



ORIGINAL ARTICLE

Evaluation of the Swedish Self-Efficacy in Palliative Care Scale and exploration of nurses' and physicians' self-efficacy in Swedish hospitals: A cross-sectional study

Lisa Granat MSP, PhD student¹  | Sofia Andersson RN, PhD, Lecture^{1,2} |
 Daniel Åberg BS, Statistician³ | Emina Hadziabdic RN, Associate Professor⁴ |
 Anna Sandgren RN, Associate Professor¹ 

¹Department of Health and Caring Sciences, Center for Collaborative Palliative Care, Linnaeus University, Växjö, Sweden

²Department of Nursing, Umeå University, Umeå, Sweden

³Region Kronoberg, Växjö, Sweden

⁴Department of Health and Caring Sciences, Linnaeus University, Växjö, Sweden

Correspondence

Lisa Granat, Department of Health and Caring Sciences, Center for Collaborative Palliative Care, Linnaeus University, 351 95 Växjö, Sweden.
 Email: lisa.granat@lnu.se

Abstract

Background: Previous research found that healthcare professionals had low preparedness for palliative care. Thus, it is necessary to explore healthcare professionals' self-efficacy. The Swedish Self-Efficacy in Palliative Care Scale (SEPC-SE) evaluates readiness in communication, patient management and multidisciplinary teamwork; however, it should be tested on a larger population. Furthermore, the constructs of the SEPC-SE should be compared to that of the original SEPC.

Aim: This study aimed to evaluate the consensus between the construct validity and reliability of the SEPC and the translated and adapted SEPC-SE. Furthermore, it aimed to describe and compare the self-efficacy of nurses and physicians in hospitals and explore the associated factors.

Methods: The nurses ($n=288$) and physicians ($n=104$) completed the SEPC-SE. Factor analysis with Cronbach's alpha evaluated validity and reliability, and an analysis using the Mann-Whitney U test compared self-efficacy and multiple linear regression-associated factors.

Results: The SEPC-SE revealed three factors with high reliability. Education or experience in specialised palliative care was minor, especially for nurses. Self-efficacy was highest in patient management (nurses, median [md] = 74.57, physicians md = 81.71, $p=0.010$) and communication (nurses md = 69.88, physicians md = 77.00, $p=0.141$) and lowest in multidisciplinary teamwork (nurses md = 52.44, physicians md = 62.88, $p=0.001$). The strongest associations with self-efficacy were education at work and advanced homecare experiences. In addition, there were significant associations between years in the profession, male sex, physicians and university education.

Conclusion: The SEPC-SE is valid and reliable for measuring self-efficacy. Nurses had lower self-efficacy than physicians. Physicians were associated with higher self-efficacy and had more education and experience in palliative care settings, which may explain their levels of self-efficacy.

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KEYWORDS

construct validity, hospitals, nurses, palliative care, physicians, reliability, self-efficacy, SEPC scale

BACKGROUND

The number of people needing palliative care in hospitals will increase because of their demographic development [1, 2]. However, the successful provision of care, where psychosocial and spiritual needs are just as important as physical needs [3], can be challenging for healthcare professionals [4, 5]. In acute settings, focus on life-prolonged treatments and task routines, combined with busy schedules, can result in unmet care needs and distressed personnel [6–8]. Additionally, healthcare professionals often lack proper education and clinical training. As an inference, providing healthcare professionals with more knowledge has been described in research as part of the solution to insufficient palliative care [9, 10]. However, knowledge does not equal readiness or expected performance in practice [11, 12]. Instead, a barrier for healthcare professionals is low confidence, which obstructs performance [13, 14]. Previous studies have shown that it is challenging for professionals to provide palliative care as it can trigger negative emotions that obstruct their self-efficacy [15, 16].

Exploring self-efficacy is a topical to enhance the quality of palliative care [17]. Self-efficacy theory describes individuals' behavioural function as a belief in themselves regarding successfully performing a particular task or behaviour. People with high self-efficacy are likely to perform successfully and be healthy; low self-efficacy creates unpleasant feelings and causes evasion behaviour when addressing assignments [18]. Self-efficacy is a complex human agency, and levels of self-efficacy depend on various factors that form a person's relationship to the task, such as personal, behavioural, and environmental aspects [19]. To foster self-efficacy, people must gain positive experiences with the task (mastery experiences) and have role models (vicarious experiences) and environments that provide encouraging feedback [15]. Individual self-efficacy depends on the external environment, and people must believe they can succeed as a group (collective efficacy) [20]. Thus, to further understand the impact of professionals' levels of self-efficacy, it is vital to explore their background characteristics. The Self-Efficacy in Palliative Care Scale (SEPC) was developed by Mason and Ellershaw [21] to measure levels of SEPC. The scale consists of 23 items and builds on three domains: communication, patient management and multidisciplinary teamwork. Based on the original SEPC, a Swedish version of the SEPC scale was translated, adapted and validated to produce

an appropriate version for healthcare professionals in the Swedish context [22]. Additionally, an extra item was added to the SEPC-SE. Although the previous study aimed to keep close to the original SEPC scale, the SEPC-SE received a broadened perspective by including nurses in the validation process and further incorporating a palliative care team perspective. Currently, the SEPC-SE is an available scale to measure SEPC. Nonetheless, there is a need to evaluate the SEPC-SE construct to compare the translated version to that of the original SEPC. Furthermore, the SEPC-SE should be tested on a larger population. Therefore, this study aimed to evaluate the Swedish SEPC scale's construct by comparing it to that of the original SEPC. Furthermore, it aimed to describe and compare the self-efficacy of nurses and physicians in hospitals and explore the associated factors.

METHODS**Study design**

A cross-sectional study using an online survey elicited nurses' and physicians' levels of SEPC. This cross-sectional study followed the STROBE guidelines [23].

Setting and participants

This study was conducted in one healthcare region and two middle-sized acute care hospitals in southern Sweden that provide healthcare to approximately 200,000 inhabitants. In this region, the palliative care organisation is affiliated with the oncology ward, which includes a palliative team of eight nurses, six physicians and one therapist. The palliative care team works across the whole region and is a supportive function between outpatient, inpatient and advanced home care, and is available Monday to Friday during the daytime. The study population included all registered nurses (hereafter referred to as nurses) and physicians working in the region's hospitals, all of whom were contacted. Nurses and physicians were included if they worked with inpatient and outpatient care and provided direct patient care in clinics such as emergency and ambulance, medicine, oncology, surgery, infection, gynaecology, ear-nose-throat, skin and children's clinics. Nurses and physicians who did not work in direct patient care, such as in administrative positions, were also excluded.

Survey and data collection

Data were collected on sex, age, profession (nurse or physician), years in the profession and level of education (specialist nurse/physician or not a specialist). Data on education and experience in palliative care were also collected. Participants were identified as having received education in palliative care if they had received education in a university or work-related context or had been trained in serious illness conversations [24]. Work experience in palliative care was defined as having worked in a specialised setting (hospice, advanced homecare, palliative care unit or palliative care team), intending to inform how many had worked in a specific palliative care setting. Data on self-efficacy were collected using the SEPC-SE [22], which consists of 24 items divided into three subscales (domains): communication (8 items), patient management (8 items) and multidisciplinary teamwork (8 items) in palliative care. An item has been added to the SEPC-SE under the subscale of multidisciplinary teamwork to broaden the perspective, as the original SEPC did not include somatic palliative care (Supporting Information).

Participants were asked how they thought they would feel when performing a specific task. Those who perceive themselves to have high self-efficacy rate themselves as confident; a lower self-efficacy score indicates the opposite: not confident. The participants rated their scores on a VAS-scale design that ranged from 0 (not confident) to 100 (very confident). The survey contains 35 questions, and a list of selected participants was compiled from the region's personnel records. An online survey was conducted on the digital platform EsMaker. The survey link could only be accessed by those invited to participate because the link was emailed to their individual email accounts, which required a login password. The survey was sent to work emails in December 2021 to nurses ($n=1200$) and physicians ($n=386$) and was open for replies until January, with two reminders.

Data analysis

IBM SPSS statistical software version 26 finalised the analysis (IBM SPSS Statistics®, IBM Software Group, Chicago, IL, USA). The SEPC-SE scale was tested for its underlying structure and reliability using factor analysis according to Principal Component Analysis and Cronbach's alpha. Descriptive analyses for the categorical variables (sex, profession, specialist education, education in palliative care and experience in specialised palliative care) are presented in frequency and proportion. The analysis of the quantitative variables (age and years) is shown as mean and standard deviation. The sum score was calculated

for each SEPC-SE domain (communication, patient management and multidisciplinary teamwork) and used as a dependent variable for multiple linear regression analyses. The Shapiro-Wilk test explored the normal distribution, and the Mann-Whitney U test was used to compare nurses and physicians' self-efficacy scores within each domain. The effect size of the Mann-Whitney U test scores was calculated to examine the dimensions of the differences between nurses and physicians. A stepwise multiple linear regression analysis explored the models that showed significant associations between healthcare professionals' background characteristics and their level of self-efficacy on the dependency variables (SEPC-SE domains, communication, patient management and multidisciplinary teamwork). Clinical affiliation of the participants was excluded from the analysis as certain clinics were small and it would be possible to recognise the involved participants. A p -value of $p < 0.05$ was the cutoff score for significance.

RESULTS

A total of 396 completed surveys were received. However, four surveys were excluded owing to duplicates and inaccurate professions. Of the 392 valid surveys, 288 nurses and 104 physicians participated, with an overall response rate of 24.7% (nurses, 73.5%; physicians 26.5%). The participants consisted of women (74.7%) and men (25.3%). The majority of the nurses were female (86.8%), and the majority of the physicians were male (58.7%). The participants' average age was 45 years ($SD \pm 11.68$). The nurses were between 21 and 69 years old ($SD \pm 11.19$), and the physicians were between 26 and 73 years old ($SD \pm 12.97$). Nurses (17 years $SD \pm 11.38$) and physicians (17 years $SD \pm 12.11$) had the same number of years of professional experience (min-max 05–45, $SD \pm 11.56$). The majority of the participants (58.4%) had undergone specialist education (nurses 53.4%; physicians 72.1%). A minority of the participants had worked in hospice (nurses 3.1%; physicians 4.7%), advanced home care (nurses 10.7%; physicians 20.1%), palliative care units (nurses 5.5%; physicians 11.5%) or a palliative care team (nurses 9%; physicians 19.9%). A minority of the participants (nurses 16.6%; physicians 11.5%) had undergone education in palliative care at the university; one-third of the nurses (30.2%) and two-fifth of the physicians (41.3%) had education in palliative care in the workplace. A minority of the nurses (6%) and one-third of the physicians (34.6%) had undergone training for serious illness conversations (Table 1). The total response rate from clinics was as follows: Oncology (40.9%), Anaesthesia (28.7%), Medicine (27.0%), Surgery (27.7%) and Emergency (19.4%).

TABLE 1 Background characteristics of participants and comparison between nurses and physicians.

Participants characteristics	Total <i>n</i> = 392	Nurses <i>n</i> = 288	Physicians <i>n</i> = 104	<i>p</i> -Value
Sex <i>n</i> (%)				<0.001 ^a
Female	293 (74.7)	250 (86.8)	43 (41.3)	
Male	99 (25.3)	38 (13.2)	61 (58.7)	
Age (years)				0.493 ^b
Mean (SD)	45 (11.68)	44.9 (11.19)	45.8 (12.97)	
Range (min–max)	23–71	23–69	26–71	
Profession <i>n</i> (%)				<0.001 ^a
Nurses	288 (73.5)			
Physicians	104 (26.5)			
Years in the profession				0.922 ^b
Mean (SD)	17(11.56) 0.5–45	17 (11.38)	17 (12.11)	
Range (min–max)	17 (4.3)	0.5–45	0.5–45	
Missing		12 (4.1)	5 (4.8)	
Specialist education (%)				<0.001 ^a
Yes	229 (58.4)	154 (53.4)	75 (72.1)	
No	158 (40.3)	132 (45.8)	26 (25)	
Missing	5 (1.3)	2 (0.8)	3 (2.9)	
Work experience in hospice <i>n</i> (%)				0.006 ^a
Yes	14 (3.6)	9 (3.1)	5 (4.7)	
No	370 (96.4)	274 (95.1)	96 (92.3)	
Missing	8 (2)	5 (1.8)	3 (3)	
Work experience in advanced homecare <i>n</i> (%)				0.013 ^a
Yes	52 (13.2)	31 (10.7)	21 (20.1)	
No	333 (84.9)	251 (87.1)	82 (78.8)	
Missing	7 (1.9)	6 (2.2)	1 (1.1)	
Work experience in palliative care unit <i>n</i> (%)				0.097 ^a
Yes	28 (7.1)	16 (5.5)	12 (11.5)	
No	356 (90.8)	269 (93.4)	87 (83.6)	
Missing	8 (2.1)	3 (1.1)	5 (4.9)	
Work experience in palliative care team <i>n</i> (%)				0.001 ^a
Yes	46 (11.7)	26 (9)	20 (19.2)	
No	343 (87.5)	261 (90.6)	82 (78.8)	
Missing	3 (0.8)	1 (0.4)	2 (2)	
Education in palliative care at university <i>n</i> (%)				0.006 ^a
Yes	60 (15.3)	48 (16.6)	12 (11.5)	
No	326 (83.1)	235 (81.5)	91 (87.5)	
Missing	6 (1.6)	5 (1.9)	1 (1)	
Education in palliative care at work <i>n</i> (%)				0.004 ^a
Yes	59 (15)	87 (30.2)	43 (41.3)	
No	38 (83.6)	198 (68.7)	59 (56.7)	
Missing	5 (1.4)	3 (1.1)	2 (2)	
Training in serious illness conversations <i>n</i> (%)				<0.001 ^a

TABLE 1 (Continued)

Participants characteristics	Total <i>n</i> = 392	Nurses <i>n</i> = 288	Physicians <i>n</i> = 104	<i>p</i> -Value
Yes	53 (13.5)	17 (6)	36 (34.6)	
No	338 (86.2)	271 (94)	67 (64.4)	
Missing	1 (0.3)	0 (0)	1 (1)	

Note: Descriptive statistics expressed in number, percent (*n*%) and standard deviation (SD). *p*-Value < 0.05.

^aPearson chi-square-test.

^bIndependent *T*-sample test.

Factor structure and internal consistency

The results showed three factors with eigenvalues equal to or greater than 1 that were prominent among the 24 items in the SEPC-SE. The cumulative of the three factors noted is 75.2% of the variance. Furthermore, the items were revealed to have high factor loadings, and the variables were shown to be strongly explained by the underlying factor, with some variation between professions (Table 2).

The results showed high reliability for the total number of subscales: reliability statistics (0.90), item-total statistics, communication (0.85), patient management (0.80) and multidisciplinary teamwork (0.93).

Healthcare professionals' level of self-efficacy in communication, patient management and multidisciplinary teamwork, and its associated factors

As the data were not normally distributed, a Mann-Whitney *U* test as a non-parametric was used to compare nurses' and physicians' levels of self-efficacy. The Mann-Whitney *U* test enabled the comparison of the median scores between the groups for each domain (*communication, patient management and multidisciplinary teamwork*). The results showed that nurses (median [md] = 69.88) rated significantly lower self-efficacy scores in communication than physicians (md = 77.00). The results also revealed that nurses (md = 74.57) had lower self-efficacy scores in patient management than physicians (md = 81.71) (NS). The results further revealed that nurses (md = 52.44) rated significantly lower self-efficacy scores in multidisciplinary teamwork than physicians (md = 62.88) (Table 3).

Communication

The results for communication showed that healthcare professionals who had undertaken education in

palliative care in the workplace demonstrated a significant association with higher SEPC ($p < 0.001$). Extended years in the profession were also significantly associated with higher self-efficacy ($p < 0.001$). Additional experience working with advanced home care revealed a significant association with higher self-efficacy ($p = 0.011$). Furthermore, the result also demonstrated that being a male was significantly associated with higher self-efficacy ($p = 0.007$). Healthcare professionals who had received education in palliative care at university were significantly associated with higher self-efficacy ($p = 0.042$) (Table 4).

Patient management

The results for patient management showed a significant association between higher self-efficacy and healthcare professionals who had the experience of education in palliative care at work ($p < 0.001$) and the experience of working with advanced home care ($p = 0.003$) (Table 4).

Multidisciplinary teamwork

The results showed that, in multidisciplinary teamwork, workplace education was significantly associated with higher self-efficacy ($p < 0.001$). In addition, the experience of advanced home care was associated with higher self-efficacy ($p = 0.001$), as well as the physician profession ($p = 0.007$) (Table 4).

DISCUSSION

To the best of our knowledge, this is the first study to include both nurses and physicians in the analysis, demonstrating the extended usability of the SEPC scale. Extensive clinical data collection has established that the scale can be applied in multiple hospital settings. The broad data collection of participants' background characteristics

TABLE 2 Factor loadings of a three-factor model of the Swedish Self-Efficacy in Palliative Care Scale (SEPC-SE).

Variable (items SEPC-SE)	Nurses and physicians <i>n</i> = 392			Nurses <i>n</i> = 288			Physicians <i>n</i> = 104		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
1	0.64			0.73			0.81		
2	0.66			0.69			0.84		
3	0.64			0.84			0.79		
4		0.66		0.85			0.79		
5	0.78			0.81			0.87		
6	0.68			0.77			0.82		
7		0.68		0.72					0.67
8	0.59			0.64			0.71		
9		0.51				0.58	0.61		
10							0.83		
11	0.66					0.66	0.88		
12	0.73					0.77	0.89		
13	0.80					0.72	0.86		
14		0.79		0.83		0.57			0.69
15		0.70		0.72					0.65
16		0.80		0.79					0.77
17				0.54			0.57		
18			0.86		0.89			0.82	
19			0.88		0.90			0.86	
20			0.81		0.84			0.76	
21			0.64		0.75		0.76		
22			0.66		0.79		0.69		
23			0.77		0.82			0.66	
24			0.61		0.67				0.64
Factor-loading range	0.59–0.80	0.66–0.80	0.61–0.88	0.54–0.85	0.67–0.90	0.57–0.77	0.57–0.89	0.66–0.86	0.64–0.77

Note: Principal Component Analysis, Rotation method: Varimax with Kaiser Normalisation. This table shows each factor's highest coefficient with a minimum loading cutoff score of 0.5.

TABLE 3 The participants' level of self-efficacy in palliative care and differences between nurses and physicians.

SEPC-SE variable domains	Nurses		Physicians		Effect-size ^a	p-Value ^b
	Total n = 288	Median (SD)	Total n = 104	Median (SD)		
Communication	228	69.88 (22.52)	80	77.00 (18.30)	Small	0.010
Patient management	180	74.57 (23.34)	81	81.71 (19.82)	Small	0.141
Multidisciplinary teamwork	186	52.44 (23.67)	86	62.88 (17.80)	Small	0.001

Note: p-Value < 0.05.

Abbreviation: SEPC-SE, Swedish Self-efficacy in Palliative Care Scale.

^aEffect size *r* for Mann–Whitney *U*.

^bMann–Whitney *U*.

TABLE 4 Results of significant associations between nurses' and physicians' level of self-efficacy in communication, patient management and multidisciplinary teamwork.

	<i>B</i>	Std error	p-Value	R ² adjusted
Communication				
Model 1				0.18
(Constant)	(53.13)	(2.23)		
Education in palliative care, workplace (yes)	12.28	2.45	<0.001	
Years spent in the profession	0.42	0.09	<0.001	
Work experience in advanced homecare (yes)	8.51	3.33	0.011	
Sex: (male)	7.22	2.56	0.007	
Education in palliative care; university (yes)	6.53	3.20	0.042	
Patient management				
Model 1				0.13
(Constant)	(67.25)	(1.63)		
Education in palliative care through workplace (yes)	13.72	2.77	<0.001	
Work experience in advanced homecare (yes)	10.96	3.61	0.003	
Multidisciplinary teamwork				
Model 1				0.13
(Constant)	(47.44)	(1.74)		
Education in palliative care through workplace (yes)	10.48	2.78	<0.001	
Work experience in advanced homecare (yes)	12.33	3.71	0.001	
Profession (physicians)	7.53	2.74	0.007	

Note: Models for multiple linear regression with stepwise analysis. p-Value < 0.05. *B* = beta.

contributes to an expanded view of what is associated with self-efficacy. The result showed that nurses had lower self-efficacy than physicians in the SEPC-SE. Education in palliative care through the workplace and work experience in advanced homecare had the strongest associations with higher self-efficacy.

This study's factor analysis revealed equal numbers of factors with an equal value over 1 on the original SEPC scale [21]. Furthermore, the factor range for SEPC-SE (factor 1 0.59–0.80, factor 2 0.66–0.80, factor 3 0.61–0.88) and original SEPC (factor 1, 0.70–0.89, factor 2 0.55–0.84, factor 3 0.70–0.84) displayed a comparable factor range, although the factor loading for the original SEPC scale

was slightly higher. The Cronbach's alpha values for SEPC-SE (communication, 0.85; patient management, 0.80; multidisciplinary teamwork, 0.93) and original SEPC (communication, 0.92; patient management, 0.93; multidisciplinary teamwork, 0.93) exposed high reliability. However, Cronbach's alpha values for the original SEPC scale were higher in communication and patient management, and both scales displayed equal value for multidisciplinary teamwork. The comparison between the scales thus suggests that the SEPC-SE's construct validity and high internal consistency show that it has a similar structure to the original scale and can be used to measure self-efficacy in Swedish settings. However, the results of

this study showed that nurses and physicians responded differently to some items. Nurses responded that they had lower self-efficacy compared to physicians. The original SEPC was developed for physicians and not nurses. This could be a reason for the scale structure differences between physicians and nurses. When interpreting the results of the regression analysis, we should consider that the regression analysis builds on the scale's original domain structure. Previous studies indicate that the SEPC scale can be helpful in longitudinal studies as pre- and post-measures to evaluate educational interventions or estimate expected performance [25, 26].

Multidisciplinary teamwork differed from communication and patient management in terms of its lower self-efficacy scores. Research has acknowledged that the complexity of palliative care can challenge collaboration in hospitals [27]. A minority of participants had received education in palliative care or experience with specialised palliative care. This result may mirror a lack of knowledge and limited awareness of the roles of other professions. Low collective efficacy affects self-beliefs [20]. Furthermore, physicians were associated with higher self-efficacy in multidisciplinary teamwork. The low rating in multidisciplinary teamwork may also be because the domain item contains questions about identifying a need or/and referral to other professions (such as physiotherapy, occupational therapy and complementary therapies). All healthcare professionals may not have the experience of identifying a need or referring patients to other professions, which may make it difficult to respond to all the items.

Nurses reported lower self-efficacy than physicians in all domains. Furthermore, the physician profession was significantly associated with higher self-efficacy in multidisciplinary teamwork, an outcome that aligns with previous studies, where physicians generally have higher self-efficacy scores than nurses [28, 29]. Moreover, physicians had undergone education in palliative care and had worked in specialised palliative care. Additionally, education through the workplace and working in advanced home care was the strongest associated factor for higher levels of self-efficacy, as it was significant across all domains; physicians had more experience than nurses in these areas. Self-efficacy is interrelated to practical knowledge since it is the gain of experience that establishes self-efficacy [30, 31]. The present study results indicate that physicians have had more opportunities for practical experience in palliative care. Previous studies using the SEPC scale have shown that healthcare professionals with extended experience in direct care and previous experience in end-of-life care scored higher in self-efficacy [25, 32]. In the present study, nurses and physicians had spent equal years in their profession, which was associated with

higher self-efficacy in communication. Although the participants had a similar number of years of experience in their profession, the nurses were younger than the physicians. Age was not significantly associated with self-efficacy. This result indicates that life experience through age may not increase self-efficacy as it does not necessarily translate into practice in the field; therefore, work experience is likely a stronger predictor of self-efficacy than age. More extended professional experience has been shown to impact self-efficacy [33]. However, in a study of Canadian long-term care, long experience in the profession was not associated with higher SEPC. A Canadian study suggested that self-efficacy is not increased only by experience in the profession but also by the experience gained in the specific area [34]. Notably, self-efficacy is not a general belief but a belief in performing specific tasks [15]. Education in palliative care through university was significantly associated with higher self-efficacy in communication, which nurses had experienced more than physicians. However, according to this study, physicians had received more education in the workplace, which had a stronger association with self-efficacy. Previous research has shown that the practical context must be integrated with learning to transform theoretical knowledge [35].

The results showed that males had higher levels of self-efficacy in communication, which was also demonstrated in a study using the Spanish SEPC scale [32]. A study by Rahe et al. showed that it differs in the effect of practice regarding confidence in favour of men [36], and this study may indicate that men and women have different confidence levels in some areas.

Increasing nurses' self-efficacy could benefit team collaboration between professions, as it can increase nurses' confidence in supporting physicians, resulting in better collective self-efficacy for the team. Nurses and physicians may require tailored support in separate areas to increase their self-efficacy in providing palliative care. Although education and experience are essential for increased self-efficacy in providing palliative care, this study found that only a few healthcare professionals had had the opportunity to learn about and work in palliative care. This study included nurses and physicians working in general settings, and not many had experience working in specialised palliative care settings, which could have affected their item responses. However, most individuals die in non-specialist palliative care, such as general hospitals. Healthcare professionals working in hospitals are more likely to care for patients with palliative care needs. Therefore, healthcare professionals with self-efficacy in providing palliative care in general settings is significantly important.

Further research should focus on how healthcare organisations worldwide, at national and local levels, can

increase the opportunities for healthcare professionals from different clinics to engage in activities that educate and provide them with more experience.

Strengths and weaknesses

A strength of this study is the procedure for reaching the participants. An online survey on the digital platform EsMaker made it possible to reach all nurses and physicians in the study area. More nurses participated than physicians. However, it should be considered that the difference in the number of nurses and physicians in this study is similar to the different group sizes within the Swedish healthcare system, where approximately 65% are nurses and 35% are physicians. The result of the distribution of nurses and physicians can be seen as expected, as it mirrored the group distributions of the two hospitals. This study had a low response rate (24.7%). However, 222 questionnaires were commenced but not submitted, and these questionnaires were excluded from the study. Not completing and submitting the questionnaire could be because healthcare professionals often have busy schedules, and a lack of time to complete the questionnaire may cause non-submission. Online surveys have a lower response rate than traditional surveys [37]. Surveys distributed to healthcare professionals in hospitals during the COVID-19 pandemic have also shown a low response rate [38]. The number of not commenced, or commenced but not submitted surveys may also be due to the participants' lack of awareness of palliative care, and the survey seeming irrelevant to them. The missing values in the self-efficacy items might have been due to difficulties in answering some questions if the participants lacked knowledge of palliative care. The result did display that the response rate between the professions showed only a slight variation, with nurses at 23.5%, physicians at 26.5% and no clinics missing from the collected data. However, although participants' specialties or workplaces were not included in the analysis for ethical reasons because participants from small clinics could be recognised, it is considered a limitation. However, a response rate is presented where the small clinics are grouped within larger clinics.

CONCLUSIONS

The SEPC-SE has good construct validity and high internal consistency and is considered reliable for measuring self-efficacy among hospital nurses and physicians. However, future studies should explore the robustness of the scale's validity. Healthcare professionals' average self-efficacy scores were highest for patient management,

followed by communication and lowest for multidisciplinary teamwork. Furthermore, nurses reported lower self-efficacy than physicians, and physicians were associated with higher self-efficacy. Education in palliative care at work and experience in advanced homecare had the strongest significant positive association with self-efficacy, with physicians having more experience than nurses. Healthcare organisations should acknowledge that work-related education and palliative care experience are important aspects of self-efficacy. As an implication, healthcare organisations should prioritise work-related education in palliative care for all healthcare professionals. Hence, they should prioritise that more healthcare professionals are given an opportunity to gain work-related experience in palliative care. Future research should focus on how to tailor education and work-related experience for different professions to maximise self-efficacy within different groups of healthcare professionals. The SEPC-SE can be used as a pre- and post-measure to evaluate educational interventions or estimate expected performance in palliative care.

AUTHOR CONTRIBUTIONS

LG, SA, EH and AS contributed to the study design. Data collection was performed by LG, SA and AS. LG performed the data analysis with inputs from SA, DÅ and AS, and drafted the manuscript. All authors performed critical reviews and approved the final version.

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CONFLICT OF INTEREST STATEMENT

None declared.

DATA AVAILABILITY STATEMENT

Data are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

This study was approved by the Swedish Ethical Review Authority (reference number: 2021-03569) and hospital management. The study was carried out in accordance with the Declaration of Helsinki of the World Medical Association [39], the Act concerning the Ethical Review of Research Involving Humans SFS 2003:460 [40] and the Swedish Ethical Review Authority guidelines [41]. All participants received written information about the study and voluntarily participated. All participants gave

informed consent for participation through the digital platform EsMaker. Participants could not access the survey before they ticked a mandatory box for their consent to participate. To secure participants' anonymity and confidentiality, one personnel member in the region working in human resources and one researcher had the password to access the online survey in Esmaker. No one else had access to information that could be traced back to specific individuals. After the study is conducted, the researcher can no longer access Esmaker and the survey.

ORCID

Lisa Granat  <https://orcid.org/0000-0003-4300-6229>

Anna Sandgren  <https://orcid.org/0000-0002-3155-575X>

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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