



Published in final edited form as:

*J Pain Symptom Manage.* 2014 July ; 48(1): 99–109. doi:10.1016/j.jpainsymman.2013.08.014.

## Testing the Factorial Validity of Scores From the Caregiver Pain Medicine Questionnaire

**David L. Albright, MSW, PhD, Robin L. Kruse, PhD, Debra Parker Oliver, MSW, PhD, Karla Washington, MSW, PhD, John Cagle, MSW, PhD, and George Demiris, PhD**

School of Social Work (D.L.A.); and Department of Family and Community Medicine (R.I.K., D.P.O., K.W.), University of Missouri, Columbia, Missouri; School of Social Work (J.C), University of Maryland, Baltimore, Maryland; and School of Nursing & School of Medicine (G.D.), University of Washington, Seattle, Washington, USA

### Abstract

**Context**—The Caregiver Pain Medicine Questionnaire is designed to measure caregiver agreement with statements regarding pain management. However, little testing has been done to determine its reliability and validity.

**Objectives**—The objective of the study was to test the factorial validity of scores from the Caregiver Pain Medicine Questionnaire as hypothesized by the original study authors.

**Methods**—Confirmatory factor analysis was conducted to assess whether the subscales postulated by the instrument authors could be replicated in external data.

**Results**—Fit statistics reveal an unsatisfactory fit between the hypothesized model and the observed data.

**Conclusion**—The theoretical model hypothesized by the original study authors was not confirmed. Results lead us to conclude that the instrument is poor and should not be used. Further research is needed to define content domains and validate the items developed to assess them.

### Keywords

Caregiver Pain Medicine Questionnaire; factor analysis; hospice; pain management

### Introduction

Cancer is the second leading cause of death,<sup>1</sup> and prevalence of pain in patients with terminal cancer is estimated to be between 59% and 75%.<sup>2</sup> Although nearly half of the patients enrolled in hospice programs are cancer patients,<sup>3</sup> terminally ill patients with other diseases also experience pain. In fact, pain is a major problem for most hospice patients.<sup>4–6</sup>

© 2013 U.S. Cancer Pain Relief Committee. Published by Elsevier Inc. All rights reserved.

Address correspondence to: David L. Albright, MSW, PhD, School of Social Work, University of Missouri, 704 Clark Hall, Columbia, MO 65211, USA. albrightd@missouri.edu.

#### Disclosures

There are no other financial relationships associated with these results that may reflect a conflict of interest or be perceived to reflect a conflict of interest.

With 66% of the hospice patients dying in their place of residence,<sup>3</sup> the day-to-day implementation of pain management plans is accomplished by informal family caregivers. These untrained caregivers are ill prepared for the struggles associated with managing pain in the terminally ill and their former caregiving experiences influence their perception and management of their loved ones' pain experience.<sup>7,8</sup>

Barriers to effective pain management arise from knowledge, beliefs, and attitudes of patients and family caregivers.<sup>9</sup> A recent review of the literature found that the pharmacological management of pain is challenging for caregivers across cultures and within numerous contexts of care.<sup>10</sup> This review concluded that there is a need for targeted educational interventions to address the myths held by caregivers and strategies to increase self-efficacy for caregivers faced with the burden of managing pain.<sup>10</sup> It is critical to have reliable and valid scores from instruments both to understand these caregiver perceptions and to evaluate the effectiveness of potential interventions. One such instrument, the Caregiver Pain Medicine Questionnaire (CPMQ), was created in 2004;<sup>11</sup> however, little testing has been done to determine the reliability and validity of its scores, especially in the hospice population.

### Caregiver Pain Medicine Questionnaire

The CPMQ is a 16-item self-report instrument that measures informal caregivers' agreement with statements regarding pain management, with a few additional questions about medication administration/adherence.<sup>11</sup> The factor structure proposed by the original instrument authors<sup>11</sup> is hierarchical and includes two second-order factors ("Concern about Reporting Pain" and "Concern about Administering Analgesics") and five first-order factors ("Fatalism," "Stoicism," "Concern about Addiction," "Concern about Side Effects," and "Concern about Tolerance"). Hierarchical factor structures represent the associations between multiple observed variables or indicators in terms of a smaller set of associated latent variables or factors, which themselves can be represented by a higher order latent variable or factor.

The original study authors<sup>11</sup> supported their decision to include the second-order factors by citing the 1994 Clinical Practice Guidelines for the Management of Cancer Pain,<sup>12</sup> which identified the factors as two (of the eight) problems related to patients that are potential barriers to effective cancer pain management. "Concern about Reporting Pain" was delimited to include two first-order factors, namely "Fatalism" and "Stoicism." "Fatalism" was defined as the belief that pain is inevitable and untreatable.<sup>11</sup> "Stoicism" was defined as the belief that pain is to be tolerated and not complained about.<sup>11</sup> "Concern about Administering Analgesics" also was delimited to include "Concern about Addiction," "Concern about Side Effects," and "Concern about Tolerance." These factors were not defined. Additional questions about medication administration/adherence were included but the rationale is not documented. The content validity of the CPMQ, however, was tested by having six experts apply the index of content validity,<sup>13</sup> resulting in the retention of all 16 items (Table 1 shows a complete list of these items).

## Objective and Hypotheses

The CPMQ was developed with a priori hypotheses of the relationships among the variables. It follows that a validity investigation should use confirmatory factor analysis (CFA) to test these relationships. The objective of our study was to test the model of the CPMQ hypothesized by the original study authors.<sup>11</sup> The model tests that 1) responses to the CPMQ can be explained by five first-order factors (“Fatalism,” “Stoicism,” “Concern about Addiction,” “Concern about Side Effects,” and “Concern about Tolerance”) and two second-order factors (“Concern about Reporting Pain” and “Concern about Administering Analgesics”); 2) each item has a non-zero loading on the first-order factor it was designed to measure, and zero loadings on the other four first-order factors; 3) residuals associated with each item are uncorrelated; and 4) covariation among the five first-order factors is explained fully by their regression on the second-order factors. Fig. 1 is a diagrammatic representation of the model. We did not test the additional questions about medication administration/adherence because our pilot study found that 43% of the caregivers did not administer medication, which resulted in high amounts of missing data and increased the likelihood of respondent burden.<sup>24</sup>

## Methods

### Participants

We have CPMQ data from two studies: the ongoing Assessing Caregivers for Team Intervention through Video Encounters (ACTIVE) study (R01NR011472)<sup>14</sup> and the pilot study for ACTIVE (R21CA120179).<sup>23,24</sup> The ACTIVE study enrolls caregivers of patients in three Midwestern hospices; two Midwestern hospices participated in the pilot study. The present study sample comprises CPMQ data for 352 informal caregivers of hospice patients collected at the time of enrollment, 283 from ACTIVE and 69 from the pilot study. Full study details are provided in another article.<sup>14</sup> The health sciences institutional review board of each participating institution approved the study. The sample of 352 caregivers (77% females) was largely married (70%), white (94%), older ( $M = 59.45$ ,  $SD = 13.43$ ), and adult children of the patients (50%). Table 2 presents complete caregiver characteristics.

### Measure

The CPMQ is a 16-item self-report instrument that measures informal caregiver agreement with statements related to pain management. Individual items are scored from one (“strongly agree”) to five (“strongly disagree”) and summed. When informal caregivers agree with any CPMQ statement, it is considered to represent a potential barrier to effective pain management. Thus, lower scores on the overall scale indicate more problematic attitudes toward pain management.

### Statistical Analysis

Casewise deletion was applied to missing data. We calculated the sample size needed to obtain accurate parameter estimates to be 153, using recommendations for the analysis of categorical data.<sup>15</sup> We evaluated the assumption of multivariate normality by reviewing

Mahalanobis distances. We used the means- and variance-adjusted weighted least squares estimator because it performs well in the CFA modeling of categorical data.<sup>16,17</sup>

The CFA was conducted to test the factor structure postulated by the original authors.<sup>11</sup> We used several recommended<sup>16,18,19</sup> fit indices and cutoff values to test the model, namely comparative fit index of 0.95 or higher, root mean square error of approximation of 0.06 or lower, and weighted root mean square residual of 0.90 or lower. All analyses were conducted with Mplus 7.<sup>20</sup>

Given that we have five first-order factors, we have 15 ( $[5 \times 6]/2$ ) pieces of information; the number of estimable parameters is 10 (five factor loadings and five residual variances), thereby resulting in an overidentified model.<sup>21</sup> The first factor-loading path for each congeneric set of parameters is automatically constrained to 1.0 and requires no specification. These parameters (i.e., Items 1, 2, 3, 5, and 6) serve as the reference indicator variables in the model related to the first-order factors. The parameter specifications for the second-order factor model constrain the variance of both (i.e., Report and Admin) to 1.0 so that the higher order factor loading paths are allowed to freely estimate.

## Results

### Data Screening

Table 3 presents a correlation table with means, standard deviations, skewness, and kurtosis of the CPMQ items. Table 1 presents a list of the items on the CPMQ and the summary of the proportions of sample respondents who endorsed each of the five response categories. For example, 46% of the caregivers disagreed and 29% strongly disagreed with Item 1, which elicits a response to “People should take less than the prescribed dose of pain medication to avoid side effects.” This suggests that it is not a strong barrier to pain management. A review of this information for all 16 items reveals that for 13 of the 16 items, most respondents selected Category 4, thereby indicating minimal evidence for barriers to pain management. This is undesirable in an instrument and raises questions about the underlying premise of the instrument.

### Model Fit

The model fit statistics ( $\chi^2(98) = 283.73$ ,  $P < 0.0001$ , comparative fit index = 0.974, root mean square error of approximation = 0.074, weighted root mean square residual = 0.996) reveal an unsatisfactory fit between the model and the observed data. This means that the factor structure hypothesized by the original study authors<sup>11</sup> does not fit our data. Table 4 presents the unstandardized parameter estimates that represent the amount of change in the latent variable as a function of a single unit change in the variable (observed or latent) causing it. The first- and second-order factor loadings reported in Table 5 are all statistically significant at  $P < 0.05$  and almost all of the standardized factor loadings (except for Item 16) are greater than 0.40, suggesting adequate convergent validity.<sup>22</sup> Convergent validity is the extent to which items of a specific factor share a high proportion of variance in common. The high correlation of the second-order factors (0.963), however, suggests poor discriminant validity.<sup>22</sup> Discriminant validity is the extent to which a factor is different from

other factors. Table 6 presents the internal reliabilities of the second- and first-order factors of the CPMQ. The internal reliability coefficients for “Fatalism” ( $\alpha = 0.59$ ), “Stoicism” ( $\alpha = 0.57$ ), and “Concern about Tolerance” ( $\alpha = 0.56$ ) are poor and suggest that the items do not consistently measure these factors.

Table 7 presents the reliability estimates and residual variances for each of the items and the reliability estimates for the five first-order factors. The residual variances for the items reveal that the factor, “Concern about Side Effects,” does not explain 72% (0.724) of the variance of Item 7, 70% (0.702) of the variance of Item 10, or 91% (0.905) of the variance of Item 16, suggesting that the items do a poor job of operationalizing the factor. The reliability estimates reveal that seven of the 16 items are weak ( $R^2 < 0.5$ ). These seven items have weak factor-indicator relationships, which is another indicator of poor model fit and suggests that four of the first-order factors (“Fatalism,” “Stoicism,” “Concern about Side Effects,” and “Concern about Tolerance”) could be better operationalized. Additionally, the factor, “Concern about Tolerance,” is undefined, which is not surprising given that the residual variance of the factor is negative (known as a Heywood case, which indicates that the data do not fit the model) and that there are only two items (a minimum of three items per factor is generally recommended). This also suggests a problematic fit between the model and data. Finally, the model modification indices (available on request) indicate multiple misspecifications (e.g., cross-loading factors and covarying residuals) suggesting poor model fit to the data.

## Discussion

Our results suggest that both the second-order factors (“Concern about Reporting Pain” and “Concern about Administering Analgesics”) and one first-order factor (“Concern about Tolerance”) should be eliminated in future modeling of the scores from the CPMQ. The items from this first-order factor (Items 2 and 8) should be included in the operationalization of the “Concern about Side Effects” factor. Items 7, 10, 13, and 16 should be eliminated completely. Additionally, the “Fatalism” and “Stoicism” factors are unlikely to have much psychometric robustness as demonstrated by the low reliability coefficients presented in Table 6.

In a qualitative analysis of caregiver interviews from the larger study, only two of the CPMQ factors were found as themes in the caregiver comments.<sup>25</sup> Although caregiver themes were consistent with “Concern about Administering Analgesics” and “Concern about Side Effects,” there were no caregiver comments to provide evidence related to “Concern about Reporting Pain” or “Concern about Tolerance.” Additionally, we identified strong themes related to challenges in communication and challenges with assessing pain. The study also found instances of unrelieved pain as pain management protocols were not followed by the caregivers. Finally, for some caregivers who followed prescribed protocols, concerns that they may have (or the nurse administering the final doses may have) facilitated the death of the patient were mentioned.<sup>25</sup>

Hospice caregivers do hold beliefs and experiences that impact both how they make sense of pain and their willingness and ability to manage pain during the hospice experience. Studies

show us that these beliefs and experiences are impacted by previous experiences with pain; thus, both unrelieved and inaccurate representations of pain within the hospice experience can impact future decision making. These challenges with pain management are not unique to the U.S. hospice experience, but to the death and dying experience globally.<sup>26–29</sup> The unique aspect for U.S. hospice caregivers is that most care for these patients occurs in a residential setting, and untrained family caregivers are the ones primarily responsible for carrying out the pain management strategies.<sup>30</sup>

It is clear that hospice providers need validated instruments to help assess and measure these family beliefs as well as a clear understanding of the former experiences that may impede the hospice teams' ability to control patients' pain as caregivers implement the plans developed by the hospice staff. Theoretically informed and psychometrically robust instruments that are easy to administer and interpret could be very valuable as hospice nurses and physicians develop plans of care to address patients' pain. Although patients' pain ratings are an important ingredient of pain management strategies, so are the beliefs of the caregivers charged with implementing those strategies. Caregivers believing that a prescribed dose of morphine may kill their loved one will be hesitant to give that medication as prescribed, or will be left with the guilt that they may have hastened the death of their loved one.

## Conclusions

The need to measure caregivers' beliefs of pain management is significant and the original authors' intentions to do so with the CPMQ were pioneering; however, our results lead us to conclude that the instrument is poor and should not be used. Although some qualitative evidence<sup>7</sup> exists for the barriers to pain management measured by the CPMQ, the results of our study suggest the definition of the content domain and the relationship between that domain and the content of the CPMQ is problematic. We recognize the significant need for such an instrument and, therefore, recommend the development of a new instrument to measure caregivers' beliefs of pain management in hospice settings that is informed by a theoretical rationale, with congruent conceptual and operational definitions, and is easily translated into a useable form for bedside hospice providers.

## Acknowledgments

This project was supported by Award Number R01NR011472 from the National Institute of Nursing Research and Award Number R21CA120179 from the National Cancer Institute. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Nursing Research, the National Cancer Institute, or the National Institutes of Health. The ClinicalTrials.gov registration number for ACTIVE is NCT01211340.

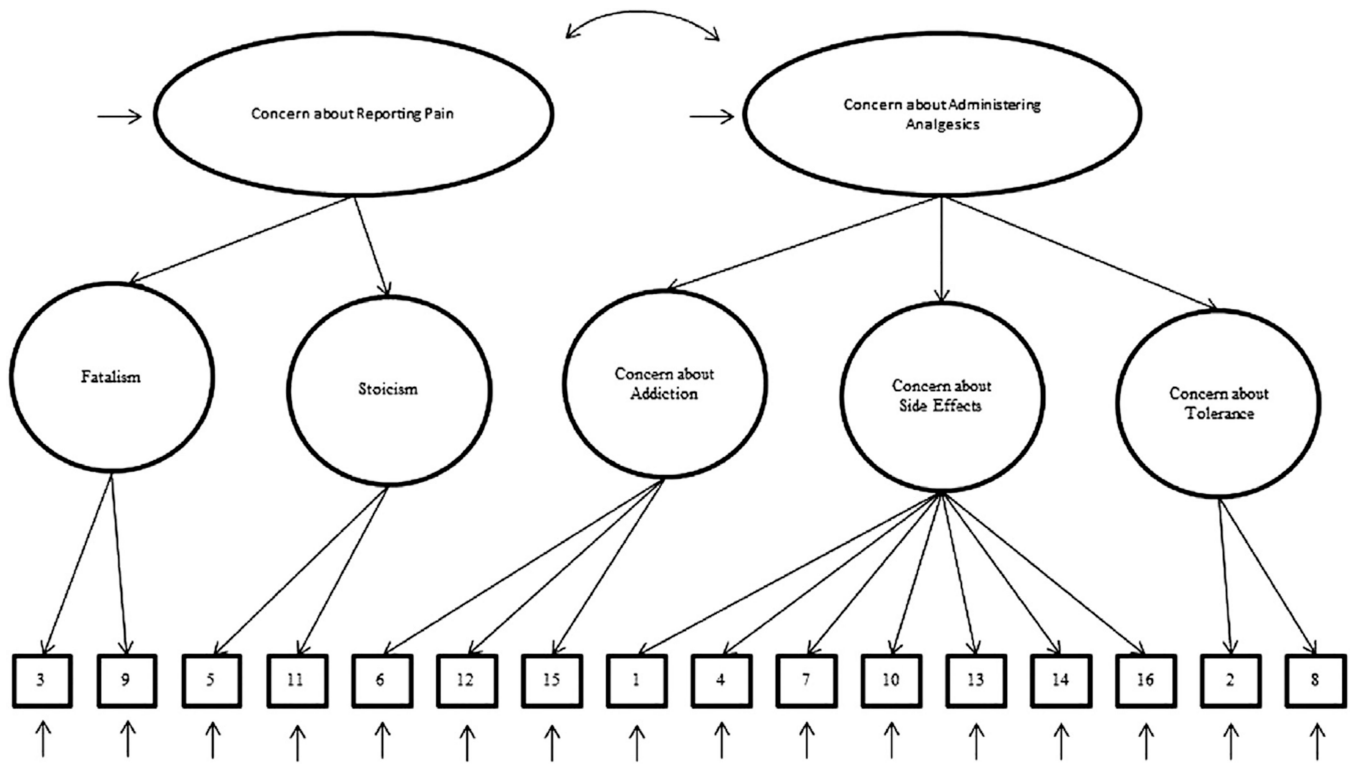
## References

1. AfHRA. National health disparities report. Rockville, MD: AHRQ; 2005.
2. Swarm R, Abernathy A, Angehelescu D, et al. Adult cancer pain. *J Natl Compr Canc Netw*. 2010; 8:1046–1086. [PubMed: 20876544]
3. National Hospice and Palliative Care Organization. [Accessed April 5, 2013] Available from [www.nhpco.org](http://www.nhpco.org)

4. Sahlberg-Blom E, Ternstedt B, Johansson J. Is good 'quality of life' possible at the end of life? an explorative study of the experiences of a group of cancer patients in two different care cultures. *J Clin Nurs*. 2001; 10:550–561. [PubMed: 11822503]
5. Hermann C, Looney S. The effectiveness of symptom management in hospice patients during the last seven days of life. *J Hosp Palliat Nurs*. 2001; 3:88–96.
6. Kutner JS, Kassner CT, Nowels DE. Symptom burden at the end of life: hospice providers' perceptions. *J Pain Symptom Manage*. 2001; 21:473–480. [PubMed: 11397605]
7. Parker, Oliver D.; Wittenberg-Lyles, E.; Washington, K., et al. Hospice caregivers' concerns with pain: "I'm not a doctor and I don't know if I helped her go faster or slower". *J Pain Symptom Manage*. 2013 [Epub ahead of print].
8. Parker, Oliver D.; Wittenberg-Lyles, E.; Demiris, G., et al. Barriers to pain management: caregiver perception and pain talk by hospice interdisciplinary teams. *J Pain Symptom Manage*. 2008; 36:374–382. [PubMed: 18495415]
9. Smith A, Schonberg M, Fisher J, et al. Emergency department experiences of acutely symptomatic patients with terminal illness and their family caregivers. *J Pain Symptom Manage*. 2010; 39:972–981. [PubMed: 20434873]
10. Meeker M, Finnell D, Othman A. Family caregivers and cancer pain management: a review. *J Fam Nurs*. 2011; 17:29–60. [PubMed: 21343621]
11. Letizia M, Creech S, Norton E, Shanahan M, Hedges L. Barriers to caregiver administration of pain medication in hospice care. *J Pain Symptom Manage*. 2004; 27:114–124. [PubMed: 15157035]
12. Jaycox, A.; Carr, D.; Payne, R., et al. Clinical Practice Guideline. Rockville, MD: Agency for Health Care Policy and Research, U.S. Department of Health and Human Services; 1994. Management of cancer pain. No. 9 AHCPR Publication No. 94–0592
13. Lynn MR. Determination and quantification of content validity. *Nurs Res*. 1986; 35:382–386. [PubMed: 3640358]
14. Kruse RL, Parker Oliver D, Wittenberg-Lyles E, Demiris G. Conducting the ACTIVE randomized trial in hospice care: keys to success. *Clin Trials*. 2013; 10:160–169. [PubMed: 23104974]
15. Joreskog, KG.; Sorbom, D. LISREL 8: User's reference guide. Chicago, IL: Scientific Software International; 1996.
16. Confirmatory factor analysis for applied research. New York, NY: Guilford; 2006. Brown TA.
17. Beauducél A, Herzberg PY. On the performance of maximum likelihood versus means and variance adjusted weighted least squares estimation in CFA. *Struct Equ Modeling*. 2006; 13:186–203.
18. Hu LT, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Struct Equ Modeling*. 1999; 6:1–55.
19. Yu, C-Y.; Muthen, B. [Accessed April 5, 2013] Evaluation of model fit indices for latent variable models with categorical and continuous outcomes. Technical report. Available from [http://www.statmodel.com/download/Yudis\\_sertation.pdf](http://www.statmodel.com/download/Yudis_sertation.pdf)
20. Muthen, LK.; Muthen, B. Mplus version 7 base program and combination add-on. Los Angeles, CA: Muthen & Muthen; 2012.
21. Harrington, D. Confirmatory factor analysis. New York, NY: Oxford University Press; 2009.
22. Canrera-Nguyen P. Author guidelines for reporting scale development and validation results in the Journal of the Society for Social Work and Research. *J Soc Social Work Res*. 2010; 1:99–103.
23. Parker, Oliver D.; Porock, D.; Demiris, G.; Courtney, K. Patient and family involvement in hospice interdisciplinary teams. *J Palliat Care*. 2005; 21:270–276. [PubMed: 16483096]
24. Parker, Oliver D.; Demiris, G.; Wittenberg-Lyles, E., et al. Caregiver participation in hospice interdisciplinary team meetings via videophone technology: a pilot study to improve pain management. *Am J Hosp Palliat Care*. 2010; 27:465–473. [PubMed: 20299692]
25. Parker, Oliver D.; Albright, DL.; Washington, K., et al. Hospice caregiver depression: the evidence surrounding the greatest pain of all. *J Soc Work End Life Palliat Care*.

26. Di, Rosa M.; Kofahl, C.; McKee, K. A typology of caregiving situations and service use in family carers of older people in six European countries: the EUROFAMCARE study. *GeroPsych*. 2011; 24:5–18.
27. Perner A, Kohler N, Brahler E, Gorze H. Quality of life and satisfaction of family caregivers in palliative care—results of postmortem interviews with bereaved family members[Article in German]. *Z Psychosom Med Psychother*. 2012; 58:267–281. [PubMed: 22987493]
28. Csikós Á, Nagy L, Busa C, Kállai J. Important aspects of end-of-life care. Survey of patients visiting the primary care office. [Article in Hungarian]. *Orv Hetil*. 2011; 152:1082–1090. [PubMed: 21676675]
29. Andruccioli J, Russo M, Bruschi A. Death representation of caregivers in hospice. *Am J Hosp Palliat Care*. 2012; 29:531–535. [PubMed: 22241459]
30. Lau DT, Berman R, Halpern L, et al. Exploring factors that influence informal caregiving in medication management for home hospice patients. *J Palliat Med*. 2010; 13:1085–1090. [PubMed: 20836633]





**Fig. 1.**  
Hypothesized second-order model of factorial structure of the Caregiver Pain Medicine Questionnaire (CPMQ). Numbers in the blocks represent CPMQ items.

Table 1

Items in the Caregiver Pain Medicine Questionnaire

Second-Order Factor, First-Order Factor, Item	Proportion of Responses				
	1	2	3	4	5
Concern about reporting pain					
Fatalism					
3 Pain medicine cannot really control pain.	0.009	0.049	0.103	0.517	0.322
9 It is not realistic to expect that pain can be relieved.	0.003	0.060	0.078	0.534	0.325
Stoicism					
5 People in pain should not complain about their pain.	0.014	0.026	0.009	0.322	0.629
11 People in pain should be strong; they should take the medicine only when the pain is extreme.	0.003	0.075	0.020	0.460	0.443
Concern about administering analgesics					
Concern about addiction					
6 It is dangerous if hospice patients become addicted to pain medicine.	0.026	0.109	0.089	0.402	0.374
12 It is not a good idea for people to take pain medicine regularly because they can get addicted to it.	0.009	0.147	0.092	0.437	0.316
15 It a hospice patient becomes addicted to pain medicine, it is one more problem to have to deal with.	0.020	0.218	0.118	0.385	0.259
Concern about side effects					
1 People should take less than the prescribed dose of pain medication to avoid side effects.	0.023	0.103	0.124	0.460	0.290
4 It is easier to put up with pain than with the side effects that come from pain medicine.	0.006	0.043	0.144	0.483	0.325
7 Taking pain medication can cause a person to lose control.	0.017	0.204	0.279	0.353	0.147
10 Taking too much pain medicine can hasten a person's death.	0.023	0.201	0.250	0.330	0.195
13 It is better to have a good bowel movement than to get constipated with the pain medicine.	0.086	0.310	0.224	0.256	0.124
14 It is better to be alert and have pain than to be drowsy with the pain medicine.	0.011	0.075	0.141	0.506	0.267
16 When people who take pain medicine have nausea, it is really distressing.	0.055	0.529	0.184	0.167	0.066
Concern about tolerance					
2 It is not good when people need to take more of the pain medication as time goes on.	0.017	0.144	0.103	0.457	0.279
8 It is better to wait to take pain medication until it is really needed or else it will not work later.	0.009	0.141	0.118	0.437	0.296

1 = strongly agree; 2 = agree; 3 = undecided; 4 = disagree; 5 = strongly disagree.

**Table 2**Caregiver Characteristics ( $N = 352$ )

Characteristics	<i>n</i> (%)
Age, yrs, mean (SD)	59.45 (13.43)
Sex (female)	272 (77)
Marital status	350 (100)
Never married	32 (9)
Married	245 (70)
Separated	8 (2)
Divorced	43 (12)
Widowed	21 (6)
Other	1 (1)
Education	346 (100)
Some high school	33 (10)
High school/GED	81 (23)
Some college	95 (27)
Undergraduate degree	69 (20)
Graduate degree	60 (17)
Other	8 (3)
Race	352 (100)
American Indian	2 (1)
African American	20 (5)
Caucasian	329 (93)
Other	1 (1)
Employment status	344 (100)
Not employed	171 (49)
Part-time	36 (11)
Full-time	99 (28)
Volunteers	5 (2)
Other	33 (10)
Relationship to patient	349 (100)
Spouse	91 (26)
Adult child	176 (50)
Other	82 (24)

SD = standard deviation; GED = general educational development.

**Table 3**  
Correlation Coefficients, Means, Standard Deviations, Skewness, and Kurtosis of the CPMQ Items

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Correlation between items																
1	1.00															
2	0.59	1.00														
3	0.45	0.54	1.00													
4	0.52	0.52	0.58	1.00												
5	0.40	0.43	0.41	0.44	1.00											
6	0.58	0.59	0.45	0.56	0.50	1.00										
7	0.36	0.31	0.25	0.39	0.31	0.44	1.00									
8	0.51	0.49	0.41	0.56	0.41	0.56	0.36	1.00								
9	0.48	0.48	0.53	0.51	0.52	0.51	0.29	0.58	1.00							
10	0.31	0.32	0.30	0.38	0.30	0.37	0.43	0.39	0.38	1.00						
11	0.54	0.50	0.47	0.47	0.62	0.59	0.33	0.65	0.58	0.41	1.00					
12	0.56	0.55	0.49	0.58	0.54	0.68	0.42	0.58	0.62	0.42	0.71	1.00				
13	0.39	0.36	0.32	0.36	0.32	0.51	0.38	0.43	0.30	0.30	0.36	0.49	1.00			
14	0.45	0.48	0.44	0.48	0.44	0.54	0.35	0.54	0.51	0.44	0.54	0.59	0.50	1.00		
15	0.53	0.53	0.94	0.51	0.44	0.68	0.40	0.55	0.48	0.44	0.54	0.63	0.457	0.570	1.00	
16	0.21	0.098	0.104	0.194	0.081	0.210	0.243	0.193	0.144	0.199	0.135	0.236	0.390	0.262	0.330	1.00
Mean	3.89	3.84	4.10	4.08	4.55	3.99	3.40	3.87	4.12	3.48	4.26	3.91	3.01	3.95	3.66	2.64
SD	1.009	1.044	0.831	0.826	0.747	1.073	1.021	1.023	0.810	1.082	0.856	1.023	1.186	0.892	1.135	1.026
Skewness	-0.927	-0.800	-1.061	-0.847	-2.397	-1.032	-0.145	-0.744	-1.038	-0.197	-1.445	-0.785	0.103	-0.902	-0.478	0.789
Kurtosis	0.350	-0.184	1.461	0.764	7.465	0.275	-0.814	-0.337	1.24	-0.932	2.118	-0.333	-1.016	0.747	-0.957	-0.264

SD = standard deviation.

Table 4

## Unstandardized Parameter Estimates

<b>Model Results</b>				
<b>Factor, Item</b>	<b>Estimate</b>	<b>SE</b>	<b>Estimate/SE</b>	<b>Two-Tailed P-Value</b>
Fatalism by				
Item 3	1.000	0.000	999.000	999.000
Item 9	1.123	0.063	17.719	<0.001
Stoicism by				
Item 5	1.000	0.000	999.000	999.000
Item 11	1.269	0.090	14.124	<0.001
Addiction by				
Item 6	1.000	0.000	999.000	999.000
Item 12	1.040	0.033	31.582	<0.001
Item 15	0.944	0.034	27.506	<0.001
Side effects by				
Item 1	1.000	0.000	999.000	999.000
Item 4	1.015	0.047	21.625	<0.001
Item 7	0.731	0.056	13.108	<0.001
Item 10	0.758	0.059	12.814	<0.001
Item 13	0.826	0.060	13.834	<0.001
Item 14	1.014	0.048	20.911	<0.001
Item 16	0.429	0.066	6.476	<0.001
Tolerance by				
Item 2	1.000	0.000	999.000	999.000
Item 8	1.054	0.052	20.249	<0.001
Concern about reporting pain by				
Fatalism	0.642	0.035	18.410	<0.001
Stoicism	0.633	0.044	14.478	<0.001
Concern about administering analgesics by				
Addiction	0.795	0.022	36.129	<0.001
Side effects	0.696	0.028	25.026	<0.001
Tolerance	0.712	0.025	25.696	<0.001
Reporting with administering	0.963	0.023	42.452	<0.001
Variances				
Reporting	1.000	0.000	999.000	999.000
Administering	1.000	0.000	999.000	999.000
Residual variances				
Fatalism	0.064	0.031	2.061	0.039
Stoicism	0.083	0.028	3.007	0.003
Addiction	0.045	0.016	2.752	0.006
Side effects	0.034	0.015	2.222	0.026
Tolerance	-0.046	0.027	-1.672	0.095

SE = standard error.

Table 5

## Standardized Parameter Estimates

Model Results				
	Estimate	SE	Estimate/SE	Two-Tailed P-Value
Fatalism by				
Item 3	0.690	0.036	19.320	<0.001
Item 9	0.774	0.031	25.023	<0.001
Stoicism by				
Item 5	0.696	0.036	19.212	<0.001
Item 11	0.884	0.035	25.479	<0.001
Addiction by				
Item 6	0.823	0.020	41.062	<0.001
Item 12	0.856	0.020	43.622	<0.001
Item 15	0.777	0.023	34.344	<0.001
Side effects by				
Item 1	0.719	0.029	25.112	<0.001
Item 4	0.730	0.028	26.156	<0.001
Item 7	0.526	0.039	13.418	<0.001
Item 10	0.545	0.038	14.193	<0.001
Item 13	0.594	0.038	15.727	<0.001
Item 14	0.730	0.029	25.542	<0.001
Item 16	0.309	0.045	6.849	<0.001
Tolerance by				
Item 2	0.679	0.035	19.591	<0.001
Item 8	0.715	0.031	23.208	<0.001
Concern about reporting pain by				
Fatalism	0.930	0.032	28.629	<0.001
Stoicism	0.910	0.032	28.307	<0.001
Concern about administering analgesics by				
Addiction	0.967	0.012	78.705	<0.001
Side effects	0.967	0.014	67.326	<0.001
Tolerance	1.049	0.031	33.479	<0.001
Reporting with administering				
Variations				
Reporting	1.000	0.000	999.000	999.000
Administering	1.000	0.000	999.000	999.000
Residual variances				
Fatalism	0.135	0.060	2.233	0.026
Stoicism	0.172	0.058	2.944	0.003
Addiction	0.066	0.024	2.770	0.006
Side effects	0.065	0.028	2.330	0.020
Tolerance	-0.100	999.000	999.000	999.000

SE = standard error.



**Table 6**

## Internal Consistency of the CPMQ

Scales <sup>a</sup>	Number of Items <sup>b</sup>	Mean (SD) <sup>c</sup>	Cronbach's Alpha
Total	16	60.84 (9.66)	0.80
Concern about reporting pain	4	17.05 (2.32)	0.65
Fatalism	2	8.23 (1.38)	0.59
Stoicism	2	8.82 (1.33)	0.57
Concern about administering analgesics	12	43.73 (7.93)	0.78
Concern about addiction	3	11.55 (2.69)	0.78
Concern about side effects	7	24.46 (4.49)	0.75
Concern about tolerance	2	7.71 (1.72)	0.56

CPMQ = Caregiver Pain Medicine Questionnaire; SD = standard deviation.

<sup>a</sup>Each measures the average response to the items.

<sup>b</sup>Each item is scored from one (strongly agree) to five "strongly disagree."

<sup>c</sup>Means and SDs of raw scores.

Table 7

Reliability Estimates	$R^2$				
	Estimate	SE	Estimate/SE	Two-Tailed P-Value	Residual Variance
Observed variables					
Item 1	0.518	0.041	12.556	<0.001	0.482
Item 2	0.461	0.047	9.795	<0.001	0.539
Item 3	0.476	0.049	9.660	<0.001	0.524
Item 4	0.534	0.041	13.078	<0.001	0.466
Item 5	0.485	0.050	9.606	<0.001	0.515
Item 6	0.677	0.033	20.531	<0.001	0.323
Item 7	0.276	0.041	6.709	<0.001	0.724
Item 8	0.512	0.044	11.604	<0.001	0.488
Item 9	0.600	0.048	12.512	<0.001	0.400
Item 10	0.298	0.042	7.096	<0.001	0.702
Item 11	0.781	0.061	12.740	<0.001	0.219
Item 12	0.732	0.034	21.811	<0.001	0.268
Item 13	0.353	0.045	7.863	<0.001	0.647
Item 14	0.532	0.042	12.771	<0.001	0.468
Item 15	0.604	0.035	17.172	<0.001	0.396
Item 16	0.095	0.028	3.424	<0.001	0.905
Latent variables					
Fatalism	0.865	0.060	14.314	<0.001	
Stoicism	0.828	0.058	14.154	<0.001	
Addiction	0.934	0.024	39.353	<0.001	
Side effects	0.935	0.028	33.663	<0.001	
Tolerance	Undefined				

SE = standard error.