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Education of nurses in the prevention and treatment of asthma

Edukacja pielęgniarek w zakresie profilaktyki i leczenia astmy

Słowa kluczowe: astma oskrzelowa, edukacja zdrowotna, poziom wiedzy, pielęgniarki.

Key words: bronchial asthma, health education, level of knowledge, nurses.

Streszczenie. Edukacja zdrowotna, realizowana w głównej mierze przez pielęgniarki jest jednym z podstawowych elementów leczenia astmy oskrzelowej.
Celem pracy była ocena przygotowania pielęgniarek do pełnienia funkcji edukacyjnej w zakresie profilaktyki i leczenia astmy.
Badaniem objęto 95 pielęgniarek zatrudnionych w jednym z małopolskich szpitali. Badania przeprowadzono metodą sondażu diagnostycznego, z użyciem kwestionariusza ankiety własnej konstrukcji. Przyjęto poziom istotności $p < 0,05$. Większość badanych (67,4%) oceniła swoje przygotowanie do pełnienia funkcji edukatora na poziomie dobrym. Ponad połowa respondentek (56,8%) prezentowała przeciętny poziom wiedzy na temat astmy oskrzelowej. Znaczny odsetek pielęgniarek poświęcał na edukację pacjentów jedynie do 5 minut (34,7%). Dobrą wiedzę na temat astmy prezentowały najczęściej pielęgniarki w wieku 36–45 lat, z tytułem licencjata pielęgniarstwa i stażem pracy 11–30 lat ($p < 0,05$). Częściej bardzo dobrze oceniały swoje przygotowanie respondentki z najmłodszej grupy wiekowej ($p < 0,05$).
Pielęgniarki w większości prezentowały przeciętny poziom wiedzy na temat astmy oskrzelowej i jej leczenia. Samoocena przygotowania do pełnienia funkcji edukatora zależała istotnie od wieku badanych pielęgniarek. Poziom wiedzy na temat astmy oskrzelowej determinowały takie zmienne jak wiek, staż pracy oraz wykształcenie.

Background. Health education realized mainly by nurses is one of the basic elements of bronchial asthma treatment.

Objectives. The aim of the study was to prepare nurses to perform an educational function in the field of prevention and treatment of asthma.

Material and methods. The study involved 95 nurses employed in a hospital in Małopolska region. The study was conducted using a diagnostic survey method with a questionnaire. An acceptable level of accessibility was $p < 0,05$.

Results. The majority of respondents (67.4%) assessed their background to act as an educator at a good level. More than half of respondents (56.8%) presented an average level of knowledge on bronchial asthma. A significant proportion of nurses dedi-

cated only up to 5 minutes to educating patients (34.7%). A good knowledge on asthma was presented mostly by nurses aged 36 to 45 years with a bachelor's degree in nursing and seniority of 11–30 years ($p < 0,05$). Respondents in the youngest age group assessed their background as very good more often ($p < 0,05$).

Conclusions. The majority of nurses presented an average level of knowledge regarding bronchial asthma and its treatment. Self–assessment of a background to act as an educator strongly depended on the age of the respondents. The level of knowledge on bronchial asthma was determined by such variables as age, seniority and educational background.

Background. Bronchial asthma is a chronic respiratory disease with an important role played by: mast cells, oesinophiles, lymphocytes T, neutrophils, platelets, epithelial cells and fibroblasts [1]. The disease is usually accompanied by both respiratory hyperresponsiveness and inflammation, but their recognition is not synonymous with diagnosis of asthma. A group of symptoms of respiratory system includes: wheezing, dyspnea, experience of heaviness in the chest, cough at night and/or in the morning. These symptoms are usually accompanied by variable airflow limitation in respiratory tract, disappearing completely or partially, spontaneously or under the influence of drugs [2].

According to data of the *Global Initiative for Asthma* (GINA), the number of asthmatic patients in the world population is more than 300 million people. *The World Health Organization* (WHO) estimates that another 100 million will fall ill by 2025. According to the Polish Society of Allergology, in Poland, each year about 1500 people die from asthma and one in ten children and one in twenty adults are ill [3].

Despite the progress in contemporary medicine, common knowledge regarding the mechanisms of the disease and the use of modern pharmacology, treatment outcomes of patients with bronchial asthma are still unsatisfactory.

Health Education (HE), carried out mainly by nurses, is one of the basic elements of treatment of bronchial asthma and should therefore be a regular part of each contact with the patient [4]. Good asthma control and its treatment success is, on the one hand, a result of a proper pharmacotherapy and, on the other hand, partner relations between a patient and a healthcare worker [5]. Combination of pharmacotherapy and HE enables a patient to acquire both knowledge and skills necessary to adopt behaviours that are favourable to health, hence HE should accompany all stages of diagnosing, treatment and care of patients [6, 7].

Material and methods. The study involved 95 nurses of 25–59 year olds (on average 42,32±8,39 years), employed in one of Małopolska hospitals, taking care of asthmatic patients.

The study was conducted based on a diagnostic survey method using a questionnaire of own design. The questionnaire consisted of 29 questions, some of which concerned the nature of the disease and the treatment of bronchial asthma (7 questions) – on the basis of which the level of knowledge of the respondents was assessed. The results were divided into 5 categories: lack of knowledge (0–5 points),

low level of knowledge (6–10 points), sufficient level of knowledge (11–15 points), good level of knowledge (16–20 points), very good level of knowledge (21–25 points). The questionnaire was completed by questions regarding sociodemographic data.

Statistical analysis was performed with the use of IBM SPSS Statistics 20. Basic descriptive statistics were used to describe the results, differences between variables were verified using χ^2 test of independence. An acceptable level of accessibility was $p < 0,05$. The study was conducted in compliance with ethical principles and good research practice resulting from the Declaration of Helsinki.

Results. The largest group consisted of nurses aged 36 to 45 years (n = 39; 41,1%), the vast majority has a bachelor's degree in nursing (n = 56; 58,9%). The average seniority in the profession was 20.15 years (±9,30 years), the largest part of the group has been working for 21–30 years (n = 34; 35,8%). A significant percentage of the respondents were ward nurses (n = 50; 52,6%).

Sample nurses found their background to act as an educator at good (n = 64; 67,4%), sufficient (n = 22; 23,2%) and very good level (n = 9; 9,5%).

Most frequently, nurses conducted HE among patients with bronchial asthma following the recognition of deficits in knowledge or skills (n = 43; 45,3%). A small group of nurses declared they had conducted education for every patient diagnosed with bronchial asthma (n = 12; 12,6), and some of the respondents only for certain patients (n = 16; 16,8%). As many as a quarter of sample nurses (n = 24; 25,3%) did not educate patients with bronchial asthma at all. Lack of time was pointed out as a restriction on conducting educational activities (n = 78; 82,1%), less of them admitted their lack of knowledge (n = 15; 15,8%).

The largest number of respondents dedicated only up to 5 minutes to educating patients (n = 33; 34,7%). Slightly less of them dedicated 6–10 minutes (n = 27; 28,4%) and 11–15 minutes (n = 23; 24,2%) and the lowest number of them 16–20 minutes (n = 12; 12,6%). Educational activities of sample nurses most often covered patients (n = 63; 66,3%), their families (n = 44; 46,4%), and slightly less frequently healthy persons (n = 25; 26,3%).

Level of knowledge on bronchial asthma. The majority of sample nurses (n = 83; 87,4%) correctly identified asthma as an inflammatory disease of the respiratory system characterized by bronchial hyperreactiveness and spontaneously or pharmacologically reversible bronchospasm. Less than half of the respondents was aware that the diagnosis of asthma is based on symptoms reported by the patient and additional examinations (n = 40; 42,1%). 54 nurses (56,8%) had knowledge on symptomatic drugs used in bronchial asthma. Significantly fewer respondents were able to specify a correct example of an anti-inflammatory drug – controlling the disease (n = 22; 23,2%). More than half of sample nurses (n = 57; 60,0%) declared their ability to provide instructions on how to administer inhalation drugs using different types of inhalers.

The most commonly known symptom of bronchial asthma in the studied group were attacks of breathlessness caused by a bronchospasm (n = 76; 80,0%) and wheezing (n = 74; 77,9%). Further, the respondents indicated cough and exertional dyspnea (n = 62; 65,3%), cough at night and in the morning (n = 56; 58,9%), The nurses studied most frequently indicated: contact with an allergen (n = 89; 93,7%), respiratory infections (n = 72; 75,8%), physical exercise (n = 55; 57,9%), while the least frequently – breathing frosty air (n = 24, 025,3%) as triggering agents of an asthma attack.

On the basis of the analysis of the results, it was concluded that most respondents presented an average level of knowledge on bronchial asthma (n = 54; 56,8%). Knowledge of 21,1% of the respondents (n = 20) was assessed as good, of 16,8% (n = 16) as low and of the remaining 5,3% (n = 5) as very good.

Factors determining the level of knowledge on bronchial asthma. Our study demonstrated that the age, seniority and educational background significantly differentiated the level of knowledge on asthma. The low level of knowledge was more often presented by nurses in the youngest age group, with a master's degree in nursing, working in the profession for 1–20 years ($p < 0,05$) (Tab. 1).

Table 1. Factors determining the level of knowledge on bronchial asthma

Variables		Level of knowledge on asthma				Statistical significance
		low	sufficient	good	very good	
		n(%)	n(%)	n(%)	n(%)	
Age	25–35 lat	8(42,1%)	7(36,8%)	3(15,8%)	1(5,3%)	p = 0,0141
	36–45 lat	5(12,8%)	21(53,8%)	12(30,8%)	1(2,6%)	
	>45 lat	3(8,1%)	26(70,3%)	5(13,5%)	3(8,1%)	
Seniority	1–10 lat	6(28,6%)	10(47,6%)	4(19,0%)	1(4,8%)	p = 0,0215
	11–20 lat	8(28,6%)	12(42,9%)	8(28,6%)	0(0,0%)	
	21–30 lat	2(5,9%)	22(64,7%)	8(23,5%)	2(5,9%)	
	31–40 lat	0(0,0%)	10(83,3%)	0(0,0%)	2(16,7%)	
Educational background	Medical high school	3(37,%)	5(62,5%)	0(0,0%)	0(0,0%)	p = 0,0012
	Vocational college	0(0,0%)	16(88,9%)	0(0,0%)	2(11,1%)	
	I° studies	7(12,5%)	29(51,8%)	17(30,4%)	3(5,4%)	
	II° studies	6(46,5%)	4(30,8%)	3(23,1%)	0(0,0%)	

Factors influencing the time spent on educating patients. The time spent on educating one patient during an on-call duty depended significantly on the age, educa-

tional background, seniority in the profession and the position held. The least time (0–5 min.) spent on education was devoted by divisional nurses, aged 36 years and older, who completed either Medical Secondary School or Post-Secondary Vocational College, or first degree studies, working in the profession for over 10 years ($p < 0,05$) (Tab. 2).

Table 2. Factors influencing the time spent on educating patients

Variables		Time spent on educating patients				Statistical significance
		0–5 min.	6–10 min.	11–15 min.	16–20 min.	
		n(%)	n(%)	n(%)	n(%)	
Age	25–35 lat	2(10,5%)	10(28,2%)	4(21,1%)	3(15,8%)	p = 0,0364
	36–45 lat	17(43,6%)	11(28,2%)	6(15,4%)	5(12,8%)	
	>45 lat	14(37,8%)	6(16,2%)	13(35,1%)	4(10,8%)	
Seniority	1–10 lat	1(4,8%)	12(57,1%)	4(19,0%)	4(19,0%)	p = 0,0010
	11–20 lat	11(39,3%)	10(35,7%)	3(10,7%)	4(14,3%)	
	21–30 lat	15(44,1%)	3(8,8%)	14(41,2%)	2(5,9%)	
	31–40 lat	6(50,0%)	2(16,7%)	2(16,7%)	2(16,7%)	
Educational background	Medical high school	2(25,0%)	2(25,0%)	4(50,0%)	0(0,0%)	p = 0,0389
	Vocational college	8(44,4%)	4(22,2%)	4(22,2%)	2(11,1%)	
	I° studies	20(35,7%)	12(21,4%)	14(25,0%)	10(17,9%)	
	II° studies	3(23,1%)	9(69,2%)	1(7,7%)	0(0,0%)	
Position	Divisional nurse	17(51,5%)	11(33,3%)	5(15,2%)	0(0,0%)	p = 0,0111
	Nurse coordinator	4(33,3%)	2(16,7%)	2(16,7%)	4(33,3%)	
	Ward nurse	12(24,0%)	14(28,0%)	16(32,0%)	8(16,0%)	

Factors affecting the level of self-assessment of preparedness to act as an educator. Self-assessment of preparedness to act as an educator depended significantly on

the age of the nurses studied. The respondents in the youngest age group most often assessed their preparedness as very good ($p < 0,05$) (Tab. 3).

Table 3. Factors affecting the level of self–assessment of preparedness to act as an educator

Variables		Self–assessment of preparedness to act as an educator			Statistical significance
		Very good	Good	Sufficient	
		n(%)	n(%)	n(%)	
Age	25–35 lat	5(26,3%)	11(57,9%)	3(15,8%)	p = 0,0026
	36–45 lat	2(5,1%)	22(56,4%)	15(38,5%)	
	>45 lat	2(5,4%)	31(83,8%)	4(10,8%)	
Seniority	1–10 lat	2(9,5%)	13(61,9%)	6(28,6%)	p = 0,1900
	11–20 lat	5(17,9%)	14(50,0%)	9(32,1%)	
	21–30 lat	2(5,9%)	27(79,4%)	5(14,7%)	
	31–40 lat	0(0,0%)	10(83,3%)	2(16,7%)	
Educational background	Medical high school	0(0,0%)	7(87,5%)	1(12,5%)	p = 0,3116
	Vocational college	2(11,1%)	14(77,8%)	2(11,1%)	
	I^{o} studies	4(7,1%)	36(64,3%)	16(28,6%)	
	II^{o} studies	3(23,1%)	7(53,8%)	3(23,1%)	

Discussion. Kupryś-Lipińska and Kuna have demonstrated the effectiveness of activities in the area of education of asthmatic patients, the use of which results in the form of better effects of treatment [8]. Many authors in the world stress that education is an integral part of treatment of asthma [9, 10] and medical staff has a duty to ensure that each and every patient with asthma can effectively identify and deal with its symptoms [11].

At the same time, adequate qualifications of nurses contribute to the quality of knowledge transferred to patients. What is more, there is a relationship between properly conducted education and the degree of participation of patients in the treatment process [8].

Most of the nurses studied (67.4%) assessed their preparedness to act as an educator at a good level. An analysis of studies has shown that only 21.1% of the respondents had knowledge at this level. In turn, Łagoda et al., who conducted surveys

concerning risk factors of allergies and occupational asthma among professionally employed nursing students assessed their knowledge as satisfactory. This result would coincide with the self-assessment of sample persons [12].

The studies carried out by Hans-Wytrychowska et al. have shown that the most effective source of knowledge having influence on the improvement of the quality of life of patients with bronchial asthma are the media rather than medical staff, i.e. nurses and doctors [13]. These data indicate the need to train medical staff, which will not only have knowledge on both prevention and treatment of diseases, but will also be able to transfer it in an accessible way to their patients.

Special educational activities are required by a group of elderly patients with asthma. According to Wardzyńska and Kowalski, specialist care combined with education in the elderly may result in controlling the disease at a level comparable to younger people [14]. Because of the difficulties relating to understanding, remembering and compliance with recommendations, educational activities must be highly individualized and carried out in several stages, and sometimes education should also cover the family of the patient [15]. Our own studies have demonstrated that less than half of the nurses studied declared they had conducted education among the families of patients.

Orzechowska et al. emphasize that the family, which constitutes the patient's immediate environment, should support the treatment through cooperation with the medical staff. The course and progress of treatment depends not only on the quality of medical care, but also on the attitude of family members, who influence the mental state of a patient and they also share the responsibility for implementing medical recommendations [16].

The educational programme requires establishing a personal management plan, which should be developed individually for each patient [12, 15]. The studies of the American scientists revealed that a significant percentage of nurses considers a written educational plan as an essential condition for compliance with medical recommendations by patients with asthma [17].

The Polish studies lack of cross-sectional research, which would indicate how important are the nurses in education of patients with asthma. As a matter of fact, it is highlighted in the literature that their role should be significant, but the nurses themselves mention education as a task most often forsaken during duty in a hospital. According to nurses, the lack of time, a great number of patients and the time of duty exclude performing necessary care activities concerning patients, including above all educational activities [18]. The factors that hinder undertaking educational tasks towards a hospitalized person are also reflected in this study, however it is difficult not to objectively agree with the fact that perhaps a significant factor of not undertaking educational tasks by nurses participating in the study is the lack of knowledge in treatment and care of patients with asthma.

Conclusions. 1. Nurses considered their preparedness to act as an educator as good, but knowledge about asthma in the majority of them was at an average level. 2. Self-assessment of preparedness to act as an educator depended significantly on age of

nurses. 3. The level of knowledge about asthma was determined by such variables as age, seniority and educational background.

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