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Evidence-Based Practice Competence Questionnaire for Nursing Students: A Validation Study in Albania

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Abstract

Evidence-based practice (EBP) is a key element among nurses to ensure high-quality, advanced care in contemporary healthcare systems. Nursing students, as future healthcare professionals, must develop competence in EBP. However, in the Albanian context, there is a lack of instruments to assess EBP competence among undergraduate nursing students.

This study aimed to translate, culturally adapt and validate the Evidence-Based Practice Competence Questionnaire (EBP-COQ) into Albanian, and to test its psychometric properties.

A cross-sectional validation study was conducted using a convenience sample of undergraduate Albanian nursing students. The translated EBP-COQ was tested for reliability and construct validity. Construct validity was initially assessed using an exploratory factor analysis (EFA), and internal consistency was assessed using Cronbach's alpha and McDonald's omega.

A total of 357 nursing students participated, with a mean age of 22.25 years and 82.6% female. The internal consistency of the Albanian EBP-COQ was high (Cronbach's alpha = 0.866; McDonald's omega = 0.855). Exploratory factor analysis identified three factors: Attitude toward EBP, Perceptions toward EBP, and Knowledge and Skills in EBP. The three factors together explained 44% of the total variance, comparable to values reported in previous validation studies of the EBP-COQ. All three factors showed statistically significant positive correlations with overall EBP competence. This study has some limitations, including data collection from a single university and the absence of test-retest reliability assessment, which may limit the generalizability of the findings. Conclusions: The Albanian EBP-COQ shows strong validity and reliability for assessing attitudes, skills, and knowledge in EBP among nursing populations in this geographic area. This scale can be used to assess baseline competence

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and guide educators and researchers in designing strategies to strengthen EBP. Additionally, it may be used to evaluate the effectiveness of EBP-related courses or workshops, monitor changes in students' competence over time, and identify factors associated with EBP competence.

Keywords: *evidence-based practice; nursing; validation; students; validity*

Introduction

Nurses face several challenges in delivering high-quality patient care. One key element for nurses to ensure safe and advanced care is their competence in evidence-based practice (EBP) [1,2]. EBP is a process in which healthcare personnel's clinical expertise is combined with the most up-to-date research evidence and patient values and preferences to achieve the best clinical outcomes [3]. According to the literature, although nurses have a positive attitude toward EBP, they lack several skills and knowledge related to it. Additionally, their inability to adopt EBP in their clinical routine was underscored [4-7]. Recognising the significance of evaluating nurses' EBP skills, attitudes, and knowledge, a Delphi study identified 24 core EBP competencies for nurses and synthesised them into a research tool to achieve this goal [8].

EBP is a beneficial approach for all participants in healthcare, first for patients and second for nurses, as it ensures optimal patient outcomes and boosts nurses' self-confidence and satisfaction [9]. Additionally, EBP has been positively correlated not only with quality improvement but also with reduced clinical errors among nurses. Apart from those, there is evidence that healthcare costs can be reduced through the provision of more effective care, which is achieved by the adoption of EBP by medical and nursing staff [10-12].

Nursing students, as future healthcare professionals, need to be competent in EBP to meet the requirements of modern healthcare systems.

However, it is widely recognised that adopting and implementing EBP in clinical practice confronts obstacles, including nurses' educational backgrounds and their knowledge, attitudes, and skills regarding EBP [1,13]. Academia plays a crucial role in developing educational strategies to address these barriers and prepare upskilled nursing students to embrace EBP in their future profession [14,15]. A descriptive study across six European countries, including 162 faculties and 276 nursing programs, found that most have not yet integrated EBP as an independent course within their curricula [15]. Therefore, teaching EBP early in their studies should be a primary goal, enhancing nursing students' self-efficacy and critical thinking skills [15,16].

A review of the scientific literature identified 34 instruments exploring EBP competence among healthcare workers as of 2023, with the majority implemented among nurses [17]. Regarding research tools to measure nursing students' knowledge, attitudes, and skills in EBP, over the last few decades, the Evidence-Based Practice Competence Questionnaire (EBP-COQ) has gained traction, as it has been used in numerous studies [18]. It has been translated and validated into Turkish [19], Polish [20], English [21], Persian [22], and Greek [23]. Additionally, the EBP-COQ has been validated and culturally adapted in Colombian nursing students [24].

A recent systematic review and meta-analysis underscores the lack of published studies in European countries, especially in the Balkan region [25]. In addition, Komuhangi et al.'s systematic review (2025) contributed evidence on nursing students' EBP competence, but only one study was from Central Europe [26]. These findings highlight the lack of published studies regarding undergraduate nursing students' EBP competence in the Albanian regional context. This evidence gap is further compounded by the absence of valid, reliable research tools to assess EBP competence in this setting. This fact remains an obstacle to illuminating the current situation in Albanian nursing students regarding EBP. Therefore, the primary aim of the current study is to

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translate and validate the Albanian version of EBP-COQ, testing its psychometric properties to address the existing knowledge gap regarding EBP.

Materials and Methods

Design and Setting

An observational validation study to test the psychometric properties of the tool was performed at the Faculty of Health of the University of Vlora "Ismail Qemali" in Albania. The university offers a three-year bachelor's degree program in nursing. Data was collected using a convenience sampling method. Although this approach facilitated access to the target population, it may have introduced potential selection bias, as these participants may not be representative of the wider population. Consequently, the generalizability of the findings should be interpreted with caution. Future investigations using random sampling methods could further enhance the representativeness of the results.

The data collection was conducted from January to April 2022 among a sample of undergraduate nursing students. A total of 1100 undergraduate nursing students were approached to participate in the present study, completing an online questionnaire distributed via their official university email addresses. In the present study, test-retest reliability was not assessed due to the study's methodological design and practical constraints related to recontacting participants for a second measurement (online questionnaire administration).

The questionnaire

The participants completed a self-reported questionnaire divided into two parts. In the first part of the tool, nursing students are invited to complete demographic information including age, gender, academic year, possession of other bachelor's or master's degrees and education in research methodology. The second section of the questionnaire encompassed the EBP-COQ. The tool was first designed and validated in Spanish

by Ruzafa-Martinez et al. (2013) and explores nursing students' attitudes, skills and knowledge towards Evidence-Based Practice (EBP), combined with their English proficiency, previous education in EBP, methodology, statistics, and computer skills [18]. The EBP_COQ consists of 25 items organised in 3 dimensions: 1. Attitude toward EBP, 2. Skills in EBP and 3. Knowledge in EBP. Each item of the tool is assessed using a 5-point Likert scale from 1 (totally disagree) to 5 (totally agree). The subscale "Attitude toward EBP" consists of 13 items exploring nursing students' perceptions and the possible benefits of implementing EBP in their future clinical routine. The second subscale, using 6 items, assesses nursing students' skills in EBP, while the third subscale, "Knowledge in EBP," investigates their knowledge of research methodology applied to EBP. The EBP_COQ is applicable and friendly to student populations due to its short completion time and ease of formation.

Translation

The initial questionnaire was developed in Spanish. The questionnaire translation from Spanish to Albanian was conducted by two individuals who independently translated the original Spanish version. Both were fluent in Spanish and Albanian. After this phase, a reconciled translation (1st reconciliation version) was produced by a third party, representing a consensus between the two versions. Then, this agreed-upon version was translated into Spanish (back translation) by a two-language speaker (whose native language was Albanian), a qualified translator who was unfamiliar with the original questionnaire. An expert panel then reviewed all versions of the questionnaire to ensure equivalence between the original and translated versions, producing a semi-final Albanian version of the EBP-COQ.

After the cross-cultural adaptations of the semi-final version of Albanian EBP-COQ, the ten nursing students from the target population completed the derived version of the tool to assess its face validity [27]. Feedback indicated that all

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items were clearly understood and culturally relevant. The nursing students reported no difficulties understanding the questions, and none of the items was identified as confusing or inappropriate.

Statistical Analysis

The software IBM® SPSS® version 29 (IBM Corp., Released 2023. IBM SPSS Statistics for Windows, Version 29.0.2.0, Armonk, NY: IBM Corp) was used to statistically analyse the data. The level of statistical significance was set at 0.05. Exploratory factor analysis was conducted using Principal Component Analysis with the Equamax Rotation Method. A KMO value above 0.60 is considered acceptable for proceeding with factor analysis [28]. The final model factor retention was based on specified criteria: (i) Scree plot analysis, retaining factors appearing before the inflection point (elbow) in the curve [29]; (ii) a minimum of three items with factor loadings ≥ 0.40 should be comprised in each factor [30]; (iii) eigenvalues greater than one were included according to the Kaiser criterion analysis [31]. Cronbach's alpha and McDonald's omega were evaluated to assess the internal consistency of the scale. Discriminant validity was assessed using a t-test.

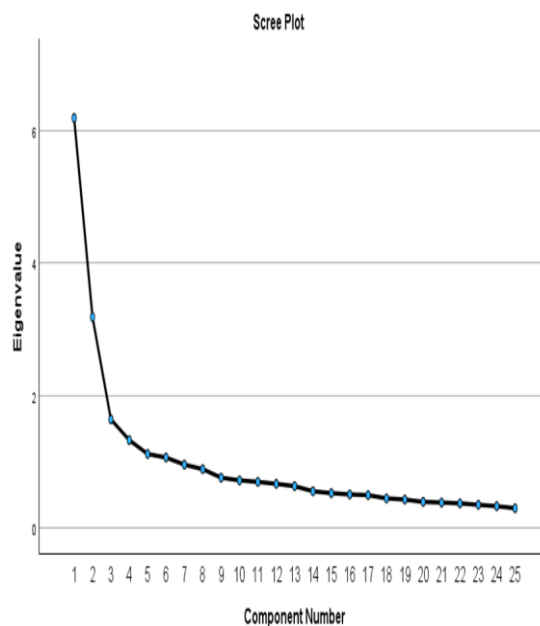
Results

The sample comprised 357 undergraduate students enrolled in this study. The sample consisted of 295 female students (82.6%) 60 male participants (16.8%), and two students (0.6%) who did not specify their gender. The mean age of the participants was 22.25 years with a standard deviation of 7.36, ranging from 18 to 53 years. Most students were enrolled in the 1st to 3rd semesters (190 students, 53.2%), whereas 167 students (46.8%) were in the 4th to 9th semesters. The translated questionnaire was initially piloted with a small, representative sample of 10 nursing students. Participants indicated that the items were clear, comprehensible, and culturally appropriate. No ambiguities or misunderstandings

were identified, and none of the items was perceived as problematic. Given the absence of issues requiring modification, it was determined that the translation successfully maintained the conceptual integrity of the original scale.

Construct validity was estimated via a principal component factor analysis. The Kaiser-Meyer-Olkin (KMO) sample adequacy analysis was 0.865. At the same time, Bartlett's test of sphericity yielded a value of 2923.39 ($p < 0.001$). All items demonstrated adequate Measures of Sampling Adequacy (MSA), exceeding the acceptable cut-off of 0.5. Following the Equamax rotation, three components were extracted, each with eigenvalues greater than 1 (4.33, 2.63, and 4.07, respectively), accounting for a cumulative variance of 44.10%. Based on the scree plot (Fig.1), the Kaiser criterion (eigenvalues > 1) [31], and the minimum acceptable explained variance (exceeding 50%), the optimal number of factors was determined to be three.

Figure 1. Scree plot of exploratory factor analysis



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Few differences were observed when comparing the results with those of the original Spanish version, as the item loadings on the extracted components did not follow the pattern reported by the original developers. Specifically, the initial Attitude toward EBP scale was divided into two subscales: Attitude toward EBP and Perceptions toward EBP. Conversely, the original subscales of Skills and Knowledge in EBP were combined into a single subscale, labelled Skills & Knowledge in EBP.

Tables 1 and 2 present the descriptive statistics for each item, including the mean and standard deviation, along with exploratory factor analysis (EFA) indices such as Measures of Sampling Adequacy (MSA), factor loadings, and results

from reliability analysis (Cronbach's alpha). Items A9, A10, A11, H2, H3, H5, C3, and C5 reflected negatively worded statements and were therefore reverse-scored so that lower values consistently indicated higher levels of the component. In the EFA, negative factor loadings indicate an inverse relationship between the item and the latent factor; after reverse scoring, the direction of these items aligns with the interpretation of the factor. Cronbach's alpha ranged from 0.707 to 0.844, while McDonald's omega was estimated between 0.708 and 0.840 in the three subscales of the tool. Subsequently, the internal consistency for the overall scale was calculated as 0.866 (Cronbach's alpha) and 0.855 (McDonald's omega), respectively.

Table 1. Summary of responses for the Albanian version of the Evidence-Based Practice Competence Questionnaire (EBP-COQ)

	Totally Disagree		Disagree		Neither Agree nor Disagree		Agree		Totally Agree	
	<i>n</i>	%	<i>N</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
A1	1	0.3	5	1.4	57	16.0	242	67.8	52	14.6
A2	0	0.0	27	7.6	126	35.3	189	52.9	15	4.2
A3	0	0.0	8	2.2	91	25.5	218	61.1	40	11.2
A4	2	0.6	13	3.6	133	37.3	177	49.6	32	9.0
A5	1	0.3	8	2.2	108	30.3	205	57.4	35	9.8
A6	3	0.8	15	4.2	115	32.2	182	51.0	42	11.8
A7	0	0.0	8	2.2	75	21.0	225	63.0	49	13.7
A8	2	0.6	17	4.8	140	39.2	174	48.7	24	6.7
A9	101	28.3	146	40.9	72	20.2	30	8.4	8	2.2
A10	54	15.1	149	41.7	125	35.0	27	7.6	2	0.6
A11	65	18.2	126	35.3	133	37.3	29	8.1	4	1.1
A12	9	2.5	14	3.9	98	27.5	197	55.2	39	10.9
A13	6	1.7	9	2.5	91	25.6	191	53.7	59	16.6
H1	12	3.4	70	19.6	141	39.5	120	33.6	14	3.9
H2	28	7.8	124	34.7	125	35.0	79	22.1	1	0.3
H3	29	8.1	132	37.0	131	36.7	61	17.1	4	1.1
H4	2	0.6	38	10.6	110	30.8	183	51.3	24	6.7
H5	22	6.2	132	37.0	127	35.6	70	19.6	6	1.7
H6	4	1.1	51	14.3	128	35.9	158	44.3	16	4.5
C1	18	5.0	86	24.1	117	32.8	120	33.6	16	4.5
C2	26	7.3	97	27.2	120	33.6	100	28.0	14	3.9
C3	35	9.8	128	35.9	110	30.8	75	21.0	9	2.5
C4	10	2.8	87	24.4	140	39.2	110	30.8	10	2.8
C5	21	5.9	77	21.6	166	46.5	83	23.2	10	2.8
C6	18	5.0	73	20.4	146	40.9	92	25.8	28	7.8

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Table 2. Explanatory factor analysis for the Albanian version of the Evidence-Based Practice Competence Questionnaire (EBP-COQ)

Item	Mean $\pm$ SD	MSA	Factor loadings	Cronbach's alpha / McDonalds' omega
Attitude towards EBP				0.820 / 0.818
A1	3.95 $\pm$ 0.62	0.888	0.639	
A3	3.81 $\pm$ 0.65	0.891	0.714	
A4	3.63 $\pm$ 0.72	0.898	0.579	
A5	3.74 $\pm$ 0.67	0.877	0.709	
A6	3.69 $\pm$ 0.77	0.896	0.723	
A7	3.88 $\pm$ 0.65	0.866	0.763	
A12	3.68 $\pm$ 0.82	0.834	0.553	
Perceptions towards EBP				0.707 / 0.708
A2	3.54 $\pm$ 0.70	0.864	0.330	
A8	3.56 $\pm$ 0.71	0.856	0.527	
A9	2.15 $\pm$ 1.00	0.821	-0.729	
A10	2.37 $\pm$ 0.85	0.797	-0.642	
A11	2.39 $\pm$ 0.91	0.797	-0.582	
A13	3.81 $\pm$ 0.80	0.845	0.431	
Skills & Knowledge in EBP				0.844 / 0.840
H1	3.15 $\pm$ 0.90	0.882	0.615	
H2	2.72 $\pm$ 0.90	0.850	-0.543	
H3	2.66 $\pm$ 0.89	0.854	-0.539	
H4	3.53 $\pm$ 0.79	0.837	0.416	
H5	2.74 $\pm$ 0.90	0.885	-0.474	
H6	3.37 $\pm$ 0.82	0.910	0.554	
C1	3.08 $\pm$ 0.98	0.868	0.716	
C2	2.94 $\pm$ 1.00	0.858	0.741	
C3	2.71 $\pm$ 0.99	0.882	-0.604	
C4	3.06 $\pm$ 0.88	0.888	0.619	
C5	2.96 $\pm$ 0.89	0.851	-0.487	
C6	3.11 $\pm$ 0.98	0.878	0.637	

The discriminant validity analysis of the Albanian version of the EBP-COQ (EBP-COQ_ALB) is summarized in Table 3 according to gender and prior education in EBP or research methods. No significant differences were observed between male and female participants regarding their attitudes towards EBP ($p = 0.618$) or perceptions of EBP ($p = 0.073$). However, EBP skills and knowledge of EBP showed statistically significant differences, with higher scores among female students ($p = 0.042$). Regarding EBP education, participants with more than one hour of prior EBP education demonstrated significantly higher scores in attitude ($p = 0.002$), perceptions ($p = 0.043$), and skills and knowledge ($p < 0.001$) compared to those with one hour or less of prior

education. Similarly, students with more than one hour of education in research methods scored significantly higher in attitude ($p = 0.033$) and skills and knowledge ($p < 0.001$). In contrast, perceptions towards EBP did not differ significantly between the groups ($p = 0.404$).

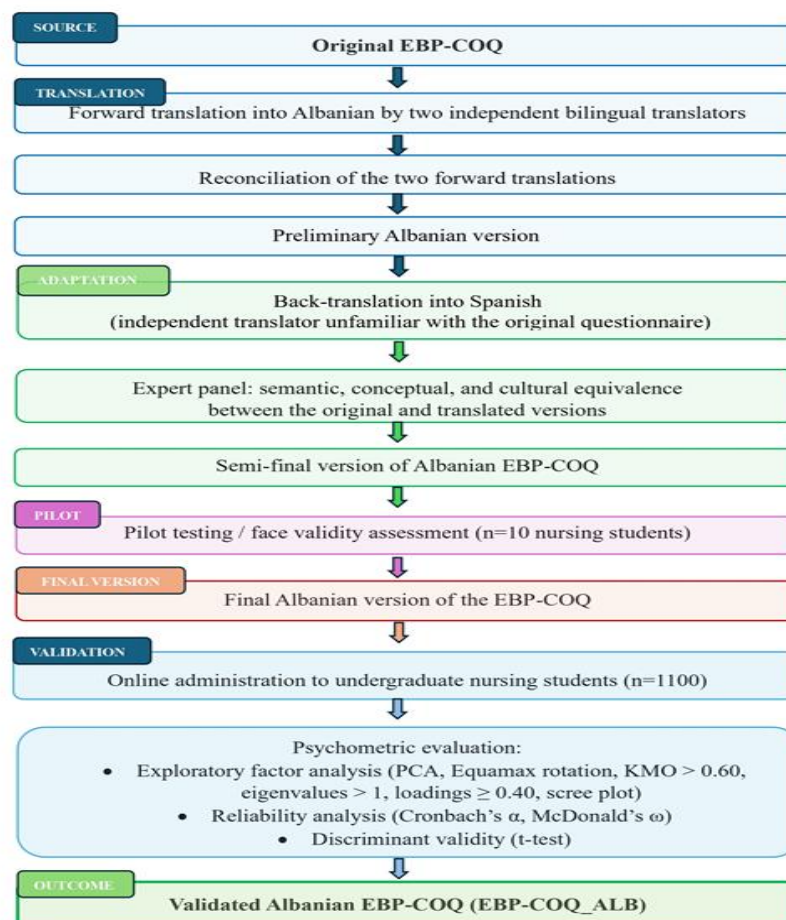
The translation and validation process of the Albanian version of the tool are presented in Figure 2.

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Table 3. Discriminant validity of the Evidence-Based Practice Competence Questionnaire (EBP-COQ) according to gender; education in EBP factor analysis for the Albanian version

	Attitude towards EBP	Perceptions towards EBP	Skills & Knowledge in EBP
Gender			
Male	26.57 ± 3.63	21.30 ± 3.35	36.87 ± 6.13
Female	26.33 ± 3.37	22.11 ± 3.16	38.78 ± 6.73
P	0.618	0.073	0.042
Effect size (95% CI)	0.07 (-0.21, 0.35)	-0.25 (-0.53, 0.02)	-0.29 (-0.57, -0.01)
Education in EBP			
1 hour	25.90 ± 3.34	21.72 ± 3.17	36.86 ± 6.68
>1 hour	26.95 ± 3.41	22.30 ± 3.22	40.35 ± 6.13
P	0.002	0.043	<0.001
Effect size (95% CI)	-0.31 (-0.52, -0.10)	-0.18 (-0.39, 0.03)	-0.54 (-0.75, -0.33)
Education in Research Methods			
1 hour	25.83 ± 3.35	21.78 ± 3.07	35.29 ± 6.39
>1 hour	26.65 ± 3.41	22.09 ± 3.27	39.99 ± 6.24
P	0.033	0.404	<0.001
Effect size (95% CI)	-0.24 (-0.46, -0.02)	-0.09 (-0.32, 0.13)	-0.75 (-0.97, -0.52)

Figure 2. Flowchart of the translation and psychometric validation process



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Discussion

The EBP-COQ Albanian version (EBP-COQ_ALB) is a research tool designed to investigate EBP competence among Albanian nursing students. It consists of 25 items that precisely and rapidly explore the attitudes, perceptions, skills, and knowledge of the target group. The main purpose of the study was to assess the psychometric characteristics of the EBP-COQ Albanian version, as established by the original authors, Ruzafa-Martinez et al. (2013) [18]. The psychometric properties of the EBP-COQ_ALB were tested. The instrument's estimated psychometric adequacy indicates that it can effectively capture the different dimensions of EBP competence among Albanian nursing students, supporting its suitability for academic research.

The internal consistency of the entire tool was calculated, yielding Cronbach's alpha and McDonald's omega of 0.866 and 0.855, respectively. These measurements highlight that the EBP-COQ_ALB demonstrates acceptable reliability, consistent with the original authors' report (Cronbach's alpha 0.880) [18]. Furthermore, these results align with most published validation surveys, in which EBP-COQ's Cronbach's alpha ranges from 0.700 (Persian version) to 0.880 (original Spanish version), with the majority exceeding 0.810 [18-24]. In particular, Cronbach's alpha values were 0.888, 0.856, 0.830, and 0.811 for the Spanish, Polish, English, and Greek versions of the EBP_COQ, respectively [18,20,21,23]. Additional studies documented values of 0.700 for the Iranian version, 0.826 for the Turkish version, and 0.890 for the Colombian version [19,22,24]. Despite these slight variations, evidence supports the view that the EBP_COQ is a valid, cross-culturally adaptable, and reliable tool that can be confidently applied across diverse nursing student populations worldwide. Additionally, the high reliability coefficients observed in the Albanian version suggest that the scale item measure the same underlying constructs of

EBP competence. This indicates that the questionnaire provides robust evidence when applied to the Albanian region.

The construct validity tests underscored some variation between the original Spanish version and the one proposed in this study. Although the initial tool consists of three factors, the EBP-COQ_ALB that emerged is more familiar with the Greek version [18,23]. The factors derived in both EBP-COQ_GR and EBP-COQ_ALB were again three, but they differed from those in the Spanish EBP-COQ. Specifically, the extracted components exhibited a distinct pattern from that reported by the developers, as the original subscale Attitude toward EBP was divided into two subscales, Attitude towards EBP (7 items) and Perceptions towards EBP (6 items), and the original subscales Skills and Knowledge were combined into one subscale named Skills and Knowledge in EBP (12 items) [18]. It is noteworthy that the EBP-COQ differs across versions, as factor loadings vary due to the unique characteristics of each study population [18-24]. Moreover, such differences may reflect cultural, educational, or contextual characteristics of the population in which the instrument is applied.

Furthermore, the discriminant validity analysis of the EBP-COQ_ALB revealed positive correlations between sex and Skills and Knowledge, whereas no correlations were observed between sex and Attitude and Perceptions toward EBP. Additionally, strong positive correlations were observed between Albanian students educated in EBP and their perceptions, attitudes, skills, and knowledge regarding EBP. These findings align with those derived from the EBP-COQ_GR study but differ from those in the Spanish study [18,23]. Moreover, although high correlations were found between Albanian nursing students educated in research methods and their attitudes, skills, and knowledge regarding EBP, this relationship was not confirmed in the Greek nursing population, where students educated in research methods showed a positive correlation with their perceptions of EBP [18]. This situation underscores the need to identify the factors that

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affect and shape EBP readiness and competence in each context. Moreover, the results underline the important role of education in EBP. At the same time, they emphasise that associated factors, such as demographic, cultural, and educational factors, may influence students' readiness to apply EBP in clinical practice. These findings suggest that nursing educators in Albania can use the EBP-COQ_ALB to identify potential gaps in students' EBP competence and to design targeted courses and curriculum improvements.

Limitations & Practical Implications

It is important to acknowledge the limitations of this study. Data were collected from a single university in Albania, which may limit the generalizability of the findings. Therefore, the study should be replicated with a larger sample of nursing students from multiple universities across Albania to confirm and extend these results. Additionally, the test-retest reliability method was not employed to assess consistency over time due to the survey's methodological design and the practical limitations in inviting participants to complete the questionnaire again online. Although the extracted factors explained 44% of the total variance, this level is considered acceptable in social science research, where complex behavioral constructs are often examined, and lower variance thresholds may still provide meaningful explanatory power.

Despite the limitations, it is important to note that this is the first attempt to translate and validate the EBP_COQ into Albanian, thereby establishing steps for implementing the tool among more nursing students in the Albanian context to assess their EBP competence. To date, no previously published papers have addressed the readiness and competence of Albanian nursing students in EBP. The current tool aims to bridge the existing knowledge gap among this specific population. Implementing the EBP-COQ_ALB will illuminate the current situation of Albanian nursing students, and the results can be used to tailor more EBP-targeted strategies, educational programs, and interventions in their curriculum.

Moreover, the results can guide not only curriculum development but also the integration of EBP principles into clinical training, promoting evidence-based decision-making in nursing practice across Albania.

Conclusion

In conclusion, the EBP-COQ_ALB is a valid and reliable research tool for effectively assessing attitudes, perceptions, skills, and knowledge in EBP among students enrolled in Albanian universities. The Albanian version of the EBP-COQ is a high-quality scale comparable to the original Spanish version and can be used repeatedly in the Albanian context. Additionally, the implementation of the EBP-COQ_ALB will serve not only as the cornerstone for assessing EBP competence among Albanian nursing students but also as a benchmark for future research in the nursing profession.

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