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Measuring interprofessional facilitation skills: An Indonesian validation study of the IPFS

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Abstract

Background: The effectiveness of Interprofessional Education (IPE) is highly dependent on the facilitator's skill in managing collaborative group dynamics. The Interprofessional Facilitation Scale (IPFS) is an established 15-item instrument developed to measure these specific competencies, but its use in the Indonesian educational and cultural context requires rigorous cross-cultural adaptation and psychometric validation to ensure the instrument's measurement equivalence and interpretability. **Objective**: This study aimed to adapt the IPFS into Indonesian, establish its psychometric properties (validity, reliability, and factor structure), and validate it for use in assessing IPE facilitator competence in Indonesia. **Methods:** Following the adaptation guidelines, the IPFS was translated and subjected to expert review. The final Indonesian version was administered to a large sample of 760 IPE facilitators, with ratings provided by IPE-participating students. Data analysis was conducted using Item-Total Correlation, Omega McDonalds (ω) for reliability, and Exploratory Factor Analysis (EFA) using Maximum Likelihood extraction for construct validity. **Results:** The Indonesian IPFS demonstrated exceptional internal consistency, with an overall ω of 0.976. All item-total correlations were strong, ranging from 0.809 to 0.879. The EFA confirmed the data's suitability (KMO = 0.976, Bartlett's Test of sphericity $p < 0.001$). The analysis extracted a single, highly dominant factor (Eigenvalue = 11.297), which accounted for 73.556% of the total variance. All items loaded strongly onto this single factor (ranging from 0.816 to 0.892). **Conclusion:** The Indonesian version of the IPFS is confirmed as a psychometrically sound, highly reliable, and valid instrument. Contrary to the original theoretical model, the scale functions as a uni-dimensional measure of overall IPE facilitation competence in the Indonesian context. This validated tool is a crucial resource for standardizing assessment, guiding faculty development, and enhancing IPE quality assurance in local institutions.

Keywords: Interprofessional Education, IPFS, Facilitation Skills, Cross-cultural adaptation, Psychometric validation

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INTRODUCTION

Interprofessional Education (IPE) is a critical strategy recognized by the World Health Organization (WHO) to prepare health professionals for collaborative practice, ultimately enhancing patient care and health system outcomes.[1] The success of IPE is fundamentally dependent on the abilities of the academic facilitator or tutor, who must possess unique skills to manage group dynamics, model interprofessional behavior, and ensure participants learn both *with, from, and about* each other.[2–4]

To systematically evaluate and improve these essential skills, a reliable and context-specific instrument is mandatory. The Interprofessional Facilitation Scale (IPFS), developed by Sargeant et al. (2010), is an established 15-item tool initially structured around two key dimensions: "Encouraging Interprofessional Interaction" and "Contextualizing IPE".[5,6]

While the IPFS has proven valuable in various settings, its application in Indonesia necessitates a rigorous cross-cultural adaptation process. Linguistic, cultural, and organizational differences, particularly the distinct hierarchical structures often present in Indonesian clinical and educational environments can significantly influence how facilitation skills are perceived and rated.[7,8] Previous successful validation efforts of IPE instruments in Indonesia, such as the CICS29 and the teaching questionnare measuring the competence of IPE facilitator have set a strong methodological precedent for this work.[9]

Therefore, this study aimed to: 1) Conduct a cross-cultural adaptation of the IPFS into the Indonesian language; 2) Determine the psychometric properties, including item validity, internal consistency reliability, and construct validity through Exploratory Factor Analysis (EFA); and 3) Validate the Indonesian IPFS as a reliable and contextually relevant tool for assessing IPE facilitator competence.

METHODS

Context

This study was conducted at the Faculty of Medicine and Health Sciences, Jambi University (FKIK UNJA) Indonesia**.** Indonesia, in general, is considered to have a hierarchical culture, in which the opinions and thoughts of older people and experts are highly valued, as well as a collectivist culture, in which relationships with other people and the maintenance of harmony within a group are considered crucial.[10–12] FKIK UNJA had implemented a community-based Interprofessional Education (IPE) involving five distinct study programs namely Medicine, Nursing, Public Health, Pharmacy, and Psychology, ensuring a rich collaborative learning environment. The students were facilitated with facilitators in line with students's profession backgroud. They had experienced with rigorous faculty development focused on mastering core IPE principles and the essential competencies required for effective collaborative facilitation.

Study design and setting

This study utilized a quantitative, cross-sectional design for psychometric validation. The study employed student raters to evaluate the performance of their IPE facilitators, consistent with the original scale's intended use.[4]

Participants
The study population consisted of 760 IPE facilitators who were actively involved in IPE activities. Ratings were collected from students across various health professions (Medicine, Nursing, Public Health, Pharmacy, and Psychology) who had completed a structured IPE module. The large sample size enhances the statistical power and generalizability of the validation results.[13,14]

Instruments
The original 15-item IPFS [4] was used. The IPFS uses a 4-point Likert scale (1 = Poor, 4 = Excellent). The scale assesses skills related to encouraging interaction (e.g., modeling, inviting discussion) and contextualizing IPE (e.g., explaining the rationale, roles, and responsibilities).

Cross-cultural adaptation process
The translation and adaptation followed established guidelines,[15–17] ensuring conceptual, semantic, and cultural equivalence. The process included forward-translation by two independent bilingual translators, synthesis, back-translation by an independent native English speaker, and a consensus review by an expert committee (medical educators and IPE specialists) using the content validity index.[18] A cognitive debriefing session with a small group of student raters confirmed the clarity of the final Indonesian version.

Data analysis
Statistical analysis was conducted using SPSS version 25. Four cases were excluded due to listwise deletion, resulting in a valid of 760 respondents. Item validity was assessed using the Pearson Corrected Item-Total Correlation. An item was considered valid if the correlation coefficient was greater than 0.3. Internal consistency was measured using Omega McDonalds (ω). The ω value greater than 0.7 was considered acceptable for research purposes.[13] Exploratory Factor Analysis (EFA) was performed using Maximum Likelihood (ML) extraction and oblimin rotation. The suitability of the data was tested using the Kaiser-Meyer-Olkin (KMO) measure (acceptable if ≥ 0.6) and Bartlett's Test of Sphericity ($p < 0.05$).[14] Factors were retained based on an Eigenvalue greater than 1.0, confirmed with scree plot. EFA was conducted to explore the dimensionality of the instrument and to obtain further support for the construct of the adapted questionnaire for its use in Indonesian IPE setting. Furthermore, EFA was used to determine the usefulness or suitability of items through factor loading and their dimensionality, EFA can be employed to explore and assess instruments in terms of factors such as culture, language, time lapse, and study participants.[13] Finally, EFA is needed to provide evidence on validity, reliability, and decent measurement, and its algorithm can be applied to the newly modified items to re-establish validity and reliability.[19]

*Ethical concideration*s
The study was approved by the Ethics Committee of Faculty of Medicine and Health Science Universitas Jambi with number 2081/UN21.8/PT.01.04/2025.

RESULTS
Descriptive statistics and item validity
All 15 items showed relatively high means (ranging from 3.5434 to 3.6605 on the 4-point scale), indicating students generally rated the IPE facilitators highly. The item-

total statistics demonstrated strong validity. The Corrected Item-Total Correlation values ranged from a minimum of 0.809 to a maximum of 0.879. All items significantly exceeded the r > 0.3, confirming that every item contributes substantially and consistently to the overall scale score.

Reliability

The Indonesian IPFS demonstrated exceptional internal consistency. The overall ω for the 15-item scale was 0.976. This value suggests a very high degree of reliability and homogeneity among the items. Additionally, the ω if any single item was deleted remained very high (ranging from 0.974 to 0.975), indicating no single item was detrimental to the scale's internal consistency.

Exploratory Factor Analysis (EFA)

The data was highly suitable for EFA. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.976, which is considered excellent (11). Bartlett's Test of Sphericity was highly significant (X^2 = 12962.888, df = 105, p < 0.001), confirming that the correlation matrix was factorable.

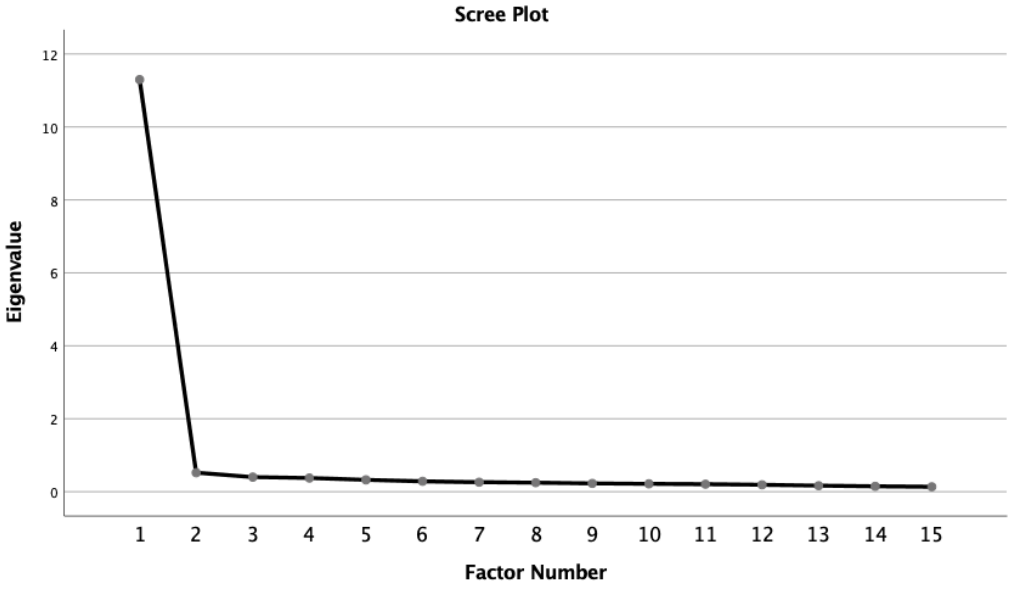

Figure 1. Scree plot graph for interprofessional facilitation skills measurement

EFA using Maximum Likelihood extraction and the Eigenvalue greater than 1.0 criterion and scree plot (Figure 1) resulted in a one-factor solution. Only one factor had an Eigenvalue greater than 1.0, specifically 11.297. This single factor accounted for a remarkable 73.556% of the total variance explained, suggesting that one underlying construct is overwhelmingly dominant. As only one factor was extracted, factor rotation was not possible. The Factor Matrix showed all 15 items loading very highly onto this single factor, with loadings ranging from 0.816 to 0.892. Based on the final result, one factor consisting of 15 items were formed from the Interprofessional facilitating skills measurement (Table 1).

Table 1. Rotated component matrix and subscales for Interprofessional facilitating skills

Item number	Statement	Factor loading	McDonald's omega	Factor name
1	Described why interprofessional education is important. (*Menjelaskan mengapa Interprofesional Education itu penting)*	0.816	0.976	**Interprofessional facilitation skills**
2	Explained how interprofessional collaboration can enhance patient-centered practice. (*Menjelaskan bagaimana kolaborasi interprofesi dapat meningkatkan praktik yang berorientasi pada pasien*)	0.844		
3	Role-modeled positive interactions with other health professionals and how professionals can work together, for example, by working collaboratively with the cofacilitator. (*Menjadi panutan dalam berinteraksi secara positif dengan tenaga kesehatan lainnya dan menunjukkan bagaimana para profesional dapat bekerja sama misalnya, dengan berkolaborasi bersama fasilitator pendamping*)	0.852		
4	Created a learning environment in which the principles of interprofessional education were demonstrated or clearly explained ~eg, did not focus on 1 provider group; acknowledged all professionals' contributions; acknowledged, respected, celebrated diversity in group (*Menciptakan lingkungan pembelajaran di mana prinsip-prinsip IPE ditunjukkan atau dijelaskan dengan jelas misalnya, tidak hanya fokus pada satu kelompok tenaga kesehatan, mengakui kontribusi semua profesional ; menghargai dan menghormati keberagaman dalam kelompok*)	0.855		
5	Openly encouraged participants to learn from other health providers' views, opinions, and experiences ~eg, asked questions that generated free	0.865		

Item number	Statement	Factor loading	McDonald's omega	Factor name
	exchange of ideas, openness, and sharing among all professions (*Secara terbuka mendorong mahasiswa untuk belajar dari sudut pandang, pendapat, dan pengalaman tenaga kesehatan lainnya misalnya, dengan mengajukan pertanyaan yang mendorong pertukaran ide secara bebas, keterbukaan, dan saling berbagi di antara semua profesi)*			
6	Used learning and facilitation methods that encouraged participants from different professions to learn with, from, and about each other ~eg, icebreaker games, case studies, group discussions (*Menggunakan strategi pembelajaran dan fasilitasi yang mendorong peserta dari berbagai profesi untuk belajar bersama, saling belajar, dan memahami satu sama lain misalnya melalui permainan icebreaker, studi kasus, atau diskusi kelompok*)	0.851		
7	Invited other professions to comment and share their experiences and perspectives as questions or comments were made in the large group (*Melibatkan profesi lain untuk memberikan komentar dan berbagi pengalaman atau perspektif mereka saat ada pertanyaan atau tanggapan yang disampaikan dalam diskusi kelompok besar*)	0.864		
8	Used appropriate facilitator skills to keep discussion topics on track (*Menggunakan keterampilan fasilitator yang tepat untuk menjaga agar topik diskusi tetap fokus dan tidak menyimpang*)	0.854		
9	Acknowledged and respected others' experiences and perceptions (*Menunjukkan sikap menghargai dan mengakui pandangan serta*	0.873		

Item number	Statement	Factor loading	McDonald's omega	Factor name
	pengalaman mahasiswa berbagai profesi)			
10	Encouraged members of all professions to contribute to decisions and seek opinions from others in the group during case or patient discussions and decision-making activities (*Mendorong semua mahasiswa dari berbagai profesi untuk berkontribusi dalam pengambilan keputusan serta mengajak semua mahasiswa dalam kelompok untuk menyampaikan pendapat selama diskusi kasus atau kegiatan pengambilan keputusan terkait pasien)*	0.877		
11	Asked participants to share their professional opinions, perspectives, and values relative to patient care and collaborative practice (*Memfasilitasi mahasiswa untuk berbagi pandangan profesional, perspektif dan prinsip-prinsip terkait kolaborasi dan perawatan pasien*)	0.872		
12	Identified professional differences in a positive manner as participants offered their professional experiences and perceptions (*Mengidentifikasi perbedaan berbagai profesi secara positif saat mahasiwa membagikan pengalaman dan persepsi profesional mereka*)	0.892		
13	Asked health professionals to indicate their profession and discuss each other's roles and responsibilities in the delivery of patient care (*Meminta mahasiswa untuk menyebutkan profesinya dan mendiskusikan peran serta tanggung jawab masing-masing profesi dalam pemberian layanan kepada pasien*)	0.842		
14	Listened to and acknowledged participants' ideas without judgment or criticism (*Mendengarkan dan menghargai pendapat*	0.866		

Item number	Statement	Factor loading	McDonald's omega	Factor name
	mahasiswa tanpa menghakimi atau mengkritik secara negatif)			
15	Asked questions to encourage participants to consider how they might use each others' professional skills, knowledge, and experiences (*Mengajukan pertanyaan yang mendorong mahasiswa berpikir tentang cara memanfaatkan keahlian, pengetahuan dan pengalaman masing-masing profesi untuk kolaborasi*)	0.838		

DISCUSSION

The successful cross-cultural adaptation of the IPFS into Indonesian is strongly supported by the psychometric results. The Indonesian IPFS demonstrates exceptional internal consistency and high item validity, confirming that the translated items are clearly understood and consistently measure the intended construct.[13,20] The most significant finding is the uni-dimensional structure of the Indonesian IPFS, as indicated by the EFA extracting only one factor that explains nearly three-quarters of the total variance. This result deviates from the original IPFS, which was theoretically and psychometrically designed as a two-factor measure (Encouraging Interprofessional Interaction and Contextualizing IPE).[5]

Several explanations may account for this finding in the Indonesian context. First, High Level of Integrationaspect: It is possible that in a well-established IPE program, students perceive the two skills—explaining IPE's *importance/context* and *encouraging interaction* as seamlessly integrated and inseparable facets of a single "Effective IPE Facilitation" construct.[21–23] The skills are not mentally compartmentalized by the student raters. Second, cultural perception of facilitation aspect: In high-context cultures, the facilitator's role might be viewed holistically, where the demonstration of professional respect and interaction encouragement (Factor 1) is intrinsically linked to establishing a safe learning environment and explaining the 'why' (Factor 2).[24–26] The overall perceived competence overrides the subtle distinction between the two theoretical sub-dimensions. Furthermore, from point of view of statistical artefact: given the exceptionally high item-total correlations and high overall omega, the items may simply be too highly correlated to be separated into distinct factors, even if they are theoretically different constructs.[14]

The strong evidence of uni-dimensionality suggests that for the Indonesian population, the IPFS may function most accurately as a single, comprehensive score representing the general competence of the IPE facilitator. This is a crucial finding for interpreting the results in practice, as it means IPE programs can reliably use the total score for overall assessment and feedback. For implications and future research, the validated Indonesian IPFS provides a robust, context-specific tool for faculty development, the high factor loadings across all items confirm their relevance, allowing IPE programs to use the 15-item scale to guide the training of facilitators on the holistic competency required. Furthermore, The high reliability makes the instrument suitable for high-stakes evaluations and longitudinal monitoring of facilitation quality (quality assurance).[27–29]

A key next step must be to confirm this factor structure using Confirmatory Factor Analysis (CFA) in a new sample. Future CFA should explicitly test both the one-factor model (as found in this EFA) and the original two-factor model,[5] to definitively establish the superior model fit for the Indonesian context.[30]

CONCLUSIONS

The Interprofessional Facilitation Scale (IPFS) has been successfully adapted for the Indonesian context. The Indonesian IPFS is confirmed to be a highly reliable and valid instrument. The Exploratory Factor Analysis revealed a uni-dimensional construct, where all 15 items measure a single, overarching factor of IPE facilitation competence. This validated, single-factor scale is an essential tool for assessing IPE facilitator performance, supporting faculty development, and enhancing the quality of IPE delivery in Indonesia.

CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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DECLARATION OF ARTIFICIAL INTELLIGENCE USE

This study used artificial intelligence (AI) for languange refinement and technical writing assistance. We confirm that all AI-assisted processes were critically reviewed by the authors to ensure the integrity and reliability of the results. The final decisions and interpretations presented in this article were solely made by the authors.

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