Global Exemplar Series

Nurse Practitioners' Self-Efficacy and Behavior in Supporting Self-Management of Patients With a Progressive, Life-Threatening Illness and Their Relatives

A Nationwide, Cross-Sectional Online Survey

Muzeyyen Arslan, MSc, PhD ❍ **Sophie I. van Dongen, MSc** ❍
Erica Witkamp, RN, MSc, PhD ❍ **Susanne M. van Hooft, RN, MSc, PhD** ❍
Pascalle Billekens, RN, MSc ❍ **Leonieke W. Kranenburg, MSc, PhD** ❍
Rik Stoevelaar, MSc, PhD ❍ **Carin C.D. van der Rijt, MD, PhD** ❍
Monique van Dijk, RN, PhD ❍ **Agnes van der Heide, MD, PhD** ❍
Judith A.C. Rietjens, Msc, PhD

This study aimed at investigating nurse practitioners' self-efficacy and behavior in supporting self-management of patients with a progressive, life-threatening illness and their relatives. We adapted an existing validated instrument for this purpose, amongst other things by adding a seventh subscale "attention for relatives," and administered it in a nationwide, cross-sectional online survey among Dutch nurse practitioners. We analyzed associations between self-reported self-efficacy and behavior using Pearson correlations and paired sample *t* tests. Associations between self-efficacy and behavior with nurse practitioners' characteristics were examined using linear regression models. Most nurse practitioners (n = 327; 26% complete responses) were women (93%). Subscale and total scores for nurse practitioners' self-efficacy were moderately positively correlated with those for their behavior in self-management support. Subscale and total scores were statistically significantly higher for their self-efficacy than for their behavior. Increased work experience with patients with a progressive, life-threatening illness was associated with higher scores on self-efficacy and behavior in self-management support. We conclude that nurse practitioners are confident in their ability to support self-management; yet, they do not always use these competencies in practice.

KEY WORDS
advanced disease, nursing, patient-centered health care, questionnaire study, self-management

Muzeyyen Arslan, MSc, PhD, is researcher, Department of Public Health and Department of Internal Medicine, Section of Nursing Science, Erasmus University Medical Centre, Rotterdam, the Netherlands.

Sophie I. van Dongen, MSc, is researcher, Department of Public Health, Erasmus University Medical Centre, Rotterdam, the Netherlands.

Erica Witkamp, RN, MSc, PhD, is researcher, Department of Public Health, Erasmus University Medical Centre; and Research Centre Innovations in Care, Rotterdam University of Applied Sciences, the Netherlands.

Susanne M. van Hooft, RN, MSc, PhD, is researcher, Research Centre Innovations in Care, Rotterdam University of Applied Sciences, the Netherlands.

Pascalle Billekens, RN, MSc, is nurse practitioner, Laurens, Rotterdam, the Netherlands.

Leonieke W. Kranenburg, MSc, PhD, is assistant professor, Department of Psychiatry, Section Medical Psychology and Psychotherapy, Erasmus University Medical Centre, Rotterdam, the Netherlands.

Rik Stoevelaar, MSc, PhD, is researcher, Department of Public Health, Erasmus University Medical Centre, Rotterdam, the Netherlands.

Carin C.D. van der Rijt, MD, PhD, is professor, Department of Medical Oncology, Cancer Institute, Erasmus University Medical Centre, Rotterdam, the Netherlands.

Monique van Dijk, RN, PhD, is professor, Department of Internal Medicine, Section of Nursing Science, Erasmus University Medical Centre, Rotterdam, the Netherlands.

Agnes van der Heide, MD, PhD, is professor, Department of Public Health, Erasmus University Medical Centre, Rotterdam, the Netherlands.

Judith A.C. Rietjens, Msc, PhD, is associate professor, Department of Public Health, Erasmus University Medical Centre, Rotterdam, the Netherlands.

Address correspondence to Muzeyyen Arslan, MSc, PhD, Department of Public Health and Department of Internal Medicine, Section of Nursing Science Erasmus University Medical Centre, Dr. Molewaterplein 40, Rg-5 3000 CA Rotterdam, the Netherlands (m.arslan.1@erasmusmc.nl).

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Muzeyyen Arslan and Sophie I. van Dongen shared first authorship due to equal contribution to the article.

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Self-management (SM) of patients with a progressive, life-threatening illness can be defined as "use of strategies to manage the physical, psychosocial and existential consequences of living with a progressive, life-threatening illness and its treatment."[1] It has received less scientific attention than SM of patients with a chronic illness, although because of patients' prospect of imminent deterioration and increased complexity of health care, it has different features.[1,2] A recent systematic review on SM of patients with advanced cancer demonstrated that patients' SM strategies span many domains: medicine and pharmacology, lifestyle, psychology, social support, knowledge and information, navigation and coordination, and medical decision making.[1] Comparable domains are found for patients with chronic disease, but within each domain, SM strategies seemed to be more divergent and ambivalent, and therefore more challenging, for patients with advanced cancer.[1]

Patient SM is not a solitary activity but is strongly associated with interactions with relatives.[1,3,4] Relatives may support patients in addressing SM tasks and take on additional tasks to assist the patient in his or her SM. Patients with higher levels of relative support report more proactive SM behavior.[5] A higher level of relative support is also linked to increased self-efficacy for SM tasks and decreased depressive symptoms.[6-8] However, many relatives feel unprepared for the caregiving role[9,10] and report distress and burden, particularly in the case of a progressive, life-threatening illness.[10,11] Therefore, patients and their relatives may require SM support (SMS) from health care professionals. Nurses and especially nurse practitioners (NPs) are considered the most appropriate health care professionals to provide this SMS, because they are in the unique position to assist patients in activities contributing to health, recovery, and peaceful death.[12,13]

Nurses' SMS competencies are explicated in the 5A model.[14] Based on this model, 5 core competencies can be distinguished: assessing the patient's knowledge, beliefs, and behaviors; advising the patient by providing specific and understandable information about his or her illness and health status; agreeing on goals set in collaboration with the patient; assisting the patient in identifying and resolving barriers that make it difficult to achieve the goals set; and arranging follow-up care.[14-16] An important determinant of performing these SMS competencies in clinical practice is self-efficacy, that is, the NP's confidence in his or her skills and ability to provide SMS.[15,17] Self-management support competencies are increasingly being adopted and integrated into nursing education, care standards, and SMS interventions in the Netherlands.[18-20] However, research on these competencies has mostly focused on nurses with vocational and undergraduate degrees and not on NPs,[15,20] who may be better suited to provide SMS.[12]

In this study, we aimed to investigate NPs' self-efficacy and behavior in supporting SM by patients with a progressive, life-threatening illness and their relatives. Therefore, we adapted a questionnaire assessing professional SMS in chronic disease care for use in palliative care and subsequently assessed this tool in terms of construct validity and reliability.

THE STUDY

Design

From July to October 2019, we conducted a nationwide, cross-sectional online questionnaire study.

Participants and Recruitment

This study was conducted among members of the Dutch Professional Nurse Practitioner Organization (Beroepsvereniging voor Verpleegkundig Specialisten V&VN-VS; approximately 3600 members, representing about 77% of all NPs in the Netherlands), who are registered in 38 disease-specific network groups. Out of these, we selected 17 network groups (~1250 NPs) likely to be involved in care for patients with a progressive, life-threatening disease, the largest one being the oncology network group (213 NPs). Eligibility criteria for inclusion in this study were 1) work experience with adult patients with a progressive, life-threatening illness, and 2) current work in clinical practice. No incentives to participate were provided.

Measures

The online questionnaire measured background characteristics and self-efficacy and behavior in SMS. Background data were age, sex, years of work experience in direct patient care, and current work setting, patient population, and frequency of contact with patients with a progressive, life-threatening illness. To measure self-efficacy and behavior in SMS, we used the Self-Efficacy and Behavior in Self-Management Support Questionnaire (SEPSS-36),[15] which is an operationalization of the 5A model. It has good content and construct validity, and good internal consistency and test-retest reliability.[15] It consists of 6 subscales: 5 are based on the 5A model, and the sixth subscale addresses nurses' overall SMS competencies. Each subscale comprises 6 items. Per item, NPs are asked to score their self-perceived self-efficacy ("I think I can do this") on a 5-point Likert-type scale with ratings "not at all" (0), "not sufficient" (1), "more or less" (2), "sufficient" (3), and "good" (4). Nurse practitioners' behavior is assessed with the statement "I do this," with rating options "never" (0), "rarely" (1), "occasionally" (2), "frequently" (3), and "always" (4). Higher scores reflect a higher level of self-efficacy or behavior in SMS.

To make it more applicable to patients with a progressive, life-threatening illness, we adapted the SEPSS-36—originally developed for patients with chronic diseases—into the SEPSS Palliative Care (Self-Efficacy and Behavior in Self-Management Support Questionnaire Palliative Care). Adaptations originated from iterative discussions by an expert panel (face-to-face, by email), consisting of researchers specialized in nursing and palliative care, one of the developers of the original SEPSS-36, a psychologist, an NP, an oncologist, and an expert in statistics and methodology. Eventually, the SEPSS Palliative Care comprises 34 items: 19 items were retained, 11 adapted, 6 omitted, and 4 added. Omitted items mostly dealt with SMS practices difficult or unsuitable for patients with a progressive, life-threatening illness (eg, subscale “assist,” “encouraging the patient to perform as many daily living activities as possible”). Adjustments mainly dealt with different wording to accommodate the change in target population (for example, “condition” instead of “illness,” and “goals” instead of “wishes and goals”). The subscale “assess” was extended with 1 new item about the use of complementary or alternative medicine (frequently mentioned in the literature on SM of patients with a progressive, life-threatening illness).[1] Finally, we added a new 3-item subscale called “attention for relatives.”

Data Collection

All NPs in the relevant network groups received an invitation by email from the Dutch Professional Nurse Practitioner Organization, with a link to the online questionnaire, administered through Lime Survey, an open-source, online survey program. A reminder email was sent twice, at 3-week intervals. Announcements were placed on the website and the social media accounts of the Dutch Professional Nurse Practitioner Organization.

Ethical Considerations

The Medical Research Ethics Committee of the Erasmus MC declared that this study was exempt from formal review because it was not subject to the Medical Research Involving Human Subjects Act (registration number: 2019.0398).

Data Analysis

We analyzed data using IBM SPSS 25 (SPSS Inc, Chicago, Illinois). Descriptive analyses were used to summarize the background characteristics of the participating NPs. Consistent with the original SEPSS-36, we summed item scores and calculated mean scores for NPs' self-reported self-efficacy and behavior in SMS for each SEPSS Palliative Care subscale and the total scale. Variables assessing self-efficacy and behavior in SMS were normally distributed. Significance of correlations between mean scores on self-efficacy and behavior was tested using Pearson correlation analysis. Differences between these mean scores were analyzed using paired sample *t* tests. Multivariable linear regression analyses (Enter method) assessed the associations between NPs' background characteristics on the one hand (age, sex, years of work experience in direct patient care, and frequency of contact with patients with a progressive, life-threatening illness) and self-reported self-efficacy and behavior in SMS on the other hand. *P* values less than .05 were considered statistically significant.

Because of our adjustments to the validated SEPSS-36, we conducted a psychometric evaluation of the SEPSS Palliative Care: testing of structural construct validity (confirmatory factor analysis) and reliability [internal consistency (Cronbach α)]. Confirmatory factor analysis of SEPSS Palliative Care data was performed using the LAVAAN package in R. Several fit indices were used to determine the model fit. First, we calculated the root mean square error of approximation (RMSEA), which reflects the estimation error divided by the degrees of freedom as a penalty function. Root mean square error of approximation values below 0.06 indicate small differences between the estimated and observed models. Second, we used the standardized root mean square residual (SRMR), which is a scale-invariant index for a global fit that ranges between 0 and 1. Standardized root mean square residual values lower than 0.08 indicate a good fit. Third, we looked at the comparative fit index (CFI), with values greater than 0.90 indicating a good model. The confirmatory factor analysis was performed separately for the self-efficacy and behavior parts of the questionnaire.

RESULTS

Of the 1250 NPs invited to participate, 429 responded (34%). A total of 102 responses were excluded from further analysis because of incomplete data (missing data for all items of the subscales, n = 95) or because respondents indicated that they did not work with patients with a progressive, life-threatening illness (n = 7). Background characteristics of the remaining 327 NPs (26%) are reported in Table 1. These NPs were mostly women (94%), had a mean age of 47 (SD, 9) years, and had on average 23 (SD, 11) years of work experience. Most worked in a hospital (85%). They mainly cared for patients with cancer (79%), lung disease (24%), heart disease (23%), and kidney disease (19%). Fifty-seven percent of the participating NPs worked with patients with a progressive life-threatening illness on a daily basis.

Confirmatory factor analysis revealed acceptable fit indices for the 7-factor structure of the SEPSS Palliative Care (self-efficacy items: RMSEA, 0.06; SRMR, 0.05; and CFI, 0.88; behavior items: RMSEA, 0.06; SRMR, 0.05; and CFI, 0.87, respectively). Factor loadings of this 34-item model ranged from 0.31 to 1.69. All items loaded on their corresponding latent construct. Performance measures were acceptable; RMSEA and SRMR values were comparable to those of the original SEPSS-36. Sample adequacy was confirmed by the Kaiser-Meyer-Olkin test (self-efficacy, 0.96; behavior, 0.94) and the Bartlett test of sphericity (self-efficacy: $\chi^2 = 7214$, $df = 561$, $P < .001$; behavior: $\chi^2 = 6030$, $df = 561$, $P < .001$), indicating that correlations between items did not occur by chance. Cronbach α was .96 for self-efficacy and .95 for behavior, which is similar compared with previous studies using the original SEPSS-36.[15,16,21] This

TABLE 1 Background Characteristics of Nurse Practitioners Participating in a Nationwide, Cross-Sectional Online Survey on Supporting Self-Management of Patients With a Progressive, Life-Threatening Illness (n = 327)

Characteristic	Mean (SD)/n (%)[a]
Age in years (n = 327)	47 (9)
Sex: female (n = 327)	306 (94)
Work setting (n = 327) (≦1 answer possible)	
Hospital	277 (85)
Nursing home	32 (10)
Hospice	8 (2)
General practice	6 (2)
Homecare	12 (4)
Other	10 (3)
Frequency of contact with patients with a progressive life-threatening illness (n = 323)	
Daily	185 (57)
Less than daily	138 (43)
Years of work experience in direct patient care (n = 327)	23 (11)
Patient population/disease category (n = 327) (≥1 answer possible)	
Cancer	257 (79)
Lung diseases	77 (24)
Heart diseases	75 (23)
Kidney diseases	63 (19)
Liver diseases	44 (13)
Geriatric care	40 (12)
Neurological diseases	31 (9)
Palliative care	21 (6)
Other	35 (11)

Abbreviation: SD, standard deviation.

[a] Continuous characteristics presented as mean (SD); categorical characteristics presented as number (percentage).

indicates a high level of internal consistency for our SEPSS Palliative Care scale.

Table 2 provides an overview of the results on the SEPSS Palliative Care, reflecting NPs' self-efficacy and behavior in SMS in palliative care. Mean perceived self-efficacy (range, 0-4) varied from 3.16 (SD, 0.60) to 3.31 (SD, 0.57) between the 7 subscales, with a mean total score of 3.23 (SD, 0.50). This implies that NPs perceived their self-efficacy as sufficient to good. The mean score for behavior in SMS varied from 2.31 (SD, 0.77) to 2.66 (SD, 0.68) between the 7 subscales, with a mean total score of 2.47 (SD, 0.62), which indicates that NPs reported to carry out SMS activities occasionally to frequently. Correlations between NPs' self-reported self-efficacy and behavior scores were moderately positive and statistically significant ($r = 0.63$, $P < .01$). In all subscales, NPs' self-efficacy scores were higher than their behavior scores ($P < .05$). In the newly developed subscale "attention for relatives," NPs scored on average 3.28 (SD, 0.66) on self-efficacy and 2.45 (SD, 0.92) on behavior.

When focusing on items, Table 3 shows that mean self-perceived self-efficacy (2.11; SD, 1.18) and behavior (0.87; SD, 1.02) scores were the lowest for the use of assistive devices and technological tools for guiding patients in SMS. Furthermore, NPs reported that they rarely discuss with patients how to use SM tools, such as a symptom diary or relaxation app [self-efficacy, 2.62 (SD, 1.03); behavior, 1.49 (SD, 1.08)], and whether patients use complementary or alternative medicine [self-efficacy, 2.89 (SD, 1.00); behavior, 1.91 (SD, 1.12)].

Table 4 shows that the frequency of contact with patients with a progressive, life-threatening illness was positively associated with both NPs' self-reported self-efficacy [$\beta = 0.158$; 95% confidence interval (CI), 0.041-0.275; $P < .05$] and behavior ($\beta = 0.315$; 95% CI, 0.173-0.458; $P < .05$), indicating that NPs who work with these patients on a daily basis reported relatively high self-efficacy and frequent SMS behavior. Nurse practitioners who have more work experience in direct patient care reported more frequent SMS behavior ($\beta = 0.012$; 95% CI, 0.002-0.022; $P < .05$).

DISCUSSION

In this study, we adapted the SEPSS-36 to the SEPSS Palliative Care to assess NPs' self-efficacy and behavior in supporting SM of patients with a progressive, life-threatening illness. We added a new subscale, "attention for relatives." Confirmatory factor and reliability analyses supported the structural validity and internal consistency of the adapted instrument. We showed that Dutch NPs consider their self-efficacy in SMS for patients with a progressive, life-threatening illness as amply sufficient. Although correlations between self-efficacy and behavior were moderately positive, NPs reported significantly lower SMS behavior

TABLE 2 Nurse Practitioners' Mean Subscale and Total Scores on the Self-Efficacy and Behavior in Self-Management Support Questionnaire Palliative Care (SEPSS Palliative Care) and Associations Between Their Self-Efficacy and Behavior Scores (n = 327)

	Self-Efficacy				Behavior				Paired Sample *t* Test	Correlation Coefficient
Subscales (n)	**Mean**	**SD**	**Min**	**Max**	**Mean**	**SD**	**Min**	**Max**	**Mean Difference**	***r***
Assess (327)	3.27	0.58	1.71	4.00	2.48	0.76	0.57	4.00	0.78*	0.62**
Advise (321)	3.31	0.57	1.25	4.00	2.46	0.70	0.50	4.00	0.85*	0.53**
Agree (312)	3.21	0.65	1.25	4.00	2.41	0.85	0.00	4.00	0.80*	0.62**
Assist (298)	3.16	0.60	1.33	4.00	2.31	0.77	0.33	4.00	0.84*	0.58**
Arrange (292)	3.18	0.52	1.60	4.00	2.40	0.65	0.40	3.80	0.77*	0.55**
Attention for relatives (292)	3.28	0.66	1.33	4.00	2.45	0.92	0.00	4.00	0.83*	0.57**
Overall competencies (291)	3.20	0.56	1.40	4.00	2.66	0.68	1.00	4.00	0.53*	0.68**
Total scale (291)	3.23	0.50	1.83	4.00	2.47	0.62	0.52	3.86	0.76*	0.63**

Abbreviations: Max, maximum; Min, minimum; r, Pearson correlation coefficient; SD, standard deviation.
**Statistically significant difference (P < .05; 2-tailed).*
***Statistically significant correlation (P < .01; 2-tailed).*

than self-efficacy levels, in particular regarding the guidance of these patients in their use of e-health, other tools, and complementary or alternative medicine. Furthermore, NPs who work with patients with a progressive, life-threatening illness on a daily basis reported higher self-efficacy and more frequent SMS behavior than NPs who do this less often. Nurse practitioners also indicated to provide SMS more frequently if they had longer work experience in direct patient care.

Compared with studies assessing nurses' SMS for patients with a chronic illness, NPs in our study scored somewhat (ie, 0.2-0.4 points) higher on both self-efficacy and behavior.[15,21] These slightly higher scores could be explained by differences in patient population (chronic vs progressive, life-threatening illness),[15] or by differences in study population: earlier studies were conducted among nurses and nursing students,[15,16,20,21] whereas the NPs in our study had a master's degree and on average 23 years of work experience.

Our study showed moderately positive and statistically significant correlations between NPs' self-efficacy and behavior. A prior study among nurses working with chronically ill patients reported a comparable correlation between self-efficacy and behavior.[21] We also found that for all 7 SMS competencies, NPs scored higher on self-efficacy than on behavior. Previous studies have reported a similar difference between nurses' self-efficacy and behavior in SMS.[15,16,20,21] This difference may be explained by attitudinal and organizational issues.[22-24] Excessive workload, time limitations, prioritization of other duties, role conflict, and inflexible health care infrastructures have been highlighted to hamper the transfer of knowledge and perceived SM skills into actual SMS behavior in clinical practice.[22-24]

Our findings support previous studies showing that clinical experience and exposure are critical prerequisites for knowledge and self-confidence among nurses.[25,26] These findings substantiate the argument that employing experienced nurse professionals in medical care is paramount in the provision of patient SMS.

Some findings on subscale and item level deserve attention. First, the new subscale on attention for relatives demonstrated good measurement properties and showed a similar pattern as the other subscales, indicating higher scores for self-efficacy than for behavior. The scale consists of 3 key elements: assessing how the illness impacts well-being of relatives, informing and instructing relatives about the illness, and discussing with relatives from whom they can get support. This is relevant because relatives fulfill vital roles in supporting SM of patients with a progressive, life-threatening illness: they assist patients physically and emotionally and gather and pass on information that can

TABLE 3 Nurse Practitioners' Scores on Items of the Self-Efficacy and Behavior in Self-Management Support Questionnaire Palliative Care (SEPSS Palliative Care; n = 327)

		Self-Efficacy			Behavior		
Subscale	**Item**	**Mean**	**SD**	**n**	**Mean**	**SD**	**n**
Assess	1. Discussing with the patient what he/she expects from living with the illness in the (near) future	3.48	0.66	327	2.66	0.94	327
	2. Discussing with the patient what he/she knows about his/her illness	3.64	0.56	327	3.00	0.91	327
	3. Discussing with the patient how he/she can share emotions about the illness with his/her environment	3.35	0.69	327	2.69	0.96	327
	4. Discussing with the patient how much confidence he/she has in his/her abilities	3.10	0.76	327	2.24	0.99	327
	5. Discussing with the patient what he/she can and wants to do in the care process	3.38	0.70	327	2.67	1.03	327
	6. Discussing with the patient whether he/she uses complementary or alternative medicine	2.89	1.00	327	1.91	1.12	327
	7. Discussing with the patient which norms and values (ie, culture, religion, and autonomy) are important	3.07	0.84	327	2.21	1.03	327
Advise	8. During each contact, asking the patient what information he/she needs	3.38	0.69	321	2.67	0.97	321
	9. Letting the patient restate the information that I gave	3.23	0.74	321	2.17	0.96	321
	10. Giving the patient information and instruction about the illness (eg, information about the possibilities and impossibilities of treatment)	3.47	0.65	321	3.01	0.88	321
	11. Helping the patient to formulate questions for other health care professionals	3.19	0.77	321	2.02	1.00	321
Agree	12. Allowing the patient to determine his/her priorities when developing goals	3.03	0.84	312	2.09	1.05	312
	13. Documenting the goals and wishes in the patient's record	3.23	0.83	312	2.38	1.16	312
	14. Helping the patient to make a decision about treatment together with health care providers	3.29	0.72	312	2.60	1.00	312
	15. Recognizing the patient''s uncertainty about making a treatment decision	3.33	0.70	312	2.59	0.91	312

(continues)

TABLE 3 Nurse Practitioners' Scores on Items of the Self-Efficacy and Behavior in Self-Management Support Questionnaire Palliative Care (SEPSS Palliative Care; n = 327), Continued

		Self-Efficacy			Behavior		
Subscale	**Item**	**Mean**	**SD**	**n**	**Mean**	**SD**	**n**
Assist	16. Discussing with the patient with whom he/she will talk about his/her illness	3.34	0.65	301	2.53	0.95	300
	17. Inviting the patient to talk to me about his/her illness	3.46	0.62	301	2.83	0.91	300
	18. Helping the patient to choose the activities that he/she can realistically perform	3.28	0.69	301	2.45	0.91	300
	19. Discussing with the patient who (eg, family, friends, acquaintances) can provide daily support	3.55	0.99	298	3.35	0.66	298
	20. Discussing with the patient how he/she could use certain tools (such as a symptom diary or relaxation app) for his/her self-management	2.62	1.03	298	1.49	1.08	298
	21. Supporting the patient in monitoring his/her health and physical reactions	2.94	0.89	298	2.04	1.16	298
Arrange	22. Discussing with the patient about a suitable moment and approach for follow-up care	3.09	0.83	292	2.35	1.10	292
	23. Consulting and making mutual plans with other health care professionals	3.47	0.60	292	2.88	0.90	292
	24. Using assistive devices and technology (ie, e-health) to provide remote guidance to the patient	2.11	1.18	292	0.87	1.02	292
	25. Facilitating the patient to easily stay in contact between appointments	3.70	0.59	292	3.42	0.91	292
	26. Initiating contact between appointments with the patient, to discuss his/her health and solve possible difficulties	3.55	0.65	292	2.52	1.08	292
Attention for relatives	27. Asking relatives about the impact of the patient's illness on their own lives and their expectations for the near future	3.29	0.75	292	2.47	1.01	292
	28. If the patient consents, informing and instructing relatives about the illness (eg, about treatment and common complaints)	3.38	0.68	292	2.52	1.05	292
	29. Discussing with relatives from whom they can get support themselves.	3.19	0.81	292	2.38	1.08	292
Overall competencies	30. Using the patient's experiential knowledge as valuable information for my own actions	3.30	0.69	291	2.61	0.89	291
	31. Considering the (cultural) background of the patient	3.00	0.79	291	2.74	0.99	291
	32. Together with the patient, determining how much of the care coordination I take over for him/her	3.01	0.85	291	2.28	1.15	291
	33. Using the patient's wishes and goals as the basis for care, even if this is not ideal from a medical perspective	3.27	0.75	291	2.66	1.06	291
	34. Reflecting on my own management (of care)	3.42	0.60	291	3.05	0.74	291

Abbreviation: SD, standard deviation.

TABLE 4 Results of Multivariate Linear Regression Analyses for the Associations Between NPs' Background Characteristics and Their Total Self-Efficacy and Behavior Scores on the Self-Efficacy and Behavior in Self-Management Support Questionnaire Palliative Care (SEPSS Palliative Care; n = 327)

	β	95% CI	*P*
Self-efficacy			
Age	0.007	−0.003 to 0.017	0.147
Sex: female vs male	−0.015	−0.248 to 0.217	0.897
Years of work experience in direct patient care	0.007	−0.002 to 0.015	0.114
Frequency of contact with patients with progressive, life-threatening illness: daily vs less than daily	0.158*	0.041 to 0.275	0.008
Behavior			
Age	−0.004	−0.016 to 0.008	0.492
Sex: female vs male	0.025	−0.257 to 0.307	0.860
Years of work experience in direct patient care	0.012*	0.002 to 0.022	0.018
Frequency of contact with patients with a progressive, life-threatening illness: daily vs less than daily	0.315*	0.173 to 0.458	0.000

Abbreviation: β, unstandardized regression coefficient; CI, 95% confidence interval for β.
**Statistically significant regression coefficient β ($P < .05$; 2-tailed).*

be crucial for patient-professional communication and interaction.[3,4,10] Yet, their SMS role cannot be taken for granted, because many relatives experience high levels of caregiver burden and numerous other problems that decrease their well-being and might interfere with SMS, including sleep disorders, depressive symptoms, impaired social relationships, and financial hardship.[9-11] Our findings stress the importance of integrating support for relatives into NPs' SMS practices. Second, NPs felt least confident in using and least often used assistive devices and technology (ie, e-health) to provide remote guidance to patients. Likewise, they reported to only rarely discuss with their patients how to use electronic SM tools, such as a relaxation app. Other studies showed similar findings,[15,16] which may be attributed to the fact that within the field of nursing, the use of technology is still relatively new and developing and has received only limited attention in nursing education.[16,21] Previous studies have shown that the use of technology in SMS is often feasible for patients with a progressive, life-threatening illness and generally acceptable to patients and their relatives,[19,27] which is all the more relevant given the current COVID-19 pandemic.[28]

Limitations

A limitation of this study is that the response rate was fair (26% complete responses) but not high enough to eliminate the risk of selective response. More research in other study populations and countries is recommended.

Implications for Clinical Practice and Research

This study shows that although NPs are sufficiently confident in supporting SM of patients with a progressive, life-threatening illness, more effort is needed to increase their SMS behaviors. Self-management support training sessions should be implemented for nurse professionals using evidence-based techniques, such as the 5A model. Innovative didactic strategies could strengthen the integration of NPs' theoretical and practical knowledge regarding SMS.[29] For example, experienced and fully trained NPs could act as role models for and supervise novice/future nurse professionals in supporting SM. Within SMS education, continued focus is needed on the self-efficacy of nurse professionals, whereas further attention should be paid to patients' relatives.

Furthermore, we recommend (further) adoption and integration of measures to asses professional SMS competencies, not merely into nursing education, but also into nursing care standards and evaluation, as well as into SMS programs for patients with a progressive, life-threatening illness. Because of relatives' integral role in supporting patient SM, it is necessary to include them in these programs.

Future research should focus on developing and evaluating experience-oriented training programs for SMS by nurse professionals in palliative care. Such training programs should address the (attitudinal and organizational) barriers and facilitators NPs experience in providing SMS in palliative care practice. In addition, it would be interesting to scrutinize how SMS competencies impact practice and patient outcomes. Finally, e-health education for NPs and integration of e-health in SMS practices for patients with a progressive, life-threatening illness are still scarce. Therefore, studies should examine preferences and possibilities regarding the use of technology for patients with a progressive life-threatening illness from the perspectives of nurse professionals, patients, and their relatives.

CONCLUSION

We developed and evaluated the SEPSS Palliative Care, an adapted version of the SEPSS-36, to assess professional SMS for patients with a progressive life-threatening illness and their relatives. We found some discrepancies between NPs' perceived (high levels of) self-efficacy and (lower levels of) behavior. Implementing effective SMS strategies for this population involves comprehensive efforts at the level of NPs, patients, and their relatives, as well as education and structural embedding of SMS in medical care. More attention is needed to better understand and leverage the value of e-health in this population.

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