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MONITORING THE EFFICACY AND DEVISING A MODEL FOR ENHANCING THE INSTRUCTION OF EVIDENCE-BASED NURSING

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Summary

Introduction. Evidence-based nursing (EBN) integrates clinical expertise, patient preferences, and robust scientific evidence to guide nursing interventions, crucial for enhancing patient outcomes and safety. EBN training enhances nurses' critical thinking, bridges academic research with clinical practice, and promotes a culture of continuous learning and standardized care protocols.

The **objective** of our study is to assess the core domains of understanding, mindset, and application concerning EBN, with the subsequent formulation of an action plan aimed at optimizing academic support.

Materials and methods. The study utilized a quasi-experimental design with 145 academic bachelors from NJSC "Semey Medical University" who underwent advanced training in EBN. Two online surveys, based on the "Assessing teaching and learning of evidence-based practice through assessment of knowledge, attitudes, and behavior" questionnaire adapted for nursing, were administered before and after the training. Data analysis was conducted using IBM SPSS Statistics 26.0, employing standard descriptive and analytical statistics, including paired Student's T-test to compare scores before and after the EBN training, with statistical significance set at $p < 0.05$.

Results. The study participants predominantly comprised women (n=143), with an average age of 44.31±10.81 years among undergraduate students. There was a statistically noteworthy rise observed in the overall average score pertaining to "Knowledge". Conversely, there was a significant decrease noted in the overall score within the domain of "Attitude", dropping from 23.3 to 17.3. Moreover, there was a statistically significant increase in the average score within the subject area of "Personal application", rising from 20.6 to 23.3 points. Lastly, the "Future Use of Evidence-Based Practice" domain also exhibited an improvement, with indicators increasing from 34.1 to 36.2.

Conclusions. Based on the data gathered, we have formulated models aimed at enhancing the efficacy of EBN training specifically designed for academic nursing students. The educational model is designed to provide comprehensive support from medical institutions to assist nurses in acquiring the knowledge and skills necessary for evidence-based nursing.

Keywords: *evidence-based nursing, nurse, nursing, undergraduate students, educational model.*

Резюме

МОНИТОРИНГ ЭФФЕКТИВНОСТИ И РАЗРАБОТКА МОДЕЛИ СОВЕРШЕНСТВОВАНИЯ ОБУЧЕНИЯ СЕСТРИНСКОМУ ДЕЛУ, ОСНОВАННОГО НА ФАКТИЧЕСКИХ ДАННЫХ

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Введение. Сестринское дело, основанное на фактических данных (ДСД), объединяет клинический опыт, предпочтения пациентов и надежные научные данные для руководства сестринскими вмешательствами, что имеет решающее значение для улучшения результатов лечения и безопасности пациентов. Обучение ДСД развивает критическое мышление медсестер, соединяет академические исследования с клинической практикой и продвигает культуру непрерывного обучения и стандартизированные протоколы ухода.

Цель исследования: оценка основных доменов знания, отношения и поведения в области ДСД, с последующей формулировкой плана действий, направленного на оптимизацию образовательного процесса.

Материалы и методы исследования. В квази-экспериментальном исследовании приняли участие 145 медицинских сестер, прошедших курс повышения квалификации по доказательной сестринской практике на базе НАО “Медицинский университет Семей”. Онлайн анкетирование было проведено до и после прохождения курса, с использованием опросника "Оценка преподавания и обучения доказательной практике путем оценки доменов знаний, отношения и поведения", адаптированной для сестринского дела. Анализ данных проводился с использованием IBM SPSS Statistics 26.0, используя стандартную описательную и аналитическую статистику, включая парный Т-критерий Стьюдента, со статистической значимостью, установленной на уровне $p < 0,05$.

Результаты. Участниками исследования были преимущественно женщины (n=143), средний возраст которых составил 44,31±10,81 года. Результаты анкетирования продемонстрировали статистически значимый рост общего среднего балла, относящегося к домену "Знания". И наоборот, было отмечено значительное снижение общего балла в области "Отношение", с 23,3 до 17,3 соответственно. Более того, наблюдалось статистически значимое увеличение среднего балла в предметной области "Личное применение", с 20,6 до 23,3 баллов. И наконец, в области "Будущее использование практики, основанной на фактических данных" также наблюдался статически значимый рост показателей с 34,1 до 36,2.

Выводы. На основе полученных данных была создана модель оптимизации эффективности обучения ДСД для изучаемой выборки. Образовательная модель предназначена для оказания всесторонней поддержки медицинских сестер на пути к приобретению знаний и навыков, необходимых для научно обоснованного сестринского дела.

Ключевые слова: *доказательное сестринское дело, медсестра, сестринское дело, студенты высших учебных учреждений, образовательная модель.*

Түйіндеме

ТИІМДІЛІК МОНИТОРИНГІ ЖӘНЕ НАҚТЫ ДЕРЕКТЕРГЕ НЕГІЗДЕЛГЕН МЕЙІРБИКЕ ІСІН ОҚЫТУДЫ ЖЕТІЛДІРУ МОДЕЛІН ӘЗІРЛЕУ

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Кіріспе. Дәлелді мейірбике ісі (ДМІ) емделушінің нәтижелері мен қауіпсіздігін жақсарту үшін маңызды болып табылатын мейірбикелік араласуларды бағыттау үшін клиникалық тәжірибені, пациенттердің қалауларын және дұрыс ғылыми дәлелдерді біріктіреді. ДМІ тренингі медбикелердің сыни ойлауын дамытады, академиялық зерттеулерді клиникалық тәжірибемен байланыстырады және үздіксіз оқу мәдениетін және стандартталған күтім хаттамаларын алға жылжытады.

Зерттеудің мақсаты: ДМІ саласындағы білімнің, көзқарастың және мінез-құлықтың негізгі бағыттарын бағалау, содан кейін білім беру процесін оңтайландыруға бағытталған іс-шаралар жоспарын құру.

Зерттеу материалдары мен әдістері. Квазиэксперименттік зерттеуге «Семей медицина университеті» КЕАҚ дәлелді мейірбикелік іс тәжірибесі бойынша біліктілікті арттыру курсынан өткен 145 медбике қатысты. Курсқа дейін және курстан кейін мейірбике ісіне бейімделген білім, көзқарас және мінез-құлық салаларын бағалау арқылы дәлелді тәжірибені оқыту мен үйренуді бағалау сауалнамасы арқылы онлайн сауалнама жүргізілді. Деректерді талдау IBM SPSS Statistics 26.0 көмегімен стандартты сипаттамалық және аналитикалық статистиканы, соның

ішінде жұптастырылған Стьюдент Т тестін пайдалана отырып, статистикалық маңыздылығы p < 0,05 мәніне орнатылды.

Нәтижелер. Зерттеуге қатысушылар негізінен әйелдер (n=143) болды, олардың орташа жасы 44,31±10,81 жас. Сауалнама нәтижелері "Білім" доменіне қатысты жалпы орташа баллдың статистикалық маңызды өсуін көрсетті. Керісінше, "Көзқарас" доменіндегі жалпы баллдың сәйкесінше 23,3-тен 17,3-ке дейін айтарлықтай төмендеуі байқалды. Сонымен қатар, «Қолдану» пәні бойынша орташа баллдың 20,6-дан 23,3 балға дейін статистикалық маңызды өсімі байқалды. Соңында, дәлелдерге негізделген тәжірибенің "Болашақта пайдалану" доменінде де 34,1-ден 36,2-ге дейін статистикалық маңызды өсу байқалды.

Қорытындылар. Алынған деректер негізінде зерттелетін үлгі үшін ДМІ оқытудың тиімділігін оңтайландыру үшін модель жасалды. Білім беру моделі медбикелерге дәлелді мейірбикелік тәжірибе үшін қажетті білім мен дағдыларды алу жолында жан-жақты қолдау көрсетуге арналған.

Түйінді сөздер: *дәлелді мейіргер, мейіргер ісі, жоғары оқу орындарының студенттері, білім беру үлгісі.*

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Касым Л.Т., Кусаинова А.А., Жетмекова Ж.Т., Кожахметова Д.К., Ботабаева А.С., Петрова Ю.В., Жокебаева М.С., Шамшудинов Т.М. Тиімділік мониторингі және нақты деректерге негізделген мейірбике ісін оқытуды жетілдіру моделін әзірлеу // Ғылым және Денсаулық сақтау. 2024. Т.26 (2). Б. 212-220. *DOI 10.34689/SH.2024.26.2.024*

Introduction

Evidence-based nursing (EBN) epitomizes a pivotal facet of contemporary nursing practice, grounded in the amalgamation of clinical expertise, patient preferences, and the most robust scientific evidence to steer nursing interventions [9]. The significance of evidence-based nursing training is unequivocal. Initially, EBN underscores the utilization of contemporary scientific evidence in informing clinical judgments, resulting in enhanced patient outcomes, mitigated errors, and bolstered safety measures [8]. Secondly, EBN fosters the cultivation of nurses' critical thinking acumen, enabling them to dissect research, amalgamate information, and apply it to intricate clinical scenarios [23]. Thirdly, education in evidence-based nursing furnishes avenues for nurses to bridge research conducted in academic domains with its pragmatic application in clinical settings [16]. By assimilating EBN principles, nurses acquire the capacity to make judicious decisions, thereby fostering more precise interventions and augmenting patient care standards. Proficiency in EBN knowledge and competencies engenders a culture of perpetual learning, motivating nurses to remain abreast of cutting-edge scientific evidence and continually enhance their professional practice [3]. Moreover, EBN advocates for the standardization of care protocols, curbing unwarranted variation in practice and fostering consistency across intra- and interdisciplinary domains [2].

Presently, several impediments hinder the advancement of competencies within the ambit of EBN: restricted accessibility to scholarly literature, time constraints, institutional support deficiencies, resistance to change among peers and managerial personnel, adherence to conventional methodologies, and inadequate proficiency in the English language [6]. Nonetheless, robust backing from healthcare and educational institutions can furnish resources, time allocations, and motivational impetus for EBN education. Seasoned EBN mentors hold the capacity to shepherd novice nurses and educators in assimilating research evidence into both practice and pedagogy [10]. Collaborative endeavors with other healthcare professionals and researchers can enrich EBN training initiatives and broaden resource accessibility [13].

Training in evidence-based nursing constitutes a significant component of contemporary nursing education, carrying extensive implications for patient care, nursing advancement, and the broader healthcare framework [25]. Despite encountering challenges and constraints, the advantages of EBN instruction, such as enhanced patient outcomes and the cultivation of critical thinking skills, hold immense importance. By employing problem-solving strategies and leveraging facilitative approaches, evidence-based nursing can be firmly established as a foundational pillar of high-quality nursing practice [22].

The primary objective of our study is to assess the core domains of understanding, mindset, and application concerning EBN with the subsequent formulation of an action plan aimed at optimizing academic support.

Materials and methods

Study design and sample description

The research employed a quasi-experimental design. The sample comprised 145 academic bachelors who completed an advanced training cycle at the NJSC "Semey Medical University" (SMU). The study entailed two online surveys administered before and after participants underwent training in "Evidence-based Nursing". These surveys utilized the "Assessing teaching and learning of evidence-based practice through assessment of knowledge, attitudes, and behavior" questionnaire [12], which had been previously confirmed in related research and translated into Russian and Kazakh by researchers. Using 26 questions

graded by a 5-point Likert scale, the questionnaire was divided into four domains: knowledge (EBP-K), attitudes towards evidence-based practice (EBP-A), personal application and utilization of evidence-based practice (EBP-P), and future intentions regarding evidence-based practice (EBP-F). The EBP-K section had a range of 5 to 30 points, while the EBP-A and EBP-P sections had a range of 6 to 36 points each.The EBP-F section ranged from 9 to 54 points. The total score was computed by summing the points from each sub-item. Participants were given a maximum of 20 minutes to complete the questionnaire.

The academic bachelor's degree program tailored for students comprised 5 credits, equivalent to 150 academic hours. The curriculum covered foundational principles, conceptual frameworks, and ethical standards relevant to EBN, in addition to fostering skills in literature review and critical analysis. Special emphasis was placed on navigating scholarly articles, evidence-based practice guidelines, and clinical nursing protocols about disease management and prevention.

Ethical approval

Before commencing the study, ethical clearance was obtained from the Local Bioethical Committee of the NJSC "Astana Medical University" (Protocol #10 dated December 22, 2022). All participants were duly informed about the study's objectives and provided informed consent before engaging in the survey.

Statistical data processing

The statistical processing of the obtained data was conducted utilizing the statistical software IBM SPSS Statistics 26.0. Standard techniques of descriptive and analytical statistics were employed for the statistical analysis of the research findings. Specifically, to compare the average scores for individual questions and their sum (domains) before and after the quasi-intervention (completing the EBN discipline) in the context of one sample, a paired Student's T-test was used. The null hypothesis was discarded in favor of the alternative hypothesis when the level of statistical significance (p) fell below the predetermined critical threshold (<0.05).

Research results

A pre-discipline survey on "Evidence-Based Nursing" was administered to 163 undergraduate students enrolled in the Nursing program at SMU. However, 19 individuals were excluded from the initial sample for various reasons: questionnaire errors such as missing answers or incomplete responses (9 individuals), failure to complete the follow-up survey (7 individuals), and incomplete fulfillment of the discipline requirements (2 individuals). Consequently, the final sample for our study comprised 145 students. As anticipated, the majority of respondents were female (n=143). The mean age of the undergraduate students was 44.31±10.81 years. Educational backgrounds within this subgroup were categorized as follows: secondary vocational education - 12 individuals, applied bachelor's degree - 133 individuals. The majority of surveyed students (n=136) resided in urban areas, while 7 students worked in rural locales, and 2 were on maternity leave. Nearly two-thirds of the sample opted to complete the survey in Kazakh (66.89%; n=97).

Figure 1 illustrates the increasing recognition of the significance of knowledge and competencies within the nursing field. Notably, the most substantial increase in values before and after the disciplinary training was observed in response to the statement: *"Practicing evidence-based medicine increases the certainty that the proposed treatment is effective"* (M=2.36 vs. M=4.07). Overall, there was a notable and statistically significant rise in the average score of the "Knowledge" category, increasing from 16.1 to 19.1.

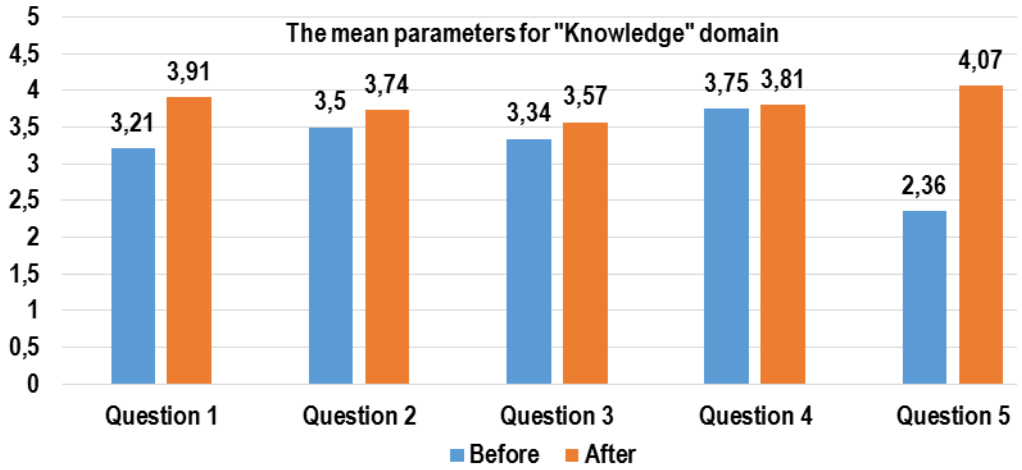

Figure 1. The average scores for questions within the "Knowledge" domain.

Question 1: Evidence-based nursing requires the use of critical appraisal skills to ensure the quality of all the research papers retrieved;

Question 2: Effective searching skills / easy access to bibliographic databases and evidence sources are essential to practicing evidence-based nursing;

Question 3: Critically appraised evidence should be appropriately applied to the patient using clinical judgment and experience;

Question 4: The evidence-based nursing process requires the appropriate identification and formulation of clinical questions;

Question 5: Practicing evidence-based medicine increases the certainty that the proposed treatment is effective.

Figure 2 displays a considerable decrease in the average responses to questions in the "Attitude" section, which was statistically significant. The overall score for this domain decreased notably from 23.3 to 17.3.

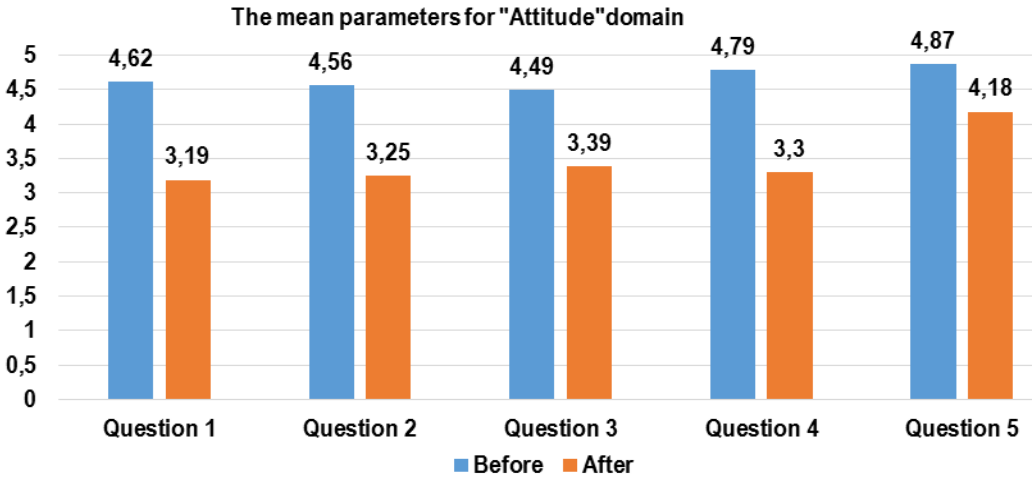

Figure 2. The average scores for questions within the "Attitude" domain.

Question 1: There is no reason for me personally to adopt evidence-based nursing because it is just a fad (or fashion) that will pass with time;
Question 2: Evidence-based nursing is cook-book medicine that disregards clinical experience;
Question 3: Nurses, in general, should not practice evidence-based practice because nursing is about people and patients, not statistics;
Question 4: Evidence-based practice ignores the art of nursing;
Question 5: Previous work experience is more important than research findings in choosing the best treatment available for a patient.

Figure 3 illustrates the escalating frequency of utilization of EBN resources in the daily practice of undergraduate nursing students. It is noteworthy to reiterate that the structure of the educational curriculum for the academic bachelor's degree in the Nursing specialty permits study without necessitating a pause in primary employment. Following the training, there was a statistically significant increase in the average score for the “Personal application” domain, rising from 20.6 to 23.3 points.

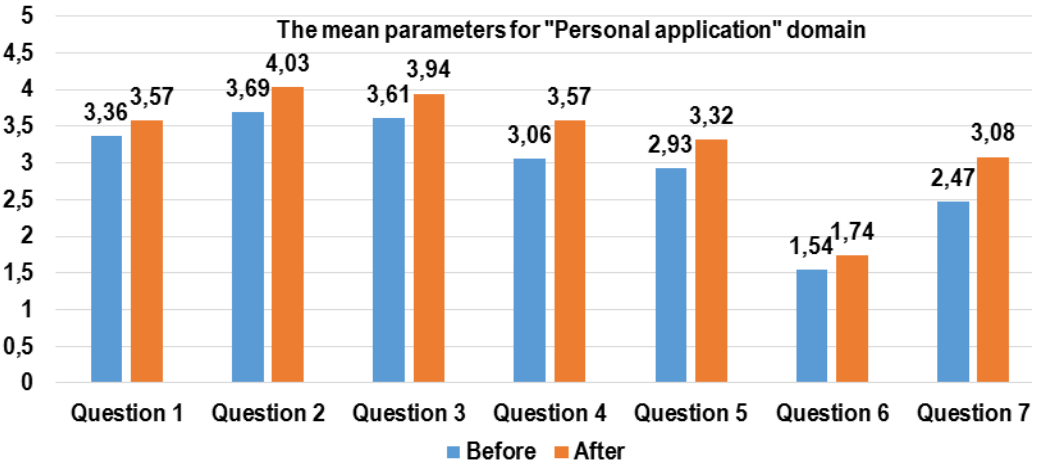

Figure 3. The average scores for questions within the "Personal application" domain.

Question 1: How frequently do you access medical evidence from a textbook?;
Question 2: How frequently to you access medical evidence in general?;
Question 3: How frequently do you access medical evidence on the Internet (excluding Medline and Cochrane Reviews)?;
Question 4: How frequently do you access medical evidence from original research papers?;
Question 5: How frequently do you access medical evidence from the Cochrane database?;
Question 6: How frequently do you access medical evidence from the CINAHL database?;
Question 7: How frequently do you access medical evidence from secondary sources such as the Evidence-Based Nursing Journal, DARE, CATs?

Figure 4 displays variations in mean responses to questions within the "Future Use of Evidence-Based Practice" category. The overall average score for this domain rose from 34.1 to 36.2.

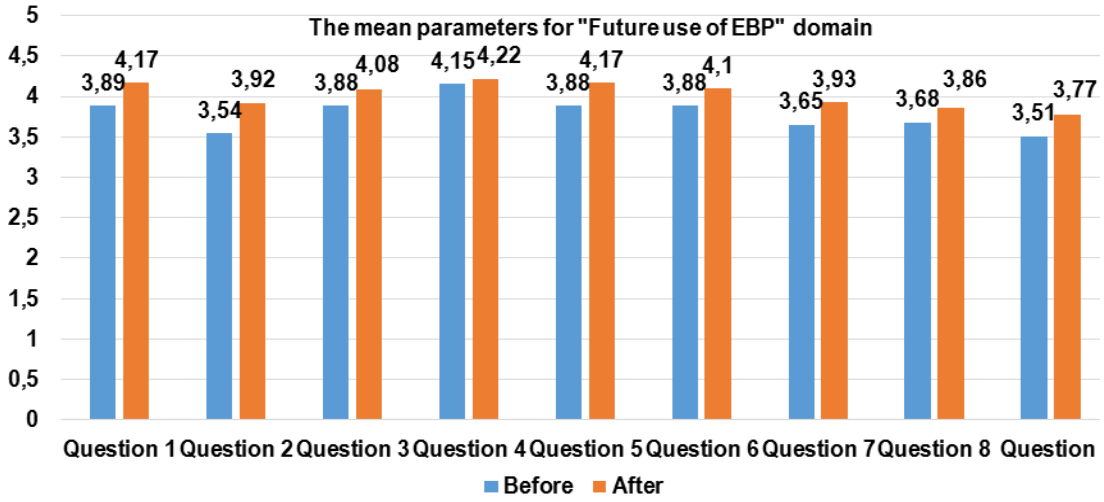

Figure 4. The average scores for questions within the "Future use of EBP" domain.

Question 1: Compared to 1 year ago, how useful do you believe evidence-based medicine will be in your future practice as a doctor?;
Question 2: Compared to 1 year ago, how willing are you to practice evidence-based medicine as a doctor in the future?;
Question 3: You personally appreciate the advantages of practicing evidence-based medicine;
Question 4: Evidence-based medicine should be an integral part of the undergraduate medical curriculum;
Question 5: Compared to 1 year ago, how much do you support the principles of evidence-based medicine?;
Question 6: Compared to 1 year ago, how much do you support lifelong learning using evidence-based medicine techniques?;
Question 7: How much do you consider the practice of evidence-based medicine a routine part of your learning?;
Question 8: How much has the practice of evidence-based medicine changed the way you learn?;
Question 9: How easy or difficult has it been for you to practice evidence-based medicine as a medical student in the last month?

Discussion

The aim of our study was to assess the core domains of understanding, mindset, and application concerning EBN, with the subsequent formulation of an action plan aimed at optimizing academic support.

A total of 145 students enrolled in the academic bachelor's program in Nursing at NJSC SMU participated in this study. The research utilized the questionnaire titled "Assessing teaching and learning of evidence-based practice through assessment of knowledge, attitudes, and behavior" to explore various domains including knowledge, attitudes, personal application, and expected future utilization of EBN [12]. The survey was administered twice: prior to and following training in the "Evidence-based nursing" course. The findings revealed statistically significant alterations across all domains - knowledge, attitudes, personal application, and expected future utilization of EBN - among undergraduate students subsequent to completing the EBN course.

The English-language literature provides comprehensive information regarding the efficacy of diverse teaching methodologies concerning EBN among students, educators, and nurse practitioners. While the interventions and assessment tools employed vary across studies, a majority have demonstrated considerable effectiveness. A randomized cluster study involving 51 instructors across various disciplines, teaching Nursing students, underscored the efficacy of a 30-hour evidence-based training program in enhancing pertinent competencies even 5 and 10 months post-training. The intervention group participants (n=27) exhibited a statistically significant enhancement in knowledge, attitudes, practice, and EBN competence in contrast to the control group (n=24), with both groups being comparable in terms of gender, age, expertise, and experience [7]. Finnish researchers conducted a randomized controlled trial involving 80 emergency room nurses across two hospitals. The participants were evenly divided into two groups: the main group underwent EBN training featuring extensive interactive sessions with a teacher, while the control group pursued self-directed knowledge and skill development. The researchers adopted a comprehensive assessment approach utilizing the Upton&Upon questionnaire and scales to evaluate beliefs, along with implementing Melnyk EBN [26,20]. Structured interviews were conducted with the participants thrice - immediately post-graduation, after 6 months, and after 12 months. Upon completion of the training sessions, notable statistical variances emerged in attitudes towards EBN, self-efficacy, and behavioral patterns between the groups. The interactive learning format group witnessed significant improvements across all parameters after six months, although these distinctions dissipated compared to the control group by the 12-month mark [15]. A cross-sectional study conducted among primary health care nurses in Greece identified key factors contributing to the successful implementation and application of EBN principles in daily practice. The study utilized an EBN questionnaire developed by Upton & Upon in 2006 [14]. The survey results indicated that the participants exhibited a high level of expertise and competencies associated with EBN, maintained a positive attitude towards EBN, and demonstrated a moderate level of application of EBN principles in their practice. Of the 164 surveyed participants, 42.7% held a master's degree or a PhD, and this subgroup displayed the highest level of commitment to EBN principles. Furthermore, nurses possessing proficiency in

evidence searching and clinical guideline utilization were more effective in conveying information to patients regarding the management of chronic diseases [1]. Another Greek study examined 473 professionally licensed nurses working in authorized organizations, utilizing a 35-question questionnaire to evaluate competency in EBN. The study employed multivariate regression analysis, which revealed that various factors such as possessing a master's degree, advanced academic writing skills, employment at a university clinic, and proficiency in computer skills significantly and positively influenced all domains of EBN (i.e., knowledge, skills, attitude, and application) [24]. These findings align with data derived from a cross-sectional study conducted in Malawi. In this study, the authors utilized the Upton & Upton questionnaire to assess EBN knowledge, skills, and utilization among 183 obstetricians. Correlation analysis demonstrated that higher scores in the practical application domain of EBN were significantly associated with educational qualifications and prior research experience. A positive attitude towards EBN was statistically correlated with practical work experience. Notably, there were no significant connections observed between adherence to EBN principles and gender identity or professional position [14]. Henceforth, the aforementioned examples of assessing the efficacy of EBN instruction highlight numerous factors that can impact its effectiveness: the extent of academic and research competencies, prior research exposure, clinical proficiency and professional expertise, alongside the methodology employed during instructional sessions.

Several strategies exist to enhance the learning experience of EBN. Emphasis should be placed on interactive teaching approaches that foster critical thinking, facilitate a deeper grasp of research methodologies and designs, and enhance information literacy skills. Proven methods for teaching EBN include problem-oriented learning, the inverted classroom model, virtual simulations of real-world scenarios, conducting master classes, engaging students in small group work, facilitating debates and discussions, and spotlighting oral presentations of student research outcomes within clinical contexts [11, 18, 21]. Training integrated into direct clinical processes significantly contributes to comprehending EBN. This approach facilitates the linkage between research findings and practical application, enabling a deeper analysis of healthcare system needs. Students engage in presenting on specific clinical issues and participate in clinical research, thereby gaining practical experience. Some scholars argue that for successful implementation of EBN principles, students must grasp the strategy and algorithm for translating scientific evidence into everyday practice. Moreover, clinical settings offer opportunities to identify role models among experienced colleagues who have effectively applied their expertise in professional endeavors [4, 5]. A significant impediment to advancing new knowledge may arise from a lack of proficiency in information and communication technologies (ICT), crucial for efficient information retrieval. Apart from acquiring skills in searching for scientific literature and evidence, students may encounter challenges in evaluating the information's quality and interpreting its relevance. To address these issues, ongoing training and assistance from instructors and librarians are essential in fostering a commitment to EBN within academic and clinical settings. Furthermore, some nurses may face obstacles in accessing information despite possessing requisite skills, often due to restrictions on databases and subscription-based publications [17,19]. Researchers in the field of Nursing education have not yet reached a consensus regarding the most suitable year within the academic program for introducing EBN or determining the ideal duration of EBN training. Similarly, there is no unified agreement on the number of hours necessary to attain proficiency in the skills and knowledge required for EBP. While some researchers advocate for introducing EBN concepts during the first year of study, others argue that EBN training should occur in senior years. Alternatively, some institutions opt for continuous EBN training throughout the entire educational curriculum. Furthermore, certain authors emphasize the importance of revisiting EBN topics covered in earlier courses during clinical practice experiences [27].

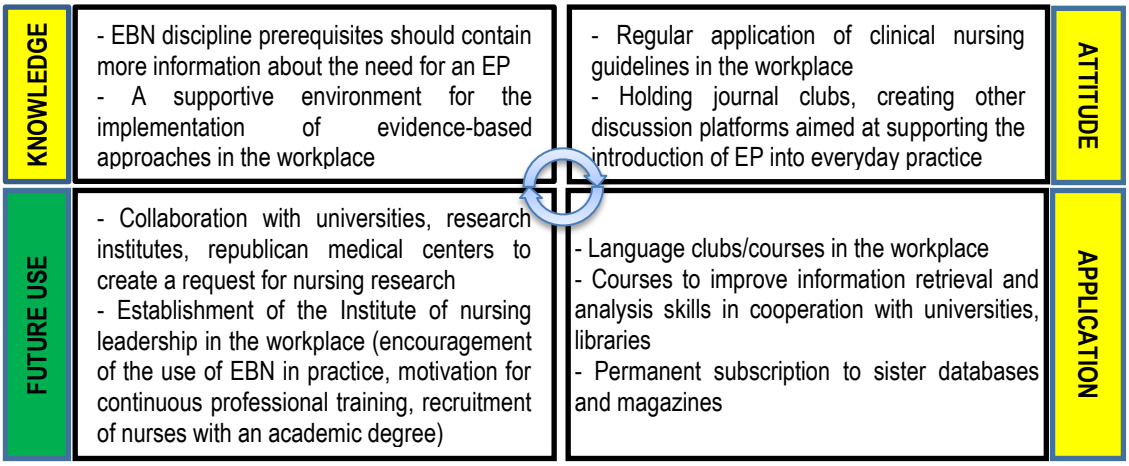

Figure 5. A model for optimizing the teaching of EBN among students of academic bachelor's degree.

Through our research, we have formulated models aimed at enhancing the efficacy of EBN training for the cohorts under study. It is noteworthy that our assessment of EBN training effectiveness encompassed an evaluation of four domains both before and after completing the discipline. Respondents rated their agreement with specific statements or the frequency of applying knowledge and skills, using a scale from 1 to 5, with higher values

indicating stronger agreement or more frequent application ("Knowledge," "Attitude," "Future Use"), or from "several times a year" to "every day" ("Personal Application in Practice"). Based on the post-training changes in average scores for each domain, we categorized the risk level as follows: above four out of five – low risk (green), above three out of five – moderate risk (yellow), above two out of five – high risk (red). Notably, among undergraduate students, the "Future Use" domain exhibited the most substantial improvement, moving into the low-risk category, while the remaining three domains remained within the moderate-risk zone. Figure 5 illustrates the risk level within individual EBN domains and proposes strategies for enhancing them specifically for undergraduate students.

Thus, educational and medical institutions need to provide greater support and assistance in mastering knowledge and skills in the utilization of evidence-supported information resources (constant access to databases, mastering algorithms for their correct use, taking English language courses) among students of the academic Bachelor of Nursing.

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