correct answer rates were 43.05% and 42.35%, respectively, with respective ranges of 7–69% and 14–77% (Omran et al., 2014). Although McCaffery and Farrell (1997) did not designate a "passing score," Brown, Bowman, and Eason (1999) stated that 80% or higher was an acceptable score by most practice standards, and that nurses who scored lower than 80% had a compromised ability to care for patients experiencing pain (McCaffery & Robinson, 2002). As it can be seen, when using a 70% level as the passing score in this study, our sample showed serious knowledge deficits and negative attitudes towards pain management. The low mean percentage score on the KASRP suggests the need for frequent educational courses to improve hospital nurses' pain knowledge and attitudes; as such courses have demonstrated improvements in KASRP scores. Abdalrahim, Majali, Stomberg, and Bergbom (2011) used a pre-post design to evaluate the effectiveness of pain education courses in a surgical unit for a group of hospital nurses and found that pain courses improved nurses' knowledge.

Pharmacological pain management is vital in nursing practice, and the KASRP survey contains several items relating to it. Perhaps the most troubling results of our survey were that two opioid-analgesic-related items (25 and 26) were not answered correctly by any of the participants. This finding draws attention to the need for nurses to possess high-quality knowledge in the area of pain management pharmacology in general and of opioids in particular. More generally, the nurses who took part in this study lacked knowledge related to drug routes of administration, dosing, duration, and peak effects. Nurses spend more time with patients and implement physicians' orders. They must be able to interpret dosages, actions, routes of administration, and be cognizant of any adverse side effects of the administered pain medications. Nevertheless, these study findings are similar to those of previous studies that reported that nurses' weakest knowledge and attitudes were pain management pharmacology (Abed El-Rahman, Al Kalaldeh, & Muhbes, 2013; Lewthwaite et al., 2011; Lui, So, & Fong, 2008; Omran et al., 2014; Yildirim et al., 2008). In many studies, correct response rates for items 25 and 26 varied greatly. Yildirim et al. reported 36.8 and 14.7%, Tufekci et al. (2013) reported 40.6 and 52.2%, and Yava et al. (2013) reported 40.7 and 40.7% correct responses, respectively. It is crucial to improve nurses' pharmacology knowledge beyond the drug routes of administration, dosing, duration, and peak effects. More recent strategies on pain management shed light on preventing drug-seeking behavior and individualization of treatment management based on patients' physiologic and psychologic needs of analgesics in order to control patients' pain through thorough pain assessment

and effective communication with pharmacists and prescribers to ensure adequate pain control (Barkin, 2010).

Al Qadire and Al Kalaileh (2014) reported that knowledge deficits about opioids among nurses were primarily related to opioid administration policy, which involves a long process of prescribing and dispensing that often discourages nurses from using opioids and ultimately causes patients to tolerate more pain. Another issue involving the administration of this class of drugs is the prevalent fear of using opioids among the population in general; and among patients and healthcare providers in particular. The most common opioid-related fears are of addiction and overdose. Nurses in many countries believe that patients who take opioids for pain are at an increased chance of becoming addicted. However, hospitalized patients can safely receive opioids for a short period without becoming addicted and can even continue taking them after discharge for several days if they are not cancer patients. Thus, low levels of knowledge and negative attitudes among nurses would appear to govern their administration of opioids and influence their ability to control pain. Nurses should employ strategies such as frequent pain assessment to overcome their fear of addiction and to help them understand the effects of opioids. Newer strategies for pain management consist of pain prevention; thus, any patient treated with opioids should be thoroughly evaluated (e.g., is the daily activity level affected, is pain adequately managed, is there any respiratory distress, is there any aberrant behavior, etc.?). Continuous educational programs for nurses are recommended to maintain appropriate theoretical and clinical knowledge and improve current skills.

The use of assessment tools is one of the factors that might influence nurses' knowledge and attitudes towards pain and could be perceived as barriers. We found that nurses who consistently used objective tools during clinical practice had higher KASRP scores than did those who seldom or never used such tools. These findings highlight the importance of using assessment tools in nursing practice. Many nurses were working in ICUs/CCUs in this study, wherein they often conducted ongoing patient pain assessments utilizing objective tools. This contrasts other studies, which found that pain assessment of critically ill patients was rather infrequent (American Association of Critical Care Nurses, 2013; Gelinas, Fortier, Viens, Fillion, & Puntillo, 2004). Another study by Al-Khawaldeh, Al-Hussami, and Darawad (2013) found the most frequently acknowledged pain knowledge barrier was not using the pain assessment tools. Standardized pain assessment tools are best utilized as frameworks for accurate pain assessment (Mackintosh, 2007) as they improve nurses' ability to assess patient pain and enhance their pain-related knowledge and attitudes (Zhang et al., 2008). Moreover, implementing pain assessment tools in clinical practice enables nurses to evaluate patients' conditions objectively, determine the need for intervention to control pain, and evaluate patient responses to therapy (Mackintosh 2007; Zhang et al., 2008).

The pain assessment issue highlighted by our study results was that just 51.5% of nurses were able to accurately assess patients' pain (item number 31). Understanding patients' self-reports of pain requires individualized pain assessments, but these cannot be performed without the nurses first approaching the patient with an open mind and believing that the patients' pain is real (Clarke & Iphofen, 2008). In this study, almost half of the participants had misjudged patients' pain, which may have interfered with the pain assessment process. This issue was particularly illustrated in the KASRP items 37A and 38, which explored nurses' knowledge and decisions about pain assessment. Specifically, these items dealt with the discrepancy between self-reported pain ratings and nonverbal cues, for example: when entering the room "the patient smiles at you and continues talking and joking with his visitor" (item 37A) and the "patient is lying quietly in bed, and grimaces as he turns" (item 38). These nonverbal cues were both paired with self-reported pain ratings of 8 on a pain scale ranging from 1 to 10, with 10 being the worst pain/or discomfort. Only 19.8% and 20.8% of the nurses, respectively, correctly responded to these two scenarios. In other words, patients' behaviors did not meet the nurses' expectations of high pain scale scores. These results

coincide with other studies reporting that nurses misjudge patients' behavioral cues of pain (Al Qadire & Al Khalaileh, 2014; Moceri & Drevdahl, 2014; Yildirim et al., 2008). Nurses' views of patients' pain reflects nurses' pain acknowledgement based on their thoughts, understanding, and estimation mainly by visual clues and facial expressions (Suhonen, Gustafsson, Katajisto, Välimäki, & Leino-Kilpi, 2010). Such perceptions are based on nurses' individual experiences, cognition and emotions of pain, as well as nursing professional knowledge (Chatchumni, Namvongprom, Sandborgh, & Eriksson, 2015). When nurses do not acknowledge pain experience; pain is poorly assessed, pain medication is withheld, and patients would not receive adequate pain control. At the same time, patients struggle to have their pain acknowledged. So it is important for nurses to understand patients' pain to perform their nursing duty ethically.

Appropriate pain assessment is particularly important because inadequacies can result in pain management failures (Breivik et al., 2008). Future empirical research is therefore recommended to better understand nurses' assessments of pain based on both their judgments and the patients' nonverbal cues. In addition, there is a need to change the nursing curriculum and to develop and implement continuing education courses and programs related to nurses' assessment and management of pain.

4.1. Limitations

This study has several limitations, which may have influenced the results. Firstly, the data was gathered through a convenience sample at four hospitals. Secondly, the survey questions were all close-ended, and the fact that they used true/false and multiple-choice questions limited the amount of information obtained from the participants. Although these factors limit the generalizability of our findings to other hospitals or nursing populations, our results increase the body of knowledge related to nurses' knowledge and attitudes regarding pain as well as their ability to assess and treat pain.

4.2. Relevance to clinical practice

The results of this study will provide educators of hospital nurses in various units with insight into the potential deficits of pain knowledge among hospital nurses, strengthen awareness of pain knowledge through education, promote knowledge of pain assessment tools, develop educational programs that cater for hospital nurses, and focus on expanding nurses' knowledge of pain management. Most importantly, the support of hospital administrators is critical for instituting positive nursing culture changes and making pain management a top priority for nurses.

4.3. Recommendations for future research

This study focused on nurses' knowledge and attitudes regarding pain management and represents further research of nurses' current practice on pain knowledge. Assessment in Jordanian hospitals should incorporate self-reported surveys, medical records, and patients' opinions on nurses' knowledge of pain management.

Given the poor pain knowledge and attitudes found in our survey, empirical research in this area should be directed towards identifying effective strategies for improving nurses' knowledge and attitudes regarding pain, which will result in better pain management. Furthermore, qualitative research is needed for in-depth exploration of the personal experiences that influence nurses' perceptions of pain and how they make pain management decisions.

5. Conclusions

Our results provide new insight into the pain-related knowledge and attitudes among Jordanian nurses who care for hospitalized patients. Overall, our findings are in accordance with previous studies that revealed that nurses have relatively poor knowledge and attitudes regarding pain and highlight the barriers to effective pain management for hospitalized patients. An important starting point for interventions is the finding that nurses who used objective tools during clinical practice achieved higher KASRP and thus exhibited a better understanding of pain management.

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Table 1
Frequency and Correct Answer Rate for Items of the Knowledge and Attitudes Survey Regarding Pain Among Nurses

Item #	Question	Frequency	%
22	Narcotic/opioid addiction is defined as a chronic neurobiologic disease, characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving.	153	75.7%
15	Patients' spiritual beliefs may lead them to think pain and suffering are necessary.	136	67.3%
7	Combining analgesics that work by different mechanisms (e.g., combining an opioid with a nonsteroidal anti-inflammatory agent [NSAID]) may result in better pain control with fewer side effects than using a single analgesic agent.	132	66.0%
34	The time to peak effect for morphine given IV is …	127	63.5%
16	After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response.	128	63.4%
21	Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm.	120	59.4%
6	Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months.	115	56.9%
12	Elderly patients cannot tolerate opioids for pain relief.	111	55.0%
14	Children younger than 11 years old cannot reliably report pain, so nurses should rely solely on the parent's assessment of the child's pain intensity.	108	53.7%
18	Vicodin (hydrocodone 5 mg + acetaminophen 500 mg) PO is approximately equal to 5–10 mg morphine PO.	106	52.7%
29	The most likely reason a patient with pain would request increased doses of pain medication is…	106	52.7%
31	The most accurate judge of the intensity of the patient's pain is…	104	51.5%
30	Which of the following is useful for treating cancer pain?	103	51.2%
20	Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose.	102	50.5%
17	Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real.	99	49.0%
5	Aspirin and other NSAIDs are NOT effective analgesics for painful bone metastases.	98	48.5%
8	The usual duration of analgesia of 1–2 mg morphine IV is 4–5 hours.	98	48.5%

2	Because their nervous system is underdeveloped, children younger than 2 have decreased pain sensitivity and limited memory of painful experiences.	96	47.5%
3	Patients who can be distracted from pain usually do not have severe pain.	95	47.0%
9	Research shows that promethazine (Phenergan) and hydroxyzine (Vistaril) are reliable potentiators of opioid analgesics.	93	46.0%
33	How likely is it that patients who develop pain already have an alcohol and/or drug abuse problem?	93	46.0%
11	Morphine has a dose ceiling (i.e., a dose above which no greater pain relief can be obtained).	92	45.5%
24	The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onset such as trauma or postoperative pain is…	90	44.6%
1	Vital signs are always reliable indicators of the intensity of a patient's pain.	89	44.1%
10	Opioids should not be used in patients with a history of substance abuse.	87	43.1%
32	Which of the following describes the best approach for cultural considerations in caring for patients in pain?	76	37.6%
4	Patients may sleep despite severe pain.	75	37.1%
35	The time to peak effect for morphine given orally is…	75	37.1%
27	Analgesics for postoperative pain should initially be given…	74	36.6%
13	Patients should be encouraged to endure as much pain as possible before using an opioid.	69	34.2%
19	If the source of the patient's pain is unknown, opioids should not be used during the pain evaluation period as this could mask the ability to correctly diagnose the cause of pain.	67	33.2%
38A	On the patient's record you must mark his pain on the scale below.	42	20.8%
36	Following abrupt discontinuation of an opioid, physical dependence is manifested by the following…	40	19.9%
37A	On the patient's record you must mark his pain on the scale below.	40	19.8%
38B	Your assessment, above, is made 2 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 side effects.	35	17.4%
23	The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is…	26	12.9%

28	A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday, the patient was receiving IV morphine (200 mg/hour). Today, he has been receiving 250 mg/hour via the same route. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is…	25	12.4%
37B	Your assessment, above, is made 2 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 side effects.	16	7.9%
25	Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate-to-severe pain for cancer patients?	0	0.0%
26	Which of the following IV doses of morphine administered over a 4-hour period would be equivalent to 30 mg oral morphine given q 4 hours?	0	0.0%
Overall percent correct (mean)			41.41%

Table 2
Descriptive Statistics of the Nurses' Demographic, Behavioral, and Work-Related Variables

Variable	Category	n	Mean	SD	%
Recently read a book on pain	Yes	75	16.76	3.96	37.1
	No	127	16.41	3.31	62.9
Attended a course on pain management	Yes	69	16.84	4.01	34.3
	No	132	16.34	3.28	65.7
Applied pain knowledge in practice	Yes	98	16.76	3.50	49%
	No	102	16.33	3.64	51%
Years of experience	<5	116	16.63	3.46	57.4
	5–10	53	16.06	3.30	26.0
	10–15	17	16.53	3.36	8.4
	>15	16	17.50	5.11	8
Objective tool use	Every time	38	17.87	3.47	18.8
	Often	48	16.35	2.76	23.7
	Seldom	78	15.76	3.65	38.6
	Never	38	17.05	3.99	18.8

Area of practice	Surgical	50	16.90	3.23	25.0
	Medical	44	16.52	3.50	22.0
	Orthopedics	14	15.64	3.90	7.0
	ICU/CCU	25	18.16	4.33	12.5
	Other	67	15.94	3.33	33.5
Workplace type	Public	81	16.01	3.05	40.0
	Private	121	16.92	3.74	60.0
Gender	Male	106	16.47	3.07	53.0
	Female	96	16.61	4.05	47.0

ICU/CCU, intensive care unit/critical care unit

Table 3
Analysis of Variance of the Overall Score of the Knowledge and Attitude Survey Regarding Pain by Nurses' Demographic, Behavioral, and Work-Related Variables

Source	Type III sum of squares	*df*	Mean square	F	p
Workplace type	24.041	1	24.041	2.025	.156
Area of practice	65.108	4	16.277	1.371	.246
Recently read a book on pain	.407	1	.407	.034	.853
Attended a course on pain management	11.127	1	11.127	.937	.334
Applied pain knowledge in practice	2.369	2	1.185	.100	.905
Objective tool use	127.955	3	42.652	3.593	.015*
Years of experience	33.817	3	11.272	.950	.418
Gender	1.908	1	1.908	.161	.689
Error	2136.809	180	11.871		
Total	2413.513	196			

*p < .05.

Table 4
Least Significant Difference Multiple Comparisons for the Overall Scores of the Knowledge and Attitude Survey Regarding Pain by the Category of Objective Tool Use

(I) Tools	Mean Difference (I – J)			
	(J) Tools			
	Every time	Often	Seldom	Never
Every time		1.40	1.90*	.44
Often			.50	-.96
Seldom				-1.46*
Never				

*p < .05.

The Level of Pain and Anxiety and Depression and its Relationship to the Coping Strategies Used by a Sample of Cancer Patients in Jordan

مستوى الألم والقلق والاكتئاب وعلاقته بإستراتيجيات التكيف لدى عينة من مرضى السرطان في الأردن

Dr. Amina Al- Tamimi
Al-Ahliyya Amman University
aadhln6@hotmail.com

Dr. Feda Al-Khair
Al-Ahliyya Amman University
f.abualkuair@ammanu.edu.jo

Abstract

***Background**: Pain-related cancer creates significant physical and psychosocial burdens for patients. In Jordan there is limited information about patients' with cancer complaints of pain and their coping strategies for this kind of pain.*

***Aim:** The aim of this study is to assess cancer-related pain, identify coping strategies used by a sample of Jordanian patients with cancer experiencing pain, and, to determine the associations between pain, anxiety and depression as well as the association between pain, anxiety, depression, and coping strategies.*

***Method**: A cross-sectional, descriptive, correlation design utilizing interview and structured questionnaire with a sample of 100 patients with cancer at the pain clinic of a specialized cancer center in Jordan. The Pain Rating Scale, Hospital Anxiety and Depression Scale and Cognitive Coping Strategies Inventory were used. Data were analyzed using descriptive, Chi square and multivariate analyses to detect variable associations.*

***Results**: Eighty-three patients reported pain of ≥ 5. 82 patients reported anxiety ≥ 8 and depression ≥ 8 on HADS. There was significant association between pain, anxiety and depression ($p < .05$). Of the different coping strategies employed there was significant association between pain and anxiety and depression and catastrophizing as coping strategies ($p < 0.05$).*

***Conclusion**: While many psychological factors influence patients' perception of pain and their resultant behavior this study suggests it would be effective to introduce adaptive coping strategies before patients' pain reached critical levels to reduce levels of anxiety and depression.*

***Implications**: Pain management should include assessment of pain and psychosocial factors often associated with pain.*

Keywords: Pain, Anxiety, Depression, Coping strategies, Cancer

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الملخص

يخلق الألم المرتبط بالسرطان أعباء جسدية ونفسية اجتماعية جسيمة للمرضى في الأردن، ولكن هناك محدودية في المعلومات حول شكاوى مرضى السرطان و إستراتيجيات مواجهة الألم لهذا المرض .

هدفت الدراسة إلى تقييم الألم المرتبط بالسرطان، وتحديد إستراتيجيات المواجهة التي تستخدمها عينة من المرضى الأردنيين المصابين بالسرطان والذين يعانون من الألم. وأيضاً هدفت لتحديد الارتباط بين كل من الألم والقلق والاكتئاب وإستراتيجيات المواجهة.

الإجراءات: تم استخدام التصميم المستعرض، الوصفي، وذلك من خلال المقابلة والاستبيان المنظم مع عينة من 100 مريض مصاب بالسرطان في عيادة الألم من مركز الحسين للسرطان في الأردن. أُستخدمت قائمة تقييم الألم، ومقياس قلق واكتئاب المستشفى، ومقياس إستراتيجيات التكيف المعرفية في جمع البيانات.

النتائج: سجل ثلاثة وثمانون مريضاً معاناتهم من الألم ≥ 5. 82 وذكر ≥ 8 أنهم يعانون من القلق، أما الاكتئاب ≥ 8 على مقياس. وقد كان هناك ارتباط كبير بين الألم والقلق والاكتئاب (ع <0.05) من استراتيجيات المواجهة المختلفة كان هناك ارتباط كبير بين الألم والقلق والاكتئاب والكارثية كاستراتيجيات مواجهة (ع <0.05).

الخلاصة: في حين أن العديد من العوامل النفسية تؤثر على إدراك المرضى للإحساس بالألم وسلوكهم الناتج، تفترض هذه الدراسة أنه يمكن أن يكون فعالاً تقديم استراتيجيات التكيف قبل أن يصل الألم لدى المرضى لمستويات حرجة وذلك للحد من شدة القلق والاكتئاب لديهم. وينبغي أن تتضمن إدارة الألم تقييم للعوامل النفسية والاجتماعية والتي غالبا ما ترتبط بالألم.

الكلمات المفتاحية: الألم، والقلق، والاكتئاب، وإستراتيجيات التكيف، والسرطان.

Introduction

Cancer is an example of a chronic illness affecting all aspects of an individual's life. One of the most common symptoms experienced by patients with cancer is pain, whether it is the result of the disease itself, cancer-related diagnostic procedures, cancer- related infection, or disease-related treatments. Pain-related cancer causes significant physical and psychosocial burdens; it is a unique personal experience markedly impacting the quality of an individual's life. It limits a person's functional ability, impairs the quality of life and possibly leads to depression and anxiety. Pain is a multidimensional problem, which can be experienced at several levels while known only to the individuals who suffer it. If a patient's prior experience with pain was distressing the patient's expectations will be the same toward the new experience and would reveal fear and uncertainty of pain management.

Previous research focused on understanding and exploring the unique experience of patients with pain in order to provide suitable psychological interventions (Norris, R., 2009), (Porter L, Keefe F., 2011) . Psychologists also reported studying maladaptive pain beliefs of patients and its relation to poor physical and psychosocial functioning (Porter L, Keefe F., 2011) (Keefe F, Abernethy A, Campbell L., 2005) as well as the negative impact of pain on patient adherence and treatment response, which may lead to high level of disability (Walsh D., Radeliffe J., 2002).

Reaction to pain is commonly studied under the term "pain coping" defined as "people's behavioral and cognitive attempts to manage or tolerate pain and its effects"(Brown G., Nicassio P., 1987)(Jensen M., Turner J., Romano J., Karoly P., 1991).Cognitive and behavioral reactions to pain are significant because they affect patient experiences of pain, functional capacity, psychological functioning and may be acquiescent to change brought about by interventions. Different types of coping strategies used by patients in dealing with their pain may be a result of their chronic illness, too (Craighead W., Nemeroff C., 2001).

The study was conducted shortly after the founding

of the pain clinic at the King Hussein Cancer Center, where he had a great interest in how to deal with the pain that has always been a concern for patients and doctors. Since the pain has a significant impact on the psychological state, it was important to adapt the study in cancer patients who suffer from pain, the study of the relationship of that more prevalent mental illnesses with cancer (anxiety and depression).

According to Jordan Cancer Registry (2008) the number of reported cancer cases, in Jordan, was 4,606. Managing cancer pain is not a new idea in Jordan. Anesthesiologists, the early advocates of pain management, initially treated using anesthetics along with discussing the importance of opioids and other narcotics for controlling patient pain. King Hussein Cancer Center (KHCC), a well-known Jordanian cancer center, initiated their pain center-wide pain service after an anesthetist began a successful pain treatment program as a consultant to adult patients. Once this intervention became successful attending pediatricians then organized their own pain management program, which in turn was followed by the creation of anesthesia and pain management department in 2003. A Palliative and Hospice Care unit was subsequently established. Pain management was a fragmented service in the beginning and up to the formation of a pain committee in 2008. The committee moved to establish a pain program to provide excellent quality for patients with cancer experiencing pain. This program helped, in turn, to create a Jordan Pain Chapter in the International Association for the Study of Pain (IASP) in (2009), which then changed its name to "Jordan Pain Society" in 2010. The current pain team at KHCC is comprised of multidisciplinary providers including Anesthesiology, Palliative and Hospice Care Personnel, Pediatric Oncologist, Adult Oncologist, Surgeon, Clinical Nurse and Nurse Educator, Psychologist, Pharmacist, Physical Medicine.

In Jordan the picture is unclear regarding cancer patient complaints of pain and their coping strategies. The objectives of the current study are to assess pain and identify coping strategies utilized by a sample of Jordanian cancer patients in pain. In addition, the study will determine associations between pain, anxiety and depression as well as the between pain, anxiety, depression, and coping strategies. Our study is expected to contribute to a better understanding of the coping strategies used by Jordanian patients with cancer suffering from pain as well as our understanding of patient suffering. This study will provide the foundation for future psychological interventions..

Literature review

Pain is a complex experience affecting patients' daily life. It limits their functional abilities as well as impacting their quality of life (Kraaimaat F., Evers A., 2003). The International Association of Pain defines pain as "unpleasant sensory and emotional experience associated with actual or potential tissue damage" (IASP, 2008). Individuals with chronic illness may not experience pain the same was as another individual of the same age with same diagnosis, which means the same medical condition may be tolerable to one person and overwhelming to another (Larsen P., Lubkin I., 2007). Cancer is a prime example of chronic illness where some of its symptoms or its treatments may or may not elicit pain for the patient.

Individuals usually describe different thoughts and behaviors when pain is experienced. What may be adaptive for one individual may be maladaptive for another. Maladaptive behaviors of chronic pain may have a negative impact on patient treatment adherence and response (Cook A., Degood D., 2006), possibly leading to a high level of disability. Cognitions, appraisals, coping responses and social environments are variables demonstrating significant relationships with indices of physical and psychological functioning in a number of chronic pain populations (IAPS, 2008).

There is a strong link between cancer pain and psychological factors such as mood, distress, depression and anxiety (Jensen M., Turner J., Romano J., Karoly P., 1991).. Pain might lead to anxiety, which may be related to many factors such as uncertainty of pain occurrence, especially if the pain is difficult to manage as well as painful medical or health procedures, especially if inadequate pain relief is used (Strong J., Unruh A., Wright A., Baxter G., 2001). In addition

negative thinking associated with pain is a contributing factor in patient depression (Spinhoven P., Kuile M., Kole-Snijders A., Mansfeld H., Ouden D., Vlaeyen J., 2004). McWilliams and his colleagues analyzed data from the National Comorbidity Survey (USA) finding adults with chronic pain were more likely to have concurrent anxiety and depression than those without chronic pain. However they also reported the association between pain and anxiety was greater than the association between pain and depression even when controlling for effects of other variables (McWilliams L., Cox B., Enns M., 2003).

Patient personal experiences, which impact emotions, then are demonstrated through their behaviors. These same thoughts and behaviors, when utilized to deal with a situation specific to such personal experiences, may be termed coping strategies (Dubey A., Agarwal A., 2007). Coping strategies can be classified into active (that is controlling or functioning with pain) or passive (that is withdrawal, avoidance, and negative self-statements about pain). Additionally coping strategies can be divided into cognitive (such as imagination, distraction, negative self statements) or behavioral (engaging in activities or planning rest breaks and some times abusing medications) strategies (Craighead W., Nemeroff C., 2001). The cognitive component of pain involves anticipation and attention, whereas behavioral component refers to the expression of pain by the patients either verbal or otherwise (Francesca F, Bader P, Echtle D, Giunta F, Williams J. 2007). These cognitive and or behavioral aspects play a key role in pain perception and how patients adjust to pain.

There are different types of coping strategies used by patients to deal with pain and other demands of this unique chronic illness. The type of coping strategy employed, though, contours the judgment with life in general. However, it does not mean coping strategies used with pain, although important, necessarily resolve the problem (Dubey A., Agarwal A., 2007). Active coping strategies (efforts to function despite the pain) play a part in individual's perception of quality of life. This type of strategy is a component of both cognitive and behavioral reactions to pain. They are significant because they may impact patients' functioning capacity, psychological functioning yet may be amenable to change brought about by interventions (Kraaimaat F., Evers A., 2003).

Psychological approaches are an integral part of care for cancer patients with pain complaints. Patients would benefit from psychological assessment and support, which would lead to improvement of patients' quality of life. Psychological interventions may impact a patient's sense of confidence about their abilities as well as their self-efficacy to control pain (IAPS, 2008). As a result, a patient's psychological distress may decrease leading to less pain and subsequent improved psychological wellbeing. Different psychological approaches are possible, such as cognitive-behavioral interventions, which may help decrease a patient's perception of distress engendered by pain. Relaxation methods may reduce muscular tension and emotional arousal and enhance pain tolerance. Additional similar approaches also may reduce anticipatory anxiety leading to avoidant behaviors and or lessen distress associated with pain (Francesca F, Bader P, Echtle D, Giunta F, Williams J. 2007). Adapting successfully to pain associated with chronic illness includes the conviction a meaningful quality of life is worth the struggle; however the suffering caused by the disease is an innumerable factor impacting the totality of a person's quality of life (Larsen P., Lubkin I., 2007).

The study addresses the following questions:

1. What is the level of pain, depression and anxiety among a sample of Jordanian patients with cancer?
2. What are the most common coping strategies patients with cancer use to cope with pain?
3. Are there associations between patients' levels of pain, and anxiety and depression?
4. Are there associations between patients' levels of pain, anxiety and depression and coping strategies used?

Method

Design

Due to the limited number of epidemiological studies and surveys in Jordan it is important to have descriptive studies to develop baseline data supporting the development of culturally suitable interventions with Jordanian patients. Therefore, a cross-sectional, descriptive, correlation design, utilizing interview using structured questionnaire was utilized, which was anticipated to be more in line with the current study focus.

Setting

The study was conducted in a well-known specialized cancer center in Jordan. The center specializes in screening, and treating cancer with 167 beds and 170 clinics. The health team at the center includes board certified oncologists, surgeons, radiologists, radiation oncologists, pathologists, nurses, and ancillary services. The team cooperatively works to treat patients from diagnosis to the end of the treatment and follow-up.

Population and Sample

The study population includes all patients with cancer complaining of pain. However the accessible population includes patients with cancer visiting the pain clinic at the center. A non-probability, purposive, consecutive sample was utilized between September and October 2009. Patient inclusion criteria included male and female patients with any type of cancer 18 years or older, able to speak Arabic, able and willing to participate visited the pain clinic at the time of data collection. The total sample size was 100 patients.

Instrument

In the current study, three scales were used: The Arabic Version of Pain Rating Scale, the Arabic version of Hospital Anxiety and Depression Scale (HADS), and Cognitive Coping Strategies Inventory (CCSI-R).

The Arabic Pain Rating Scale is as self-report scale developed by the British Pain Society(2010) measuring a patient's pain intensity, distress caused by pain, interference of pain with daily activities, and the effect of prescribed pain medication to relieve pain. The scale is an 11-point numerical scale from (0), indicating absence of pain, to (10) indicating presence of extreme pain. Five points was the inclusion cut-off point. However, for the effect of pain medication, the scale ranges from (0), indicating no relief of pain by medication to (100%), indicating complete relief of pain by medication. It is cross cultural scale.

The Hospital Anxiety and Depression Scale (Zigmond A., Snaith R., 1983) is a self-report scale consisting of 14 items assessing anxiety and depressive symptoms. It includes seven items for anxiety (HADS-A) and seven for depression (HADS-D). The items are scored on a four-point scale from zero (not present) to three (considerable). The item scores are added to give sub-scale total scores on the HADS-A and the HADS-D from zero to 21 for each. A total score of 0 to 7 for either subscale could be regarded as normal range; a score of 8 to 10 suggests the presence of the relevant state and a score of 11 or higher indicating probable presence of the mood disorder. The score does not diagnose anxiety and mood disorders. Rather it measures the severity of symptoms, which suggest the likeliness a patient may have a disorder. The scale takes 2 to 5 minutes to complete. The concurrent validity of the HADS compared to other questionnaires for anxiety and depression is 0.60 and 0.80 for both sub-scales. A Cronbach's alpha coefficient of internal consistency was reported in a systematic review of 15 studies with variability for HADS-A from .68 to .93 (mean .83), and HADS-D from .67 to .90 (mean .82) (Bjelland I., Dahl A., Haug T., Neckelmann D., 2002). The Arabic version of the HAD scale demonstrated to be a valid instrument for detecting anxiety and depressive disorders in primary health care settings, also supportive was a Cronbach's alpha measures of internal consistency were 0.78 and 0.88 for anxiety and depression, respectively (El-Rufaie O., Absood H., 1995).

The Cognitive Coping Strategies Inventory-Revised (CCSI-R), is composed of 32 statements, worded in

negative and positive directions, using 5 point Likert Scale describing different thoughts and behaviors people engage in when experiencing pain under 3 cognitive strategies (Distraction, coping self statement, Catastrophizing). The CCSI-Revised showed reliability between .74 -.90 in studies of patient with pain (Thorn B., 2004).

The CCSI-R was translated, then back translated and adapted to the Jordanian culture. The modification includes adding question number 33 "when I have severe pain I go to Salat (pray) and Doaa (Supplication) for God to help me and to decrease my pain". Additional modifications include changing certain words in the items to accommodate Jordanian culture such as item number 1, "I use my imagination to change the situation or place where I am experiencing pain in order to try and make the pain more bearable" changed to "I imagine that I am changing my place to make the pain more bearable"; item number 8, " I try and imagine that for some reason it is important for me to endure the pain" changed to "I have to tolerate the pain and be patient"; item number 12, " in general, my ability to see things visually in my mind's eye or imagination is quite good" changed to " in general, my ability and my vision for things is very good"; item number 13, " I develop images or pictures in my mind to try and ignore the pain" to "I develop pictures and imagination in my mind trying to ignore the pain"; item 14, " I might concentrate on how attractive certain colors are in the room or place that I am experiencing pain" changed to "I might concentrate on how attractive certain colors are in the room or place where I complain of pain"; item number 25, " I might try and think that I am over reaching and that my pain is really not as severe as it seems" changed to "I might try and look like I am over reaching and that my pain is really not as severe as it seems"; and item number 30, " I try and preoccupy my mind by daydreaming about various pleasant things such as clouds or sailboats" changed to "I try and preoccupy my mind by daydreaming about various pleasant things such as sun set and spring. A score of 82 or more indicated patients' successful coping behavior, while a score of less than 82 indicated patients' inability to cope. Content validity was established by 6 experts (psychiatric physician; psychologist (PhD) in the academic field; 3 psychological counselors, and psychologist with a Master degree working in the field, and oncology physician. Modification was performed based on experts' suggestions.

Ethical Considerations:

Patients were approached by health care providers' attending the pain clinic and informing them about the purposes of the study and outcomes. If patients agreed to participate they introduced to the researchers. After agreeing with the researchers to participate patients received a cover letter explaining the purposes and outcomes of the study. Patients ensured their participation is voluntary and their withdrawal at any time without any penalty. Patients also assured that all the information will be held confidential with only information related to the study will be published without indication for any personal information. Once there was patient agreement to these conditions the consent form was signed.

Procedure:

Once the Institution Research Board (IRB) permission was granted, patients meeting the inclusion criteria were approached at the outpatient pain clinic. Those agreeing to participate in the study were invited to the psychology service room, whereby they received a package including a cover letter explaining the study purposes and outcomes as well as their signed consent form. The patients were interviewed and completed the questionnaire, which took approximately 30 minutes.

Statistical Analyses

Statistical Package for Social Science (SPSS) for windows version 16.0 was used for data analysis. Descriptive values (Means, Frequency, Standard deviations), according to the level of measurements, were used to describe the study variables. Chi square test for the comparison of associations between dimensions (pain, depression and anxiety and coping), and Multivariate analysis were used to investigate the asso-

ciation between the study variables (pain, depression and anxiety) on the coping strategies used.

Result

Patents' Demographic Characteristics

A total of 105 patients were approached between September and October 2009. One hundred patients agreed to participate. Five patients chose not to participate in the study because they were experiencing severe pain, and unable to tolerate or participate in the study.

Of the total participants 57 (57%) patients were women while 43 (43%) were men. The mean age of the participants was 46.6 year (SD=15.3 year; R 17-78). Also (73%) was married. Table 1 shows the demographic characteristics of the patients.

Pain, Depression, and Anxiety:

Using the Arabic Pain Rating Scale to assess patients with cancer pain, the results showed a total of 83 patients reported pain of ≥ 5 while 17 patients had pain < than 5. The mean score of the effect of pain medication in relieving pain was 65 (SD 21; R 20-100), indicating that although patients received pain management, pain still is a complaint.

For depression the mean score was 11.64 (SD 4.5, R 0-21), with 82 participants having a depression score of ≥ 8, which indicates a relevant state of depression. For anxiety, the mean score was 11.78 (SD 4.58; R 1-21), with 82 patients reporting an anxiety score of ≥ 8, thereby suggesting the presence of the relevant state of anxiety.

Coping strategies:

Patients with cancer in the study used different coping strategies. Of the participants 48 patients were not coping with their pain (reported coping score of < 82

Table 1. Participant's Demographic Characteristics

Characteristics	n (%)
Age	
- M (SD): 46.6 (15.3)	
- R: 17-78	
Gender	
- Female	57(57.0%)
- Male	43(43.0%)
Marital status	
- Divorced	3(3.0%)
- Married	73(73.0%)
- Single	19(19.0%)
- Widow	5(5.0%)
Work	
- Non workers	81(81.0%)
- Workers	19(19.0%)

Education	
- Illiterate & Primary	29(29.0%)
- Tawjihi; BSc; Diploma & Postgraduate	71(71.0%)

N= 100

on the CCSI-R). Based on the CCSI-R patients reported using three coping strategies including Catastrophizing Distraction, and Coping Self-Statement (used by 36, 34, and 30 participants respectively). Comparing patients who are coping with those not coping, with respect to coping strategies used, the results demonstrated significant mean differences (Distraction, t= 7.5; p < .05; Catastrophizing, t= 6.6; p < .05; Coping self Statement; t=7.1, p < .05)

Association between patients' levels of pain, anxiety and depression and with coping strategies used

Chi squared was used to assess association between pain, and depression and anxiety. Of patients who reported pain ≥ 5 on the Arabic Pain Rating Scale the results showed significant association between pain and depression (x2 = 6.64, p <.05) and between pain and anxiety (x2 = 9.34, p<.05). In addition, there is significant association between those who showed depression and the coping (x2 = 8.63, p <.05) and significant association between those who had anxiety and coping with the illness (x2 = 11.97, p <.05).

Of the different coping strategies used, there was significant association between pain and catastrophizing as coping strategies (Wald =4.8; p < 0.05). In addition, using multivariate analysis, anxiety and depression were significantly associated with catastrophizing as coping strategies (Wald =12.2; Wald =5.3) respectively; p <.05.

Discussion

The current study aimed at assessing pain associated with cancer among a sample of cancer patients in Jordan treated at a well known cancer center in the nation and the region. Additionally the study aimed at identifying coping strategies used by patients with cancer who experience pain and to determine associations between patients complain of pain, coping strategies used, and anxiety and depression.

In spite of limited evidence about cancer pain treatment, under treatment of cancer pain in Jordan remains a significant concern requiring attention. This trend was also documented in a previous study (Charles S. Cleeland, Rene Gonin, and Alan K., et al, 1994). In our study we found a significant number of patients who participated in the study suffered from cancer–related pain. Although, the World Health Organization introduced the pain ladder on 1986 (WHO, 2011) and it is accepted worldwide, cancer-related pain is still a problem. Several studies indicate cancer patients are not receiving adequate pain relief (Beck S., Falkson G., 2001) (Lai Y., Keefe F., Sun W., et al., 2002) In Jordanian patients with cancer, as well as other patients, pain is often under-reported and under-treated. This may be, to some extent, due to a variety of beliefs, religious and otherwise, held by patients, families and healthcare professionals (The British Pain Society, 2010). Under-report and or under treated pain may also be related to health care provider failure to, or fear of, controlling pain by giving medication or increasing the dosage, because of a fear of patient addiction. An additional reason may be patient fear of medication side effects, or the perception cancer pain is inevitable and their belief a good patient does not complain, and, possible inadequate knowledge of their disease and its impact on their body (Ward S, Goldberg N, Miller-McCauley V, Muel-

ler C, Nolan A., 1993) (Mokdad AH, Marks JS, Stroup DF, Gerberding JL., 2004).

It is clear cancer-related pain does contribute to anxiety. In this study we found pain is significantly associated with patient anxiety as well as depression, which is consistent with previous research (Spiegel D., Sands S., Koopman. C., 1994). Psychological responses such as anxiety or depression are viewed as secondary to patient complaints of pain and not considered to play a direct role in the pain experience (Keefe F., Abernethy A., Campbell L., 2005). A high percentage of participating patients with cancer-related pain also suffer from anxiety, which could be related to the pain, or the disease progression. In a previous literature review of 19 studies, 14 supported a significant association between pain and psychological distress including anxiety and this higher level of distress was associated with a higher level of pain (Zaza C., Baine N., 2002). Anxiety is also known to have an effect on pain (Anderson KO, Mendoza TR, Valero V, at al., 2000) therefore anxiety-related pain requires the attention of health care providers.

Depression, which in this study was associated pain, is the psychiatric syndrome receiving the most attention in individuals with cancer. However, it is a challenge to conduct research about depression because symptoms occur on a spectrum ranging from sadness to major affective disorder. Addition difficulty researching this topic is mood change may often be difficult to evaluate when a patient is confronted by repeated threats to their life, is receiving cancer treatments, is fatigued, or is experiencing pain (Porter L., Keefe F., 2011). Depression may be the result of feeling of helpless and or the sense of being controlled by other as health care provider or family and caregiver. Cancer-related depression is a crucial topic to research because as a comorbid illness it complicates the treatment of both depression and pain while also possibly leading to poor adherence to treatment recommendations and subsequent undesirable outcomes(Keefe F., Abernethy A., Campbell L., 2005).

In this study, the multivariate analysis revealed the use of distraction, catastrophizing and coping self-statement as three coping strategies in adapting to chronic cancer-related pain. However, if one considers distraction and coping self-statement as active or adaptive coping strategies, this study found neither coping self-statement nor distraction were significantly related to pain or associated with anxiety and depression. However, the study results do emphasize catastrophizing, which is the "tendency to focus on and exaggerate the threat value of painful stimuli and negatively evaluate one's ability to deal with pain" (p.524)(Sullivan MJL., Bishop SR., Pivik J., 1995), as the most common strategy employed by participants complaining of pain. Giving that catastrophizing is the coping strategy associated with anxiety and depression is consistent with cognitive theory of emotion in which negative evaluations of events (pain) are thought to precipitate distress reactions (Lazarus A., 1999) Catastrophizing, as coping strategy, also tends to be the strategy most research reports as a positive relationship with anxiety and depression (Bishop S., Warr D., 2003) (Wilkie D., Keefe F., 1991). Passive coping category, as catastrophizing, is associated with poorer outcomes such as decreased physical functioning and increased psychological distress (Smith C., Wallston K., Dowdy S., 1997). Catastrophizing associated with greater emotional distress (Bishop S., Warr D., 2003) and could contribute to patients' poor adjustment to the disease. The catastrophizing of cancer pain can be considered as a maladaptive coping strategy. During the data collection, when participants were interviewed, the authors recall patients visiting the pain clinic complaining of the disability (physical, psychological, social) caused by pain as well as talking about their experiences with cancer.

Indeed, many psychological factors provoke patient perception of pain and the resulting behavior. Given people usually build their thoughts and perceptions from personal experiences, and may be reflected in their emotions and their behaviors, the idea of maladaptive beliefs about chronic pain can have a negative impact on a patient's adherence and treatment response (Cook A., Degood D., 2006) and some pain beliefs lead to maladaptive behaviors and high level of disability (Walsh D., Radcliffe J., 2002). This could explain the association between having cancer pain

as catastrophizing and complaints of high level and anxiety that participants in this study suffer.

Conclusion and Implications

Our study findings confirm previous studies' results that showed that maladaptive coping with pain would increase anxiety and depression. The current study was limited to a famous national cancer center in Jordan, which limits generalizability of the study. However, the study does provide health care providers a piece of the patient complaint 'picture' thus highlighting the importance of future studies utilizing other patients treated in other care environments.

Recommendations

- It is important to introduce adaptive coping strategies before patients' pain reach critical levels.
- It is very important to assess pain and any related problem, and to include the patients in the discussions regarding treatment of pain.
- Effective pain management should include assessment not only of pain but also of the psychosocial factors that often associated with pain.
- Health care providers need to refer patients to pain specialist and to psychosocial services early for proper intervention focusing on adaptive coping strategies.
- The need to future research related to effectiveness of introducing adaptive coping strategies early in the trajectory of illness before pain becomes a clinical issue.
- The need to similar researches about the pain and another chronic diseases, and it's relation with another mental illnesses.
- The need to future researches about Thinking errors, and Cognitive distortions among Cancer Patients.

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