

Original paper

FACTORS INFLUENCING THE USE OF COMPETENCES OF NURSING STAFF FOR WRITING PRESCRIPTIONS AND PRESCRIBING MEDICATION IN PRIMARY HEALTHCARE FACILITIES IN ŚWIĘTOKRZYSKIE PROVINCE



Magdalena Sikorska¹, Agnieszka Strzelecka², Dorota Kozieł²

¹Department of Health Promotion and e-Health, Institute of Public Health, Faculty of Health Sciences, Jagiellonian University Medical College, Kraków, Poland

²Institute of Health Sciences, *Collegium Medicum*, Jan Kochanowski University, Kielce, Poland

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Address for correspondence:

Dr **Magdalena Sikorska**, Department of Health Promotion and e-Health, Institute of Public Health, Faculty of Health Sciences, Jagiellonian University Medical College, Kraków, Poland, e-mail: magdalena1.sikorska@uj.edu.pl

Summary

Introduction: Despite having the competences to write prescriptions and prescribe medication, nurses do not always want to use these competences or do not feel the need to supplement their training through specialised courses, for example. They have concerns related to various factors. The aim of the paper was to determine factors influencing the use of the competences of nursing staff for writing prescriptions and prescribing medication in studied primary healthcare facilities in Świętokrzyskie Province.

Material and methods: The study was carried out between May and September 2021 in 19 primary healthcare facilities located in Kielce. Two facilities from each of the 13 districts of Świętokrzyskie Province were also drawn to participate in the study. The drawing was done using the R Project for Statistical Computing (R Program). The survey was conducted among 188 nurses. The research tool was an original survey questionnaire.

Results: The reasons for the lack of interest in obtaining new qualifications by the surveyed professional nursing group were mainly concerns about liability for the prescribed medicine (39; 26.71% vs. 8; 19.05%), the possibility of conducting a physical examination in the place of work (32; 21.92% vs. 4; 9.52%), and multiple responsibilities – workload (19; 13.01% vs. 1; 2.38%). Another barrier was the expectation to receive additional remuneration for performing these activities as part of the job (28; 19.18% vs. 6; 14.29%).

Conclusions: Irrespective of their qualifications, nurses point to various factors that may limit their willingness to write prescriptions.

Key words: nursing, prescription, medicines, primary healthcare.

Introduction

The dynamic development of science is a factor that influences the need to continuously improve and enhance individual competences across multiple fields, especially in medical professions [1, 2]. Nursing is constantly evolving to provide the public with greater access to healthcare. The adoption of new tasks by nurses has meant that the profession can provide higher quality care for patients in many countries [3–6].

Prescribing medicines had long been reserved exclusively for doctors. This situation began to change with the growing number of countries around the world that introduced reforms to allow nurses to write prescriptions [7]. Prescribing medication is a step that allows nurses to

work more effectively with patients. The introduction of new competences for Polish nurses is a response to the changes taking place in the modern world. According to the International Council of Nurses, the use of enhanced nurse competencies improves standards of patient care and increases accessibility to healthcare services for the public [8]. Taking on new tasks and implementing competencies for nurses has been shown in other countries to increase the quality of services as assessed by patients [9]. The use of new competences is not mandatory; it is only a choice and a possibility [10, 11]. It involves additional work, responsibility, and, if necessary, training to supplement knowledge and gain practical experience in a specific field [12, 13].

Aim of the paper

The aim of the paper was to determine factors influencing the use of competences of nursing staff in writing prescriptions and prescribing medication in studied primary healthcare facilities in Świętokrzyskie Province.

Material and methods

The study was carried out between May and September 2021 in 19 primary healthcare facilities (3 public and 16 non-public) out of 23 facilities located in Kielce (4 facilities did not consent to participate). Two facilities (one public and one non-public) from each of the 13 districts of Świętokrzyskie Province were also drawn to participate in the study. One of them did not agree to participate in the study. The draw was made using R software (the R Project for Statistical Computing). In selecting the sample for the study, the sample size calculator was used from STATISTICA statistical software version for Windows 13.1 TIBCO Software Inc. – StatSoft. Participation in the study was offered to all nurses present at the clinics at the time of the survey. The study was approved by the Bioethics Committee of the Collegium Medicum of Jan Kochanowski University in Kielce (Bioethics Committee Resolution No. 45/2020).

The largest group of nurses (188; 100%) were in the age range 40–49 years (60; 31.92%), living in cities (174; 92.55%), and with work experience of over 20 years (86; 45.74%) (Table 1).

Among the 188 nurses, 42 (22.34%) were competent to prescribe medication. In their work, the new competences were used by 23 nurses (12.23%), while 19 (10.11%) did not use the competences despite hav-

ing them. In the future, only 44 nurses (23.40%) of the 146 (77.66%) without the new competences plan to complete a specialist course.

Statistical analysis

The statistical methods used in the study depended on the type of variables analysed. For qualitative variables, the distribution (n) and frequency (%) are given, whereas to verify the independence of variables determining readiness to use the new competences at work and holding such competences, a χ^2 test was used, or in the case of the smallest (least numerous) classes ($n < 5$), a χ^2 test based on a maximum-likelihood function. In addition to information on the value of the χ^2 test, the degrees of freedom and the probability p , which can be interpreted as the probability of error made when rejecting the null hypothesis, are also given (the significance level of $\alpha = 0.05$ was adopted in the study). Data were collected in an Excel spreadsheet from Microsoft MS Office suite. Statistical analysis was performed using STATISTICA version for Windows 13.1 TIBCO Software Inc., StatSoft, Poland.

Results

The reasons for the lack of interest in obtaining new qualifications (competences) by the surveyed professional nursing group were mainly concerns about liability for the prescribed medicine (39; 26.71% vs. 8; 19.05%), the possibility of conducting a physical examination in the place of work (32; 21.92% vs. 4; 9.52%), and multiple responsibilities – workload (19; 13.01% vs. 1; 2.38%). Another barrier was the expectation to receive additional remuneration for performing these activities as part of the job (28; 19.18% vs. 6; 14.29%). It should be noted that those with additional qualifications to prescribe medicines mostly did not indicate concerns about their use in the workplace (13; 31% vs. 29; 69%). A statistically significant relationship was found between the subjective opinion on the limitations of being able to prescribe medicines and the possession and use of the discussed competences by the nurses surveyed ($p = 0.001$) (Table 2).

According to the subjective opinion of the nurses surveyed, one in two nurses felt, regardless of their additional competencies, that they were not adequately prepared to prescribe medicines themselves (83; 56.85% vs. 18; 42.86%), and one in three indicated the ability to continue supplying medicines prescribed by a doctor (52; 35.62% vs. 17; 40.48%) and the lack thereof (52; 35.62% vs. 13; 30.95%). There was no statistically significant correlation between the subjective opinion of the respondents regarding the readiness for independently prescribing ($p = 0.189$) and continuing

Table 1. Sociodemographic data – professional nursing group

Sociodemographic data	<i>n</i>	%
Age		
20–29 years	22	11.70
30–39 years	59	31.38
40–49 years	60	31.92
50 years and over	47	25.00
Place of work/health service provision		
City	174	92.55
Countryside	14	7.45
Years of work		
Over 20 years	86	45.74
16–20 years	12	6.38
11–15 years	56	29.79
6–10 years	10	5.32
5 years and less	24	12.77

Table 2. Sources of concern and willingness of nurses to write prescriptions

Response options	Lack of competence		Having competence		Total	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Concerns about liability for prescribed medication	39	26.71	8	19.05	47	25.00
Concerns about increased workload	19	13.01	1	2.38	20	10.64
Concerns related to the possibility of performing a physical examination	32	21.92	4	9.52	36	19.15
Willingness to prescribe medication subject to a salary supplement	28	19.18	6	14.29	34	18.09
Full readiness to prescribe medication	28	19.18	23	54.76	51	27.13
Total	146	77.66	42	22.34	188	100.0

$\chi^2 = 22.50523$, $df = 4$, $p = 0.001$; $p < \alpha$, $\alpha = 0.05$
df – degrees of freedom

Table 3. Subjective opinion of nurses on the readiness to individually prescribe and continue supplying medications prescribed by a doctor

Response options	Lack of competences		Having competences		Total	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Readiness of nurses to prescribe medications independently						
Yes	28	19.18	13	30.95	41	21.81
No	83	56.85	18	42.86	101	53.72
I don't know	35	23.97	11	26.19	46	24.47
Readiness of nurses to continue supplying medications prescribed by a doctor						
Yes	52	35.62	17	40.48	69	36.70
No	52	35.62	13	30.95	65	34.57
I don't know	42	28.77	12	28.57	54	28.72

$\chi^2 = 3.327639$, $df = 1$, $p = 0.189$; $p > \alpha$, $\alpha = 0.05$

$\chi^2 = 0.4155383$, $df = 4$, $p = 0.812$; $p > \alpha$, $\alpha = 0.05$
df – degrees of freedom

medication prescribed by a doctor ($p = 0.812$) and the possession and use of the discussed competences by the nurses surveyed. The results indicate the need for further and continuous education of the nurses under observation in the areas discussed (Table 3).

Using the acquired competences of nursing staff in the process of treating patients requires the healthcare facility to organise its work accordingly. This determines the quality of medical care, which is assessed by the final recipients of these services – the patients. The nurse should be able to carry out a physical examination (if so indicated) and have access to a computer workstation to issue an e-prescription. Only 38.83% of the nurses surveyed had access to an office where they could carry out a physical examination in conditions respecting the patient's rights. One in three indicated that there was no such place (68; 36.17%), and one in four could not determine (47; 25%) whether such a place existed in the medical facility. More than half of the nurses surveyed had access to a computer workstation (111; 59.04%), while a small percentage indicated that they did not (17; 9.04%). One in three nurses could not indicate (60; 31.91%) whether such a workstation had

been arranged and made available at the medical facility where they work. The majority of the nurses surveyed declared a high level of computer literacy – they were very familiar with the MS Windows environment and could operate its basic software (108; 57.45%), one in four could only operate the MS Office suite (45; 23.94%), and one in five needed the help of others (35; 18.62%). A comparable proportion declared a willingness to undergo training in computer use (69; 36.70%) compared to those who did not (67; 35.64%). One in four had attended such a course (52; 27.68%). However, the highest percentage of respondents showed interest in training in the scope of e-prescriptions (90; 47.87%). The result of the independence test for the discussed areas showed no statistically significant relationship between the possession and use of the discussed competences by the nurses surveyed ($p > \alpha$) (Table 4).

The introduction of the new powers for nursing staff should be accompanied by an extensive informational campaign aimed at nurses themselves, as well as at doctors and patients, who could potentially benefit from the ability of nursing staff to prescribe medication. It is therefore important to find out what nurses, doc-

Table 4. Readiness of healthcare facilities and nurses to write prescriptions – nurses' opinion

Response options	Lack of competences		Having competences		Total	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Nurse's access to an office to conduct a physical examination						
Yes	52	35.62	21	50.00	73	38.83
No	56	38.36	12	28.57	68	36.17
I don't know	38	26.03	9	21.43	47	25.00
$\chi^2 = 1.475722, df = 2, p = 0.478; p > \alpha, \alpha = 0.05$						
Nurse's access to a stand-alone computer workstation						
Yes	85	58.22	26	61.90	111	59.04
No	13	8.90	4	9.52	17	9.04
I don't know	48	32.88	12	28.57	60	31.91
$\chi^2 = 0.2823191, df = 2, p = 0.868; p > \alpha, \alpha = 0.05$						
Computer skills						
I am very familiar with the Windows environment and can operate basic software	84	57.53	24	57.14	108	57.45
I can operate only MS Office without the help of others	32	21.92	13	30.95	45	23.94
I can operate only MS Office with the help of others	30	20.55	5	11.90	35	18.62
$\chi^2 = 2.421951, df = 2, p = 0.298; p > \alpha, \alpha = 0.05$						
Willingness to participate in computer training						
Yes	54	36.99	15	35.71	69	36.70
No	53	36.30	14	33.33	67	35.64
Completed training	39	26.71	13	30.95	52	27.68
$\chi^2 = 0.3070062, df = 2, p = 0.858; p > \alpha, \alpha = 0.05$						
Willingness to participate in training on issuing e-prescriptions						
Yes	70	47.95	20	47.62	90	47.87
No	40	27.40	10	23.81	50	26.60
Completed training	36	24.66	12	28.57	48	25.53

$\chi^2 = 0.3542799, df = 4, p = 0.838; p > \alpha, \alpha = 0.05$
df – degrees of freedom

tors and patients know about the new competences. Nurses were asked questions about the legal and organisational issues surrounding continued supply of medications prescribed by a doctor and prescribing medications independently. A comparison of responses between those who had and those who had not acquired such competences was made using Pearson's χ^2 test of independence. The common lack of knowledge of the legal and organisational aspects of issuing prescriptions in the group of competent nurses is concerning. Only one in six competent nurses (7; 16.67%) knew where to find the list of medicines they could prescribe, and one in 10 (4; 9.52%) knew who secured the pool of reimbursed prescriptions. Regardless of the competencies held, the respondents were mostly unaware of the voluntary nature of postgraduate training (87; 46.28%), but they were aware that competent nurses are not obligated to prescribe medication (160; 85.11%). For professional nursing staff to write prescriptions it should be necessary to conduct a physical examination and to

have access to an office where the examination can be performed. One in three nurses holding the competences (14; 33.33%) and only one in five without the competences knew that prescribing medicines and writing prescriptions must be linked to a physical examination (37; 25.34%) (Table 5).

Discussion

Only 22.23% of nurses in the Świętokrzyskie Province who work at primary healthcare facilities are competent to write prescriptions. In practice, 12% are using the new competences at work. Nurses who do not have the competences in question (77.7%) show no interest in supplementing their education in this area.

The functioning of the healthcare system can benefit from the use of more prescribing options. According to our research, the nurses' knowledge in this area needs to be supplemented. Among the competent nurses,

Table 5. Nurses' knowledge of prescribing medicines

Response options	Lack of competences		Having competences		Total	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Continuing medication prescribed by a doctor						
Correct	80	54.79	17	40.48	97	51.60
Incorrect	33	22.60	8	19.05	41	21.81
I don't know	33	22.60	17	40.48	50	26.60
$\chi^2 = 5.402919, df = 2, p = 0.067; p > \alpha, \alpha = 0.05$						
Independently prescribing medication						
Correct	68	46.58	12	28.57	80	42.55
Incorrect	44	30.14	13	30.95	57	30.32
I don't know	34	23.29	17	40.48	51	27.13
$\chi^2 = 6.043987, df = 2, p = 0.049; p < \alpha, \alpha = 0.05$						
List of medicines that a nurse may prescribe						
Correct	34	23.29	7	16.67	41	21.81
Incorrect	77	52.74	17	40.48	94	50.00
I don't know	35	23.97	18	42.86	53	28.19
$\chi^2 = 5.762818, df = 2, p = 0.056; p > \alpha, \alpha = 0.05$						
Securing the pool of reimbursable prescriptions						
Nurses	124	84.93	34	80.95	158	84.04
Employers	15	10.27	4	9.52	19	10.11
I don't know	7	4.79	4	9.52	11	5.85
$\chi^2 = 1.326424, df = 2, p = 0.515; p > \alpha, \alpha = 0.05$						
Postgraduate training of nurses						
Voluntary	60	41.10	12	28.57	72	38.30
Mandatory	21	14.38	8	19.05	29	15.43
I don't know	65	44.52	22	52.38	87	46.28
$\chi^2 = 22.231400, df = 2, p = 0.328; p > \alpha, \alpha = 0.05$						
Obligation for competent nurses to prescribe medications						
Yes	12	8.22	5	11.90	17	9.04
No	126	86.30	34	80.95	160	85.11
I don't know	8	5.48	3	7.14	11	5.85
$\chi^2 = 0.7538632, df = 2, p = 0.690; p > \alpha, \alpha = 0.05$						
Prescribing medications connected to a physical examination						
Yes	37	25.34	14	33.33	51	27.13
No	88	60.27	21	50.00	109	57.98
I don't know	21	14.38	7	16.67	28	14.89

$\chi^2 = 1.475722, df = 2, p = 0.478; p > \alpha, \alpha = 0.05$
df – degrees of freedom

one in two (54.79%) have knowledge of what training they need to be able to continue supplying medications prescribed by a doctor, and one in three (28.57%) to prescribe medication themselves. In a study conducted at the Warsaw Medical University, Zarzeka *et al.* [14] analysed the knowledge about independently prescribing medicines among specialised nurses. The survey was conducted among staff with seniority of more than 20 years. The questionnaire included questions on legislation and opinions towards the emerging changes. A statistically significant variation

in responses was noticed based on the respondents' education. Nurses who have completed a master's degree have a greater knowledge of prescribing medicines and writing prescriptions. Similarly, according to our own research, nurses know that prescribing is not obligatory (69%). Their knowledge of the legislation is not sufficient. One in three nurses know who can independently prescribe medication (36%) and continue supplying medication prescribed by a doctor (39%). In contrast, one in two nurses (43%) knows where to find a list of medicines that they can prescribe them-

selves [14]. Adequate preparation of nursing staff to utilise the opportunity to prescribe medication is an element contributing to the provision of comprehensive care, which many countries are striving to achieve. This translates into benefits for all those involved in the treatment process. This increases the autonomy of nurses, but also comes with increasing responsibility and additional duties. Depending on the type of healthcare system in the country, the processes for implementing new entitlements vary [15].

Several studies from, among others, the UK, the US, New Zealand, Australia, Ireland, and Sweden show the benefits of nurses prescribing medication. For patients, a detailed consultation is particularly important [16].

The views of 436 doctors on the expansion of nurses' competences and their readiness to perform new tasks were expressed by completing the NPA-36 questionnaire at Warsaw Medical University in a 2019 study by Zarzek *et al.* [17]. More than half of the doctors (52%) were of the opinion that extended competences would certainly have an impact on the prestige of both professions, as well as on increasing responsibility. Doctors were doubtful that nurses were adequately prepared to exercise the new powers; however, they recognised that they could benefit both themselves and patients due to time savings [17].

Nurses have concerns about their responsibility for the prescribed medication, the increased workload, and the possibility of conducting a physical examination, as indicated by the results of our study. These concerns are significantly more frequent among nurses who are not competent to write prescriptions. Importantly, the increase in workload was significant for only one nurse with the relevant competences. The addition of a salary supplement proved important for both groups. The Regulation of the Minister of Health of 8 July 2020, implemented on 1.08.2020 and amending the Regulation on guaranteed services in primary healthcare, introducing nursing advice to primary healthcare services, may be an important argument to change the motivation of nurses to write prescriptions. Staff and patients need to be convinced that nursing advice is not intended to replace doctors' work, but to help patients access the required services more quickly. Our research showed that only 55% of nurses are fully prepared to prescribe medication. It is very important to know the existing barriers and concerns to be able to effectively encourage the introduction of nursing advice in primary healthcare facilities. Surprisingly, only 31% of nurses believe they are prepared to prescribe medicines and only 40% to continue supplying medicines prescribed by a doctor, despite their competence. Patients are more likely than nurses and doctors to say that nurses are prepared to write prescriptions. Nurses have more concerns than doctors about their ability to prescribe medicines. They are more likely to continue supplying the medication

prescribed by a doctor than to independently prescribe medication. Using the new competences of nurses and strengthening the belief that they are ready for their new roles through, for example, appropriate courses, can have a positive impact on the functioning of the healthcare system. The experience of countries where, many years earlier, similar entitlements for nurses were introduced shows an increase in patient satisfaction with the quality of services received. It is also linked to effectiveness and satisfaction with the treatment administered, because nurses' involvement in prescribing medication also influences adherence to treatment, especially among the elderly. Obtaining accurate information about the disease and the treatment is also an important element affecting patient satisfaction with the services received [18]. Analysis of the literature review dealing with this topic indicates that nurses' involvement in new activities not only influences their professional development and increased autonomy, but also impacts the whole team by enabling the health professions to work together [19, 20]. Kinnersley *et al.* investigated whether nursing care differed from that received from a primary care physician among patients who requested a same-day consultation in the UK. It was found that patients who received nursing consultations received more information about their illnesses. Patients also reported that their appointment was significantly longer. The positive feedback confirms that nurses are able to provide the highest possible level of care, which at the same time means that they play an important role in primary care [21]. A report assessing the development of nurses' medicine prescriptions in Scotland found that 80% of nurses who prescribe medicines expressed satisfaction with their role. Most felt that this had an impact on the quality of patient care. In addition, the nurses said that this made them feel independent and that they felt greater job satisfaction. In contrast, some also cited negative impacts such as less time (24%) and increased administrative duties (46%). Most of the surveyed nurses (78%) prescribe medicines at work, mainly in healthcare centres and primary care surgeries (87%), and write between 2 and 10 prescriptions per week. When asked what influenced their decision to complete medication prescribing training, the vast majority (90%) of nurses responded that it was an opportunity for development, which translates into job satisfaction. Improving the quality of patient care was also a factor [22]. The Bejster survey of 126 nurses also asked for their opinion on nurses prescribing medication. Some of them (33%) said that the prestige of the profession will increase with the new powers. Motivation to continuously improve their knowledge and use their skills was an important element for 16% of the respondents. The benefits perceived by respondents also included a reduction in waiting times for prescriptions and an increase in the autonomy of the profession.

Nurses not only recognised the advantages of the new entitlements, but also indicated some concerns about it. These included a lack of financial benefit associated with the additional responsibilities. They were also concerned about the possibility of a misdiagnosis, its impact on the patient's health, and the associated consequences. Nurses were unsure whether patients would trust their knowledge and skills. Another problem they noted is the lack of facilities where they could carry out physical examinations [23].

Our research also identified factors that may be related to the low level of interest of nurses in writing prescriptions. Approximately 61% believed that there is no access or do not know if there is access to an office in their facility to conduct a physical examination. Lack of access to a stand-alone computer workstation was reported by 9% of nurses and 32% did not know if one is available. A problem with computer literacy was also recognised. Very good knowledge of the Windows environment and being able to operate its basic software was reported by 57% of the respondents. At the same time, 37% of nurses would like to participate in computer training, and nearly half of the respondents (48%) in training covering e-prescriptions.

Conclusions

Primary care nurses in Świętokrzyskie Province, regardless of their qualifications, believe that they are not adequately prepared to use their new entitlements. Irrespective of their qualifications, nurses point to various factors that may limit their willingness to write prescriptions. Managers of primary care facilities should ensure the possibility of conducting physical examinations and access to a stand-alone computer workstation, and they should implement systematic training on computer use and e-prescriptions.

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