

# The knowledge of students from selected universities on the extension of nurses' and midwives' competences to administer medications, give prescriptions, and refer for diagnostic tests

(Wiedza studentów wybranych uczelni na temat rozszerzenia kompetencji zawodowych pielęgniarek i położnych w zakresie ordynowania leków, wystawiania recept i kierowania na badania diagnostyczne)

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**Abstract** – Introduction. Beginning on January 1st, 2016, particular groups of nurses and midwives in Poland gained the authority to write out prescriptions and refer for diagnostic tests autonomously.

The aim of the study. The aim of the study was to assess the knowledge of students of selected universities about expanding professional competences of nurses and midwives.

Material and Methods. A total of 535 students from three universities participated in the study. Women constituted 82% of all, mean age: 23 (min.=19; max.=58, SD=4.780). Students of nursing constituted the largest sub-group of participants (177 people, 33% of the total), followed by students of medicine (145 people, 27% of all), midwifery (107 people, 20% of the total), and public health (100 people, 19% of all). As many as 324 respondents (60%) had never participated in courses in medical law.

The study method was a voluntary and anonymous survey (39 questions, 3 parts). There were 13 questions on knowledge, 26 statements concerning attitudes, the Likert scale, and 8 demographic questions. Pearson's chi-square test was used to compare frequency of the correct answers by the major of studies. The ANOVA Kruskal-Wallis rank test with a *post-hoc* analysis for multiple comparison of mean rank sums, STATISTICA version 12.5 (StatSoft, Inc.) licensed to WMU,  $\alpha=0.05$ , were used to calculate differences in summative points for correct answers.

Results. Students of Nursing significantly more frequently chose the correct answers compared to students of Medicine and Public Health ( $p<0.001$ ) and of Midwifery ( $p<0.002$ ). The answers provided by the students of Medicine, Public Health, and Midwifery did not differ significantly.

Conclusions. The level of knowledge of expanding professional competence of nurses and midwives among the study group of

students of selected Polish universities was insufficient and needs to be urgently complemented.

1. Learning content needs to be modified not only for students of Nursing and Midwifery but also for other members of therapy team, e.g. physicians and pharmacists as well as specialists in public health.

**Key words** – professional competence, expanding competence, students, health sciences.

**Streszczenie** – Wstęp. Od 1 stycznia 2016 r. określone grupy pielęgniarek i położnych w Polsce uzyskują uprawnienia w zakresie wystawiania recept i samodzielnego kierowania pacjentów na badania diagnostyczne.

Cel badań. Celem pracy była ocena wiedzy studentów wybranych uczelni na temat rozszerzenia kompetencji zawodowych pielęgniarek i położnych.

Materiał i metodyka. 535 studentów reprezentujących trzy uczelnie, 82% kobiet, średnia wieku: 23 lata (min.=19; max.=58, SD=4,780). Największą grupę badanych stanowili studenci pielęgniarstwa – 177 (33%) osób, 145 (27%) - kierunku lekarskiego, 107 (20%) - położnictwa, 100 (19%) zdrowia publicznego. 324 (60%) osoby nigdy nie korzystały z edukacji w zakresie prawa medycznego.

Dobrowolne, anonimowe badania ankietowe (39 pytań, 3 części: 13 pytań dotyczących wiedzy, 26 stwierdzeń dotyczących postaw, skala Likerta, 8 pytań metryczkowych). Częstość występowania prawidłowych odpowiedzi w zależności od kierunku studiów porównano testem  $\chi^2$ -Pearsona. Różnice w sumarycznej punktacji za poprawne odpowiedzi oszacowano z wykorzystaniem testu ANOVA rang Kruskala-Wallisa z analizą *post-hoc* dla porównań wielokrotnych średnich rang, STATISTICA wersja 12.5 (StatSoft, Inc.), licencja WUM,  $\alpha=0,05$ .

Wyniki. Studenci pielęgniarstwa istotnie częściej wskazywali prawidłowe odpowiedzi, niż studenci kierunku lekarskiego i zdrowia publicznego ( $p < 0,001$ ) oraz położnictwa ( $p < 0,002$ ). Odpowiedzi studentów kierunku lekarskiego zdrowia publicznego oraz położnictwa nie różniły się istotnie statystycznie.

Wnioski. W badanej grupie studentów wybranych polskich uczelni wyższych poziom wiedzy na temat rozszerzenia kompetencji zawodowych pielęgniarek i położnych był niewystarczający i wymaga pilnego uzupełnienia. Należy zmodyfikować nie tylko treści kształcenia dla studentów pielęgniarstwa i położnictwa, lecz również innych członków zespołu terapeutycznego, np. lekarzy i farmaceutów oraz specjalistów z zakresu zdrowia publicznego.

**Słowa kluczowe** – kompetencje zawodowe, rozszerzenie uprawnień, studenci, nauki o zdrowiu.

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- A. The idea and the planning of the study
- B. Gathering and listing data
- C. The data analysis and interpretation
- D. Writing the article
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**Accepted for publication:** March 18, 2016.

## I. INTRODUCTION

Since January 1<sup>st</sup>, 2006, specified groups of nurses and midwives in Poland have been granted the authority to give prescriptions on behalf of physicians, administering specific medications (including prescribing them), and autonomously referring patients for diagnostic tests, high-

risk cases excluded. This change became known as the extension of nurses' and midwives authority [1,2].

The changes have been a part of an Act on the nursing and midwifery profession [1,2] and they are to help introduce the role of an Advanced Nurse Practitioner in Poland [3]. Nevertheless, the role is going to be a privilege rather than an obligation [4-10]. The range of competence is going to be dependent on the nurses' or midwives education (Bachelor's or Master's degree) and the forms of completed postgraduate courses (specialist courses, specialisation training) [1,2,4-10].

The group to obtain the authority defined in the new regulations without having to complete any additional postgraduate courses are the students of nursing or midwifery admitted as freshmen for the 2015/2016 academic year. The curricula of vocational degree courses have been modified in a way that allows the respective professional qualifications to be included in the course syllabi.

Nevertheless, considering the fact that the extension of nurses' and midwives authority will affect not only nurses and midwives but also doctors and public health specialists in general, the basic knowledge on the regulations governing the extensions should be obtained by students at all healthcare-related programmes.

The aim of this study was to assess the knowledge of students on the extension of nurses' and midwives' competences to administering medications, giving prescriptions, and referring for diagnostic tests.

## II. MATERIAL AND METHODS

### Material

A total of 535 students from selected Polish medical universities participated in the study. 417 (78%) of them were from the Medical University of Warsaw, 104 (19%) – from the Ludwik Rydygier Collegium Medicum in Bydgoszcz, and 14 (3%) from the Józef Piłsudski University of Physical Education in Warsaw. The percentage of submitted questionnaires against the number of requests to fill them in was 41%.

439 (82%) of the participants were women and 92 (17%) of them were men. 4 (1%) participants did not provide their gender. The average age of the study group was 23 (min.=19; max.=58, SD=4,780, median=23, mode=22).

The largest group among the respondents were the students of nursing – 177 (33%) people. They were followed by the students of medicine – 145 (27%) people. 107 (20%) of

participants studied midwifery, and 100 (19%) studied public health. 6 (1%) people did not specify their major.

Students of Bachelor's programmes were the most numerous group, with 288 (54%) people (nursing, midwifery, and public health). 151 (28%) were students of medicine (5-year programme), and 82 (15%) studied at Master's degree programmes. 14 (3%) respondents provided no answer to this question.

The majority of the study group were 1<sup>st</sup> year students – 218 (41%) people. They were followed by 2<sup>nd</sup> year students – 135 (25%), 4<sup>th</sup> year students – 57 (11%), 3<sup>rd</sup> year students – 53 (10%) and 5<sup>th</sup> year students – 44 (8%). The least numerous group were 4<sup>th</sup> year students – 20 (4%). 8 (2%) people did not provide an answer here. 324 (60%) people had never obtained any education in medical law, whereas 208 (39%) of them claimed they had been exposed to some education in the field of medical law. 3 (1%) people offered no answer here.

409 (76%) people had not graduated from another programme or did not study at another programme at the time. 83 (16%) people studied at another programme and 37 (7%) had graduated from another course. 6 (1%) people provided no answer.

### Methods

This voluntary and anonymous study was performed using the authors' own questionnaire in May and June of 2015. The reliability analysis performed by the Department of Didactics and Education Outcomes at The Faculty of Health Science, Medical University of Warsaw. The questionnaire was found to be a reliable tool to study the knowledge on and attitudes towards the extension of nurses' and midwives' professional competences [11].

The questionnaire consisted of three parts and had a total of 39 questions. The first part pertained to the students' knowledge on the extension of nurses' and midwives' professional competences. The first part had 13 multiple choice questions: 6 questions with 5 options available, 5 questions with 4 options including a correct answer and an "I don't know" answer, and 2 questions with 3 options available.

The second part of the questionnaire pertained to students' attitudes towards the subject matter and had 18 statements on the extension of competences. The attitudes towards the statements were assessed by the students on the Likert scale (1 – strongly disagree, 3 – no opinion, 5 – strongly agree). The third part of the questionnaire pertained to the sociodemographic data of the respondents and consisted of eight questions on the respondent's gender,

year of birth, the major, year, and type of studies, any concurrent or past studies undertaken by the students, professional employment in the respective field, and previous experience related to the education in medical law.

### Bioethics Committee

The Bioethics Committee of the Medical University of Warsaw abstained from reviewing this study. The justification for that was that "*questionnaire studies, retrospective studies, and other non-invasive studies are not dealt with by the Committee*" [12].

### Statistical analysis of the results obtained

The frequency of correct answers to the knowledge-based questions depending on the major of studies was compared by the non-parametric Pearson's chi-squared test. Potential differences in the overall point scores calculated for correct answers of the students of different majors were estimated using the non-parametric ANOVA Kruskal-Wallis test by ranks with a *post-hoc* analysis for the comparison of mean ranks. STATISTICA 12.5 (StatSoft, Inc.) software licenced to the Medical University of Warsaw was utilised for calculations. For all analyses, the default (*a priori*) significance level assumed was  $\alpha=0,05$ .

### Conclusions

Over a third of the study group (39%) could give the correct answer to the question about the act which led to the changes aimed at the extension of nurses' and midwives' competences to administer medications, give prescriptions, and refer for diagnostic tests. A comparable group of respondents (35%) could not provide any answer. In the study group, half of the students of nursing (53%) and almost half of the students of midwifery (46%) selected the correct answer. Detailed results are presented in Table 1.

Less than a third of the study group (29%) knew the date when the new regulations pertaining to nurses' and midwives' competences were to enter into force. Less than a half of the students of nursing (42%) selected the correct answer. Less than a quarter of the students of midwifery selected the correct answer (21%). Detailed results are presented in Table 2.

Table 1. The respondents' knowledge on the acts which were changed because of the extension of nurses' and midwives' competences

| Question  | Study group - overall<br>n=529  |       | Medicine<br>n=145 |       | Nursing<br>n=177 |       | Midwifery<br>n=107 |       | Public Health<br>n=100 |       |
|---|---|-------|-------------------|-------|------------------|-------|--------------------|-------|------------------------|-------|
|   | Which legal act was updated for the extension of nurses' and midwives' competences to administer medications, give prescriptions, and refer for diagnostic tests? |       |                   |       |                  |       |                    |       |                        |       |
| The Act of May 12, 2011, on the reimbursement of medications, special food products, and medical supplies | 44  | (8%)  | 9                 | (6%)  | 13               | (7%)  | 11                 | (10%) | 11                     | (11%) |
| <b>The Act of July 15, 2011, on nursing and midwifery professions</b>                                     | 210   | (39%) | 22                | (15%) | 93               | (53%) | 49                 | (46%) | 40                     | (40%) |
| The Act of July 1, 2011, on the autonomy of nurses and midwives   | 44  | (8%)  | 3                 | (2%)  | 30               | (17%) | 10                 | (9%)  | 1                      | (1%)  |
| The Act of July 5, 1996, on nursing and midwifery professions   | 45  | (8%)  | 15                | (10%) | 8                | (5%)  | 7                  | (7%)  | 15                     | (15%) |
| I don't know  | 186   | (35%) | 95                | (66%) | 31               | (18%) | 27                 | (25%) | 33                     | (33%) |

Table 2. The respondents' knowledge date when the new regulations pertaining to nurses' and midwives' competences were to enter into force

| Question                  | Study group - overall<br>n=529  |       | Medicine<br>n=145 |       | Nursing<br>n=177 |       | Midwifery<br>n=107 |       | Public Health<br>n=100 |       |
|---------------------------|---|-------|-------------------|-------|------------------|-------|--------------------|-------|------------------------|-------|
|                           | When will the new regulations pertaining to nurses' and midwives' competences to administer medications, give prescriptions, and refer for diagnostic tests enter into force? |       |                   |       |                  |       |                    |       |                        |       |
| On July 1, 2017           | 18  | (3%)  | 1                 | (1%)  | 2                | (1%)  | 10                 | (9%)  | 5                      | (5%)  |
| On January 1, 2017        | 67  | (13%) | 15                | (10%) | 19               | (11%) | 19                 | (18%) | 13                     | (13%) |
| On July 1, 2016           | 84  | (16%) | 4                 | (3%)  | 45               | (25%) | 23                 | (21%) | 11                     | (11%) |
| <b>On January 1, 2016</b> | 157   | (29%) | 42                | (29%) | 75               | (42%) | 22                 | (21%) | 15                     | (15%) |
| I don't know              | 207   | (39%) | 82                | (57%) | 36               | (20%) | 32                 | (30%) | 56                     | (56%) |

A half of the studied group of students (51%) correctly indicated that the new competences were to be a privilege rather than an obligation. In the group of those who were directly affected by the new regulations, a majority of the students of nursing (70%) and less than a half of the students of midwifery (43%) gave the correct answer. Detailed results are presented in Table 3.

Table 3. The respondents' knowledge on whether the new competences were to be a privilege or an obligation for nurses and midwives

| Question  | Study group - overall<br>n=529 |              | Medicine<br>n=145 | Nursing<br>n=177 | Midwifery<br>n=107 | Public Health n=100 |
|---|--------------------------------|--------------|-------------------|------------------|--------------------|---------------------|
|   | Yes                            | No           | I don't know      |                  |                    |                     |
| Will the autonomous administration of medicines and writing out prescriptions be an obligation for all nurses and midwives? | 127<br>(24%)                   | 273<br>(51%) | 131<br>(24%)      | 59<br>(41%)      | 17<br>(10%)        | 25<br>(23%)         |
|   | 21<br>(14%)                    | 63<br>(43%)  | 59<br>(41%)       | 17<br>(10%)      | 25<br>(23%)        | 29<br>(29%)         |
|   | 34<br>(19%)                    | 124<br>(70%) | 17<br>(10%)       | 17<br>(10%)      | 25<br>(23%)        | 29<br>(29%)         |
|   | 36<br>(34%)                    | 46<br>(43%)  | 25<br>(23%)       | 17<br>(10%)      | 25<br>(23%)        | 29<br>(29%)         |
|   | 35<br>(35%)                    | 36<br>(36%)  | 29<br>(29%)       | 17<br>(10%)      | 25<br>(23%)        | 29<br>(29%)         |

The question about the respondents' knowledge on the detailed regulations and restrictions pertaining to the extended competences of nurses and midwives showed that the respondents were not aware of the detailed regulations on medicine administration and prescription (Table 4), prolonging doctors' prescriptions for certain medications (Table 5) and autonomous referrals for diagnostic tests (Table 6) by nurses and midwives. The students of nursing and midwifery offered similar answers to those of the entire respondent group.

Table 4. The respondents' knowledge on the specific groups of nurses and midwives who can administer certain medications and prescribe them autonomously

| Question   | Study group - overall<br>n=529 |   | Medicine<br>n=145  | Nursing<br>n=177  | Midwifery<br>n=107 | Public Health n=100 |             |
|--|--------------------------------|---|--|---|--------------------|---------------------|-------------|
|  | Yes, every nurse and midwife   | Only the nurses and midwives who graduated from Master's degree courses | Only the nurses and midwives who graduated from Master's degree courses and completed a specialist course for the new role | Only the nurses and midwives who graduated from Master's degree courses or completed a specialisation, and completed a specialist course for the new role | I don't know       |                     |             |
| Will every nurse and midwife be allowed to autonomously administer certain medications and give prescriptions? | 68<br>(13%)                    | 61<br>(11%)   | 129<br>(24%)   | 112<br>(21%)  | 153<br>(29%)       | 4<br>(3%)           | 37<br>(21%) |
|  | 4<br>(3%)                      | 12<br>(8%)  | 26<br>(18%)  | 26<br>(18%)   | 71<br>(49%)        | 19<br>(11%)         | 19<br>(18%) |
|  | 37<br>(21%)                    | 19<br>(11%)   | 61<br>(34%)  | 38<br>(21%)   | 20<br>(11%)        | 37<br>(21%)         | 19<br>(18%) |
|  | 19<br>(18%)                    | 16<br>(15%)   | 26<br>(24%)  | 24<br>(22%)   | 21<br>(20%)        | 19<br>(18%)         | 19<br>(18%) |
|  | 8<br>(8%)                      | 13<br>(13%)   | 15<br>(15%)  | 24<br>(24%)   | 38<br>(38%)        | 8<br>(8%)           | 8<br>(8%)   |

Table 5. The respondents' knowledge on the specific groups of nurses and midwives who can autonomously prolong doctors' prescriptions for some medications and write out the prescriptions themselves

| Question   | Study group - overall<br>n=529   |                  |                    |          |          | Public Health n=100 |
|--|--|------------------|--------------------|----------|----------|---------------------|
|  | Medicine<br>n=145  | Nursing<br>n=177 | Midwifery<br>n=107 |          |          |                     |
| Will every nurse and midwife be allowed to autonomously prolong certain medications and prescribe them | Yes, every nurse and midwife   | 65 (12%)         | 5 (3%)             | 30 (17%) | 17 (16%) | 12 (12%)            |
|  | Only the nurses and midwives who graduated from Bachelor's degree courses  | 28 (5%)          | 5 (3%)             | 7 (4%)   | 9 (8%)   | 6 (6%)              |
|  | Only the nurses and midwives who graduated from Bachelor's degree courses and completed a specialist course for the new role   | 98 (18%)         | 18 (12%)           | 45 (25%) | 18 (17%) | 16 (16%)            |
|  | Only the nurses and midwives who graduated from Bachelor's degree courses or completed a specialisation, and completed a specialist course for the administering medications | 147 (27%)        | 32 (22%)           | 55 (31%) | 33 (31%) | 27 (27%)            |
|  | I don't know   | 188 (35%)        | 82 (57%)           | 36 (20%) | 30 (28%) | 38 (38%)            |
|  |  |                  |                    |          |          |                     |

Table 6. The respondents' knowledge on the specific groups of nurses and midwives who can autonomously refer patients for diagnostic tests

| Question   | Study group - overall<br>n=529   |                  |                    |          |          | Public Health n=100 |
|--|--|------------------|--------------------|----------|----------|---------------------|
|  | Medicine<br>n=145  | Nursing<br>n=177 | Midwifery<br>n=107 |          |          |                     |
| Will every nurse and midwife be allowed to autonomously refer patients for diagnostic tests? | Yes, every nurse and midwife   | 75 (14%)         | 0 (0%)             | 31 (18%) | 30 (28%) | 14 (14%)            |
|  | Only the nurses and midwives who graduated from Bachelor's degree courses and completed a specialist course for the new role | 85 (16%)         | 9 (6%)             | 39 (22%) | 21 (20%) | 15 (15%)            |
|  | Only the nurses and midwives who graduated from Bachelor's degree courses or completed a specialisation                      | 27 (5%)          | 7 (5%)             | 11 (6%)  | 4 (4%)   | 5 (5%)              |
|  | Only the nurses and midwives who graduated from Bachelor's degree courses and completed a specialisation                     | 131 (24%)        | 29 (20%)           | 56 (32%) | 21 (20%) | 24 (24%)            |
|  | I don't know   | 210 (39%)        | 99 (68%)           | 38 (21%) | 29 (27%) | 41 (41%)            |
|  |  |                  |                    |          |          |                     |

Less than a half of the respondents were aware that the authority to refer patients for diagnostic tests was to be limited, and the details were to be specified in a directive (49%). More than a half of the students of nursing provided the correct answer (63%). No more than a half of the students of midwifery answered correctly (41%). Detailed results are presented in Table 7.

Table 7. The respondents' knowledge on nurses' and midwives' authority to refer patients for diagnostic tests

| Question  |   | Study group - overall<br>n=529 | Medicine<br>n=145 | Nursing<br>n=177 | Midwifery<br>n=107 | Public Health n=100 |
|---|---|--------------------------------|-------------------|------------------|--------------------|---------------------|
| Will the nurses' and midwives' authority to refer patients for diagnostic tests be limited? | No, nurses and midwives will be able to refer patients for all diagnostic tests   | 37<br>(7%)                     | 3<br>(2%)         | 9<br>(5%)        | 16<br>(15%)        | 9<br>(9%)           |
|   | Yes, nurses and midwives will be able to refer patients for diagnostic tests excluding laboratory diagnosis                   | 46<br>(9%)                     | 3<br>(2%)         | 23<br>(13%)      | 12<br>(11%)        | 8<br>(8%)           |
|   | <b>Yes, nurses and midwives will be able to refer patients for only the diagnostic tests that are listed in the directive</b> | 260<br>(49%)                   | 58<br>(40%)       | 112<br>(63%)     | 44<br>(41%)        | 43<br>(43%)         |
|   | I don't know  | 184<br>(34%)                   | 77<br>(53%)       | 31<br>(18%)      | 35<br>(33%)        | 39<br>(39%)         |

Less than a quarter of respondents (24%) were aware that the new rules would apply to the administration of not only medications, but also specialist food products and medical supplies. Less than a half of the students (41%) were unable to provide any answer. The relevant group of respondents (students of nursing or midwifery) were correct with a percentage similar to the entire group. Detailed results are presented in Table 8.

Table 8. The respondents' knowledge on the medications affected by the extension of nurses' and midwives' competences

| Question  |  | Study group - overall<br>n=529 | Medicine<br>n=145 | Nursing<br>n=177 | Midwifery<br>n=107 | Public Health n=100 |
|---|--|--------------------------------|-------------------|------------------|--------------------|---------------------|
| The changes related to the extension of nurses' and midwives' professional competences will affect: | The administration of OTC medications  | 39<br>(7%)                     | 3<br>(2%)         | 9<br>(5%)        | 16<br>(15%)        | 11<br>(11%)         |
|   | The administration of reimbursable medications   | 45<br>(8%)                     | 10<br>(7%)        | 18<br>(10%)      | 10<br>(9%)         | 6<br>(6%)           |
|   | <b>The administration of medications, specialist food products, and medical supplies</b> | 128<br>(24%)                   | 32<br>(22%)       | 56<br>(32%)      | 20<br>(19%)        | 20<br>(20%)         |
|   | The administration of medications and medical supplies per doctors' guidelines           | 96<br>(18%)                    | 18<br>(12%)       | 45<br>(25%)      | 12<br>(11%)        | 18<br>(18%)         |
|   | I don't know   | 221<br>(41%)                   | 80<br>(55%)       | 48<br>(27%)      | 48<br>(45%)        | 44<br>(44%)         |
|   |  |                                |                   |                  |                    |                     |

A half of the respondents (50%) knew that the level of nurses' and midwives' authority was to be dependent on the education of a given professional. The responses to this question were comparable between the students of nursing and midwifery and all the studied responders. Detailed results are presented in Table 9.

Table 9. The respondents' knowledge on the correlations in the nurses' and midwives' authority level on administering medications, giving prescriptions, and referring for diagnostic tests

| Question   | Study group - overall<br>n=529 |              | Medicine<br>n=145 | Nursing<br>n=177 | Midwifery<br>n=107 | Public Health n=100 |
|--|--------------------------------|--------------|-------------------|------------------|--------------------|---------------------|
|  | Yes                            | No           |                   |                  |                    |                     |
| Nurses and midwives who graduated from Bachelor's degree courses and Master's degree courses are going have a different authority level as far as administering medications, giving prescriptions, and referring for diagnostic tests are concerned. | I don't know                   | 183<br>(34%) | 74<br>(51%)       | 38<br>(21%)      | 36<br>(34%)        | 34<br>(34%)         |
|  | Yes                            | 270<br>(50%) | 7<br>(5%)         | 33<br>(19%)      | 23<br>(21%)        | 15<br>(15%)         |

Less than a third of the respondents (30%) could name the legal act in which the list of medications to be administered by autonomously by nurses and midwives was to be published. Less than a half of the students of nursing (45%) and less than a quarter of the students of midwifery (22%) selected the correct answer. Detailed results are presented in Table 10.

Table 10. The respondents' knowledge on the legal act in which the list of medications to be administered by autonomously by nurses and midwives was to be published

| Question  | Study group - overall<br>n=529   | Medicine<br>n=145 | Nursing<br>n=177 | Midwifery<br>n=107 | Public Health n=100 |
|---|--|-------------------|------------------|--------------------|---------------------|
|   | The list of medications to be administered by autonomously by nurses and midwives who have such authority will be provided in: |                   |                  |                    |                     |
| A Minister of Health directive  | 163<br>(30%)   | 27<br>(19%)       | 79<br>(45%)      | 24<br>(22%)        | 31<br>(31%)         |
| A new act on nursing and midwifery professions                          | 61<br>(11%)  | 9<br>(6%)         | 27<br>(15%)      | 12<br>(11%)        | 12<br>(12%)         |
| An act on the amendment of the act on nursing and midwifery professions | 108<br>(20%)   | 23<br>(16%)       | 35<br>(20%)      | 28<br>(26%)        | 20<br>(20%)         |
| I don't know  | 198<br>(37%)   | 83<br>(57%)       | 35<br>(20%)      | 43<br>(40%)        | 37<br>(37%)         |

The responders were unable to point out the forms of education that nurses and midwives would have to undertake in relation to the new competences in order to autonomously administer medications (Table 11), prolong prescriptions for medications prescribed by doctors (Table 12), and refer patients for selected diagnostic tests (Table 13). Less than a third of the responders provided correct answers. The students of nursing and midwifery achieved results that were similar to those of the rest of the group.



Table 11. The respondents' knowledge on the education that would, according to the new regulations, authorise nurses and midwives to administer selected medications autonomously

| Question   |  | Study group - overall<br>n=529 |                  |                    |                     |
|--|--|--------------------------------|------------------|--------------------|---------------------|
|  |  | Medicine<br>n=145              | Nursing<br>n=177 | Midwifery<br>n=107 | Public Health n=100 |
| Which of the following forms of education can, according to the new regulations, give nurses and midwives the authority to autonomously administer selected medications? | „Specialisation” and/or graduation from a Master’s degree course and a specialist course | 156<br>(29%)                   | 70<br>(40%)      | 25<br>(23%)        | 26<br>(26%)         |
|  | „Specialisation” and a specialist course   | 46<br>(9%)                     | 20<br>(11%)      | 12<br>(11%)        | 8<br>(8%)           |
|  | Graduation from a Master’s degree course and a specialist course                         | 120<br>(22%)                   | 51<br>(29%)      | 27<br>(25%)        | 17<br>(17%)         |
|  | I don’t know   | 205<br>(38%)                   | 32<br>(18%)      | 42<br>(39%)        | 49<br>(49%)         |

Table 12. The respondents' knowledge on the forms of education that would, according to the new regulations, authorise nurses and midwives to prolong the prescriptions written out by doctors

| Question   |  | Study group - overall<br>n=529 |                  |                    |                     |
|--|--|--------------------------------|------------------|--------------------|---------------------|
|  |  | Medicine<br>n=145              | Nursing<br>n=177 | Midwifery<br>n=107 | Public Health n=100 |
| Which of the following forms of education can, according to the new regulations, give nurses and midwives the authority to prolong the prescriptions written out by doctors? | „Specialisation” and/or graduation from a Bachelor’s degree course and a specialist course | 132<br>(25%)                   | 57<br>(32%)      | 28<br>(26%)        | 24<br>(24%)         |
|  | „Specialisation” and a specialist course   | 45<br>(8%)                     | 18<br>(10%)      | 14<br>(13%)        | 5<br>(5%)           |
|  | Graduation from a Bachelor’s degree course and a specialist course                         | 114<br>(21%)                   | 50<br>(28%)      | 23<br>(21%)        | 18<br>(18%)         |
|  | I don’t know.  | 238<br>(44%)                   | 92<br>(63%)      | 50<br>(28%)        | 41<br>(38%)         |

Table 13. The respondents' knowledge on the forms of education that would, according to the new regulations, authorise nurses and midwives to refer patients for selected diagnostic tests

| Question   |  | Study group - overall<br>n=529 | Medicine<br>n=145 | Nursing<br>n=177 | Midwifery<br>n=107 | Public Health<br>n=100 |
|--|--|--------------------------------|-------------------|------------------|--------------------|------------------------|
| Which of the following forms of education can, according to the new regulations, give nurses and midwives the authority to refer patients for selected diagnostic tests? | „Specialisation” and/or graduation from a Bachelor’s degree course | 156<br>(29%)                   | 32<br>(22%)       | 61<br>(34%)      | 33<br>(31%)        | 28<br>(28%)            |
|  | „Specialisation”   | 39<br>(7%)                     | 5<br>(3%)         | 18<br>(10%)      | 11<br>(10%)        | 5<br>(5%)              |
|  | Graduation from a Bachelor’s degree course                         | 64<br>(12%)                    | 6<br>(4%)         | 39<br>(22%)      | 12<br>(11%)        | 6<br>(6%)              |
|  | I don't know   | 270<br>(50%)                   | 100<br>(69%)      | 59<br>(33%)      | 48<br>(45%)        | 61<br>(61%)            |

The analysis of the easiness of the questions on the new competences of nurses and midwives showed that the students found the questions difficult.

Table 14. Easiness of the questions on the new professional competences of nurses and midwives

| Question | Major   |          |           |               |
|----------|---------|----------|-----------|---------------|
|          | Nursing | Medicine | Midwifery | Public Health |
| 1        | 0.53    | 0.15*    | 0.47      | 0.40          |
| 2        | 0.42    | 0.29     | 0.21      | 0.15*         |
| 3        | 0.71    | 0.44     | 0.43      | 0.36*         |
| 4        | 0.22    | 0.19*    | 0.23      | 0.24          |
| 5        | 0.32    | 0.23*    | 0.31      | 0.27          |
| 6        | 0.06    | 0.05     | 0.04*     | 0.05          |
| 7        | 0.64    | 0.41*    | 0.41*     | 0.43          |
| 8        | 0.32    | 0.22     | 0.19*     | 0.20          |
| 9        | 0.60    | 0.44*    | 0.45      | 0.51          |
| 10       | 0.45    | 0.19*    | 0.22      | 0.31          |
| 11       | 0.40    | 0.23*    | 0.24      | 0.26          |
| 12       | 0.33    | 0.14*    | 0.26      | 0.24          |
| 13       | 0.34    | 0.22*    | 0.32      | 0.28          |

\* The lowest easiness recorded for a given question

The sum of the correct answers given by the students on different majors to the questions testing the knowledge of the new professional competences of nurses and midwives was significantly different between the students at each major. ( $p < 0.000$ , Table 15). The students of nursing answered correctly significantly more frequently than those of medicine, public health ( $p < 0.001$ ), or midwifery ( $p < 0.002$ , Table 16). The responses offered by the students of medicine, public health, and midwifery had no significant differences (Table 16).

Table 15. The sum of correct answers given by the students of different majors to the questions about the new professional competences of nurses and midwives

| Major         | The ANOVA Kruskal-Wallis rank test; $H(3, N=478) = 47.17747$<br>$p < 0.00001$ |           |               |
|---------------|---|-----------|---------------|
|               | Correct answers (N valid)   | Suma Rang | Średnia Ranga |
| Nursing       | 158   | 46774.5   | 296.04        |
| Medicine      | 126   | 23467.0   | 186.25        |
| Midwifery     | 96  | 22242.0   | 231.69        |
| Public Health | 98  | 21997.5   | 224.46        |

Table 16. The analysis of the differences in the students' level of knowledge (measured by the number of correct responses) between the students of respective majors

| Major         | A <i>post-hoc</i> analysis for multiple comparison of mean ranks for all groups |                      |                       |                           |
|---------------|---|----------------------|-----------------------|---------------------------|
|               | Nursing*<br>R:296.04  | Medicine<br>R:186.25 | Midwifery<br>R:231.69 | Public Health<br>R:224.46 |
| Nursing       | -----   | < 0.001              | 0.002                 | < 0.001                   |
| Medicine      | < 0.001   | -----                | 0.091                 | 0.240                     |
| Midwifery     | 0.002   | 0.091                | -----                 | 1.000                     |
| Public Health | < 0.001   | 0.240                | 1.000                 | -----                     |

\* Nursing has significantly higher results than each of the other majors analysed.

### III. DISCUSSION

In the worldwide scholarly literature available (PubMed, SCOPUS, ProQuest; key words: *nurse prescribing*, years: 2000-2015), 65 reference sources related to prescribing medications by nurses and midwives in Europe and the rest of the world were found. The subject is widely discussed in scholarly literature. The accounts of different experiences of various countries implementing the nurses' and midwives authority to administer medications were studied. Those accounts put an emphasis on the problems related to the new legislature, the attitudes of healthcare professionals towards the changes, and economic analyses [13-19]. A small number of studies were concerned with the knowledge and attitudes of nursing or midwifery students.

In the available Polish scholarly literature (Polska Bibliografia Lekarska – Polish Medical Bibliography; key words: *pielęgniarki (nurses) AND recepty (prescriptions)*, years: 2000-2015), no results were found for the subject at hand. There are publications on the extension of nurses' and midwives' competences, but they tend to appear in medical journals and magazines rather than scholarly databases [20-27]. What they describe are often the required qualifications of nurses and midwives and not any study results from the analysis of the knowledge or attitudes of selected groups of healthcare professionals pertaining to the new competences of nurses and midwives. The only scholarly publications on the subject matter are the ones published by the authors of this study [1-6].

The problem of administering drugs, giving prescriptions, and referring for diagnostic tests by nurses and midwives is a novelty in Polish scholarly literature. Yet, the subject is very much around because of the ongoing preparations for the introduction of the changes in law entering into force on January 1, 2016. In the studies on the matter conducted formerly by the authors of this paper, the attitudes of senior nurses [2] and unit nurses employed at a children's clinical hospital [5] were analysed. The research of students' attitudes was only a pilot study. The qualitative focus study was conducted on a limited number of students who took part in a medical law workshop [1,6].

The studies conducted so far on the students of majors other than nursing or midwifery have been undertaken only as a pilot study at the Medical University of Warsaw [10].

The studies of other student groups, e.g. students of medicine or public health, who represented various higher education institutions, have not been conducted at all so far, which is why the authors of the current paper decided to include a group of students who are not directly affected by the new regulations in the study.

In the studied group of nursing and midwifery students as well as public health and medicine on selected Polish universities, the level of knowledge on the extension of nurses' and midwives authority to administer medications, give prescriptions, and refer to diagnostic tests was notably insufficient. The students of nursing had a significantly broader knowledge than those at other majors. Yet, it was still unsatisfactory. The students of nursing achieved significantly higher results mainly in the area of the fundamental issues related to the new competences.

Over a half of the students of nursing could name the legal act to be updated per the new competences introduced. Most of the students (70%) knew the changes were to be an option and a privilege rather than a requirement. Nevertheless, only 42% were aware of when the changes were to enter into force.

The remaining detailed issues analysed pertaining to the knowledge of the new competences of nurses and midwives were unfamiliar to the students, regardless of their majors. Most of the students were not aware of the differences in the competences of nurses and midwives with Bachelor's and Master's degree, and of the forms of postgraduate education required for the implementation of the extended competences in practice.

It is the authors' opinion that the results obtained were to be expected as the campaign to educate nurses and midwives was insufficient, and students did not receive any information that was prepared specifically for them either, despite the fact that they will be allowed to put the new

competences into practice after they graduate. What is surprising is the fact the students of midwifery had a significantly lower level of knowledge on the new competences than the students of nursing. This observation requires further research - the curriculum of midwifery should be reviewed to include the information about the new competences.

As the new professional authority for nurses and midwives is going to be introduced, the education standards at these majors are going to be modified in the near future. The Bachelor's degree course curricula for nursing and midwifery are going to be adjusted to the new standards of education issued by the Ministry of Science and Higher Education. It is the authors' opinion that not only the curricula for nursing and midwifery should be updated regarding the new competencies. All members of interdisciplinary medical teams, especially doctors and pharmacists, should be aware of the new regulations as they will be directly involved in their implementation.

#### *The limitations to the presented study results*

The authors' research can be considered a pilot study as since it was conducted, the legislature pertaining to the new competences of nurses and midwives has been changed again. The future studies must take those changes into account and be based on the latest interpretation of the Polish law on the extension of nurses' and midwives' authority to administer medications, give prescriptions, and refer for diagnostic tests.

#### *Areas for further studies*

The authors believe that a similar study should include students of pharmacy, as they in their future practice they will take part in the new competences of nurses and midwives.

## IV. CONCLUSIONS

- In the studied group of students of selected Polish higher education institutions, the knowledge on the extension of nurses' and midwives' professional competences was insufficient and required an urgent intervention.
- What should be modified are the curricula not only at nursing and midwifery programmes, but also in the courses of education of other therapeutic team

members, i.e. doctors, pharmacists, and public health specialists.

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