Evaluation of Evidence-Based Practice Competency among Greek Undergraduate Nursing Students

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Article

Evaluation of Evidence-Based Practice Competency among Greek Undergraduate Nursing Students

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Abstract: Several years now, the global scientific community has accepted and recognized the importance of Evidence-based practice (EBP) for Nursing science. The main factor for the implementation of EBP is the competence of undergraduate Nursing students towards EBP, so that they as active nurses be ready for its application in their clinical practice, in order to provide better care for their patients. The aim of the present study is to examine the level of evidence-based practice competency evaluated with the self-reported EBP-COQ questionnaire. A quantitative study based on cross-sectional design was conducted from February to June 2022 in a convenience sample of Greek undergraduate nursing students. The Evidence-Based Practice Competence Questionnaire (EBP-COQ) and a questionnaire on undergraduate students' gender, age, academic year, and training in the field of research were used. The SPSS 26.0 program was used to perform descriptive, bivariate and multivariate analyses. A total of 175 undergraduate students participated at the Hellenic University Nursing (Greece), specifically from the 2nd and 3rd academic year. The mean score of EBP-COQ for nursing undergraduate students was 3.03 ± 0.26, indicating moderate EBP. Among the EBP-COQ dimensions, the mean scores were obtained 3.03 ± 0.32 for Attitude toward EBP, 3.01 ± 0.49 for Skills in EBP, and 3.03 ± 0.49 for Knowledge in EBP. They were not found significant differences among participants' mean EBP-COQ scores regarding gender ($p = 0.766$), age ($p = 0.400$), academic year ($p = 0.153$), and training in the field of Research Methodology ($p = 0.538$). It appears that the level of readiness towards EBP is mediocre between undergraduate nursing students at a university in Greece. Therefore, it is necessary to carry out new studies in the future, so that there is a correct approach of all the elements that contribute to the readiness of Nursing undergraduate students regarding EBP.

Keywords: evidence-based practice; nursing; undergraduate nursing students; competency

1. Introduction

Evidence-Based Practice (EBP) is now characterized as essential in order to ensure health benefits in patients. Increasing research is focusing on the subject and imple-mentation of EBP by nurses, who are the most important part found in the health sys-tem [1,2]. There has already been talk about the EBP even before the 1970s. Since 1970, its recognition has been obvious and fully accepted. The EBP is a great means of de-veloping nursing care, which serves, as well as improving health spending by enhanc-ing the quality of provided health services by increasing the professional satisfaction of nurses [3–5]. One of the most

important abilities in a nurse to practice high-quality care provisions safely and responsibly, is the competence of EBP [2,5,6]. Nonetheless, studies show that it still exists in higher education and particularly, in the undergraduate level of teaching about the EBP, which is a problem for the

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undergraduate student's competence on the subject of EBP. The competence concerning the EBP makes it difficult for a large number of nurses because they are unable to assess and critically evaluate a piece of information as there was no undergraduate guidance on the subject of the EBP [3,6–8].

The educational training of undergraduate nursing students in the adoption and implementation of the EBP is not considered easy to implement [9–11]. The complexity that is prevalent is great, although many would find it an easy puzzle to solve. The evolution of nursing curricula is essential not only in the teaching of the implementation and adoption of the EBP, but also in all other courses, as the development of studies and of the new data is increasingly changing [2,5,12]. The planning of the EBP program must be done with deferential care and to focus on undergraduate students' skills and in the teaching concept in general. It is believed that the proper teaching method of the EBP to educational institutions' undergraduate nursing students, is a focal point for the competence of these students in the field of the EBP and must be able to fully develop their critical thinking and perception [9,12,13]. In order to achieve the proper guidance and education of undergraduate nursing students in the field of EBP, there needs to be the appropriate infrastructure, technological equipment and all the knowledge material required to integrate an EBP course into the curriculum and also to assist other courses related to EBP. If this is accomplished then it will be possible to study the degree of effectiveness of these courses, i.e., whether or not the level of knowledge and skills of undergraduate nursing students regarding EBP has improved [2,5,9].

The curricula always have room for development, even more so when it comes to courses related to EBP [14]. However, ambiguity is identified in the efficiency of teaching methods regarding the adoption of EBP by undergraduate students. Although some development in implementation is recognized, their level of knowledge and competence towards EBP remains unstable [3,7]. The nurses seem to recognize their shortcomings in the level of knowledge about EBP and thus refrain from, due to difficulty, in evaluating and criticizing research material [7,15]. That is why there is constant vigilance by researchers for the training and competence of nurses in EBP strategies since the beginning of the undergraduate level of their studies [7,16]. As mentioned above, most active nurses have not received a university education regarding EBP before its model is fully accepted, so this is another negative aspect of nurses' competence regarding EBP [5,15]. It is auspicious, however that there is a reference to the possibility of improving the relationship between the academic and the clinical field of Nursing regarding the competence of the undergraduate students on the EBP for subsequent correct nursing practices [6,9,15]. Therefore, the primary pursuit of Nursing must remain, the thorough education of the undergraduate students for the benefit of the patient, in other words, providing the highest quality in the provision of health care, which in turn results in a well-structured health system [2,16,17]. This study is considered important in order to provide a better opinion about the competence of undergraduate nursing students regarding EBP so that their nursing ability can be improved in the future.

2. Materials and Methods

2.1. Study Design and Sample

This descriptive-analytical study was based on cross-sectional analysis which examined the level evidence-based practice competence and its relationship with demographic variables. This study was conducted from February to June 2022 in a convenience sample of undergraduate nursing students at the Hellenic Mediterranean University (HMU) in Greece.

2.2. Data Collection Tools

The data collection instrument was a two-section standard questionnaire. The first section of the questionnaire encompassed demographic information (including the biological sex, age, academic year, and training in the field of Research Methodology), and the second section contained the standard Greek version EBP-COQ (Evidence-Based Practice Competence Questionnaire), translated and validated into Greek from Spanish-language [18,19]. EBP-COQ specifically developed to evaluate the self-perceived level of evidence-based practice competence among nursing students. The

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questionnaire consists of 25 items, which are organized in a three-factor structure. Factor 1: Attitude toward EBP (13 items), Factor 2: Skills in EBP (6 items), and Factor 3: Knowledge in EBP (6 items). All items of the instrument are scored on a Likert-type scale of 1–5, with a higher score indicating more self-perceived competence in EBP, greater self-perception of knowledge and skills in EBP, and more positive attitudes towards the EBP.

2.3. Ethical Consideration

The present study was approved and examined by the Hellenic Mediterranean University Ethics Committee (no. 29/18.01.21) Moreover, the present study was conducted in accordance with the new General Data Protection Regulation (GDPR) (EU 2016/679) on sensitive personal data. The required licenses were obtained by the respective services prior to installation. The data obtained were anonymous, and their usage was limited to the survey and the principal researcher's access to them. The participants gave their written agreement after being properly informed that the procedure was anonymous, that their personal data and replies would be used solely for research reasons, and that they may leave at any given moment. Besides, the permission to use the questionnaire was obtained from the original author of the Greek version of the instrument.

2.4. Data Analysis

The statistical analysis was performed using SPSS version 25.0 (SPSS Inc., Chicago, IL, USA). Continuous variables were expressed as mean ± standard deviation and categorical variables were expressed as numbers (percentages). A T-test was used to detect the difference in the mean score of the EBP-COQ scale and subscales regarding biological sex and academic year. The ANOVA test was used to investigate the difference between the mean scores of EBP-COQ scale and subscales regarding their age category and level of training in the field of Research Methodology level. To investigate the correlation between EBP-COQ subscales, Pearson's correlation coefficient was used. Normality of the variables was tested by the Shapiro-Wilks test. For all tests, statistical differences were determined to be significant at $p < 0.05$.

3. Results

One hundred seventy-five questionnaires were distributed (58 students of the 2nd and 117 undergraduate students of the 3rd academic year), of which 175 completed questionnaires were returned (a response rate of 100%). Most of the participants (57.33%) were in the 21-22 year old age group (67.43%) and in the 3rd academic year (66.86%). Moreover, 82.29% of the participants were females, and the rest males. Most of the respondents had <40 hours training in the field of Research Methodology. Table 1 shows the frequency distribution of the participants' information.

Table 1. Frequency distribution of participants' information (n = 300).

		Count	Column N %
Biological sex	Female	144	82.29%
	Male	31	17.71%
Age	18-20	31	17.71%
	21-22	118	67.43%
	23-24	12	6.86%
	>24	14	8.00%
Academic year	2nd	58	33.14%
	3rd	117	66.86%
Training in the field of Research Methodology	None	17	9.71%
	<40 hours	138	78.86%
	40-150 hours	20	11.43%

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As presented in Table 2, the mean score of EBP-COQ for nursing students was 3.03 ± 0.26, indicating moderate EBP. Among the EBP-COQ dimensions, the mean scores were obtained 3.03 ± 0.32 for Attitude toward EBP, 3.01 ± 0.49 for Skills in EBP, and 3.03 ± 0.49 for Knowledge in EBP.

Table 2. Mean and standard deviation of participants' EBP-COQ.

	Score Domain	Mean	Standard Deviation
EBP-COQ	1-5	3.03	0.26
Attitude toward EBP	1-5	3.03	0.32
Skills in EBP	1-5	3.01	0.49
Knowledge in EBP	1-5	3.03	0.49

The mean total EBP-CQ score in women (3.02 ± 0.26) did not differ significantly from that of men (3.04 ± 0.26), p = 0.766. Also, no significant difference was found between the age groups 18-20 (2.95 ± 0.21), 21-22 (3.04 ± 0.27), 23-24 (3.02 ± 0.27), and >24 (3.03 ± 0.23), p = 0.400. Regarding the academic year, no significant difference was found between second-year (2.99 ± 0.24) and third-year students (3.04 ± 0.26), p = 0.153. Finally, based on training in Research Methodology, no significant difference was found between students with no training at all (2.97 ± 0.28), those with <40 hours of training (3.03 ± 0.25), and those with 40-150 hours of training (3.07 ± 0.32), p = 0.538. (Table 3)

Table 3. Relationship between EBP-COQ regarding participants' information.

		EBP-COQ		
		Mean	Standard Deviation	Test, p-value
Gender	Female	3.02	0.26	t(173) = -0.298, p = 0.766
	Male	3.04	0.26	
Age	18-20	2.95	0.21	F (3, 171) = 0.987, p = 0.400
	21-22	3.04	0.27	
	23-24	3.02	0.27	
	>24	3.03	0.23	
Academic year	2nd	2.99	0.24	t(173) = -1.436, p = 0.153
	3rd	3.04	0.26	
Training in the field of Research Methodology	None	2.97	0.28	F (2, 172) = 0.622, p = 0.538
	<40 hours	3.03	0.25	
	40-150 hours	3.07	0.32	

The average total score of EBP-CQ-Attitude among women (3.03 ± 0.32) did not show a statistically significant difference compared to men (3.07 ± 0.33), with a p-value of 0.451. Similarly, there was no significant variance observed among different age groups: 18-20 (2.96 ± 0.36), 21-22 (3.04 ± 0.32), 23-24 (3.06 ± 0.30), and >24 (3.11 ± 0.30), with a p-value of 0.464. In terms of academic year, no significant difference was detected between second-year (2.99 ± 0.32) and third-year students (3.05 ± 0.32), with a p-value of 0.258. Lastly, when considering training in Research Methodology, no significant difference was found between students without any training (3.14 ± 0.28), those with less than 40 hours of training (3.02 ± 0.33), and those with 40-150 hours of training (3.07 ± 0.32), with a p-value of 0.297. (Table 4)

Table 4. Relationship between Attitude toward EBP subscale regarding participants' information.

		Attitude toward EBP		
		Mean	Standard Deviation	Test, p-value
Gender	Female	3.03	0.32	t(173) = -0.755, p = 0.451
	Male	3.07	0.33	
Age	18-20	2.96	0.36	F (3, 171) = 0.858, p = 0.464

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	21-22	3.04	0.32	
	23-24	3.06	0.30	
	>24	3.11	0.30	
Academic year	2nd	2.99	0.32	t(173) = -1.136, p = 0.258
	3rd	3.05	0.32	
Training in the field of Research Methodology	None	3.14	0.28	F (2, 172) = 1.223, p = 0.297
	<40 hours	3.02	0.33	
	40-150 hours	3.07	0.32	

The mean total score of EBP-CQ-Skills in females (3.01 ± 0.50) did not show a statistically significant difference compared to males (3.01 ± 0.45), with a p-value of 0.992. Similarly, there was no significant variance observed among different age groups: 18-20 (2.99 ± 0.35), 21-22 (3.02 ± 0.50), 23-24 (2.87 ± 0.54), and >24 (3.16 ± 0.57), with a p-value of 0.494. In terms of academic year, no significant difference was detected between second-year (2.99 ± 0.46) and third-year students (3.03 ± 0.50), with a p-value of 0.623. Lastly, concerning training in Research Methodology, no significant difference was found between students without any training (2.88 ± 0.45), those with less than 40 hours of training (3.01 ± 0.48), and those with 40-150 hours of training (3.15 ± 0.54), with a p-value of 0.246. (Table 5)

Table 5. Relationship between Skills in EBP subscale regarding participants' information.

		Skills in EBP		
		Mean	Standard Deviation	Test, p-value
Gender	Female	3.01	0.50	t(173) = 0.010, p = 0.992
	Male	3.01	0.45	
Age	18-20	2.99	0.35	F (3, 171) = 0.803, p = 0.494
	21-22	3.02	0.50	
	23-24	2.87	0.54	
	>24	3.16	0.57	
Academic year	2nd	2.99	0.46	t(173) = -0.493, p = 0.623
	3rd	3.03	0.50	
Training in the field of Research Methodology	None	2.88	0.45	F (2, 172) = 1.415, p = 0.246
	<40 hours	3.01	0.48	
	40-150 hours	3.15	0.54	

The average total score of EBP-CQ-Knowledge in women (3.03 ± 0.50) does not show a significant difference from that of men (3.03 ± 0.44), p = 0.984. Additionally, there was no significant difference found between the age groups 18-20 (2.92 ± 0.44), 21-22 (3.07 ± 0.50), 23-24 (3.12 ± 0.50), and >24 (2.83 ± 0.51), p = 0.163. In terms of academic year, no significant difference was found between second-year (2.97 ± 0.43) and third-year students (3.05 ± 0.52), p = 0.314. Lastly, based on training in Research Methodology, no significant difference was found between students with no training at all (2.89 ± 0.46), those with <40 hours of training (3.05 ± 0.48), and those with 40-150 hours of training (2.98 ± 0.59), p = 0.393. (Table 6)

Table 6. Relationship between Knowledge in EBP subscale regarding participants' information.

		Knowledge in EBP		
		Mean	Standard Deviation	Test, p-value
Gender	Female	3.03	0.50	t(173) = 0.020, p = 0.984
	Male	3.03	0.44	
Age	18-20	2.92	0.44	F (3, 171) = 1.728, p = 0.163
	21-22	3.07	0.50	
	23-24	3.12	0.50	

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	>24	2.83	0.51	
Academic year	2nd	2.97	0.43	t(173) = -1.009, p = 0.314
	3rd	3.05	0.52	
Training in the field of Research Methodology	None	2.89	0.46	F (2, 172) = 0.938, p = 0.393
	<40 hours	3.05	0.48	
	40-150 hours	2.98	0.59	

The findings did not reveal a significant correlation between EBP-COQ subscales (Table 7). Specifically, no strong correlation was found between the Attitude subscale and the Skills (p = 0.483) and Knowledge (p = 0.487) subscales, nor between the Skills and Knowledge subscales (p = 0.219).

Table 7. Correlation between EBP-COQ subscales.

		Attitude toward EBP	Skills in EBP	Knowledge in EBP
Attitude toward EBP	Pearson Correlation	1	-0.053	-0.053
	Sig. (2-tailed)		0.483	0.487
	N	175	175	175
Skills in EBP	Pearson Correlation	-0.053	1	0.093
	Sig. (2-tailed)	0.483		0.219
	N	175	175	175
Knowledge in EBP	Pearson Correlation	-0.053	0.093	1
	Sig. (2-tailed)	0.487	0.219	
	N	175	175	175

4. Discussion

It is important to mention that the EBP-COQ tool which was used in its Greek version of our study, has been weighted and translated in many countries of the world. Ruzafa et al. who was the creator of the questionnaire reports that the Cronbach's alpha index for the entire questionnaire was 0.888 (0.940 for Attitude toward EBP, 0.756 for Skills in EBP and 0.800 for Knowledge in EBP). Patelarou et al. also reports that the Cronbach's alpha index is calculated at 0.811 for all items (0.858 for Attitude toward EBP, 0.789 for Skills in EBP and 0.777 for EBP Perceptions) [18,19] Similar results have been found by other validation studies of EBP-COQ, such as the study of Nursing and Midwifery of Kermanshah and Ilam University of Medical Sciences in Iran, where Cronbach's alpha was 0.7. In the study by Wang et al. where the EBP-COQ was weighted and translated into English, Cronbach's alpha ' for the entire instrument was 0.83 [20,21]. In the study by Finotto et al. for the weighting of the EBP-COQ in Italian, Cronbach's alpha has a value of 0.892 [22]. Additionally, in countries such as Turkey where the EBP-COQ was validated and Yildiz et al. created the Turkish version, Cronbach's alpha was found to be 0.826 (0.850 for Attitude toward EBP, 0.516 for Skills in EBP and 0.587 for Knowledge in EBP) [23]. A close value to Cronbach's alpha was also the validation of the EBP-COQ where it was carried out on nursing students in Colombia, its value there was found at 0.89, while a similar value was also found in a study carried out in Poland and the EBP-COQ validated for nursing students, the value of Cronbach's alpha in this case was 0.856 for the entire questionnaire [24,25]. Therefore, based on all the above we can say that the tool we used in this research has a high degree of reliability, which is very positive for our study.

The present study highlighted important data on the competency of the nursing undergraduate students regarding EBP in a Greek university. As mentioned in the three main aspects (attitude towards EBP, skills and knowledge) that describe the level of undergraduate nursing students regarding EBP, the level of undergraduate students is characterized as average and this means a lot about their preparedness in the field of EBP. In more detail, the main findings of the present study regarding the competence of the undergraduate nursing students, had mean scores of 3.03 ± 0.32 for Attitude toward EBP, 3.01 ± 0.49 for skills in EBP, and 3.03 ± 0.49 for Knowledge in EBP.

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Similar research findings exist in the bibliography and in other studies. For instance, the knowledge of Oman undergraduate university nursing students' regarding the EBP had a value of 3.41 (SD = 0.66), their skills a value of 3.62 (SD = 0.51) and their attitudes a value of, 3.41 (SD = 0.68) [26]. Additionally, the results from another study that was conducted on nursing staudents at a Spanish university seem to be more encouraging regarding their increased knowledge value, which is 4.23 (SD =0.35), their skills at 3.93 (SD = 0.36) and their attitude at 4.34 (SD =0.29) [27]. However, there is also the case that the results of an equivalent study in which there was a slight increase in the values of attitude being 3.33, while the values of the skills (2.75) and knowledge (2.82) were lower than the findings of the present study [5]. Similar findings are reported in other studies, where undergraduate nursing students do not have a high level in these 3 aspects. For this reason, the need for proper guidance and encouragement from the teachers to undergraduate students regarding the subject of EBP is highlighted [28]. In other studies, we find that there is a connection between the reduced competence of the undergraduate students and the inadequate provision of patient care. So, the level of nursing care is judged according to the competence of the undergraduate students providing EBP [29–31].

At the same time, the lack of skills, especially in bibliography search and critical evaluation of data, reduces the undergraduate students' competence percentage regarding EBP, regardless of whether they themselves have a high percentage of understanding regarding the necessity of applying EBP in Nursing and confidence in the subject of EBP [31,32]. Moreover, it is mentioned that even undergraduate students who have some knowledge about EBP, consider that they have a lack in that knowledge, not enough time and a negative attitude [33]. Due to the reduced competence of undergraduate students towards EBP, it is of utter importance to educate undergraduate Nursing students regarding the strengthening of critical thinking, proper bibliography search techniques, and evaluation of research data [11,34,35]. Having EBP courses in the academic curriculum will improve undergraduate students' EBP competence in knowledge, attitude and skills towards EBP [5]. It would be very important to improve the EBP learning techniques and methods in the future. One such example is the effort to implement the EBP e-Toolkit in the EBP course, for the education of undergraduate nursing students in Greece.

It is evident from the specific study and from other ones that are related to the competency of the undergraduate students on the EBP field we are concerned but at the same time in need of change. That requires a lot of effort for the Nursing universities to overcome emerging barriers and increasingly integrate EBP into the curricula as the needs for evidence-based clinical patient care will continue to grow. At this point it is worth mentioning that the relatively modest level of the undergraduate nursing students in EBP competence is largely due to the strong attachment that dominates the educational and clinical field regarding the anachronistic and traditional concepts of applying nursing practices [36–38]. This fact significantly discourages undergraduate nursing students from adopting and implementing EBP and as a result, clinical practices are not based on the indicators with any negative implications this entails. Many studies point out that addressing this issue needs strategy, i.e., with dynamic interventions in the field of EBP in the education programs of undergraduate nursing students. An example of such intervention could be the creation of a separate course in the study cycle, exclusive for EBP. This will be an important solution and will greatly improve the competency levels of undergraduate nursing students, as they will inquire specialized knowledge and skills in the field of EBP, therefore they will have a greater performance later on in making and implementing their clinical decisions [36–40].

At this point, reference should be made about the strengths and limitations of the present study, as it is not multicentered. However, we should mention that this is the first cross sectional study in Greece of this kind of sample i.e., undergraduate nursing studies which are about the students' level of competency in the field of EBP. For this reason, there were more limitations regarding this type of bibliography as mentioned above, that there is currently no other such study regarding the teaching of EBP, so there was no data for analyzing and comparing corresponding studies involving Greek university students. At the same time however, this is a motivation to carry out similar studies in Greek universities as the present study was conducted in just one nursing university in Greece.

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5. Conclusion

The present research was carried out in order to evaluate the readiness of undergraduate Nursing students at a Greek university. A sample of undergraduate Nursing students was used and with the help of the psychometric tool EBP-COQ, important data was obtained about the attitude, knowledge and skills of the undergraduate students regarding the EBP. From the resulting research data, it appears that the level of readiness towards EBP is mediocre. Therefore, it is necessary to carry out new studies in the future, so that there is a correct approach of all the elements that contribute to the readiness of each undergraduate nursing student regarding EBP, because the greater the readiness in EBP care is, the better the quality of patient care.

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Institutional Review Board Statement: The present study was approved by the Hellenic Mediterranean University Ethics Committee (Nursing Department's Executive Board no. 29/18.01.21). Respondents were informed via an information sheet about the purpose of the research, asking them to give their full consent for participation. The research respects the dignity of the participants, protects their privacy and anonymity, and ensures an adequate level of confidentiality. The data were only used for the purposes of the present study.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

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Conflicts of Interest: The authors declare no conflict of interest.

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