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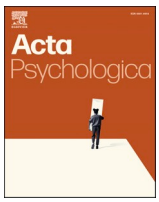

Translation and psychometric evaluation of the Clance impostor phenomenon scale in Arabic-speaking individuals: Study of validity and reliability

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ABSTRACT

Background: Imposter Syndrome (IS), or Imposter Phenomenon (IP), is marked by persistent self-doubt and fear of being exposed as a fraud despite success. It's prevalent in high-achieving fields like medicine and is linked to anxiety and perfectionism. The Clance Imposter Phenomenon Scale (CIPS) is the most common assessment tool. This study aims to translate and validate an Arabic version of CIPS for Arabic-speaking populations.

Methods: This cross-sectional study was conducted at King Saud University, Riyadh, from August to September 2024, using a convenient sampling method. The survey gathered demographic details and included the Arabic version of the CIPS, the General Self-Esteem Scale (GSES), and The Big Three Perfectionism Scale (BTPS). Data were analyzed using IBM SPSS 22 ($p < 0.05$). Construct validity was assessed through Exploratory and Confirmatory Factor Analysis. Internal consistency (Cronbach's alpha $\geq$0.7), test-retest reliability (ICC >0.75), and discriminant validity were evaluated. Concurrent validity was examined using structural equation modelling and Pearson's correlation with GSES and BTPS.

Results: A total of 477 participants (66.5 % female, mean age 21.1 $\pm$ 2.0 years) completed the questionnaire. The Arabic CIPS demonstrated a three-factor structure in exploratory factor analysis (KMO = 0.936, Bartlett's test $p < 0.001$), with confirmatory factor analysis supporting good model fit (CFI = 0.87, RMSEA = 0.07). Internal consistency was excellent (Cronbach's α = 0.90), and test-retest reliability was acceptable (ICC = 0.71). Discriminant validity was supported by significant score differences across quartiles. CIPS correlated negatively with general self-efficacy ($r = -0.39$, $p = 0.001$) and positively with self-critical perfectionism ($r = 0.68$, p = 0.001) and rigid perfectionism ($r = 0.46$, p = 0.001), confirming its construct validity.

Conclusion: The Arabic CIPS is valid and reliable for use among medical and non-medical populations.

1. Introduction

Imposter syndrome (IS), also known as imposter phenomenon (IP), is a psychological condition marked by chronic self-doubt and a persistent fear of being exposed as a fraud, despite clear evidence of success (Bravata et al., 2020). The concept, which was introduced by psychologists Suzanne Imes and Pauline Rose Clance in 1978, originally focused on high-achieving women and marginalized groups struggling with feelings of fraudulence despite their accomplishments (Thomas & Bigatti, 2020). However, in recent literature, the term has become more prominent.

IP is closely associated with psychological traits such as perfectionism, anxiety, and neuroticism, and it can lead to diminished motivation, increased stress, and difficulty appreciating one's success

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Table 1
Personal characteristics of study participants ($n = 477$).

Personal Characteristics	No.	%
Age in years		
< 20 years	97	20.3 %
20–22 years	209	43.8 %
23–24 years	138	28.9 %
> 24 years	33	6.9 %
Mean ± SD	21.1 ± 2.0	
Gender		
Male	160	33.5 %
Female	317	66.5 %
Monthly income		
< 2000 SR	361	75.7 %
2000–4999 SR	70	14.7 %
5000–10,000 SR	18	3.8 %
> 10,000 SR	28	5.9 %
Specialty		
Medical	415	87.0 %
Non-Medical	62	13.0 %

(Almatrafi et al., 2022). The consequences of IP extend beyond individual well-being, negatively affecting psychological health and undermining the ability to enjoy personal achievements (Villwock et al., 2016). Research has shown a significant inverse relationship between IP and personal achievement, with those experiencing IP often scoring lower on measures of personal success (Naser et al., 2022). Moreover, IP erodes self-esteem, leading to heightened sensitivity to mistakes and excessive rumination on perceived errors, which can cause depression, anxiety, and burnout (Schubert & Bowker, 2019).

IP is highly prevalent in cognitively demanding fields such as medicine and academia, where the relentless pursuit of excellence often fosters a deep-seated sense of inadequacy (Jamil et al., 2024). In the medical profession, IP affects individuals across all training levels, from students to medical seniors (Gottlieb et al., 2020). The pressure inherent in clinical practice—due to matters ranging from patient complaints to competitive grant environments—can further exacerbate these feelings (LaDonna et al., 2018). A study on medical students found that 35 % of females and 29 % of males experience IP, highlighting its significant impact (Alrayyes et al., 2020). In Saudi Arabia, studies have documented varying levels of IP in the medical field, with prevalence ranging from 27.5 %–62.5 % (Almatrafi et al., 2022; Alrasheed et al., 2024; Elnaggar et al., 2023; Aleiaidi et al., 2024; Impostor phenomenon among urologists in Saudi Arabia, 2023).

Beyond medicine, IP is also prevalent in other high-stakes fields, including engineering, where students frequently experience self-doubt despite objective achievements (Yang et al., 2024). First-generation college students, in particular, are disproportionately affected, often facing heightened stress levels and additional challenges related to social and cultural expectations (Holden et al., 2024). Similarly, Research on Russian college students further highlights the psychological toll of IP, linking it to perfectionism and identifying it as a mediator between perfectionism and anxiety, ultimately contributing to increased psychological distress (Wang et al., 2019).

Identifying IP requires a comprehensive assessment, including a detailed examination of the social, environmental, and psychological factors influencing the individual (Jamil et al., 2024). There are no universally validated diagnostic criteria for IP; however, the Clance Imposter Phenomenon Scale (CIPS) is one of the most widely used tools. While other scales exist, such as the Harvey, Young, Leary, and Perceived Fraudulence scales, they lack external validity (Jamil et al., 2024).

The CIPS is popular for its brevity and self-administration format, and it is psychometrically reliable (Chrisman et al., 1995). The CIPS has been translated and validated in several languages, including English, German, Korean, and Spanish (Brauer & Wolf, 2016; Chae et al., 1995; Chrisman et al., 1995; Sandoval-Lentisco et al., 2024). Although several studies in Saudi Arabia have employed the CIPS (Almatrafi et al., 2022; Alrasheed et al., 2024; Elnaggar et al., 2023; "Impostor Phenomenon among Urologists in Saudi Arabia," 2023; Siraj et al., 2024), no validated Arabic version currently exists, and its psychometric properties in this context remain unexplored. Therefore, the aim of the study was to develop, culturally adapt, and validate the CIPS in Arabic while evaluating its reliability and validity for assessing IP in Arabic-speakers.

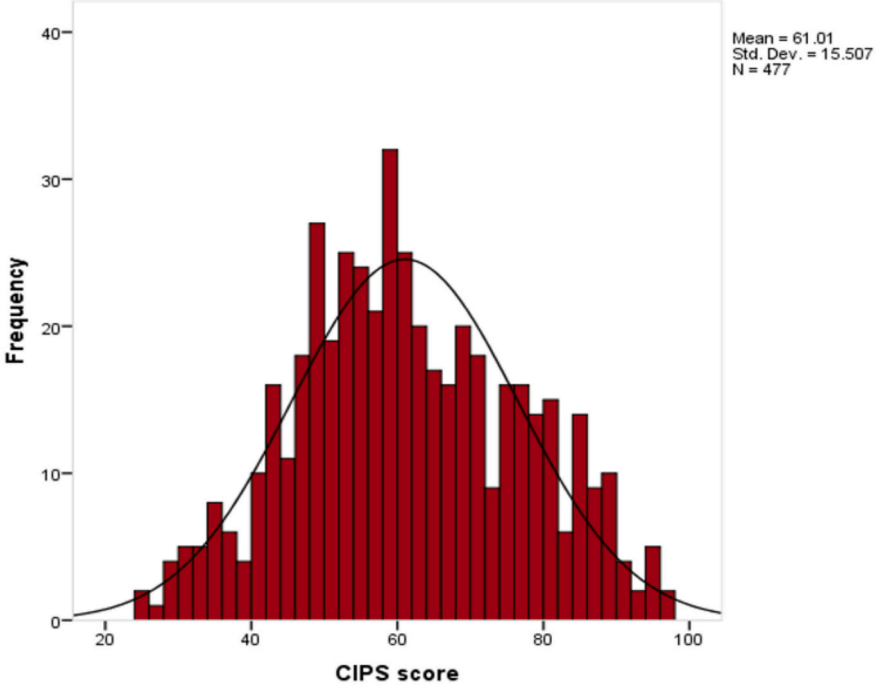

Fig. 1. Distribution of Clance Impostor Phenomenon Scale (CIPS) scores among the study sample.

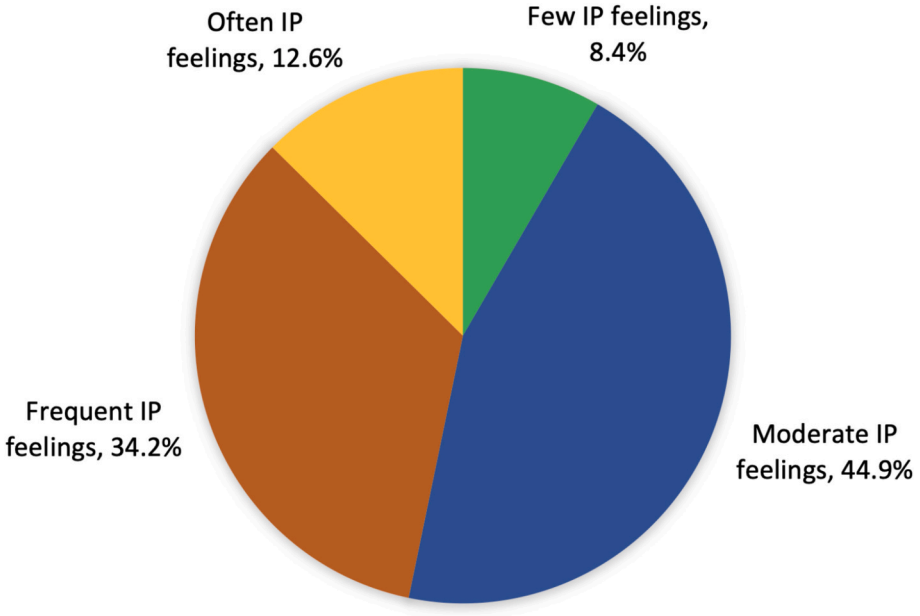

Fig. 2. Frequency distribution of Clance Impostor Phenomenon level among the study sample.

Table 2
Exploratory factor analysis of the Arabic Clance Impostor Phenomenon scale.

Rotated Component Matrix[a]			
	Factor		
	1	2	3
CIPS 1	0.193	0.010	0.727
CIPS 2	−0.075	0.061	0.620
CIPS 3	0.576	0.236	0.058
CIPS 4	0.651	0.326	0.062
CIPS 5	−0.107	0.713	0.318
CIPS 6	0.645	0.414	0.078
CIPS 7	0.544	0.270	−0.026
CIPS 8	0.383	0.390	−0.091
CIPS 9	0.296	0.736	0.049
CIPS 10	0.406	0.577	−0.197
CIPS 11	0.346	0.734	0.002
CIPS 12	0.730	0.180	−0.038
CIPS 13	0.721	0.316	−0.017
CIPS 14	0.688	0.209	0.169
CIPS 15	0.624	0.523	0.013
CIPS 16	0.499	0.425	−0.152
CIPS 17	0.753	0.237	−0.079
CIPS 18	0.675	0.197	0.201
CIPS 19	0.434	−0.083	0.366
CIPS 20	0.665	−0.023	0.105
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			0.936
Bartlett's Test of Sphericity	Approx. Chi-Square		3913.175
	df		190
	Sig.		<0.001

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
[a] 3 components extracted.

2. Methodology

2.1. Study design, participants, setting

We conducted an observational analytical validation study in Riyadh city in Saudi Arabia, from August–September 2024. Participants were Arabic-speaking students from different universities (King Saud University, Imam Mohammed bin Saud University, and King Saud bin Abdulaziz University for Health Sciences. It focused on medical students; however, we included students enrolled in non-medical colleges in the fields of art and social sciences. The sole exclusion criterion was the inability to speak Arabic fluently.

The participants recruited were primarily medical students. The questionnaire was disseminated via SurveyMonkey (https://www.surveymonkey.com/) to batch leaders representing all academic years, ensuring both male and female students were reached. To broaden the scope of the study, the survey was shared with students in colleges other than medicine. Batch leaders were instructed to distribute the link to their respective networks, and multiple reminders were sent throughout the data collection period to encourage participation.

2.2. Questionnaire

The data collection tool was an electronic survey structured into four sections. The first part gathered data related to the subjects' demographics such as the participants' age, gender, and personal monthly income. The second section utilized the newly developed Arabic version of the CIPS for assessing imposter syndrome among the participants. The third section included the Arabic Self-Esteem Scale, a brief 10-item measure. The final section employed the Arabic version of the Big Three Perfectionism Scale to assess different dimensions of perfectionism.

2.2.1. Clance imposter phenomenon scale (CIPS)

The CIPS tool was originally developed by Dr. Pauline Clance back in 1985. It assesses the severity of imposter syndrome in individuals who feel like frauds despite external validation of their accomplishments (Chrisman et al., 1995) via 20 items scored on a 5-point Likert scale ranging from "Not at all true" to "Very true." This scale evaluates feelings of self-doubt, fear of evaluation, and a tendency to downplay achievements. The higher the score, the stronger the experience of the imposter phenomenon, with possible total scores ranging from 20 to 100. Psychometric analyses have demonstrated high reliability, with a Cronbach's alpha of 0.92, supporting the scale's internal consistency (Chrisman et al., 1995).

2.2.2. General self-efficacy scale (GSES)

The General Self-Efficacy Scale (GSES) was developed by Schwarzer

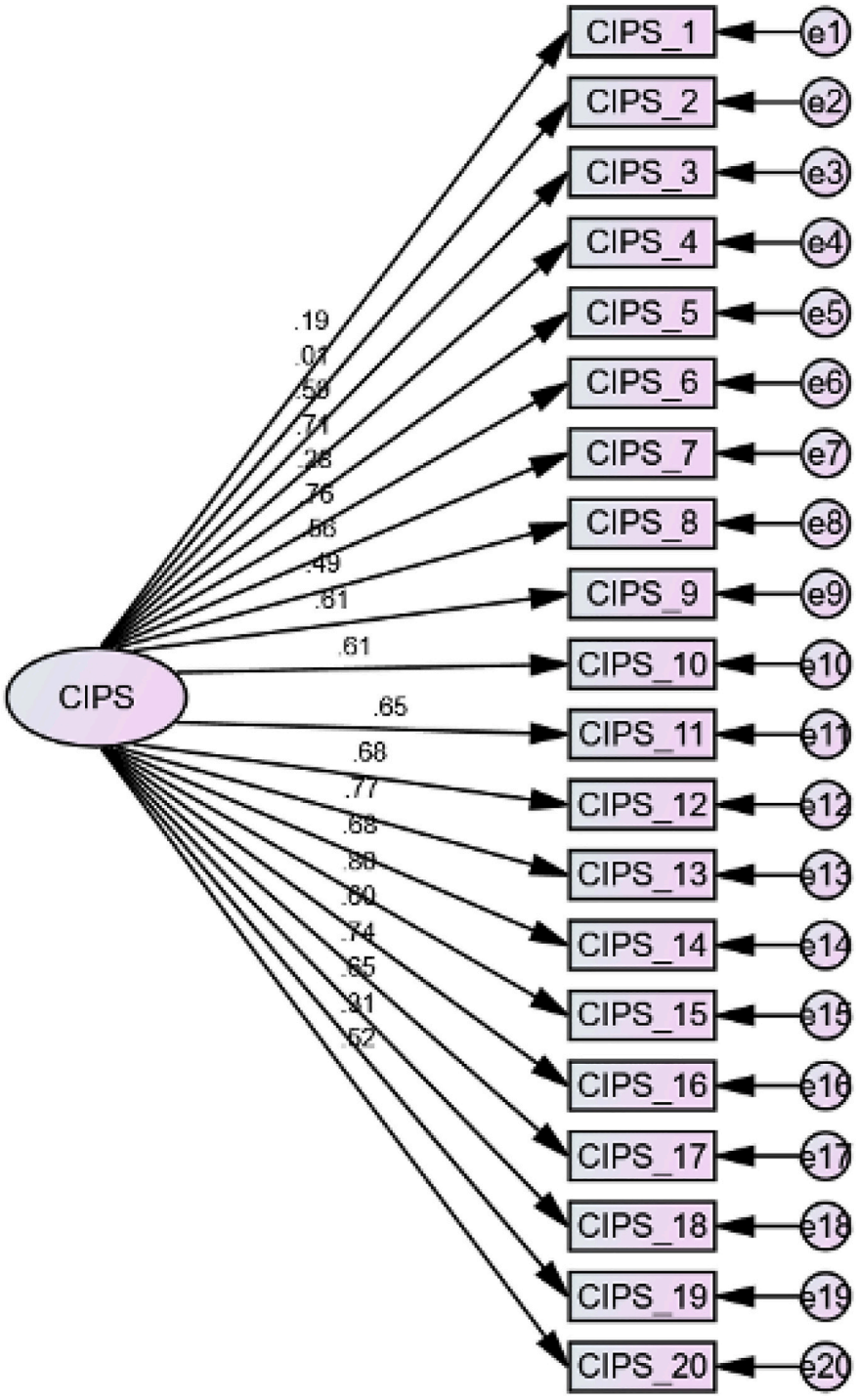

Fig. 3. Path Diagram of the Unidimensional Model for the Arabic CIPS.

and Jerusalem in 1995 to measure a person's belief in their capacity to handle challenges effectively (Almatrafi et al., 2022). Comprising 10 items, the GSES uses a 4-point Likert scale ranging from "Not at all true" to "Exactly true," with scores ranging from 10 to 40. Higher scores indicate greater self-efficacy, reflecting confidence in managing difficult situations. The GSES has demonstrated strong psychometric properties, including a Cronbach's alpha of 0.82, indicating reliable internal consistency (Schwarzer & Jerusalem, 2012). This scale has been widely validated across different cultures and languages, including an Arabic version validated in 2017, which showed a Cronbach's alpha of 0.95, affirming the GSES's cross-cultural applicability and reliability (Crandall et al., 2016).

2.2.3. *The big three perfectionism scale (BTPS)*

Developed by Smith et al. in 2016, the Big Three Perfectionism Scale (BTPS) assesses three dimensions of perfectionism: rigid perfectionism, self-critical perfectionism, and narcissistic perfectionism (Smith et al., 2016). The BTPS is a 16-item measure, with items scored on a 5-point Likert scale from "Strongly disagree" to "Strongly agree." Each dimension reflects different aspects of perfectionism, such as rigid standards, critical self-evaluation, and a desire for admiration. Scores for each dimension range from 15 to 75, with higher scores indicating higher

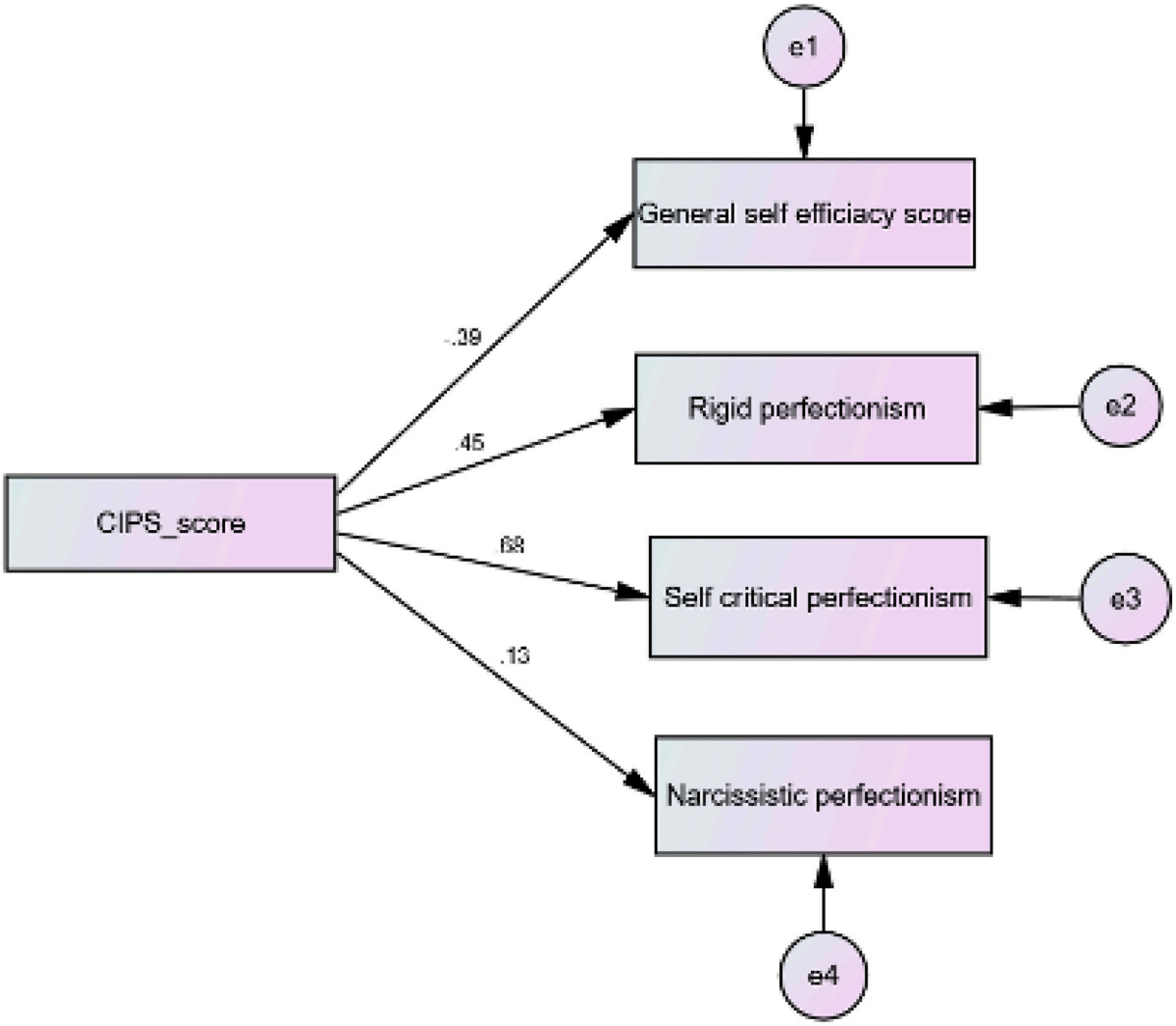

Fig. 4. Path Diagram of the Higher-Order Model Linking CIPS to Related Constructs.

Table 3
Descriptive of internal consistency and test-retest reliability of the Arabic Clance Impostor Phenomenon scale.

Subgroup	Cronbach's alpha CIPS	ICC (95 % CI)
Medical	0.91	0.72 (0.62–0.84)
Non-Medical	0.89	0.70 (0.60–0.85)
Overall	0.90	0.71 (0.60–0.83)

ICC: Intra-class correlation coefficient CI: Confidence interval.

levels of that specific dimension of perfectionism. The scale shows excellent psychometric properties, with Cronbach's alpha values of 0.87 for rigid perfectionism, 0.88 for self-critical perfectionism, and 0.81 for narcissistic perfectionism, indicating strong reliability (Feher et al., 2020). The Arabic version, validated in 2023, has shown comparable reliability, with Cronbach's alpha values between 0.83 and 0.86, supporting its use in Arabic-speaking populations (Fekih-Romdhane et al., 2023).

2.3. Instrument translation process

To ensure cultural and linguistic accuracy, the translation process adhered to a comprehensive approach recommended by Sousa and Rojjanasrirat (Sousa & Rojjanasrirat, 2011). After permission was obtained from the original developers to translate the scales, two independent professional translators performed forward translations of the instrument from English to Arabic (TL-1 and TL-2). Two authors (N.A. and F.A.) reviewed and combined the two versions into a unified preliminary Arabic version (PI-TL). We subjected this version to backward translation by another professional translator who was unaware of the forward translation. The resulting English version (B-TL 1) was reviewed by the tool's original developer (P.C.) for accuracy and conceptual equivalence. After receiving feedback, further revisions were made, resulting in developing the pre-final Arabic version (P-FTL). Overall, the backward translation was deemed appropriate for reflecting the original meaning.

2.4. Psychometric analysis for validity and reliability

Prior to finalizing the Arabic translation of the scales, a content validity evaluation was carried out with input from a panel of 10 subject matter experts (SMEs), including four psychiatrists, three psychologists, and three family physicians. The experts assessed each item across four key criteria—clarity, simplicity, relevance, and importance—using a 4-point Likert scale. Based on these evaluations, several psychometric indices were computed, such as the Content Validity, Simplicity, Importance, and Clarity Indices. The insights gathered from this expert review informed the refinement of the Arabic version of the Clance Impostor Phenomenon Scale (Ar-CIPS), resulting in the finalized version

Table 4
Item-Total Statistics and Impact on the Arabic Clance Impostor Phenomenon scale Reliability.

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
CIPS 1	57.07	233.611	0.203	0.165	0.908
CIPS 2	57.43	238.720	0.019	0.068	0.912
CIPS 3	58.00	218.269	0.558	0.344	0.901
CIPS 4	58.08	210.730	0.672	0.520	0.897
CIPS 5	58.41	227.015	0.279	0.226	0.908
CIPS 6	58.15	207.813	0.719	0.584	0.896
CIPS 7	57.81	216.648	0.546	0.347	0.901
CIPS 8	58.30	222.153	0.464	0.295	0.903
CIPS 9	59.16	218.675	0.596	0.507	0.900
CIPS 10	58.43	215.389	0.570	0.485	0.900
CIPS 11	58.85	215.436	0.630	0.558	0.899
CIPS 12	57.39	214.137	0.645	0.507	0.898
CIPS 13	57.94	210.011	0.717	0.601	0.896
CIPS 14	57.65	216.603	0.644	0.497	0.899
CIPS 15	58.40	210.023	0.757	0.608	0.895
CIPS 16	58.15	215.273	0.573	0.463	0.900
CIPS 17	57.74	210.365	0.688	0.556	0.897
CIPS 18	57.58	215.291	0.637	0.484	0.899
CIPS 19	57.39	226.348	0.307	0.146	0.907
CIPS 20	57.34	219.499	0.501	0.355	0.902

labelled as FT.

2.5. Ethical considerations

The Institutional Review Board (IRB) of the College of Medicine at King Saud University granted ethical approval for this study (E-24-8787, Ref. No. 24/1310/IRB) in August 2024. Before participation, all students provided e-informed consent after being fully briefed about the study's objectives and duration. No identifying information was collected to ensure anonymity, and participants were not offered any incentives to take part in the present study.

2.6. Statistical analysis

After being extracted, data were revised, coded, and run through statistical software IBM SPSS version 22 (SPSS, Inc. Chicago, IL). All statistical analysis was done using two-tailed tests. A p-value of <0.05 was statistically significant. To further evaluate the construct validity of the questionnaire, "both Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were conducted. The EFA aimed to uncover the underlying factor structure within the data and to determine the optimal number of components that best represented the constructs measured. Principal Component Analysis (PCA) with Varimax rotation was employed to enhance the clarity of factor interpretation. Only factors with eigenvalues exceeding one and items with factor loadings above 0.5 were retained for subsequent analyses. Following EFA, CFA was implemented to confirm the factor structure, with model fit assessed through multiple indices, including the Chi-square statistic, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA). Concurrent validity was assessed using a structural equation model based on path analysis, with a path diagram showing standardized coefficients assessing the standardized regression coefficient between each item and scale construct. A standardized coefficient of 0.3 or higher was considered indicative of a strong association between an item and its corresponding factor. To evaluate discriminant validity, the ceiling and floor effects were analyzed. This involved comparing the mean scores of the lowest (first quartile) and highest (third quartile) scoring groups using an independent samples t-test. A statistically significant difference between these groups supported the discriminant validity of the scale. To evaluate internal consistency across domains, Cronbach's alpha was calculated, reflecting the average inter-item correlation within each domain of the questionnaire. Values between 0.7 and 0.8 were regarded as ideal, indicating a high level of reliability and internal coherence in scale development. The stability of the instrument, or test–retest reliability, was measured among 19 participants using the intraclass correlation coefficient (ICC). An ICC above 0.75 denoted excellent reliability, values between 0.4 and 0.75 indicated moderate to good stability, and values below 0.4 suggested poor reliability. Additionally, Pearson correlation coefficients were used to construct a correlation matrix, which helped determine the strength and direction of relationships between the CIPS and other instruments used in the study, namely the Arabic GSES and BTPS.

3. Results

The final sample comprised 477 individuals who completed the survey. Participant ages varied between 18 and over 30 years, with a mean age of 21.1 years (SD = 2.0), and 317 (66.5 %) participants were female. A monthly income of <2000 SR was reported among 361 (75.7 %) participants, while 70 (14.7 %) reported 2000 to <5000 SR, and 28 (5.9 %) reported a monthly income exceeding 10,000 SR. Most of the respondents (87 %; 415) were in the medical field, but 62 (13 %) were non-medical students (Table 1).

The distribution of CIPS scores (Fig. 1) ranged from 20 to 100, with a mean score of 61.01 ± 15.5. Score distribution showed a normal distribution pattern. Of the participants, 40 (8.4 %) experienced few IP feelings, 214 (44.9 %) experienced moderate IP feelings, 163 (34.2 %) had often IP feelings, and 60 (12.6 %) experienced frequent IP feelings (Fig. 2). Exploratory factor analysis (EFA; Table 2) identified a three-factor model, supported by a high Kaiser-Meyer-Olkin (KMO) value of 0.936, suggesting excellent sampling adequacy for factor analysis. Additionally, Bartlett's Test of Sphericity yielded a statistically significant result ($\chi^2 = 3913.175$, $p < 0.001$), further validating the suitability of the dataset for this analytical approach.

In addition to the three-factor structure identified through EFA, two alternative structural models were tested to provide further insight into the psychometric properties of the Arabic CIPS. The first model (Fig. 3) examined a unidimensional structure where all 20 items loaded onto a single latent variable ("CIPS"). Factor loadings ranged from 0.19 to 0.80, with some items (e.g., CIPS 1 and CIPS 2) showing weaker associations, supporting the multidimensionality observed in EFA. The second model (Fig. 4) tested a higher-order structure, with "CIPS score" influencing four related subconstructs: General Self-Efficacy, Rigid Perfectionism, Self-Critical Perfectionism, and Narcissistic Perfectionism. Path coefficients highlighted a strong positive association with Self-Critical Perfectionism (0.68), moderate associations with Rigid Perfectionism (0.45) and Narcissistic Perfectionism (0.13), and a negative association with General Self-Efficacy (−0.39). This model supports the construct

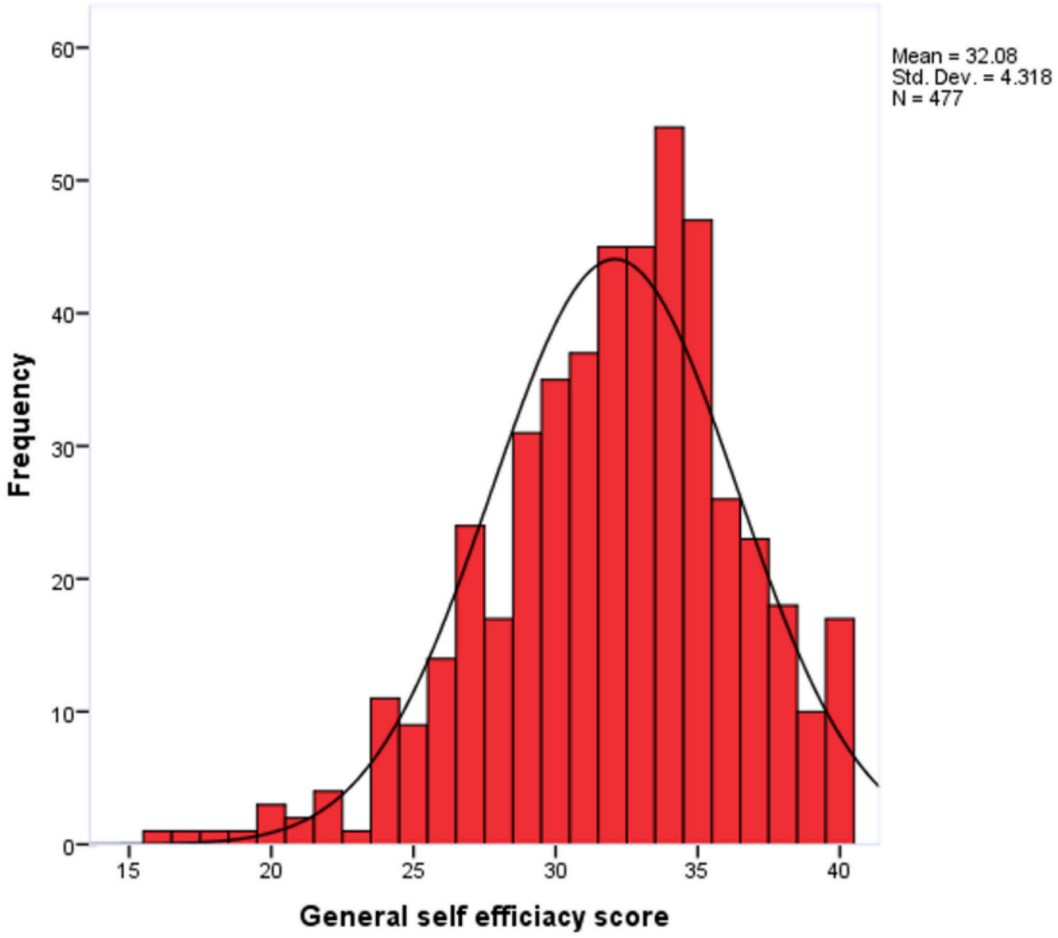

Fig. 5. Distribution of general self-efficacy scale scores among the study sample.

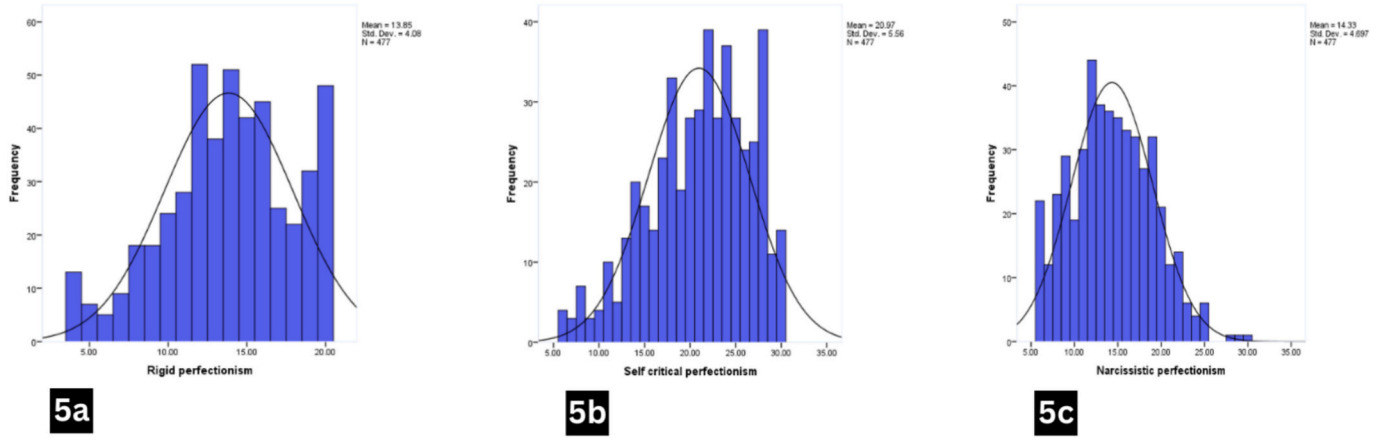

Fig. 6. Distribution of Big Three Perfectionism Scale scores among study sample.

validity of the Arabic CIPS by demonstrating its alignment with related psychological constructs.

Using PCA with varimax rotation, the EFA identified a three-factor solution accounting for 51.99 % of the total variance. Items loaded onto three distinct factors, indicating a well-defined structure for the CIPS. The rotated component matrix highlighted that some items (CIPS3, CIPS4, CIPS12, CIPS13, and CIPS17) loaded strongly onto Factor 1, while items CIPS5 and CIPS9 loaded onto Factor 2. In addition, items CIPS1 and CIPS2 displayed high loadings on Factor 3, composing the three-factor structure. The model showed high model fit measures (CFI = 0.87; GFI = 0.86; RMSEA = 0.07; and PCLOE <0.001).

In terms of discriminant validity, a notable difference was observed between the lower quartile (1st quartile) and upper quartile (3rd quartile) scores on the CIPS scale, with mean scores of 42.1 and 81.5, respectively, supporting strong evidence of discriminant validity. To assess reliability (Table 3), a descriptive internal consistency and test–retest reliability of the CIPS were examined. Cronbach's alpha CIPS was 0.91 (excellent) among medical students and 0.89 (very good) among non-medical students. The overall Cronbach's alpha CIPS was 0.90 (excellent). With regard to stability (test–retest reliability), ICC was

Table 5
Correlation between Clance Impostor Phenomenon Scale with General Self-Efficacy Scale and Big Three Perfectionism Scale.

Scales	CIPS	
	r	p-value
General self-efficacy score	−0.39	0.001*
Big Three Perfectionism		
Rigid perfectionism	0.46	0.001*
Self-critical perfectionism	0.68	0.001*
Narcissistic perfectionism	0.13	0.003*
Overall BTPS	0.55	0.001*
Content validity		
Property	Mean ± SD	Min-Max
Scale-level content validity index (S-CVI)	0.95 ± 0.05	0.9–1
Simplicity index (SI)	0.96 ± 0.06	0.8–1
Importance index (II)	0.96 ± 0.05	0.9–1
Clarity index (CI)	0.97 ± 0.06	0.8–1

r: Pearson Correlation co-efficient * $P < 0.05$ (significant).

0.72 (0.62–0.84) among medical students and 0.70 (0.60–0.85) among non-medical students, with an overall ICC of 0.71 (0.60–0.83).

An inter-item correlation matrix revealed how the various items on the scale related to each other, with values ranging from −1 − +1. Most correlations were positive, indicating that the items increased or decreased together. For example, moderate to strong correlations were found between items CIPS 6 and CIPS 4 (0.592) and CIPS 9 and CIPS 10 (0.454), suggesting that these items share a significant association. Some items showed weaker or near-zero correlations, indicating less connection between them. Interestingly, a few items (e.g., CIPS 2 and CIPS 8) displayed a negative correlation (−0.050), signifying a slight inverse relationship.

The item-total statistics (Table 4) provide insights into how each item contributes to the overall scale. Most items demonstrated strong corrected item-total correlations, indicating consistency with the total score. In particular, items CIPS 6 (0.719) and CIPS 15 (0.757) showed robust contributions. On the other hand, item CIPS 2 (0.019) had a much lower correlation, indicating potentially less of a contribution to the overall scale. The Cronbach's alpha "if item deleted" values further supported this, as the removal of most items would lower the alpha, reinforcing their importance in maintaining the scale's reliability. However, removing weaker items, such as CIPS 2, would slightly improve the alpha (from 0.908 to 0.912), suggesting these items could be less central.

Fig. 5 shows the distribution of general self-efficacy scale scores among the study sample. The scores, which ranged from 16 to 40 with a mean score of 32.1 ± 4.3, revealed normal distribution. The scale reliability was satisfactory, with Cronbach's alpha of 0.77. Fig. 6 shows the distribution of the BTPS scores among the study sample. Distribution was normal for the three domains (rigid perfectionism, self-critical perfectionism, and narcissistic perfectionism), with mean scores of 13.8 ± 4.1, 20.9 ± 5.6, and 14.3 ± 4.6, respectively. The reliability of the tool items was 0.86 for rigid perfectionism, 0.87 for self-critical perfectionism, and 0.75 for narcissistic perfectionism.

Table 5 reveals the associations between the Arabic version of the CIPS and the GSES and BTPS. Within the study sample, the GSES demonstrated a Cronbach's alpha of 0.77, while the BTPS showed strong internal consistency across its subscales, with alpha values of 0.86 for rigid perfectionism, 0.87 for self-critical perfectionism, and 0.75 for narcissistic perfectionism. A moderate, statistically significant negative correlation was observed between CIPS and GSES ($r = -0.39$; $p = 0.001$). Additionally, CIPS was moderately and positively correlated with rigid perfectionism ($r = 0.46$; $p = 0.001$) and self-critical perfectionism ($r = 0.68$; $p = 0.001$), while its correlation with narcissistic perfectionism was weaker but still significant ($r = 0.13$; $p = 0.003$). Overall, the CIPS demonstrated a moderate positive correlation with the total BTPS score ($r = 0.55$; $p = 0.001$).

4. Discussion

Highly demanding professionals and college students often face the demanding nature of their roles, which increases their susceptibility to experiencing the impostor phenomenon, commonly known as impostor syndrome (Gottlieb et al., 2020; Jamil et al., 2024). This is especially troubling since it correlates with an increased prevalence of burnout and suicidal thoughts (Brennan-Wydra et al., 2021; Villwock et al., 2016). This project seeks to translate, validate, and culturally adapt the CIPS into Arabic, guaranteeing cultural appropriateness and evaluating its psychometric characteristics, validity, and reliability.

The research revealed a normal distribution of CIPS scores, with a mean of 61.01 among individuals. Consistent with our findings, Levant et al. (2020) examined the CIPS of medical students and reported a mean CIPS score of 63.0, indicating moderate-to-frequent imposter sentiments (Levant et al., 2020). According to a study by Campos et al. 12 % experienced mild symptoms, while more than one third reported moderate symptoms, the highest reported group expressed severe symptoms, and 15 % extremely severe symptoms of IP (Shinawatra et al., 2023). Shinawatra et al. . (2023) found that nearly half of clinical-year medical students reported encountering IP. The multivariable analysis revealed a significant correlation between a heightened propensity for IP and greater levels of anxiety, stress, and depression (Campos et al., 2022).

In the current research, results showed that a minority exhibited little IP sensations, while almost half the sample showed moderate IP feelings, approximately one third displayed frequent IP feelings, and a small portion manifested frequently frequent IP feelings. Consistent with our findings, Levant et al. (Levant et al., 2020) discovered that third-year medical students predominantly resonated with aspects pertaining to irrational fear of failure, reluctance to acknowledge achievements prior to their announcement, recollection of failures over successes, self-perception of inferiority compared to peers, and anxiety regarding success. Conversely, these pupils did not prominently attribute their successes to chance. Gender and feelings of fatigue or depersonalization influenced responses to certain themes differently, although self-reported underrepresented minority status was unaffected. As students move from preclinical to clinical training phases, this finding may help shape medicines intended to support health (Levant et al., 2020). In a university center in Northeast Brazil, Campos et al. (2022) (Campos et al., 2022) reported that severe or very severe IP symptoms were associated with being single, poor physical activity levels, and lack of family economic contribution. Severe or very severe IP symptoms correlate with a history of melancholy, anxiety, and the use of antidepressants. Additionally, a correlation was seen between the CIPS and PHQ-9 scale scores, as well as between IP and BS (the components of emotional exhaustion and cynicism) (Shinawatra et al., 2023).

The Arabic version of the CIPS (Ar-CIPS) exhibited robust psychometric characteristics in this study, affirming its reliability and validity as a tool for evaluating impostor syndrome among Arabic-speaking medical students and professionals. The scale demonstrated high internal consistency, with a Cronbach's alpha of 0.90, and showed satisfactory construct validity, supported by good model fit indices. These findings align with previous studies, such as those by Levant et al. and Campos et al., underscoring the scale's reliability across diverse cultural contexts. The discriminant validity of the CIPS, shown by significant differences in impostor scores across symptom severity levels, further highlights its utility for distinguishing between varying degrees of impostor feelings. Moreover, the Ar-CIPS demonstrates a strong alignment with other validated translations, underscoring its robustness and cross-cultural applicability. Consistent with findings from German (Brauer & Wolf, 2016) and English (Chrisman et al., 1995) studies, the Arabic version adhered to the well-established three-factor structure, further validating the scale's conceptual foundation. Internal consistency was high across all studies, with the Arabic version achieving a Cronbach's alpha of 0.90, closely matching the Spanish (α = 0.90) (Sandoval-Lentisco et al., 2024), German (α = 0.87)(Brauer & Wolf,

2016), Korean (α = 0.84)(Chae et al., 1995), and English (α = 0.92) (Chrisman et al., 1995) versions. This consistency highlights the reliability of the CIPS in diverse cultural contexts. Moreover, the CIPS consistently revealed significant correlations with key psychological constructs, exhibiting a negative relationship with self-esteem, Mayers-Briggs Type Indicator (MBTI)–the introverted type and a positive relationship with fear of negative evaluation, NEO personality inventory and depression across translations in Spanish, German, English, and Korean.

These findings suggest that individuals with higher IP scores tend to experience lower self-efficacy and greater perfectionistic tendencies, particularly in rigid and self-critical domains. The significant association between IP and overall perfectionism underscores how these individuals may set excessively high standards for themselves, contributing to persistent self-doubt and feelings of inadequacy. Interestingly, the weaker association with narcissistic perfectionism suggests that while high standards are a common feature, they may not always be accompanied by self-focused or grandiose traits. This pattern highlights how IP is often rooted in a blend of self-critical thinking and perfectionism, suggesting that interventions aimed at building self-efficacy and addressing perfectionistic beliefs could be beneficial for those affected by IP. In 2024, research revealed a negative association between CIPS scores and GSES and a positive correlation with BTPS, which aligns with our results (Pákozdy et al., 2024). Psychological traits, as in anxiety, neurosis, perfectionism, and a lack of self-control, have been linked to the IP. Despite their accomplishments and proof of ability, affected individuals display low self-esteem, increased depression, and a feeling of pessimism (Awinashe et al., 2023; Henning et al., 1998).

The study's sample size is a notable strength. With 477 participants, it benefits from a relatively large cohort, enhancing the reliability of the findings within this specific population. However, several limitations should be acknowledged. First, the lack of comparable Arabic translations of imposter syndrome scales hindered the ability to cross-validate results with other versions, potentially affecting the contextual interpretation of findings. Additionally, participants were recruited from a single center, limiting the diversity and variability of the sample, which may restrict the generalizability of the outcomes to other regions or institutions. Furthermore, the inclusion of only a small number of non-medical students constrained the ability to perform subgroup analyses across broader populations. This limitation reduces the study's capacity to explore variations in impostor syndrome across different professional or academic domains. Upcoming studies should strive to ensure demographic diversity and broader representation in their samples by recruiting participants from multiple centers and various educational or professional backgrounds. Expanding the scope to encompass balanced gender representation and broader fields would enhance the generalizability and applicability of the findings to a wider audience.

5. Conclusion

The Arabic version of the CIPS demonstrated strong validity, including construct validity, high reliability, and stability, confirming its robustness as a tool for assessing impostor tendencies in this population. The research revealed moderate feelings of impostorism in most of the participants, which is consistent with the standard distribution pattern of CIPS results among medical students. The tool's validity was further supported by its negative correlation with the GSES and positive correlation with the BTPS-SF, aligning with theoretical constructs of IP. Future research should investigate the prevalence and characteristics of impostor syndrome across diverse populations to further establish the tool's applicability and broaden its utility in different contexts.

CRediT authorship contribution statement

Nasser M. AbuDujain: Writing – review & editing, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Fahad Alajlan:** Writing – original draft, Validation, Software. **Sara T. Alkhelaiwi:** Writing – original draft, Project administration, Methodology, Investigation, Data curation. **Abrar M. Alshahrani:** Writing – original draft, Methodology, Investigation, Data curation. **Abdulrahman A. Almuhaideb:** Writing – original draft, Software, Resources, Data curation. **Abdullah A. Alrasheed:** Writing – review & editing, Supervision, Project administration, Conceptualization. **Turky H. Almigbal:** Writing – review & editing, Supervision, Project administration, Funding acquisition, Conceptualization. **Fahad D. Alosaimi:** Conceptualization, Investigation, Methodology, Validation, Writing – review & editing. **Victoria M. Fallon:** Writing – review & editing, Software, Resources, Conceptualization.

Author contribution statement

All authors have read and approved the manuscript. Furthermore, all ICMJE requirements for authorship have been met, and this work represents an original and honest work.

Ethical approval

Ethical approval E-24-8787, Ref. No. 24/1310/IRB) was granted by the Institutional Review Board at the College of Medicine, King Saud University, in August 2024.

Ethics statement

Participants provided electronic consent after being informed about the study's purpose, expected duration, principal investigator's contact details, and their right to withdraw at any time without obligation. No identifying information was collected to ensure anonymity, and no incentives were offered.

Declaration of Generative AI and AI-assisted technologies in the writing process

We have used generative AI and AI-assisted technologies in accordance with the journal policy only to improve the readability of the manuscript.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

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Data availability

The data used in this study are available upon reasonable request from the corresponding author.

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