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# Transformation of the Evidence-Based Practice Attitude Scale-36 into Turkish: An Investigation of Validity and Reliability

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## Abstract

**Background:** Evidence-based practice (EBP) is essential for ensuring healthcare quality, patient safety, and effective clinical decision-making. As nurses and physicians play a key role in implementing EBP, assessing their attitudes toward it is important. Although tools exist to measure nurses' attitudes in Türkiye, no scale currently evaluates both nurses and physicians.

**Aim:** This study aimed to evaluate the validity and reliability of the *Evidence-Based Practice Attitude Scale-36* (EBPAS-36), originally developed by Rye et al., for adaptation into the Turkish context.

**Methods:** Data were collected from 205 nurses and physicians working in the surgical clinics of two hospitals in Izmir between October 2019 and December 2021. The EBPAS-36 and an 18-item descriptive questionnaire developed by the researcher were used. Statistical analyses included means, percentages, standard deviations, and significance testing at the 0.05 level. Validity was assessed through linguistic, content, construct, and face validity, while reliability was evaluated using test-retest analysis and Cronbach's alpha.

**Results:** Of the participants, 71.2% were female, with a mean age of 32.15±7.88 years (range: 22-58). Nurses comprised 76.1% of the sample, while physicians made up 23.9%. The content validity index of the EBPAS-36 was 0.68, exceeding the minimum acceptable threshold. Construct validity analysis yielded a Kaiser-Meyer-Olkin (KMO) value of 0.80. Confirmatory factor analysis supported a ten-factor structure for the Turkish version, which differed from the original scale. The 10 sub-dimensions explained 58.714% of the total variance. The scale demonstrated strong reliability, with a Cronbach's alpha coefficient of 0.828 and a McDonald's omega coefficient of 0.859.

**Conclusion:** The analyses indicated that the EBPAS-36 possesses linguistic and content validity, structural integrity, face validity, Cronbach's alpha internal consistency, and test-retest reliability. Based on these findings, the scale is valid and reliable for healthcare professionals, particularly physicians and nurses, within the Turkish cultural context.

*Keywords: Attitude, evidence-based practice, nursing, scale, validity and reliability*

## Introduction

Evidence-based practice, as defined in the existing literature,[1–9] integrates scientifically grounded research, patient preferences, and clinical expertise. Similarly, evidence-based nursing (EBN), as discussed by various researchers,[5,6,9–13] is an approach to nursing care that utilizes the best available evidence derived from scientific research, clinical experience, and patient preferences. As nursing education continues to progress, there is an increasing shift from traditional methods toward evidence-based care. Over the past 50 years, nurse researchers have advocated for clinical practices to be guided by research findings, that is, scientific evidence.[12] Efforts such as the publication of books and guidelines on EBN, the organization of scientific congresses, and the establishment of EBN centers are actively contributing to this transformation. The term "Evidence-Based Nursing" was first introduced in a pivotal publication by Kara and Babadağ,[14] building upon a concept initially proposed by Platin in 2000. This early work focused on addressing the challenges associated with implementing evidence-based practice in Türkiye. It provided foundational insights into the subject, as cited by Kara et al.[14] and Kocaman.[12] Following 2006, there was a notable increase in initiatives related to EBN. A key component of the evidence-based practice (EBP) framework is its emphasis on the practitioner's experience and the context in which they practice. The integration of current research evidence with the clinician's tacit knowledge plays a critical role in bridging the gap between theory and practice.[15] Despite ongoing efforts and frequent discussion of EBN in academic literature, conferences, and within the context of quality nursing care, research shows that EBP remains difficult to implement in clinical settings.[14,16]

The International Council of Nurses (ICN) has highlighted the need for nurses to develop the skills necessary to identify, appraise, and apply the most effective evidence in their clinical decision-making.[17,18] This process must also consider patient preferences, specific circumstances, and the clinician's expertise. According to *Article 6 of the Nursing Regulation*, issued in March,[8,10,19,20] nurses are responsible for assessing the health needs of individuals, families, and communities, and for planning, implementing, and evaluating nursing care based on evidence, within the framework of nursing diagnoses. Implementing evidence-based nursing practices is critical for improving care outcomes, standardizing interventions, and bridging the theory-practice gap.[8,11,20]

However, several studies have highlighted that healthcare professionals' attitudes and perceptions remain significant barriers to the adoption of EBP.[6,10,21] Individual factors (e.g., gender, clinical experience) and organizational factors (e.g., leadership, institutional support, financial resources, and policies) are known to in-

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fluence these attitudes.[6,21] Rye et al.[21] observed that less experienced clinical staff tend to be more receptive to adopting innovative practices. Therefore, assessing the attitudes of nurses and physicians toward EBP is essential for designing effective strategies to promote its integration.[8,16]

Numerous studies in Türkiye have examined nurses' attitudes toward EBP, often using the *Evidence-Based Attitude Scale Toward Nursing*, which was translated into Turkish by Ayhan et al.[10] However, quality healthcare services can only be delivered through interdisciplinary collaboration.[2,22–24] As such, it is vital for all members of the healthcare team to adopt evidence-based methods when implementing EBP. When creating plans to incorporate EBP into the clinical setting, it is essential to understand the emotions, opinions, and perspectives of individuals toward EBP.[10,12,25] There is a need for instruments that assess the attitudes of nurses as well as other healthcare professionals on this matter. A review of the existing literature reveals a variety of studies investigating public attitudes toward evidence-based practice in our country. However, these studies indicate that no reliable measurement tool currently exists that can be used by all healthcare professionals. This study aimed to adapt the *Evidence-Based Practice Attitude Scale-36*, originally developed by Rye et al.,[26] into Turkish, with the objective of evaluating its validity and reliability.

## Research Questions

1. Is the Turkish adaptation of the *Evidence-Based Practice Attitude Scale-36* (EBPAS-36) reliable?
2. Is the Turkish adaptation of the EBPAS-36 a reliable assessment tool?
3. Is the Turkish version of the *Evidence-Based Practice Attitude Scale-36* (EBPAS-36) valid?
4. Is the Turkish version of the EBPAS-36 reliable?

# Materials and Methods

## Study Design

This study was designed as a methodological study to assess the validity and reliability of the *Evidence-Based Practice Attitude Scale-36*.

## Study Sample

The study population consisted of nurses and physicians working in surgical clinics, including intensive care units, wards, and operating rooms, at a university hospital and a training and research hospital in Izmir, between October 2019 and December 2021. In methodological studies, the sample size is typically determined based on the number of items in the scale. A sample size of 5 to 10 times the total number of items is often recommended.[27] The objective was to recruit between 180 and 360 physicians and nurses for participation. A total of 205 nurses and physicians who met the inclusion criteria (i.e., working in surgical units or operating rooms, not on leave during data collection, and voluntarily participating in the study) were included.

## Data Collection Tools

The research data were collected using two components. The first part was a questionnaire that gathered descriptive information, while the second part consisted of *Evidence-Based Practice Attitude Scale-36*.

### Characteristics Survey Questionnaire

This form comprised 18 questions related to personal characteristics (e.g., age, gender, education level, and profession) and knowledge of evidence-based practices (e.g., familiarity with evidence-based practice, training received, and publication/journal subscriptions).

### Evidence-Based Practice Attitude Scale-36 (EBPAS-36)

The original EBPAS scale was developed by Gregory A. in 2004, consisting of 15 items across four sub-dimensions.[28] In 2012, Aarons et al.[29] expanded upon this work by adding 35 new items, resulting in a 50-item version of the EBPAS with 12 sub-dimensions. The EBPAS-36 was later developed in 2017 by Rye et al.,[26] maintaining the same 12 sub-dimensions from the original version: Requirements, Appeal, Openness, Divergence, Limitations, Fit, Monitoring, Balance, Burden, Job Security, Organizational Support, and Feedback. The EBPAS-36 is a five-point Likert-type scale consisting of 36 items. Each item is rated on a scale from "0 (Strongly Disagree)", "1 (Somewhat Agree)", "2 (Partially Agree)", "3 (Very Agree)", to "4 (Strongly Agree)". Each sub-dimension includes three items. The total score is calculated by reversing the scores of the following sub-dimensions: 4. Divergence, 5. Limitations, 7. Monitoring, 8. Balance, and 9. Burden. The total score ranges from 0 to 144, with higher scores indicating a more positive attitude toward adopting EBP. The original scale reported a total Cronbach's alpha coefficient of 0.79.[26]

## Data Collection and Analysis

### Validity and Reliability of the Evidence-Based Practice Attitude Scale-36

#### Examination of the Psycholinguistic Properties of the Scale/Language Adaptation

At this stage, the scale items were translated from their original language into the target language for adaptation. The cultural adaptation process followed the guidelines established by the World Health Organization (WHO.[30] The language adaptation process included the following steps: forward translation, expert panel review, backward translation, pre-testing and cognitive interviewing, and finalization.

The forward translation, which involved translating it from English into Turkish, was conducted by a professional interpreter/translator. The language and structure of the scale were found to be consistent in both the forward translation and expert reviews, resulting in a unified consensus. A back-translation into English was then performed by a native English-speaking linguist to compare with the original scale.

A pilot test was carried out during the pre-test and cognitive interview phase with a group of 10 physicians and nurses who were not included in the main study sample. The results of the pilot test, along with the expert panel's feedback, were reviewed and analyzed. Based on the findings from all stages of the adaptation process, the researchers finalized the Turkish version of the measurement tool.

#### Examination of the Psychometric Properties of the Scale

The psychometric assessment followed WHO guidelines and included the following steps to evaluate the scale's validity and reliability.

### Validity of the Scale

#### Content Validity

An assessment of the scale's content validity was carried out using expert evaluations. Content Validity Ratios (CVR) for each item in the Turkish adaptation and the Content Validity Index (CVI) for the entire scale were calculated. The *Expert Evaluation Form* was sent to 15 experts, who submitted their feedback via email after giving their consent. The form asked experts to evaluate each scale item based on its appropriateness for measuring the intended feature, its readability and clarity, and its effectiveness in assessing attitudes toward evidence-based practice. Experts were instructed to rate each item as either: "Appropriate" (the item is suitable and can be used without modification), "Changeable" (the item is suitable but needs revision), or "Not Appropriate" (the item does not reflect the intended characteristic and should be removed).

Following the feedback from all subject matter experts, the content validity ratio for each item was calculated using the Lawshe method. The average CVI was then determined by taking the mean of the CVR values for all items.

#### Construct Validity

The construct validity of the scale was evaluated to identify the dimensions measured by the *Evidence-Based Practice Attitude Scale-36* and to interpret the meaning of the scores obtained. Exploratory Factor Analysis (EFA) was used to assess the construct validity. To determine the suitability of the data for factor analysis, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test were applied.

#### Surface and Face Validity

The face validity of the scale items was assessed to determine their clarity, appropriateness, and ability to measure the intended concept, as well as to ensure they were easy to understand. Researchers reviewed each item of the *Evidence-Based Practice Attitude Scale-36* for clarity and made adjustments based on expert feedback. A preliminary evaluation was conducted with 10 healthcare professionals, including physicians and nurses, who were similar to those in the study sample.

### Reliability of the Scale

Internal consistency and reliability were assessed by calculating Cronbach's alpha coefficient for the scale. The scale was re-administered to a randomly selected group of participants from the original sample four weeks after the initial assessment.

## Data Collection

Data were collected from nurses and physicians working in surgical clinics, including intensive care units, wards, and operating theaters, at a university hospital and a training and research hospital in Izmir between October 2019 and December 2021. Face-to-face interviews were conducted, each lasting approximately 15 to 20 minutes.

## Statistical Analysis

Statistical analyses were performed using IBM SPSS (Statistical Package for the Social Sciences) Statistics for Windows, version 24.0; AMOS (Analysis of Moment Structures), version 24.0 (IBM Corporation, NY, USA); and Jamovi Statistics, version 2.2.2 (Sydney, Australia). Descriptive statistics were presented as number of cases, mean±standard deviation, percentages, minimum and maximum values, as well as median and percentile values.

Cronbach's alpha and McDonald's omega coefficients were used to assess the internal consistency of the scale and its subdimensions. Pearson correlation analysis and split-half analysis were employed to evaluate item-total score correlations for the scale and its subdimensions. Hotelling's T-square test was applied to assess response bias in the scale. For the test-retest analysis, a t-test was conducted for dependent groups. Exploratory Factor Analysis was used to determine the association between items and factors. The principal axis factoring estimation method was chosen based on the recommendation of the original scale developer, and the Tomakomai rotation technique was applied as the rotation method. An eigenvalue of one was used as the criterion for this factor. A factor loading coefficient of 0.30 was considered the threshold for determining an item's sub-dimension. The extent to which the scale items and subdimensions reflected the original structure was assessed using Confirmatory Factor Analysis (CFA). Prior to conducting CFA, a multiple correlation analysis was performed, which revealed no multicollinearity among the items. The correlation matrix was used for the Exploratory Factor Analysis, while the covariance matrix was used for the Confirmatory Factor Analysis. The margin of error for data analysis was set at 0.05 (5%).

## Ethical Considerations

This research was conducted in accordance with the principles of the Declaration of Helsinki. Permission to adapt the scale into Turkish was obtained via email from the original developer. Ethical approval was granted by the Ege University Medical Research Ethics Committee (Approval Number: 20-1.1T/19, Date: 22.01.2020). Additionally, institutional approval was obtained from the participating hospitals. Physicians and nurses were first given verbal information about the study, after which written informed consent was obtained from those who agreed to participate.

# Results

## Sociodemographic Characteristics of Participants

Of the participants, 71.2% were female and 28.8% were male. The mean age was 32.15±7.88 years, with a range of 22 to 58 years. Among the participants, 76.1% were nurses and 23.9% were physicians. In terms of institutional affiliation, 42.9% were employed at a university hospital and 57.1% at a training and research hospital. Regarding work settings, 3.2% of the nurses were employed in operating rooms, 20.5% in intensive care units, and the majority (76.3%) were working in general clinics.

## Participants' Knowledge of Evidence-Based Practices

The analysis revealed that 24.4% of participants regularly read professional journals, while 38% followed them selectively. Additionally, 62.4% reported attending at least one scientific conference within the past two years. Among those attendees, 78.5% participated as listeners, 12.6% presented papers, and 8.9% gave oral presentations. It was found that 24.9% of participants had submitted their own work, consisting of 46.4% research articles, 17.4% compilations, and 36.2% case reports. The results also showed that 61.5% of participants had knowledge of EBP, while 36.1% had received training on the subject. Furthermore, 46.8% reported using EBP in their current departments.

## Validity and Reliability Evaluation of the Evidence-based Practice Attitude Scale-36 (EBPAS-36)

### Findings from the Validity Analysis of the EBPAS-36

#### Content validity

The CVR and CVI values are presented in Table 1, based on evaluations from 15 experts regarding the scale items. The statistical significance of these ratios was

**Table 1.** Expert opinions and content validity results for the *Evidence-Based Practice Attitude Scale-36*

| Scale item | Appropriate/ keep | Modifiable/ suggestion for correction | Not appropriate/ remove | CVR | Scale item | Appropriate/ keep | Modifiable/ suggestion for correction | Not appropriate/ remove | CVR |
|---|---|---|---|---|---|---|---|---|---|
| Item 1 | 12 | 3 | 0 | 0.60 | Item 21 | 8 | 7 | 0 | **0.06** |
| Item 2 | 14 | 1 | 0 | 0.86 | Item 22 | 10 | 5 | 0 | **0.33** |
| Item 3 | 14 | 1 | 0 | 0.86 | Item 23 | 12 | 3 | 0 | 0.60 |
| Item 4 | 15 | 0 | 0 | 1.00 | Item 24 | 12 | 3 | 0 | 0.60 |
| Item 5 | 15 | 0 | 0 | 1.00 | Item 25 | 15 | 0 | 0 | 1.00 |
| Item 6 | 12 | 3 | 0 | 0.60 | Item 26 | 15 | 0 | 0 | 1.00 |
| Item 7 | 13 | 2 | 0 | 0.73 | Item 27 | 12 | 3 | 0 | 0.60 |
| Item 8 | 13 | 2 | 0 | 0.73 | Item 28 | 11 | 4 | 0 | **0.46** |
| Item 9 | 13 | 2 | 0 | 0.73 | Item 29 | 12 | 3 | 0 | 0.60 |
| Item 10 | 13 | 2 | 0 | 0.73 | Item 30 | 11 | 4 | 0 | **0.46** |
| Item 11 | 14 | 1 | 0 | 0.86 | Item 31 | 11 | 4 | 0 | **0.46** |
| Item 12 | 14 | 1 | 0 | 0.86 | Item 32 | 11 | 4 | 0 | **0.46** |
| Item 13 | 12 | 3 | 0 | 0.60 | Item 33 | 11 | 4 | 0 | **0.46** |
| Item 14 | 12 | 3 | 0 | 0.60 | Item 34 | 15 | 0 | 0 | 1.00 |
| Item 15 | 14 | 1 | 0 | 0.86 | Item 35 | 13 | 2 | 0 | 0.73 |
| Item 16 | 15 | 0 | 0 | 1.00 | Item 36 | 12 | 3 | 0 | 0.60 |
| Item 17 | 14 | 1 | 0 | 0.86 | Number of experts | | 15 | | |
| Item 18 | 13 | 2 | 0 | 0.73 | Content validity criterion | | 0.49 | | |
| Item 19 | 14 | 1 | 0 | 0.86 | CVI | | 0.68 | | |
| Item 20 | 9 | 6 | 0 | **0.20** | | | | | |

CVR: Content validity ratio, CVI: Content validity index.

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**Table 2.** Item analysis results of the *Evidence-Based Practice Attitude Scale-36* (EBPAS-36) Questionnaire (n=205)

| Item no. | Variance explained (%) | α value when item is deleted | Corrected item-total score correlation (r)* | Corrected item-subscale total score correlation (r)* | Cronbach's alpha | McDonald's omega | Mean±SD | Factor loading |
|---|---|---|---|---|---|---|---|---|
| 1. Subdimension | 22.434 | | | | 0.878 | 0.886 | 2.77±0.78 | |
| Item 28 | | 0.832 | 0.090 | 0.591 | | | 1.46±1.23 | 0.484 |
| Item 31 | | 0.827 | 0.220 | 0.672 | | | 2.56±1.26 | 0.550 |
| Item 32 | | 0.819 | 0.520 | 0.770 | | | 2.76±0.96 | 0.776 |
| Item 33 | | 0.822 | 0.388 | 0.805 | | | 2.37±1.18 | 0.764 |
| Item 34 | | 0.819 | 0.514 | 0.720 | | | 2.81±0.99 | 0.854 |
| Item 35 | | 0.817 | 0.554 | 0.703 | | | 2.92±1.00 | 0.841 |
| Item 36 | | 0.823 | 0.353 | 0.416 | | | 2.49±1.07 | 0.492 |
| 2. Subdimension | 10.545 | | | | 0.892 | 0.897 | 2.13±0.97 | |
| Item 8 | | 0.819 | 0.529 | 0.773 | | | 3.01±0.93 | 0.828 |
| Item 9 | | 0.831 | 0.129 | 0.870 | | | 2.29±1.26 | 0.960 |
| Item 10 | | 0.829 | 0.176 | 0.777 | | | 2.20±1.36 | 0.863 |
| Item 11 | | 0.830 | 0.150 | 0.638 | | | 1.71±1.21 | 0.608 |
| 3. Subdimension | 7.098 | | | | 0.859 | 0.866 | 2.97±0.82 | |
| Item 7 | | 0.820 | 0.487 | 0.563 | | | 3.19±0.96 | 0.537 |
| Item 12 | | 0.842 | -0.274 | 0.649 | | | 1.16+1.14 | 0.580 |
| Item 13 | | 0.824 | 0.311 | 0.751 | | | 2.80±1.21 | 0.881 |
| Item 14 | | 0.830 | 0.152 | 0.692 | | | 2.27±1.27 | 0.859 |
| Item 15 | | 0.821 | 0.401 | 0.751 | | | 2.34±1.15 | 0.628 |
| 4. Subdimension | 4.756 | | | | 0.753 | 0.758 | 2.69±0.89 | |
| Item 18 | | 0.818 | 0.548 | 0.437 | | | 2.95±0.99 | 0.351 |
| Item 25 | | 0.818 | 0.530 | 0.524 | | | 2.90±2.90 | 0.577 |
| Item 26 | | 0.824 | 0.311 | 0.667 | | | 3.03±0.98 | 0.935 |
| Item 27 | | 0.822 | 0.386 | 0.581 | | | 3.10±0.96 | 0.635 |
| 5. Subdimension | 3.156 | | | | 0.877 | 0.878 | 3.10±0.87 | |
| Item 1 | | 0.818 | 0.536 | 0.739 | | | 3.27±0.98 | 0.640 |
| Item 2 | | 0.820 | 0.481 | 0.778 | | | 3.04±0.94 | 0.829 |
| Item 3 | | 0.831 | 0.085 | 0.776 | | | 2.24±1.11 | 0.894 |
| 6. Subdimension | 2.719 | | | | 0.681 | 0.688 | 1.79±0.99 | |
| Item 19 | | 0.818 | 0.548 | 0.458 | | | 2.98±1.01 | 0.515 |
| Item 20 | | 0.825 | 0.289 | 0.540 | | | 3.39±1.03 | 0.685 |
| Item 21 | | 0.826 | 0.263 | 0.492 | | | 3.13±1.13 | 0.635 |
| 7. Subdimension | 2.441 | | | | 0.834 | 0.834 | 2.36±1.08 | |
| Item 29 | | 0.835 | -0.002 | 0.716 | | | 2.11±1.28 | 0.699 |
| Item 30 | | 0.828 | 0.173 | 0.716 | | | 2.03±1.11 | 0.766 |
| 8. Subdimension | 2.108 | | | | 0.527 | 0.592 | 1.77±0.85 | |
| Item 22 | | 0.827 | 0.205 | 0.405 | | | 2.00±1.10 | 0.671 |
| Item 23 | | 0.824 | 0.311 | 0.303 | | | 2.03±1.18 | 0.419 |
| Item 24 | | 0.818 | 0.507 | 0.281 | | | 2.99±1.06 | 0.515 |
| 9. Subdimension | 1.888 | | | | 0.570 | 0.584 | 2.93±0.80 | |
| Item 4 | | 0.824 | 0.318 | 0.386 | | | 2.72±1.14 | 0.687 |
| Item 5 | | 0.825 | 0.296 | 0.320 | | | 2.08±1.09 | 0.406 |
| Item 6 | | 0.823 | 0.349 | 0.438 | | | 2.39±1.11 | 0.557 |
| 10. Subdimension | 1.567 | | | | 0.461 | 0.472 | 2.66±0.91 | |
| Item 16 | | 0.820 | 0.435 | 0.309 | | | 2.56±1.18 | 0.508 |
| Item 17 | | 0.817 | 0.577 | 0.309 | | | 2.85±0.95 | 0.397 |
| Total | 58.714 | | | | 0.828 | 0.859 | 2.56±0.41 | |
| KMO | **0.800** | | | | | | | |
| Bartlett $\chi^2$ (p) | 4015.780 (0.000) | | | | | | | |

*: Significant at p<0.001. SD: Standard deviation, KMO: Kaiser-Meyer-Olkin.

determined by comparing the CVR values to the minimum acceptable threshold of 0.49, as recommended for 15 expert evaluations by Lawshe and Yeşilyurt et al.[31] The CVI for the entire scale was found to be statistically significant, exceeding the Content Validity Criterion of 0.49, with a final CVI value of 0.68, as shown in Table 1. All scale items were agreed upon by the experts, and revisions were made in accordance with their feedback.

**Table 3.** Confirmatory factor analysis (CFA) model fit indices

| | $\chi^2$/df | RMSEA | GFI | CFI | IFI | NNFI | NFI |
|---|---|---|---|---|---|---|---|
| Ten-factor model | 2.050 | 0.072 | 0.78 | 0.84 | 0.85 | 0.82 | 0.74 |

$\chi^2$/df: Chi-square/degrees of freedom ratio, RMSEA: Root mean square error of approximation, GFI: Goodness of fit index, CFI: Comparative fit index, IFI: Incremental fit index, NNFI: Non-normed fit index, NFI: Normed fit index.

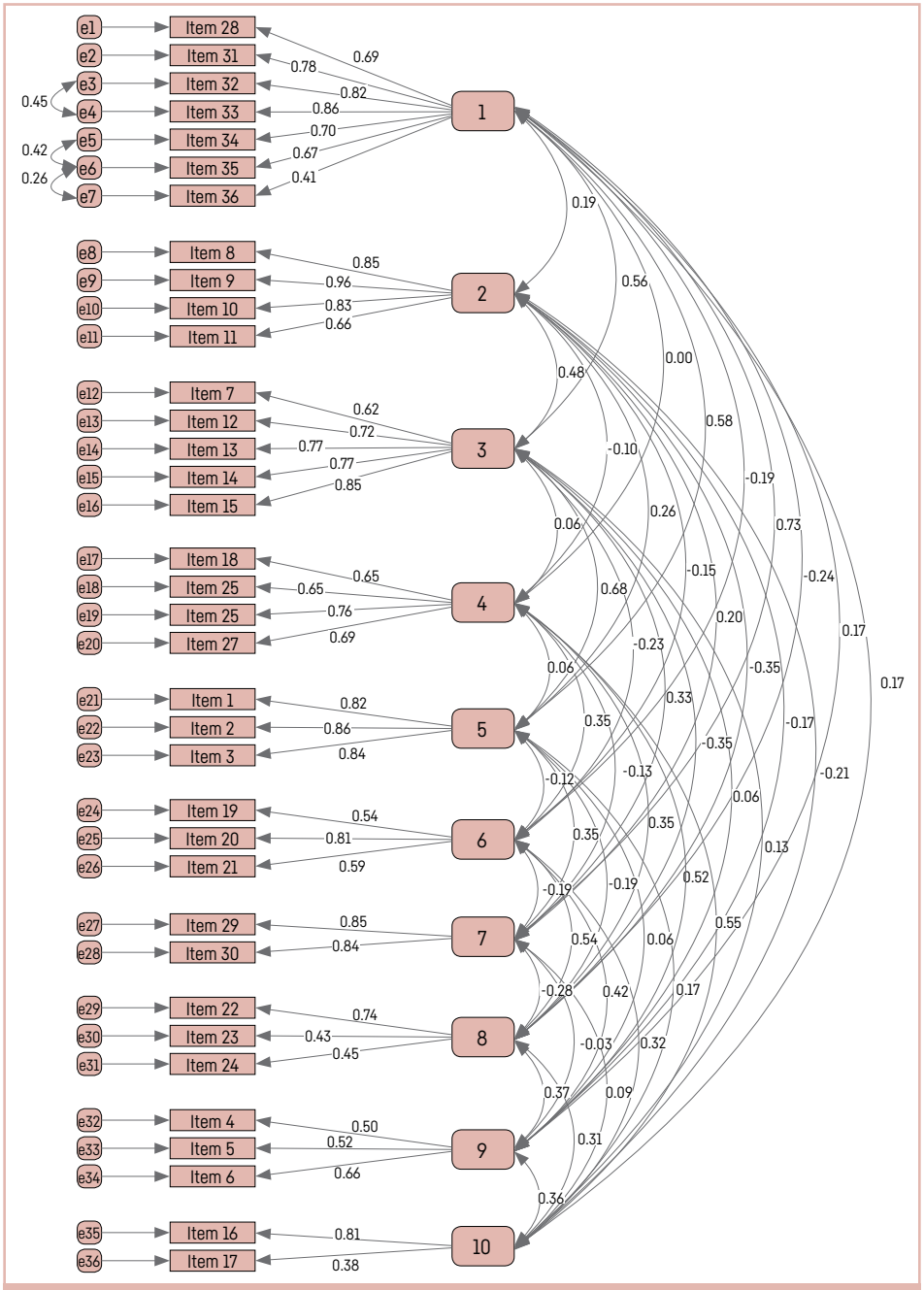


**Figure 1.** Confirmatory factor analysis.

## Construct validity

To assess the adequacy of the sample, the KMO and Bartlett's tests were conducted prior to evaluating the construct validity of the scale. The KMO coefficient was found to be 0.800, while Bartlett's test produced a $\chi^2$ value of 4015.780 with a p-value of 0.000 (Table 2). These results indicate that the data were suitable for factor analysis.[32] The factor loadings for the scale's sub-dimensions, as determined by the EFA, are presented in Table 2. The 10 sub-dimensions accounted for 58.714% of the total variance (Table 2).

**Table 4.** Test-retest analysis results of the first and second applications of the scale

| | First application Mean±SD | Second application Mean±SD | t | p | r | p |
|---|---|---|---|---|---|---|
| Scale total | 2.52±0.409 | 2.48±0.396 | 1.524 | 0.132 | 0.805 | 0.000 |
| 1. Subdimension | 2.32±0.700 | 2.84±0.832 | **7.559** | **0.000** | 0.731 | 0.000 |
| 2. Subdimension | 2.11±0.996 | 2.22±0.994 | 1.367 | 0.176 | 0.761 | 0.000 |
| 3. Subdimension | 3.06±0.815 | 3.05±0.835 | 0.208 | 0.836 | 0.840 | 0.000 |
| 4. Subdimension | 2.61±0.893 | 2.37±0.892 | **3.467** | **0.001** | 0.803 | 0.000 |
| 5. Subdimension | 3.04±0.943 | 3.03±0.927 | 0.155 | 0.877 | 0.845 | 0.000 |
| 6. Subdimension | 1.55±0.902 | 1.43±0.989 | 1.287 | 0.203 | 0.659 | 0.000 |
| 7. Subdimension | 2.55±1.030 | 2.64±1.123 | 0.960 | 0.340 | 0.756 | 0.000 |
| 8. Subdimension | 1.67±0.782 | 1.66±0.792 | 0.122 | 0.903 | 0.645 | 0.000 |
| 9. Subdimension | 2.86±0.814 | 2.37±0.941 | **4.444** | **0.000** | 0.461 | 0.000 |
| 10. Subdimension | 2.62±1.019 | 2.48±1.132 | 1.456 | 0.148 | 0.738 | 0.000 |

P<0.05. SD: Standard deviation, t: T-test for dependent groups, r: Pearson correlation coefficient.

Model fit was evaluated using various fit indices. The calculated $\chi^2$/df ratio for the ten-factor model was 2.050, as shown in Table 3. Additional fit indices are also listed in Table 3. A CFA was performed to validate the construct previously assessed through EFA. The factor loadings for the subdimensions identified by the Confirmatory Factor Analysis are illustrated in Figure 1.

A systematic analysis of the EBPAS-36 was conducted.

### Internal consistency analysis

The Cronbach's alpha coefficient for the overall scale was calculated to be 0.828. Cronbach's alpha and McDonald's omega reliability coefficients for each of the ten subdimensions are presented in Table 2.

A Cronbach's alpha value of 0.653 was calculated for the first half of the scale, and 0.707 for the second half, based on the split-half analysis. The correlation coefficient between the two halves was 0.831. The Spearman-Brown coefficient was calculated as 0.908, and the Guttman split-half coefficient was 0.907. Hotelling's T-square value for the scale was calculated as 926.510, with an F-statistic of 22.06 and a p-value of 0.000. These results indicate that there was no response bias in the scale. Correlations between individual scale items and the total scale score, as well as with subdimension scores, are presented in Table 2. The removal of any item did not lead to a significant increase in the overall Cronbach's alpha value.

### Invariance (Test-retest reliability)

The test-retest reliability of the scale and its subdimensions was evaluated over a period of time by examining the Pearson correlation coefficient, in order to assess the consistency of the scale's results (Table 4).

No statistically significant difference was found between the total scores of the first and second administrations, nor between the mean scores of the second, third, fifth, sixth, seventh, eighth, and tenth subdimensions (p>0.005). However, a significant and strong correlation was observed between the scores from the first and second measurements (p<0.05). A statistically significant difference was observed in the scores from the initial and subsequent applications for the first, fourth, and ninth subdimensions, with a p-value of 0.05. While a correlation was found between the scores of the initial and fourth subdimensions, as well as with the first application overall, the correlation between the scores from the first and second applications for the ninth subdimension was negligible, as shown in Table 4.

## Discussion

Investigating the perspectives of nurses and physicians on EBP may support the development of tailored strategies to encourage its broader adoption. In this study, the initial assessment focused on the instrument's language validity. After translation, expert opinions were gathered, and item modifications were made based on the results of a preliminary trial. Content validity is assessed to ensure that a scale comprehensively measures the intended concept and excludes unrelated elements beyond its scope.[31,33,34] The CVR is influenced by the number of experts consulted.[33–35] The study compared the calculated Content Validity Ratio for each item with the overall Content Validity Index of the scale, as determined by expert feedback, against a predefined content validity criterion of 0.49. Items that did not initially meet the CVR threshold were revised based on expert comments and suggestions; however, none were removed from the scale. Given the context, it is reasonable to conclude that the scale components adequately represent the intended characteristic and that the scale has a clear and easily understandable linguistic structure and content.

The construct validity of a measurement tool determines what concept or attribute it assesses and the extent to which it reflects the underlying theoretical framework. To compare the factor structure of the original scale with that of the culturally adapted version and to identify areas of difference and similarity, the use of CFA is recommended.[33,35] Since the KMO coefficient and Bartlett's test of sphericity yielded statistically significant results, it can be inferred that the dataset is highly suitable for factor analysis.

The threshold value for exploratory factor analysis, which was used to evaluate the factor loadings of the scale items within their respective dimensions, was set at 0.30, as recommended by Ercan and Kan.[33] The analysis revealed that all factor loadings exceeded 0.30, and no items were removed from the scale. A ten-factor structure emerged, supporting the scale's strong construct validity.

The 10-factor, 36-item structure of the scale was validated through CFA. Commonly used model fit indices in research include the Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Non-Normed Fit Index (NNFI), and Goodness of Fit Index (GFI), as reported by Akgül.[36] According to Büyüköztürk,[37] a model is considered to have a good fit if the RMSEA value is 0.080 or lower and the p-value exceeds 0.05, indicating statistical significance; an RMSEA value of 0.10 or lower suggests a weak fit. Akgül[36] also stated that a CFI and NNFI value of 0.90 or higher indicates an acceptable fit, while Şimşek[38] noted that a GFI value of 0.90 or above signifies good model fit.

Examination of the fit indices obtained from the Confirmatory Factor Analysis revealed that the Goodness of Fit Index, Normed Fit Index, and NNFI values were relatively low. However, since the RMSEA value was below 0.080, the ten-factor structure of the scale was considered generally acceptable. A study by Rye et al.[26] in 2017 on the Norwegian version of the scale, which used a 12-factor model, reported a strong overall model fit ($\chi^2$=1125.04, p<0.001, CFI=0.91). One of the fit indices, RMSEA, had a relatively low value of 0.052, as noted by Rye et al.[26]

The finalized Turkish version of the scale consists of 36 items and 10 factors, as illustrated in the path diagram, and it differs from the original scale.

The high accuracy of the measurement tool indicates that it functions effectively as intended. Evaluating scales in conjunction with their reliability is generally more appropriate than assessing validity alone, particularly as noted by Ercan and Kan,[33] Hançer,[34] and Yeşilyurt and Çapraz.[31] A reliability coefficient below 0.40

indicates that the scale is unreliable; values between 0.40 and 0.60 indicate low reliability; values from 0.60 to 0.80 suggest moderate reliability; and values between 0.80 and 1.00 indicate high reliability.[33,34] The study found that the first, second, third, fifth, and seventh subdimensions of the scale demonstrated high reliability based on these criteria. The overall Cronbach's alpha coefficient of 0.828 indicates a strong level of reliability. In comparison, the original scale, as reported in Rye et al.'s[26] study, had a total Cronbach's alpha coefficient of 0.79. The Cronbach's alpha coefficients for the subdimensions of the original scale, which comprises 12 sub-dimensions, were found to be high. However, the overall Cronbach's alpha coefficient of 0.79 reported in the original scale26 was lower than the 0.828 obtained in this study, which included 16 subdimensions.

According to studies by Ayhan et al.,[10] Çapık et al.,[35] and Ercan and Kan,[33] a minimum interval of four to six weeks should be maintained between two measurements to ensure a reliable test-retest analysis. Furthermore, research by Ayhan et al.,[10] Çay and Daşbaş,[39] and Ercan and Kan[33] indicates that the test procedure should involve at least 30 participants. In this study, the test-retest was administered to 68 participants (33% of the total sample), with a four-week interval between assessments. The closer the correlation coefficient is to 1.00, the more reliable the scale is considered over time. Literature recommends a minimum correlation coefficient of 0.70 for acceptable reliability35. This study found that only three sub-dimensions had correlation coefficients below 0.70. Overall, the scale demonstrated consistent reliability and stability.

## Limitations

Data collection was conducted during the Coronavirus Disease 2019 (COVID-19) pandemic, which limited the participation of healthcare professionals in hospitals. Additionally, the study's findings are based solely on data collected from medical professionals working in two hospitals in the city of İzmir.

## Conclusion

The EBPAS-36 is a valid and reliable instrument for healthcare professionals, including physicians and registered nurses, and can be effectively used to evaluate their attitudes toward evidence-based practices, within the Turkish context. The findings showed that the 36 items of the scale, structured within 10 factors, accurately reflect the intended concept, effectively assess the relevant domains, and yield consistent results over time. Further research is recommended to explore its influence on clinical practice. The scale can be effectively used in studies evaluating physicians' and nurses' attitudes toward evidence-based practices. Further research is recommended to explore its influence on clinical practice.

**Ethics Committee Approval:** The study was approved by the Ege University Medical Research Ethics Committee (Approval Number: 20-1.1T/19, Date: 22.01.2020).

**Informed Consent:** Written informed consent was obtained from those who agreed to participate.

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