

ORIGINAL PAPER
ΕΡΕΥΝΗΤΙΚΗ ΕΡΓΑΣΙΑ

**Cross-cultural adaptation and validation
of the “Evidence-Based Practice
Questionnaire” in Greek**

OBJECTIVE To translate and validate the Greek version of the Evidence-Based Practice Questionnaire (EBPQ). **METHOD** A cross-sectional study was conducted with a convenience sample of 164 nurses and physicians working in the primary health care sector. The original version of the EBPQ was translated into Greek and we estimated internal reliability, content validity, and construct validity. We conducted factor analysis in order to estimate the structure of the questionnaire. A pilot study was conducted to assess the reliability of the EBPQ. **RESULTS** Our three-factor model explained 65% of the variance and confirmed the original version of the EBPQ: (a) practice, (b) knowledge/skills, and (c) attitudes towards evidence-based practice. The Cronbach's alpha internal consistency coefficient for the entire questionnaire was 0.91, indicating excellent internal reliability. Spearman's correlation coefficient for all items in test-retest assessment was >0.7 ($p < 0.001$). **CONCLUSIONS** The EBPQ was found to be a short, valid and reliable tool to assess the practice, attitude and knowledge/skills associated with evidence-based practice in Greek health professionals.

ARCHIVES OF HELLENIC MEDICINE 2023, 40(4):517–522
ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2023, 40(4):517–522

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Πολιτισμική προσαρμογή
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του «ερωτηματολογίου για την
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Περίληψη στο τέλος του άρθρου

Key words

Evidence-based practice
questionnaire
Greece
Healthcare professionals
Translation
Validation

Submitted 26.7.2022

Accepted 3.9.2022

The origin of the meaning of evidence in the patients' health care goes back to the time of the era of Florence Nightingale.^{1,2} However, the term “evidence-based practice” (EBP) was first adopted by the scientific community in the '90s to denote the value of using evidence in health care decision-making and the quality of care improvement.³

EBP has brought significant benefits to healthcare professionals and patients, e.g. reduction of healthcare costs,^{4,5}

improvement of healthcare outcomes,^{6,7} improvement of patients⁸ and nurse satisfaction,⁹ as well as increase of prestige and trust in nurses.^{4,7} Also, the adoption of EBP by healthcare professionals seems to be related to the strengthening of their professional profile, increasing their credibility, responsibility and trust in their person.¹⁰

Development and implementation of tools that evaluate the EBP behavior of healthcare professionals is a crucial

* The present article expresses the opinions of the author and does not reflect the views of the Hellenic Ministry of Health or any other entity

issue. In general, there are 160 different questionnaires estimating EBP behavior evaluation among healthcare workers.¹¹ Moreover, 24 tools are used in nursing practice to measure nurses' knowledge, skills, practices, and attitudes towards EBP, as well as looking for barriers to its adoption and implementation.¹²

To the best of our knowledge, only one tool (Evidence-Based Practice Readiness Survey, EBPRS) to assess the use of evidence among Greek healthcare workers has already been validated.^{13,14} This tool assesses the readiness of healthcare professionals for the implementation of the EBP and consists of 74 items. Thus, we decided to translate and validate another tool (Evidence-Based Practice Questionnaire, EBPQ) that is shorter and easier than EBPRS. The EBPQ has proven to be the tool with the highest validity and it is the easiest tool to use in practical terms.¹²

The EBPQ was developed by Upton and Upton (2006) and is proposed as a self-report measure to assess healthcare professionals' perceptions of EBP.¹⁵ It has been translated and validated in more than 10 languages,¹⁶ including Spanish,¹⁷ Japanese¹⁸ and Korean.¹⁹ The EBPQ provides a valid measurement of EBP to healthcare professionals both in primary health care and hospitals. At the same time, EBPQ enables cultural comparisons and between participants comparisons. Its major advantage is the small number of questions, which makes the EBPQ an easy-to-use and valuable tool for measuring EBP. Additionally, the measurement of the three subscales of EBP (use, attitude, knowledge/skills of EBP) gives a comprehensive and global approach to the evaluation of the implementation of EBP.¹²

Therefore, the purpose of this study was to translate and validate the "EBPQ" in Greek.

MATERIAL AND METHOD

Study design

A cross-sectional study was conducted with a convenience sample of 164 healthcare professionals working in primary health care. The questionnaires were disseminated by social media and completed via an electronic platform between February 2022 and April 2022. Study population included physicians and nurses since they constitute the majority of workers in primary health care.

Questionnaires

We collected demographic and occupational data of participants (gender, age, level of education, profession, years of service in primary health care). Also, we used the EBPQ that consists of 24 items and three subscales; the attitudes towards EBP subscale (4

items), the knowledge/skills subscale (14 items) and practice subscale (6 items).¹⁵ Items are rated on a 7-point Likert scale. A higher score indicates a more positive attitude towards EBP, practice, or knowledge/skills of EBP.

Translation

Initially, written permission for use of the EBPQ was obtained from the developers of the questionnaire. Then forward translation into Greek was done by two independent bilingual translators. The members of the research team compared the translations and arrived at the Greek version of the questionnaire. This was followed by the backward translation of the Greek version of the EBPQ by two independent bilingual translators. The final English-translated version of the questionnaire was compared with the original. Then, the researchers discussed issues of accuracy and finally concluded on the required corrections of the Greek questionnaire.²⁰

Cultural adaptation process

To examine the understanding of the items (face validity), the questionnaire was given to 7 community nurses. Participants were asked to express their opinions about their understanding of the questions. Their comments were discussed by the research team and some were incorporated into the final version while others were not because they changed the meaning of the items. A pilot study was then conducted with 22 participants, physicians and nurses, to assess the reliability through the test-retest method,²¹ and to determine whether the questionnaire was clear and culturally appropriate. Finally, the translation and cultural adaptation process was evaluated and completed.²⁰

Statistics

Categorical variables are presented with absolute (n) and relative frequencies (%), and quantitative variables are presented with mean, standard deviation, median, minimum value, and maximum value. The Kolmogorov-Smirnov test was used to test the normal distribution of the quantitative variables, and it was found that the quantitative variables followed the normal distribution. The construct validity of the Greek version of the EBPQ was investigated with factor analysis (varimax rotation method). The loadings of the questionnaire items that were >0.40 were considered acceptable, as well as the eigenvalues of the scales that were >1. The Kaiser-Meyer-Olkin criterion was used to test sample size adequacy with values >0.7 being acceptable. Bartlett's statistical test was applied to test the reliability of correlations between questionnaire items with values <0.05 being acceptable. Also, we used Spearman's correlation coefficient to estimate the reliability of the EBPQ through the test-retest method in the pilot study.²¹ Internal consistency of the EBPQ was assessed with Cronbach's alpha coefficient. The two-tailed level of statistical significance was set equal to 0.05. Data analysis was performed with the Statistical Package for Social Sciences (IBM SPSS), version 21.0.

Ethics

Permission to conduct the research was obtained from the Institutional Committee of the University of West Attica. Participants were informed about the study's aim and gave their consent to complete the questionnaire.

RESULTS

A sum of 164 health professionals participated in the present study. The mean age of the participants was 41.6 years, 81.1% were women and 42.7% had postgraduate studies (MSc or PhD). Most of them were nurses (76.8%). The mean years of clinical experience were 9.1 years.

Pilot study with a test-retest method revealed an excellent reliability of the EBPO. In particular, Spearman's correlation coefficient for all items in test-retest assessment was >0.7 ($p < 0.001$). Also, Cronbach's alpha coefficients on the first and second measurement were 0.82 and 0.84, respectively, which indicates excellent reliability of the questionnaire.

Kaiser-Meyer-Olkin value was 0.88 and p-value for Bartlett test was <0.001 , indicating that the sample size was adequate to perform factor analysis. Factor analysis revealed that the Greek version of the EBPO confirmed the three-factor model of the original version of the EBPO; practice of EBP (Q1–Q6), attitudes towards EBP (Q7–Q10), and knowledge/skills associated with EBP (Q11–Q24). The three-factor model explained 65% of the variance. Cronbach's alpha coefficient for the entire EBPO was 0.91, for the "practice" factor was 0.95, for the "attitudes" factor was 0.72, and for the "knowledge/skills" factor was 0.92 (tab. 1). Therefore, the internal consistency of the questionnaire was excellent.

The mean score for the "practice" factor was 4.5 indicating a moderate level of practice. The mean score for the "attitudes" factor was 5.5 and the mean score for the "knowledge/skills" factor was 5.5, indicating a high level of attitudes and knowledge/skills associated with EBP (tab. 2).

DISCUSSION

The purpose of the present study was to translate into Greek and to test the psychometric properties of the EBPO. The EBPO has been translated into many languages. In its cultural adaptation to the Greek language, it was found to be a highly reliable and valid tool that can be established to measure the practice, attitudes, and knowledge/skills about EBP among Greek nurses and physicians. Practices,

knowledge, and attitudes towards EBP have been measured using different tools in different countries and different professions.²² Researchers, in each case, highlight the strengths of the tools they choose to use in their study. However, validating a tool in different languages and cultural settings has the advantage of creating a common language among researchers and facilitating comparisons with the same tool across different cultures.

In the present research, Cronbach's alpha for the total questionnaire was 0.91, which means excellent internal consistency. Similarly, Cronbach's alpha >0.9 was also found in other questionnaire validation studies.^{18,23–25} A lower Cronbach's alpha value was also found in the attitudes towards the EBP subscale (0.72) compared to the practice (0.95) and knowledge/skills (0.92) subscales. Similarly, low Cronbach's alpha values of the attitude subscale compared to the other subscales were also found in previous validation studies.^{15,18,19,25,26} This finding may be related to the type of the four questions of the specific subscale. The questions constitute a kind of dipole that may have made it difficult for the participants to understand their meanings. The need for further improvement of the attitude subscale is also pointed out by the authors of the original questionnaire.²⁷

In the factor analysis, it was found that all 24 questions of the EBPO create the following three-factor model: attitudes towards EBP, practice of EBP, and knowledge/skills associated with EBP. Differences in the number of questions and factors were found in studies with different populations. For example, the Portuguese version includes 20 questions²⁶ and the Spanish version 19 questions.¹⁷ The Japanese version consists of 18 questions and includes 4 factors,¹⁸ while in the Persian version²³ four factors were also emerged.

Item analysis of the Greek EBPO showed that all items were correlated. The three-factor model explains 65% of the questionnaire's variability. Similar variability interpretation values are also observed in previous studies, e.g. 61.8% in the original study.¹⁵

The present study had some limitations. Particularly, the study sample was small with an imbalance in participants' gender (more females), participants' profession (more nurses), and consisted only of health professionals working in primary health care. Therefore, there is a limitation in the generalization of the results. The questionnaire was self-administered and information bias was probable in our study. Further studies in larger samples and different populations are needed to confirm the psychometric properties of the questionnaire.

In conclusion, the EBPO was found to be a reliable and

Table 1. Factor analysis of the 24 items of the EBPO.

Item	Factors		
	1	2	3
	Practice	Attitudes	Knowledge/ skills
Ερώτηση 1: Διατυπώσατε ένα ερώτημα, το οποίο αποτέλεσε την αρχή της διαδικασίας για την κάλυψη αυτού του κενού στις γνώσεις σας	0.85		
Ερώτηση 2: Μόλις διατυπώσατε το ερώτημα, εντοπίσατε τη σχετική ένδειξη στη βιβλιογραφία	0.89		
Ερώτηση 3: Αξιολογήσατε με κριτικό τρόπο, βάσει καθορισμένων κριτηρίων, οποιοδήποτε άρθρο βρήκατε στη βιβλιογραφία	0.86		
Ερώτηση 4: Εφαρμόσατε την ένδειξη που βρήκατε στην κλινική σας πράξη	0.90		
Ερώτηση 5: Αξιολογήσατε τα αποτελέσματα της πρακτικής σας	0.88		
Ερώτηση 6: Μοιραστήκατε αυτές τις πληροφορίες με συναδέλφους	0.88		
Ερώτηση 7: Ο φόρτος εργασίας μου είναι πολύ μεγάλος για να είμαι πάντα ενήμερος(η) για όλες τις νέες ενδείξεις		0.42	
Ερώτηση 8: Δυσανασχετώ που αμφισβητούν την κλινική μου πρακτική		0.66	
Ερώτηση 9: Η πρακτική βασισμένη σε ενδείξεις είναι χάσιμο χρόνου		0.78	
Ερώτηση 10: Είμαι σταθερός(ή) σε δοκιμασμένες και αξιόπιστες μεθόδους αντί να αλλάζω σε οτιδήποτε νέο		0.50	
Ερώτηση 11: Δεξιότητες έρευνας			0.65
Ερώτηση 12: Δεξιότητες χρήσης ηλεκτρονικού υπολογιστή			0.64
Ερώτηση 13: Δεξιότητες παρακολούθησης και επανεξέτασης της πρακτικής σας			0.69
Ερώτηση 14: Μετατροπή των αναγκών σας για πληροφορίες σε ερευνητικό ερώτημα			0.62
Ερώτηση 15: Επίγνωση των κύριων τύπων και πηγών των πληροφοριών			0.74
Ερώτηση 16: Ικανότητα αναγνώρισης των κενών στην επαγγελματική σας πρακτική			0.43
Ερώτηση 17: Γνώση του τρόπου αναζήτησης της ένδειξης στο διαδίκτυο			0.72
Ερώτηση 18: Ικανότητα κριτικής ανάλυσης των ενδείξεων σε σχέση με καθορισμένα πρότυπα			0.71
Ερώτηση 19: Ικανότητα προσδιορισμού της εγκυρότητας (κοντά στην αλήθεια) της ένδειξης			0.78
Ερώτηση 20: Ικανότητα προσδιορισμού της χρησιμότητας (κλινικά εφαρμόσιμη) της ένδειξης			0.65
Ερώτηση 21: Ικανότητα εφαρμογής των πληροφοριών σε συγκεκριμένες περιπτώσεις			0.54
Ερώτηση 22: Ανταλλαγή ιδεών και πληροφοριών με συναδέλφους			0.83
Ερώτηση 23: Διάδοση νέων ιδεών, σχετικά με τη φροντίδα, στους συναδέλφους			0.85
Ερώτηση 24: Ικανότητα αξιολόγησης της δικής σας πρακτικής			0.41
Cronbach's alpha coefficient	0.95	0.72	0.92

Values express factors loadings

EBPQ: Evidence-Based Practice Questionnaire

Table 2. Descriptive statistics of the three factors of the EBPO.

Factor	Mean	Standard deviation	Median	Minimum value	Maximum value
Practice of evidence-based practice	4.5	1.5	4.8	1	7
Attitudes towards evidence-based practice	5.5	0.9	5.5	2	7
Knowledge/skills associated with evidence-based practice	5.5	0.7	6	3.6	6.9

EBPQ: Evidence-Based Practice Questionnaire

valid tool to measure practice, attitudes, and knowledge/skills associated with EBP among healthcare professionals in Greece. The three-factor model of the questionnaire con-

firms the original version. The small number of questions makes it an easy-to-use and valuable tool to measure EBP. Additionally, EBPQ would be an important tool in the tool-

kit of Greek researchers because it broadens the methods of measuring behaviors towards EBP, as well as it can be combined with other tools to investigate EBP relations with professional practice and organizational culture.

ΠΕΡΙΛΗΨΗ

Πολιτισμική προσαρμογή και εγκυροποίηση στα Ελληνικά του «ερωτηματολογίου για την πρακτική-βασισμένη σε ενδείξεις»

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Αρχεία Ελληνικής Ιατρικής 2023, 40(4):517–522

ΣΚΟΠΟΣ Η μετάφραση και η εγκυροποίηση στην ελληνική γλώσσα του «ερωτηματολογίου για την πρακτική-βασισμένη σε ενδείξεις» (Evidence-Based Practice Questionnaire, EBPQ). **ΥΛΙΚΟ-ΜΕΘΟΔΟΣ** Διεξήχθη μια συγχρονική μελέτη με δείγμα ευκολίας στην οποία συμμετείχαν 164 νοσηλευτές και ιατροί που εργάζονταν στην πρωτοβάθμια φροντίδα υγείας. Η πρωτότυπη έκδοση του ερωτηματολογίου EBPQ μεταφράστηκε στα Ελληνικά και αξιολογήθηκαν η εσωτερική αξιοπιστία, η εγκυρότητα δομής και η εγκυρότητα περιεχομένου. Διενεργήθηκε ανάλυση παραγόντων για τον έλεγχο της δομής του ερωτηματολογίου καθώς και πιλοτική μελέτη για την αξιολόγηση της αξιοπιστίας του EBPQ. **ΑΠΟΤΕΛΕΣΜΑΤΑ** Το μοντέλο τριών παραγόντων, (α) της πρακτικής, (β) των γνώσεων/δεξιοτήτων και (γ) των στάσεων προς την πρακτική-βασισμένη σε ενδείξεις, εξήγησε το 65% της διακύμανσης και επιβεβαίωσε την πρωτότυπη έκδοση του EBPQ. Ο συντελεστής εσωτερικής συνέπειας Cronbach's α ήταν 0,91 για ολόκληρο το ερωτηματολόγιο και δήλωσε εξαιρετική εσωτερική αξιοπιστία. Ο συντελεστής Spearman's correlation coefficient στον έλεγχο test-retest ήταν >0,7 (p<0,001) για όλα τα στοιχεία του ερωτηματολογίου. **ΣΥΜΠΕΡΑΣΜΑΤΑ** Το ερωτηματολόγιο EBPQ είναι ένα σύντομο, έγκυρο και αξιόπιστο εργαλείο για την εκτίμηση της πρακτικής, των γνώσεων/δεξιοτήτων και των στάσεων προς την πρακτική βασισμένη σε ενδείξεις των Ελλήνων επαγγελματιών υγείας.

Λέξεις ευρετηρίου: Εγκυροποίηση, Ελλάδα, Επαγγελματίες υγείας, Ερωτηματολόγιο για την πρακτική-βασισμένη σε ενδείξεις, Μετάφραση

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