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Nurses' Attitudes Towards Physical Examination and Influencing Factors: A Descriptive and Cross-Sectional Study

Hemşirelerin Fizik Muayeneye Yönelik Tutumları ve Etkileyen Faktörler: Tanımlayıcı ve Kesitsel Bir Çalışma

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ABSTRACT

Objective: The aim of the study was to determine the characteristics of Turkish nurses with regard to performing physical examination, their current attitudes towards physical examination, and the factors affecting them.

Methods: This descriptive and cross-sectional study was conducted with 488 nurses working in a state and an university hospital in the Afyonkarahisar province of Turkey. The data were collected with the Nurse Information Form and the Turkish version of the Physical Examination Attitude and Practice Scale. Independent samples t-test, One-way ANOVA, Pearson correlation analysis, multiple linear regression model were used to analyze the data.

Results: Nurses' attitude score towards physical examination was found to be 45.89 (SD = 10.32, minimum: 19, maximum: 87). As per the multiple linear regression results, performing physical examination (β = −0.318, $P < .001$), having undergraduate degree (β = −0.179, $P < .001$), being female (β= −0.175, $P < .001$), having postgraduate degree (β = −0.168, $P < .001$), being responsible for the daily care of fewer patients (β = −0.158, $P = .005$), considering physical examination as part of nursing practices (β = −0.155, $P = .002$), and having sufficient knowledge level about physical examination (β = −0.140, $P = .001$) were significant factors that were effective in having a more positive attitude towards physical examination.

Conclusion: The results of this study revealed that nurses have a positive attitude towards physical examination. Experience performing a physical examination was the main predictor of attitude towards physical examination. To enable nurses to use their physical examination skills effectively, it is recommended to improve their knowledge and skill levels and to establish policies at the institutional level.

Keywords: Attitude, nurse, practice, physical examination

ÖZ

Amaç: Bu çalışmanın amacı, hemşirelerin fizik muayene yapma konusundaki özelliklerini, fizik muayeneye yönelik mevcut tutumlarını ve etkileyen faktörleri belirlemektir.

Yöntemler: Tanımlayıcı ve kesitsel tipteki bu araştırma, Afyonkarahisar ilindeki bir devlet ve üniversite hastanesinde görev yapan 488 hemşire ile gerçekleştirilmiştir. Veriler Hemşire Bilgi Formu ve Fizik Muayene Tutum ve Uygulama Ölçeğinin Türkçe versiyonu kullanılarak toplandı. Verilerin analizinde bağımsız örneklem t-testi, tek yönlü varyans analizi (ANOVA), Pearson korelasyon analizi, çoklu doğrusal regresyon modeli kullanıldı.

Bulgular: Hemşirelerin fizik muayeneye yönelik tutum puanı 45.89 (SS=10.32, minimum: 19, maksimum: 87) olarak bulundu. Çoklu doğrusal regresyon analizi sonuçlarına göre; fizik muayene yapmak (β = −0.318, $P < .001$), lisans mezunu olmak (β = −0.179, $P < .001$), kadın olmak (β = −0.175, $P < .001$), yüksek lisans derecesine sahip olmak (β = −0.168, $P < .001$), daha az hastanın günlük bakımından sorumlu olmak (β = −0.158, $P = .005$), fizik muayeneyi hemşirelik uygulamalarının bir parçası olarak görmek (β = −0.155, $P = .002$) ve fizik muayene hakkında yeterli bilgi düzeyine sahip olmak (β = −0.140, $P = .001$), fizik muayeneye yönelik daha olumlu tutuma sahip olma üzerine etkili olan anlamlı yordayıcılardı.

Sonuç: Bu çalışmanın sonuçları, hemşirelerin fizik muayeneye yönelik olumlu bir tutuma sahip olduklarını gösterdi. Fizik muayene yapma deneyimi tutumun ana belirleyicisiydi. Hemşirelerin fizik muayene becerilerini etkin bir şekilde kullanmalarını sağlamak için, bilgi ve beceri düzeylerinin geliştirilmesi ve kurumsal düzeyde politikaların oluşturulmasını öneriyoruz.

Anahtar Kelimeler: Tutum, hemşire, uygulama, fizik muayene

INTRODUCTION

Accurate identification of the patient's actual or potential health problems that require nursing care is important for safe and effective patient care. Therefore, the first step in individualized care is to obtain objective and subjective data about the patient.[1] The physical examination (PE) is a critical component of the first stage of the nursing process, which is considered a roadmap for nurses in providing holistic care and solving health problems.[2] Physical examination contributes to achieving positive health outcomes by supporting the next steps of the nursing process, namely diagnosis, planning, implementation, and evaluation.[3] In the health assessment process, PE, which provides access to objective data for the nursing process, is the systematic assessment of the integrity of various organs and systems in the body, using a number of skills such as inspection, palpation, percussion, and auscultation.[4]

Nurses, who are in direct and long-term interaction with patients, are in a position to assess patients first and identify any changes that may occur in the patient during the treatment and care process in the early period.[5] Therefore, nurses, involved in the constantly changing and developing health system, should always use up-to-date approaches in patient care. The knowledge and ability to perform comprehensive and focused PE is considered one of the key competencies for nurses needed to fulfilll their care provider roles in every care setting.[6] Nurses benefit from PE in deciding on timely and correct approaches regarding the clinical course of the patient/healthy individual, determining the areas where nursing care is needed, and assessing whether the care they provide meets the desired care outcomes.[5,7] Thus, the patient's actual or potential health problems are identified based on scientific data, care goals are determined accordingly, and the implementation of appropriate nursing interventions is facilitated. This also contributes to the development of a nurse's capacity to monitor changes in the health of individuals and develop the ability to make better and more accurate judgments. Therefore, PE is a fundamental component of providing evidence-based care for nurses.[2,7,8]

Despite the emphasized importance of performing PE in achieving more positive patient outcomes, current studies noted that PE skills gained in nursing education are not used sufficiently by nurses and that nurses' knowledge and skills about PE are not at the desired level.[6,9-12] In a study conducted with nurses working in critical care, it was reported that the basic PE skills of nurses were limited to the evaluation of vital signs.[5] In similar studies conducted on the PE skills of nurses, it was emphasized that the palpation and auscultation skills among the PE techniques used were very limited.[13]

Various factors affecting the use of PE in the clinical environment have been discussed. Factors such as uncertainty in the role definitions of nurses within the health care system, increased trust in technology, lack of self-confidence and knowledge, lack of role models, and organizational culture affect the integration of PE skills into clinical practice.[3,14,15] Another factor known to be effective in nurses' use of PE skills is their attitudes towards PE.[4,16] Attitude is a key factor in transforming knowledge into action. Attitude can also be defined as the tendency to prepare for a behavior.[17] The limited number of studies investigating nurses' attitudes towards PE have emphasized that attitudes towards PE may positively or negatively affect the use of this skill by nurses in the clinical environment.[4,18,19] Therefore, it is important to understand nurses' attitudes towards PE and the factors affecting them, as the acceptance and adoption of PE by nurses is related to the importance nurses attach to PE.[3,6,16,20] However, most of the studies in the literature have focused on the characteristics of nurses' PE practices, and there are limited studies investigating nurses' attitudes towards PE.

Performing PE is defined among the independent roles of nurses in the legal regulations related to nursing in Turkey, and nurses are expected to use their PE skills in patient care.[21] On the other hand, the inadequacies in the integration of PE skills into patient care continue to be a problem for nurses. In studies conducted with Turkish nurses, it has been reported that although nurses consider the use of PE methods necessary, they cannot use them effectively in practice. Moreover, it has been reported that nurses within the health care system need knowledge and self-confidence support in using PE skills, and that they cannot spare enough time for PE due to institutional policies.[22-25] Continuing problems in the integration of PE, also included in the job descriptions of nurses into patient care practices in the clinical setting, highlight the necessity of detailed studies on the issue. Based on this requirement, we anticipate that the results of this study we planned will contribute to the planning of interventions that aim to improve the PE skills of nurses as well as to the formation of institutional policies.

AIM

In this study, we aimed to determine the characteristics of Turkish nurses in regard to performing PE, their current attitudes towards PE, and the factors affecting them.

METHODS

Design and Setting

This descriptive and cross-sectional study was conducted with nurses from 2 hospitals, 1 public and 1 university, in Afyonkarahisar, located in the Aegean Region of Turkey, between November 5, 2020, and April 15, 2021.

Participants

The study population consisted of 966 nurses working in the hospitals mentioned above. The inclusion criteria were working for at least 3 months in internal clinics (internal medicine, endocrinology, infectious diseases, chest diseases, neurology, cardiology, oncology, pediatric) and surgical clinics (general surgery, neurosurgery, thoracic surgery, orthopedics, cardiovascular

surgery, urology, pediatric surgery, otorhinolaryngology, ophthalmology) intensive care units and emergency department where PE-related skills were expected to be actively used. The exclusion criteria were working in units such as blood collection unit, operating room, and psychiatry clinics, where they were considered unable to apply PE effectively. The minimum sample size to be reached in the study was determined as 248 with a 0.05 margin of error and 95% CI, according to the formula ($n = Nt^2\ pq/d^2\ (N-1) + t^2pq$) which is used when the number of individuals in the study population is known.[26] Totally, 691 nurses who met the inclusion criteria were invited to the study. During the time period of the study, a total of 488 data collection forms were answered due to the nurses being on annual or maternity leave, unwillingness to participate in the study, and filling out the data collection forms incompletely. The participation rate of nurses in the study was 70.6%.

Data Collection Tools

The study data was obtained with the "Nurse Information Form" and the Turkish version of the "Physical Examination Attitudes and Practices Scale."

Nurse Information Form

It included a total of 17 questions, prepared by the researchers after the literature review,[2,4,12-14,22-24] to obtain data related to the demographic and occupational characteristics (8 questions) and PE characteristics of the nurses (9 questions).

Physical Examination Attitudes and Practices Scale

The "Physical Examination Attitudes and Practices Scale," developed to evaluate nurses' attitudes towards the practice of PE in the clinical setting, originally consisted of 20 items and 4 subdimensions.[16] The validity and reliability study of the scale in the Turkish nurse population was performed by Kısacık and Özdaş.[27] The Turkish version of the scale consists of 19 items and 4 subdimensions, which are "technical deficiencies in PE'" (6 items), "benefits and usefulness of PE" (5 items), "barriers to conduct PE" (5 items), and "cultural considerations" (3 items). The statements on the scale were scored in a 5-point Likert type as "strongly disagree" (1), "disagree" (2), "neither agree nor disagree" (3), "agree" (4), and "strongly agree" (5). The items (7-8-9-10-11) written with positive statements in the scale are reverse-scored. The minimum score that can be obtained from the scale is 19, and the maximum score is 95. As the score obtained from the scale decreases, it is interpreted that nurses' attitudes towards the practice of PE in the clinical setting are more positive, while a higher score indicates more negative attitudes towards the practice of PE.[16,27] While the total Cronbach's alpha coefficient of the scale was reported as 0.83 by Gharaibeh,[16] the Cronbach's alpha coefficient for internal consistency was found to be 0.85 in the Turkish validity and reliability study.[27] The Cronbach's alpha coefficient calculated for the whole scale in the sample group of 488 individuals in this study was 0.86.

Ethical Considerations

In order to carry out this study, firstly, the ethics committee approval was obtained from the Clinical Research Ethics Committee of the Afyonkarahisar Health Science University (Date: November 1, 2020 and Number: 478). Written permission was also obtained from the managers of the hospitals where the study was conducted. The participants were informed that participation in the study was voluntary, and the confidentiality of the data was guaranteed.

Statistical Analysis

All statistical analyses of the study data were performed with the Statistical Package for the Social Sciences Statistics version 22.0 software (IBM Corp.; Armonk, NY, USA) package program. Categorical data were shown as numbers and percentages, while data related to continuous variables were presented as mean and standard deviation (SD). An independent sample *t*-test was used for the independent paired comparison of the personal and occupational characteristics of nurses and their attitude scores towards PE. One-way analysis of variance was used for comparisons of more than 2 independent groups, and post hoc analysis was performed using the Scheffé test if there were significant differences between groups. Pearson correlation analysis was used to examine the relationship between nurses' characteristics given by continuous variables and their attitude scores. A multiple linear regression model was used to analyze the effects of explanatory variables, found to be significant in the statistical analyses, on the nurses' attitude scores towards PE. Assumptions of normality, covariance, and multicollinearity were tested before performing multiple linear regression analysis. $P < .05$ was considered for the level of statistical significance in all analyses.

RESULTS

Characteristics of the Nurses

The data on the personal and occupational characteristics of the nurses participating in the study are presented in Table 1. According to the findings, 77.3% of the nurses were female, 63.5% had an undergraduate degree, and 35.2% worked in medical clinics. While the mean age of the nurses was 28.51 ± 6.30 years, the mean number of patients for whom they were responsible for daily care was 9.49 ± 8.01 (Table 1).

Characteristics of the Nurses Experience with Physical Examination

While the majority of the participating nurses (88.1%) were found not to attend any in-service training related to PE, 60.5% of the nurses reported the source of their current knowledge about PE as the educational institution where they received their nursing education. A total of 79.5% of the nurses reported that they did not have sufficient knowledge about PE, whereas more than half (58.6%) stated that they "partially" performed PE. Factors that negatively affect nurses' PE practices were mainly associated with "lack of time'" (22.7%), "lack of knowledge and skills on PE" (20.7%), and "work system that prevented them from using PE skills" (19.5%) (Table 2).

Attitudes of Nurses Toward Physical Examination

Nurses' attitude score towards the practice of PE in the clinical setting was found to be 45.89 (SD = 10.32, minimum (min): 19, maximum (max): 87), in the range of 19-95 points. The mean scores of the sub-dimensions of the scale were 14.79 (SD = 4.27, min: 6, max: 30) for "technical deficiencies in PE," 11.21 (SD = 3.37, min: 5, max: 24) for "benefits and usefulness of PE," 13.03 (SD = 4.21, min: 5, max: 25) for "barriers to conduct PE" and 6.86 (SD = 2.66, min: 3, max: 15) for "cultural considerations" (Table 3).

The statements with the lowest mean scores expressing the more positive attitudes of nurses in the sub-dimensions of the scale were as follows: "There is no need to perform PE if the patient will undergo diagnostic examination computed tomography (CT) or Magnetic Resonance Imaging (MRI)" (2.29 SD = 0.95) in "technical deficiencies in PE," "PE improves care opportunities and communication with the patient" (2.10 SD = 0.84) in "benefits

Table 1. Characteristics of the Nurses

Characteristics	Categories	n	%
Gender	Female	377	77.3
	Male	111	22.7
Marital status	Single	227	53.5
	Married	261	46.5
Education level	Health vocational high school	103	21.1
	Associate degree	38	7.8
	Undergraduate degree	310	63.5
	Postgraduate degree	37	7.6
Institution of employment	State hospital	215	44.1
	University hospital	273	55.9
Type of worked unit	Internal clinics	172	35.2
	Surgical clinics	114	23.4
	Intensive care units	152	31.1
	Emergency department	50	10.2
Total working years in nursing	<1	18	3.7
	1-5	261	53.5
	6-10	107	22.5
	11-15	29	9.4
	≥16	9	1.8
	Mean ± SD	**Minimum**	**Maximum**
Age (years)	28.51 ± 6.30	20	49
Number of patients who were given care daily	9.49 ± 8.01	1	50

SD, standard deviation

Table 2. Characteristics of the Nurses' Experience with Physical Examination

Characteristics	Categories	n	%
In-service training related to PE	Yes	58	11.9
	No	430	88.1
Source of information on PE	Nursing education	295	60.5
	In-service education	92	18.8
	Experience from colleagues	101	20.7
Having sufficient knowledge level about PE	Yes	100	20.5
	No	388	79.5
Wanting to receive education about PE	Yes	370	75.8
	No	118	24.2
Performing PE	Yes	126	25.8
	Sometimes	286	58.6
	No	76	15.6
PE methods used by nurses*	Palpation	462	31.1
	Percussion	321	21.6
	Auscultation	317	21.3
	Inspection	309	20.8
	Olfaction	77	5.2
Accepting PE as part of nursing practice	Yes	425	87.1
	No	63	12.9
PE in patient care findings necessary	Yes	447	91.6
	No	41	8.4
Factors affecting nurses' PE practices negatively*	Lack of time	216	22.7
	Lack of knowledge and skills in PE	197	20.7
	The working system that prevents nurses from using their PE skills	185	19.5
	Uncertainties in the job descriptions of nurses	169	17.8
	Lack of confidence in PE skills	109	11.5
	Lack of role models	74	7.8

PE, physical examination.
*Multiple answers were given.

and usefulness of PE," I don't perform PE because most of the nurses don't perform PE" (2.35 SD = 1.05) in "barriers to conducting PE," and "I don't perform PE if the patient is of the opposite sex" (1.87 SD = 0.95) in "cultural considerations" (Table 3).

The statements with the highest mean scores expressing the more negative attitudes of nurses in the sub-dimensions of the scale were as follows: "X-ray, CT scan and similar diagnostic procedures can be used instead of PE" (2.77 SD = 0.99) in "technical deficiencies in PE," "Basing the selection of diagnostic tests on PE results is a reliable way to limit unnecessary testing" in "benefits and usefulness of PE," and "Most of the PE skills I learned are not practical" (2.89 SD = 1.08) in "barriers to conduct PE" (Table 3).

Differences in Physical Examination Attitudes According to the Characteristics of the Nurses

Nurses' attitude scores towards PE were determined to have a statistically significant difference according to gender ($t = -4.262$; $P < .001$) and educational status ($F = 17.403$; $P < .001$). Accordingly, female nurses had more positive attitudes towardPE than males ($t = -4.262$; $P < .001$), and nurses with undergraduate and graduate levels of education had more positive attitudes towards PE than those of vocational high school and associate degree graduates. Furthermore, participants who stated having sufficient knowledge about PE ($t = -4.365$; $P < .001$), who considered PE as a part of nursing practices ($t = -6.377$; $P < .001$), and those who believed that the application of PE in patient care was required ($t = -3.815$; $P < .001$) were also found to have a statistically significantly more positive attitude. Another variable in which the participants' attitude scores showed a significant difference was that the nurses perform PE ($F = 36\,072$; $P < .001$). Accordingly, the attitudes of the nurses who performed PE were significantly more positive compared to those who partially did it, and those who partially performed it compared to the nurses who did not. In the Pearson correlation analysis, as the number of patients nurses were responsible for increased, the scale score, which meant that the attitude towards PE was more negative, was found to also increase ($r_p = .129$; $P = .004$; Table 4).

Table 3. Attitudes of Nurses Towards Physical Examination

	Number of Items	**Range**	**Minimum**	**Maximum**	**Total Score, *M* (SD)**	
Subscales Technical Deficiencies in PE	**6**	**6-30**	**6**	**30**	**14.79 (SD 4.27)**	
	I Strongly Disagree	**I Disagree**	**Neither Agree nor Disagree**	**I Agree**	**I Strongly Agree**	**Item Score, *M* (SD)**
Items	n (%)	n (%)	n (%)	n (%)	n (%)	
PE can be a source of risk for the nurse	48 (9.8)	202 (41.4)	123 (25.2)	94 (19.3)	21 (4.3)	2.67 (1.03)
X-ray, CT scan and similar diagnostic procedures can be used instead of PE	41 (8.4)	168 (34.4)	157 (32.2)	105 (21.5)	17 (3.5)	2.77 (0.99)
There is no need to perform PE if the patient will undergo diagnostic examination such as CT or MRI	87 (17.8)	241 (49.4)	106 (21.7)	39 (8.0)	15 (3.1)	2.29 (0.95)
Sometime in the future, PE as we know it will not be that helpful	86 (17.6)	215 (44.1)	126 (25.8)	47 (9.6)	14 (2.9)	2.36 (0.97)
Conducting PE is not helpful because it is not a sensitive test *(able to identify abnormal findings when there is a problem) (demonstrate the abnormality of findings when there is a disorder)*	76 (15.6)	218 (44.7)	133 (27.3)	47 (9.6)	14 (2.9)	2.40 (0.95)
Conducting PE is not helpful because it is not a specific test *(able to identify normal findings when there is no problem) (demonstrate normal findings when there is no disorder)*	84 (17.2)	234 (48.0)	118 (24.2)	42 (8.6)	10 (2.0)	2.30 (0.92)
Benefits and Usefulness of PE	**Number of Items**	**Range**	**Minimum**	**Maximum**	**Total Score *M* (SD)**	**Number of Items**
	5	5-25	5	24	11.21 (3.37)	5
	I Strongly Disagree	**I Disagree**	**Neither Agree Nor Disagree**	**I Agree**	**I Strongly Agree**	**Item Score *M* (SD)**
Items	n (%)	n (%)	n (%)	n (%)	n (%)	
Physical examination improves care opportunities and communication with the patient*	8 (1.6)	28 (5.7)	66 (13.5)	288 (59.0)	98 (20.1)	2.10 (0.84)
Physical examination is important to establish a relationship based on closeness and trust with the patient*	6 (1.2)	52 (10.7)	87 (17.8)	254 (52.0)	89 (18.2)	2.25 (0.91)
Physical examination is an integral part of nursing care for the patient*	15 (3.1)	57 (11.7)	106 (21.7)	216 (44.3)	94 (19.3)	2.35 (1.01)
There are many diagnoses that can be easily made by physical examination*	8 (1.6)	25 (5.1)	81 (16.6)	275 (56.4)	99 (20.3)	2.11 (0.84)
Basing the selection of diagnostic tests on PE results is a reliable way to limit unnecessary testing*	8 (1.6)	52 (10.7)	150 (30.7)	197 (40.4)	81 (16.6)	2.40 (0.94)
Barriers to Conduct PE	**Number of Items**	**Range**	**Minimum**	**Maximum**	**Total Score *M* (SD)**	**Number of Items**
	5	5-25	5	25	13.03 (4.21)	5
	I Strongly disagree	**I Disagree**	**Neither Agree Nor Disagree**	**I Agree**	**I Strongly Agree**	**Item Score *M* (SD)**
Items	n (%)	n (%)	n (%)	n (%)	n (%)	
I don't perform physical examinations because most nurses don't perform physical examinations.	105 (21.5)	197 (40.4)	110 (22.5)	60 (12.3)	16 (3.3)	2.35 (1.05)
I often do not perform a physical examination because I am not skilled or competent	101 (21.7)	197 (40.4)	91 (18.6)	75 (15.4)	24 (4.9)	2.43 (1.12)
I don't perform physical examinations most of the time because my physical examination skills are poor.	85 (17.4)	207 (42.4)	86 (17.6)	85 (17.4)	25 (5.1)	2.50 (1.12)
Most of the physical examination skills I learned are not practical'	50 (10.2)	140 (28.7)	139 (28.5)	133 (27.3)	26 (5.3)	2.89 (1.08)
Most of the physical examination skills are rarely or not used at all in practice	47 (9.6)	154 (31.6)	133 (27.3)	133 (27.3)	21 (4.3)	2.85 (1.06)
Cultural Considerations	**Number of Items**	**Range**	**Minimum**	**Maximum**	**Total Score *M* (SD)**	**Number of Items**
	3	3-15	3	15	6.86 (2.66)	3
	I Strongly disagree	**I Disagree**	**Neither Agree Nor Disagree**	**I Agree**	**I Strongly Agree**	**Item Score *M* (SD)**
Items	n (%)	n (%)	n (%)	n (%)	n (%)	
I don't perform physical examination if the patient is of the opposite sex	202 (41.4)	189 (37.8)	64 (13.1)	23 (4.7)	10 (2.0)	1.87 (0.95)
Performing a physical examination on a patient of the opposite sex is stressful for me	133 (27.3)	198 (40.6)	78 (16.0)	65 (13.3)	14 (2.9)	2.24 (1.08)
Culture and norms can be an obstacle to performing a physical examination, especially when dealing with a patient of the opposite sex.	78 (16.0)	152 (31.1)	104 (21.3)	122 (25.0)	32 (6.6)	2.75 (1.18)
Overall attitude score	**Number of Items**	**Range**	**Minimum**	**Maximum**	**Total Score *M* (SD)**	**Number of Items**
	19	19-95	19	87	45.89 (10.32)	19

CT, computerized tomography; M, mean; MRI, magnetic resonance imaging; PE, physical examination.
*****Reverse scored positive statements

Table 4. Differences in Physical Examination Attitudes According to the Characteristics of the Nurses

Characteristics	Categories	n	*M* (SD)	*t*/*F*	*P*
Gender	Female	377	44.74 (9.72)	*t* = −4.262	**<.001***¥
	Male	111	49.81 (11.35)		
Education level	Health vocational high school	103	50.4 (9.90)[a]		
	Associate degree	38	52.02 (8.3)[a]	*F* = 17.403	**<.001****¥
	Undergraduate degree	310	44.44 (9.79)[b]		
	Postgraduate degree	37	40.18 (11.39)[b]		
Institution of employment	State hospital	215	45.92 (10.60)	*t* = −0.053	.958*
	University hospital	273	45.87 (10.12)		
Type of worked unit	Internal clinics	172	46.51 (10.87)		
	Surgical clinics	114	45.98 (9.59)	*F* = 0.549	.649**
	Intensive care units	152	45.05 (9.57)		
	Emergency department	50	46.12 (12.22)		
Total working years in nursing	<1	18	43.83 (10.49)		
	1-5	261	45.48 (9.72)	*F* = 0.865	.485**
	6-10	110	45.91 (10.60)		
	11-15	46	46.65 (11.58)		
	≥16	53	47.94 (11.44)		
In-service training related to PE	Yes	58	45.63 (10.24)	*t* = −0.204	.839*
	No	430	45.93 (10.35)		
Having sufficient knowledge level about PE	Yes	100	41.95 (11.22)	*t* = −4.365	**<.001***¥
	No	388	46.91 (9.84)		
Performing PE	Yes	126	40.27 (11.14)[a]	*F* = 36.072	**<.001****¥
	Partially	286	46.85 (9.12)[b]		
	No	76	51.61 (8.91)[c]		
Accepting PE as part of nursing practice	Yes	425	44.80 (9.97)	*t* = −6.377	**<.001***¥
	No	63	53.30 (9.66)		
PE in patient care findings necessary	Yes	447	45.36 (10.21)	*t* = −3.815	**<.001***¥
	No	41	51.70 (9.83)		
				r_p***	*P*
Age (years)				0.033	.465
Number of patients who were given care daily				0.129	**.004**¥¥

Abbreviation: PE; Physical Examination
*Independent sample *t*-test was used.
**One-way analysis of variance was used.
***Pearson correlation coefficient
¥Significant at the p < 0.001 level,
¥¥Significant at the p < 0.05 level
[a,b,c]Different superscripts within the same column indicate significant difference among group

Predictors of Attitudes of Nurses Towards Physical Examination

A multiple linear regression model was used to determine the variables that predicted nurses' attitudes towards PE. In this study, the regression model created with the independent variables, in which the nurses' attitude scores towards PE were found to show significant differences, was statistically significant (F = 17.008; P < .001), and these variables explained 24.7% of the attitudes towards PE. Among these variables included in the model, in order of strength, performing PE (β = −0.318, P < .001), having undergraduate degree (β = −0.179, P < .001), being female (β = −0.175, P < .001), having postgraduate degree (β = −0.168, P < .001), being responsible for the daily care of fewer patients (β = −0.158, P = .005), considering PE as part of nursing practices (β = −0.155, P = .002) and having a sufficient knowledge level about PE (β = −0.140, P = .001) were significant variables that were effective in having a more positive attitude towards PE (Table 5).

DISCUSSION

This study investigated the characteristics of Turkish nurses regarding the practice of PE, their current attitudes towards PE, and the factors affecting these attitudes. According to our findings, the majority of the nurses stated the source of their current knowledge about PE as nursing education and colleagues' experiences, and the rate of participation in in-service training on PE among them was found to be quite low. In some studies

Table 5. Predictors of Attitudes of Nurses Towards Physical Examination

		95% CI for *B*									
Enter Method	***B***	**Lower**	**Upper**	**SE**	**β2**	***t***	***P***	**Zero**	**Partial**	**Part**	**VIF**
(Constant)	58.922	55.156	62.688	1.917		30.743	**<.001**¥				
Gender											
Reference [Male]											
Female	−4.308	−6.249	−2.367	0.988	−0.175	−4.362	**<.001**¥	−0.206	−0.196	−0.171	1.042
Education level											
Reference [Health vocational high school]											
Associate degree	2.129	−1.223	5.481	1.706	0.055	1.248	.213	0.173	0.057	0.049	1.270
Undergraduate degree	−3.838	−5.918	−1.758	1.059	−0.179	−3.626	**<.001**¥	−0.185	−0.164	−0.143	1.578
Postgraduate degree	−6.554	−10.022	−3.086	1.765	−0.168	−3.713	**<.001**¥	−0.158	−0.168	−0.146	1.327
Having sufficient knowledge level about PE											
Reference [No]											
Yes	−3.583	−5.643	−1.523	1.048	−0.140	−3.417	**.001**¥¥	−0.194	−0.155	−0.134	1.088
Performing PE											
Reference [No]											
Yes	−7.491	−10.365	−4.617	1.463	−0.318	−5.122	**<.001**¥	−0.321	−0.228	−0.201	2.490
Partially	−2.422	−4.842	−0.002	1.232	−0.116	−1.966	.050	0.110	−0.090	−0.077	2.237
Accepting PE as part of nursing practice											
Reference [No]											
Yes	−4.758	−7.714	−1.802	1.504	−0.155	−3.163	**.002**¥¥	−0.276	−0.143	−0.124	1.546
PE in patient care findings necessary											
Reference [No]											
Yes	1.094	−2.373	4.562	1.765	0.029	0.620	.535	−0.171	0.028	0.024	1.456
Number of patients who were given care daily	0.204	0.063	0.345	0.072	0.158	2.851	**.005**¥¥	0.129	0.130	0.109	2.116

Abbreviation: VIF, variance inflation index; *B* = Unstandardized beta coefficients; β*2* = Standardized beta coefficients.

Model summary: $F = 17.008$; $P < .001$; $R = 0.513$; Adj. $R^2 = 0.247$; SEE = 8.961; Durbin–Watson = 1.997.
¥Significant at the p < 0.001 level,
¥¥Significant at the p < 0.05 level

conducted with Turkish nurses, the rate of nurses receiving in-service training on PE methods was determined to be insufficient and their PE knowledge was limited to what they gained during their nursing education.[22-24] These findings suggest that postgraduate education programs aiming to improve the competencies of nurses in PE are inadequate in the clinical setting. Whereas, PE is a process that requires nurses to use their critical thinking and clinical reasoning competencies and to interpret the clues about the patient's condition by critically analyzing the data obtained from the patient. Therefore, an adequate level of knowledge is a key component for nurses to fulfilll their roles related to PE.[1,3] Khoran et al[7] pointed out that nurses' PE skills are related to their knowledge levels. Mitoma and Yamauchi[28] reported that the educational intervention they used for nurses positively affected the clinical use of PE skills. Various studies have emphasized the importance of educational interventions to encourage nurses' knowledge, attitudes, and practices regarding PE.[4,11,12] Moreover, an insufficient level of knowledge about PE is considered to be one of the most important hindering factors in transferring this skill to a clinical setting.[3,16,18] Therefore, the development of nurses' knowledge and competencies in PE should continue after graduation, as well as nursing education.

In this study, while only one-fifth of the nurses were found to consider their current knowledge about PE sufficient, the rate of nurses who reported using PE in patient care was limited to one-fourth of all participants. Also, more than half of the nurses stated that they knew the PE methods partially. While the results of various studies in the international literature noted that nurses have deficiencies in knowing and performing PE, they indicated that nurses could mostly apply basic PE skills specific to the units they worked; however, they were not sufficient enough in PE skills for more complex and body systems.[5,10-12] Similarly, one of the studies conducted in Turkey reported that only 56.5% of nurses working in the critical care field were able to fully describe all PE methods, and PE skills used were mostly limited to observational skills.[24] Similar results were found in some studies investigating Turkish nurses' knowledge and practices of PE.[22,25] An insufficient level of knowledge about PE is considered to be one of the most important hindering factors in transferring this skill to a clinical setting.[3,6,14] Based on our study findings and the literature, we can say that the gain of PE competence in nurses is an issue that should be taken seriously in nursing education.

When nurses' attitude scores were examined, it can be stated that they have a positive attitude towards the application of PE in clinical settings. The number of studies investigating nurses' attitudes towards PE in the literature is limited. The results of 2 studies conducted in Pakistan and Ethiopia reported that nurses had positive attitudes towards PE.[4,18] Although we did not come

across any study examining attitudes towards PE in Turkey, the results of some studies on PE revealed that PE was considered among nursing roles and nurses were ready to practice PE if they were supported.[22,24,25]

Our study findings revealed that while only a quarter of the nurses performed PE, more than half of them were able to transfer their PE skills partially into practice. Also, we found that although the majority of nurses consider PE necessary, the main factors that prevent them from performing their roles effectively were related to factors such as lack of time, knowledge, and skills, and the characteristics of the nursing work system. Moreover, an increase in the number of patients for whom nurses were responsible for their care was associated with more negative attitudes towards PE. While various studies pointed out personal factors such as personality traits, lack of knowledge, self-confidence, and autonomy,[5,29] some of the other studies reported that factors related to the characteristics of the working system of nurses such as time, workload, role ambiguities, practice differences between occupational specialties, the inadequacy of cooperation and support systems, and increased trust in technology negatively affect nurses' PE practices.[5,10,16] Gharaibeh et al[19] associated negative attitudes of Jordanian nurses towards PE with factors and difficulties that hinder nurses' PE performance, although they believed that PE was necessary. Some studies conducted with Turkish nurses also drew attention to the presence of inhibiting factors such as lack of time, heavy workload, lack of self-confidence, and insufficient support from other health team members regarding their role in applying PE.[23-25] Although in Turkey, it is clearly included in the legal regulations related to the nursing profession that PE is an independent nursing role and nurses should practice this role, the inability to use PE effectively in the practical environment is an ongoing problem, as seen in our findings. This also highlights the need for leadership and care-oriented organizational culture that would contribute to the increase in the confidence of nurses in their PE skills within the health system and that expects and supports them to use PE skills.

Our study findings revealed that nurses had more negative attitudes regarding statements that different diagnostic procedures could be used instead of PE and that the selection of diagnostic tests based on PE results would be a safer way. It is a common opinion that factors such as increased trust in technology and dependency on electronic monitoring equipment might be an easier way to obtain data related to PE, especially due to time constraints; however, these factors are known to create an obstacle to the transfer of PE skills into practice.[5,29] Besides, the nurses in this study were found to have an attitude that most of the PE skills they had gained were not applicable. Although this finding suggests that Turkish nurses were not confident enough in their PE skills related to their knowledge and skills, this might also be a result of the lack of practice of PE by nurses in clinical settings and the inadequacies in nursing education in gaining PE competence. Borji et al[6] pointed out that the value given to the importance of PE may be possible with a better level of knowledge about PE. On the other hand, Gharaibeh et al[19] reported that the inconsistency between what is learned and practiced plays a role among the important factors in Jordanian nurses having a negative attitude, although they believe that PE positively affects patient outcomes and is vital for patient care. Korkmaz Doğdu and Kol[25] found that Turkish nurses' views about PE were influenced by the education they received about PE. The literature reports the lack of confidence and knowledge as the most important barriers to the practice of PE.[8,29] Birks et al[30] reported that the use of PE skills has been largely affected by the practices in clinical settings and how nurses perceive these practices.

According to our study findings, experience of performing PE and increased education level were significant predictors of a more positive attitude towards PE. When the literature was reviewed, it was reported that nurses who were more competent in terms of knowledge and experience about PE were positively influenced in their attitude and practice towards PE.[6,12,14,18,19] In Turkey, Çalışkan et al[23] found that as the education level of nurses increased, their use of PE skills increased. Korkmaz Doğdu and Kol[25] reported that the rate of nurses who considered PE among their nursing roles was significantly higher in nurses with undergraduate and graduate levels of education. These findings also highlight the necessity of improving nurses' knowledge and skills regarding PE and supporting them to use these skills, in order for the nurses to have more positive attitudes towards PE. Various studies have reported that a sufficient level of knowledge positively increases the attitude towards PE and improves autonomy, self-confidence, and motivation and that is associated with higher skill use.[3,4,15,18]

In the current study, we determined gender as a significant variable that predicts nurses' attitudes towards PE and found that female nurses had more positive attitudes compared to males. There are studies in the literature with different results on how gender affects knowledge, attitudes, and practices regarding PE. Two different studies conducted with nurses working in the field of critical care reported that attitudes and practices towards PE were not related to gender, different from our findings.[13,18] In another study, the knowledge-skill scores of PE were found to be significantly higher in female nurses.[6] A study conducted in Jordan has shown that female nurses used PE techniques significantly better compared to male nurses.[2] With the different results in the literature, the effects of gender on attitudes towards PE need to be investigated further. Also, these results suggest that the gender factor should be taken into account in interventions aimed at improving nurses' use of PE skills and attitudes. Besides, the results of another recent study with Jordanian nurses showed that the gender of the nurse performing PE was the most important variable that had an effect on the more negative attitude towards performing PE for a patient of the opposite sex.[19] Although participant nurses in this study were found to have a more positive attitude about performing PE for a patient of the opposite sex in the "cultural considerations" sub-dimension, it is noteworthy that the nurses had the highest mean score, which expresses the more negative attitudes in this sub-dimension of the scale, from the statement that "culture and norms can be effective in making PE for a patient of the opposite sex." Therefore, in gaining PE competence for nurses, the focus should be on the importance of PE in patient care rather than the gender of the person performing PE in line with the universal ethical principles and responsibilities of nursing.

Limitations

This study has been the first to understand Turkish nurses' attitudes towards PE. However, this study has some limitations. First of all, the study was conducted with nurses from a university and a public hospital in the city of Afyonkarahisar in the Aegean region of Turkey. Therefore, the results obtained from

this study can only be generalized to this sample. Because of the cross-sectional study design used, the fact that the data were collected only once and the obtained data were based on nurses' self-reports may have limited the ability to draw valid conclusions. These limitations may restrict the generalization of the study results. However, the results of this study showed similarities to the results of studies conducted with nurses from different countries on PE. Therefore, institution administrators and nurse educators aiming to improve knowledge, attitudes, and practices about PE can benefit from the results of this study to develop theoretical and clinical training programs aimed at increasing the practice and improving certain aspects of existing training curricula.

The results of this study showed that Turkish nurses have a positive attitude towards PE. However, the fact that the Turkish nurses' knowledge competency and practice status of PE were not at the desired level for transforming this positive attitude into practice highlighted the need to focus on the hindering factors. The vast majority of participating nurses expressed their willingness to have the opportunity to receive training in PE. Multiple linear regression findings showed that experience of performing PE, having higher educational qualifications, being female, being responsible for the daily care of fewer patients, having more positive perceptions that PE is part of the nursing role, and knowledge competency were the main factors affecting attitude towardsPE.

The development of competencies of nurses in PE skills is an important requirement to develop an effective care plan. The results of this study emphasize that nurses need support in the fields of education, self-confidence, motivation, and the work system expecting them to practice their independent roles in order for positive attitudes towards PE to turn into practice and for PE to be among the nursing roles. Nursing education institutions should review their curricula for more effective teaching of PE skills and give importance to the use of permanent teaching methods. Continuing education to further train nurses in PE skills is required beginning from basic nursing education even after graduation, and education programs should focus on areas where nurses are less competent and need training. Thus, it can be ensured that both the nurses of the future and the nurses in different care settings reach the desired competency in PE skills. There is a need for more planning and arrangements emphasizing the importance of self-confidence in PE, role clarity, educational support, and support from other disciplines, which would support the basic nursing roles and patient-centered work of nurses in health care institutions in Turkey.

Ethics Committee Approval: Ethics committee approval was received for this study from the Clinical Research Ethics Committee of Afyonkarahisar Health Science University (Date: November 1, 2020 and Number: 478).

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