

Original Article

Barriers to Pain Management in a Community Sample of Chinese American Patients with Cancer

Janet Edrington, RN, PhD, Angela Sun, MPH, Candice Wong, MD, MPH, PhD, Marilyn Dodd, PhD, RN, FAAN, Geraldine Padilla, PhD, Steven Paul, PhD, and Christine Miaskowski, PhD, RN, FAAN

School of Nursing (J.E., M.D., C.W., G.P., S.P., C.M.), University of California at San Francisco; and the Chinese Community Health Resource Center (A.S.), San Francisco, California, USA

Abstract

Barriers to cancer pain management can contribute to the undertreatment of cancer pain. No studies have documented barriers to cancer pain management in Chinese American patients. The purposes of this study in a community sample of Chinese Americans were to: describe their perceived barriers to cancer pain management; examine the relationships between these barriers and patients' ratings of pain intensity, pain interference with function, mood disturbances, education, and acculturation level; and determine which factors predicted barriers to cancer pain management. Fifty Chinese Americans with cancer pain completed the following instruments: Brief Pain Inventory (BPI), Karnofsky Performance Status (KPS) Scale, Barriers Questionnaire (BQ), Hospital Anxiety and Depression Scale (HADS), Suinn-Lew Asian Self-Identity Acculturation Scale (SL-ASIA), and a demographic questionnaire. The mean total BQ score was in the moderate range. The individual barriers with the highest scores were: tolerance to pain medicine; time intervals used for dosage of pain medicine; disease progression; and addiction. Significant correlations were found between the tolerance subscale and least pain ($r = 0.380$) and the religious fatalism subscale and average pain ($r = 0.282$). These two subscales were positively correlated with anxiety and depression levels: (tolerance: $r = 0.282$, $r = 0.284$, respectively; religious fatalism: $r = 0.358$, $r = 0.353$, respectively). The tolerance subscale was positively correlated with pain interference ($r = 0.374$). Approximately 21% of the variance in the total BQ score was explained by patients' education level, acculturation score, level of depression, and adequacy of pain treatment. Chinese American cancer patients need to be assessed for

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Address correspondence to: Janet Edrington, RN, PhD, 2 Koret Way, Room 0631, San Francisco, CA 94143-0610, USA. E-mail: janet.edrington@ucsf.edu

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Key Words

Barriers, cancer pain, Chinese, acculturation, ethnicity

Introduction

Cancer pain occurs in all populations, regardless of culture, ethnicity, or gender identification. However, minority groups may be at increased risk for unrelieved pain due to inadequate medication management.^{1,2} Whereas a number of clinician and system barriers may contribute to the undertreatment of cancer pain,³ patient barriers also contribute to inadequate management.^{4–6} Studies have demonstrated that patient barriers to cancer pain management are prevalent in the United States^{7,8} and in other countries, including Taiwan.^{9–15} However, no studies have documented barriers to cancer pain management or evaluated predictors for these barriers in Chinese American patients. Therefore, the purposes of this study, in a community sample of Chinese Americans with cancer pain, were to: describe the barriers to cancer pain management; examine the relationships between these barriers and patients' ratings of pain intensity, pain interference with function, mood disturbances, education, and acculturation level; and determine which factors predicted barriers to cancer pain management.

Patient Barriers to Cancer Pain Management

In a recent study of barriers to pain management in Taiwanese cancer patients,¹⁴ the nine most common concerns that hindered patients' reports of pain or their use of analgesics were: concerns about the development of tolerance; fears of addiction; a sense of fatalism; concerns about medication side effects; a desire to be viewed as a "good patient;" concerns that pain medications are better given on an as-needed (PRN) basis rather than on an around-the-clock (ATC) basis; concerns about distracting one's physician from treating their disease; concerns that pain signifies the progression of the cancer; and a belief that pain is caused by or given by God or Karma and

that patients have to tolerate or endure the pain to avoid carrying the pain into their next lives. Similar barriers were identified in an earlier study of Taiwanese cancer patients.¹¹ These barriers were found to contribute to patients' reluctance to report pain, and their use of prescribed analgesics, which in turn contributed to inadequate pain control.

Patient Barriers and Mood Disturbances

Although studies in the United States and Taiwan demonstrate the negative effects of unrelieved pain on patients' mood,^{16–21} only one study examined the relationship between barriers to cancer pain management and mood disturbances.²¹ In this study, higher barrier scores were associated with higher depression and anxiety scores. However, pain severity scores were not correlated with depression.

The absence of studies on Chinese Americans supports the need for an evaluation of the barriers to cancer pain management in these patients, in addition to an examination of the relationships between these barriers and demographic characteristics, pain characteristics, and mood disturbances. In addition, as no studies were identified that examined the relationships between barriers and acculturation levels, this study examined those relationships. Given the fact that over 3.3 million Chinese Americans of various acculturation levels are living in the United States today,²² and an estimated 19,800 (rate: 600/100,000) have cancer,^{23,24} descriptive, correlational studies with this population are needed to guide clinical practice and the design of intervention studies.

Methods

Participants and Settings

A convenience sample of oncology outpatients with cancer pain was recruited from

the Chinese Community Health Resource Center, the Northern California Chinese Unit of the American Cancer Society (ACS), and the Comprehensive Cancer Center at the University of California at San Francisco (UCSF). Patients were included if they were: adults over 18 years of age; had self-identified themselves as being of Chinese ethnicity and living in the United States; had a diagnosis of cancer; had pain related to cancer in the last 24 hours (i.e., pain level of 1 or more on a 0 [no pain] to 10 [worst pain imaginable] numeric rating scale [NRS]); and were able to read or understand Mandarin, Cantonese, or English. Participants were excluded if they had undergone surgery in the past three months.

Instruments

The use of translated instruments is often necessary when participants do not speak, read, or understand the language of the original instrument. Furthermore, research participants may feel more comfortable reading and answering questions in their primary language. Therefore, when available, standardized pretranslated instruments were used in this study. These culturally appropriate translated instruments should be conceptually and technically equivalent to the language of the original instrument. In addition, they should be culturally and linguistically appropriate for the target population.²⁵

A committee of four trilingual Chinese-speaking health care professionals (i.e., Mandarin, Cantonese, and English) reviewed the pretranslated instruments and their English versions for clarity, equivalence, and appropriateness for Chinese persons living in Northern California. When a pretranslated instrument was not available (i.e., demographic questionnaire; consent form), the instrument was translated into Chinese by the committee method of translation and back translation recommended by Brislin.²⁶

The translation committee consisted of equal numbers of expert trilingual and tricultural health care professionals who spoke Cantonese and Mandarin Chinese and English. The committee agreed to use traditional Chinese characters for the translations, because these characters reflect the speaking and writing dialect of the Chinese American community in Northern California. However, the

translation of an instrument verbatim into another language may not adequately account for linguistic and cultural differences. Therefore, the committee members examined the wording of the items to evaluate their semantic content, their cultural relevancy, and the conceptual equivalence of the translated items. If needed, revisions of the translations were based on feedback from the trilingual committee members, as recommended by Hilton and Skrutkowski.²⁷

Patients were asked to complete, in their preferred language, the following instruments: demographic questionnaire; Karnofsky Performance Status (KPS) Scale,²⁸ KPS-Chinese (KPS-C),²⁹ Barriers Questionnaire (BQ),⁹ BQ-Chinese (BQ-C),¹¹ Brief Pain Inventory (BPI),³⁰ Brief Pain Inventory-Chinese (BPI-C),³¹ Hospital Anxiety and Depression Scale (HADS),³² HADS-Chinese (HADS-C),¹⁸ Suinn-Lew Asian Self-Identity Acculturation Scale-short form (SL-ASIA),³³ and SL-ASIA-Chinese (SL-ASIA-C).³⁴

The demographic questionnaire obtained information on patients' age, gender, educational level, marital status, yearly income, religious beliefs, length of time in the United States, and cancer diagnosis. Patients' functional status was assessed using the KPS²⁸ or the KPS-C,²⁹ which were designed to measure patients' ability to accomplish normal activities of daily living or their need for help with nursing care. Validity and reliability of the KPS^{35,36} and the KPS-C^{18,29} are well established.

Patients' perceived barriers to cancer pain management were assessed using the BQ-C. Items are rated using 0 (do not agree at all) to 5 (agree very much) Likert scales. The BQ-C consists of nine subscales (i.e., fatalism, fear of addiction, desire to be a good patient, fear of distracting physicians, fear of disease progression, tolerance, side effects, religious fatalism, time for dosage of medications).²⁹ Subscale and total BQ-C scores, calculated as the means of the individual items, can range from 0 to 5, with higher scores indicating higher levels of perceived barriers. Validity and reliability of the BQ and the BQ-C are well established.^{9,11} In this study, the Cronbach's alpha for the total BQ-C score was 0.76.

The BPI is a nine-item questionnaire that was used to assess pain intensity and pain's level of interference with function.³⁰ Ratings

of present, least, average, and worst pain were obtained using 0 (no pain) to 10 (worst pain imaginable) NRSs. Pain interference with seven activities was rated on 0 (no interference at all) to 10 (complete interference) NRSs. A total interference score was calculated as the mean of the seven interference items. The validity and reliability of the BPI³⁰ and the BPI-C³¹ are well established.

The pain management index (PMI) was used to measure the adequacy of the analgesic prescription. PMI categories are based on the World Health Organization's classification of the recommended use of analgesics in relationship to the patient's worst pain intensity score.^{1,37} To construct the PMI, the analgesics were categorized as follows: 0 = no analgesics; 1 = non-opioid analgesics; 2 = so-called "weak" opioids; and 3 = so-called "strong" opioids. Patients' worst BPI pain scores were grouped into the following severity cutpoints as recommended by Paul et al.:³⁸ 1 = a worst pain rating of 1 to 4; 2 = a worst pain rating of more than 4 to 7; and 3 = a worst pain rating of more than 7 to 10. The PMI was computed by subtracting the pain level from the highest analgesic category. Negative PMI scores (i.e., -1, -2, -3) indicate an inadequate analgesic prescription, whereas positive scores (i.e., 0 or more) indicate an adequate analgesic prescription for a given level of pain severity.

The HADS is a 14-item questionnaire that was designed to assess the psychological states of patients with physical problems.³² Anxiety and depression are each measured using seven items that are rated using a 4-point Likert scale. Scores can range from 0 to 21 on each subscale. A subscale score of 8 to 10 indicates a doubtful case of anxiety or depression, whereas a subscale score of 11 or more indicates a definite case of anxiety or depression.³² Validity and reliability of the HADS³⁹⁻⁴² and of the HADS-C^{18,43,44} are well established. In this study, the Cronbach's alphas for the HADS anxiety and depression subscales were 0.88 and 0.76, respectively.

Patients' level of acculturation was assessed using the seven-item short form of the SL-ASIA. The SL-ASIA short form uses patients' preferred language to read, write, and speak; ethnic self-identity; and generation level to determine acculturation level. Each item is rated on a 5-point Likert scale. A mean acculturation

score is obtained by summing the values for all of the items and dividing the sum by the total number of questions answered.⁴⁵ Scores can range from 1.00 (indicates a low level of acculturation) to 5.00 (indicates a high level of acculturation). A higher score indicates greater Western identification, whereas a lower score indicates stronger Chinese or Asian identification. The validity and reliability of the short form of the SL-ASIA³³ and the SL-ASIA-C^{45,46} are well established. In this study, the Cronbach's alpha for the SL-ASIA was 0.87.

Study Procedures

To facilitate the design and content of a culturally appropriate research study, input was sought from experts within the Chinese American community to identify pertinent cancer pain management issues; to assist with the recruitment and interviews of study participants; and to assist with the analysis of the cultural meanings of the study's results. In addition, participation in community events and research activities that focused on Asian American health care helped to increase the cultural sensitivity, respectfulness, and flexibility of the primary investigator (J.E.). Networking with Asian American and Pacific Islander (AAPI) health care groups, attending health care meetings and conferences, and gathering information on pain beliefs and experiences directly from the Chinese American community over a period of three years facilitated the development of trust and commitment between the primary investigator and the Chinese American community, in addition to the identification of cancer pain management issues within the community.

For this study, a research partnership was developed between the Chinese Community Health Resource Center, the Northern California Chinese Unit of the ACS, and the academic research team at UCSF. The goal of this partnership was to develop a research study that would meet the cancer pain management needs of the Chinese American community.

This study was approved by the Committee on Human Research at UCSF. Flyers, distributed in the community, in the media, on community bulletin boards, and in physicians' offices, were used to recruit patients for this study. Patients who were interested called a specific telephone number. A trilingual staff

member returned their call, ascertained their language preference, answered their questions, and screened them for participation. Patients who met the inclusion criteria were interviewed by a trilingual research assistant and/or the investigator who described the study to them, answered their questions, and obtained written informed consent. Patients were given a choice to answer either the Chinese or English questionnaires. If a patient was unable to read or complete a questionnaire independently, the trilingual research assistant read the instructions and questionnaires to the patient in the language of their choice and recorded their responses. A total of 66 patients were screened for participation in this study. Fifty patients met the inclusion criteria. The primary reasons for exclusion were not having cancer-related pain ($n = 11$) and surgery in the past month ($n = 2$).

Statistical Analysis

Data were analyzed using SPSS version 14.0 statistical software. Descriptive statistics, summarized as frequencies and percentages for categorical variables and means and standard deviations (SD) for continuous variables, were used to describe the demographic and clinical characteristics of the patients. Pearson's product moment correlations were used to determine the relationships between patient barriers to pain management and pain severity, pain interference with function, mood disturbance (i.e., anxiety, depression), education, and acculturation. Independent Student's *t*-tests were used to evaluate gender differences in patient barriers. Multiple linear regression analysis was used to determine whether demographic characteristics (i.e., age, gender, education, living arrangement), pain characteristics (i.e., worst pain, total pain interference score, PMI), mood disturbance scores (i.e., anxiety, depression), and acculturation level predicted patient barriers to cancer pain management (i.e., total BQ score). Variables were systematically removed until a parsimonious model was obtained. A *P*-value of less than 0.05 was considered statistically significant.

Results

Demographic and Clinical Characteristics

A convenience sample of 50 patients participated in this study. As summarized in Table 1,

Table 1
Demographic and Clinical Characteristics
of the Patients ($n = 50$)

Characteristics	Frequency (%)	Mean (SD), years
Gender		
Male	16 (32.0)	
Female	34 (68.0)	
Age		62.6 (11.7)
Education level		11.5 (4.1)
Marital status		
Married	33 (66.0)	
Widowed	8 (16.0)	
Divorced	9 (18.0)	
Live alone	10 (20.0)	
Religious beliefs		
None	18 (36.0)	
Christianity	15 (30.0)	
Buddhism	13 (26.0)	
Taoism	1 (2.0)	
Other	3 (6.0)	
Country of birth		
Mainland China	39 (78.0)	
Vietnam	4 (8.0)	
Hong Kong	2 (4.0)	
Taiwan	2 (4.0)	
United States	2 (4.0)	
Other	1 (2.0)	
Years living in the United States		18 (10.6)
Annual income \leq \$25,000	36 (72.0)	
Annual income $>$ \$25,000	13 (26.0)	
Diagnosis		
Breast cancer	16 (32.0)	
Liver	7 (14.0)	
Lung	7 (14.0)	
Head and neck	5 (10.0)	
Gastrointestinal	4 (8.0)	
Prostate	1 (2.0)	
Colorectal	1 (2.0)	
Other	9 (18.0)	
Disease stage		
Metastatic	27 (54.0)	
Localized	18 (36.0)	
Unknown	5 (10.0)	
Karnofsky Performance Status Score		68.0 (16.8)
Acculturation level		1.8 (0.6)
Hospital Anxiety and Depression Scale		
Anxiety		5.96 (4.6)
Depression		6.57 (4.5)

the majority of the patients were born in Mainland China (78%); had resided in the United States between three and 44 years; and were females (68%). Eighty-eight percent of the patients spoke Cantonese, 4% spoke Mandarin,

4% spoke only English, and 4% were bilingual. The patients were approximately 63 years of age (range 39–78 years), married (66%), and had 11.5 years of education. Their religious affiliations were mixed. The patients' mean acculturation level was 1.79 (± 0.63), which indicates a strong Asian identification. The majority of the patients had breast (32%), liver (14%), and lung (14%) cancer. More than 50% of the patients had metastatic disease. Ninety-two percent of the patients completed the Chinese version of the study instruments.

Relationships Between Patient Barriers and Demographic Characteristics

Fig. 1 illustrates the mean scores (\pm SD) for each of the BQ subscales and the total BQ score. Subscale scores ranged from 0.39 (± 0.8) for the "good patient" subscale to 4.26 (± 1.3) for the "tolerance" subscale. The mean total BQ score was 2.5 (± 0.6), which suggests a moderate level of barriers.

No significant relationships were found between any of the demographic characteristics and BQ subscale and total scores, except for gender, living arrangements, and KPS. Female patients reported higher scores on the "religious fatalism" subscale (1.37 [± 1.49] vs. 0.54 [± 0.97]; $P = 0.02$) and male patients reported higher concerns about distracting the physician (3.13 [± 0.67] vs. 2.36 [± 1.25]; $P = 0.007$). In addition, patients who lived alone reported significantly higher religious

fatalism (2.0 [± 1.73] vs. 0.09 [± 1.2], $P = 0.02$), but significantly lower time for dosage (3.30 [± 1.21] vs. 4.15 [± 0.91], $P = 0.02$) subscale scores compared with patients who lived with someone. Finally, lower KPS scores were associated with significantly higher ($r = -0.296$, $P < 0.05$) time for dosage subscale scores (i.e., patients with a poor functional status were more concerned about using their analgesics on an ATC basis).

Relationships Between Patient Barriers and Pain Severity

The majority of the pain severity scores did not correlate with any of the subscale or total BQ scores. However, as shown in Table 2, significant positive correlations were found between least pain and the tolerance subscale ($r = 0.380$, $P = 0.007$) and between average pain and the religious fatalism subscale ($r = 0.282$, $P = 0.047$).

Relationships Between Patient Barriers and Pain Interference with Function

The tolerance subscale score was the only BQ score that was significantly correlated with the total BPI pain interference score ($r = 0.374$, $P = 0.007$). However, significant correlations were found between the tolerance and fatalism subscale scores and a number of the pain interference items. Patients who reported higher tolerance scores reported significantly higher pain interference scores for general activity

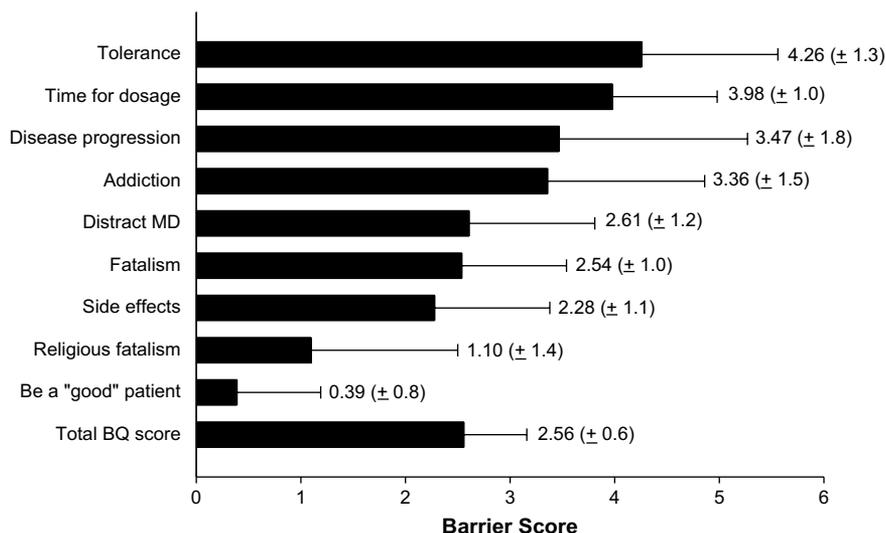


Fig. 1. Means and standard deviations for the total and subscale scores for the Barriers Questionnaire.

Table 2
Relationships Between Select Study Variables and the Barriers Questionnaire Subscale and Total Scores

BQ Subscales	Education Level	Least Pain	Average Pain	Total BPI Interference	PMI	HADS-A	HADS-D	SL-ASIA
Tolerance	-0.253	0.380 ^a	0.138	0.374 ^a	-0.217	0.282 ^b	0.284 ^b	-0.380 ^a
Fatalism	0.086	0.101	0.007	-0.140	-0.426 ^a	-0.037	-0.105	-0.291 ^b
Distract MD	0.000	0.199	0.049	0.105	-0.309 ^b	0.105	0.116	-0.260
Disease progression	-0.022	0.267	0.075	0.160	-0.004	0.126	0.075	-0.377 ^a
Religious fatalism	-0.216	0.007	0.282 ^b	0.217	0.025	0.358 ^b	0.353 ^b	-0.045
Time for dosage	-0.011	0.230	0.045	0.095	-0.234	-0.023	0.194	-0.277
Total BQ score	-0.006	0.257	0.107	0.218	-0.189	0.185	0.257	-0.273

^a $P < 0.01$ (two-tailed).

^b $P < 0.05$ (two-tailed).

($r = 0.300$, $P = 0.034$), normal work ($r = 0.450$, $P = 0.001$), walking ($r = 0.368$, $P = 0.009$), and sleep ($r = 0.308$, $P = 0.029$). In addition, patients with lower fatalism scores reported more pain interference with the item "relations with other people" ($r = -0.286$, $P = 0.044$).

Relationships Between Patient Barriers and Adequacy of Pain Treatment

Using the PMI to determine the adequacy of pain treatment, 62% of the patients were classified as being undertreated. Using the full range of PMI scores, shown in Table 2, the more inadequate the analysis, the higher the fatalism ($r = -0.426$, $P = 0.003$) and the concerns about distracting the physician ($r = -0.309$, $P = 0.034$) BQ subscale scores.

Relationships Between Patient Barriers and Mood Disturbances

As shown in Table 2, only the tolerance and religious fatalism subscale scores of the BQ significantly correlated with the HADS anxiety and depression scores. Patients with higher tolerance ($r = 0.282$, $P = 0.047$) and higher religious fatalism ($r = 0.358$, $P = 0.011$) subscale scores reported higher HADS anxiety scores. Similar relationships were found for the HADS depression scores.

Relationships Between Patient Barriers and Acculturation Level

Three barrier subscales (i.e., tolerance, fatalism, and disease progression) were negatively correlated with SL-ASIA scores. As shown in Table 2, patients with low levels of acculturation reported significantly higher fatalism ($r = -0.291$, $P = 0.041$), tolerance ($r = -0.380$, $P = 0.006$), and disease progression ($r = -0.377$, $P = 0.007$) BQ subscale scores.

Predictors of Patient Barriers to Cancer Pain Management

The results of the multiple regression analysis are shown in Table 3. Using the total BQ score as the dependent variable, years of education, acculturation score, PMI score, and depression score explained 21.3% of the variance in total BQ score ($P = 0.036$). In this study, patients with more years of education, lower levels of acculturation, an inadequate analgesic prescription, and higher depression scores reported higher barrier scores.

Discussion

This study is the first, to our knowledge, to describe the barriers to cancer pain management and to determine the predictors of these barriers in a community sample of Chinese American patients. As shown in Table 4, the mean barrier score in this sample was equivalent to that reported by a Taiwanese sample of cancer patients,¹¹ but higher than that reported by a sample of White American cancer patients.⁸ In fact, the Chinese American cancer patients had a total BQ mean score that was 31% higher than that of the White American cancer patients. This difference equates with a moderate to large effect size (i.e.,

Table 3
Multiple Regression Analysis of the Predictors of Barriers to Cancer Pain Management

Source	R^2	Beta	% of Explained Variance	df	F	P
Overall	21.3			4.42	2.84	0.036
Education		0.230	4.0			0.151
Acculturation		-0.313	8.2			0.043
PMI		-0.211	4.0			0.151
HADS-D		0.320	8.8			0.036

Table 4
Comparison of the Rankings (Highest to Lowest) of Subscale and Total BQ Scores Among Three Studies

Current Study of Chinese American Cancer Patients (<i>n</i> = 50)		Taiwanese Cancer Patients ^a (<i>n</i> = 159)	White American Cancer Patients ^b (<i>n</i> = 35)
Ranking	Subscales	Ranking	Ranking
1	Tolerance	1	7
2	Interval for dosage	3	Not evaluated
3	Disease progression	2	1
4	Addiction	4	3
5	Distract MD	6	5
6	Fatalism	8	8
7	Side effects	5	2
8	Religious fatalism	7	Not evaluated
9	Good patient	9	4
	Not evaluated	Not evaluated	6 (injection)
	Total BQ score = 2.55 (0.64)	Total BQ score = 2.56 (0.79)	Total BQ score = 1.94 (0.85)

^aLin (2000).¹¹

^bWard, Berry, Misiewicz (1996).⁸

$d = 0.72$)⁴⁷ and suggests a clinically significant difference in barrier scores between the two groups of patients.^{48,49}

In this study, the four barriers with the highest mean scores were: concerns about developing tolerance to the pain medication; concerns about taking the pain medication on an ATC vs. on a PRN basis, concerns about cancer pain being an indicator of disease progression; and concerns about the development of addiction. The ranking of these four barriers is consistent with previous studies of Taiwanese cancer patients.^{9,11} In contrast, the barriers with the highest mean scores in a study of White American cancer patients were concerns about: disease progression; side effects of the pain medicine; addiction; and being viewed as a good patient.⁸ It is interesting to note that for both the Chinese American and Taiwanese cancer patients, concerns about the development of tolerance was the highest ranking barrier, whereas it ranked seventh in the study of White American cancer patients. This finding suggests that the Chinese Americans in this study perceived similar barriers to cancer pain management as patients in Asia and is consistent with the strong Asian identification in this sample. However, these discrepancies could be explained by differences in the clinical characteristics of the samples. In the study by Ward et al.,⁸ patients were terminally ill, whereas in this study and in those in Taiwan,¹¹ the Chinese patients were undergoing active, not palliative, treatment. Additional research is needed to determine if barriers to cancer pain management change

across the disease trajectory within and across ethnic groups.

Although one study found that older Taiwanese patients and patients with less education reported higher barriers to cancer pain management,⁹ these relationships were not supported in the current investigation. The differences between the two studies may be explained by the fact that the Chinese Americans in this study were older and better educated (mean age = 62.5 ± 11.6 years; only 18% of the patients had less than a high school education) than the patients in Taiwan (mean age = 47 ± 15.3 years; 31% of the patients had less than a high school education).

In this study, women reported higher religious fatalism scores (i.e., pain comes from God), and men reported higher levels of concern about their pain distracting their physician from treating their disease. These findings are not consistent with previous reports that evaluated for gender differences in barriers to pain management.^{6,9,50} In two of these studies,^{6,50} male patients reported higher fatalism scores (i.e., pain is an inevitable part of cancer) than female patients. However, in both of these studies, the "religious fatalism" subscale was not included in the BQ. In addition, although Lin and Ward⁹ reported that women were more concerned about the development of tolerance than men, this association was not found in the current study. The reasons for the inconsistencies in gender differences among the studies are not readily apparent and warrant further investigation.

The barrier scores reported by the Chinese Americans in this study were relatively high and may indicate reluctance on the part of these patients to report their pain to clinicians and to adhere to their analgesic regimen.⁹ It should be noted that approximately 60% of the patients in this study, based on their PMI scores, were not receiving adequate treatment for their cancer pain. In addition, patients with lower PMI scores reported higher scores on the "fatalism" and the "distract MD" subscales, which is consistent with findings from a previous study.⁹ Furthermore, in this study, three of the four barriers with the highest scores were concerns related to analgesic use (i.e., tolerance, time for dosage, and addiction), whereas the barriers in a study of White American cancer patients were evenly divided between concerns about analgesic use (i.e., side effects, addiction) and perceived barriers that hindered patients' communication with their health care provider about their pain (i.e., desire to be viewed a good patient, disease progression).⁸ Previous research showed that concerns about analgesic use can contribute to poor adherence with an analgesic regimen.⁵¹

This study is the first to evaluate the relationship between mood disturbance and barriers to cancer pain management in Chinese American cancer patients. Whereas the mean anxiety and depression scores in this sample did not reach the cutoff score of 11 for the HADS, higher anxiety and depression scores were associated with higher tolerance and religious fatalism subscale scores. Because of the relatively small sample size, these findings need to be confirmed in future studies.

This study also is the first to examine the relationship between Chinese Americans' acculturation level and perceived barriers to cancer pain management. Patients with lower acculturation levels reported significantly higher tolerance, fatalism, and disease progression subscale scores ($r = 0.380$, $P \leq 0.01$; $r = -0.291$, $P \leq 0.05$; $r = -0.377$, $P \leq 0.01$), respectively. It should be noted that even though the Chinese Americans in this study had lived in the United States for a relatively long period of time (i.e., mean 18 ± 10 years; 35% of the sample lived in the United States for over 10 years), their acculturation scores suggested that they retained a strong Chinese or Asian identification. Future studies need to examine

the relationships between barriers to cancer pain management and acculturation in samples of Chinese Americans with a broader range of acculturation scores.

In terms of the predictors of barriers to cancer pain management, even with the relatively small sample size, 21.3% of the variance in the total BQ score was explained by more years of education, lower level of acculturation, less than adequate analgesic prescription, and higher levels of depression. Patients' level of acculturation and depression were the strongest predictors in the regression model. Even as these findings warrant replication, clinicians may be able to use these characteristics to identify Chinese Americans who have greater concerns about cancer pain management and who warrant additional interventions to improve the management of their cancer pain.

It should be noted that although language could have been a potential barrier to patient recruitment, the use of trained trilingual translators and the establishment of collaborations with the Chinese American community facilitated the recruitment of a sufficient number of patients to begin to explore Chinese American patients' perceived barriers to cancer pain management. Researchers who want to conduct studies with Chinese Americans need to pay careful attention to these methodologic issues and spend time forming partnerships with the key stakeholders in the Chinese American community.

Several limitations of this study should be noted. The relatively small sample size and the homogeneity of the sample in terms of acculturation level limit the generalizability of the study findings. In addition, because of the relatively small sample and the characteristics of the patients, the findings from this exploratory study need to be interpreted with caution and warrant replication in larger and more heterogeneous samples of Chinese Americans, particularly in terms of their acculturation levels. Finally, because all of the patients were from a community setting in a large urban area, these findings cannot be generalized to hospitalized patients or to patients in more rural areas.

Despite these limitations, the findings from this study suggest that Chinese American patients experience barriers to cancer pain management that are more similar to those

reported by Taiwanese cancer patients than to White American cancer patients. Additional research is warranted to explore the relationships between patient education level, socio-economic status, acculturation level, health beliefs, and various aspects of cancer pain management. These findings can be used to design and test culturally and linguistically appropriate pain management programs for Chinese American patients and family members. Additional research is warranted to determine which educational strategies are most effective for reducing barriers to cancer pain management in Chinese American patients. This research will require continued collaboration with members of the Chinese community to insure its success.

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