Original Article

Does Mode of Survey Administration Matter? Using Measurement Invariance to Validate the Mail and Telephone Versions of the Bereaved Family Survey

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Abstract

Context. The Veterans Health Administration evaluates outcomes of end-of-life (EOL) care using the Bereaved Family Survey (BFS). Originally, the BFS was administered as a telephone survey but was transitioned to a mail survey beginning October 2012. The transition necessitated an evaluation of the tool's validity using this new mode of administration.

Objectives. The objective of this study was to validate the mail version and to test for measurement invariance (MI) across the two administration modes.

Methods. Telephone and mail versions of the BFS were validated separately between October 2009 and September 2013. MI was evaluated using a series of confirmatory factor analyses (CFAs). Construct validity was evaluated by calculating Cronbach alpha coefficients and examining differences between BFS factor scores for groups with and without quality care indicators (e.g., receipt of a palliative care consult).

Results. Our sample consisted of 35,682 decedent BFS scores (27,109 telephone surveys; 8573 mail surveys). BFS item scores were slightly skewed, with a predominance of higher scores for both the telephone and mail version. The average missing rate for each BFS item was minimal, just 2% for each version. The CFA models demonstrated dimensional, configural, metric, and factor mean invariance across administration modes. BFS factor scores were consistently higher when a patient received EOL quality care indicators regardless of mode of administration.

Conclusion. These findings demonstrate the MI and robust psychometric properties for the BFS across administration modes. J Pain Symptom Manage 2016;51:546–556. *Published by Elsevier Inc. on behalf of American Academy of Hospice and Palliative Medicine.*

Key Words
End-of-life care, quality improvement, psychometric evaluation, measurement invariance, palliative care, Veterans health care

Introduction

Measuring the quality and outcomes of care is a ubiquitous feature of modern health care organizations. The measurement of key processes and outcomes serves multiple purposes: guiding quality improvement efforts, providing transparency, and increasingly, modifying payment for services.[1] Given the high stakes, it is imperative that performance measures are valid and reliable.

Since 2008, the Department of Veterans Affairs (VA) has used the Bereaved Family Survey (BFS) to evaluate the quality of care and outcomes of end-of-life (EOL) care for Veterans dying in 146 inpatient VA facilities across the U.S. and Puerto Rico. The BFS was adapted

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from the Family Assessment of Treatment at EOL—Short Form (FATE-S), which was validated in several studies.[2–4] Both the FATE-S and BFS were administered by telephone interview. In 2012, however, the BFS was transitioned predominantly to a mail survey.

Many surveys use multiple modes of administration that typically encompass mail, phone, and/or web-based approaches. The choice of administration mode is influenced by financial considerations (e.g., a mail survey is cheaper to administer than a phone survey), survey topic, and the desire to maximize response rates. Although the survey items may be the same across all formats, the mode of administration can affect survey results in two important ways. First, it can influence the type of person who responds. For example, a person with limited literacy skills and/or visual impairments may be less likely to complete a mail survey than a phone survey; thus, the respondent sample changes with the mode of administration.[5] Second, administration mode can alter the type of responses that people give.[5] For example, self-administration (via mail or computer-based surveys) allows more time for contemplation and may remove the possibility for social desirability bias by fostering a sense of anonymity. This may allow respondents to feel more comfortable providing honest and negative feedback.[5–8]

These differences in how people think about and respond to questions based on survey format raise important questions about measurement invariance across modes of administration.[9] Measurement invariance (MI) exists when the relationships between observed variables and latent variables are the same across samples.[10,11] If the types of instruments function differently across administration modes—in other words, if they are not equivalent[12]—then combining or comparing data from the different groups can yield biased results and lead to erroneous conclusions.[13,14]

MI is critical to all patient-/family-reported measures, including the BFS. The VA Hospice and Palliative Care office directs an integrated quality improvement program to reduce variation in care practices across facilities and to identify and promulgate evidence-based practices that enhance patient outcomes. The BFS is a core element in this effort, and one global-rating item is a National Quality Forum–endorsed palliative care performance measure.[15] An adapted BFS also has been used by non-VA palliative care programs to evaluate quality.[16] Thus, establishing validity and MI for all versions of the measure is critical to ongoing quality improvement and accountability efforts.

The purpose of this study was twofold: 1) to examine the validity of the mail and phone versions of the BFS, and 2) to test for MI across the two modes of administration. Specifically, we evaluated differences in the types of responses given; that is, do people understand and respond to items differently based on whether they are delivered orally by phone or in a written survey? We did not focus on the differences in who responded because we have examined nonresponse bias in previous analyses.[17,18]

Methods

Sample and Data Sources

The data used in this study were collected as part of a national VA quality improvement program called Performance Reporting Outcomes Measurement to Improve the Standard of Care at End of life (PROMISE) (http://www.cherp.research.va.gov/PROMISE/PROMISE_ Methods.asp). This study included patients who died in 146 VA Medical Centers (VAMCs) nationwide between October 2009 and September 2013. Inpatient deaths were retrieved from national VA databases, a method that identifies over 95% of decedents.[3,19] Inpatient units included all beds in acute care, intensive care, hospice-palliative care, and community living center (i.e., VA nursing home) settings. Human subjects approval for this secondary analysis of PROMISE data was obtained from the Philadelphia VAMC institutional review board.

Data were collected for all decedents with the following exceptions: patients who died within 24 hours of admission and/or in the emergency department unless they had been admitted to a VAMC in the preceding month, and patients who died as a result of suicide or accident. During infrequent periods when the number of deaths exceeded interviewers' capacity to conduct interviews, patients were selected at random for omission from the sample.

For each patient, the potential respondent was identified in the following hierarchy: 1) patient's primary next of kin (NOK), 2) patient's secondary NOK, and 3) patient's emergency contact listed in the electronic medical record (EMR). The NOK or emergency contact was presumed the most likely person to be able to evaluate the Veteran's care. However, for both telephone and mail administration modes, our contact letters and phone calls included a standardized statement that invited NOKs or emergency contacts to identify a more knowledgeable person if they lacked direct experience with the Veteran during the last month of life. In these cases, we obtained contact information for the alternate respondent and restarted the data collection process.

Bereaved Family Survey

The BFS contains 19 items; 16 forced-choice items focus on specific aspects of care. One item, which is