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Research Article

Translation, Cultural Adaptation, and Validation of the Urdu Version of Irritable Bowel Syndrome Severity Scoring System

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ABSTRACT

The Irritable Bowel Syndrome Severity Scoring System (IBS-SSS) is a widely utilized tool for screening and classifying IBS patients according to the severity of their symptoms. This study aimed to translate the IBS-SSS into Urdu, culturally adapt it, and validate it for the Urdu-speaking Pakistani population. The translation process involved forward translation, reconciliation, backward translation, an expert committee review, and cognitive interviewing to ensure conceptual and semantic precision. The final Urdu-translated scale was administered to 250 participants (146 females and 104 males) aged 18-67 years (M = 35.69, SD = 12.56). Structural validity was assessed using EFA. The IBS-SSS scores were correlated with GSRS-IBS to determine the convergent validity, while the scores of IBS patients were compared with healthy individuals on different severity levels to explore the discriminant validity. The EFA confirmed the scale's unidimensionality with the KMO measure of the adequacy of 0.91 and Bartlet test of sphericity being significant ($p > .001$). The reliability assessment suggested robust results with Cronbach's alpha a = 0.96, indicating high inter-item internal consistency, test-retest reliability ranging from 0.89 to 0.98, and the split-half reliability score yielding highly significant results with a = 0.92 ($p < 0.01$). Convergent validity revealed a moderate to strong correlation with a value of ($r = .65$, $p < 0.01$). For discriminant validity, significant differences in the scores of IBS patients and non-patients were observed, where IBS patients scored higher on all IBS types irrespective of their symptom severity ($p < .001$). The findings indicated that the Urdu-translated version of IBS-SSS is a reliable and valid tool for the assessment of symptom severity in the Pakistani population with IBS. Future studies should investigate the applicability of the scale across diverse Urdu-speaking populations and IBS subtypes, examining its validity in longitudinal studies.

Key Words: Irritable Bowel Syndrome, Irritable Bowel Syndrome-Severity Scoring System, Psychometric Validation

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INTRODUCTION

Irritable bowel syndrome is a frequently experienced persistent condition of the lower gastrointestinal tract (Drossman et al., 2002). It is considered a disorder of gut-brain interaction, characterized by the symptoms of abdominal pain and/or discomfort as well as the symptoms of alterations in bowel habits, without having any definite structural abnormality (Longstreth et al., 2006). IBS symptoms may be either persistent or episodic, varying from mild to severe. IBS prevalence is estimated to be approximately 5-10% worldwide but higher (10-15%) in Western countries, while it is increasing in Asia (Lovell et al., 2012; Zhang et al., 2022).

The symptoms of IBS are more common in females and younger people and are greatly exacerbated by stress (Hafiz et al., 2023). It appears that differences in the prevalence of illness are likely to be associated with lifestyle changes, diet, attitude toward illness, and other psychosocial factors. In this context, another important factor is the choice of diagnostic criteria, Rome IV is more strict and reports a significantly lower prevalence (4-5%), as compared to Rome III and earlier versions which present a a higher rate, about 15% in some regions (Oka et al., 2020; Almario et al., 2023). Effective treatment strategies would require IBS patients to be grouped into the relevant subcategories depending on symptom severity (Emmanuel et al., 2020). IBS severity is not diagnosed by blood tests or by histopathological reports but by using composite measures and grading scales assessing the distinct and individual symptoms of this condition (Lambo et al., 2005; Fukudo et al., 2021). The IBS-SSS is considered the most commonly used instrument for the assessment and monitoring of the severity and intensity of IBS symptoms (Francis et al., 1997). It measures symptoms severity in the past 1o days related to abdominal pain, distension, changes in bowel patterns, and how it impacts daily life functioning (Francis et al., 1997; Ida et al., 2017). Thus, the scale is proved as an overall adequate choice for both clinical and research purposes (Johannesson et al., 2011; Francavilla et al., 2019).

The demand for culturally validated and relevant tools to support cross-cultural research has increased with the global diversity in language, and culture (Beaton et al., 2000; Sidani et al., 2016). It is particularly important in the healthcare setting because findings drawn from diverse populations hold high clinical relevance for healthcare practitioners. However, the absence of such instruments within the local language prevents the therapists from adequately addressing the challenges associated with illness. The IBS-SSS has been validated across various populations, confirming its reliability and validity as an essential tool for both research and clinical practice (Kaptchuk et al., 2010; Lackner et al., 2013; Lackner et al., 2018; Farrukh et al., 2022; Huang et al., 2023). However, the scale faces a significant limitation of utility in non-English speaking populations, due to the language barrier. To bridge this gap, the study aimed to translate and culturally adapt the English version of IBS-SSS in Urdu for the Pakistani population. The study was further planned on the linguistic validation of the scale to prepare an easily understandable and conceptually equivalent scale for the measurement of IBS symptom severity in the Pakistani population living with IBS.

METHOD

Study Design and Participants

This cross-sectional research was conducted in four public sector hospitals in Lahore from November 2023 to March 2024. The sample selected through probability sampling comprised a total of 250 adults, 50 healthy volunteers, and 200 IBS patients diagnosed by a specialist gastroenterologist within the last 12 months. To have an appropriate sample size the study followed the guidelines suggesting the recommended sample size of 10 participants per item (Mundform et al., 2005). The inclusion criteria required participants to be adults above 18 years of age, able to read and understand Urdu, diagnosed with IBS under Rome IV criteria, and not having other organic gastrointestinal diseases. Due to the various comorbidities attached to IBS, such as stress, anxiety, depression, a history of abuse, and social status, any participant with those symptoms or undergoing some medical treatment was also excluded (Zhao et al., 2010; Dimzas et al., 2024).

MEASURES

Rome IV Diagnostic Criteria for IBS

Rome IV criteria for IBS developed by Palsson et al., (2016), is a self-report measure used to diagnose irritable bowel syndrome, it serves as inclusion criteria in clinical trials and supports epidemiologic surveys. For diagnosis of IBS, the patient should have symptoms of abdominal pain at least one day per week during the last three months, and the onset of symptoms should be 6 months ago. The pain must be associated with two or more of the following: changes in stool frequency, changes in stool form (appearance), or pain related to defecation (Schmulson & Drossman, 2017).

Irritable Bowel Syndrome – Severity Scoring System (IBS-SSS)

IBS-SSS is a five-item self-administered questionnaire developed by Francis et al., (1997). The first 3 questions require IBS patients to assess the frequency and intensity of their abdominal pain and distension and its impact on their quality of life experienced over the preceding 10 days. The subsequent two questions ask them to assess their overall satisfaction with bowel movements and the extent to which IBS interferes with their daily life functioning. The

total scores on the scale range from 0-500 with each item's score ranging from 0-100, except for the question on the number of days the patient experienced stomach pain, which is scored from 0 to 10. However, for calculating the final score, the abovementioned question scores are multiplied by 10 to convert them to 0–100 score points. The IBS-SSS can differentiate the IBS patients from healthy individuals and stratify the IBS patients into three distinct categories based on their final score. A score ranging from 75 to 175 indicates mild IBS, while scores between 175 and 300 are categorized as moderate IBS, and the third category, comprising a score above 300, signifies severe IBS (Francis et al., 1997).

The Gastrointestinal Symptom Rating Scale-IBS (GSRS-IBS)

GSRS-IBS is a 13-item measure of the severity of GI symptoms experienced over the last seven days. The items include; (1) abdominal pain, (2) pain relieved by bowel action, (3) bloating, (4) passing gas, (5) constipation, (6) diarrhea, (7) loose stools, (8) hard stools, (9) urgent need for bowel movement, (10) incomplete bowel emptying, (11) fullness shortly after eating, (12) fullness long after eating, and (13) visible distension. The items score between 1 and 7, where 1 means "no discomfort at all", and 7 means "very severe discomfort". In the original validation study, the items were shown to belong to five symptom clusters: pain (items 1 and 2), bloating (items 3, 4 and 13), constipation (items 5 and 8), diarrhea (items 6, 7, 9 and 10), and early satiety (items 11 and 12). The items are scored between 1 and 7, where 1 corresponds to "no discomfort at all" (Wiklund et al., 2003).

Demographic Sheet

The study sample was investigated regarding gender, age, education, marital status, family system, number of siblings, employment status, nature of the job, monthly income, place of residence, smoking, height, weight, and body mass index (BMI) of the respondents.

IBS-SSS TRANSLATION PROCESS

Written permission was obtained from the Rome Foundation for the translation and subsequent validation of the scale in 2023. The translation was modified from the original Rome Foundation copyrighted IBS-SSS, following the standard guidelines for scale translation, with the coordination of specialist gastroenterologists and expert psychologists. The translation process was comprised of the five following steps.

In the first stage, two independent bilingual experts fluent in both Urdu and English, with at least five years of field experience along with translation expertise, were approached for forward translation of the original English version into Urdu language. The rationale of the study was explained to experts and they were provided with the original scale. The scale was individually translated by the experts, taking into account the cultural nuances to ensure the conceptual, idiomatic, and semantic equivalence of all items. At the end of this stage, the two forward-translated versions T1 and T2 were produced.

In the subsequent phase, the reconciliation process involved four experts, two psychologists, and two gastroenterologists. These experts analyzed both forward translations to detect potential inconsistencies. In this process, the experts produced a final Urdu version of the scale, T3, which was then provided to two healthy adult native Urdu speakers for cognitive debriefing. All the participants gave relevant answers to each item and did not require any further clarification showing that they understood the purpose and meaning of the scale.

In the next step, a native English speaker fluent in Urdu carried out the back translation, producing the final English version B1. A panel of experts reviewed the original English scale and its back translation. They conducted a thorough review, comparing each item of the scales based on linguistic similarity and interpretational comparability. Upon reaching an agreement, the panel found the translated version highly relevant to the original one and approved the Urdu forward translation for cognitive interviewing. Later on, the finalized Urdu version of the scale was administered to ten healthy, native Urdu-speaking adolescent volunteers for cognitive interviewing. All the volunteers confirmed that the scale was comprehensible in terms of the meaning and purpose of the items. Furthermore, they provided the appropriate responses to all the questions without requiring any significant additional explanation. The final Urdu-translated version of IBS-SSS was produced at the end of this stage.

PSYCHOMETRIC EVALUATION

Data analysis was done using different statistical procedures. Descriptive analysis was employed to calculate the mean, standard deviation, and frequencies. To determine the psychometric properties of the Urdu version of IBS-SSS the internal consistency analysis was employed, it assesses the level of relatedness among the items of the scale within each dimension. Cronbach's alpha was used for this purpose as it is the most widely applied measure to

estimate internal consistency reliability. An alpha coefficient value between 0.80 and 0.90 is considered excellent, indicating that all the scale items measure the same construct (Cronbach, 1951). Similarly, test-retest reliability was used to evaluate the stability of the scores over time. The same participants provided repeated measurements on the test at an interval of seven days to ensure the independence of the responses. (Fitzpatrick et al., 1998).

The validity of the scale was assessed to determine how well the scale measures the underlying theoretical concept it is designed to measure. In this study, construct validity was established by measuring content validity along with convergent and discriminant validity. The content validity index (CVI), including the item-level consistency (ICV-I) and the scale-level consistency (S-CVI), was calculated. Exploratory factor analysis (EFA) was utilized to elucidate the factorial structure of IBS-SSS.

Further proceeding with the analysis, convergent validity was explored by correlating the IBS-SSS with GSRS-IBS. Similar dimensions in these instruments were expected to be highly correlated with each other, as both scales measure the severity of IBS symptoms. Pearson's product-moment correlation for convergent value above 0.70 is considered strong, 0.50 moderate, and 0.30 is considered as low (Hinkle et al., 2003). Discriminant validity determines how well a measurement tool differentiates two concepts that are supposed to be distinct. In this case, the differences in the score of IBS-SSS among IBS patients and healthy individuals on different severity levels were compared to examine the discriminant validity of the scale. The two groups were expected to have significantly different scores. The IBM SPSS Statistics 26 and AMOS 23 were used for data analysis.

ETHICAL STATEMENT

Before the commencement, the study was approved by the Ethical Review Committee of the Lahore College for Women University, Lahore, Pakistan. Permission for data collection was also sought from the respective institutes. Participants were briefed about the study protocol and were assured of the confidentiality of their data. Additionally, they were informed about their right to withdraw from the study at any stage. They were instructed to carefully answer all the questions without skipping any item.

RESULTS

A total of 250 individuals (146 females and 104 males), 200 diagnosed with IBS, and 50 healthy volunteers were recruited for the study, with an age range of 16- 67 (Mean = 35.69, SD = 12.56). Among the participants, 50 (20%) had mild IBS, 145 (58%) had moderate IBS, and 55 (22%) were experiencing severe IBS. The majority of the participants 143 (57.2%) were married, and 132 (52.8%) had completed graduation. A significant portion of the study sample 140 (56%) were employed, with 121 (48.4%) having a monthly income ranging from 50k to 200k. Most of the participants, 174 (69%) belonged to the nuclear family. Additionally, the height, weight, and BMI of the participants were also calculated. The demographic characteristics of the study participants are displayed in Table 1.

Table 1. Frequency and Percentage of the Demographic Characteristics of the Participants

Variables	*F*	(%)
Gender		
Male	104	41.6%
Female	146	58.4 %
Education		
Uneducated	15	6%
Under Matric	19	7.6%
Intermediate	64	25.6%
Graduation	132	52.8%
Postgraduate	20	8%
Marital Status		
Un-Married	83	33.2%
Married	143	57.2%
Widow	15	6%
Divorced	9	3.6%
Family System		
Nuclear	174	69.6%

Joint	76	30.4%
Employment Status		
Unemployed	135	54%
Govt. Job	35	14%
Private Job	47	18.8%
Self Employed	22	8.8%
Retired	11	4.4
Monthly Income		
Below 50k	32	12.8%
50k 100k	71	28.4%
100k-150k	121	48.4%
150k-200k	16	6.4%
Above 200k	10	4%
Age (Mean±SD)	35.69(12.56)	
Weight (Mean±SD)	67.3(10.7)	
Height (Mean±SD)	5.5(0.33)	
BMI (Mean±SD)	23.56(3.27)	

BMI = body mass index; M = mean; SD = standard deviation

Face validity of the Urdu-translated version of IBS-SSS was assessed during the process of translation. To assess the face validity, the scale was approved by a team of five experts after a thorough evaluation based on clarity, convenience of use, and grammatical correctness. The scale was proven linguistically and culturally relevant to the Pakistani population. The content validity index was determined to ensure the relevance and representativeness of the scale. Findings revealed that the Urdu-translated IBS-SSS produced an excellent S-CVI score of 0.95, indicating it is a highly reliable and relevant measure of IBS symptom severity for the Urdu-speaking Pakistani population.

Exploratory factor analysis (EFA) was employed to explore the structural validity of the scale. Based on the results of this study and considering the previous literature it was proved that IBS-SSS is a unidimensional scale. The findings proved the model suggested by the developers of the scale reporting that all the five items of the scale measure a single construct and hence can be loaded on a single factor. The results of EFA indicated that above 80% of variance was observed (Table 2).

Table 2. Eigen Values and Variance of Five Factors of IBS-SSS

Factors	Eigen Values	Percentage of Variance	Cumulative Percentage
1	4.482	89.63	89.63
2	.206	4.12	93.75
3	.137	2.74	96.49
4	.093	1.85	98.34
5	.083	1.66	100

$P < 0.001$

The Kaiser-Meyer-Olkin measure of sampling adequacy was reported as 0.91, showing that the study sample was adequate. Similarly, the significance value for Bartlett's Test for Sphericity was less than .001 (Table 3).

Table 3. KMO Test for Sampling Adequacy and Bartlett's Test of Sphericity for IBS-SSS

Scale	KMO	*Bartlett's Test*	*Df*	*P*
IBS-SSS	.91	1363.19	10	.000

It can also be observed in the scree plot (Figure 1) that the inflation points coincide at eigenvalues less than 1 at the four points, but only for the factor 1 eigenvalue appears to be more than double of factor 2 and so on, strongly supporting the unidimensionality of the scale.

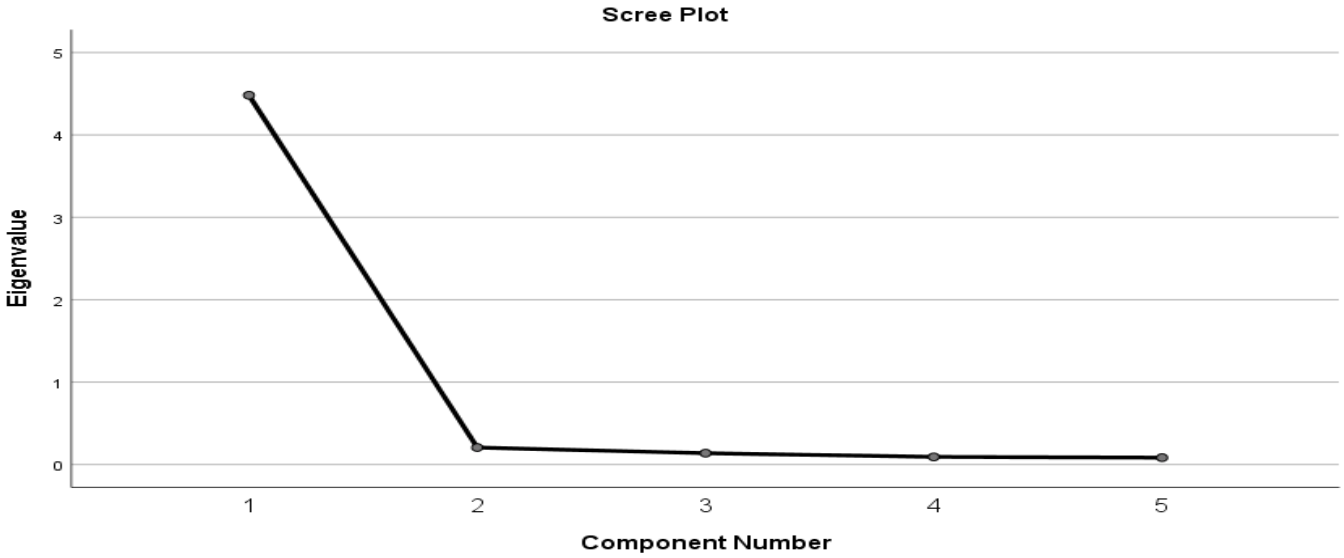

Figure 1. Scree Plot Demonstrating the Uni-dimensional Nature of the IBS-SSS

The inter-item correlation of all the IBS-SSS items was significantly high ranging between the suggested value of 0.95 to 0.96. Additionally, Cronbach's Alpha (a) value of 0.96 suggested excellent reliability and a significantly high internal consistency of the scale (Table 4).

Table 4. Reliability Analysis: Cronbach's Alpha for IBS-SSS

No. of Cases	No. of Items	Coefficient Alpha
250	5	0.96

*P < 0.01

Similarly, the test-retest reliability of IBS-SSS was reported as being good with values ranging from 0.89 to 0.98 (p < 0.01). To further proceed with the reliability analysis, the split-half reliability analysis was performed which showed a significant correlation value of 0.92 (p < 0.01) suggesting that two halves of the scale measure the same construct.

The convergent validity of the IBS-SSS was determined by exploring the correlation of IBS-SSS with GSRS-IBS. Both these scales are designed to measure the severity of IBS symptoms. The findings indicated a moderate to strong convergence with the correlation with the value of (r = 0.65, p < .01) among both scales, the subscales of GSRS-IBS also strongly correlated with the IBS-SSS (Table 5).

Table 5. Intercorrelation between IBS-SSS and GSRS-IBS and Subscales.

	Scale/Subscales	1	2	3	4	5	6	7
1	IBS-SSS Total	-	.65**	.66**	.64**	.61*	.57**	.56*
2	GSRS-IBS Total	-	-	.95**	.97**	.92**	.95**	.88**
3	Pain	-	-	-	.88**	.85**	.92**	.83**
4	Bloating	-	-	-	-	.89**	.89**	.84**
5	Constipation	-	-	-	-	-	.79**	.71**
6	Diarrhea	-	-	-	-	-	-	.77**
7	Satiety	-	-	-	-	-	-	-
	Mean	178.60	38.98	6.22	8.98	9.08	8.94	5.76
	SD	27.55	12.24	1.89	3.65	2.36	3.48	1.62

Note. IBS-SSS=Irritable bowel syndrome symptom severity score, GSRS-IBS= Gastrointestinal Symptom Rating Scale-IBS **p < .01, *p < .05

Discriminant validity was measured by comparing the scores of healthy participants with the IBS patients. The findings showed that irrespective of the symptom severity among both the groups they significantly scored different, with the IBS patients scoring higher on IBS-C, IBS-D, and IBS-M respectively (p < .001) (Figure 2).

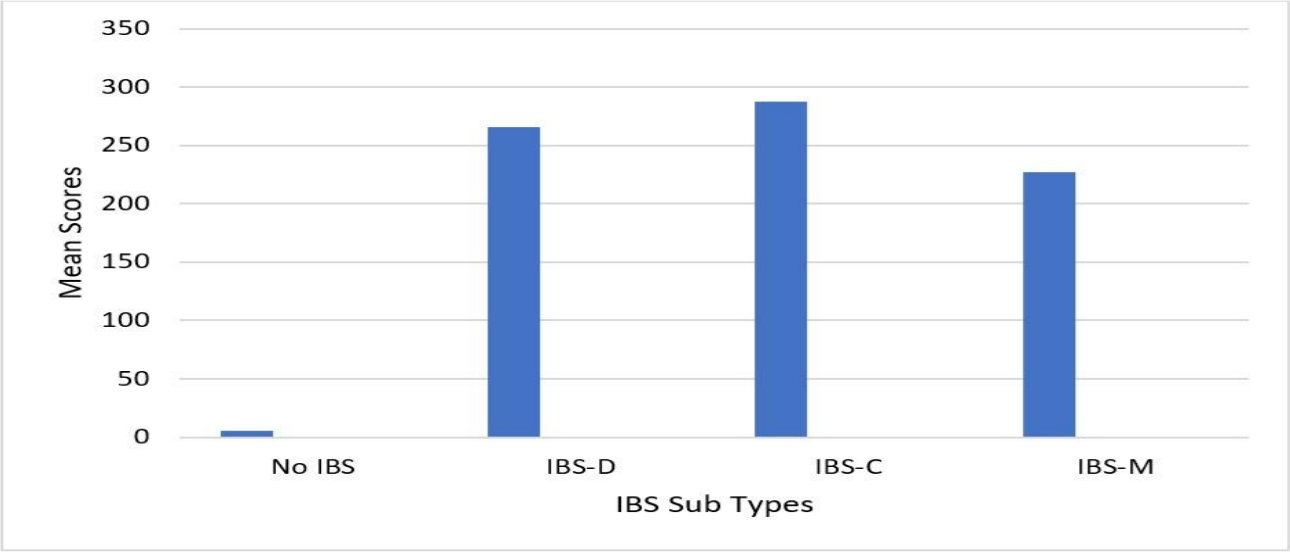

Figure 2. The comparison of mean scores of IBS patients and healthy participants on IBS-SSS

DISCUSSION

The persistent nature of Irritable Bowel Syndrome (IBS) poses a significant psychological burden that may lead to the symptoms of depression, anxiety, and stress creating a vicious cycle where psychological stress exacerbates the physical manifestation of the illness (Wang et al., 2022; Staudacher et al., 2023). It is therefore critical to use validated instruments for the effective measurement of IBS symptom severity and its impact. Translation is the most frequently used method for adaptation and cross-cultural use of the scale (Sperber, 2014). The linguistic variation may influence the validity of the items, so it is essential to take into account that a scale just translated into a different language cannot be considered a valid measure. Thus, the scale needs to undergo proper psychometric validation to make it suitable for the research (Griffee, 2001).

For this purpose, the main objective of the study was to translate the IBS-SSS into Urdu to enhance its utility among the Pakistani community. Thus, to ensure accuracy and precision the scale was translated following the Rome Foundation translation guidelines. The translation process included forward translation, and backward translation, following the reconciliation and cognitive interviewing of the participants (Sperber, 2004). Consistent with the previous studies conducted with various populations, the Urdu-translated version of IBS-SSS exhibited high validity (Francis et al., 1997; Shinozaki et al., 2006; Almansa et al., 2011). More precisely, the scale allows the experts to not only distinguish the IBS patients from healthy individuals but also based on the severity of illness including, mild, moderate, and severe. Additionally, the scale was also found sensitive for detecting the changes in the severity of IBS symptoms following a therapeutic intervention, proving its effectiveness for clinical trials.

The study was further planned to continue with the cultural adaptation of the scale for the Pakistani cultural context. It was observed that the original factorial structure of the scale was unaffected by the economic, social, and cultural factors of Pakistan. Similarly, the broader literature suggests that the core items of IBS-SSS are relevant to the worldwide experience of IBS, and the scale maintained its validity and reliability when applied across various demographic groups (Jeitler et al., 2021; Farrukh et al., 2022). It is also well known that certain health conditions, like IBS, display universal symptoms. Therefore, major cultural changes in the scale (i.e., major changes in the items or contents of the scale) are discouraged (Guillemin et al., 1993; Beaton et al., 2000). It has been proven to be a useful tool for research and clinical use in other ethnically and culturally diverse contexts (Weerts et al. 2020; Skrzydlo-Radomanska et al. 2021; Wang et al. 2022). The cross-cultural validity of IBS-SSS makes the Urdu version of the scale an effective tool for the Pakistani population with IBS.

In addition, the psychometric properties of the Urdu-translated IBS-SSS were established for the Pakistani population. The findings indicated that the scale's reproducibility, validity, and internal consistency were equal to those of other translated versions (Almansa et al., 2011; Dimzas et al., 2024) and the original scale developed by Francis et al., (1997). The content validity index is critical to determine the relevance and representativeness of the scale (Shi et al., 2012; Connell et al., 2018). Acceptable values for S-CVI and I-CVI are recommended to be equal to or above 0.90 and 0.78, respectively (Shi et al., 2012). The Urdu-translated IBS-SSS produced an excellent S-CVI

score of 0.95, indicating it is a highly reliable and relevant measure of IBS symptom severity for the Urdu-speaking Pakistani population.

To examine the scale's structural validity and the possible cultural differences between the two versions the Exploratory factor analysis (EFA) was employed. The findings revealed a single-factor model using varimax rotation. Consistent with the model proposed by the scale developers, our findings showed that all five items of the scale loaded onto a single factor (i.e., symptom severity), demonstrating a unidimensional structure (Francis et al., 1997). Similarly, Dimzas et al., (2024) also suggest the unidimensional structure of the IBS-SSS, reinforcing its use as a cohesive measure for the assessment of IBS symptom severity. Various studies based on the same model and following a similar analysis suggested that all the items of IBS-SSS are related and they aim to measure the severity of different IBS symptoms (Drossman et al., 2002; Harrington, 2009).

Additionally, the convergent validity of the scale was explored to determine the relatedness of IBS-SSS with other scales that measure the same construct. For this purpose, the scores of IBS-SSS were compared with GSRS-IBS which is also a measure of IBS symptom severity. Both scales were found closely related to each other. These findings are consistent with the prior literature suggesting that the GSRS-IBS and IBS-SSS measure the severity of the gastrointestinal symptoms associated with IBS, suggesting that these scales are highly correlated with each other (McLeod et al., 2024). Additionally, Aasbrenn et al., (2018) also employed the GSRS-IBS and IBS-SSS for the measurement of the bowel symptoms in the study participants and found consistent results. Conclusively, the GSRS and IBS-SSS are found to be consistent with one another in their ability to reliably assess gastrointestinal symptoms and complement one another in the clinical and research setting of IBS and related conditions.

The discriminant validity of the Urdu-translated version of IBS-SSS was evaluated through a comparison of the scores of IBS patients with healthy volunteers across different levels of symptom severity. As expected, the study identified significant differences in the severity scored among both groups, for each level the participants scored differently on each IBS subtype irrespective of their symptom type. These findings align with previous studies suggesting that the original IBS-SSS and its translated versions in other languages had strong discriminant validity in distinguishing IBS patients from healthy controls (Francis et al., 1997; Dimzas et al., 2024). For instance, many validation studies in non-English populations demonstrate that IBS-SSS accurately differentiates IBS-specific symptom severity and IBS subtypes (Almansa et al., 2011; Dimzas et al., 2024). These findings confirm that the IBS-SSS is a useful instrument for evaluating disease-specific symptomology because it assesses IBS-specific symptoms rather than general pain or unrelated problems.

The reliability analysis demonstrated the excellent internal consistency and the reproducibility of the IBS-SSS, indicating that the items in IBS-SSS are strongly correlated with each other reflecting a single construct. The test-retest reliability which is a measure of the stability of the test over time, was established by collecting the data from the same participants with one-week intervals (Fitzpatrick et al., 1998). The findings revealed that the Urdu-translated version of IBS-SSS possesses good test-retest reliability. Moreover, split-half reliability was assessed by dividing the scale into two halves (i.e., odd, or even) to measure the consistency of the scale across its different parts. Though it is a less common analysis used for the validation studies of IBS-SSS, it provides additional confirmation about the internal consistency of demonstrating that the subsets of the scale provide similar results. The results revealed that the two halves of the IBS-SSS significantly correlate with the correlation coefficient value, suggesting that the overall scale evaluates a similar construct.

Conclusively, the study findings demonstrate the strong psychometric properties of the IBS-SSS Urdu translated version, affirming its relevance and reliability for the assessment of IBS symptom severity in the Pakistani community. This underscores the effectiveness of IBS-SSS not only for diagnostic purposes but also for cross-cultural research using an inclusive and comparative approach.

Despite the notable contributions of the study, certain limitations must be acknowledged while planning future investigations. Firstly, although the sample size was adequate for a validation study, it may not capture the diversity of Pakistani culture. Thus, to ensure the generalizability of the findings, future research should strive to engage more diverse and larger samples, from various regions of Pakistan. Secondly, the cross-sectional design of the study limits the assessment of the longitudinal reliability of the scale. Longitudinal studies are therefore critical to determine the effectiveness of the scale to explore the severity of IBS symptoms over time, particularly in response to therapeutic interventions. Regardless of the limitations of the study, these findings pave the way for future research and clinical trials to explore various facets of the illness, and facilitate the development of novel treatment approaches for the management of irritable bowel syndrome (IBS).

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