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**APPLICATION OF PHYSICAL EXAMINATION
IN THE PROFESSIONAL PRACTICE OF NURSES
AND PARAMEDICS**

**Stosowanie badania przedmiotowego w praktyce zawodowej pielęgniarek
i ratowników medycznych**

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A - Koncepcja i projekt badania, B - Gromadzenie i/lub zestawianie danych, C - Analiza i interpretacja danych, D - Napisanie artykułu, E - Krytyczne zrecenzowanie artykułu, F - Zatwierdzenie ostatecznej wersji artykułu

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Abstract (in Polish):

Cel pracy

Badanie przedmiotowe należą do podstawowych zadań pielęgniarek i ratowników medycznych, od których wymaga się prawidłowej i pełnej oceny fizycznej pacjenta. Obecnie badania nad rozbieżnością stosowania badania przedmiotowego w praktyce pielęgniarek i praktyce ratowników medycznych są ograniczone. Celem analizy była ocena stosowania badania przedmiotowego w praktyce pielęgniarek i ratowników medycznych.

Material i metody

W badaniu przeprowadzonym w 2022 r. wzięło udział 161 osób pracujących w zawodzie pielęgniarstwie i ratownika medycznego. Badania przeprowadzono metodą sondażu diagnostycznego z wykorzystaniem kwestionariusza ankiety. Pytania zawarte w ankiecie obejmowały zagadnienia dotyczące badania przedmiotowego. Pytania zawarte w kwestionariuszu analizowano w dwóch kategoriach wykonywanego zawodu z wykorzystaniem test χ^2 .

Wyniki

Częstość wykonywania badania przedmiotowego różniła się znacząco ($p < 0,001$) między ratownikami medycznymi i pielęgniarkami, ze wskazaniem na wykonywanie ich „zawsze” w większym odsetku przez ratowników medycznych (13,1% vs. 63,6%). Z wyjątkiem oglądania, jako techniki badania fizykalnego, pozostałe techniki ratownicy medyczni wykorzystywali istotnie statystycznie częściej ($p < 0,001$) niż pielęgniarki. Statystycznie istotnie częściej wskazywaną przez pielęgniarki niż przez ratowników medycznych barierą w wykonywaniu badania przedmiotowego była duża ilość obowiązków w pracy ($p < 0,01$), natomiast przez ratowników medycznych „niechęć ze strony pacjentów” ($p < 0,001$).

Wnioski

Rodzaj wykonywanego zawodu medycznego miał istotny wpływ na częstość i zróżnicowanie technik wykorzystywanych w badaniu przedmiotowym oraz bariery ograniczające ich wykonywanie. Istnieje potrzeba aktywizowania pielęgniarek do częstego stosowania badania przedmiotowego w swojej praktyce zawodowej z wykorzystaniem wszystkich technik.

Abstract (in English):

Aim

Medical interview and physical examination are the fundamental tasks of nurses and paramedics who are required to perform a correct and complete assessment of the patient. The evaluation of the use of interview and physical examination in the practice of nurses and paramedics.

Material and methods

161 people working as nurses and paramedics took part in the research conducted in 2022. The research was carried out with the use of a questionnaire. The questions in the survey concerned the medical interview and physical examination issues. The questionnaire results were analysed with division into both occupations using the χ^2 test.

Results

The frequency of performing the physical examination significantly ($p < 0,001$) varied in nurses and paramedics, with a higher percentage of paramedics performing it “always” (13,1% vs. 63,6%). Except for observation as a technique of physical examination, paramedics applied other techniques significantly more often ($p < 0,001$) than nurses. An obstacle statistically significantly more often indicated by nurses than by paramedics was numerous duties at work ($p < 0,01$), while for paramedics the “reluctance of patients” ($p < 0,001$).

Conclusions

The type of medical profession significantly impacted the frequency and variety of techniques used in physical examination and obstacles limiting their performance. It is necessary to activate nurses to more frequent applying the physical examination in their professional practice with the use of all techniques.

Keywords (in Polish): badania przedmiotowe, pielęgniarstwo, ratownik medyczny.

Keywords (in English): nurse, paramedics, physical examination.

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Badanie przedmiotowe w praktyce pielęgniarek i ratowników

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Authors (short)

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Introduction

Physical examination is the fundamental duty of nurses and paramedics who are required to perform a correct and complete assessment of the patient [1]. Introducing new diagnostic techniques does not understate the value of the physical examination. It is hard to imagine how the profession of nurses and paramedics would look like, providing health services mentioned in the law without examination of the patient. It is important to stress that during studies, all adepts of medical professions acquire knowledge and skills in the field of physical examinations of the patient. Moreover, nurses, as well as paramedics, must continuously update their knowledge about their profession, and they have the right to specialise themselves in different types of postgraduate education [2–4].

The physical examination constitutes a valuable tool because it helps nurses verify the clinical history, identify the patient's problems, define a nursing diagnosis, plan, and carry out medical interventions, and monitor the patient's state [5]. When it comes to paramedics, the assessment of the patient's state allows them to determine the required intervention and make the decision to start or withdraw from emergency treatment. However, the discrepancies between the practices of nurses and paramedics significantly affect the physical examination performed, and the obstacles faced by each profession.

The analysis aimed to evaluate the use of physical examinations in the practice of nurses and paramedics.

Materials and method

161 people took part in the survey performed in May 2022. Nurses (n=84) constituted 84 people (52,2%), while 77 people (47,8%) were working as paramedics. All the respondents were employed in the Polish health care system.

The nationwide research was carried out by the method of a diagnostic survey with the use of a questionnaire. The surveys were collected electronically through the Google Forms platform. Active work as a nurse or paramedic and voluntary agreement were criteria for inclusion in the survey. The questions in the survey concerned the frequency of performing the physical examination, the used techniques, and the barriers that limit examination. The research complied with the ethical standards recognized in the Helsinki Declaration

The results of the questionnaire were analyzed in categories for both occupations. The statistical analysis was carried out using the χ^2 test in the form of function G [6]. The application of such function was due to the occurrence of numbers smaller than 5 in separate categories. The significance of the test was $p < 0,05$.

Results

Table 1 contains the sociodemographic characteristic of respondents. The group of nurses and paramedics varied statistically significantly ($p < 0,001$) regarding education. 7,1% of nurses and 40,3% of paramedics completed medical vocational school. Undergraduate and graduate education had 92,9% of nurses and 59,7% of paramedics. The main place of employment of nurses were hospital departments (71,4%), and paramedics in a similar percentage (71,4%) – the emergency ambulance services. The nurses also worked in an emergency department (10,7%), and primary care (13,1%), while paramedics worked in emergency departments (23,4%). The most numerous groups of nurses constituted people with more than 5 years and more than 16 years of experience (32,1% and 40,5%, respectively). The work experience of paramedics was evenly distributed over the range of 6-10 years (26%), 11-15 years (29,9%), and more than 16 years (24,6%). The statistically significant differences were indicated when it comes to the place of work ($p < 0,001$) and work experience ($p < 0,01$) between the group of nurses and paramedics.

Table 1. Sociodemographic characteristics of the respondents

Specification	In total (n=161)		Profession				Test χ^2
			Nurses (n=84)		Paramedics (n=77)		
	n	%	n	%	n	%	
Education level							
Medical high school/ Medical vocational college	37	23,0	6	7,1	31	40,3	$\chi^2(2) = 36,12;$ $p < 0,001$
Medical undergraduate studies	85	52,8	46	54,8	39	50,6	
Medical master's degree	39	24,2	32	38,1	7	9,1	
Place of work							
Emergency medical services	57	35,4	2	2,4	55	71,4	$\chi^2(4) = 141,26;$ $p < 0,001$
Emergency department	27	16,8	9	10,7	18	23,4	
Hospital wards	64	39,8	60	71,4	4	5,2	
Primary care	11	6,8	11	13,1	0	0,0	
Specialistic outpatient care unit	2	1,2	2	2,4	0	0,0	

Work experience							
≤ 5 years	42	26,1	27	32,1	15	19,5	$\chi^2(3) = 13,83;$ $p < 0,01$
6-10 years	32	19,9	12	14,3	20	26,0	
11-15 years	34	21,1	11	13,1	23	29,9	
≥ 16 years	53	32,9	34	40,5	19	24,6	

Table 2 includes aspects of the use of physical examination in the profession of nurses and paramedics.

Table 2. Aspects of physical examination use in the profession of nurses and paramedics

Specification	In total (n=161)		Profession				χ^2 test	
			Nurses (n=84)		Paramedics (n=77)			
	n	%	n	%	n	%		
Performance of physical examination in the professional practice								
Yes	123	76,4	48	57,1	75	97,4	$\chi^2(1) = 33,91;$ $p < 0,001$	
No	38	23,6	36	42,9	2	2,6		
The frequency of applying physical examination in professional practice								
Sometimes	32	19,8	29	34,5	3	3,9	$\chi^2(3) = 58,09;$ $p < 0,001$	
Often	28	17,5	21	25,0	7	9,1		
Very often	41	25,7	23	27,4	18	23,4		
Always	60	37,1	11	13,1	49	63,6		
The techniques of physical examination used in the professional practice								
Observation	Yes	157	97,5	80	95,2	77	100,0	$\chi^2(1) = 5,30;$ $p > 0,05$
	No	4	2,5	4	4,8	0	0,0	
Palpation	Yes	130	80,8	55	65,5	75	97,4	$\chi^2(1) = 24,33;$ $p < 0,001$
	No	31	19,3	29	34,5	2	2,6	
Percussion	Yes	94	58,4	23	27,4	71	92,2	$\chi^2(1) = 69,49;$ $p < 0,001$
	No	67	41,6	61	72,6	6	7,8	
Auscultation	Yes	106	65,9	31	36,9	75	97,4	$\chi^2(1) = 62,71;$ $p < 0,001$
	No	55	34,2	53	63,1	2	2,6	
Barriers limiting the performance of physical examination								
Reluctance on the part of doctor	Yes	40	37,4	24	45,3	16	29,6	$\chi^2(1) = 2,80;$ $p > 0,05$
	No	67	62,6	29	54,7	38	70,4	
Reluctance on the part of other nurses/paramedics	Yes	22	20,6	12	22,6	10	18,5	$\chi^2(1) = 0,28;$ $p > 0,05$
	No	85	79,4	41	77,4	44	81,5	
Too many work responsibilities	Yes	63	58,9	39	73,6	24	44,4	$\chi^2(1) = 9,38;$ $p < 0,01$
	No	44	41,1	14	26,4	30	55,6	
Reluctance on the part of patient	Yes	52	48,6	16	30,2	36	66,7	$\chi^2(1) = 14,25;$ $p < 0,001$
	No	55	51,4	37	69,8	18	33,3	
Others	Yes	6	5,6	2	3,8	4	7,4	$\chi^2(1) = 0,68;$ $p > 0,05$
	No	101	94,4	51	96,2	50	92,6	

Regardless of their profession, most of the surveyed health care workers (76,4%) used physical examination in their practice. However, in the group of nurses, the proportion of people applying for physical examination (57,1%) was significantly lower ($p < 0,001$) than in the paramedics' group (97,4%) (Table 2).

Similarly, the frequency of performing a physical examination in professional practice varied significantly ($p < 0,001$) in nurses and paramedics. Slightly over one-third of nurses (35,4%) declare that they perform physical examination "sometimes", while most paramedics (64,0%) do it "always" (Table 2).

Observation as one of the techniques of physical examination was slightly more often ($p > 0,05$) applied by paramedics (100,0%) than by nurses (95,2%). The rest of the techniques, such as palpation, percussion, or auscultation, was performed statistically significantly ($p < 0,001$) more often by paramedics than nurses (Table 2).

The most common barrier that hindered the performance of the physical examination was too many work responsibilities. Significantly more nurses ($p < 0,01$) reported this factor rather than paramedics (73,6% vs. 44,4%). The second common barrier was the patient's reluctance. It was paramedics who significantly more often ($p < 0,001$) than nurses indicated this factor (66,7% vs. 30,2%). Reluctance on the part of doctors or other nurses/paramedics was reported as more frequent among the surveyed nurses (45,3% and 22,6%, respectively) than in paramedics (29,6% and 18,5%, respectively). Other barriers to performing physical examinations were mentioned more often by paramedics (7,4%) than nurses (3,8%) (Table 2).

Discussion

Recognizing the patient's clinical condition constitutes the first and most crucial step in the therapeutic process. Making an incorrect diagnosis can lead to inappropriate treatment and, consequently, loss of chances of improving the patient's state of health [2]. In Poland, nurses and paramedics are entitled to independently performing physical examinations [3,4]. Therefore, it seems that the physical examination should be a standard in their profession, but the conducted research did not confirm this in the case of nurses. Our research showed that in the group of nurses, the percentage of people performing physical examination was 57,1% which was significantly lower than in the group of paramedics. A similar frequency of physical examination (42,8%) by practicing nurses was obtained by Borowiak et al. [7] in research conducted in 2014-2019 on the group of nurses and nursing students.

It can be noticed that nurses do not perform all the techniques of physical examination even though they acquired such knowledge and skills during education. Our research showed that only observation as a physical examination technique was performed by nurses as often as by paramedics. The rest of the physical examination techniques paramedics performed significantly more often than nurses. As in the previous study, percussion is the least performed technique by nurses. It was used by 1.7% of nurses working in hospital departments and 15.4% nurses employed in long-term care facilities [8].

In the case of the frequency of performing the auscultation technique, Liyew et al. [9] obtained a similar result in the research conducted in 2019 on a group of nurses working in the intensive care unit at regional state hospitals in north-western Ethiopia. In that study auscultation of the lungs and heart was performed respectively 33,8% and 36,1% of nurses. In a study by Grabowski [10] the auscultation of the chest was declared by only 4.18% of nurses. Also, Cicolini et al. [1], in the research conducted in 2013-2014 on 1182 Italian graduated nurses, indicated that the technique of auscultation of lungs, heart and abdominal cavity was almost never performed by more than 60% of the participants. Similarly, the study

by Osborne et al. [11], 2015, concerning nurses and midwives who deal with acute care showed that 18% of surveyed nurses never performed percussion and auscultation.

Numerous studies indicate specific barriers to performing a physical examination in the professional group of nurses and paramedics. The authors of these studies indicated different barriers in the group of paramedics and different in the group of nurses. In our research, the reluctance on the part of patients was significantly more often indicated by paramedics than by nurses. However, nurses identified indicated too many work responsibilities and the reluctance of doctors as the main obstacle. In their research, Borowiak et al. [7] drew attention to similar difficulties of nurses performing physical examination. She showed that these barriers were: low support of doctors (30,1%), other nurses (28,2%), and excess duties (29,3%). McElhinney [12] pointed to similar factors that made it difficult for nurses to perform the physical examination on a sample of 21 nurses from 10 clinical areas. He divided hindering factors into individual, organizational, and supportive. In individual factors, he indicated “lack of self-confidence”, in organizational factors – “lack of staff” and in supportive, he noted – “lack of acceptance of medical personnel for the individual ability to perform physical examination”. Liyew et al. [9] showed the lack of time and breaks during work as the main barrier to the physical assessment of patients by nurses working in the intensive care unit. The authors of that study also mentioned: lack of self-confidence, department culture, and dependence on technologies as the barriers to the physical assessment of the patient.

Conclusions

The type of medical profession impacted the frequency and variety of techniques used in physical examination and barriers limiting their performance. It is necessary to activate nurses to more frequently apply physical examination in their professional practice with the use of all techniques.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and publication of this article.

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