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Research Article

Assessment of student nurses' self-efficacy levels in physical examination

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Highlights

- The physical examination self-efficacy of nursing students was at a moderate level.
- The results of the study underline the need to focus on strategies that will increase students' self-efficacy and competence in physical examination during nursing education.

Abstract

Objective: This study aimed to determine the self-efficacy levels of nursing students regarding their physical examination skills.
Method: The study was conducted using a descriptive design between February 2024 and May 2024. Participants included 2nd, 3rd, and 4th-year students from the Nursing Department of the Faculty of Health Sciences at Van Yüzüncü Yıl University. The study population consisted of 278 nursing students, and the required sample size was calculated to be at least 199 students using the G-Power 3.1.9.4 program, with parameters set at d=0.2, α=0.05, and power=0.80. Ultimately, 226 students participated in the study. Data were collected using the Student Information Form and the Perceived Self-Efficacy in Physical Examination Scale for Undergraduate Nursing Students (PPSES). The data were analyzed using SPSS (Statistical Package for Social Sciences) version 26.0.
Results: The mean age of the participants was 22.00±1.39 years; 67.3% were female, 35.4% were in their 2nd year, and 55.3% had reluctantly chosen nursing as their field of study. Additionally, 72.6% reported not having received any formal course or training on physical examination, while 69.5% indicated that they applied physical examination methods during practice. The mean total score on the Perceived Self-Efficacy in Physical Examination Scale (PPSES) was 96.08±24.02, indicating a moderate level of self-efficacy.
Conclusion: The findings suggest that nursing students have a moderate level of self-efficacy regarding physical examination skills. Efforts should be made to enhance their self-efficacy by encouraging active participation in physical examination practices.
Practice for implications: The study highlights the need for additional support and training to improve nursing students' self-efficacy in physical examination, which is crucial for their professional competence.
Keywords: Nursing student, physical examination, self-efficacy.

Introduction

Today, nurses must be professionally competent to meet the demands of an evolving healthcare system and the growing need for qualified nurses and high-quality nursing education. One of the key areas of competence in nursing is health assessment (Çalışkan et al., 2020). Physical examination, a crucial element of health assessment, is a critical thinking process that involves advanced or direct physical examination techniques such as inspection, palpation, percussion, auscultation, and olfaction. This process is further supported by the systematic integration of health history, objective data, and subjective findings (Çalışkan et al., 2020; Utli, Dinç, & Bütün, 2023).

The primary goal of clinical education is to bridge the gap between theoretical knowledge and practical application, thereby enhancing students' self-efficacy in diagnosis, treatment, and patient care (Pozam & Zaybak, 2022). The concept of self-efficacy, first introduced by psychologist Albert Bandura, refers to an individual's ability to set goals, plan the necessary steps to achieve them, and evaluate their success or failure based on their own capabilities (Bandura, 2002). Nursing education aims to cultivate cognitive, affective, and psychomotor skills in students. Understanding nursing students' self-efficacy and competence levels is crucial for developing strategies to optimize teaching and learning processes (Yiğitbaş & Yetkin, 2003).

Factors such as anxiety, stress, loss of control, motivation, and self-efficacy significantly influence the success or failure of undergraduate nursing students in clinical settings (Zengin et al., 2014). Institutions providing undergraduate nursing education aim to train qualified nurses for the profession. To achieve this, it is essential for these institutions to focus on developing physical examination skills, a core competency of nursing practice, in their students (Gök & Zencir, 2022). However, research indicates that many students struggle to perform physical assessments at the desired level due to several challenges (Brown et al., 2024; Deliens et al., 2015; Budzynski-Seymour et al., 2020). These include the status of physical assessment as an elective course, lack of self-confidence stemming from insufficient clinical knowledge, and the prioritization of patient care over teaching physical assessment skills by nurses in clinical environments (Çalışkan et al., 2020).

Nursing students who do not acquire adequate physical examination skills may conduct incomplete assessments, potentially compromising the already fragile health status of patients (Douglas, Windsor, & Lewis, 2015). In a study by Gök and Zencir (2022), it was found that although nursing students successfully completed physical examination courses, they faced challenges in applying these skills in clinical settings. The primary obstacles identified were students' self-perceived inadequacies, the clinical practice environment, interactions with patients and their relatives, and the perceived insufficiency of nursing education. Similarly, Açıksöz et al. (2016) emphasized the need to evaluate self-efficacy and competence levels based on students' willingness to choose the nursing profession. Dikmen et al. (2016) also highlighted the impact of voluntarily choosing the nursing field on self-efficacy and competence levels.

This study aims to provide valuable insights into the self-efficacy levels of nursing students regarding physical examination skills and how nursing education programs can address this critical issue.

Research question

What is the physical examination self-efficacy levels of nursing students?

Methods

Research type

This study was designed as a descriptive research study. It was conducted between February 2024 and May 2024 with 2nd, 3rd, and 4th-year students enrolled in the Department of Nursing at the Faculty of Health Sciences, Van Yüzüncü Yıl University.

Population and sample

The study population consisted of 2nd, 3rd, and 4th-year nursing students studying at Van Yüzüncü Yıl University, Faculty of Health Sciences, during the 2023-2024 academic year. The sample size was calculated using the G*Power 3.1.9.4 program, considering a low effect size (d=0.2), a margin of error (α=0.05), and a power of 80% (1-β=0.80). The minimum required sample size was determined to be 199 participants, but 226 student nurses participated in the study. Inclusion criteria were being a nursing student, voluntarily agreeing to participate in the study, and having no disabilities that could interfere with participation.

Data collection tools

Data were collected using two tools: the Student Information Form and the Perceived Self-Efficacy Scale in Physical Examination for Undergraduate Nursing Students (PPSES).

Student information form

This form was developed by the researchers and included items to collect demographic and educational information, such as age, gender, educational status, and willingness to choose the nursing profession.

Perceived Self-Efficacy Scale in Physical Examination for Undergraduate Nursing Students (PPSES)

This scale was developed by Nasaif et al. (2022) to measure nursing students' confidence in performing physical examination skills. It was adapted into Turkish by Utli et al. (2023). The scale comprises 48 items across six sub-dimensions: face and neck, eye, cardiovascular, ear-nose-throat, chest, and other skills. Each item begins with the phrase, "How confident are you in your ability…" and describes a specific skill related to each body system. Responses are rated on a 4-point Likert scale (1=Not at all confident, 2=Somewhat confident but not very confident, 3=Confident, 4=Very confident), following Bandura's guidelines for scale construction.

Sub-dimensions and item distribution:
Face and neck: Items 1–3,
Eye: Items 4–8,
Cardiovascular: Items 9–15,
Ear, nose, and throat: Items 16–19,
Chest: Items 20–27,
Other skills: Items 28–48.

The scale does not contain reverse-scored items. Sub-dimension mean scores are calculated by averaging the scores for items within each sub-dimension, while the total score is the sum of all items. The original Cronbach's alpha value for the scale was 0.986, indicating high reliability. For this study, the Cronbach's alpha value was recalculated as 0.952, confirming the scale's reliability in this context.

Data collection

Prior to data collection, approval was obtained from the Van Yüzüncü Yıl University Non-Interventional Scientific Research Ethics Committee (Decision No. 2024/05-18; Date: 10/05/2024). Written permissions were also acquired from the dean of the Faculty of Health Sciences and the authors of the PPSES scale. Nursing students who met the inclusion criteria and agreed to participate in the study were recruited between February 2024 and May 2024.

Data analysis

Data were analyzed using the SPSS 26.0 software. Descriptive statistics such as means, standard deviations, and percentages were calculated for sociodemographic data. For group comparisons:

- The independent samples t-test and analysis of variance (ANOVA) were used for normally distributed data.
- The Kruskal-Wallis and Mann-Whitney U tests were applied for non-normally distributed data.

All analyses were conducted at a 95% confidence interval with a 5% margin of error.

Results

The mean age of the nursing students participating in the study was 22.00±1.39 years. Of the participants, 67.3% were female, 35.4% were in their second year of study, 55.3% reported choosing the nursing department reluctantly, 72.6% indicated that they had not received any formal course or training on physical examination, and 69.5% stated that they used physical examination methods during clinical practice (Table 1).

The total score on the Perceived Self-Efficacy in Physical Examination Scale (PPSES) was 96.08±24.02, indicating a moderate level of self-efficacy. Subscale scores were as follows, all at a moderate level: face-neck subscale (6.66±2.00), eye subscale (9.00±2.89), cardiovascular system subscale (14.20±4.24), ear-nose-throat subscale (6.60±2.61), chest subscale (17.08±5.40), and another skills subscale (42.53±12.18).

When the mean scores of the total Perceived Self-Efficacy in Physical Examination Scale (PPSES) and its sub-dimensions were analyzed according to the sociodemographic characteristics of the nursing students, several significant differences were observed. Male students had significantly higher mean scores in the Eye and Ear-Nose-Throat (ENT) sub-dimensions compared to female students (p<0.05). Regarding educational levels, 4th-year students scored significantly higher in the Eye, Cardiovascular System, and ENT sub-dimensions compared to 2nd and 3rd-year students (p<0.05). Students who willingly chose the nursing department had significantly higher scores in the Eye sub-dimension compared to other students (p<0.01). Additionally, students who reported using physical examination methods had significantly higher total PPSES scores as well as higher scores in the Face-Neck, Eye, Cardiovascular System, and Chest sub-dimensions compared to those who did not use physical examination methods (p<0.05).

A positive, moderate, and highly significant correlation was identified between the PPSES total score and the subscale scores for Face-Neck, Eye, Cardiovascular, Ear-Nose-Throat, Chest, and Other Skills (r=0.560, 0.682, 0.764, 0.712, 0.844, 0.924; p<0.001).

Discussion

Physical examination is one of the first steps in the nursing process, serving as a critical means of collecting essential data to understand the patient, accurately identify their needs, and plan and implement appropriate care. It also plays a key role in validating clinical decisions (Fennessey, Wittmann, & Price, 2011). The perceived self-efficacy level of nursing students in physical assessment can significantly influence their clinical competencies, which are essential skills in healthcare services (Kıskaç & Rashidi, 2024). This study revealed that nursing students' self-efficacy perceptions in physical examination were moderate.

Physical assessment is considered a cornerstone of nursing practice. It enables nurses to evaluate their patients effectively, make accurate diagnoses, and develop appropriate treatment plans. Nursing education aims to cultivate these competencies using effective teaching methods (Kıskaç & Rashidi, 2024). The findings of this study, showing that students' self-efficacy perceptions about physical assessment were moderate, are consistent with Kıskaç et al. (2024), who found that nursing students' self-efficacy levels in this area were low. This discrepancy might be influenced by the relatively small sample size in their study.

This study also analyzed the mean scores of the total perceived self-efficacy in physical examination scale (PPSES) and its sub-dimensions according to the sociodemographic characteristics of nursing students. It was observed that male students scored significantly higher in the Eye and Ear-Nose-Throat (ENT) sub-dimensions compared to female students. Furthermore, students who willingly chose the nursing department had significantly higher scores in the Eye sub-dimension compared to those who did not. However, as the PPSES is a relatively new scale, there are no prior findings in the literature regarding the significant gender differences or the elevated Eye sub-dimension scores among students who willingly chose nursing. This can be explained by the fact that those who choose the profession with love are more self-sacrificing and willing.

In line with the findings of this study, Gök and Zencir (2022) emphasized the importance of physical examination skills as a core component of independent nursing practice, suggesting that proficiency in these skills can significantly enhance the quality of nursing care. These findings support the results of our study, where students who reported using physical examination methods had significantly higher total PPSES scores and higher scores in the Face-Neck, Eye, Cardiovascular, and Chest sub-dimensions compared to those who did not use such methods.

Additionally, Utli et al. (2023), who validated the Turkish version of the PPSES, identified significant differences in PPSES total scores and sub-dimension scores for Eye, Cardiovascular, ENT, Chest, and Other Skills based on students' academic year. Consistent with the findings of our study, 4th-year students had significantly higher mean scores in the Eye, Cardiovascular, and ENT sub-dimensions compared to 2nd and 3rd-year students.

Table 1.
Sociodemographic characteristics of the students (N=226).

Features	**M±SD**	**Min-Max.**
Age	22.01±1.39	19-28
	N	**%**
Gender		
Female	152	67.3
Male	74	32.7
Grade		
2nd grade	80	35.4
3rd grade	78	34.5
4th grade	68	30.1
The status of choosing the nursing department willingly		
Yes	101	44.7
No	125	55.3
Receiving training/course on physical examination		
Yes	62	27.4
No	164	72.6

Utilization of physical examination methods		
Yes	157	69.5
No	69	30.5

Table 2.
Mean scores of the total Perceived Self-Efficacy in Physical Examination Scale (PPSES) and its subscales (N=226).

Scales	Mean±SD	Received Min-Max. Values	Min-Max. Values Available
PPSES Total	96.08±24.02	48-167	48-192
Face and Neck	6.66±2.00	3-12	3-12
Eye	9.00±2.89	5-18	5-20
Cardiovascular system	14.20±4.24	7-26	7-28
Ear, nose and throat	6.60±2.61	4-16	4-16
Chest	17.08±5.40	8-32	8-32
Other skills	42.53±12.18	21-83	21-84

Table 3.
Comparison of the mean scores of the total Perceived Self-Efficacy in Physical Examination Scale (PPSES) and its subscales according to the sociodemographic characteristics of nursing students (N=226).

Features	Scales						
	PPSES Total	Face and Neck	Eye	Cardiovascular system	Ear, nose and throat	Chest	Other skills
	M±SD	M±SD	M±SD	M±SD	M±SD	M±SD	M±SD
Gender[1]							
Female (152)	95.06±23.47	6.78±1.94	8.73±2.73	14.19±4.25	6.33±2.51	16.89±5.54	42.11±11.73
Male (74)	98.20±25.16	6.41±2.12	9.55±3.13	14.21±4.25	7.16±2.73	17.47±5.12	43.37±13.11
	t=-0.923	t=1.283	t=-2.024	t=-0.031	t=-2.252	t=-0.754	t=-0.729
	p=0.357	p=0.201	p=0.044*	p=0.975	p=0.025*	p=0.452	p=0.467
Grade[2]							
2nd grade[a] (80)	92.10±23.60	6.35±2.13	8.12±2.40	13.18±4.05	6.15±2.58	16.56±5.44	41.72±11.85
3rd grade[b] (78)	97.65±25.12	6.79±1.73	9.41±3.08	14.68±4.18	6.47±2.56	17.37±5.44	42.82±13.21
4th grade[c] (68)	98.98±24.02	6.88±2.12	9.55±2.98	14.73±4.38	7.29±2.60	17.36±5.35	43.14±11.45
	F=1.774	F=1.558	F=5.975	F=3.627	F=3.766	F=0.574	F=0.282
	p=0.172	p=0.213	p=0.003*	p=0.028*	p=0.025*	p=0.564	p=0.755
			Difference: a<b<c	Difference: a<b	Difference: a<c		
The status of choosing the nursing department willingly[1]							
Yes (101)	98.59±22.82	6.65±1.92	9.24±2.82	14.98±4.18	6.77±2.72	17.58±5.06	43.35±11.46
No (125)	94.06±24.86	6.67±2.07	8.80±2.94	13.57±4.21	6.47±2.52	16.68±5.65	41.86±12.75
	t=1.412	t=-0.069	t=1.158	t=2.499	t=0.858	t=1.251	t=0.915
	p=0.159	p=0.945	p=0.248	p=0.013*	p=0.392	p=0.212	p=0.361
Receiving training/course on physical examination[1]							
Yes (62)	99.64±22.89	6.74±1.90	9.51±2.89	14.96±4.13	6.80±2.49	17.69±4.92	43.91±12.29
No (164)	94.74±24.37	6.63±2.04	8.80±2.87	13.91±4.26	6.53±2.66	16.85±5.57	42.00±12.14
	t=1.371	t=0.360	t=1.657	t=1.669	t=0.708	t=1.042	t=1.053
	p=0.172	p=0.719	p=0.099	p=0.096	p=0.480	p=0.299	p=0.293
Utilization of physical examination methods[1]							
Yes (157)	99.06±23.60	6.93±6.76	9.27±2.83	14.80±4.24	6.70±2.68	17.79±5.43	43.54±11.96
No (69)	89.31±23.76	6.04±5.57	8.37±2.95	12.82±3.96	6.37±2.45	15.47±5.03	40.21±12.46
	t=2.852	t=3.143	t=2.166	t=3.302	t=0.875	t=3.012	t=1.903
	p=0.005*	p=0.002*	p=0.031*	p=0.001*	p=0.383	p=0.003*	p=0.058

*Note: [1]t: Independent sample test. [2]F: One-way variance (ANOVA). *p<0.05.*

Table 4.
The relationship between the total Perceived Self-Efficacy in Physical Examination Scale score and subscale scores (N=226).

	PPSES Total	Face and Neck	Eye	Cardiovascular system	Ear, nose and throat	Chest	Other skills
Ppses total	1						
Face and Neck	r=0.560 p<0.001**	1					
Eye	r=0.682 p=0.001**	r=0.402 p<0.001**	1				
Cardiovascular system	r=0.764 p<0.001**	r=0.529 p<0.001**	r=0.498 p<0.001**	1			
Ear, nose and throat	r=0.712 p<0.001**	r=0.309 p<0.001**	r=0.548 p<0.001**	r=0.504 p<0.001**	1		
Chest	r=0.844 p<0.001**	r=0.388 p<0.001**	r=0.546 p<0.001**	r=0.628 p<0.001**	r=0.542 p<0.001**	1	
Other skills	r=0.924 p<0.001**	r=0.422 p<0.001**	r=0.507 p<0.001**	r=0.566 p<0.001**	r=0.593 p<0.001**	r=0.692 p<0.001**	1

*Note: r: Pearson Correlation, **p<0.001.*

Limitations

This study has certain limitations, including being conducted at a single university and adopting a cross-sectional design, which may limit the generalizability of the findings.

Conclusion

The findings of this study indicate that the self-efficacy of nursing students in physical examination is at a moderate level, as assessed across the specified sub-dimensions. These results underscore the need to focus on strategies that enhance students' self-efficacy and proficiency in physical examination during their nursing education.

Ethics approval statement

Ethical approval for the study was obtained from the Van Yüzüncü Yıl University Non-Interventional Scientific Research Ethics Committee (Decision No. 2024/05-18; Date: 10/05/2024). Additionally, written permission was secured from the dean of the Faculty of Health Sciences where the research was conducted.

Patient consent statement

N/a.

Consent for publication

N/a.

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CRediT authorship contribution statement

S. Arslan: Writing – review & Data Collection, Literature Review. **M. Ş. Çelik:** Writing – review & Data Collection, Literature Review. **E. Kaplan:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Formal analysis, Data curation, Conceptualization. Written informed consent was obtained from all students participating in the study.

Data availability statement

N/a.

Declaration of competing interest

The authors declare no conflict of interest.

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