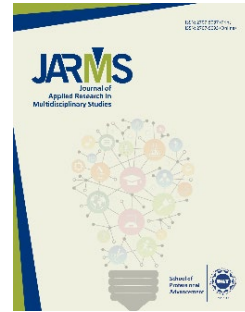
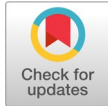


Journal of Applied Research and Multidisciplinary Studies (JARMS)

Volume 6 Issue 2, Fall 2025

ISSN(P): 2707-5087, ISSN(E): 2707-5095

Homepage: <https://journals.umt.edu.pk/index.php/jarms>



- Title:** Development and Validation of the Scale of Illness Anxiety (SIA)
- Author (s):** Zarmin Tariq and Saima Dawood
- Affiliation (s):** University of the Punjab, Lahore, Pakistan
- DOI:** <https://doi.org/10.32350/jarms.62.06>
- History:** Received: June 02, 2025, Revised: October 16, 2025, Accepted: November 20, 2025, Published: December 29, 2025
- Citation:** Tariq, Z., & Dawood, S. (2025). Development and validation of the Scale of Illness Anxiety (SIA). *Journal of Applied Research and Multidisciplinary Studies*, 6(2), 131–151. <https://doi.org/10.32350/jarms.62.06>
- Copyright:** © The Authors
- Licensing:**  This article is open access and is distributed under the terms of [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/)
- Conflict of Interest:** Author(s) declared no conflict of interest



UMT

A publication of
School of Professional Advancements
University of Management and Technology, Lahore, Pakistan

Development and Validation of the Scale of Illness Anxiety (SIA)

Zarmin Tariq* and Saima Dawood

Centre for Clinical Psychology, University of the Punjab, Lahore, Pakistan

Abstract

It has been established that the manifestation of psychiatric disorders varies across cultures, which often presents difficulties during the clinical assessment, as indigenous expressions may differ. For this reason, the present study aimed to develop an indigenous measure to support the assessment of illness anxiety disorder (IAD), which entails culture-specific features of illness anxiety. The study consisted of two phases. In the first phase, the researcher developed a pool of items by exploring the existing literature, conducting a focus group discussion with clinical psychologists, interviewing general physicians and psychiatrists, and examining the clinical interview archives of a patient diagnosed with IAD. Following the development of an item pool, the initial version of the scale was obtained after item evaluation by researchers and expert clinicians, establishing content validity. This initial version had 24 items within three factors. The exploratory factor analysis (EFA) was performed on $N = 229$ university students, through principal component analysis using varimax rotation to examine this initial version, and suggested a single-factor structure with 23 items. This single-factor structure was later confirmed through confirmatory factor analysis (CFA), performed using a sample of $N = 240$ university students. The final model consisted of 21 items and demonstrated an acceptable fit ($CFI = .93$; $RMSEA = .05$). The final scale, Scale of Illness Anxiety (SIA), had an excellent reliability value of $\alpha = .92$. This version was further used to calculate cut-off and normative scores for a sample of $N = 300$ university students. This newly developed scale can be used for the assessment of IAD in both clinical and research settings in Pakistan. It was concluded to be a noticeable contribution to the indigenous literature, supporting culturally relevant psychological assessment.

Keywords: illness anxiety, IAD, psychological assessment, culture, indigenization

*Corresponding Author: zarmin.rana1199@gmail.com

Introduction

Illness anxiety is defined as having an irrational and obsessive worry about having or developing a serious medical illness (American Psychiatric Association [APA], [2013](#), [2022](#)). It is normal for an individual to be concerned about their body when it is showing signs of illness. However, when an individual misinterprets a sensation or change, for example, a new growth on the skin or a muscle twitch, as a sign of a fatal disease, it creates undue worry. This health-related anxiety, when it goes beyond normality, leads to a persistent anxiety about personal health that is known as illness anxiety disorder (IAD) (APA, [2022](#); Kikas et al., [2024](#)).

The IAD was earlier named as hypochondriasis; the term hypochondriasis is not used now. Hypochondriasis was often associated with a persistent conviction of illness, while IAD is the current Diagnostic and Statistical Manual of Mental Disorders (DSM) diagnosis focused on high anxiety about health with low physical symptoms. It defines IAD as a persistent, excessive preoccupation with having or acquiring a serious, undiagnosed medical illness for at least six months, despite normal tests and reassurance. It often involves minimal or no somatic symptoms, with high health anxiety, and, at times, excessive health-related checks or avoidance behavior (APA, [2013](#), [2022](#)).

Since individuals with IAD experience increased awareness of bodily sensations and excessive worry about having an undetected medical illness, they become preoccupied with health-related concerns and spend significant time and energy focusing on and researching possible illnesses. This frame of mind brings distress and disruption in their lives. These patients are not easy to reassure, like those with somatic symptom disorder (Chappell, [2018](#)). They may be seeking immoderate medical treatment or asking for recurrent changes to treatment (care-seeking type), some may be avoiding treatment, fearing a possible real illness, or injurious impacts of medications (care-avoidant type). This debilitating disorder is associated with uncontrollable utilization of health care and makes it challenging to treat (Higgins-Chen et al., [2019](#)).

Illness anxiety can be understood using a cognitive-behavioral explanation, according to which health or illness anxiety develops when a person tends to misinterpret the bodily changes or medical information as more threatening than they really are (as an indicator of a serious underlying

illness). This exaggeration of the bodily changes results in anxiety, which is clearly excessive and out of proportion. This leads to the adoption of maladaptive safety behaviors, such as seeking excessive medical reassurance, online searching of symptoms, and sometimes, avoiding medical settings as a way to manage anxiety symptoms. (Salkovskis & Warwick, [1986](#); Warwick & Salkovskis, [1990](#); Salkovskis & Clark [1993](#)).

Salkovskis and Rimes ([1997](#)), in their corollary cognitive behavior theory related to severe anxiety, proposed that a severe level of health anxiety is experienced by a patient when they tend to misinterpret obscure medical information as a signal of an illness. This notion suggests that those people with a comparatively high health anxiety level are likely to misapprehend the ambiguous medical evidence, for instance, clinical consultations, screening tests and procedures, and information obtained from different resources such as the internet and media (Salkovskis et al., [2003](#)).

The cognitive-behavioral model of health anxiety (Salkovskis et al., [2003](#)) suggests that misapprehensions of body symptoms lead to physiological and emotional anxiety, as well as safety-seeking behaviors that reinforce these fearful beliefs. Individuals continue engaging in these behaviors, believing they will reduce their anxiety. However, in reality, these behaviors are actually heightening their anxiety as they interpret bodily changes as threatening. Rather than discontinuing these protective strategies to test the accuracy of their fears, the person keeps relying on them.

Though a little is known about the risk factors of IAD, a recent systematic review has suggested that the development of health-related anxiety is associated with childhood experiences of illness, childhood traumatic experiences, intergenerational transmission of health anxiety (including genetic heritability and vicarious observations of parents with health anxiety), and the development of health anxiety (Thorgaard et al., [2018](#)). In this context, evidence from family-based studies suggests that some people show great health concern and have frequent discussions about health anxieties. Individuals brought up in such families are likely to develop IAD later in life (Alberts et al., [2016](#)). It is also reported that experiencing serious illness in their childhood or in the families (to their parents or siblings) is linked to an increased risk of IAD development (Alberts et al., [2016](#); Scarella et al., [2019](#)). Further, receiving a diagnosis of

anxiety disorders, such as generalized anxiety disorder, is associated with later IAD risk (French & Hmeed, [2023](#)).

The current prevalence rates of IAD remain unknown, likely due to its recent introduction in the DSM-5. Recent evidence suggests that clinically significant health anxiety is common within the general population, with an estimated prevalence of up to 13% (Scarella et al., [2019](#)). However, given that individuals with illness anxiety often seek excessive medical reassurance, the prevalence is higher in medical settings such as primary care (i.e., general practitioner clinics) and secondary care (i.e., specialized outpatient or inpatient clinics), ranging between 7% and 19.9% (Pandey et al., [2017](#); Tyler et al., [2019](#)). It is often reported with other psychiatric conditions, including somatic disorders, depression, and anxiety disorders (Kikas et al., [2025](#)). IAD places a substantial burden on both individuals and society. The exact course of the disorder is not well defined yet, but the common age of its onset is young adulthood (Scarella et al., [2019](#)).

A person with IAD experiences recurrent and persistent anxiety and fear of having or developing a serious physical illness, which unfavorably affects their life (French & Hameed, 2021; Chappell, [2018](#)). In particular, after the COVID pandemic, evidence from different parts of the world reports an increase in health-related concerns or illness anxiety across clinical and community populations, as well as among healthcare providers (Ilyas et al., [2024](#); Newby et al., [2020](#); Mahdavifar et al., [2022](#)). This poses a threat to the psychological well-being of the population and a strain on the healthcare system. Specifically, the high overlap between the symptoms of IAD and other disorders can contribute to a substantial burden on healthcare services, because the providers may be ordering unnecessary and expensive investigations (Almalki et al., [2016](#)). This makes assessing IAD a challenge for healthcare professionals. Despite its impact, understanding of the disorder is lacking, and debates remain about whether IAD should be classified as an anxiety disorder and whether it is distinct from somatic symptom disorder (Kikas et al., [2024](#)).

Historically, assessment of health or illness anxiety is typically based on self-report measures, which conceptualize health anxiety in terms of hypochondriasis and attitude towards illness. For instance, the Whiteley Index (WI; Pilowsky, 1967), Health Anxiety Inventory (HAI; Salkovskis et al., [2003](#)), Health Anxiety Questionnaire (HAQ; Lucock & Morley, [1996](#)), and Illness Attitude Scale (IAS; Kellner, [1986](#)). Most of these measures can

be used to assess core features of IAD, which is conceptually considered a severe form of pathological health anxiety. However, these tools are generally better viewed as screening and severity measures, as they do not truly capture IAD as defined by DSM-V. In addition, considering the linguistic nuances and varying levels of mental health literacy, these measures are not suitable for use with the Pakistani population. Further, these scales are developed within foreign sociocultural contexts, while integration of cultural aspects during clinical assessment is considered essential (Mawar et al., [2025](#)). So, an indigenously designed and validated measure could be useful to address the challenging aspects of IAD assessment in Pakistani culture. In this context, the present study aimed to develop an indigenous tool to support the assessment of IAD. This newly developed Scale of Illness Anxiety (SIA) would be a contribution to indigenous literature and also be useful for healthcare professionals and researchers in clinical and academic settings, as it supports the cultural conceptualization of the IAD.

Method

In the present study, scale development was carried out in two phases; the first phase involved item generation, and the second phase addressed the statistical evaluation of the scale structure through factor analysis and scoring.

Phase I: Item Generation

The researchers followed a mixed approach to develop scale items. During this preliminary phase of scale development, the researchers developed the first item pool (consisting 23 items) based on the cognitive-behavioral theory of health anxiety; criteria of IAD in DSM-5, and considering the previously available measures and literature related to health and illness anxiety. For the second item pool, items were developed using data obtained from a focus group discussion with clinical psychologists ($n=7$), and interviews with general physicians ($n=3$) and psychiatrists ($n=3$). The participants (professionals) were recruited using criterion sampling technique. They had at least seven years of experience in their respective fields and were working at well-known health institutions in Lahore, Pakistan. This step aimed to identify additional concepts and understand the indigenous conceptualization of illness anxiety based on the field experts' experiences with patients. Later, the archival interview data

of an individual diagnosed with IAD were examined. This aimed to incorporate patient-centered experiences during item generation. The data obtained from focus group discussions and interviews were analyzed through thematic analysis (Braun & Clarke, [2006](#)). The themes generated from the statements of the participants were used to formulate another pool of 30 items.

The final item pool yielded a list of 53 items, which were scrutinized by the research team and resulted in a revised list with 33 items. These items were then subjected to further evaluation by eight expert clinical psychologists from three renowned institutes in Lahore, Pakistan, to establish the content validity of the scale. They were asked to rate each item for its representativeness and relevance to the construct as well as its clarity. The content validity index for the items was also calculated (Lawshe, [1975](#)). This process resulted in a final list of 24 items; the items were removed from the final scale for repetition, ambiguity, and overlap. The items in the final version of the scale were transformed into self-reporting statements to be rated on a five-point Likert scale, based on experiences during the past six months as mentioned in DSM-5 (APA, [2013](#)). This final scale was named the Scale of Illness Anxiety (SIA) and had three subscales.

Phase II: Structural Evaluation and Standardization

The structure of the newly developed scale, Scale of Illness Anxiety (SIA), was empirically evaluated using factor analysis. It consisted of three steps, which are as follows.

Step 1: Exploratory Factor Analysis (EFA)

Sample. To perform EFA, a sample of 229 university students (considering Hair et al. (2019)'s recommendations for factor analysis) was collected from a renowned public university in Lahore city. The sample, recruited using convenience sampling, comprised 112 men and 117 women and had a mean age of 22.45 years (1.89). A larger percentage of the sample were students of graduation (almost 60 %) and were single (almost 90%). Among them, a smaller proportion of the participants, about 13%, was also involved in part-time jobs or freelancing. Participants with physical disabilities, diagnosed psychiatric disorders, and severe physical illness were excluded.

Procedure. The SIA, which comprised 24 items, was administered on a sample of 229 students who were approached at their respective

departments in the university after seeking permission to collect data. The data obtained from this sample were subjected to statistical evaluation to establish the construct validity and reliability of the scale. The EFA was performed through principal component analysis using varimax rotation. During EFA, scale structure was evaluated based on eigenvalues, scree test, and item loading cut-off of $\geq .05$ (Hair et al., [2019](#)) and, communalities (Yong & Pearce, [2013](#)). The SPSS V21 was used to run the analysis.

Step 2: Confirmatory Factor Analysis (CFA)

Sample. For CFA, another sample of 240 university students was approached (using the same criteria as for EFA) at the same public university in Lahore city. This sample included 103 men and 137 women. The mean age of this sample was 25.70 years (2.59). Most of these students were in graduation (almost 63%), and the rest were MPhil/MS students (almost 37%). Demographically, the majority were unmarried, with only about 8% of respondents indicating they were married. About 10% of them were working part-time or freelancing, and some were running their startups (almost 2%).

Procedure. The revised version of the scale, having 23 items, finalized during EFA, was administered to the study participants who were approached at their respective departments in the university, following the same protocols as during EFA. This data was then further evaluated to confirm the scale structure using AMOS V21. The CFA was performed to test construct validity, dimensionality, and model fit. Here, the items were evaluated based on their standardized regression weights, standardized residual covariances, and overall model fit. At the end, the internal consistency reliability of the scale was calculated.

Step 3: Scoring

For scale scoring and score interpretation, normative data were calculated using the final 21-item version of the scale.

Sample. At this step, a separate sample of 300 university students (following the same criteria as for EFA) was recruited from a public university in Lahore city. This sample comprised 144 men and 156 women. Their mean age was 25.37 years (2.83). A greater percentage of this sample consisted of MS and MPhil students (almost 53%). A smaller percentage was also doing part-time jobs (almost 9%) or running a business (almost 3%). Further, most of them were single (88%).

Procedure. The final version of the scale, consisting of 21 items, was administered to the participants following the same procedure as during EFA and CFA; however, at each point of data collection, data were collected from different departments. The obtained data were used to develop normative data by calculating percentiles and T scores. These scores were used to facilitate scale scoring and interpretation.

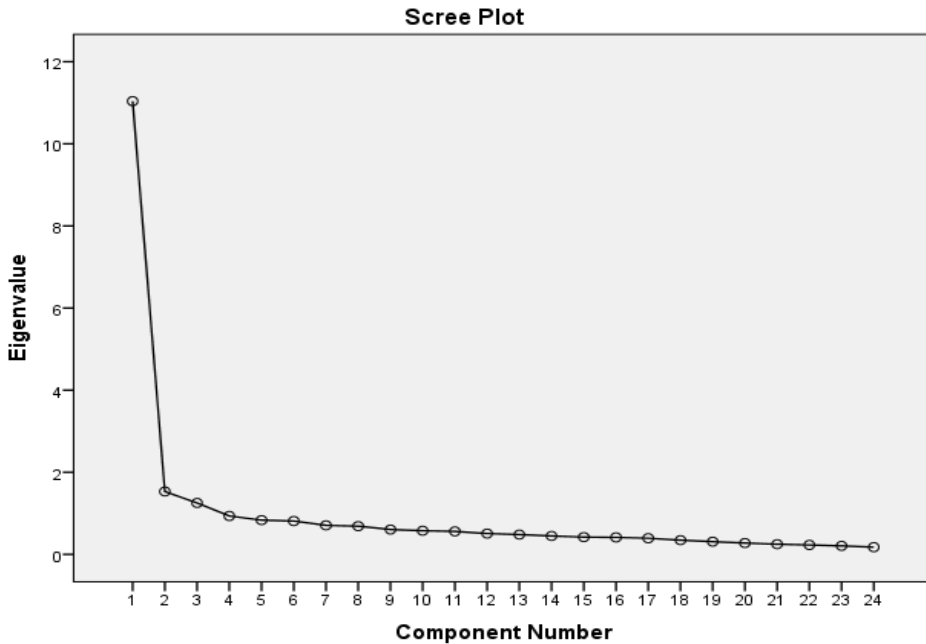
Ethical Considerations

The present research was conducted following the approval of the departmental doctoral program committee. In addition, permission to collect data was also sought from the respective data collection sites. Further, informed consent from the field experts as well as the other study participants was also taken before their participation. It was ensured that all the study participants understood the purpose of the study, their rights as study participants, and provided their consent to indicate voluntary participation.

Results

The initial version of the scale obtained during the first phase of the study originally consisted of 24 items, which measured the core features of IAD, including bodily preoccupation, fears and worry about illness, reassurance seeking and health checking behaviors, and psychosocial impairment due to illness anxiety. Based on the qualitative analysis of the items, the scale items were classified into three factors, i.e., illness anxiety, safety behaviors, and functional and psycho-social impacts.

In the next phase of the study, the scale structure was evaluated. The findings of EFA showed a satisfactory value of Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (.94) and Bartlett's Test of Sphericity ($\chi^2 = 3142.48$, $df = 276$, $p < .001$), showing the sample size is adequate for conducting factor analysis. Based on Kaiser's criterion (1960) of eigenvalue greater than one, initially EFA suggested three factors; one prominent factor with eigenvalue of 11.04 (46% variance) and two less prominent factors with eigenvalues of 1.53 (6% variance) and 1.25 (5% variance), respectively. However, the scree test indicated two factors structure.

Figure 1*Scree Plot Showing Number of Factors Based on Eigenvalues*

So, considering the eigenvalues and scree plot, EFA was run with fixing three and two factors solution. This resulted in the scattered appearance of items across factors, with many items conceptually not aligning with the factors defined on an a priori basis. Therefore, considering the percentage variance accounted for by the first factor (about 46%), a unidimensional structure of the scale was considered. When the EFA was again run using a single-factor solution, a clear one-factor structure was obtained with an eigenvalue of 10.92 and accounted for almost 47%. Further, the scale items were evaluated based on their communality values ($\geq .25$ cut-off by Yong and Pearce (2013)), loadings ($\geq .05$ cut-off by Hair et al. (2019)), and inter-item correlations. Based on these criteria, one of the items was removed for its low communality value and below $.50$ factor loading. So, the revised scale finalized during EFA consisted of 23 items in a single factor with item loadings ranging between $.55$ and $.80$.

Table 1

Item Loadings for the Scale of Illness Anxiety (SIA) from Exploratory Factor Analysis (EFA) (N=229)

Items	Loadings
S1	.71
S2	.67
S3	.58
S4	.78
S5	.80
S6	.69
S8	.73
S9	.73
S10	.73
S11	.80
S12	.64
S13	.55
S14	.57
S15	.75
S16	.67
S17	.72
S18	.72
S19	.67
S20	.69
S21	.69
S22	.59
S23	.72
S24	.57

The 23-item version of the scale was further evaluated through CFA. The initial model obtained showed an average fit as goodness-of-fit index (GFI) and Tucker–Lewis index (TLI) values were nearly acceptable (see Table 1). So, the model was modified to improve indices. In this context, the standardized regression weights (item loadings), standardized residual covariances, and error covariances were thoroughly examined. The standardized regression weight values for the items ranged from .44 to .70. For one item, a standardized regression weight value below .50 was considered (Yong & Pearce, 2013) to avoid removing this item as it was of clinical significance. Two of the items were removed from the model for

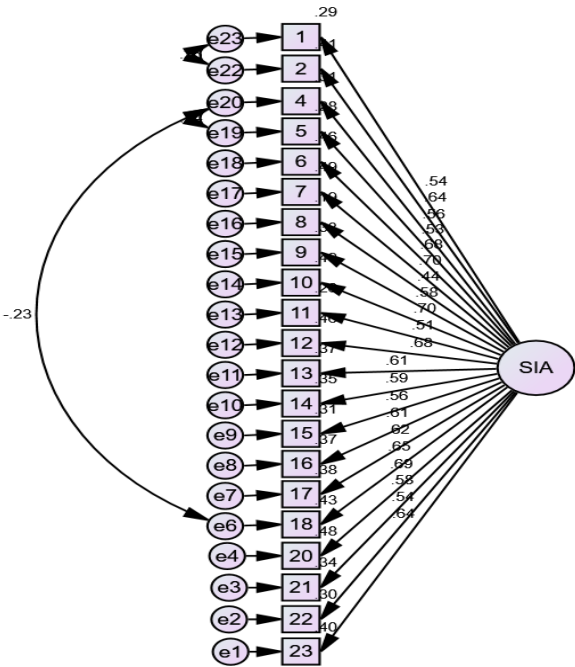
their considerably below loadings (item 3 and 19), which improved the model-fit to some extent.

Table 2
Goodness-of-Fit Statistics for Initial and Final Models of Scale of Illness Anxiety (SIA)

	χ^2	df	CMIN/df	GFI	CFI	TLI	RMSEA	SRMR	PCLOSE
Initial Model	417.94	230	1.82	.86	.90	.89	.06	.06	.060
Final Model	297.28	186	1.60	.89	.93	.94	.05	.05	.486

Note. χ^2 = Chi-square; *df* = degree of freedom; CMIN/*df* = Relative chi-square index; GFI = Goodness-of-fit index; CFI = Comparative-fit index; TLI= Tucker–Lewis Index; RMSEA = Root mean square error of approximation; SRMR = Standardized root means square residual.

Figure 2
The Final Single-Factor Solution Suggested by Confirmatory Factor Analysis (CFA)



Besides that, the model was modified after merging error covariances. Although GFI (.89) was slightly below the recommended cutoff. The overall indices suggested a reasonably good fit of the model with 21 items in a single factor (see Table 2).

The alpha reliability value for the final version of SIA was calculated to assess its internal consistency. The scale showed an excellent alpha value ($\alpha = .92$), above the recommended threshold of .70 (Hair et al., 2019). The normative data were developed using percentiles and T scores. Further, the percentile-based cut-off was used to classify levels of anxiety. The final scale assessed illness anxiety as a unidimensional construct with a higher score indicating a higher level of illness anxiety, warranting risk of IAD.

Discussion

The present study aimed to develop an indigenous scale that reflects core features of IAD as suggested by DSM-5, and previous literature, as well as to portray a cultural picture of illness anxiety. The study was carried out in two phases. The first phase provided a 24-item version of the SIA, which has three sub-factors decided on an a priori basis. During the second phase, the scale structure was evaluated through EFA and CFA. During EFA, a single-factor structure seemed reasonable as most items loaded on a single factor, and additional factors contributed limited unique variance. This single-factor structure was later confirmed through CFA. The factor analysis resulted in the removal of a total of three items due to poor communality and item loadings. So, the final structure of the SIA consisted of 21 items, which showed a good model fit (Hair et al., 2019). The normed chi-square value ($\chi^2/df = 1.60$) remained below the recommended threshold of 3.0. and incremental fit indices were also satisfactory, except for GFI. However, GFI is known to be sensitive to sample size and may be less emphasized (Wang et al., [2019](#)).

The final version of the scale also showed an excellent internal consistency value, which further supported its psychometric standing. Although statistically acceptable, this single-factors structure suggested that the scale items reflect a broader underlying construct rather than distinct subdimensions. It implies that illness anxiety is better interpreted as a unidimensional construct on a continuum, with higher scores on the scale indicating a higher anxiety level. Statistically, this can be supported by previous research evidence, which reports that measurement models may

exhibit simpler factor structures than theoretically expected, particularly when a dominant factor accounts for substantial shared variance among items. In such cases, conventional model fit indices and cut off-based evaluation may not fully capture underlying multidimensionality (Goretzko et al., [2024](#); Ree et al., [2015](#)). So, it may be assumed that illness anxiety may be experienced as an integrated psychological phenomenon in Pakistani culture rather than as separate cognitive, behavioral, and functional domains.

Psychological illnesses exist in all societies; however, the stage, severity, and nature of presenting symptoms can vary tremendously. Similarly, response patterns towards illnesses may be varied and influenced by several factors (Bhugra et al., [2021](#)). It suggests that the presentation of different psychiatric disorders varies across cultures, as also emphasized in the DSM (APA, [2022](#)). In this context, individuals with illnesses or health anxiety are likely to manifest their anxiety in terms of their unique cultural perspective. As of the present study, data obtained during focus group discussions with clinical psychologists and interviews with general physicians and psychiatrists strongly endorsed the culturally specific manifestation. It was observed that individuals were more likely to engage in reassurance-seeking and care-seeking behaviors when experiencing anxiety, in addition to having strong fears and worries related to illness. Among safety behaviors, visiting spiritual healers and quacks was a common practice in addition to doctor shopping. This often leads to mistrust in a patient-healthcare provider relationship and an increased financial burden on both sufferers and the healthcare system due to unnecessary medical requests (Jain & Bargayary, [2025](#)). This indulgence of safety behaviors is also strongly supported by existing research evidence and may be targeted during the interventions with IAD patients.

In addition, in relation to the current digital era, access to every kind of information is easy. The items of SIA also incorporate this common practice among individuals with IAD who often look up the internet for their symptoms. This often results in their heightened anxiety symptoms, thus overwhelming them (Din et al., [2022](#)). Existing evidence suggests that symptom searching behaviors is common phenomenon associated with health anxiety and experienced by clinical patients as well as by the normal population (Blackburn et al., [2019](#); Fergus et al., [2017](#); Sansakorn et al., [2024](#)). These days, this phenomenon is referred to as cyberchondria and

potentially influences health-related behaviours (Doherty-Torstrick et al., [2016](#); Starcevic, [2023](#)). In this reference, in the present study, clinicians reported an increased presentation of individuals in outpatients who search for their symptoms and seek medical reassurance. The expert clinicians reported that they call such individuals fat file patients as their extensive medical records show they had already visited nth number of doctors to satisfy their anxiety. They have a strong conviction that they are seriously ill despite their clear medical investigations, and don't rely on their doctors' advice, as also suggested by Jain and Bargayary (2025). One of the clinicians also reported that people with illness anxiety would exaggerate minor fluctuations and are therefore difficult to treat. Other than that, it was reported that the doctor played a crucial role in developing and maintaining illness anxiety in patients who are present in a general health setting.

Further, as supported by the present study and existing literature, illness anxiety, particularly when severe, significantly disrupts an individual's daily life and social ties (Newby et al., [2017](#)). This highlights an important aspect that shall be considered during the assessment of IAD. In SIA, items have also addressed this context, which was highlighted by interviews and discussions with healthcare professionals. A recent study with the elderly population by Tavakoli et al. ([2022](#)) has reported that social health is a strong modifiable risk factor for individuals diagnosed with IAD. So, this aspect could be specifically focused on during the assessment and planning interventions for illness anxiety or IAD.

As discussed above, during the process of indigenization of SIA, some items originated that focus on costs and gains due to an individual's sick role in the family. These present outlays of illness in the form of the family's lack of understanding and support in response to an individual's illness-related attitude, and gain in the form of the family's attention and exemption from responsibilities. This aspect was not addressed in previous tools, and the reason may be differences in the culture. These items were initially included in the SIA. However, items related to gains were not strongly supported by all the clinicians during the final evaluation and were removed.

Similarly, in previously available measures, items related to bodily preoccupation and health-related worries are mostly based on pains and aches, as in Whitey Index (WI; Pilowsky, 1967) and Illness Attitude Scale (IAS; Kellner, [1986](#)), but in SIA, suggested during the indigenization of the

scale, bodily concerns and worries reflected specificity. For instance, as scale items reflect, individuals have strong concerns related to minor changes in skin color, weakness, and headache, and often fear developing and dying of serious illnesses like cardiac issues, tumors, or cancers. This can be described again in terms of cultural representation of illness anxiety.

The present study is a meaningful contribution to the indigenous literature on culturally relevant psychological assessment. It supports the assessment of IAD by considering the cultural conceptualization of illness anxiety. The SIA would be useful for both clinicians and researchers as it saves them from relying on the translation of foreign assessment measures, which in itself is a time-consuming and rigorous process. Despite prominent strengths, the present study has some limitations. The SIA has not been validated for use with the clinical population and cannot be used as a standalone diagnostic measure of IAD. In addition, the test-re-test reliability of the scale was not calculated. Further, although the study samples were recruited from different faculties within a public university, this limits the generalizability of the findings.

Of course, this newly developed measure is in its preliminary stage; further work will be needed to empirically validate it for use with the clinical population. So, future research work could be focused on the validation and norms development of SIA for the clinical population. To support the psychometric standing of the SIA, its convergent and discriminant validity has also been established with standardized measures. The psychometric data will be provided in another article focusing on the psychometric evaluation of the SIA.

Conclusion

To conclude, SIA is an indigenously developed measure that supports the assessment of IAD when used with other standardized assessment methods, such as diagnostic clinical interviews. It not only captures the diagnostic features of IAD but also incorporates the clinical picture of illness anxiety in the Pakistani cultural context.

Author Contribution

Zarmin Tariq: conceptualization, methodology, investigation, data curation, formal analysis, visualization, writing – original draft. **Saima Dawood:** conceptualization, methodology, supervision, data curation, writing – review & editing.

Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

Data Availability Statement

Data supporting the findings of this study will be made available by the corresponding author upon request.

Funding Details

No funding has been received for this research.

Generative AI Disclosure Statement

The authors did not use any type of generative artificial intelligence software for this research.

References

- Alberts, N. M., Hadjistavropoulos, H. D., Sherry, S. B., & Stewart, S. H. (2016). Linking illness in parents to health anxiety in offspring: Do beliefs about health play a role? *Behavioral and Cognitive Psychotherapy*, 44(1), 18–29. <https://doi.org/10.1017/s1352465814000319>
- Almalki, M., Al-Tawayjri, I., Al-Anazi, A., Mahmoud, S., & Al-Mohrej, A. (2016). A recommendation for the management of illness anxiety disorder patients abusing the health care system. *Case Report in Psychiatry*, Article e6073598. <https://doi.org/10.1155/2016/6073598>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596>
- American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). [https://doi.org/10.1176/appi.books.9780890425787opens in new window](https://doi.org/10.1176/appi.books.9780890425787opens_in_new_window)
- Bhugra, D., Watson, C., & Wijesuriya, R. (2021). Culture and mental illnesses. *International Review of Psychiatry*, 33(1–2), 1–2. <https://doi.org/10.1080/09540261.2020.1777748>
- Blackburn, J., Fischerauer, S. F., Talaei-Khoei, M., Chen, N. C., Oh, L. S., & Vranceanu, A. M. (2019). What are the implications of excessive internet searches for medical information by orthopaedic patients? *Clinical Orthopaedics and Related Research*, 477(12), 2665–2673. <https://doi.org/10.1097/CORR.0000000000000888>

- Braun, V. and Clarke, V. (2006) Using thematic analysis in Psychology. *Qualitative Research in Psychology*, 3, 77–101.
- Briggs, S. R., & Cheek, J. M. (1986). The role of factor analysis in the development and evaluation of personality scales. *Journal of Personality*, 54(1), 106–148. <https://doi.org/10.1111/j.1467-6494.1986.tb00391.x>
- Chappell, A. S. (2018). Toward a lifestyle medicine approach to illness anxiety disorder (formerly hypochondriasis). *American Journal of Lifestyle Medicine*, 12(5), 365–369. <https://doi.org/10.1177/1559827618764649>
- Din, U. M., Mashhadi, S. F., Khan, S., Safdar, T., Ashraf, B., & Awan, Z. K. (2022). Anxiety experienced by people searching internet for medical information. *Journal of Islamabad Medical & Dental College*, 11(1), 25–29. <https://doi.org/10.35787/jimdc.v11i1.711>
- Doherty-Torstrick, E. R., Walton, K. E., & Fallon, B. A. (2016). Cyberchondria: Parsing health anxiety from online behavior. *Psychosomatics*, 57(4), 390–400. <https://doi.org/10.1016/j.psych.2016.02.002>
- Fergus, T. A., Griggs, J. O., Cunningham, S. C., & Kelley, L. P. (2017). Health anxiety and medical utilization: The moderating effect of age among patients in primary care. *Journal of Anxiety Disorders*, 51, 79–85. <https://doi.org/10.1016/j.janxdis.2017.06.002>
- French, J. H. & Hameed, S. (2023, July 16). *Illness anxiety disorder*. StatPearls Publishing.
- Goretzko, D., Siemund, K., & Sterner, P. (2024). Evaluating model fit of measurement models in confirmatory factor analysis. *Educational and Psychological Measurement*, 84(1), 123–144. <https://doi.org/10.1177/00131644231163813>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage.
- Higgins-Chen, A. T., Abdallah, S. B., Dwyer, J. B., Kaye, A. P., Angarita, G. A., & Bloch, M. H. (2019). Severe illness anxiety treated by integrating inpatient psychotherapy with medical care and minimizing reassurance. *Frontiers in Psychiatry*, 10, Article e150. <https://doi.org/10.3389/fpsy.2019.00150>

- Ilyas, U., Aslam, F., Fatima, M., Tariq, Z., & Hotiana, U. (2024). Health anxiety, fear of COVID-19, nosophobia, and health-protective behaviors among healthcare professionals. *Innovations in Clinical Neuroscience*, 21(1-3), 31–35.
- Jain, S., & Bargayary, H. (2025). Internet, hypochondriasis and doctor shopping: A triad of modern healthcare challenge. *Open Access Journal of Behavioural Science & Psychology*, 8(1), Article e180166.
- Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, 20, 141–151. <https://doi.org/10.1177/001316446002000116>
- Kellner, R. (1986). *Somatization and hypochondriasis*. Praeger Publishers.
- Kikas, K., Werner-Seidler, A., Corkish, B., Upton, E., Holden, M., & Newby, J. M. (2025). Illness anxiety disorder: A qualitative study of people with health anxiety and their experiences seeking and avoiding medical care. *The British Journal of Clinical Psychology*, 65(1), 68–85. <https://doi.org/10.1111/bjc.70005>
- Kikas, K., Werner-Seidler, A., Upton, E., & Newby, J. (2024). Illness anxiety disorder: A review of the current research and future directions. *Current Psychiatry Reports*, 26(7), 331–339. <https://doi.org/10.1007/s11920-024-01507-2>
- Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, 28, 563–575.
- Lucock, M. P. and Morley, S. (1996), The Health Anxiety Questionnaire. *British Journal of Health Psychology*, 1(2), 137–150. <https://doi.org/10.1111/j.2044-8287.1996.tb00498.x>
- Mahdavifar, N., Mohammadian, M., Kalan Farmanfarma, K., Khosrorad, R., Dizavandi, A. R., Sani, F. V., & Salehiniya, H. (2022). Evaluation of the prevalence of illness anxiety disorder following the COVID-19 pandemic in Iran and its related factors: A cross-sectional study. *Health Science Reports*, 6(1), e943. <https://doi.org/10.1002/hsr.2.943>
- Mawar, L., Rahmadi, M. A., Siagian, L. A., Siregar, S. M., Pratiwi, A., Nasution, H., Sihombing, N., & Tarigan, A. A. B. (2025). Development of a culturally grounded trauma assessment protocol in the Middle Eastern context. *Jurnal Riset Ilmu Kesehatan Umum dan Farmasi*, 3(4), 146–163. <https://doi.org/10.57213/jrikuf.v3i4.885>

- Newby, J. M., Hobbs, M. J., Mahoney, A. E. J., Wong, S. K., & Andrews, G. (2017). DSM-5 illness anxiety disorder and somatic symptom disorder: Comorbidity, correlates, and overlap with DSM-IV hypochondriasis. *Journal of Psychosomatic Research*, 101, 31–37. <https://doi.org/10.1016/j.jpsychores.2017.07.010>
- Newby, J. M., O'Moore, K., Tang, S., Christensen, H., & Faasse, K. (2020). Acute mental health responses during the COVID-19 pandemic in Australia. *PloS One*, 15(7), Article e0236562. <https://doi.org/10.1371/journal.pone.0236562>
- Pandey, S., Parikh, M. N., Brahmabhatt, M. J., & Vankar, G. K. (2017). Clinical study of illness anxiety disorder in medical outpatients. *Archives of Psychiatry and Psychotherapy*, 19(4), 32–41. <https://doi.org/10.12740/APP/76932>
- Pilowsky I. (1967). Dimensions of hypochondriasis. *The British Journal of Psychiatry*, 113(494), 89–93. <https://doi.org/10.1192/bjp.113.494.89>
- Ree, M. J., Carretta, T. R., & Teachout, M. S. (2015). Pervasiveness of dominant general factors in organizational measurement. *Industrial and Organizational Psychology*, 8(3), 409–427. <https://doi.org/10.1017/iop.2015.16>
- Salkovskis, P. M., & Clark, D. M. (1993). Panic disorder and hypochondriasis. *Advances in Behaviour Research and Therapy*, 15(1), 23–48. [https://doi.org/10.1016/0146-6402\(93\)90002-J](https://doi.org/10.1016/0146-6402(93)90002-J)
- Salkovskis, P. M., & Rimes, K. A. (1997). Predictive genetic testing: Psychological factors. *Journal of Psychosomatic Research*, 43(5), 477–487. [https://doi.org/10.1016/s0022-3999\(97\)00170-0](https://doi.org/10.1016/s0022-3999(97)00170-0)
- Salkovskis, P., Rimes, K. A., Warwick, H. M. C., & Clark, D. (2002). The Health Anxiety Inventory: Development and validation of scales for the measurement of health anxiety and hypochondriasis. *Psychological Medicine*, 32(5), 843–853. <https://doi.org/10.1017/s0033291702005822>
- Salkovskis, P. M., & Warwick, H. M. (1986). Morbid preoccupations, health anxiety and reassurance: A cognitive-behavioural approach to hypochondriasis. *Behaviour Research and Therapy*, 24(5), 597–602. [https://doi.org/10.1016/0005-7967\(86\)90041-0](https://doi.org/10.1016/0005-7967(86)90041-0)
- Salkovskis, P. M., Warwick, H. M. C., & Deale, A. C. (2003). Cognitive-behavioral treatment for severe and persistent health anxiety

- (hypochondriasis). *Brief Treatment and Crisis Intervention*, 3(3), 353–367. <https://doi.org/10.1093/brief-treatment/mhg026>
- Sansakorn, P., Mushtaque, I., Awais-E-Yazdan, M., & Dost, M. K. B. (2024). The relationship between cyberchondria and health anxiety and the moderating role of health literacy among the Pakistani public. *International Journal of Environmental Research and Public Health*, 21(9), Article e1168. <https://doi.org/10.3390/ijerph21091168>
- Scarella, T. M., Boland, R. J., & Barsky, A. J. (2019). Illness anxiety disorder: Psychopathology, epidemiology, clinical characteristics, and treatment. *Psychosomatic Medicine*, 81(5), 398–407. <https://doi.org/10.1097/PSY.0000000000000691>
- Starcevic, V. (2023). Keeping Dr. Google under control: How to prevent and manage cyberchondria. *World Psychiatry*, 22(2), 233–234. <https://doi.org/10.1002/wps.21076>
- Thorgaard, M. V., Frostholt, L., & Rask, C. U. (2018). Childhood and family factors in the development of health anxiety: A systematic review. *Children's Health Care*, 47(2), 198–238. <https://doi.org/10.1080/02739615.2017.1318390>
- Tavakoli, N., Kaviani, S., & Amini, Z. (2022). Illness anxiety disorder and its relationship with social health in the elderly, Isfahan, Iran. *Advanced Biomedical Research*, 11, 42. https://doi.org/10.4103/abr.abr_185_21
- Tyrer, P., Cooper, S., Tyrer, H., Wang, D., & Bassett, P. (2019). Increase in the prevalence of health anxiety in medical clinics: Possible cyberchondria. *The International Journal of Social Psychiatry*, 65(7–8), 566–569. <https://doi.org/10.1177/0020764019866231>
- Wang, K., Xu, Y., Wang, C., Tan, M., & Chen, P. (2019). A corrected goodness-of-fit index (CGFI) for model evaluation in structural equation modeling. *Structural Equation Modeling*, 27(5), 735–749. <https://doi.org/10.1080/10705511.2019.1695213>
- Warwick, H. M., & Salkovskis, P. M. (1990). Hypochondriasis. *Behaviour Research and Therapy*, 28(2), 105–117. [https://doi.org/10.1016/0005-7967\(90\)90023-C](https://doi.org/10.1016/0005-7967(90)90023-C)
- Yong, G. A., & Pearce, S. (2013). A beginner's guide to factor analysis: Focusing on exploratory factor analysis. *Tutorials in Quantitative Methods for Psychology*, 9(2), 79–94.