

Reliability and Validity of a Tool to Assess Oncology Nurses' Experiences With Prognosis-Related Communication

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Communication with patients and families regarding a cancer diagnosis or recurrence generally includes a discussion of prognosis. Prognosis-related communication includes estimates of likelihood of cure, how long the patient is expected to live, and the kind of life the patient will have, among other issues (Mack, Wolfe, Grier, Cleary, & Weeks, 2006). This information is often presented during several separate discussions with members of the healthcare team, consisting of the patient's physician (MD) and often the nurses caring for the patient (Clayton et al., 2007; Hancock et al., 2007). This type of communication can be challenging to deliver and receive, and it can have a significant impact on decision making (Innes & Payne, 2009) and the maintenance of hope (Clayton et al., 2008; Mack et al., 2006). To date, examination of nurses' experiences with this process has been limited and, therefore, the creation of robust instruments to measure such experiences and their impact on nurses and patient care are essential. The purpose of this study is to analyze a previously developed survey instrument, Ethical Dilemmas and Prognosis-Related Communication in Oncology Nursing: A Survey of Oncology Nursing Professionals (Helft, Chamness, Terry, & Uhrich, 2011), in an effort to determine whether the individual items in the scale can be aggregated into a valid and reliable measure of nurses' experiences with prognosis-related communication.

Background

Since the 1970s, a shift has occurred; the physician is no longer the keeper of all medical information, rarely sharing with patients and families the details of a diagnosis and its treatment (Kaplowitz, Campo, & Chiu, 2002). In the current healthcare environment, patients are routinely informed of their diagnoses (Innes & Payne, 2009) and are often active participants in decision making related to their care

Purpose/Objectives: To establish the reliability and validity of a previously developed survey measuring nurses' experiences with prognosis-related communication.

Design: Psychometric testing of survey.

Setting: Mailed survey of Oncology Nursing Society (ONS) members.

Sample: 392 ONS members.

Methods: Reliability was analyzed using Cronbach's alpha. Total scale and subscale characteristics were evaluated through inter-item correlation matrices, average inter-item correlations, corrected item-to-total correlations, and Cronbach's alpha coefficients if the items were removed. Construct validity was assessed using exploratory factor analysis and contrasted group comparisons.

Main Research Variables: Measures of attitudes toward prognosis-related communication, demographic variables.

Findings: A three-factor structure emerged with acceptable reliability and validity. Contrasted group comparisons revealed differences in prognosis-related communication by nurses' years of experience with patients with cancer, level of education, and extent of education about prognosis-related communication.

Conclusions: The final three-factor instrument, Prognosis-Related Communication in Oncology Nursing, was found to have acceptable reliability and validity.

Implications for Nursing: The final instrument can serve as a tool to measure nurses' experiences with prognosis-related communication. Such measurements may guide interventions that aim to improve the process of prognostic disclosure and elucidate the role of the nurse in the process.

Key Words: prognosis; nurses' experiences; disclosure; communication

ONF, 42(1), 64–73. doi: 10.1188/15.ONF.64-73

(Clayton et al., 2007). Patients want to be knowledgeable regarding their diagnoses and the treatment options that are available to them (Hagerty, Butow, Ellis, Dimitry, & Tattersall, 2005). A key aspect of participating in health care, particularly in the setting of life-limiting illness, is accurate understanding

of prognosis (Kiely, Stockler, & Tattersall, 2011). The communication of such information can have a significant impact on a patient's ability to cope with illness and engage in treatment-related decision making (Innes & Payne, 2009); therefore, the manner in which information is conveyed is critical.

The initial disclosure of prognostic information is generally considered the purview of the MD (Dewar, 2000). Consequently, patients and families rely on the MD to disseminate life-altering information. Prognostic disclosure is a process that involves numerous conversations among patients, families, MDs, and other healthcare providers (Clayton et al., 2007; Hagerty, Butow, Ellis, Dimitry, et al., 2005; Hagerty, Butow, Ellis, Lobb, et al., 2005; Lamont & Christakis, 2003). These exchanges occur before, during, and after the news is delivered (Warnock, Tod, Foster, & Soreny, 2010). Patients are often in a state of shock when prognostic information is initially conveyed, and recall of the conversation with the MD may be limited (Dewar, 2000). Patients and family members often turn to the nursing staff for clarification of the information presented (Rassin, Levy, Schwartz, & Silner, 2006). The nurse may or may not have been present for such discussions and is often in a position of vulnerability, attempting to be truthful with the patient but not conveying information that is different from what was presented by the MD (Helft et al., 2011).

For patients with life-threatening illnesses, the nurse plays an essential role, helping to translate information provided by the MD and assisting the patient and family to make sense of the illness and its treatment. When patients are hospitalized, nurses provide 24-hour care, attending to the patient's physical, psychosocial, and spiritual needs (Neuman & Fawcett, 2011). In the outpatient oncology setting, nurses are generally the primary contact person for patients, serving as facilitators and navigators. If the nurse is not present for key discussions regarding the patient's diagnosis and prognosis, the nurse is potentially placed in a position of disadvantage because uncertainty may exist with how to best advocate and assist the patient and family in decision making and care planning (Helft et al., 2011; Tobin, 2012).

Helft et al. (2011) described adult oncology nurses' experiences with prognosis-related communication. In the article, the authors reported the results of a mailed survey, which was administered to members of the Oncology Nursing Society (ONS). Content validity was established, but no further psychometric testing was performed on the instrument. The survey, which consists of the compilation of single-item questions regarding the topic, was identified as a potential instrument to measure nurses' experiences with prognosis-related communication. Therefore, the aim of this study was to

analyze the psychometric properties of the instrument to determine its potential use in future studies.

Methods

The original study by Helft et al. (2011) employed a cross-sectional mailed survey sent to a random sample of ONS members and was designed to assess oncology nurses' attitudes toward prognosis-related communication and experiences of the quality of such communication with patients and MDs. Surveys were printed in booklet form and mailed with a self-addressed return envelope to potential participants.

The primary research question for the current study was to identify the reliability and validity characteristics of the Ethical Dilemmas and Prognosis-Related Communication in Oncology Nursing: A Survey of Oncology Nursing Professionals instrument (Helft et al., 2011).

Instrument

The survey instrument (Helft et al., 2011) was developed following an extensive review of the literature, iterative discussions among team members, and informal discussions with practicing oncology nurses. Content validity was established by administering the instrument to a cohort of 20 practicing oncology nurses. Items that were difficult to understand, questions that were identified as ambiguous, and items perceived to be unclear, invalid, or inconsistent with nurses' experiences were altered or discarded to create the final instrument.

The final instrument specified in the instructions that nurses should consider their work with patients with advanced cancer when completing the survey. *Patients with advanced cancer* were defined as "patients with incurable cancer, terminal cancer, or life-ending cancer diagnoses" (Helft et al., 2011, p. 740). Helft et al. (2011) also defined prognosis-related communication. *Prognosis* was referred to as "a numerical estimate of life expectancy" (p. 470), and they directed the respondents to think of *prognosis-related communication* as "communication about how long a patient has to live" (p. 470).

The instrument includes two sections and a demographic questionnaire (see Table 1). Section 1 includes 20 fixed-response items using a four-point Likert-type scale that measures the extent of disagreement or agreement (strongly disagree to strongly agree). Section 2 lists 14 items with a five-point Likert-type scale to measure frequency (i.e., always/almost always, often, sometimes, rarely, and never). For a full version of the survey, please email the first author of this article. Demographic questions included respondent age, gender, race or ethnicity, years as a nurse, years working with patients with cancer, highest level of education achieved, oncology nursing certification, primary

Table 1. Survey Items in Sections 1 and 2 With Descriptive Statistics

ID	Item	N	Range	\bar{X}	SD
S1Q1 ^a	Patients can only make good decisions about their care if they understand their prognosis.	385	1–4	1.6	0.7
S1Q2 ^a	Patients can only make good decisions about hospice enrollment if they understand their prognosis.	385	1–4	1.5	0.6
S1Q3 ^a	Patients can only make good decisions about further anticancer treatments, including clinical trial participation, if they understand their prognosis.	384	1–4	1.5	0.7
S1Q4	I feel that oncology nurses have a responsibility to help patients prepare for the end of their life.	385	1–4	1.4	0.6
S1Q5 ^a	When asked questions about life expectancy by patients, oncology nurses should provide an estimate.	385	1–4	3	0.7
S1Q6 ^a	I feel it is primarily the physician's responsibility to discuss the prognosis with the patient.	386	1–4	3.3	0.8
S1Q7 ^a	I feel comfortable telling a patient he or she will probably die from cancer if he or she asks me.	382	1–4	2.4	0.9
S1Q8 ^a	I am willing to initiate a discussion with patients regarding PRI.	384	1–4	2.3	0.8
S1Q9	Uncertainty about my role in communicating about PRI is a major barrier to helping patients and families understand their prognosis.	384	1–4	2.4	0.8
S1Q10 ^a	I feel that answering questions about PRI is within the scope of nursing practice.	383	1–4	2.1	0.7
S1Q11	I feel it is my responsibility to initiate a discussion with physicians about a patient's prognosis if the patient has questions about his or her prognosis.	386	1–4	1.4	0.6
S1Q12 ^a	I feel well equipped to discuss PRI with patients with advanced cancer.	386	1–4	2.2	0.8
S1Q13 ^a	Generally, oncology nurses have enough knowledge to answer questions from patients with advanced cancer about their prognosis.	385	1–4	2.2	0.7
S1Q14 ^a	I am comfortable providing an estimated life expectancy to patients who ask.	384	1–4	3	0.8
S1Q15	Oncology nurses should have more education on how to handle prognosis-related questions.	385	1–3	1.7	0.6
S1Q16	Lack of time is a major barrier to discussing PRI with patients and families.	368	1–4	2.7	0.8
S1Q17	Fear of taking away patients' hope is a major barrier to discussing PRI with patients and families.	366	1–4	2.8	0.7
S1Q18 ^a	Physician discomfort with giving bad news is a major barrier to helping patients and families understand their prognosis.	364	1–4	3	0.8
S1Q19 ^a	Most of the doctors I work with are skilled at discussing PRI with patients with advanced cancer.	366	1–4	2	0.8
S1Q20 ^a	I cannot advocate for my patients as well as I would like to when they don't understand their prognosis.	357	2–4	2.9	0.7
S2Q1 ^a	How often do you care for patients with advanced cancer who do not appear to understand their prognosis?	368	1–5	3.4	0.7
S2Q2 ^a	How often do the doctors you work with keep you informed about what they have told patients about their prognosis?	368	1–5	2.7	1.1
S2Q3 ^a	How often do you feel pressure not to provide information about prognosis to patients who ask because you do not want to contradict what the doctors have said?	368	1–5	2.7	1.1
S2Q4	How often do you know how much your patients understand their prognosis?	388	1–5	3.3	0.8
S2Q5	How often do patients ask you questions that suggest they want more information about their prognosis?	389	2–5	3.6	0.7
S2Q6 ^a	How often are the patients you care for given prognostic information early enough in their terminal illness to allow them to make informed choices about their care?	388	1–5	2.5	1

(Continued on the next page)^a Items included in Prognosis-Related Communication in Oncology Nursing survey

PRI—prognosis-related information; Q—question; S—Section

Note. Scales range from 1–4 for Section 1 questions and 1–5 for Section 2 questions.

Note. Based on information from Helft et al., 2011.

Table 1. Survey Items in Sections 1 and 2 With Descriptive Statistics (Continued)

ID	Item	N	Range	\bar{X}	SD
S2Q7	How often do you avoid talking with patients about PRI because you are uncomfortable giving bad news?	389	1–5	2.4	0.9
S2Q8	How often do cultural barriers prevent you from sharing PRI with patients?	389	1–5	2.5	0.8
S2Q9	How often do you feel ethically conflicted when patients or families ask prognosis-related questions?	387	1–5	2.6	0.9
S2Q10	How often do you ask your patients if they have a written advanced directive?	389	1–5	2.3	1.4
S2Q11	How often are you present when doctors discuss PRI with patients?	389	1–5	3.2	1.1
S2Q12 ^a	How often do the doctors you work with address end-of-life issues, including prognosis, with patients with advanced cancer early in the course of the disease?	381	1–5	2.9	1
S2Q13	When patients do not appear to understand their prognosis, how often is it because they are in denial?	389	1–5	3.4	0.7
S2Q14 ^a	When patients do not appear to understand their prognosis, how often is it because their physicians have not discussed it with them fully?	386	1–5	3	0.9

^a Items included in Prognosis-Related Communication in Oncology Nursing survey

PRI—prognosis-related information; Q—question; S—Section

Note. Scales range from 1–4 for Section 1 questions and 1–5 for Section 2 questions.

Note. Based on information from Helft et al., 2011.

practice setting, number of oncologists in the respondent's practice, and the amount of formal education regarding prognosis-related communication.

Sample

In May 2007, the survey was mailed to 1,338 randomly selected members of ONS, all of whom had at least one year of experience as an oncology nurse. Three hundred and ninety-four nurses returned complete surveys for a response rate of 29%. Three hundred and ninety-two surveys were deemed evaluable for psychometric analysis because two had only demographic data. The majority of nurses were Caucasian ($n = 338$, 89%) and female ($n = 371$, 97%). The mean age was 47.9 years with an average of about 14 years caring for patients with cancer. Forty percent of nurses ($n = 154$) had a bachelor of nursing degree, 29% ($n = 112$) had an associate degree, and 17% ($n = 65$) had a master of nursing degree. Most of the nurses worked in the outpatient setting ($n = 227$, 61%). Seventy-seven percent of nurses ($n = 295$) indicated they had never received education regarding prognosis-related communication or, if they had, it was only a "little bit." A detailed description of the sample was provided by Helft et al. (2011).

Procedure

After formal agreements were signed, survey data obtained by the original study team (Helft et al., 2011) were transferred electronically via a password-protected file to the current study's principal investigator

(PI). The initial study underwent review and approval by the institutional review board (IRB) at Indiana University–Purdue University at Indianapolis. Because the data received for this analysis were completely deidentified, a letter of determination from the PI's university IRB indicated that further IRB approval was not required.

Data Analysis

All analyses were conducted using SPSS®, version 22. Twelve of the 34 survey items were reverse coded to ensure all responses were consistent in direction (i.e., lower scores indicated positive [desired] responses and higher scores represented negative [undesired] responses). Item and scale statistics were calculated using descriptive statistics. Reliability of the instrument was analyzed using Cronbach's alpha. In addition, total scale and subscale characteristics were evaluated through inter-item correlation matrices, average inter-item correlations, corrected item-to-total correlations, and Cronbach's alpha coefficients if the items were removed (DeVellis, 2003). Construct validity was assessed using principal components analysis with varimax rotation (Tabachnick & Fidell, 2001).

Construct validity was also evaluated with contrasted group comparisons. Contrast group comparisons were conducted using t tests for independent samples. Based on the review of the literature, it was hypothesized that nurses with more than 10 years of experience working with patients with cancer (Dunniece & Slevin, 2000), higher levels of education (master's degree or higher)

(Reinke, Shannon, Engelberg, Young, & Curtis, 2010), and previous moderate to large amounts of education regarding prognosis-related communication (McLenon, Uhrich, Lasiter, Chamness, & Helft, 2013) would have significantly lower (more positive) scores on the instrument.

Results

Item, Scale, and Initial Reliability Characteristics

Item means ranged from 1.4–3.6. The average item mean for the total scale was 2.5. The average item mean of Section 1 was 2.3, and the average item mean of Section 2 was 2.8, both slightly higher (more negative responses) than the midpoints of their respective scaling formats.

For the total scale, the average inter-item correlation was 0.1, and inter-item correlations ranged from –0.35 to 0.65. For Section 1, the average inter-item correlation was 0.12, with individual inter-item correlations ranging from –0.33 to 0.65. For Section 2, the average inter-item correlation was 0.15, with individual inter-item correlations ranging from –0.3 to 0.6. Corrected item-to-total correlations were –0.12 to 0.5 for the total scale. Corrected item-to-total correlations for Section 1 were –0.12 to 0.58 and –0.08 to 0.62 for Section 2.

Raw and standardized Cronbach's alphas were performed for the total scale and the individual sections. Despite four- and five-point scales for Sections 1 and 2, respectively, no significant differences were observed between raw and standardized scores (DeVellis, 2003); therefore, raw scores will be reported throughout the results. Cronbach's alpha for the total scale was 0.78, and Cronbach's alpha for Sections 1 and 2 was 0.72 for both. The coefficient alpha did not increase by more than 0.1 if any of the items were deleted.

Construct Validity

Principal components analysis with varimax rotation was used to identify the underlying factor structure. Because of possible correlations among factors, principal axis extraction with direct oblimin rotation was also performed with limited differences in resulting factor structures. Because of the large sample size, the variables-to-cases ratio was deemed adequate (Tabachnick & Fidell, 2001). The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.822, indicating that the sample size was sufficient for principal components analysis. Similarly, Bartlett's test of sphericity was significant ($p < 0.001$), indicating sufficient correlation between the variables to proceed with the analysis.

The Kaiser-Guttman retention criteria of retaining eigenvalues greater than 1 (Kaiser & Norman, 1991) resulted in an eight-component unrotated solution

that explained 57% of the variance. Review of the scree plot revealed a break after the fifth component (Cattell, 1966). A five-component solution accounted for 47% of the variance. Because cross loading on multiple factors was identified for a few items, factor analysis for a forced four-component solution was also performed. Ultimately, a five-factor structure combining items from Sections 1 and 2 provided the best theoretically interpretable distribution of factor loadings.

Communalities ranged from 0.19–0.713. Factor 1 (eigenvalue = 5.24) accounted for 15% of the variance and had nine items, factor 2 (eigenvalue = 4.8) accounted for 14% of the variance and had nine items, factor 3 (eigenvalue = 2.45) accounted for 7% of the variance and had six items, factor 4 (eigenvalue = 1.77) accounted for 5% of the variance and had four items, and factor 5 (eigenvalue = 1.62) accounted for 5% of the variance and had six items. The 34 items, their factor correlations (rotated loadings), communality estimates, and item-total correlations can be found in Table 2.

The rotated component matrix was also reviewed. Loadings were reviewed for each item. Six items were initially deleted because factor loadings were less than 0.4 (S1Q11, S1Q15, S1Q17) (DeVon et al., 2007; Tabachnick & Fidell, 2001) or items appeared to load on more than one factor (Tabachnick & Fidell, 2001) and were not theoretically consistent with other items within the factor (S1Q4, S2Q5, S2Q9). Reliability analyses were then performed on the revised instrument and the five different factors. Cronbach's alpha for the total scale was 0.77. Cronbach's alpha for factor 1 was 0.84, 0.81 for factor 2, 0.76 for factor 3, 0.5 for factor 4, and 0.4 for factor 5. Because factors 4 and 5 did not meet the minimum criteria of 0.7 for a subscale (Polit, 2009), these two factors were deemed unreliable and were eliminated with their associated items. This elimination resulted in a stable, three-factor structure.

Principal components analysis with varimax rotation was then performed on a forced three-factor structure. The three-factor structure accounted for 50% of the variance. Factor 1, MD communication (eigenvalue = 4.12), accounted for 21% of the variance; factor 2, RN role (eigenvalue = 3.66), accounted for 18% of the variance; and factor 3, decision making (eigenvalue = 2.31), accounted for 12% of the variance. The rotated three-factor solution is presented in Table 3. Cronbach's alpha for the total scale was 0.75, which is deemed acceptable for new instruments (DeVellis, 2003). No further items were recommended for elimination based on review of alpha if item deleted values. For factor 1, the average inter-item correlation was 0.4 (range = 0.22–0.6). The corrected item-total correlations ranged from 0.45–0.7. Cronbach's alpha for factor 1 was 0.84. For factor 2, the average inter-item correlation was 0.34 (range = 0.16–0.62). The corrected item-total correlations ranged

Table 2. Factor Loadings, Communalities, and Item-Total Correlations

Item ID	F1	F2	F3	F4	F5	Comm	Corrected ITC
S1Q1	-0.011	0.036	0.811	0.032	-0.018	0.661	0.15
S1Q2	0.003	0.014	0.815	0.003	0.071	0.669	0.14
S1Q3	0.02	0.039	0.84	-0.01	0.073	0.713	0.18
S1Q4	-0.115	0.331	0.427	0.172	0.102	0.345	0.26
S1Q5	0.01	0.594	0.111	-0.141	-0.147	0.407	0.25
S1Q6	0.075	0.498	-0.203	-0.035	0.034	0.297	0.24
S1Q7	-0.051	0.687	0.152	0.172	0.085	0.534	0.43
S1Q8	-0.068	0.62	0.077	0.271	0.216	0.515	0.46
S1Q9	0.239	0.353	-0.197	0.195	0.443	0.455	0.42
S1Q10	-0.104	0.696	0.066	0.038	0.045	0.504	0.34
S1Q11	-0.051	0.38	0.19	0.18	0.096	0.225	0.3
S1Q12	-0.004	0.693	0.008	0.303	0.169	0.601	0.5
S1Q13	0.066	0.5	0.018	-0.031	0.02	0.256	0.27
S1Q14	-0.011	0.738	0.062	0.053	-0.124	0.566	0.37
S1Q15	-0.245	0.104	0.3	-0.089	-0.29	0.253	-0.12
S1Q16	0.066	-0.171	0.048	0.427	0.419	0.393	0.17
S1Q17	-0.044	0.09	0.044	0.171	0.386	0.19	0.18
S1Q18	0.628	-0.136	-0.142	-0.087	0.073	0.446	0.18
S1Q19	0.728	0.018	0.072	0.021	-0.079	0.542	0.34
S1Q20	-0.41	0.102	0.459	-0.014	-0.099	0.399	-0.11
S2Q1	0.521	-0.054	-0.013	-0.068	0.317	0.38	0.28
S2Q2	0.563	0.214	-0.026	0.474	-0.072	0.593	0.51
S2Q3	0.602	0.17	-0.12	0.209	0.243	0.508	0.48
S2Q4	0.299	0.235	0.0	0.536	0.242	0.49	0.51
S2Q5	0.411	-0.207	-0.093	-0.346	0.076	0.346	-0.05
S2Q6	0.777	-0.027	0.009	0.033	-0.117	0.619	0.31
S2Q7	-0.027	0.479	-0.03	0.186	0.533	0.55	0.44
S2Q8	0.138	-0.027	0.156	-0.211	0.542	0.383	0.14
S2Q9	0.454	0.275	-0.056	-0.08	0.497	0.539	0.45
S2Q10	-0.252	0.142	0.071	0.603	-0.123	0.467	0.09
S2Q11	0.21	0.088	-0.028	0.68	-0.021	0.516	0.34
S2Q12	0.725	-0.013	0.06	0.18	-0.107	0.574	0.35
S2Q13	-0.218	-0.009	0.012	-0.188	0.463	0.298	-0.06
S2Q14	0.799	0.001	-0.13	-0.026	0.021	0.656	0.34

Comm—communality; F—factor; ITC—item-total correlation; Q—question; S—Section
 Note. Based on information from Helft et al., 2011.

from 0.33–0.62, and Cronbach’s alpha was 0.81. For factor 3, the average inter-item correlation was 0.45 (range = 0.23–0.66). The corrected item-total correlations ranged from 0.32–0.68, and Cronbach’s alpha was 0.76. Correlation between factors was found to be low (see Table 4). Factor-to-total scale correlations were high for factors 1 ($r = 0.73$) and 2 ($r = 0.65$), and low but statistically significant for factor 3 ($r = 0.23$), indicating distinct dimensions of the same underlying construct.

Construct validity was further assessed by testing hypotheses of expected differences in total and subscale scores between groups within the study sample (see Table 5). Nurses who had worked with patients with cancer for more than 10 years, had a master’s degree or higher, and had a moderate to high amount of education regarding prognosis-related communication scored significantly lower on RN role, indicating increased comfort and confidence in the RN role in relation to prognosis-related communication. In contrast to expectations, no significant differences were found with regard to MD communication or decision making. Total scale scores were significantly different (lower) for nurses who had worked with patients with cancer for more than 10 years, had a master’s degree or higher, and had a moderate to high amount of education regarding prognosis-related communication.

Discussion

Through psychometric testing, the revised three-factor, 20-item survey instrument, Ethical Dilemmas and Prognosis-Related Communication in Oncology Nursing: A Survey of Oncology Nursing Professionals (Helft et al., 2011), appears to be a valid and reliable measure of oncology nurses’ experiences with prognosis-related communication. Originally created as single-item questions without an underlying theoretical structure, a five-factor structure emerged during factor analysis, of which three factors

Table 3. Rotated Factor Matrix With Three Factors

Item ID	MD Comm	RN Role	Decision Making
S1Q1	–	–	0.833
S1Q2	–	–	0.821
S1Q3	–	–	0.866
S1Q5	–	0.544	–
S1Q6	–	0.47	–
S1Q7	–	0.733	–
S1Q8	–	0.691	–
S1Q10	–	0.706	–
S1Q12	–	0.769	–
S1Q13	–	0.497	–
S1Q14	–	0.724	–
S1Q18	0.641	–	–
S1Q19	0.737	–	–
S1Q20	–	–	0.457
S2Q1	0.564	–	–
S2Q2	0.62	–	–
S2Q3	0.634	–	–
S2Q6	0.772	–	–
S2Q12	0.744	–	–
S2Q14	0.797	–	–

MD Comm—physician communication; Q—question; S—Section

were deemed stable for use in future measurement: MD communication, RN role, and decision making.

The first factor, MD communication, consists of eight items and explores the dynamics of MD communication with patients regarding prognosis. Items include concepts surrounding early disclosure of prognosis-related information, MD comfort with such communication, and the extent to which the MD keeps the nurse informed of discussions. Items are framed with the desired goal of patient understanding of prognosis, which is presumed to be affected by clear communication by the MD. An exemplar item includes, “When patients do not appear to understand their prognosis, how often is it because their MDs have not discussed it with them fully?”

The second factor, RN role, includes eight items and addresses nurse comfort with different aspects of prognosis-related discussions as well as perceptions regarding the nurse’s role in the process. Examples of items include, “I am comfortable with providing an estimated life expectancy to patients who ask,” and, “I feel well equipped to discuss prognosis-related information with patients with advanced cancer.”

The third factor, decision making, includes four items. Three of the items directly link “good” decision making regarding different aspects of care to understanding of prognosis. The final item was, “I

cannot advocate for my patients as well as I would like to when they do not understand their prognosis.” Nurse advocacy is conceptually linked with decision making. To enhance and solidify the factor loading, the item may benefit from clarification of the wording to more clearly reflect nurse advocacy as assisting patients in decision making.

The fourth and fifth factors were eliminated because of low reliability and lack of conceptual clarity. The fourth factor consisted of four items with loadings of 0.536–0.68. Although the loadings were acceptable, the items appeared incongruent and the factor and its associated items were deleted. In addition, Cronbach’s alpha was only 0.5 for this factor. In the fifth factor, which conceptually describes barriers to prognosis-related communication, loadings ranged from 0.443–0.542, which was not excellent but seemed to indicate that the items relate to the factor fairly well (Comfrey & Lee, 1992). However, some items within this factor also loaded on other factors. The reliability of this factor was low, with a Cronbach’s alpha of only 0.4. The concept of barriers to prognosis-related communication is important in determining the extent to which perceived barriers may exist in the practice setting. Development of an adequate measure to document such barriers may prove meaningful for future work. Ultimately, 14 of the 34 items were deleted from the instrument, resulting in a 20-item instrument with three subscales.

One of the three contrasted group comparisons exhibited results in the expected direction. As anticipated, nurses with more experience and education scored lower, or had more positive responses, on items regarding the nurse’s role in the process of prognosis-related communication. Experience and education did not affect scoring in regards to nurses’ perceptions of MD communication or decision making. The lack of difference may be because MD communication and patient decision making are largely out of the nurse’s control; therefore, individual nurse factors will not affect scores as much as observations of MD and patient behaviors. In the future, collecting data on levels of interdisciplinary collaboration

Table 4. Inter-Item and Inter-Scale Correlations for Three Factors

Factor	Item-Total Correlations	Inter-Scale Correlations			
		MD Comm	RN Role	Decision Making	Total Scale
MD comm.	0.22–0.51	–	0.04	–0.19**	0.73**
RN role	0.21–0.4	0.04	–	0.13*	0.65**
Decision making	–0.12–0.19	–0.19**	0.13*	–	0.23**
Total Scale	–	0.73**	0.65**	0.23**	–

* Correlation is significant at less than 0.05; ** Correlation is significant at less than 0.01.

MD Comm—physician communication

and patient decision making may allow for better evaluation of the construct validity of these factors.

The final instrument, more succinctly titled Prognosis-Related Communication in Oncology Nursing, can be used for future exploration of oncology nurses' experiences with prognosis-related communication. When scoring the instrument, a composite score can be calculated after standardizing all scores to account for differences in the scaling formats. Composite scores will provide an overall indication of the construct of prognosis-related communication. Consideration should be given to revising the scaling format of the questions to make item responses numerically consistent, which would allow for simpler scoring. Calculation of subscale scores will allow future investigators to independently examine and measure nurses' experiences with MD communication, RN role, and patient decision making, all within the context of prognosis-related communication. Currently, lower scores on the entire instrument and each of the subscales indicate a more positive response. Lower scores on the MD communication subscale indicate that nurses agree that the MDs with whom they work generally disclose prognostic information to patients, do so early in the course of the disease, and generally keep the nurses involved in such discussions. A lower score on the RN role subscale implies that nurses feel well equipped and comfortable initiating and responding to prognosis-related discussions with patients and families. Lower scores on the decision-making subscale would suggest that nurses identify prognosis-related communication as assistive and integral for patient decision making regarding care. For ease of interpretation, the scale scoring could be reversed in the future to have higher scores indicate more positive experiences.

Limitations

This instrument was originally developed with single-item questions without any intent to develop a

composite measure of prognostic communication as a construct. The two separate portions of the survey were developed with different responses, making it potentially difficult to combine the two Sections. Items from both Sections factored together on several of the components including MD communication and

Table 5. Contrasted Group Comparisons Using Demographic Variables

Factor or Scale	Groups	n	\bar{X}	SD	Test Statistics
Years Worked With Patients With Cancer					
MD communication	0–10 years	149	22.7	5.2	t (337) = 1.2 p = 0.23
	Greater than 10 years	190	22.1	5.1	
RN role	0–10 years	158	21.9	3.7	t (358) = 5.78 p = 0.00
	Greater than 10 years	202	19.5	3.9	
Decision making	0–10 years	155	7.5	3.1	t (346) = -0.01 p = 0.99
	Greater than 10 years	193	7.5	2	
Total scale score	0–10 years	144	51.9	6.3	t (324) = 3.9 p = 0.00
	Greater than 10 years	182	49	7	
Highest Level of Education					
MD communication	ADN or BSN	240	22.6	5.1	t (294) = 1.68 p = 0.1
	MSN or PhD	56	21.3	5.4	
RN role	ADN or BSN	249	21.4	3.8	t (311) = 6.1 p = 0.00
	MSN or PhD	64	18.1	4.1	
Decision making	ADN or BSN	246	7.6	2.2	t (302) = 1.3 p = 0.2
	MSN or PhD	58	7.2	1.6	
Total scale score	ADN or BSN	226	51.5	6.3	t (279) = 5.14 p = 0.00
	MSN or PhD	55	46.5	7.4	
Extent of Education Regarding Prognosis-Related Communication					
MD communication	None or a little bit	263	22.4	5.1	t (340) = 0.32 p = 0.75
	A moderate amount or a lot	79	22.2	5.5	
RN role	None or a little bit	282	21.1	3.9	t (362) = 4.81 p = 0.00
	A moderate amount or a lot	82	18.8	3.6	
Decision making	None or a little bit	272	7.4	2	t (349) = -1.8 p = 0.07
	A moderate amount or a lot	79	7.8	2	
Total scale score	None or a little bit	252	50.9	6.7	t (326) = 2.35 p = 0.02
	A moderate amount or a lot	76	48.9	7	

Knowledge Translation

Physician communication, comfort in the nurse role, patient decision making, and barriers were identified as essential components of the process of prognosis-related communication.

More focused education is required to improve the comfort of oncology nurses who are involved in prognosis-related discussions.

The Prognosis-Related Communication in Oncology Nursing instrument is a valid and reliable tool for future research exploring prognosis-related communication.

barriers. Although the barriers factor was recommended for deletion from the instrument by the current authors, further work should be done to refine and reword the individual items to explore this factor in the future because measuring nurses' experiences with barriers to prognosis-related communication seems essential.

A number of the items were lengthy, lacked clarity of purpose, or were somewhat difficult to discern the relationship to an underlying theoretical construct or the polarity of the scaling format to determine the need for reversal of the item scores. Several of these items were recommended for removal from the instrument, such as, "How often do patients ask you questions that suggest they want more information about their prognosis?" The question is unclear as to whether it suggests that the MD has not provided the patient with enough information regarding prognosis and, therefore, is asking the nurse, or the MD provided sufficient information but the patient simply wants more information from the nurse. Those items should be evaluated for refinement and possible inclusion in future versions of the instrument. Because this was a retrospective review of data previously gathered, the ability to explore other facets of construct validity (e.g., predictive or convergent and discriminant validity) were limited.

Implications for Nursing

Development of a reliable and valid instrument to measure nurses' experiences with prognosis-related communication is critical to future exploration of the topic. The ability to measure nurses' experiences and perceptions of prognosis-related communication will help to guide the development and evaluation of interventions aimed at improving the process of prognostic disclosure, which has the potential to affect the quality of care and communication with patients and families, as well as patient and family satisfaction. In addition, the tool will allow for further exploration and explication of the nurse's role in the process of prognosis-related communication and how nurses perceive collaboration with their MD colleagues.

Conclusion

The role of the nurse in the process of prognosis-related communication can be critical. The nurse is often a constant to patients and families and is frequently consulted regarding questions related to prognosis and prognostic-related implications. More research is necessary to document and assess nurses' experiences with this process. The final instrument, Prognosis-Related Communication in Oncology Nursing, was found to have acceptable item, scale, and reliability characteristics and can be used to further explore this concept. As the instrument is refined and applied to other populations, such as pediatric oncology nurses, additional psychometric analyses will need to be performed.

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References

- Cattell, R.B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research, 1*, 245–276.
- Clayton, J.M., Hancock, K.M., Butow, P.N., Tattersall, M.H., Currow, D.C., Adler, J., . . . Yates, P. (2007). Clinical practice guidelines for communicating prognosis and end-of-life issues with adults in the advanced stages of a life-limiting illness, and their caregivers. *Medical Journal of Australia, 186*, S83–S108.
- Clayton, J.M., Hancock, K., Parker, S., Butow, P.N., Walder, S., Carrick, S., . . . Tattersall, M.H. (2008). Sustaining hope when communicating with terminally ill patients and their families: A systematic review. *Psycho-Oncology, 17*, 641–659. doi:10.1002/pon.1288
- Comfrey, A.L., & Lee, H.B. (1992). *A first course in factor analysis* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.
- DeVellis, R.F. (2003). *Scale development: Theory and applications* (2nd ed.). Thousand Oaks, CA: Sage.
- DeVon, H.A., Block, M.E., Moyle-Wright, P., Ernst, D.M., Hayden, S.J., Lazzara, D.J., . . . Kostas-Polston, E. (2007). A psychometric toolbox for testing validity and reliability. *Journal of Nursing Scholarship, 39*, 155–164. doi:10.1111/j.1547-5069.2007.00161.x
- Dewar, A. (2000). Nurses' experiences in giving bad news to patients with spinal cord injuries. *Journal of Neuroscience Nursing, 32*, 324–330.
- Dunnice, U., & Slevin, E. (2000). Nurses' experiences of being present with a patient receiving a diagnosis of cancer. *Journal of Advanced Nursing, 32*, 611–618.
- Hagerty, R.G., Butow, P.N., Ellis, P.M., Dimitry, S., & Tattersall, M.H. (2005). Communicating prognosis in cancer care: A systematic review of the literature. *Annals of Oncology, 16*, 1005–1053. doi:10.1093/annonc/mdi211
- Hagerty, R.G., Butow, P.N., Ellis, P.A., Lobb, E.A., Pendlebury, S.C., Leighl, N., . . . Tattersall, M.H. (2005). Communicating with realism and hope: Incurable cancer patients' views on the disclosure of

- prognosis. *Journal of Clinical Oncology*, 23, 1278–1288. doi:10.1200/JCO.2005.11.138
- Hancock, K., Clayton, J.M., Parker, S.M., Walder, S., Butow, P.N., Carrick, S., . . . Tattersall, M.H. (2007). Truth-telling in discussing prognosis in advanced life-limiting illnesses: A systematic review. *Palliative Medicine*, 21, 507–517. doi:10.1177/0269216307080823
- Helft, P.R., Chamness, A., Terry, C., & Uhrich, M. (2011). Oncology nurses' attitudes toward prognosis-related communication: A pilot mailed survey of Oncology Nursing Society members. *Oncology Nursing Forum*, 38, 468–474. doi:10.1188/11.ONF.468-474.
- Innes, S., & Payne, S. (2009). Advanced cancer patients' prognostic information preferences: A review. *Palliative Medicine*, 23, 29–39. doi:10.1177/0269216308098799
- Kaiser, H.F., & Norman, W.T. (1991). Coefficient alpha for components. *Psychological Reports*, 69, 111–114.
- Kaplowitz, S.A., Campo, S., & Chiu, W.T. (2002). Cancer patients' desires for communication of prognosis information. *Health Communication*, 14, 221–241. doi:10.1207/S15327027HC1402_4
- Kiely, B.E., Stockler, M.R., & Tattersall, M.H. (2011). Thinking and talking about life expectancy in incurable cancer. *Seminars in Oncology*, 38, 380–385. doi:10.1053/j.seminoncol.2011.03.007
- Lamont, E.B., & Christakis, N.A. (2003). Complexities in prognostication in advanced cancer: "To help them live their lives the way they want to." *JAMA*, 290, 98–104. doi:10.1001/jama.290.1.98
- Mack, J.W., Wolfe, J., Grier, H.E., Cleary, P.D., & Weeks, J.C. (2006). Communication about prognosis between parents and physicians of children with cancer: Parent preferences and the impact of prognostic information. *Journal of Clinical Oncology*, 24, 5265–5270. doi:10.1200/JCO.2006.06.5326
- McLennon, S.M., Uhrich, M., Lasiter, S., Chamness, A.R., & Helft, P.R. (2013). Oncology nurses' narratives about ethical dilemmas and prognosis-related communication in advanced cancer patients. *Cancer Nursing*, 36, 114–121. doi:10.1097/NCC.0b013e31825f4dc8
- Neuman, B.M., & Fawcett, J. (2002). *The Neuman systems model* (5th ed.). Upper Saddle River, NJ: Pearson.
- Polit, D.F. (2009). *Statistics and data analysis for nursing research* (2nd ed.). Upper Saddle River, NJ: Prentice Hall
- Rassin, M., Levy, O., Schwartz, T., & Silner, D. (2006). Caregivers' role in breaking bad news: Patients, doctors, and nurses' points of view. *Cancer Nursing*, 29, 302–308.
- Reinke, L.F., Shannon, S.E., Engelberg, R.A., Young, J.P., & Curtis, J.R. (2010). Supporting hope and prognostic information: Nurses' perspective on their role when patients have life-limiting prognoses. *Journal of Pain and Symptom Management*, 39, 982–992. doi:10.1016/j.jpainsymman.2009.11.315
- Tabachnick, B.G., & Fidell, L.S. (2000). *Using multivariate statistics* (4th ed.). Boston, MA: Pearson Allyn and Bacon.
- Tobin, G.A. (2012). Breaking bad news: A phenomenological exploration of Irish nurses' experiences of caring for patients when a cancer diagnosis is given in an acute care facility (part 1). *Cancer Nursing*, 35, E21–E29. doi:10.1097/NCC.0b013e318241921d
- Warnock, C., Tod, A., Foster, J., & Soreny, C. (2010). Breaking bad news in inpatient clinical settings: Role of the nurse. *Journal of Advanced Nursing*, 66, 1543–1555. doi:10.1111/j.1365-2648.2010.05325.x