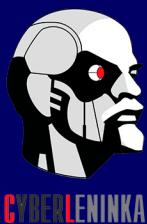


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(“Журнал клинической и профилактической медицины”)

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# ВАЛИДИРОВАНИЕ МЕЖДУНАРОДНОГО ИНДЕКСА ЭРЕКТИЛЬНОЙ ФУНКЦИИ В УЗБЕКИСТАНЕ: ИЗУЧЕНИЕ ЯЗЫКОВЫХ, КУЛЬТУРНЫХ И ЭТИЧЕСКИХ ОСОБЕННОСТЕЙ ДЛЯ ТОЧНОГО ПРИМЕНЕНИЯ

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ВАЛИДИРОВАНИЕ МЕЖДУНАРОДНОГО ИНДЕКСА ЭРЕКТИЛЬНОЙ ФУНКЦИИ В УЗБЕКИСТАНЕ: ИЗУЧЕНИЕ ЯЗЫКОВЫХ, КУЛЬТУРНЫХ И ЭТИЧЕСКИХ ОСОБЕННОСТЕЙ ДЛЯ ТОЧНОГО ПРИМЕНЕНИЯ. ЖКМП.-2025.-Т.4.-№4.-С

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**Аннотация:** Сексуальная функция является важной составляющей здоровья мужчин и качества их жизни, однако во многих культурных контекстах отсутствуют надежные инструменты для её оценки. Международный индекс эректильной функции (ИЕФ) является одним из наиболее широко используемых опросников в мире, но его применимость в узбекоязычной популяции ранее систематически не изучалась. Целью данного исследования была адаптация и валидация опросника ИЕФ для мужчин, говорящих на узбекском языке. Кросс-культурный перевод проведён в соответствии с международными рекомендациями, после чего была выполнена психометрическая оценка на выборке сексуально активных мужчин. Результаты подтвердили языковую и культурную эквивалентность анкеты, а также её высокую надежность и внутреннюю согласованность. Валидированная узбекская версия ИЕФ может использоваться в клинической практике и дальнейших исследованиях мужского сексуального здоровья в Узбекистане.

**Ключевые слова:** сексуальная функция, мужское сексуальное здоровье, валидация опросника, Международный индекс эректильной функции (ИЕФ), кросс-культурная адаптация, Узбекистан.

## EREKTIK FUNKTSIYANING XALQARO INDEKSINI O'ZBEKISTONDA VALIDATSIYALASH: TO'G'RI QO'LLASH UCHUN LINGVISTIK, MADANIY VA AXLOQIY XUSUSIYATLARNI O'RGANISH

А.Т. Махмудов.<sup>1,2</sup>, Ш.А. Аббосов.<sup>1,2</sup>, А.К. Тулабоев.<sup>3</sup>, С.У. Алиев.<sup>3</sup>, Ш.Ш. Шавахабов.<sup>2</sup>, Ф.А. Акилов.<sup>1</sup>

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**Аннотация:** Jinsiy funksiya erkaklar salomatligi va hayot sifatining muhim tarkibiy qismidir, biroq ko'plab madaniy muhitlarda uni baholash uchun ishonchli vositalar yetarli emas. Xalqaro erektil funksiyani baholash indeksi (ИЕФ) dunyo miqyosida keng qo'llaniladi, ammo uning o'zbek tilidagi populyatsiyada qo'llanishi ilgari tizimli o'rganilmagan. Ushbu tadqiqotning maqsadi ИЕФ so'rovnomasini o'zbek tiliga moslashtirish va validatsiya qilishdan iborat bo'ldi. Tarjima jarayoni xalqaro metodik ko'rsatmalarga muvofiq amalga oshirildi, so'ngra jinsiy faol erkaklar ishtirokida psixometrik baholash o'tkazildi. Natijalar so'rovnomaning lingvistik va madaniy mosligini, shuningdek, yuqori darajadagi ishonchligini va ichki uyg'unligini tasdiqladi. Validatsiya qilingan ИЕФning o'zbekcha varianti klinik amaliyot va erkaklar jinsiy salomatligi bo'yicha keyingi tadqiqotlarda qo'llanishi mumkin.

**Калитсўзлар:** jinsiy funksiya, erkaklar jinsiy salomatligi, so'rovnoma validatsiyasi, Xalqaro erektil funksiyani baholash indeksi (ИЕФ), madaniyatlararo moslashtirish, O'zbekiston.

## VALIDATING THE INTERNATIONAL INDEX OF ERECTILE FUNCTION IN UZBEKISTAN: NAVIGATING LINGUISTIC, CULTURAL, AND ETHICAL LANDSCAPES FOR ACCURATE APPLICATION

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**Abstract:** Sexual function is an important component of men's health and quality of life, yet reliable tools for its assessment are lacking in many cultural contexts. The International Index of Erectile Function (IIEF) is one of the most widely used instruments worldwide, but its applicability in Uzbek-speaking populations has not been systematically validated. This study aimed to adapt and validate the IIEF questionnaire in Uzbek men. A cross-cultural translation was performed according to international guidelines, followed by psychometric evaluation in a sample of sexually active men. The results confirmed the linguistic and cultural equivalence of the questionnaire, as well as its high reliability and internal consistency. The validated Uzbek version of the IIEF can now be applied in clinical practice and future research on male sexual health in Uzbekistan.

**Keywords:** *sexual function, male sexual health, questionnaire validation, International Index of Erectile Function (IIEF), cross-cultural adaptation, Uzbekistan.*

**Introduction:** The International Index of Erectile Function (IIEF-5) is a cornerstone in the assessment of erectile dysfunction (ED), offering a standardized measure for clinical and research purposes [1-3]. For such an instrument to be truly valuable in a specific socio-cultural context like Uzbekistan, it must not only be accurately translated but also rigorously validated to ensure it measures what it intends to measure in a way that is meaningful and accurately interpreted by the target population [4, 5]. This paper focuses on the crucial phase of validating the culturally adapted IIEF-5 for use in Uzbekistan, emphasizing the intricate process of navigating linguistic subtleties, cultural landscapes, and ethical principles to ensure its accurate and effective application.

Following a comprehensive cross-cultural adaptation process detailed in a in other work by authors, the focus shifts to validating the resulting Uzbek IIEF-5. Validation is not a single event but a process of accumulating evidence to support the intended interpretations of questionnaire scores [6-8]. This paper will discuss the initial steps in this validation journey, primarily focusing on content and face validity as assessed through cognitive interviewing with Uzbek-speaking respondents [9-11]. It will explore how achieving linguistic precision and addressing cultural sensitivities are fundamental to obtaining valid responses and how ethical conduct underpins the trustworthiness of the validation outcomes. The ultimate goal is to establish a reliable and valid tool for assessing ED that can be confidently applied in research and clinical settings within Uzbekistan [12, 13].

### Literature Review: Foundations of Validating Health Measures Across Cultures

Significance of Erectile Dysfunction and the Role of IIEF-5. Sexual dysfunction is an important public health concern [14]. In men erectile dysfunction

(ED, previously "impotence") is defined as the inability to achieve and maintain an erection sufficient to permit satisfactory sexual intercourse [15]. The combined prevalence of minimal, moderate and complete impotence was 52% [16]. The risk of ED was about 26 cases per 1,000 men annually, and increased with age, lower education, diabetes, heart disease and hypertension [17]. Common barriers to seeking treatment included the belief that ED would resolve spontaneously (younger men) and that ED was a normal part of ageing (older men) [18].

The IIEF-5 provides a brief, reliable method for assessing ED severity [2]. For its utility to extend to Uzbekistan, evidence of its validity within this specific population is paramount.

**Principles of Questionnaire Validation.** Validation involves gathering evidence to support the inferences made from instrument scores [19]. Key aspects include content validity (are items relevant and representative?) [20], construct validity (does it measure the intended underlying concept?) [21], and criterion validity (how does it compare to other standards?) [22]. In cross-cultural validation, ensuring that these aspects hold true in the new linguistic and cultural context is the primary challenge [23].

### Impact of Linguistic and Cultural Factors on Validity

**Linguistic Precision and Interpretation:** The validity of an adapted instrument heavily depends on the clarity and precision of its language. Ambiguous phrasing or terms that lack conceptual equivalence in the target language can lead to misinterpretation by respondents, thereby threatening the validity of the data collected [24, 25]. The translation of terms like "confidence" or "satisfaction" within the IIEF-5 must result in an Uzbek phrasing that elicits the intended meaning consistently among respondents.

Cultural Relevance and Response Bias: Cultural norms and values can profoundly influence how individuals respond to health questions, particularly sensitive ones. Stigma surrounding sexual health in Uzbekistan, for instance, might affect willingness to report accurately, potentially introducing social desirability bias and impacting validity [26]. Response styles (e.g., acquiescence) can also vary culturally and must be considered when interpreting validation data [27]. An instrument's perceived cultural appropriateness is key to obtaining valid responses.

Conceptual Equivalence: For an instrument to be valid across cultures, the underlying construct it measures (e.g., erectile function as defined by the IIEF-5 items) must be understood and experienced similarly, or any differences must be accounted for [28]. The validation process should seek evidence of this conceptual equivalence [29].

Ethical Conduct as a Prerequisite for Valid Data. In health research, especially on sensitive topics, ethical conduct is not merely a procedural requirement but a foundation for obtaining valid data [30].

Trust and Truthfulness: When participants feel respected, their privacy protected, and their consent genuinely informed, they are more likely to provide honest and accurate responses, which are essential for validation [31, 32].

Minimizing Bias: Ethical considerations, such as ensuring comprehension of questions (particularly for those with lower health literacy) and reducing any perceived pressure to respond in a certain way, contribute to minimizing measurement error and bias, thereby enhancing validity [33, 34].

The Need for Validated Sexual Health Measures in Uzbekistan. There is a recognized gap in validated instruments for assessing sexual health in Central Asian republics, including Uzbekistan. Establishing the validity of the adapted IIEF-5 in this context is crucial for generating reliable data on ED prevalence, supporting accurate clinical assessments, and informing culturally appropriate public health initiatives.

### Methods: Validating the Adapted Uzbek IIEF-5.

This section outlines the methodological steps focused on gathering initial validity evidence for the culturally adapted Uzbek IIEF-5, primarily focusing on content and face validity through cognitive interviewing. The adaptation process itself, which precedes this

validation stage, is detailed in in other work by authors.

### The Adapted Instrument: Uzbek IIEF-5.

The instrument under validation is the final Uzbek version of the IIEF-5, developed through a rigorous process of forward and back translation, expert committee review, and iterative refinement based on initial pre-testing.

*Participants for Validation (Cognitive Interviewing Phase).* The initial validation evidence was gathered through cognitive interviews with a purposively selected sample of 15 Uzbek-speaking male university students in Tashkent. This demographic was chosen as the initial target population for the instrument's application in research settings. Recruitment aimed for diversity in age (within the student range) and academic disciplines.

**Data Collection:** Cognitive Interviewing for Content and Face Validity. Cognitive interviewing techniques [35] were employed to explore:

*Comprehension:* How participants understood each item, specific terminology (especially culturally sensitive or clinically nuanced terms like “erection”, “confidence”, “satisfaction”), and the instructions in the adapted Uzbek IIEF-5.

*Retrieval:* How participants recalled information to answer the questions.

*Judgment:* How participants made judgments about their experiences to select a response.

*Response Mapping:* How participants mapped their judgment onto the provided response options.

**Perceived Relevance and Cultural Appropriateness:** Whether participants found the questions relevant to their understanding of erectile function and culturally acceptable.

Think-aloud protocols and targeted verbal probes were used. For example, after a participant answered an item, they might be asked, “What were you thinking when you chose that answer?” or “What does the word '[specific Uzbek term]' mean to you in this question?”

*Ethical Framework for Validation.* Ethical approval for all validation procedures was obtained from Ethics Committee of Republican Specialized Scientific and Practical Medical Center of Urology.

*Informed Consent for Validation:* Participants provided written informed consent in Uzbek, ensuring they understood the purpose of this validation phase, the voluntary nature of their input, confidentiality measures, and their right to withdraw.

*Privacy and Data Handling:* Anonymity was maintained. Data from cognitive interviews were coded and stored securely.

#### Data Analysis for Initial Validation.

Qualitative data from the cognitive interviews were analyzed thematically. The analysis focused on identifying:

- Patterns of interpretation for each item and key terms;
- Any remaining ambiguities or areas of confusion despite prior adaptation;
- Evidence of respondent understanding aligning with the intended meaning of the items;

*Confirmation of the cultural acceptability and perceived relevance of the questionnaire;*

This qualitative analysis provided evidence for content and face validity.

**Framework for Subsequent Psychometric Validation.** Following this initial qualitative validation, a larger-scale study is planned to assess the psychometric properties of the Uzbek IIEF-5. This will include:

*Reliability:* Internal consistency (e.g., Cronbach's alpha for the total score) and test-retest reliability (administering the questionnaire to the same group at two time points).

*Construct Validity:* Potentially including exploratory or confirmatory factor analysis (though the IIEF-5 is often treated as unidimensional for its total score but taps into different facets), and examining correlations with other related constructs or demographic variables (e.g., age, presence of known ED risk factors).

*Known-Groups Validity:* Comparing scores between groups expected to differ (e.g., individuals with a clinical diagnosis of ED vs. a control group).

*Results:* Evidence for the Validity of the Adapted Uzbek IIEF-5

This section presents the findings from the cognitive interviewing phase, which was designed to gather initial evidence supporting the content and face validity of the culturally adapted Uzbek IIEF-5. The results are detailed below, covering participant demographics and a thematic analysis of their comprehension, interpretation, and cultural acceptance of the instrument.

#### Participant Characteristics.

A total of 15 Uzbek-speaking male respondents participated in the cognitive interviewing phase. The sample was drawn from patients at the Republican Specialized Scientific and Practical Medical Center of

Urology to ensure feedback from individuals engaging with the healthcare system regarding related issues. The mean age of participants was 31.5 years, with a range from 20 to 60, providing a diverse age perspective. Key demographic characteristics of the participants are summarized in (Table 1).

**Table 1: Demographic Characteristics of Cognitive Interview Participants (N=15).**

Characteristic	Value
Age (Mean, SD)	31.5 ±2.8
Age Range (Years)	[20-60]
Departments	Radiology: n=1 (7%); Urology: n=4 (26%); Andrology: n=10 (67%)
Heterosexual lifestyle	Monogamy 12 (80%) Polygamy 3 (20%)
Sexual activeness in last six months	Yes 10 (67%) No (33%)

**Table 2: Summary of Cognitive Interview Findings on Item Comprehension and Interpretation.**

IIEF-5 Item	Key Construct	Representative Participant Feedback (Illustrative Quote)	Interpretation and Outcome
<b>Q1: Confidence in getting and keeping an erection.</b>	Self-Efficacy	"It asks how sure I am that I can achieve and maintain an erection when I need to." (Participant A)	High comprehension. Participants correctly interpreted the question as an assessment of their self-assurance in erectile ability.
<b>Q2: Erection hardness for penetration.</b>	Erection Rigidity	"This is straightforward. Is my erection hard enough for sexual intercourse? It's a very practical question." (Participant D)	High comprehension. The phrasing was clearly understood as relating to the physical requirement for penetration, confirming conceptual equivalence.
<b>Q3: Maintaining erection after penetration.</b>	Erection Maintenance	"This asks if I can stay erect after intercourse begins. It's different from just getting one." (Participant F)	High comprehension. Participants distinguished this concept from initial hardness, correctly identifying it as a measure of maintenance ability.
<b>Q4: Difficulty in maintaining erection to completion.</b>	Maintenance Effort	"How much of a struggle is it to keep the erection until the end? It's about the difficulty, not just if it happens." (Participant I)	High comprehension. The focus on "difficulty" was well understood. Response options were seen as logical gradations of effort.
<b>Q5: Satisfaction with intercourse attempts.</b>	Overall Satisfaction	"This question is about whether the intercourse itself felt complete and good for me because of my erection." (Participant B)	High comprehension. Participants understood this as a summary judgment of satisfaction tied specifically to erectile function during the act.

#### Item Comprehension and Content Validity.

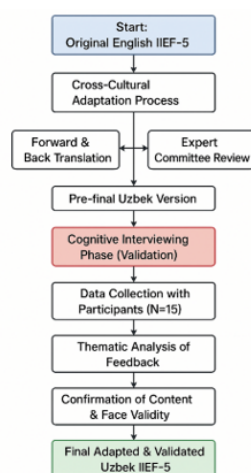
The cognitive interviews indicated a high level of comprehension for all items in the adapted Uzbek IIEF-5. The systematic adaptation process appeared effective in rendering the items clear and their intended meaning transparent to the participants.

A detailed breakdown of participant interpretation for each item is presented in Table 2, which aligns the item's core construct with representative participant feedback and the resulting interpretation.

The qualitative data summarized in Table 2 confirm that participants consistently understood the nuanced constructs of each question – from the psychological aspect of confidence (Q1) to the functional aspects of rigidity (Q2) and maintenance (Q3, Q4), and the culminating assessment of satisfaction (Q5). The iterative adaptation process successfully produced items that were clearly interpreted as intended.

### Summary of Validation Process.

The cognitive interviewing phase confirmed that the adapted Uzbek IIEF-5 is a well-understood and culturally accepted instrument among the target sample. No new significant issues requiring modification emerged, indicating that the iterative adaptation process was effective. The overall validation process, from adaptation to the gathering of this initial validity evidence, is summarized in (Figure 1).



**Figure 1: Flowchart of the Uzbek IIEF-5 Adaptation and Validation Process.**

*Minor Observations and Confirmations.* The cognitive interviewing phase largely confirmed the revisions made during the earlier adaptation stages. No new significant issues requiring substantial modification to the instrument's content or phrasing emerged from this validation step, indicating that the iterative adaptation process was effective in producing an instrument ready for broader psychometric testing.

### Discussion: Interpreting the Validity of the Uzbek IIEF-5.

The initial validation phase, focusing on content and face validity through cognitive interviewing,

provides promising evidence for the adapted Uzbek IIEF-5. The findings suggest that the instrument is well-understood, its items are interpreted consistently with their intended meaning, and it is culturally acceptable to the target sample of Uzbek-speaking university students. This forms a critical foundation for its accurate application in future research and clinical settings in Uzbekistan.

**Linguistic Precision as a Pillar of Valid Measurement.** The careful linguistic adaptation, including the multi-step translation process and expert refinement of terms such as “confidence,” “hard enough for penetration,” and “satisfactory,” appears to have successfully rendered an instrument that communicates effectively in Uzbek. The high level of comprehension reported during cognitive interviews supports the semantic and conceptual equivalence achieved. This is vital, as unclear or misinterpreted items are a primary threat to the validity of any patient-reported outcome measure [25, 36]. The iterative refinement process, where terms were discussed and tested, was crucial in achieving this linguistic precision, which directly underpins the instrument's ability to yield valid data.

**Cultural Resonance and its Impact on Response Validity.** The cultural adaptation measures undertaken prior to this validation phase were instrumental. The input from Uzbek cultural experts and urologists, along with feedback from initial pre-testing, aimed to create an instrument that, while assessing a sensitive topic, does so in a manner that minimizes cultural offense or misunderstanding. The general acceptability reported by participants during cognitive interviews suggests these efforts were successful for those population. When respondents perceive an instrument as culturally appropriate and respectful, they are more likely to engage earnestly and provide truthful responses, thereby enhancing the validity of the collected data [26]. The acknowledgement by some participants that the topic is sensitive in broader society, yet acceptable within a confidential research context, highlights the importance of the administration setting and ethical assurances in obtaining valid responses in Uzbekistan.

**Ethical Conduct: The Bedrock of Trustworthy Validation Data.** The ethical framework guiding this validation – particularly the emphasis on comprehensible informed consent and robust confidentiality measures – likely contributed to the candid feedback received.

Participant trust is essential for obtaining accurate information, especially for sensitive topics like sexual function [31]. By ensuring participants felt safe and respected, the likelihood of obtaining valid and reliable responses was increased. This underscores that ethical research conduct is not merely a procedural hurdle but an integral component of achieving valid scientific outcomes.

**Strengths and Limitations of the Current Validation Evidence.** The strength of this initial validation phase lies in the qualitative depth provided by cognitive interviewing, offering insights into how participants understand and interpret the adapted Uzbek IIEF-5. This provides richer evidence of content and face validity than purely quantitative approaches might offer at this stage.

However, the primary limitation is that this study presents only initial evidence of validity. The sample, while appropriate for in-depth cognitive interviewing, was limited respondents in Tashkent and was relatively small, restricting generalizability. Full psychometric validation, including reliability assessments (internal consistency, test-retest) and further construct validity testing (e.g., factor analysis, correlations with other measures, known-groups validity) in a larger, more diverse Uzbek sample, is essential and represents the next critical phase of research. The current findings, while positive, do not yet establish these broader psychometric properties.

**Implications for Accurate Application in Uzbekistan.** The positive findings regarding comprehension and cultural acceptability suggest that the adapted Uzbek IIEF-5, once fully psychometrically validated, has the potential to be an accurate tool for researchers and clinicians in Uzbekistan.

*For Research:* It can facilitate more reliable epidemiological studies on ED and related factors among Uzbek-speaking men.

*For Clinical Practice:* It can aid clinicians in screening for ED, initiating discussions about sexual health in a standardized and culturally sensitive manner, and monitoring treatment responses with greater confidence in the accuracy of the patient-reported data.

#### **Conclusion and Future Validation Steps.**

The initial validation efforts for the culturally adapted Uzbek IIEF-5 indicate that it is a well-understood and culturally acceptable instrument for assessing erectile dysfunction among Uzbek-speaking male respondents.

The rigorous preceding adaptation, focusing on linguistic precision and cultural nuances, coupled with ethical research practices, has laid a strong foundation for its accurate application. While these findings regarding content and face validity are encouraging, they represent the first step in a comprehensive validation process.

Future research must focus on establishing the psychometric robustness of the Uzbek IIEF-5 through larger-scale studies assessing its reliability and various facets of construct validity across more diverse segments of the Uzbek male population. Only through such continued validation can the IIEF-5 be confidently and accurately applied to improve the understanding and management of erectile dysfunction within the unique linguistic, cultural, and ethical landscape of Uzbekistan.

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