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FACTORS AFFECTING THE LEVEL OF PROFESSIONAL DEVELOPMENT AMONG NURSING STAFF AFTER THE INTRODUCTION OF AN ELECTRONIC EDUCATION MONITORING SYSTEM

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A – study design, **B** – data collection, **C** – statistical analysis, **D** – interpretation of data, **E** – manuscript preparation, **F** – literature review, **G** – sourcing of funding

ABSTRACT

Background: Constant improvement of the level of education, occupational independence, and the undertaking of scientific activity, including research and publications, contribute fundamentally to the development of the nursing profession. Ministerial directives for nurses to acquire and increase qualifications gave rise to the emergence of a new job profile in which self-discipline in the scope of scientific activity and personal development is essential.

Aim of the study: The study aimed to assess the factors affecting the level of professional development among nurses after the introduction of the electronic education monitoring system (SMK), including variables hindering the process of increasing respondents' qualifications.

Material and methods: The research group consisted of 214 nurses who were both licensed to practice and practicing professionally. A diagnostic survey and questionnaire technique were used with the use of the author's original questionnaire.

Results: Nurses actively undertake postgraduate education, treating it more as a deep inner need and willingness to increase qualifications than a legal obligation. Among various forms of training, the biggest proportion took part in specialist courses – 24.9% (n=53), qualification courses – 23.8% (n=51), and specializations – 17.9% (n=38). Age (p=0.036) and length of professional service (p=0.001) were the most statistically relevant factors motivating the staff to undertake further educational activities.

Conclusions: The factors significantly affecting the level of professional development in nurses are age, system of work, and issues arising while using the SMK. The introduction of training and clear instructions for using the system might contribute to the level of professional development among nurses.

KEYWORDS: education, nursing, legislation, employment

Background

The nursing profession is an independent medical job, outlined in the Act on the nursing and midwifery profession dated on 11th July 2011 (Polish Official Journal 2011, no 134, pos. 1039). The act states the rules and conditions for performing the job of a nurse, the requirements to achieve the license to

practice, and the rules of professional and postgraduate training [1].

The role of the profession is to provide health services, as stated in the qualifications and skills owned by a nurse [2]. The education earned by nurses allows them to be employed by the institutions responsible for founding health care from public expenses; agencies overseeing these institutions which prepare, organize, and oversee activities connected with providing health care; public authorities which supervise health care; military and penitentiary institutions; social care centres, nurseries, and children's centres; and additional institutions other than their workplace (e.g., professional societies) [3].

Some of the most fundamental conditions of the development of the nursing profession are a constantly improving educational system, practical education, independence, and scientific activity such as research and publications. Such an environment meets the expectations of nurses, who treat the improvement of professional competence as crucial [4]. Postgraduate qualifications allow a nurse to provide a patient with professional care based on the latest standards. The need for constant development of knowledge and skills stems from medical advancement, changeable proceeding standards, treatment complications, the development of rehabilitation, and diagnostics.

Legal regulations of post-graduate nursing education in Poland and the strategy for the development of nursing in Poland

On December 1998, the Minister of Health and Social Care issued the regulation on the postgraduate education of nurses and midwives. New forms of postgraduate education were introduced including specialist training, qualification courses, specialist courses, and update courses [5].

The Regulation of the Minister of Health, dated on 12th of December 2013, regulated the list of nursing fields and those involved in health care that could be trained via specializations and qualification courses [6]. The regulation entered into force on 24th of August 2015 and was preceded by the Regulation of the Minister of Health, dated on 29th of October 2003, on the list of nursing fields, and those involved in health care, that can be trained during specializations and qualification courses, as well as curriculum frameworks of specializations for nurses and midwives. It also details the requirements for a candidate to enter a specific kind of an educational programme [7,8].

On 30th of September 2018 a new Regulation of the Minister of Education was issued on the postgraduate education for nurses and midwives. It determines detailed criteria and regarding the process of post-graduate education, including the criteria and the mode of a qualifying process, the length of training, course document models, and the mechanisms for partial or overall specialist training exemption [9]. Furthermore, after consultation with the General Council of Nurses and Midwives, every December the Minister of Health announces, in the form of proclamation, the training admission limits and the cost of a single training seat [10].

All these amendments led to the formation of a new job profile in which the current emphasis on scientific self-discipline and the continuation of personal development have become very important factors to combat changes within the medical system.

In 2017 there was an essential alteration in the post-graduate education legislation. According to the Act dated on 9th October 2015, amending the Act on the system of information in health care, a new education monitoring system for medical workers (SMK) came into force on 1st of May 2017. SMK is a Polish education monitoring system, used to monitor the level of training of nursing staff. It is an electronic system which supports the postgraduate studies of medical staff including nurses and midwives. In accordance with the official statement established by the Department of Nurses and Midwives and the Legal Department of the Ministry of Health, the implementation of education via the SMK was launched on the 1st of July 2017. During the whole of 2017, 2,989 training courses were carried out including 223 specialist training courses, 405 qualification courses, 2,176 specialist courses, and 185 update courses [11].

The regulations in force since 1st of May 2017 did not introduce any changes to the system of education; however, they modified the methods in which the course participants and the education institutions communicate. Paper documentation was replaced by its electronic form. Such computerization constitutes a tool of quick response, information, and decision flow as well as digitalization of the documents associated with education. The process of qualifying a nurse for specialization, qualification, specialist, or update courses is conducted with the use of the SMK. Both nurses and their specialization supervisors create their accounts, which need to be authenticated and verified for their qualifications [5-8]. An important modification is a data upgrade from the Central Register of Nurses and Midwives (CRPiP) – currently nurses do not need to inform their Regional Chambers of Nurses about their specialization examination results. The General Council for Nurses and Midwives strives for data upgrades from all types of postgraduate education [12,13]. Therefore, it was decided to examine and evaluate the factors affecting the level of postgraduate education in nurses after the introduction of the SMK, taking into account current legal regulations related to educating nurses.

Aim of the study

The current study aimed to assess the factors affecting the level of professional development among nurses after the introduction of the SMK based on legal regulations, including the recognition of variables hindering the process of increasing nurses' qualifications.

Material and methods

Study design

Observational examination was carried out among randomly chosen, professionally active nursing staff of various levels of qualification.

Settings

The research was conducted between July 2018 and March 2019, among nurses from the area of Poland. Approval was granted by The Bioethics Committee at Opole medical School (Nr 57/PI/2018). The study was carried out in the spirit of the Declaration of Helsinki, dated on 1975 and amended in 2013, as well as Good Clinical Practice.

Participants

The research group consisted of 256 professionally active female and male nurses who consciously agreed to participate in the study. Completing the questionnaire demonstrated consent to take part in the study. Participation was voluntary and anonymous. Exclusion criteria included age under 25 years and work service shorter than two years. Thus, 42 respondents were not eligible for the study and the ultimate analysis was conducted on 214 responses.

Data sources/measurement

The research was conducted with a diagnostic survey method with the use of the authors' own questionnaire, consisting of 30 closed questions. Questions 1–11 collected socio-demographic and current employment data. Questions 12–19 focused on the field of the respondents' qualifications (courses and specializations completed). Questions 20–30 determined variables affecting respondents' decisions about whether to undertake efforts to increase their qualifications. To reach the widest possible group of respondents in Poland, the questionnaire was posted on the website www.sondaz.e-statystyka.com.pl and also available on a social portal named Facebook.pl. Both sources enabled anonymity.

Statistical methods

The quantitative variables such as age, overall work experience, and current work experience did not display standard deviations and were verified with the Shapiro-Wilk test. For these variables, the median and the highest and lowest scores were presented. The results were conducted using the chi-squared test, the Fisher's test and the Spearman's rank correlation coefficient as well as Pearson's correlation coefficient test. To calculate the data for the study, Microsoft Excel 2010 was applied.

Results

Descriptive data

The majority of respondents (212; 99.1%) were female. Respondents in the age groups 26–40, 41–50, and 51 and over constituted 21.5% (46), 53.3% (114), and 25.2% (54) of the research group, respectively. The largest proportion of respondents came from Masovian voivodeship (35; 16.4%), while the smallest proportions came from Holy Cross voivodeship and Warmian-Masurian voivodeships (4; 1.9% each) (Figure 1)

Regarding highest level of education, 11.2% (24) of the respondents had secondary, 5.6% (12) had post-secondary, 52.3% (112) had a nursing Bachelor's degree, and 30.8% (66) had a Master's degree, while a further 3.2% (7) had completed postgraduate studies in the field of health care. They were mostly employed in hospitals: 20.1% (43) in provincial hospitals, 8.9% (19) in municipal hospitals, 26.2% (56) in regional hospitals, 17.8% (38) in clinical hospitals, and 6.1% (13) in university hospitals. In total, 9.8% (21) of those surveyed were employed by Primary Health Care institutions; the others worked in social care centres and nursing homes.

When asked about the type of professional training, most of the respondents reported completing specialist (53; 24.9%) and qualification courses (51; 23.8%). Most of the surveyed had completed the cardio-pulmonary resuscitation (CPR) course (55; 25.5%), the electrocardiograph course – application and results' interpretation in adults (54; 25%) and the medical history and physical examination course (34; 15.9%). The respondents were least interested in the application and assessment of skin tests course (3; 1.3%). Almost half of them (68; 46.3%) chose a different form of further education. In total, 18.5% (41) stated that they had not completed, nor were

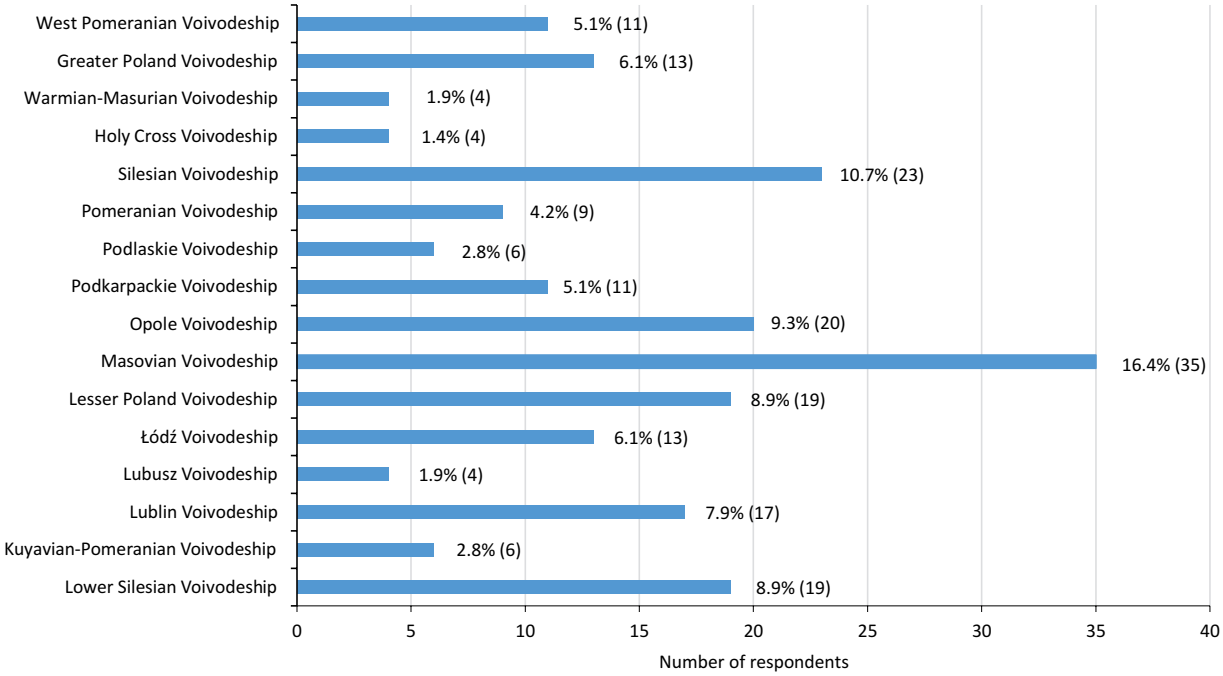

Figure 1. Chart displaying the percentages of participants within all Polish voivodeships. Regarding work experience, the biggest proportion of the respondents had 21–30 years' experience (102; 47.7%), followed by up to 20 years (66; 30.8%), and then over 31 years (46; 21.5%)

they currently taking, any courses. Only 12.6% (27) attended the family nursing course, 10.3% (22) the anaesthesiology and intensive care course, 9.3% (20) the long-term health care course and 7.3% (16) the emergency nursing course.

The respondents were least interested in the nursing in diabetes course – 0.7% (1). The other chose a different form of education such as specialist courses or specializations. Of all the respondents, 26.6% (57) indicated they had not completed, nor were they currently undertaking, any specializations. In contrast, 9.6% (20) claimed to have completed the nursing in internal medicine specialization, and the anaesthesiology and intensive care nursing and surgical specializations were completed by 9.2% (19) of all the respondents. 5.7% (12) of respondents declared they were currently undertaking the nursing in paediatrics specialization. Such fields as educational environment, diabetics, and neurological nursing were least commonly reported (1; 0.4%).

The SMK System

Results showed that 50.9% (109) of the respondents had an account in the SMK while 44.4% (95) did not. The remaining 4.7% (10) of them were not aware of the existence of the system. Regarding use of the system, only 27.7% (59) of respondents used the system while deciding which form of education to choose; 28.2% (60) did not use the system to enrol on any courses, and 30% (64) of respondents did not use the system at all. When they required assistance while using the system, 5.5% (12) of examinees turned to the Regional Chamber of Nurses and Midwives, 4.5% (10) to their colleagues, 2.7% (6) to their close relatives, and 1.4% (3) contacted the course organizers.

The study did not find any significant correlations between the age of the respondents and problems using the SMK ($p=0.436$), showing nursing staff of all ages encountered similar issues. However, a significant correlation was revealed between the level of education and problems using the system ($p=0.002$) (Table 1).

The length of service in the profession also positively correlated with the level of education respondents were interested in ($p=0.002$) (Table 2). Those working fewer than 20 years were mostly interested in specializations (18; 27.3%) and specialist courses (3; 19.7%). Those working much longer in the profession seemed to be less interested in increasing their qualifications.

The shift work (day or night shifts) The system of work was not found to determine the form of education in any specific way ($p=0.063$) (Table 3).

The research showed a statistically significant correlation between respondents' level of education and their choice of education form ($p<0.001$). For example, respondents with a Bachelor's degree more frequently reported an intention to undertake Master's degree studies (55; 49.1%); an intention expressed by only one (1.5%) person with an already completed Master's degree. Those with secondary and post-secondary education, in 58.3% (21) of cases, did not take up any other form of increasing their expertise, whereas

Table 1. Age and education level vs. problems with using the SMK

Variables			Age			Significance level
			26–40 year	41–50 year	51 year and more	
What problems did you experience while using the SMK?	I did not use it at all	n	16	57	27	p=0.436
		%	34.8	50.0	50.0	
	I did not encounter any problems	n	7	11	5	
		%	15.2	9.6	9.3	
	I encountered some problems	n	23	46	22	
		%	50.0	40.4	40.7	
Overall		n	46	114	54	
		%	100	100	100	
Variables			**The level of education in nursing**			**Significance level**
			secondary/ post-secondary	**Bachelor's degree**	**Master's degree**	
What problems did you experience while using the SMK?	I did not use it at all	n	18	64	18	p=0.002
		%	50.0	57.1	27.3	
	I did not encounter any problems	n	5	9	9	
		%	13.9	8.0	13.6	
	I encountered some problems	n	13	39	39	
		%	36.1	34.8	59.1	
Overall		n	36	112	66	
		%	100	100	100	

Legend: p = statistical significance, n = number of respondents, % = percentage of people in reference to all respondents, SMK = education monitoring system.

Table 2. The correlation between the form of education and the length of service among the respondents

Variables			How long have you been working in the profession?			Significance level
			Up to 20 years	21-30 years	31 years and more	
Which form of education are you interested in the most?	I am not going to increase my qualifications	n	5	13	13	**p=0.002**
		%	7.6	12.7	28.3	
	I don't know	n	7	14	3	
		%	10.6	3.7	6.5	
	specialist courses	n	13	29	11	
		%	19.7	28.4	23.9	
	qualification courses	n	7	4	2	
		%	10.6	3.9	4.3	
	specialization	n	18	15	8	
		%	27.3	14.7	17.4	
	Bachelor's degree studies	n	0	7	0	
		%	0.0	6.9	0,0	
	Master's degree studies	n	5	12	1	
		%	7.6	11.8	2.2	
	doctoral studies	n	3	0	0	
		%	4.5	0.0	0.0	
	postgraduate studies	n	8	7	7	
		%	12.1	6.9	15.2	
	others	n	0	1	1	
		%	0.0	1.0	2.2	
Overall		n	66	102	46	
		%	100	100	100	

Legend: p = statistical significance, n = number of respondents, % = percentage of people in reference to all respondents, SMK = education monitoring system.

Table 3. The result of correlation between the form of education and the system of work

Variables			What kind of working system are you subjected to at your main workplace?		Significance level
			One-shift	Two-shift	
Which form of education are you interested in the most?	I am not going to increase my qualifications	n	12	19	p=0.063
		%	18.2	12.8	
	I don't know	n	13	11	
		%	19.7	7.4	
	specialist courses	n	11	42	
		%	16.7	28.4	
	qualification courses	n	2	11	
		%	3.0	7.4	
	specialization	n	9	32	
		%	13.6	21.6	
	Bachelor's degree studies	n	3	4	
		%	4.5	2.7	
	Master's degree studies	n	4	14	
		%	6.1	9.5	
	doctoral studies	n	1	2	
		%	1.5	1.4	
	postgraduate studies	n	10	12	
		%	15.2	8.1	
	others	n	1	1	
		%	1.5	0.7	
Overall		n	66	148	
		%	100	100	

Legend: p = statistical significance, n = number of respondents, % = percentage of people in reference to all respondents, SMK = education monitoring system.

Table 4. The results of correlation between respondents' level of education and their choice of further education

Variables			The level of education in the nursing profession			Significance level
			secondary/post-secondary	Bachelor's degree	Master's degree	
What forms of further education are you currently subjected to?	I am not going to increase my qualifications	n	21	33	33	p<0.001
		%	58.3	29.5	50.0	
	specialist courses	n	4	8	6	
		%	11.1	7.1	9.1	
	qualification courses	n	2	3	2	
		%	5.6	2.7	3.0	
	specialization	n	8	11	18	
		%	22.2	9.8	27.3	
	Bachelor's degree studies	n	0	2	0	
		%	0	1.8	0	
	Master's degree studies	n	0	55	1	
		%	0	49.1	1.5	
	postgraduate studies	n	0	0	5	
		%	0	0	7.6	
	others	n	1	0	1	
		%	2.8	0	1.5	
Overall		n	36	112	66	
		%	100	100	100	

Legend: p = statistical significance, n = number of respondents, % = percentage of people in reference to all respondents, SMK = education monitoring system

22.2% (8) of the respondents with the lowest level of education had completed specializations (Table 4).

The length of nursing service significantly affected the choice of further education (p<0.001) (Table 5).

Further analysis using the chi-squared test showed age and seniority at work are statistically relevant factors motivating the respondents to undertake further training (Table 6).

Table 5. The results of correlation between the form of further education and the length of work service

Variables			How long have you been working in the profession?			Significance level
			Up to 20 years	21-30 years	31 years and more	
What forms of further education are you currently subjected to?	I am not going to increase my qualifications	n	16	48	23	p<0.001
		%	24.2	47.1	50.0	
	specialist courses	n	5	6	7	
		%	7.6	5.9	15.2	
	qualification courses	n	3	1	3	
		%	4.5	1.0	6.5	
	specialization	n	15	16	6	
		%	22.7	15.7	13.0	
	Bachelor's degree studies	n	0	2	0	
		%	0	2.0	0.0	
	Master's degree studies	n	26	28	2	
		%	39.4	27.5	4.3	
	postgraduate studies	n	0	1	4	
		%	0	1.0	8.7	
	others	n	1	0	1	
		%	15	0	2.2	
Overall		n	66	102	46	
		%	100	100	100	

Legend: p = statistical significance, n = number of respondents, % = percentage of people in reference to all respondents, SMK = education monitoring system.

Table 6. Age and length of service in the profession vs. factors encouraging the undertaking of further education

Variables			Age			Significance level
			26–40 Years	41–50 Years	51 Years and more	
Which factors encourage you to undertake further education?	none	n	4	12	11	χ^2=25.548 df=14 p=0.036
		%	8.7	10.5	20.4	
	promotion at work	n	3	3	4	
		%	6.5	2.6	7.4	
	higher salary	n	17	52	15	
		%	37.0	45.6	27.8	
	willingness to increase qualifications	n	26	59	23	
		%	56.5	51.8	42.6	
	desire to change the ward/institution	n	9	16	1	
		%	19.6	14.0	1.9	
	inner need for upgrading knowledge	n	21	57	32	
		%	45.7	50.0	59.3	
	others	n	0	1	1	
		%	0.0	0.9	1.9	

Table 6 contd.

Variables			How long have you been working in the profession?			Significance level
			for 20 years	21–30 years	31 years and more	
Which factors discourage you from undertaking further education or make the decision harder?	none	n	0	0	0	χ^2=50.345 df=24 p=0.001
		%	0.0	0.0	0.0	
	working system	n	14	25	8	
		%	25.9	27.2	18.6	
	taking up extra work	n	6	15	4	
		%	11.1	16.3	9.3	
	lack of time	n	26	33	5	
		%	48.1	35.9	11.6	
	other burdens	n	31	31	11	
		%	57.4	33.7	25.6	
	lack of financial support	n	23	51	21	
		%	42.6	55.4	48.8	
	long distance from place of residence	n	11	14	6	
		%	20.4	15.2	13.9	
	lack of consent from a superior	n	4	7	1	
		%	7.4	7.6	2.3	
	pass rate of official exams	n	7	13	4	
		%	13.0	14.1	9.3	
	others	n	2	0	2	
		%	3.7	0.0	4.6	

Legend: p = statistical significance, n = number of respondents, % = percentage of people in reference to all respondents, χ^2 = test statistic, df = degrees of freedom.

Discussion

Key results

The results of the current research showed that the choice of professional development among the respondents was significantly influenced by the number of years worked in the nursing profession and the level of education, which in turn significantly impacted on the operation of the SMK system.

Interpretation

Education and development constitute the elements of the personal motivation to complete expertise and improve the skills and competence necessary for fulfilling one's professional duties [17-19]. The successful professional development of nursing staff depends on the readiness to undertake constant further training in theoretical and practical aspects, as well as increasing their qualifications. A nurse, as a professional, is obliged to manage her own skills development, to share her experience, and take advantage of others' practices [20].

One study conducted in the USA showed that the leaders of the systems in the field of health care, and the nurses themselves, face the challenge of integrating all the normalized practices based on evidence, which support constant improvement of the results in their systems. Participants comprised 6,800 professional nurses; their attitudes, beliefs, and readiness to undertake further education based on Evidence Based Practice revealed that despite positive attitudes towards further training, their ability to complete it was rather low [21].

There are no reports of problem encountered by nursing staff trying to undertake professional educational courses in Poland. Research conducted by the CKPPIP (Center for Postgraduate Education for Nurses and Midwives) in Poland throughout 2017-2018 showed that 17,945 male and female nurses were undertaking specializations in all officially approved fields [22]. The biggest group consisted of the nurses studying internal medicine, anaesthesiology and intensive care nursing, and finally, surgical specializations [22]. This is consistent with the present findings, in which the same fields were chosen. Further confirmation of the preference for various specializations comes from Krupińska [22]. Of the 113 nurses in the study, 70 were specialists; 13 specialized in surgical nursing, 12 in anaesthesiology and intensive care nursing, and 9 in conservative nursing [23].

The system of postgraduate studies has been changeable since the 1990s, and some have noticed a tendency to withdraw from small fields of specializations in nursing staff education [24]. After the changes in August 2015 the fields of specialization were limited from 19 to 15 [25]. Furthermore, work on new limitations is being carried out due to the new Regulation issued by the Minister of Health dated on 16th of March 2020 on postgraduate education for nurses and midwives [26].

The SMK, introduced on 1st of May 2017, made the access to various forms of postgraduate training significantly more difficult, as indicated by the record number of people taking the national specialization exam before the system was launched, in order to avoid using the system [27]. It is worth mentioning that the average age of professionally active nurses and midwives is over 50. Therefore, introducing some changes, especially involving computerization, without earlier training among the organizers of education, members of Regional Chambers of Nurses and Midwives, or CKPPiP was really troublesome [28].

The research conducted by Krupińska underlines that high cost of training constitutes the main obstacle faced by professionally active nurses and midwives, in comparison to nurses' and midwives' earnings and lack of referrals from employers. The present findings seem to be consistent with Krupińska's findings. A lack of financial resources and employers' support, as well as difficulties operating the SMK, discourage or hinder nurses from undertaking further education [23].

The nursing profession is currently undergoing many changes, resulting in many nurses resigning. The prestige of the job is being lowered; low earnings and increasing emigration of Polish nurses and midwives take place. Therefore it is worth considering ways to promote the profession. These actions were initiated by the Ministry of Health by the project entitled 'The development of nursing skills' within the framework of POWER, funded by the UE. The project was planned to be launched in the first quarter of 2019. The media campaign aimed to build a positive image of nursing and midwifery professions, as well as present the various potential job opportunities within the health care system [29].

Despite all the burdens, it must be mentioned that Polish nurses and midwives are very well educated and still willingly undertake further training, regardless of age.

Generalizations

The analysis of nurses' system of postgraduate education and the influence of the current legal obligation for nurses to engage in professional improvement might reveal important and interesting conclusions for the institutions responsible for training and those engaged in the problem of educating lower medical staff in Poland.

Limitations of the study

The limitations of the study include a small research group and a non-standard questionnaire. However, the scope of the study and the problems it addresses in the tool mean it is still an important contribution to the literature.

Conclusions

The seniority in the profession and the level of basic education constitute two main factors motivating nursing staff to undertake further training in the profession. However, negative attitude towards the SMK might have a daunting effect. It derives from the lack of proper courses on how to use the system and the issues that emerge while it is in use.

Recommendations

Nursing is an independent medical profession. All persons performing it are faced with the challenge of continuous improvement of qualifications, which are the result of the increasing scope of nursing services, such as prescribing or nursing advice. The creation of an educational programme from the SMK ICT system and its implementation by the Regional Chambers of Nurses and Midwives may increase the number of participants in training. Thus, the Regional Chambers of Nurses and Midwives ought to organize courses and training for the staff. The representatives of the institutions should report the information at a central level to improve the organization of training, functioning of the SMK, and planning further education in the profession.

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