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Psychometric properties of the New General Self-Efficacy Scale for Vietnamese persons with colorectal cancer

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Abstract

Background: There are currently no specific tools available to assess self-efficacy among Vietnamese individuals with colorectal cancer (CRC) post-surgery. Translating and evaluating the psychometric properties of the New General Self-Efficacy Scale (NGSE) for use in the Vietnamese population could help address this gap.

Objective: This study aimed to evaluate the psychometric properties of the Vietnamese version of the NGSE scale.

Methods: A cross-sectional study was conducted. The sample consisted of 120 individuals aged 20-59 with CRC post-surgery, recruited through a multi-stage sampling technique from three hospitals in Vietnam. The scale was translated into Vietnamese using Brislin's technique. Content validity was assessed using the Content Validity Index for item (I-CVI) and for scale (S-CVI). Construct validity was examined through confirmatory factor analysis (CFA), and reliability was measured using Cronbach's α coefficients.

Results: The findings showed an I-CVI of 1.00 and an S-CVI of 1.00, indicating excellent content validity. The Cronbach's α for the NGSE was 0.95, indicating excellent internal consistency. CFA results showed that all eight items fit well within a unidimensional structure (χ^2 = 48.936, p >0.05, df = 24, χ^2/df = 2.04, RMSEA = 0.078, CFI = 0.979, TLI = 0.971, SRMR = 0.023). Factor loadings for each item ranged from 0.798 to 0.901.

Conclusion: The results suggest that the NGSE scale demonstrates good psychometric properties as applied to the Vietnamese individuals examined in this study. This instrument can be regularly utilized in clinical settings to identify key concerns in colorectal cancer patients' care and facilitate appropriate nursing interventions to enhance self-efficacy in this population effectively.

Keywords

Vietnam; self-efficacy; psychometric properties; reliability; validity; confirmatory factor analysis; colorectal neoplasms

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Background

Self-efficacy refers to a person's belief in their ability to perform the actions required to attain particular performance results (Eller et al., 2018). It significantly affects cancer patients, particularly those with colorectal cancer after treatment. Specifically, self-efficacy refers to a colorectal cancer post-surgery person's perception of their ability to perform different achievement situations.

A literature review indicates that self-efficacy is a crucial individual characteristic that impacts quality of life among colorectal cancer patients. People with greater self-efficacy generally experience an improved health-related quality of life following surgery because increased self-efficacy fosters greater confidence in their self-care abilities, reduces the time spent addressing health issues post-surgery, and enhances motivation (Ayalon & Bachner, 2019). Furthermore, self-efficacy has been identified as the most important factor influencing and significantly predicting health-related quality of life (Johansson et al., 2018; Yan et al., 2022).

However, evidence suggests that self-efficacy decreases among colorectal cancer patients, particularly showing a moderate reduction from 3 to 12 months post-surgery (Johansson et al., 2018; Li et al., 2023). Therefore, it is crucial to explore the status of self-efficacy in colorectal cancer patients that could help improve their overall quality of life. Increased self-efficacy can motivate behavioral improvements and enhance one's capacity for self-management, quality of life, and confidence in managing cancer, thereby improving psychological adaptation following surgery (Wu et al., 2007; Yeung & Lu, 2014).

For nurses, understanding and measuring self-efficacy in colorectal cancer patients is vital to patient education and support. By utilizing accurate self-efficacy measurement tools,

nurses can better assess and address the unique needs of Vietnamese patients post-surgery. This knowledge enables nurses to provide interventions that promote self-efficacy and improve patients' self-management skills and health outcomes. Empowering patients to believe in their capabilities can lead to enhanced motivation, adherence to treatment regimens, and, ultimately, a better quality of life. By focusing on self-efficacy, nursing interventions can more effectively promote psychological adaptation and improve overall care for colorectal cancer patients.

To assess self-efficacy, several instruments have been developed, including the General Self-Efficacy Scale (GSE), Self-Efficacy for Managing Chronic Disease Scale (SEMCD), and Sherer's General Self-Efficacy Scale (SGSE). However, these scales assess a broad personal competence to deal effectively with a variety of stressful situations and numerous diseases. Among these instruments, the New General Self-Efficacy Scale (NGSE) focuses on individuals' perception of their ability to perform in diverse situations, which aligns closely with the definition of self-efficacy in colorectal cancer (CRC) patients. Additionally, the NGSE has demonstrated greater reliability and stronger factor validity compared to the other scales.

The NGSE scale was developed by Chen et al. (2001) to measure individuals' perception of their ability to perform tasks across various situations. The NGSE scale has demonstrated strong psychometric properties, including high test-retest reliability coefficients (r_{t1-t2} = 0.65, r_{t2-t3} =0.66, r_{t1-t3} = 0.62) and internal consistency reliability (α = 0.86 and 0.90). Additionally, the test-retest stability was indicated by a reliable coefficient (r = 0.67) (Chen et al., 2001).

Currently, there are no specific tools available to measure self-efficacy in Vietnamese individuals with colorectal cancer. Translating the NGSE scale from English into Vietnamese could help fill this gap. Therefore, evaluating its psychometric properties for use in the new context is necessary. Consequently, this study aimed to translate the NGSE scale and assess its psychometric properties for use among Vietnamese individuals who have undergone surgery for colorectal cancer.

Methods

Study Design

The data for this study were extracted from a cross-sectional study, which was part of a doctoral dissertation titled "A causal model of health-related quality of life among persons with colorectal cancer post-surgery in Vietnam" (Tran et al., 2024).

Samples/Participants

This study employed a multi-stage sampling technique to collect data. In Vietnam, oncology hospitals performing colorectal cancer surgeries are categorized by administrative units into three types: central hospitals, provincial hospitals, and city hospitals. One oncology hospital was randomly selected from each region. A purposive sampling technique was used within each hospital to recruit participants following inclusion criteria.

Regarding sample size, DeVellis (2017) recommended a rule of 10 or 15 cases for factor analysis, with at least 10 cases for each item in the instrument. Given that the NGSE scale comprises eight items, this study required a sample size of between 80 and 120 participants. Therefore, a total of 120 respondents were recruited for this research.

The inclusion criteria for participants consisted of individuals aged 20 to 59 who had undergone their first colorectal cancer (CRC) surgery as the primary treatment, within 1 to 6 months post-surgery, without any history of previous cancer surgeries, and who were able to read and communicate verbally in Vietnamese. Participants were excluded if they exhibited potentially life-threatening conditions or had widespread metastases (such as tumors that had spread to the brain, liver, etc.).

Instrument Validation

Data for this study were collected using the New General Self-Efficacy Scale (NGSE). In addition, a demographic form was developed by the researchers to gather information about the respondents' characteristics, including age, gender, family status, education level, employment status, disease stage, types of cancer, type of stoma, treatment type, duration since surgery. The NGSE scale is designed to be completed in less than three minutes and consists of eight unidimensional items rated on a 5-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The scale has a possible score range from 8 to 40, with higher scores showing a greater self-efficacy.

The 8-item NGSE scale was then sent to five experts to assess its content validity index, following the recommendation of Polit et al. (2007). All experts held PhDs in nursing and had at least five years of experience in the oncology field. The content validity assessment evaluated the relevance of all eight items to the context of Vietnamese. The level of agreement for each item regarding the self-efficacy of colorectal cancer patients was subsequently calculated.

Instrument Translation

In the study, the researcher got permission from the developer to translate and use the NGSE Scale. Following this permission, the scale was translated from English into Vietnamese using the forward-backward translation technique outlined by Brislin (1970). Initially, the questionnaire was translated into Vietnamese and then back-translated into English by two bilingual experts. These experts included Vietnamese oncology lecturers who graduated from a doctoral nursing program abroad, possess English certifications and have at least five years of experience in the oncology nursing field, as well as one Vietnamese practice nurse currently working in an English-speaking country. The two translated versions were subsequently reviewed by a Vietnamese professional translator, an English lecturer at a nursing university, to assess comparability and interpretability.

Once the final version was completed, a pilot study was carried out. An interview was held with ten individuals who had undergone colorectal cancer surgery within the past 1 to 6 months, randomly selected from the Oncology department of a general hospital, to assess the conceptual clarity of the Vietnamese version.

Data Collection

The data were collected from May to August 2023 at the oncology centers of three hospitals in Vietnam: Vietnam

National Cancer Hospital, Nam Dinh General Hospital, and Hanoi Oncology Hospital.

Data collection involved the following steps: Firstly, three research assistants, who were head nurses at each hospital, were trained on study objectives, design, instruments, ethics, and data collection procedures. Next, they assisted in identifying eligible participants and introduced them to the researcher for individual engagement. Then, the researchers established rapport, explained the study's objectives, ensured confidentiality, and asked to sign consent forms from willing participants. After that, participants completed the self-administered questionnaire for about five minutes. Finally, the researchers reviewed the questionnaire for completeness.

Data Analysis

Data analysis for this study utilized SPSS (Statistical Package for the Social Sciences) version 29 and Mplus version 8.3. Descriptive statistics were used to analyze the participants' demographics, including means and standard deviations. Internal consistency reliability of the NGSE scale was assessed using Cronbach's alpha coefficients, and values above 0.80 were considered acceptable (DeVellis, 2017). Confirmatory Factor Analysis (CFA) was utilized for examining construct validity, with five statistical criteria employed to evaluate the model fit: non-significant chi-square (χ^2) (p >0.05), normed Chi-squared (χ^2/df) was <3, root mean square error of approximation (RMSEA) ≤0.08, comparative fit index (CFI) and Tucker–Lewis index (TLI) >0.90, standardized root mean square residual (SRMR) was <0.08 (Byrne, 2013).

Ethical Considerations

This study was an instrument development which was part of "A causal model of health-related quality of life among persons with colorectal cancer post-surgery in Vietnam" (Tran et al., 2024) that received approval from the Board of the Faculty of Nursing, Chulalongkorn University (No. 5/2023, dated March 7, 2023). Ethical approval was granted by the Institutional Review Board (IRB) with reference numbers 1909/BVK-HDDD, 894/GCN-HDD, and 2013/QD-BVUB. Additionally, the researcher received permission from the Institutional Ethics Committee to engage with participants through the hospital nursing staff.

Informed consent was secured prior to data collection. This process involved providing participants with detailed information about the study's purpose, procedures, potential risks, and benefits, ensuring they could make an informed decision about their participation. Participants were also assured of their right to withdraw from the study at any time (until data collection was concluded) without any consequences, and their confidentiality was guaranteed by anonymizing their data. Furthermore, a consent form was presented to each participant, which they had the opportunity to read and ask questions about before signing, thereby reinforcing the ethical standards of the research and fostering trust between the researchers and participants

Results

Participants Characteristics

The demographic data of the respondents revealed that the majority of participants were aged between 50 and 59 years (62.50%). Most participants were male (63.33%), married (94.17%), and had completed secondary school (41.67%) or high school (31.67%). Approximately half of the respondents were unemployed (55.83%). Most participants were at stage III (66.67%) and had colon cancer (62.50%), with 75.00% not having a stoma. The majority of participants underwent surgery in combination with chemotherapy (86.67%), and the average time since surgery was 3.51 months (SD = 1.57) (**Table 1**).

Table 1 Characteristics of the participants (N = 120)

Characteristics	*n*	%
Age (years)		
20-29	6	5.00
30-39	14	11.67
40-49	25	20.83
50-59	75	62.50
Mean (SD) = 49.79 (10.09)		
Gender		
Male	76	63.33
Female	44	36.67
Family status		
Married	113	94.17
Single	7	5.83
Education level		
Primary school	12	10.00
Secondary school	50	41.67
High school	38	31.67
College	9	7.50
University or higher	11	9.16
Employment status		
Unemployed	67	55.83
Employed	53	44.17
Disease stage		
Stage I	5	4.17
Stage II	24	20.00
Stage III	80	66.67
Stage IV	11	9.17
Type of cancer		
Colon cancer	75	62.50
Rectum cancer	45	37.50
Type of stoma		
Non-stoma	90	75.00
Permanent stoma	22	18.33
Temporary stoma	8	6.67
Type of treatment		
Surgery with chemotherapy	104	86.67
Surgery only	14	11.67
Surgery with radiotherapy	2	1.67
Duration from surgery (months)		
Mean (SD) = 3.51 (1.57)		
Min = 01, Max = 06		

Translation Results

All items were translated into Vietnamese, and the back-translated version closely resembled the original (**Table 2**). In the pilot testing, participants understood the Vietnamese questionnaire and noted that all items were simple to assess. They did not suggest any additional information. This positive feedback indicated that the translation was accurate and culturally appropriate, ensuring that the language used was accessible to the participants.

Table 2 Translated and back-translated items

Item No.	Original item (English)	Translated item (Vietnamese)	Back-translated item (English)
1	I will be able to achieve most of the goals that I have set for myself.	*Tôi có thể đạt được hầu hết các mục tiêu mà tôi đã đặt ra cho bản thân.*	*I am able to achieve most of my goals that I have set for myself*
2	When facing difficult tasks, I am certain that I will accomplish them.	*Khi đối mặt những nhiệm vụ khó khăn, tôi tin chắc rằng mình sẽ hoàn thành chúng.*	*When facing with difficult tasks, I believe that I will accomplish them.*
3	In general, I think that I can obtain outcomes that are important to me.	*Nhìn chung, tôi nghĩ rằng tôi có thể đạt được những kết quả quan trọng đối với mình.*	*Generally, I think I can gain outcomes that are important to me.*
4	I believe I can succeed at most any endeavor to which I set my mind.	*Tôi tin rằng tôi có thể thành công ở hầu hết bất cứ việc gì mà tôi đặt tâm huyết vào.*	*I believe that I can succeed at most any endeavor I set my mind to.*
5	I will be able to successfully overcome many challenges.	*Tôi có thể vượt qua các thử thách thành công.*	*I will be able to be successful to overcome many challenges.*
6	I am confident that I can perform effectively on many different tasks.	*Tôi tự tin rằng tôi có thể làm nhiều việc một cách có hiệu quả*	*I am confident that I can perform effectively on many different tasks.*
7	Compared to other people, I can do most tasks very well.	*So với những người khác, tôi có thể thực hiện rất tốt hầu hết các nhiệm vụ.*	*Compared to others, I can perform most tasks very well.*
8	Even when things are tough, I can perform quite well.	*Tôi vẫn có thể làm khá tốt ngay cả với những việc khó khăn*	*Even when things are tough, I still can perform quite well.*

Psychometric Properties of the NGSE scale

Reliability

The internal consistency reliability of the New General Self-Efficacy Scale (NGSE) was assessed with 120 Vietnamese patients after colorectal cancer surgery. Cronbach's alpha of the NGSE scale was 0.95, indicating high internal consistency (Polit & Beck, 2004). All eight items had item-total correlation exceeding 0.70 (**Table 3**), demonstrating that each item contributes significantly to the overall scale. Such strong item-total correlations reinforce the effectiveness of the NGSE in reflecting the self-efficacy of this patient population.

Table 3 Item correlation of the Vietnamese version of the NGSE scale

Items	Scale Mean if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I will be able to achieve most of the goals that I set for myself.	15.35	0.850	0.948
When facing difficult tasks, I am certain that I will accomplish them.	15.42	0.813	0.950
In general, I think that I can obtain outcomes that are important to me.	15.38	0.807	0.951
I believe I can succeed at most any endeavor to which I set my mind.	15.27	0.781	0.952
I will be able to successfully overcome many challenges.	15.37	0.873	0.947
I am confident that I can perform effectively on many different tasks.	15.28	0.851	0.948
Compared to other people, I can do most tasks very well.	15.47	0.859	0.947
Even when things are tough, I can perform quite well.	15.36	0.818	0.950

Content Validity Index

The results indicated that all items were rated between 3 (quite relevant) and 4 (highly relevant), confirming that most items correlated well with the self-efficacy of colorectal cancer patients. Additionally, the NGSE scale demonstrated a Content Validity Index for item (I-CVI) of 1.00 and a Content Validity Index for scale (S-CVI) of 1.00, indicating excellent content validity.

Construct Validity - Confirmatory Factor Analysis

The construct validity of the NGSE scale was evaluated through confirmatory factor analysis (CFA). The analysis indicated that the 8-item Vietnamese version of the NGSE scale demonstrated a good fit with a unidimensional structure, thereby supporting its validity for measuring self-efficacy among colorectal cancer patients in the Vietnamese population after surgery (χ^2 =48.936, p >0.05, df = 24, χ^2/df = 2.04, RMSEA = 0.078, CFI = 0.979, TLI = 0.971, SRMR = 0.023). The factor loadings for each factor varied from 0.798 to 0.901 (**Figure 1**).

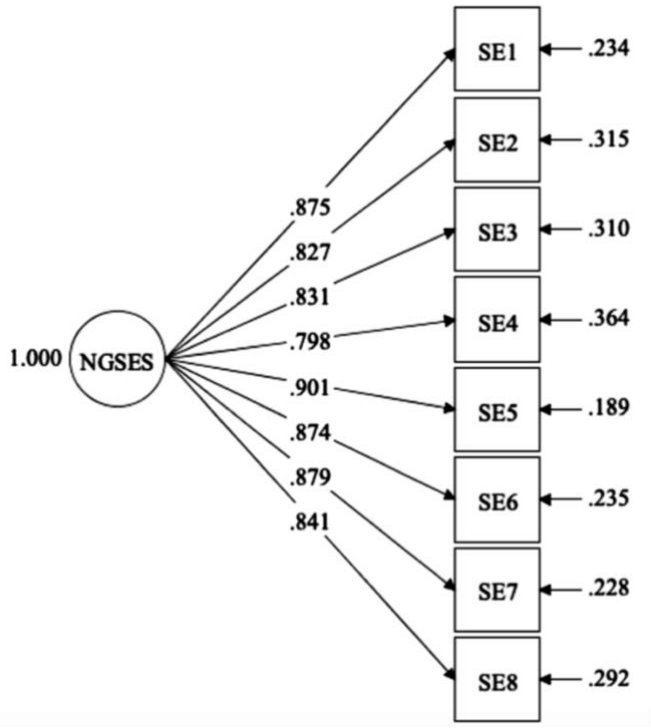

Figure 1 Construct validity of the NGSE scale from 120 CRC post-surgery patients

Discussion

This study aimed to translate and evaluate the psychometric properties of the New General Self-Efficacy Scale (NGSE) for Vietnamese patients with colorectal cancer (CRC) post-surgery. The findings revealed that the Vietnamese version of the NGSE scale was easy to understand and comparable to the English version. Furthermore, the results indicated that the Vietnamese version is a valid tool for measuring self-efficacy among colorectal cancer patients, demonstrating strong psychometric validity and good internal consistency.

The internal consistency of the Vietnamese version of the NGSE scale, reflected by Cronbach's α of 0.95, falls within an excellent range. This finding is consistent with the original version, which reported internal consistency coefficients ranging from 0.85 to 0.90 (Chen et al., 2001, 2004). Furthermore, it aligns with the established psychometric properties of both the Polish version of the NGSE scale (Baran & Janowski, 2023) and the Arabic version (El Alaoui et al., 2017), thereby supporting the scale's reliability across diverse cultural contexts.

Content validity was confirmed with a Content Validity Index for item (I-CVI) of 1.00 and a Content Validity Index for scale (S-CVI) of 1.00, indicating excellent content validity. This finding is consistent with previous research showing that the NGSE scale possesses notably high content validity (Chen et al., 2001).

Confirmatory factor analysis (CFA) affirmed that the eight items formed a unidimensional scale that accurately measures self-efficacy in Vietnamese CRC post-surgery patients. These findings are consistent with prior studies that have conducted CFA on the NGSE scale, demonstrating a unidimensional structure with a good fit to empirical data (Alexopoulos & Asimakopoulou, 2009; Chen et al., 2001, 2004; El Alaoui et al., 2017; Scherbaum et al., 2006).

Implications for Nursing Practice

Given the absence of a self-efficacy measurement tool specifically for Vietnamese individuals after colorectal cancer surgery, a validated instrument designed to assess self-efficacy in this population is vital for evaluating post-treatment functionality. Nurses can regularly utilize this tool in clinical settings to identify critical concerns related to the care of colorectal cancer patients and guide appropriate interventions to enhance self-efficacy. By effectively addressing the self-efficacy needs of Vietnamese colorectal cancer survivors, nurses can provide more personalized support throughout the recovery journey. This approach helps patients regain confidence in their self-management abilities and fosters better adherence to treatment regimens and healthier lifestyle choices. Finally, by integrating this validated tool into practice, healthcare professionals can significantly improve the health outcomes and overall quality of life for Vietnamese patients recovering from colorectal cancer surgery.

Limitations

This study was conducted in the Northern region of Vietnam, which may limit the generalizability of the findings to other areas of the country. Due to time constraints, the authors selected only one hospital from each region. While this approach captures various types of oncology care available in Vietnam, it may not fully represent all aspects of colorectal cancer treatment nationwide. Additionally, participants were included within a specific time frame of 1 to 6 months post-surgery. This narrow window may not adequately reflect the variations in self-efficacy that could occur at different stages of the recovery process.

Recommendations for Future Research

Future studies should consider expanding the geographical scope to include participants from the Southern and Central regions of Vietnam to enhance the generalizability of the results. Furthermore, longitudinal studies that follow patients over a more extended period post-surgery could provide valuable insights into how self-efficacy evolves throughout recovery. This approach would help identify critical periods where interventions may be most beneficial, allowing for targeted support that adapts to changes in self-efficacy over time.

Conclusion

The study demonstrated that the Vietnamese version of the New General Self-Efficacy Scale is suitable and adheres to standard translation methodology, demonstrating good psychometric validity and internal consistency. This tool is valuable for nurses and healthcare professionals in assessing self-efficacy among Vietnamese colorectal cancer patients post-surgery and can assist in establishing targeted goals to enhance their self-efficacy.

Declaration of Conflicting Interest

The authors declare no conflicts of interest.

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Authors' Contributions

Tran Thi Hong Hanh: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Resources, Software, Validation, Writing – original draft, Writing - review & editing.
Sureeporn Thanasilp: Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Writing – original draft, Writing - review & editing.
Noppamat Pudtong: Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing – original draft, Writing - review & editing.
All authors approved the article's final version to be published and were accountable for each part of the study.

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Data Availability

The datasets used and analyzed during the current study are available from the corresponding author upon reasonable request.

Declaration of Use of AI in Scientific Writing

There is nothing to declare.

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