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# Factors predicting the effectiveness of palliative care in patients with advanced cancer

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(RECEIVED March 11, 2014; ACCEPTED June 30, 2014)

## ABSTRACT

*Objective:* The purpose of this study was to assess the factors that predict the effectiveness of palliative care in patients with advanced cancer.

*Method:* Cross-sectional data were collected from 240 patients recruited from three tertiary care hospitals in Bangkok and suburban Thailand aged 18 years or older who were willing to participate; able to speak, read, and write Thai; were not receiving aggressive cancer treatment; and had been diagnosed with advanced-stage cancer. Participants were asked to complete a Personal Information Questionnaire (PIQ), a Palliative Care Assessment Form (PCAF), and the Spiritual Well-Being Scale (SWBS).

*Results:* The significant predictors of the effectiveness of palliative care in patients with advanced cancer were found to be spiritual well-being ( $p = 0.000$ ) and palliative care strategies: a combination of pharmacological and psychosocial care, mind–body intervention, and spiritual care; physical management; and traditional medicine, herbal treatment, and diet management ( $p = 0.027$ ). The likelihood of effectiveness for patients whose spiritual well-being and palliative care strategies scores increased by an average of one point increased by factors of 1.058 and 2.271, respectively.

*Significance of Results:* These findings suggest that patients who experienced better spiritual well-being and who employed a variety of palliative care strategies also experienced enhanced effectiveness of palliative care.

**KEYWORDS:** Effectiveness, Palliative care, Advanced cancer

## INTRODUCTION

Cancer was a major cause of death during 2011, accounting for some 113 fatalities per 100,000 population worldwide and 67 per 100,000 in Southeast Asia. The World Health Organization (2012) predicts that the worldwide numbers will rise to 120 and 152 per 100,000 population by 2015 and 2030, respectively. Cancer patients suffer from a wide variety of physical and psychological symptoms (Gilbertson-White, 2011), especially during the advanced stages of the disease. Chaiviboontham and her colleagues

(2011) reported that pain is the most distressing symptom for these patients and identified four main symptom clusters: (1) pain, sickness-behavior, and psychological; (2) anorexia/cachexia; (3) gastrointestinal and elimination; and (4) dermatological. In addition, patients confronted with advanced cancer may experience a state of imbalance and disharmony. They often experience a sense of loss, fear, uncertainty, and anxiety. All these symptoms impact the quality of life (QoL), functional status, and performance of the activities of daily life for patients and their family members (Suwisith et al., 2008; Phligbua et al., 2013).

The goal of advanced cancer care is to deliver comprehensive symptom management as well as psychological, educational, social, and spiritual support to patients. Palliative care is a process of active total

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care aimed at improving the quality of life of patients and families who face life-threatening illness through provision of pain and symptom relief and spiritual and psychosocial support from diagnosis through to the end of life and bereavement (WHO, 2002). Various palliative care strategies—including pharmacological (WHO, 2002) and nonpharmacological strategies and a combination of the two—may thus be needed to manage the illness, help patients and family deal with symptoms, and provide comfort. Nonpharmacological management was conceptualized into four major groups: (1) psychosocial; (2) mind–body intervention and spiritual; (3) physical (manipulation and body-based method); and (4) traditional medicine, herbs, and diet (Get-Kong et al., 2010). A combination of pharmacological and nonpharmacological strategies is the predominant approach to managing the effects of cancer and its treatment, and may help to reduce pain and other symptoms by lowering the dosages of medication (Schulmeister & Gobel, 2008; Get-Kong et al., 2010).

When individuals are faced with an out-of-control situation, suffering, and the threat of loss of life, they strive to regain control and often seek the help of a higher power by articulating spiritual concerns. Spirituality can be a useful coping mechanism that can help ameliorate depression (Nelson et al., 2009). In the terminally ill, spiritual beliefs and spiritual well-being can serve as a source of strength and encouragement by helping one understand his/her illness and suffering in a different context, and thus assist in coping with life's uncertainties. So spiritual beliefs/well-being constitute an important aspect of healthcare and can be a major coping resource and a source of strength and courage, helping patients with advanced cancer to understand their illness and suffering, their meaning and purpose, and help them grapple with the uncertainties of life (Harris et al., 2010; Puchalski, 2012).

Effective palliative care depends on various factors, including the specific pharmacological agents utilized; symptom relief; psychological, emotional, and financial support; and cultural attitudes and religious beliefs, which are aspects of spirituality (Rhymes, 1996).

There has been little study on the factors that predict the effectiveness of palliative care. The present study sought to delineate the factors that predict the effectiveness of palliative care in patients with advanced cancer. Its findings are expected to provide new knowledge that can be employed in delivering comprehensive and effective palliative care to patients with advanced cancer and others who are terminally ill.

## METHODS

### Design

This cross-sectional study was part of a larger study that investigated symptom experience, palliative care type, and spiritual well-being in patients with advanced cancer conducted in 2008–2009.

### Sample and Setting

Purposive sampling was employed to recruit participants from three tertiary care hospitals in Bangkok and suburban Thailand. The inclusion criteria were: patients diagnosed with advanced-stage cancer, not receiving aggressive treatment for cancer; aged 18 years older; willing to participate; and able to speak, read, and write Thai. After estimation of the proportion of the total population and allowing for a 25% attrition rate, the final sample consisted of about 240 participants.

### Ethical Considerations

The study was approved by the ethics committee of the Faculty of Medicine at Ramathibodi Hospital, Mahidol University. Each potential participant was informed about the purposes of the study, what study involvement entailed, confidentiality and anonymity issues, the nature of voluntary involvement, and the right to withdraw at any time without repercussions. All participants agreeing to participate were asked to sign a consent form.

### Data Collection

Patients who decided to participate were approached either in a private part of the waiting room of the outpatient ward or at the individual's bedside on the inpatient ward at each healthcare institution utilized as a data-gathering site. Copies of the questionnaires were distributed to participants, at which point the details regarding how to complete them were explained. The principal investigator (PI) read the questionnaires to participants who required assistance due to health or visual impairment and asked them to verbally respond to questions. Completing the questionnaires took 30 to 45 minutes. Participants returned completed questionnaires to the PI, who then checked to verify that the data had been successfully gathered. Completed questionnaires then received a code number and were placed in a locked cabinet.

### Instruments

Three instruments were employed for data collection: the Personal Information Questionnaire (PIQ), the

Palliative Care Assessment Form (PCAF), and the Spiritual Well-Being Scale (SWBS). A pilot study with 30 patients was conducted to test study feasibility and instrument reliability. None of those involved in the pilot study were included in the main study.

The Personal Information Questionnaire (PIQ) was developed by the PI to collect demographic data: age, gender, marital status, religion, educational level, years of education, occupation, family income, method of payment of medical expenses, and presence of a family caregiver. Data on type of cancer, length of time since diagnosis, comorbid diseases, and use of medical devices were obtained by the PI from the medical records.

The Palliative Care Assessment Form (PCAF) was developed by the PI to obtain information about palliative care strategies. The process of questionnaire development consisted of a literature review, conceptualizing strategies into groups, content validation, and pilot testing. Nonpharmacological management was conceptualized into four major groups (which included 23 strategies): (1) psychosocial; (2) mind–body intervention and spiritual; (3) physical (manipulation and body-based methods); and (4) traditional medicine, herbs, and diet. Each item consisted of two response choices: “yes = 1” (meaning that the management strategy was used) and “no = 0” (meaning that the management strategy was not utilized). Scores were summed, with higher scores reflecting utilization of a greater number of strategies.

Participants were asked to rate the effectiveness of the palliative care employed in terms of (1) symptom elimination, (2) symptom relief, (3) no effect on symptoms, (4) symptom worsening, and (5) uninterpretable effectiveness. Effective palliative care was defined as either (1) or (2).

Developed by Paloutzian and Ellison (1982), the Spiritual Well-Being Scale (SWBS) is a general measure of spiritual well-being. It is a 20-item instrument with two 10-item subscales measuring religious well-being (RWB) and existential well-being (EWB). It was purchased from Life Advance Inc. for use in the present study. A version published by Noipiang (2002) was employed in this study because its items were modified to minimize cultural differences. The scale was rated on a 6-point Likert-type scale from “strongly agree” to “strongly disagree” (where negative wordings in items were reverse scored). It yields three scores: a total scale score (SWB), a score for RWB, and a score for EWB. The highest possible scores represent the highest degree of SWB.

## Data Analysis

Data were checked for outliers or errors and coded before being entered into the computer program. Statistical significance was set at a *p* value of 0.05. Demographic data were represented by using descriptive statistics. Logistic regression analysis was performed in an attempt to determine the predictors of effective palliative care.

## RESULTS

### Participants

Participant ages ranged from 19 to 86 years, with a mean of 56.1 years. About half were female (50.8%). The majority of participants were in a couple (76.7%), Buddhists (96.7%), and had finished primary school (48.8%). Healthcare costs were mainly covered by universal coverage (42.9%) and government welfare (40.4%). The median income was 20,000 baht (30 baht = 1 USD) per month, with a range of 4,000–300,000 baht per month. Among these, 44.2% believed they had sufficient financial resources, and all had a caregiver. The most common cancers were gastrointestinal, breast, hepatobiliary, and lung. The time since diagnosis ranged from 1 to 294 months, with a mode of 8 and a median of 13 months. Hypertension was the most common comorbid feature, followed by diabetes mellitus. The most common medical assists employed were a nasogastric tube, a colostomy bag, total parenteral nutrition, and oxygen.

### Palliative Care Strategy

Participants employed various types of pharmacological palliative care strategies to manage their illnesses: various forms of morphine were used most often, followed by other opioids, laxatives, antidepressants, anxiolytics, antiflatulents, nonnarcotic analgesics, anticonvulsants, and antiemetics. Some 47 (19.61%) participants utilized a morphine sulfate solution (mean dosage of 25.26 mg/day (*SD* = 10.12)), followed by morphine injection (16.27%) (mean dosage, 16.46 mg/day (*SD* = 6.44)), morphine sulfate tablets (15.02%) (mean dosage, 51.39 mg/day (*SD* = 36.97)), kaptopril (7.39%) (mean dosage, 32.11 mg/day (*SD* = 25.51)), and fentanyl (6.68%) (mean dosage, 39.81 µg/hr (*SD* = 22.96)).

The most often-used nonpharmacological strategies were: getting information/advice on self-care and talking to someone who offered support/encouragement (psychosocial group); changing food/eating behaviors and taking vitamins or dietary supplements (traditional medicine, herbs, and diet

group); and reading religious books about dharma and doing good deeds (mind–body and spiritual group).

The largest proportion of participants ( $n = 151$ , 62.92%) tended to use a combination of pharmacological and nonpharmacological strategies.

### Effectiveness of Palliative Care Used

Of the 240 participants, 100 (41.7%) perceived, regardless of method used, both pharmacological and nonpharmacological strategies to be effective (“eliminated symptoms” or “relieved symptoms”).

### Spiritual Well-Being

Participants reported their overall spiritual well-being as high ( $n = 133$ , 55.4%) or moderate ( $n = 107$ , 44.6%). None reported having low spiritual well-being. Overall, their religious well-being was rated higher (mean = 51.75) than their existential well-being (mean = 48.05).

### Predictors of Effective Palliative Care

Effective palliative care was presented in terms of relieving (40.4%) or eliminating symptoms (1.3%) after palliative care. Some 41.7% of participants rated palliative care as effective. Table 1 presents the details about the factors that predicted the effectiveness of palliative care.

The logistic regression analysis yielded the following equation to predict the effectiveness of palliative care:

$$\text{Effectiveness} = -7.557 + 2.271 \times \text{Palliative Care Strategy} + 1.058 \times \text{Spiritual Well-Being}.$$

The predictive accuracy of this equation was as follows: 78.6% for the ineffective group, 57% for the

effective group, and 69.6% for the combined ineffective/effective group.

## DISCUSSION

These findings provide evidence about the factors that influence the effectiveness of palliative care in advanced cancer patients. The most significant predictors for the effectiveness of palliative care in advanced cancer patients were spiritual well-being and a combination of palliative care strategies: pharmacological plus psychosocial care; mind–body intervention and spiritual care; physical management; and traditional medicine, herbs, and diet management.

Spirituality is based on personal experiences, perceptions, beliefs, cultures, and contexts. In the Western context, an earlier study on spiritual well-being found that spiritual well-being is best conceived as having two dimensions: one vertical and the other horizontal. The vertical dimension refers to one’s sense of well-being in relationship to God (i.e., their religious beliefs), while the horizontal dimension refers to one’s perception of self-satisfaction and the purpose of life (Paloutzian & Ellison, 1982; Ellison, 1983). The Spiritual Well-Being Scale was developed to be a standard measurement for spiritual well-being. It consists of two subscales: existential well-being and religious well-being (Paloutzian & Ellison, 1982). Cella (2010) developed the 12-item Functional Assessment of Chronic Illness Therapy–Spiritual Well-Being (FACIT–Sp–12) to explore spirituality and confirm that meaning, purpose, peace, and calm are important to people. Spiritual well-being is supported not only by a religious belief system, but also by a sense of self-worth and connection with others, and is disrupted by physical suffering (Lo, 2011). Breitbart and colleagues (2010) developed meaning-centered group psychotherapy (MCGP) to enhance spiritual well-being and help

**Table 1.** Logistic regression model for predicting the effectiveness of palliative care

Variable in Equation	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	exp( <i>B</i> )	<i>p</i>	<i>CI</i> <sub>95%</sub>
Sex	−0.372	0.303	1.509	1	0.690	0.219	0.381–1.248
Age	0.007	0.013	0.282	1	1.007	0.595	0.982–1.033
Family income	0.000	0.000	0.474	1	1.000	0.491	1.000–1.000
Time after diagnosis	−0.003	0.005	0.439	1	0.997	0.508	0.998–1.006
Palliative care strategy <sup>a</sup>	0.820	0.371	4.883	1	2.271	0.027	1.097–4.699
Spiritual well-being	0.057	0.012	22.469	1	1.058	0.000	1.031–1.083

<sup>a</sup>Combination of pharmacological and psychosocial care, mind–body intervention, and spiritual care; physical management; and traditional medicine, herbs, and diet management.

Chi-square (omnibus tests of model coefficients) model = 40.353,  $df=7$ ,  $p = 0.000$ .

Chi-square (Hosmer and Lemeshow test) = 7.007,  $df = 8$ ,  $p = 0.536$ .

−2 log likelihood = 285.660; Cox & Snell  $R^2 = 0.155$ ; pseudo  $R^2$  (Nagelkerke  $R^2$ ) = 0.208; constant = −7.557.

patients with advanced cancer to sustain or enhance a sense of meaning, peace, and purpose in life.

There are only a few studies regarding Eastern culture, especially in the Thai context. A study of spiritual well-being in persons with HIV/AIDS indicated that the components of spiritual well-being include happiness, a peaceful mind, mindfulness, loving kindness, compassion, and inner strength. Spiritual well-being in Thai people has been found to be based on religious devotion, particularly in the Buddhist tradition, which provides spiritual guidelines (Pilaikiat et al., 2003). That study found that the factors that affect spiritual well-being include hope, acknowledging one's condition and accepting this as a fact of life, fostering self-esteem, social support, maintaining positive attitudes, income, experience of the past, personality, family history, and health status. The strength of family bonds in Thai culture can foster a relationship based on love, caring, concern, and understanding among family members (Tongprateep, 2000; Kunsongkeit et al., 2004). Connection with every aspect of one's life, and especially religion, is important to spiritual well-being in Thai people. Spiritual well-being was a significant predictor of effectiveness of treatment in this study, which could be explained in the context of Thai culture and religious practice. Spirituality is an important part of the daily lives of Thai people, and it is based on religious and supernatural beliefs. Most of the participants in this study were Buddhists (96.7%). Buddhism holds that there are four unavoidable dangers in life: birth, aging, sickness, and death. Karma is a key aspect of Buddhism that encompasses a person's acts and the ethical consequences of those actions. Patients who understand these principles thoroughly will realize that all diseases are the result of karma and are subject to natural law (Paonil & Sringernyuang, 2005). Reading books about dharma and performing meritorious actions was reported as one strategy to enhance palliative care in Thais with advanced cancer (Get-Kong et al., 2010). Tanti-trakull and Thanasilp (2010) also found that cancer patients who practice religious activities have a high level of spiritual well-being even during the terminal stages. Another study among Buddhist patients revealed that a program of meditation and chanting significantly improved spiritual well-being in Thai elders (Wiriyasombat et al., 2011), which could explain why religious practice focused on mind training might help to bring about peace and harmony which can lead to a sense of spiritual well-being.

In advanced cancer care, maintaining and improving a patient's quality of life and spiritual well-being are increasingly important when it comes to symptom relief and prolongation of life (Higginson &

Constantini, 2008). Spirituality is a critical factor in health and well-being and also has a significant impact on the quality of life of patients with cancer by providing a context from which they can derive hope and meaning (Puchalski, 2012). Another study showed a positive correlation among spiritual well-being and four dimensions of the quality of life: mood, well-being, leisure activity, and perceived social support (Travado et al., 2010).

Palliative care is delivered to patients and family to maintain physical, psychological, social, and spiritual well-being. This approach aims to relieve pain and other distressing symptoms, provide comfort, and improve QoL. In the present study, the palliative care strategies employed were a significant predictor of successful care, because effective palliative care requires a wide range of strategies tailored to the specific cultural and social context of the target population. The modalities of palliative care include a combination of pharmacological and nonpharmacological strategies (Get-Kong et al., 2010). This can be explained by the fact that the nonpharmacological strategies used in conjunction with conventional treatment provided satisfaction, relief, and comfort, and the combination of nonpharmacological strategies with an appropriate pharmacological strategy reduced pain and other symptoms better with smaller dosages of medication. Complementary and alternative care are slowly being integrated into the health-care system, as are all conventional and alternative therapeutic systems that help patients to be more comfortable (Kozak et al., 2009). The people of Thailand have relied on traditional medicine for many generations. The Thai government has also framed policies and laws to promote and encourage the use of local knowledge related to the traditional medicine that has been passed down through the ages (Kozak et al., 2009; Get-Kong et al., 2010).

Financial resources are essential for effective palliative care. This includes help with prescription copayments and coverage of the full cost of over-the-counter medications, and transportation, and such indirect resources as loss of patient and caregiver income (Lyckholm, 2010). Family income was not a significant predictor of effectiveness in the current study. This might have been due to the universal coverage policy and government welfare offered to these patients. Moreover, Thai herbs, traditional medicine, and alternative therapies are being integrated into the healthcare system and can be reimbursed just as conventional treatments are, which can result in decreased financial burden. There is a great opportunity for people with terminal and advanced cancer to receive both conventional and traditional care, which can further heighten the effectiveness of care.

## CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

This study found that patients who felt greater spiritual well-being and used a variety of palliative care strategies experienced enhanced effectiveness of care. This required palliative care strategies that cover all aspects of care to promote effective palliative care in patients with advanced cancer. This finding could help lead to more effective management and promotion of more successful palliative care, and would also enhance the quality of life for patients with advanced cancer. Nevertheless, some limitations do need to be addressed. The cross-sectional design, by its nature, limits the data to only one data-point. Future studies need to employ an interventional study design to test comprehensive palliative care strategies in patients with advanced cancer.

## ACKNOWLEDGMENTS

This study was part of a major project supported by the Commission on Higher Education, the Ministry of Education, and the Thailand Nursing and Midwifery Council. I also wish to express deep gratitude to Professor Emeritus Somchit Hanucharurnkul for blessing my life and career with inspiration.

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