EVIDENCE – BASED MEDICINE AND EVIDENCE – BASED MIDWIFERY PRACTICE – KNOWLEDGE AND ATTITUDES OF STUDENTS OF MIDWIFERY

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Abstract

The awareness of benefits resulting from the use of the latest research findings in the professional practice of midwives is a prerequisite to ensuring safe midwifery care satisfying the highest standards. Thus, it is important to encourage midwifery students to expand their knowledge and to improve their research methodology and critical analysis of literature-related competence.

Aim

The aim of the study was to analyse the knowledge and attitudes of midwifery students with respect to Evidence-Based Medicine (EBM) and Evidence-Based Midwifery Practice (EBMP) in relation to their undertaking of professional practice.

Material and Methods

116 students of the second-level midwifery at Medical University of Warsaw (1 male), 67 people do not work in the profession, 49 people have taken up work in midwifery. The mean age of the population studied 26.37 years (min. 22, max. 50, SD = 6.53); 72% full-time students, 50% of the 1st year.

38% obtained the Bachelor's degree in midwifery in 2012. Evidence-Based Practice Questionnaire of University of South Australia, quantitative analysis of research findings. Statistical analysis, non-parametric U Mann-Whitney tests and chi^2: STATISTICA version 10.0.

Results

Students of midwifery not working in the midwifery profession revealed higher awareness of the existence, significance and development of EBMP (medians 15 vs. 16, U Mann-Whitney test, $p = 0.049$). They also had greater knowledge of relevant terminology: 21 people not working in the profession declared understanding of the term *systematic review* and partial understanding of the term *publication bias* (U Mann-Whitney test, $p = 0.034$ and $p = 0.011$, respectively). A markedly higher number of people ($n = 35$) who have not taken up practising the midwifery profession declared having formulated a correct clinical question concerning a patient, a problem, actions taken and their results at least once a month last year (U Mann-Whitney Test, $p = 0.022$).

Conclusions

1. In both compared groups the level of knowledge of Evidence-Based Practice is not sufficient and requires urgent upgrading in terms of both knowledge and skills of students in this area.

2. Students not working as midwives have greater EBP-related knowledge than the studied group of students working in the profession.

3. In order to improve the knowledge of midwives with respect to the use of EBP in everyday clinical work it is advisable to provide them with additional training and to expand their skills in the area of methodology of scientific research.

4. There is a need for ongoing updating by midwives of their knowledge with respect to the use of the latest scientific research findings in professional practice.

Keywords: evidence-based medicine, evidence-based midwifery practice, safety, midwifery care quality.

1 INTRODUCTION

The ability to make use of and apply up-to-date scientific research findings by health care workers, doctors, nurses or midwives, in their everyday professional practice is absolutely necessary to ensure effective and safe patient care which would satisfy the highest quality standards. The use of scientific evidence in clinical practice has a beneficial impact not only on the safety of the very patient and medical personnel but also on the growth of the financial effectiveness and efficiency of medical procedures performed [1-10].

In midwifery, adequate decision-making requires not only an adequate clinical diagnosis but also knowledge of scientific data and determination of the degree of their credibility. Hence the ever growing emphasis on the use of scientific research finding in the professional practice of midwives which is expected to have a favourable influence not only on the safety of the patient and the medical personnel or the effectiveness of the medical procedures performed but also on their financial effectiveness. A prerequisite is thus to make students of midwifery aware of the necessity of using the latest scientific research findings and development of their skills and competence in the field of methodology of conducting scientific research [1-11].

Having been awarded the right to practise the profession students simultaneously take up work in the profession of a midwife and continue their education attending second-level studies. Having completed Bachelor's degree studies in midwifery the majority of students seem to enjoy high self-evaluation with respect to their professional preparation and takes up work in the profession of a midwife [12].

The education of midwifery students in the course of first- and second-level studies at higher education medical institutions with long-term experience in conducting scientific research and implementing their results in clinical practice should place an even greater emphasis on education in the field of conducting scientific research, analysis of research findings or ability to critically read scientific texts, that is all the key elements of Evidence-Based Midwifery Practice.

2 AIM OF STUDY

The aim of the study was an analysis of the knowledge and attitudes of midwifery students towards practical practice based on scientific evidence and the application of the latest research finding in everyday clinical practice in relation to the professional activity undertaken.

3 MATERIAL

The study covered 116 students of level II studies in Midwifery (1 male) of Medical University of Warsaw (MUW). The mean age for the total group studied was 26.37 years (the youngest person was 22, the oldest – 50, SD = 6.53). 67 people from the study group do not work in the profession, and 49 declared work in the profession of a midwife. 86 of those studied were students of full time studies, with 60 of them being students of the first course. The age analysis indicates that people working as midwives took up second-level studies at a much later period. Among the people studied 23 obtained the Bachelor's degree at a university other than WUM. 79 people from the whole group studied declared having come across Evidence - Based Practice subjects during theoretical classes at the University. Detailed information concerning the studied group together with an analysis of numerousness and age of respondents is given in Table 1 and Fig. 1.

Table 1 Characteristics of the studied groups of students of midwifery.

	n	*p**	*Mean Age*	*SD*	*p***
People working in the midwifery profession	*n*= 49	> 0.05	23.8	± 2.80	< 0.05
People not working in the midwifery profession	*n*= 67		28.9	± 8.74	

**p* – nonparametric Chi^2 compliance test (for $p > 0.05$ no significant difference between number of people in the groups)

**p* – nonparametric *U* Mann-Whitney Test to compare the significance of age differences in the two study groups of students (for $p < 0.05$ both groups are significantly different)

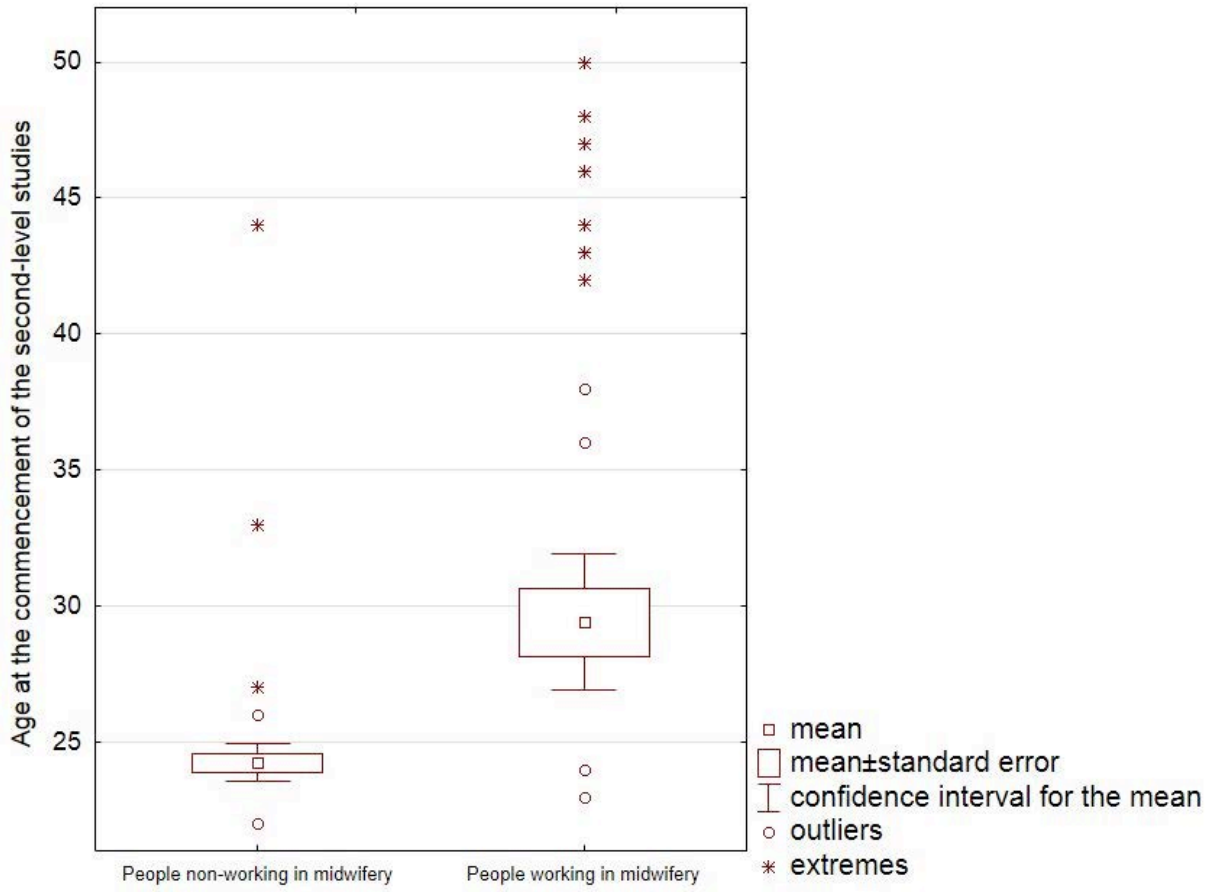

Figure 1. Age of respondents at the commencement of the second-level studies.

4 METHODS

In the study we used the diagnostic probe method, the questionnaire technique. Research was carried out from March to April 2014 via the Internet (Internet Address of the Questionnaire: https://docs.google.com/forms/d/1oC0rcwPJFWLvzg74rP1rZOf3UvtpE_yuQzhR845Uk8/viewform?usp=send_form). We used the questionnaire 'Evidence-Based Practice Profile Questionnaire developed by a team of authors: McEvoy MP, Williams MT, Olds TS. of the School of Health Sciences, University of South Australia, Adelaide, Australia and published in 2010 in the journal *Medical Education*: McEvoy MP, Williams MT, Olds TS. Evidence based practice profiles: Differences among allied health professions. BMC Medical Education 2010, 10:69 doi:10.1186/1472-6920-10-69. [13] The authors of the present study obtained the consent for its use. The questionnaire was validated and doubly translated by independent translators for the use in our own research.

Participation in the study was voluntary and the questionnaire was anonymous. The questionnaire consisted of 4 questions with the Likert scale or the nominal scale in the area of professional practice based on scientific evidence, 13 questions concerning personal information, education and employment as well as one question concerning an earlier encounter with the subject-matter discussed. Questions concerning evidence-based practice were divided into 7 subject domains:

1. Midwifery students' knowledge of and attitudes to EBP
2. Students' relation to expanding their EPB competence
3. EBP application in the professional midwifery practice
4. Knowledge of EBP terminology
5. Frequency of the application of individual EBP elements in everyday midwifery practice
6. Level of EBP-related skills
7. Predispositions and barriers limiting the application of EBP by midwifery students.

The obtained data were gathered in Microsoft Excel Sheet 2010 (v14.0). Two groups of midwives were compared: Group 1 (WS) of students of second-level studies who work professionally as midwives and Group 2 (NWS) comprising people who are not working in the profession currently. STATISTICA version 10.0 statistical packet licensed by Medical University of Warsaw was used to perform an analysis of the data.

In the comparative analysis of the obtained questionnaire results we used nonparametric tests for independent groups: U Mann-Whitney test for Likert scale questions (domains 1, 3, 6 and 7) or Pearson Chi^2 test for questions with the nominal scale (domains 2,3 and 5). In addition, to determine the degree of reliability of the questions based on the Likert scale we estimated the value of α-*Cronbach* coefficient which serves to evaluate the internal compliance of measurement results.

$P < 0.05$ was adopted as the level of statistical significance for all analyses.

5 RESULTS

In the evaluation of the degree of reliability of the questions based on the Likert scale (domains 1, 3, 6 and 7; a total of 44 questions) the total level of the internal compliance of the measurement findings was high and amounted to $\alpha = 0.867$. A detailed analysis of reliability showed that in the case of Domain 3 the questions fell into two separate groups which cross-measured the same set of features and properties of the respondent. That is why this domain was divided into two sub-domains 3a and 3b. The results of the reliability analysis for questions based on the Likert scale is given in Table 2.

Table 2. Results of the reliability analysis for individual domains of the questionnaire based on the Likert scale.

Subject scope of the domain	α-*Cronbach Coefficient*
1: Midwifery students' knowledge of and attitudes to EBP	0.94
3a: Application of EBP in professional midwifery practice	0.88
3b: Application of EBP in professional midwifery practice	0.74
6: Level of EBP-related skills	0.93
7: Predispositions and barriers to the application of EBP by midwifery students	0.71

In the comparative analysis of the subject-domains based on the Likert scale statistically significant differences between the two study groups were found only with respect to the measurement of the midwifery students' knowledge of and attitudes to EBP. Respondents who do not undertake professional practice in midwifery in the course of study (NWS Group) showed higher awareness of the existence, importance and development of EBP in the field of midwifery than it was in the case of professionally-working students (WS Group) (medians 15 vs. 16, respectively; U Mann-Whitney test; $p = 0.049$) (Figure 2).

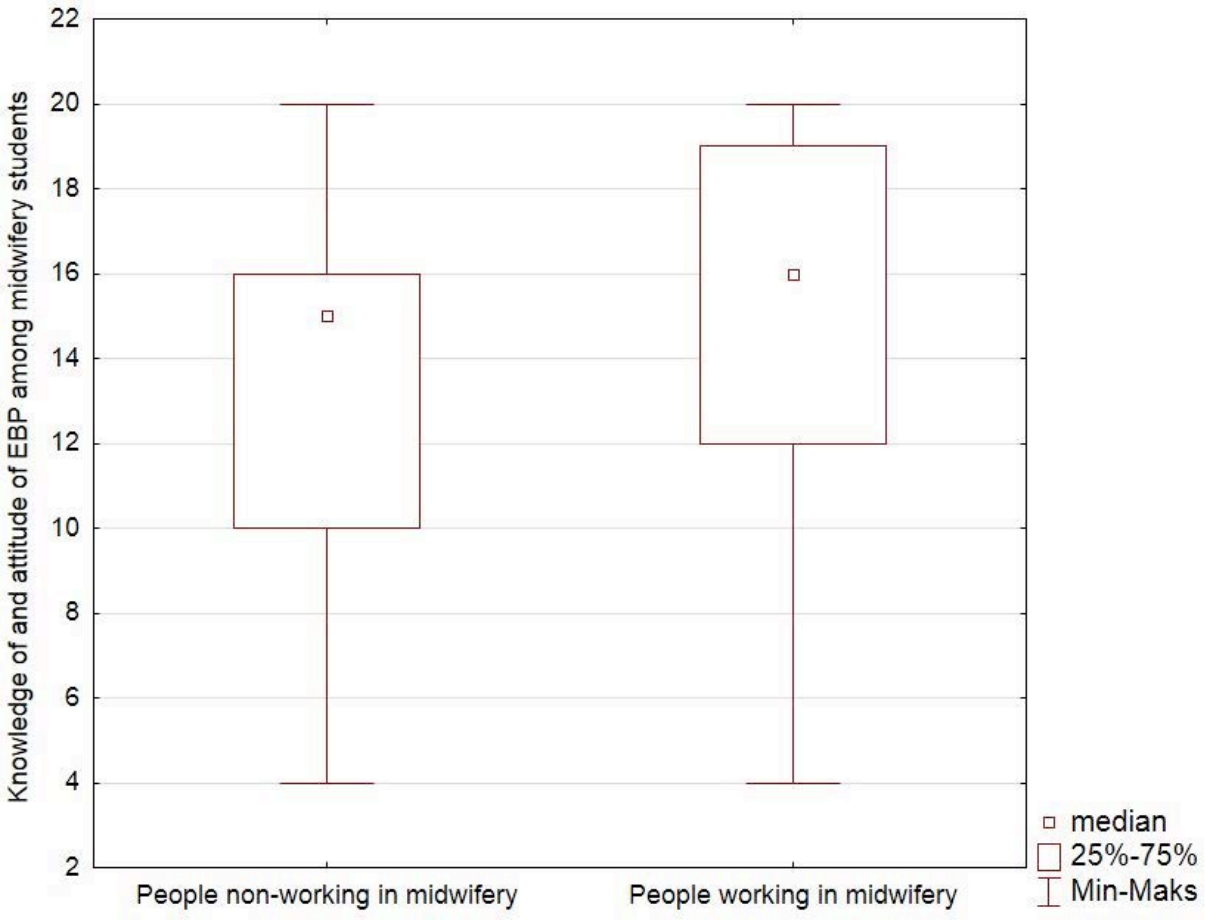

Figure 2. Knowledge of and attitudes to EBP of students working (WS) and not-working (NWS) in midwifery.

In the analysis of questions from Domains 2,3 and 5, containing questions with the nominal scale, Pearson Ch^2 test was used (in total 30 questions). Statistically significant differences between the two study groups were observed for 5 questions.

In the Domain *' Knowledge of EBP terms'* 3 statistically significant differences were noted. In the question concerning the understanding of the term '*systematic review'* a markedly larger number of respondents not-working as midwives (NWS) declared relatively good knowledge and partial understanding of the term as compared with WS Group (Pearson Ch^2 test, $p = 0.034$) (Table 3).

Table 3. Answers of the two compared study groups (NWS and WS) concerning the term '*systemic review'.*

Systemic review	People not working in midwifery (NWS)	People working in midwifery (WS)
I have never heard about it	17	9
I have heard about it but I do not know the meaning of the term	7	14
I understand the term partially	18	12
I understand the term quite well	21	8
I understand the term and can explain its meaning to others	4	7

In the following question from the same domain the difference between the study groups of students concerned the knowledge of the term *'publication bias'*. The number of respondents not-working as midwives (NSW Group) who declared partial understanding of the term was higher while respondents working as midwives (NS Group) chose most frequently the answer which indicated that they had encountered the definition in question but did not know its meaning. (Pearson Ch^2 test, p = 0.011) (Table 4).

Table 4 NSW and WS students' knowledge of the term '*publication bias'.*

Publication bias	People not working in midwifery (NWS)	People working in midwifery (WS)
I have never heard about it	27	22
I have heard about it but I do not know the meaning of the term	11	17
I understand the term partially	21	4
I understand the term quite well	7	4
I understand the term and can explain its meaning to others	1	3

The answers of all students taking part in the study with respect to the knowledge of the term '*forest plot'*, also from the subject-domain *'Knowledge of EBP terms',* showed a statistically significant difference between the compared groups. Both the majority of respondents working as midwives (WS) and those not-working as midwives (NWS) had never heard the term. Respondents not-working in the profession (NSW) tended to choose the 'partial understanding' answer most frequently while every 4th respondent working in midwifery (WS) declared having heard the term but not knowing its meaning. (Pearson Ch^2 test, p = 0.037) (Table 5).

Table 5 Answers of the compared study groups (NSW and SW) concerning the *'forest plot'* term.

Forest plot	People not working in midwifery (NWS)	People working in midwifery (WS)
I have never heard about it	38	31
I have heard about it but I do not know the meaning of the term	7	13
I understand the term partially	18	4
I understand the term quite well	3	1
I understand the term and can explain its meaning to others	1	1

In the subject-domain *'Frequency of the application of individual EBP elements in everyday professional midwifery practice'* statistically significant differences between the compared NSW and SW Groups were observed in 2 questions. The first of them concerned the frequency of the application of individual *Evidence-Based Practice* elements in everyday professional practice. Answering the question: ' How often last year did you formulate a correct clinical question with respect to a patient, a problem, actions taken or their results?' most respondents who do not work as midwives declared having formulated such a question once a month or less frequently (Pearson Ch^2 test, p = 0.022) (Table 6).

Table 6. Frequency of the application by respondents of EBP elements in everyday professional practice.

How often last year did you formulate a correct clinical question?	People not working in midwifery (NWS)	People working in midwifery (WS)
Never	17	16
Once a month or more rarely	35	14
Once in two weeks	4	9
Once a week	5	9
Every day	5	2

The second question from the domain characterizing *'The frequency of the application of individual EBP elements in everyday midwifery practice'* in which a statistically significant difference was observed between the compared NWS and WS study groups concerned informal discussion with co-workers of the latest scientific news and studies in the field of medicine (Pearson Ch^2 test, p = 0.031). (Table 7).

Table 7**.** Answers of NSW and WS Group respondents to the question: 'How often last year did you informally discuss scientific news with co-workers?'.

How often last year did you informally discuss scientific news with co-workers?	People not working in midwifery (NWS)	People working in midwifery (WS)
Never	20	16
Once a month or more rarely	24	22
Once in two weeks	12	4
Once a week	4	8
Every day	7	0

6 DISCUSSION

In the available world literature PubMed, SCOPUS, EMBASE, PROQUEST, dates of search: 1 January 2000-12 - November 2013, language of publication: English; key words: *midwifery, evidence-based practice, evidence-based midwifery practice*) we found 7 publications dealing with the techniques of the application of individual elements of *evidence-based midwifery practice* [14-20] as well as 5 publications on the subject of the use of EBM and EBP by midwives [21-26].

In Polish scientific literature (Polska Biografia Lekarska – PBL) we did not find any publications concerning the knowledge and attitudes of midwifery students with respect to the application of scientific research findings in everyday clinical practice. Consequently, the research findings presented in this study were compared with the research findings of a study conducted among students of a related field – nursing – a field having a similar curriculum and profile of education [27-34].

Though issues related to the application of *evidence-based practice* concern everyday clinical practice and primary health care, subjects related to professional practice based on scientific evidence should be included to the curricula of nursing and midwifery studies [27-34]. All the relevant publications emphasize, however, the necessity of the earliest possible introduction of EBP issues to the curricula of programmes for educating nurses and midwives.

Medical universities all over the world offer their students an opportunity of benefiting from different forms of education which are directly related with EBP [11]. In Polish curricula of nursing and midwifery studies elements of *Evidence-Based Nursing Practice* and *Evidence-Based Midwifery*

Practice come to form part of subjects such as, for instance, *Scientific Research in Nursing* or *Scientific Research in Midwifery.*

Aronson writes that in the USA a new subject '*Evidence-Based Nursing Interventions'* was included to the curriculum of the 1st semester of nursing studies as early as in 2003 which had a marked impact on both the quality of education and student satisfaction with the educational contents of studies as well as improved students' preparation for the commencement of clinical classes in the following semesters [7]. Similar findings were described in 2011 by Iranian authors who conducted research among 41 students of medicine and nursing confirming that teaching students on the basis of the EBNP paradigm is very effective and should constitute grounds for clinical education [8].

The above findings remain in compliance with the results of the research carried out by Florin and co-workers [10] in 2006 on a group of 1440 students from 26 different universities (68% of the nursing students' population) in Sweden. The findings reveal that the emphasis on the importance of developing EBP-related skills in the course of pre-clinical education was markedly more extensive than in the course of clinical education, directly with a patient. Students were clearly better prepared for the application of published scientific research findings within theoretical education at university than within practical education. Moreover, students declared good preparation for the application of EBP in their professional work (≈8.1, on a 10-grade scale) [10]. The research findings obtained by Florin and co-workers do not comply with our own findings. Nearly a half of midwifery students declared lack of the ability to apply scientific information in their research work (n = 55), inability to determine the degree of the clinical usefulness of scientific evidence gained (n = 19) or inability to determine the degree of its reliability (n = 22).

Similar results were obtained by Morris and co-workers [11] who conducted a study on a group of students of different health sciences in the course of second-level studies who took part in EBP classes in the course of first-level studies. Morris analysed students' self-assessment with respect to their clinical competence. Study findings confirmed that students' participation in EBP classes contributes to a growth in their self-assessment and confidence with respect to preparation for clinical classes and performance of professional tasks. It is worth emphasizing that factors responsible, in students' opinion, for the limitation of the application of EBP assumptions in work with a patient include lack of time and organization culture which make it impossible for nurses to fully apply the latest scientific research findings in everyday clinical practice. Our own research indicates as the principal factor limiting the application of research findings lack of time by midwifery students for personal scientific development and search for new, reliable research findings (n = 58) along with work load (n = 49). The majority of midwifery students participating in the study (n = 68) admit, however, that the application of EBP in professional practice helps them take the right clinical decisions concerning patients and contributes to the improvement of medical services rendered by them (n = 76).

In their study on 21 midwives, Bogdan-Lovis and co-workers used structured, individual interviews to evaluate the level of knowledge of the subject, access to and practicing of evidence-based medicine. The results showed that midwives working in both municipal and regional hospital have extensive general knowledge of EBMP while answers to specific questions concerning EBMP practices showed incomplete understanding of the concept of adequate knowledge of EBP and EBMP and its application in practice. Our own research, in which midwifery students declared knowledge of the term EBP (n = 70) and awareness of the continuous development of EBP in their profession (n = 68) while failed to apply individual elements in their clinical practice due to insufficient knowledge of the subject and relevant terminology, seems to confirm these findings: 40 respondents have never evaluated the methodological correctness of the scientific literature used and have not referred scientific research findings to their own diagnosis (n = 36).

The specificity of the profession and the development of modern midwifery demand that midwifery students develop professional skills, gain new information and upgrade their knowledge on an ongoing basis. Expansion of these students' knowledge of methodology of scientific research, critical analysis of its results or their ability to critically read scientific texts, that is all the key elements of Evidence-Based Midwifery Practice, can have a significant impact not only on the development of midwifery students and staff in this field but also on the future development of midwifery as a science.

7 CONCLUSIONS

1. In both compared groups the level of knowledge of Evidence-Based Practice is not sufficient and requires urgent upgrading in terms of both knowledge and skills of students in this area.

2. Students not working as midwives have greater EBP-related knowledge than the studied group of students working in the profession.
3. In order to improve the knowledge of midwives with respect to the use of EBP in everyday clinical work it is advisable to provide them with additional training and to expand their skills in the area of methodology of scientific research.
4. There is a need for ongoing updating by midwives of their knowledge with respect to the use of the latest scientific research findings in professional practice.

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