

# The Psychometric Appraisal of Arabic Interprofessional Attitudes Scale

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Attitudes

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## ABSTRACT

**Objective:** To translate and validate the Interprofessional Facilitation Scale (IPFS) into Arabic for assessing competencies, in particular in the context involving simulations under health professionals.

**Study Design:** Cross-sectional survey study

**Place and Duration of Study:** This study was conducted at the Department of Medicine, Colleges of Medicine, Shaqra University (SU), in Riyadh, Saudi Arabia, during the academic year from March 2020 to June 2022.

**Materials and Methods:** It includes prospective health professionals for measuring the interprofessional attitudes by using a predesigned questionnaire. The IPFS-Arabic edition was created in part using the standards for questionnaire cross-cultural adaptation. The survey had demographic questions as well as 19 expanded RIPLS items and the interprofessional attitude scale (IPAS). The interprofessional simulation trainings' data were used to validate them. The content validity of the scale was deemed appropriate by experts and observers. The sample's demographic characteristics were described using means, standard deviations, and percentages of descriptive statistics. Bartlett's test and the Kaiser-Meyer-Olkin test were applied for assessing the assumptions about matrix identity and sample sufficiency. Cronbach's alpha was used to measure internal consistency.

**Results:** Out of 72 participants predominantly 97.2% were male with age 22-24 years 76.4%. Most of the participants from nursing science 37.5% followed by medicine, pharmacy, physical therapy and clinical laboratory science, 33.3%, 15.3%, 8.3% and 5.6% respectively filled questionnaire with 100% response rate. The significance of the Bartlett's test of sphericity of each scale employed in this study with  $p=0.000$ . The overall IPAS Cronbach's alpha of items was .88, which indicates a high level of internal consistency.

**Conclusion:** This study offers proof that trainers' facilitation skills may be evaluated using the IPFS-Arabic during an IPE simulation. It can also assist in furthering the development of those abilities in support of feedback.

**Key Words:** Interprofessional Facilitation Scale, Arabic Interprofessional Attitudes Scales, Translation, Cultural Adaptation

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## INTRODUCTION

Collaboration between a wide range of health professionals from varied backgrounds and clients, relatives, cares, and organizations are necessary to deliver the greatest level of care across contexts<sup>1</sup>. This is known as interprofessional collaborative practice (ICP).

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To improve this collaboration, there is widespread agreement that interprofessional education (IPE) should be promoted. IPE is an interaction that "arises when students from two maybe more professions learning with, from, and engage with one another," according to Pedersen et al. (2020)<sup>2</sup>. For IPE to be more effective in Arabic, the trainers' abilities must be raised. In fact, the instructors should be role models for ICP, explain interprofessional principles, vocabulary, and concepts, and demonstrate general facilitation skills<sup>3</sup>. The 2003 IOM study included the ability to provide patient-centered care as a part of an interprofessional team as one of the learning outcomes for all health professionals in order to address these issues and meet the needs of the 21<sup>st</sup> era health service<sup>4</sup>.

The Strategic Capacity for Interprofessional Collaborative Practice report (hereinafter referred to as the IPEC Report) proposed four interprofessional core competency areas: morality for partnership working, aspects, transdisciplinary connectivity, and teams and collaboration as a response to the need to develop IPE core capabilities<sup>5</sup>. A major obstacle to implementing IPE competencies, according to the IPEC Report, is

"the requirement for evaluation instruments to measure interprofessional competencies<sup>6</sup>". In IPE via simulation (IPE simulation), students from various professions participate as a team in a simulated care scenario. It is frequently used to enhance ICP, and the evidence that is currently available points to its beneficial impact on students' and teams' performances<sup>7</sup>.

The Interprofessional Learning Scale (RIPLS) are recognized measures for assessing interprofessional attitudes<sup>4</sup>. Using items developed from items to better cover the core skill areas in Arabic, we discuss the outcomes of our attempts to design and validate an interprofessional attitudes scale in this study. A sizable and diversified group of health professional students were given the questionnaire<sup>8</sup>.

To our knowledge, Arabic-speaking countries need to establish validated methods for assessing trainers' interprofessional education competencies, in particular in the context involving simulations. To evaluate the abilities of IPE facilitators within the context of IPE workshops, the Interprofessional Facilitation Scale (IPFS) was created.

## MATERIALS AND METHODS

This study is a cross-sectional survey study. It includes prospective health professionals for measuring the interprofessional attitudes by using a predesigned questionnaire, during the academic year from March 2020 to June 2022 and the study was conducted at the Center for Interprofessional Simulation in the Arabic-speaking nation. The IPFS-Arabic edition was created in part using the standards for questionnaire cross-cultural adaptation. The survey had demographic questions as well as 19 expanded RIPLS items and the interprofessional attitude scale (IPAS) (1 = strongly disagree, 5 = strongly agree) with a few minor phrasing changes (e.g., "health care professionals" was changed to "health professionals/students" or "health sciences students"). New questions regarding IPEC competency domains were also added to the survey. The health care industry's 72 undergraduate and graduate students were each sent an electronic survey invitation through email. Students from these programs receive their education and practised in places like rural health clinics and tertiary care hospitals. The optional and confidential character of the survey was made explicit in the invitations, which also contained a consent form. The age, sex, and ethnic makeup of the students who took the survey did not differ considerably from the demographics of the students who received survey invitations. Participants were chosen from among the four colleges and universities. The questionnaire was utilized to gather information regarding students' attitudes towards interprofessional and IPE at a crucial juncture in the development of the IPE curriculum, where IPE instruction was at the time undergoing substantial changes and expansion. We concentrated on

the 72 interprofessional simulation debriefings that students from six different curricula participated in (nursing science, medicine, pharmacy, physical therapy and from clinical laboratory science). The majority of the trainers who were observed had been facilitating interprofessional simulation for a while, although a third were new. The data was gathered by four observers. The trainers consented to being watched and to being given assessment on their IPE competences upon request.

The sample's demographic characteristics were described using means, standard deviations, and percentages of descriptive statistics. Items having more than 25% of null data were eliminated, and the average value for the remaining items was utilized. 23 responses were excluded from the analysis in total; 7 were excluded because there were insufficient data available for their field of research, and 16 were excluded because the surveys were too brief to be used for the proposed EFA and CFA analyses. Experts evaluated the scale's applicability to measuring every facet of the underlying construct to ascertain its internal validity. In order to explore the structure and verify that the procedure was appropriate, principal component analysis was performed. Using Bartlett's test and the Kaiser-Meyer-Olkin test, assumptions about matrix identity and sample sufficiency were assessed. Cronbach's alpha was used to measure internal consistency.

## RESULTS

Out of 72 participants predominantly 97.2% were male with age 22-24 years 76.4%. Most of the participants from nursing science 37.5% followed by medicine, pharmacy, physical therapy and clinical laboratory science, 33.3%, 15.3%, 8.3% and 5.6% respectively filled questionnaire with 100% response rate. (Table-1).

To test the scale's factor structures, exploratory factor analysis was used. Determining the reliability of scale structures is crucial. In order to assess the scales' construct validity, the KMO (Kaiser-Meyer-Olkin) measure of sample sufficiency was used. The results demonstrated that the scale's KMO values are at least 0.77. This value exceeds the KMO value that is commonly recognised in statistical research (the recommended KMO value is .50 at least). The significance of the Bartlett's test of sphericity of each scale employed in this study with  $p=0.000$ . (Table-2).

Principal component analysis was performed on the 19 RIPLS elements (PCA). PCA begins by extracting the greatest variance, placing it into the first component, then the second factor, and so on until the last factor. We evaluated the data's eligibility for factor analysis prior to PCA. The correlation matrix was checked, and several coefficients of 0.3 and higher were found. The Figure 1 scale plot for factor extraction revealed that there are three data values above the break, thus we

retained three factors. Connection between the items and factors, greater than 0.30 indicates moderate correlation between items and factors. The eigenvalues of these three variables are factor 1 (6.822), factor 2 (2.738), and factor 3 (1.797).

The use of Varimax rotation in the following stage produced factor loadings with an acceptable value greater than 0.55. (Table-3). A non-statistical variety of validity called content validity examines how well the test's content corresponds to the construct's associated content domain. There are two types of CVI; I-CVI and S-CVI. The RIPLS average (I-CVI) content validity index with all 19 items is 1.0. (S-CVI) scale content validity was 1.0. A scale with outstanding content validity is advised to have I-CVIs of 0.78 or higher and an average S-CVI of 0.8 or higher. Four sub-dimensions of the scale were used in the construct validity investigation. (Table-4).

The level of accuracy a scale displays despite multiple measurement repeats is referred to as reliability. Reliability analysis refers to examining this data collection tool's intrinsic accuracy. According to Cronbach, a scale is deemed dependable if its value is larger than 0.70 and less reliable if its value is less than 0.70. On subgroups, the RIPLS scale demonstrated strong internal consistency. Only one item had a correlation value of .21, while the other 18 items had values ranging from .30 to .66. The RIPLS items' overall Cronbach's alpha was .86, indicating very high internal consistency. Cronbach's alpha value for teamwork and collaboration (.89), Negative professional identity (.85), Positive professional identity (.83) and Roles and responsibility (.82). Results revealed all sub dimensions have authentic and satisfactory reliability. The results demonstrated that the scale's KMO values are at least 0.70. This result above the KMO threshold recommended by statistical research, which is >0.50. The significance of the Bartlett's test of sphericity of each scale employed in this study showed statistically significant (p=0.000). (Table-5).

Principal component analysis was performed on the 27 IPAS items (PCA). The correlation matrix was checked, and several coefficients of 0.3 and higher were found. More than 0.30 implies moderate item-factor correlation, which is the correlation between the two. Eigenvalues display the portion of the variance that is explained by that specific factor. Factor 1 (9.046), Factor 2 (3.414), and Factor 3 (2.592), these three factors' eigenvalues.

Factor loadings less than 0.39 are considered poor, 0.4-0.49 are considered acceptable, 0.5-0.59 are considered good, 0.6-0.69 are considered very good, and 0.7+ are considered exceptional. On factor 1, 12 items had factor loadings under 0.51. Factor loadings on factor 2 were 0.54 for 10 items. The factor loadings on factor 3 were 0.53 for 5 items. Items in factors 1, 2, and 3 are valid and fully loaded. Analysis of the rotated solution in the

pattern matrix. (Table-6). A non-statistical type of validity called content validity examines how well the test's content corresponds to the construct's associated content domain. I-CVI and S-CVI are the two different forms of CVI. With all 27 items, the IPAS average (I-CVI) content validity index is 1.0. Content validity on the (S-CVI) scale was 1.0. A scale with outstanding content validity is advised to have I-CVIs of 0.78 or higher and an average S-CVI of 0.8 or higher. (Table-7).

Items total correlation shows test how highly correlated each item is with the overall scale. 27 items total correlation shows the association with overall scale, value between .30 and .69 shows good association and only two items had a low value of .18. Cronbach's Alpha ( $\alpha$ ) coefficient was used to calculate each factor's reliability in the questionnaire. Reliability analysis tells us to what degree the results can be obtained when analysis is done again and again. It can be assessed by checking the consistency of the results. The acceptable value is shown such as  $\alpha \geq 0.9$  is excellent,  $\geq 0.8$  is good,  $\geq 0.7$  is acceptable,  $0.6 > \alpha \geq 0.5$  is poor. Cronbach's Alpha value for Teamwork role and responsibilities (.81), Patient centeredness (.83), Inter-professional Biases (.71), Diversity and ethics (.85), and Community centeredness (.85), these values indicate good internal consistency. The IPAS scale had very good internal consistency on subgroups. The overall IPAS Cronbach's alpha of items was .88, which indicates a high level of internal consistency.

**Table No.1: Demographic data of participants**

Characteristics	
Variable	N = 72
<b>Age</b>	
Age 22-24	55 (76.4%)
Age 25-30	17 (23.6%)
<b>College</b>	
Clinical laboratory science	4 (5.6%)
Medicine	24 (33.3%)
Nursing science	27 (37.5%)
Pharmacy	11 (15.3%)
Physical Therapy	6 (8.3%)
<b>Gender</b>	
Female	2 (2.8%)
Male	70 (97.2%)

**Table No.2: Showing the Bartlett's test**

KMO and Bartlett's test	
	Arabic
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.771
Bartlett's Test of Sphericity significant	.000

**Table No.3: Content validity Index of RIPLS**

Items	Experts in agreement	Items CVI	Subgroups
Item1	2	1.0	TWC
Item2	2	1.0	TWC
Item3	2	1.0	TWC
Item4	2	1.0	TWC
Item5	2	1.0	TWC
Item6	2	1.0	TWC
Item7	2	1.0	TWC
Item8	2	1.0	TWC
Item9	2	1.0	TWC
Item10	2	1.0	NPI
Item11	2	1.0	NPI
Item12	2	1.0	NPI
Item13	2	1.0	PPI
Item14	2	1.0	PPI
Item15	2	1.0	PPI
Item16	2	1.0	PPI
Item17	2	1.0	RR
Item18	2	1.0	RR
Item19	2	1.0	RR
	<b>S-CVI/Ave</b>	<b>1.0</b>	

**Table No.4: Item total correlations and Cronbach's Alpha value for RIPLS**

Item	Item total correlations	Cronbach's Alpha
TWC	.37	.85
TWC	.56	.85
TWC	.56	.85
TWC	.55	.85
TWC	.59	.84
TWC	.63	.84
TWC	.57	.85
TWC	.66	.84
TWC	.44	.85
<b>TWC Overall</b>		<b>.89</b>
NPI	.38	.86
NPI	.21	.87
NPI	.36	.86
<b>NPI Overall</b>		<b>.85</b>
PPI	.36	.85
PPI	.53	.84
PPI	.53	.84
PPI	.58	.85
<b>PPI Overall</b>		<b>.83</b>
RR	.62	.84
RR	.46	.85
RR	.45	.85
<b>RR Overall</b>		<b>.82</b>
<b>Overall</b>		<b>.86</b>

**Table No.5: Showing the Bartlett's test**

KMO and Bartlett's test	
	Arabic
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.703
Bartlett's Test of Sphericity significant	.000

**Table No.6: Content validity Index of IPAS**

Items	Experts in agreement	Items CVI	Subgroups
Item1	2	1.0	TRR
Item2	2	1.0	TRR
Item3	2	1.0	TRR
Item4	2	1.0	TRR
Item5	2	1.0	TRR
Item6	2	1.0	TRR
Item7	2	1.0	TRR
Item8	2	1.0	TRR
Item9	2	1.0	TRR
Item10	2	1.0	PC
Item11	2	1.0	PC
Item12	2	1.0	PC
Item13	2	1.0	PC
Item14	2	1.0	PC
Item15	2	1.0	IB
Item16	2	1.0	IB
Item17	2	1.0	IB
Item18	2	1.0	DE
Item19	2	1.0	DE
Item20	2	1.0	DE
Item21	2	1.0	DE
Item22	2	1.0	CC
Item23	2	1.0	CC
Item24	2	1.0	CC
Item25	2	1.0	CC
Item26	2	1.0	CC
Item27	2	1.0	CC
	<b>S-CVI/Ave</b>	<b>1.0</b>	

**Table No.7: Item total correlations and Cronbach's Alpha value for IPAS**

Item	Item total correlations	Cronbach's Alpha
TRR	.47	.88
TRR	.60	.87
TRR	.61	.87
TRR	.41	.88
TRR	.51	.88
TRR	.64	.87
TRR	.57	.88
TRR	.30	.89
TRR	.65	.88
<b>TRR Overall</b>		<b>.81</b>
PC	.46	.88
PC	.48	.88

PC	.40	.88
PC	.46	.88
PC	.54	.88
<b>PC Overall</b>		<b>.83</b>
IB	.18	.89
IB	.18	.89
IB	.36	.88
<b>IB Overall</b>		<b>.71</b>
DE	.38	.88
DE	.49	.88
DE	.47	.88
DE	.56	.88
<b>DE Overall</b>		<b>.86</b>
CC	.58	.88
CC	.53	.88
CC	.53	.88
CC	.69	.88
CC	.54	.88
CC	.59	.88
<b>CC Overall</b>		<b>.85</b>
<b>Overall Scale IPAS</b>		<b>.88</b>

**Abbreviations:** TWC =Teamwork and collaboration, NPI = Negative Professional Identity, PPI= Positive Professional Identity, RR= Roles and Responsibility, TRR =Teamwork Role and Responsibilities, PC = Patient Centeredness, IB= Inter-professional Biases, DE= Diversity and Ethics, CC=Community Centeredness

## DISCUSSION

In this study, the IPFS was translated into Arabic and validated. The full version of the IPFS contained 19 components. The outcomes provided proof that the scale is appropriate for evaluating trainers' IPE competencies in a simulation scenario. The Interprofessional Attitudes Scale (IPAS) builds upon RIPLS, one of the most popular IPE evaluation tools, albeit there have been questions raised about the validity of RIPLS's items and subscales<sup>6</sup>. The results of independent EFA and CFA analysis show that the construct validity of the IPAS is good.

The IPAS is unique in that it connects IPE evaluation to IPEC basic abilities. Furthermore, IPAS is helpful as a scale produced and validated at a significant American academic health facility with a variety of health professional programs because the majority of IPE instrument creation and testing to date has taken place outside the United States<sup>7</sup>. By using IPAS, it may be possible to compare attitudes across various groups, establish baseline attitudes toward IPE, customise IPE experiences for certain groups, and create the best IPE programmes<sup>4</sup>. The IPAS might also be used longitudinally for pre- and post-intervention evaluation, albeit this would need validation of the IPAS.

The simulation environment actively encourages interprofessional interactions between students while

bringing together health care experts for experiential learning<sup>2</sup>. The learners participate in a case scenario during the simulation, playing their professional roles as accurately as feasible<sup>4</sup>. Learners evaluate their team's performance during the interprofessional simulation debriefing by using the best practices in ICP<sup>9</sup>. This procedure benefits from a welcoming learning atmosphere. Items that indicate a trainer's capacity to foster a learning environment are part of our Factor 1. In fact, when trainers urge each professional to provide their opinion on the care issue during the debriefing, opportunities for interprofessional learning occur<sup>10</sup>. Learning also happens when instructors permit professionals to communicate their expectations and goals in the care setting<sup>3</sup>.

The complete RIPLS The items' Cronbach's alpha was 0.86, indicating very strong internal consistency. Items in factors 1, 2, and 3 are valid and fully loaded. Results showed that all of the subdimensions had genuine and acceptable dependability. Interprofessional simulation facilitation is a very demanding and challenging undertaking<sup>5</sup>. Trainers must coordinate interprofessional teamwork and oversee each learner's acquisition of the precise skills they need. To teach more successfully, trainers should receive training in simulation best practises and increase their IPE competencies<sup>11</sup>. Our findings can imply that the time allocated for train-the-trainer sessions helps to advance teaching abilities and IPE simulation competencies.

The study has a few flaws. The sample size was somewhat modest because there weren't many IPE simulations conducted throughout the data collecting period and some trainers declined to be monitored. To corroborate the findings and the substructure's strength across a wider spectrum of health care providers, additional research is required.

## CONCLUSION

This study offers proof that trainers' facilitation skills may be evaluated using the IPFS-Arabic during an IPE simulation. It can also assist in furthering the development of those abilities in support of feedback. Learning interprofessional competencies while managing the intricacy of interprofessional founder is one of the most difficult components of IPE training. They should also encourage the exchange of representations, reciprocal expectations, and professional standards.

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### Author's Contribution:

Concept & Design of Study: Ali Qassim Darraj  
 Drafting: Ali Qassim Darraj  
 Data Analysis: Ali Qassim Darraj  
 Revisiting Critically: Ali Qassim Darraj

Final Approval of version: Ali Qassim Darraj

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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