RESEARCH ARTICLE

Relationship Between Belief about Analgesics, Analgesic Adherence and Pain Experience in Taiwanese Cancer Outpatients

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Abstract

　　Social and behavioral scientists have proposed that a person's belief system crucially influences his or her behaviour, and therefore may affect outcomes of pain management. The purpose of this study was to explore the relationship between analgesic beliefs, analgesic adherence and pain experience amongst Taiwanese cancer outpatients. The cross-sectional study included 92 oncology outpatients in two teaching hospitals in the Taipei area of Taiwan. The research instruments included the Pain Opioid Analgesic Beliefs Scale-Cancer (POABS-CA), opioid adherence, and the Brief Pain Inventory-Chinese (BPI-Chinese). Beliefs about pain and opioids demonstrated a significant relationship with patients' opioid adherence ($r = -0.30$, $p < 0.01$). The more negative beliefs regarding opioids and pain the patient had, the worse their adherence to around the clock (ATC) analgesic regimen. However, there was no significant correlation between opioid belief and pain experience. As well, there were no significant relationships between adherence to opioid regimen and any of the measures of pain experience. The study highlights the potential importance of a patient's pain and opioid beliefs in adherence to pain medication.

Keywords: Beliefs - analgesics - adherence - cancer pain

Introduction

　　Pharmacological agents are considered to be a cornerstone of cancer pain management, and adherence to one's prescribed analgesic regimen is a key to successful cancer pain control. Medication adherence rates amongst patients who have prescribed analgesics for their cancer pain, however, are lower than what is needed to achieve optimal pain control (Zeppetella, 1999; Miaskowski et al., 2001; Chang, et al., 2002; Lai et al., 2002). Evidence suggests that patients are often reluctant to use pain medication and that many patients have negative beliefs regarding analgesics (Chang et al., 2002; Gunnarsdottir, et al., 2002; Yates et al., 2002). This may influence patients' intention and commitment to adhere to their prescribed medication.

　　Promoting and maintaining adherence to prescribed analgesic regimens are important interventions for cancer patients (Miaskowski et al., 2001; Chang et al., 2002). Social and behavioural scientists have proposed that a person's belief system crucially influences his or her behaviour (Becker, 1974; Fishbein and Ajzen, 1975; Jensen et al., 1999). For example, studies suggest that pain beliefs can influence a person's ability to cope with

pain (Jensen et al., 1999) and perceive pain (Thastum and Herlin, 2011). Beliefs regarding opioids may also influence patients' behavior with adhering to their prescribed medication (Lai et al., 2002) and therefore affect pain experience of patients.

　　Although limited study in Taiwan (Lai et al., 2002) has demonstrated the relationship between concerns about analgesics and analgesics adherence. However, the researchers have not directly examined patients' pain experience. Understanding factors influencing pain experience of cancer patients is important to assist health professional to development relevant interventions for improving outcome of pain management. Thus, the purposes of this study were to explore the relationship between analgesic beliefs, analgesic adherence, and pain experience amongst Taiwanese outpatients with cancer.

Materials and Methods

　　This study was part of a larger cross-sectional study of the opioid-taking self-efficacy in Taiwanese outpatients with cancer pain which developed a scale of opioid-taking self-efficacy and explored the factors that influence patients' opioid-taking self-efficacy and analgesic

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adherence. Full details of the sample have been reported elsewhere (Liang, et al., 2008; Liang, et al., 2010a; Liang, et al., 2011b). This paper reports findings of descriptive analyses of participants' responses to the relationship between belief about opioids, opioid adherence and pain experience.

Sample and Procedure

A convenience sample was used for this study. The sampling frame was all the cancer patients with pain who were admitted to the outpatient oncology units of two teaching hospitals in the Taipei area of Taiwan. Patients were eligible for enrolment in the study if they met the following inclusion criteria: (1) had a cancer diagnosis; (2) had an average pain intensity score of ≥3 on a 0-10 scale in the past 24 hours; (3) had been prescribed opioid analgesics for cancer related pain on an around the clock basis (ATC) ± as needed (PRN) basis in the past one week at least; (4) were over 18 years of age; and (5) were conscious and able to sign the consent form.

After ethical approvals were obtained from these two hospitals, eligible patients were recruited for the sample. The principal investigator (S. Y. L) approached potential patients who met the inclusion criteria as identified from a review of charts. Patients were then approached to ensure they were well enough to sign the consent form, and a verbal explanation of the study was given. Those patients who were interested in participating in the research were screened to assess average pain levels in the past 24 hours, and eligible patients were asked to sign the study consent form. A study questionnaire packet was given to the patient. After they had answered all the questions, responses were checked for any missing information and subjects were asked to complete items they had missed. Those patients who were unable to complete the questionnaire on his/her own, were read the questionnaire items by the principal investigator. Details of the medical characteristics were obtained from the patients' medical record.

Measures

Sociodemographic Variables: Sociodemographic variables assessed were: gender, age, and years of education. Medical variables consisted of diagnosis, site of metastases, time that the patient has had pain, prescribed opioid analgesics, and side effect of analgesics.

Opioid Beliefs: Opioid beliefs were measured by the Pain Opioid Analgesics Beliefs Scale–Cancer (POABS-CA), Chinese version (Lai et al., 2003). The POABS-CA was designed to assess the beliefs about opioids and pain. The POABS-CA is a 10-item Likert-type scale, each item with a range of 0–4, so that 0 indicates 'strongly disagree' and 4 indicates 'strongly agree'. The higher the score on the POABS-CA, the most concerns related to patients' beliefs about cancer pain and opioids.

The construct validity of POABS-CA was assessed by Lai et al. (2003) using factor analysis, confirming the two factor structure identified by the original developers of the scale. The POABS-CA was reported to have a coefficient alpha 0.84 for the total scale, 0.74 for negative effect beliefs and 0.80 for endurance beliefs (Lai et al., 2003).

Test-retest reliability of the scale was 0.94 over a 2-day period (Lai et al., 2003).

Analgesic Adherence: A mean adherence rates were calculated using the dose taken divided by dose prescribed and multiplied by 100 (Miaskowski et al., 2001). For mean adherence rates, all opioid analgesics were converted to morphine equivalents. Total daily doses of opioid analgesics, prescribed and administered on an ATC basis were calculated.

Analgesic adherence was assessed by patient self report at interview. The researcher transcribed the prescribed medication, strength, dosage/route, and frequency of the prescribed opioid analgesics from the patient's medical record. Patients were then asked to report their pain medication used, including strength, dosage/route, and frequency, in the past 24 hours, for each medication in turn. A chart with the picture and the name of each available medication on the market was provided in order to help respondents recall the name of their medication.

To match adherence data with pain experience data, analgesic adherence was measured for the past 24 hours. This restricted time frame was selected to minimize the risk of recall bias.

Pain Experience: The BPI-Chinese was administered to assess patients' pain (Wang et al., 1996). The BPI asks patients to rate their pain and pain interference in the past 24 hours on a 0-10 scale. Patients rate their pain at its worst, its least, its average, and at the time of the study. Patients are also asked to rate separately how their pain interferes with several life functions, including enjoyment of life, activity, walking, mood, sleep, work, and relations with others. In addition, patients rate their pain relief from their pain treatment that they had experienced in the past 24 hours on a 0%-100% scale. Evidence for validity and reliability of this instrument are well established, with the instrument being used in numerous studies across the world (Lin, 2001; Yates et al., 2004; Reyes-Gibby et al., 2006).

Statistics: Data were analyzed using the Statistical Package for the Social Sciences for Windows version 17.0. Descriptive statistics (mean, frequency, and percentages) were used to describe patients' sociodemographic, medical characteristics, analgesic belief, opioid adherence and pain experience. The associations between belief about analgesics, opioid adherence and pain experience were assessed using Pearson product-moment correlations. A p-value of < 0.05 (two-tailed) was considered significant.

Results

Description of the sample

Patients included 54 (58.7%) men and 38 (41.3%) women. Patients ranged in age from 30 to 92 years old with a mean age of 56.4 years (SD = 12.2 yrs). The majority of subjects were married (73.9%), lived with others (89.1%), had a mean education of 9.2 years (SD = 4.5, range = 0-19 years), were either Buddhist (51.1%) or Taoist (21.7%), and were not working (56.5% unemployed, 19.6% retired). In addition, the sample represented a heterogeneous group of individuals with various cancer diagnoses. Major groups were those with head and neck (35.9%), colon/
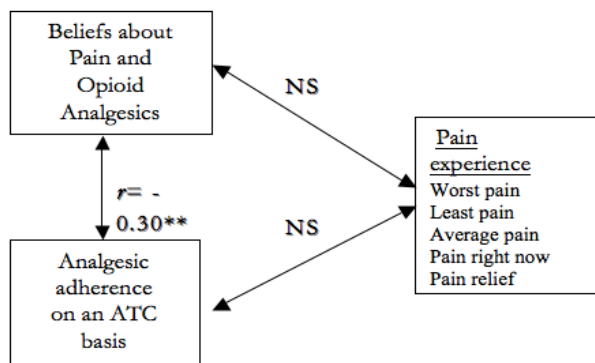
Figure 1. Concept Framework and Results of the Present Study. *p<0,05, **p<0.01, NS: none significance

rectum (18.5%), or breast (14.1%) cancer, with 66.3% having a diagnosis of metastatic disease. Pain levels for participants in this study were on average moderate to high, with the majority of patients experiencing this pain for many months. That is, participants reported having had pain from 0.25 to 149 months, with a mean time of 12.60 months (SD = 20.37 months). The distribution was skewed, with median time for having experienced pain being 6.50 months. Around 50% of the patients had pain most of the time and 25% of the patients had pain all of the time. All subjects were receiving analgesics, with 29.3% currently undergoing a course of radiation therapy and 22.8% undergoing chemotherapy. The majority of subjects (79.3%) were taking ATC opioids, with 70.7% using them orally.

Descriptions of pain experience, adherence behaviour and opioid beliefs

The patients in this study reported that in the previous 24 hours they had experienced a mean worst pain of 6.91 (SD = 2.06, possible range 0-10). The mean score for pain intensity on average in the last 24 hours was 5.21 (SD = 1.69, possible range 0-10). An overall adherence rate for ATC opioid analgesics was 63.6% (SD = 38.3%, possible range 0-100%). The mean of the total scale of opioid beliefs was 2.44 (SD = 0.63, possible range 0-4), the higher the score, the more negative beliefs about using opioid analgesics for cancer pain.

Relationships between opioid beliefs, adherence behaviours and pain experience

Pearson's correlation indicated a significant and negative correlation between opioid beliefs and adherence to opioid regimen on an ATC basis (r = -0.30, $p < 0.01$), indicating the more negative beliefs regarding opioids the patient had, the worse their adherence to the ATC analgesic regimen. There was no significant correlation between the total scale of opioid belief and pain experience (worst pain r = 0.10, $p > 0.05$, least pain r = -0.11, $p > 0.05$, average pain r = -0.08 $p > 0.05$, pain right now r = 0.05, $p > 0.05$, pain interference r = 0.19, $p > 0.05$, and pain relief r = -0.07, $p > 0.05$).

There were no significant relationships between adherence to opioid regimen and any of the measures of pain experience (worst pain r = 0.17, $p > 0.05$, least pain r = 0.09, $p > 0.05$, average pain r = 0.12, $p > 0.05$, pain

right now r = 0.15, $p > 0.05$, pain interference r = 0.09, $p > 0.05$, and pain relief r = 0.02, $p > 0.05$) (Figure 1).

Discussion

This study systematically assesses the relationship between opioid beliefs and oncology outpatients' opioid adherence and pain experience. This investigation is important, since beliefs is an appropriate target for educational and behavioural intervention should it be identified as influencing pain outcomes.

Importantly, this study has identified a link between opioid beliefs and opioid adherence. However, results of this study have not demonstrated the relationship between opioid beliefs as well as opioid adherence and pain experience. As pain experience is recognised as an important indicator of good pain outcomes, being an important determinant of satisfaction with cancer pain control (Kimura et al., 2005; Malouf, et al., 2006), the findings of this study thus offers some insights into the possible factors associated with the current results.

The findings of this study have identified that more negative opioid beliefs are related to lower levels of adherence to their prescribed regimen. Our results support the findings of earlier work on the relationship between opioid beliefs and reported medication adherence (Ersek, et al., 1999; Lin, 2000; Chang et al., 2002). Health belief model assumes that an optimistic belief about the illness and relevant treatment determine people's commitment to health promoting behavior (Becker, 1974). The results of this study may thus suggest that individuals with negative beliefs about their cancer pain and analgesics significantly influence the decisions they make in the processing of their cancer pain management strategies.

However, the finding that both opioid beliefs and opioid adherence were not significantly correlated with reports of pain experiences suggests that the application of the concepts of opioid beliefs and adherence in the context of responses to pain experience may need to take into account the other factors, such as prescription for pain treatment (Kumar, 2007). For example, it may be that the patients were under-treatment due to inadequate analgesic prescriptions. If analgesic prescriptions in the present study were not adequately titrated, this may also partially explain this no significantly relationship between opioid adherence and pain experience.

On the other hand, considering both morphine and adjuvant medications may be important when exploring the relationship between adherence and pain experience. Although opioids continue to be the mainstay of management of moderate or severe pain in patients with cancer, co-analgesics are used for neuropathic, skeletal related and visceral components of the pain. The effective treatment of opioid-induced side effects with adjuvant medication is also important in the successful opioid treatment of pain. This study only included opioid analgesic taking in adherence behaviour and may be not sensitive enough to identify significant relationships between adherence and pain experience in cancer pain management.

Results of this study support the importance of

assessing and responding to the cognitive dimension of pain, and the significance of this dimension in an integrated conceptual model of cancer pain management. These results suggest cognitive dimension of the pain experience, such as beliefs about opioids, is important for promoting desired behaviours for cancer pain management. This study thus provides evidence supporting the importance of interrelated pain experience and multidimensional approaches to cancer pain management.

This study has several implications for clinical practice. The existence of a correlation between opioid beliefs and adherence suggests that assessment of a patient's beliefs and attitudes in opioids and cancer pain may help to identify those at risk of poor adherence. Moreover, belief is potentially a modifiable variable and as such can provide the basis for effective interventions to increase opioid adherence. Our results also suggest that clinicians may achieve improved opioid adherence by educational interventions, since such interventions if focused on reducing patients' misconceptions about opioid analgesics and cancer pain may ultimately lead to better opioid regimen adherence (Chang et al., 2002). Our results thus suggest that incorporating strategies focused on improving patients' beliefs in relation to managing their cancer pain with opioid analgesics may be beneficial for improving analgesic regimen adherence (Gohner and Schlicht, 2006). Further research is needed which includes both assessment of morphine and adjuvant medications to explore the relationship between prescribed regimen adherence and pain experience.

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