

Validation of Psychometric properties of an Arabic version of the Multidimensional Inventory of Hypochondriacal Traits (MIHT)

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Article Info	Abstract
<p>Article History</p> <p>Received: December 10, 2020</p> <p>Accepted: February 03, 2021</p> <hr/> <p>Keywords: Hypochondriasis, Illness Anxiety Disorder, MIHT, Exploratory Factor , Analysis</p> <p>DOI: 10.5281/zenodo.4499180</p>	<p><i>There is a desperate need in Arab societies for an accurate tool to assess Illness Anxiety Disorder (IAD) or hypochondriasis symptoms. This research aims to verify the Arabic variant of the Hypochondriacal Traits Multidimensional Inventory (MIHT) and its psychometric validation. The original American version of the MIHT translated from the English-language into the Arabic language and conducted on a non-clinical sample of 300 seniors and junior university students. An exploratory factor analysis (EFA) was performed in SPSS software using varimax rotation method via Principal Component Analysis. The results found that 31-items of four factor health anxiety domains fit into the health anxiety assessment model, i.e. Affective, Perceptual, Behavioral, and Cognitive domain. To validate the Arabic version of MIHT, EFA analysis was performed which confirms the validity of the instrument. Further, the percentiles were computed as norms for raw scores, and the prevalence of IAD was found as 2%. The research developed the Arabic version of MIHT and validated its applicability on IAD. This study's implication is originally centered on Arabic speakers to diagnose the disorder; however, this would also contribute to developing more Arabic research in this field.</i></p>

Introduction

Every human being is prone to be affected with any or several kinds of health anxieties in their life that resulted in an either physical or psychological disorder. In contrast, the medical condition in each individual is never the same, where, health anxiety exists in individuals, but despite its occurrence, the medical condition does not enough to prove its existence. Individuals with current medical conditions or without reported greater health anxiety levels (Bardeen & Fergus, 2020). Several types of health anxieties are prevalent in students that are hindrances in the path of smooth understanding and two-way flow of teaching. In this regards, hypochondriasis or Illness Anxiety Disorder (IAD) is one of the oldest and chronic disorders under psychopathological classification. The IAD refers to a disorder when a patient feels a persistent and illogical fear from suffering, illness or serious medical condition. The prominent symptoms of this disorder result in the individual's frequent misunderstanding of signs and physical symptoms, which continues even after the medical reassurance but also confirms the absence of any disease.

The conceptualization of hypochondriasis in DSM IV is considered a specific somatoform disorder category (Heuvel et al, 2014). Besides, the hypochondriasis term was recently replaced in DSM-5, which partly reflects under IAD, and partly in Somatic Symptoms Disorder (SSD). Therefore, the concept of DSM-5 is slightly different but refers to the same diagnostic features with small changes (American Psychiatric Association, 2013). However, Starcevic (2014) argued that there is no need to replace hypochondriasis from DSM-5, especially since there are no reliable clinical studies that support them. Based on Starcevic (2014) findings and our clinical experience, the term hypochondriasis is still used widely in psychiatric clinics and among specialists in psychopathology, especially since the new term did not bring any significant changes. However, with the small modifications, DSM-5 proposed the following criteria to be included in IAD diagnosis: preoccupation with illness, mild or free from Somatic symptoms, anxiety about health, and excessive health-related behaviors. The overviewing of the diagnostic characteristics of DSM-IV and DSM-5 revealed that the majority of people who had previously been diagnosed with hypochondria, now have either condition, for instance, SSD or IAD. The main difference between the two is based on the severity of the physical symptoms i.e., if the physical symptoms are severe, the diagnosis would be SSD, whereas, whether the physical signs were non-existent or mild, the IAD would be diagnosed.

Globally, the debate about the measurement of IAD disorder is always welcomed, and several studies have focused on this research realm. Nonetheless, the measurement process of IAD is still challenging and deficient in assessing some of the symptoms related to the disorder as claimed by (Skritskaya et al. 2012). Until now, a few and pioneer instruments have been employed so far such as; the Whiteley Index (Pilowsky, 1967), Illness

Attitude Scale (Kellner, 1987), Health Anxiety Inventory (Salkovskis et al., 2002), and Health Anxiety Questionnaire (Lucock & Morley, 1996) etc. However, these instruments' application is limited, and all hypochondriasis dimensions cannot even be measured. Therefore, a sound assessment tool is needed to diagnose the mental disorder such as Hypochondriacal Traits Multidimensional Inventory (MIHT). This assessment model encompasses four interrelated factors such as; affective, cognitive, perceptual, and behavioral. Although, several measurement tools have been designed to assess health anxieties in the past, the Multidimensional Inventory of Hypochondriacal Traits (MIHT) is the one which best fit into the model (Longley et al, 2005). The diagnosis tool of MIHT has been applied to several studies such as (Bardeen & Fergus, 2020; Witthoft et al., 2015); however, to the best of our knowledge, its applicability and validity for Arabic version is still unexplored. There is a lack of Arab research that deals with Hypochondriasis or IAD, and a lack of tools to measure the disorder in a multidimensional and accurate diagnosis.

Looking at the aforementioned concerns of mental disorder, and their severity, the personal and educational concerns have led to call for its assessment as the disorder has effects on the academic and professional performance of the people and personal relationships. Therefore, it is essential to recognize the students with IAD disorder, those unable to control their symptoms, and are not deliberately induced by them as emphasized by (Ezmeirly & Farahat, 2019). This would enrich the educational institutions towards a universal education system that recognizes psychological disordered students' prominence.

In the past, several psychological intervention models exist to assess and diagnose the patients amongst those a cognitive behavior model seems rather efficacious (Olatunji et al., 2014). Therefore, this research aims to focus on the MIHT tool on university students. The research aim is achieved via assessing four anxiety factors of the cognitive-behavior model using EFA. Furthermore, the validity of MIHT in the Arabic Version is of more interest in this research which has not been addressed yet. Therefore, the factorial validity of the four anxiety factors underlying MIHT was assessed. This study follows up on Longley et al. (2005) MIHT, an inventory which many scientists and psychiatrists see as a crucial means of assessing the anxiety of our wellbeing (Stewart et al., 2008). Being a multidimensional tool it allows for a more accurate diagnosis.

Research Justification and Conceptualization of Psychometric Framework

As per the authors' knowledge after overviewing literature, there is no health anxiety measure under the Arabic language version. None of the studies has applied the instrument on the Arabic population. In this continuation, this research aims to assess the psychometric properties of the MIHT Arabic version. The Arabic version confirms the adequate measurements of hypochondriacal traits with additional confidence. This was achieved by undertaking a license and guidance from the American Psychological Association (APA).

The tool's validity is assessed using an internal measure of consistency and validity of evidence via exploratory factor analysis. A four-correlated factor model is developed representing the measurement model as initially proposed by Longley et al. (2005). Each domain of this model, i.e. affective, perceptual, cognitive, and behavioral is considered among each item to account for common variability. A similar model is tested and fit by (MacSwain et al., 2009).

Factor loading values were computed on each item, and based on factor loadings, the validity coefficients were confirmed. According to Hair et al. (2014), factor loading value in the range of 0.3 to 0.4 is enough to meet the threshold level of validity, and a value above or closer to 0.5 is considered more significant, whereas, any value above 0.7 is ideal for the validity. Accordingly, the factor loading value of above 0.3 is considered significant as they fall within the threshold limits. The second validation is performed in terms of raw scores and percentiles for the MIHT.

Method

The research follows a systematic scientific step by step methodology to achieve the research aim. The investigation begins from coordination with the author of the original MIHT and taking the scientific views into account in the translation. This is followed by obtaining the publisher's approval. In this regard, the American Psychological Association (APA) has been approached to obtain a license (License Number: 4414980431684) to use the current study tool and translate it into the Arabic language. During the translation, of the MIHT items into the Arabic language, all aspects related to context and meaning in the Arab culture were considered. Later, the translated inventory is presented to a group of Arabic and English language experts, followed by reviewers from the field of psychopathology.

The aforementioned steps validated the instrument for a pilot survey where a limited trial for the items on some Arabian university students who represent the validation sample was performed. The issues in language and understandability (i.e. simplicity of instrument structure) were identified and later modified. This leads to the finalizing of the MIHT instrument. Further, the instrument was applied to a validation sample, which has been chosen randomly to represent the original society. Validation of the inventory was assessed in two directions,

i.e. its consistency, and validity in SPSS via EFA, also the prevalence of IAD was extracted. The complete process is illustrated in Figure 1.

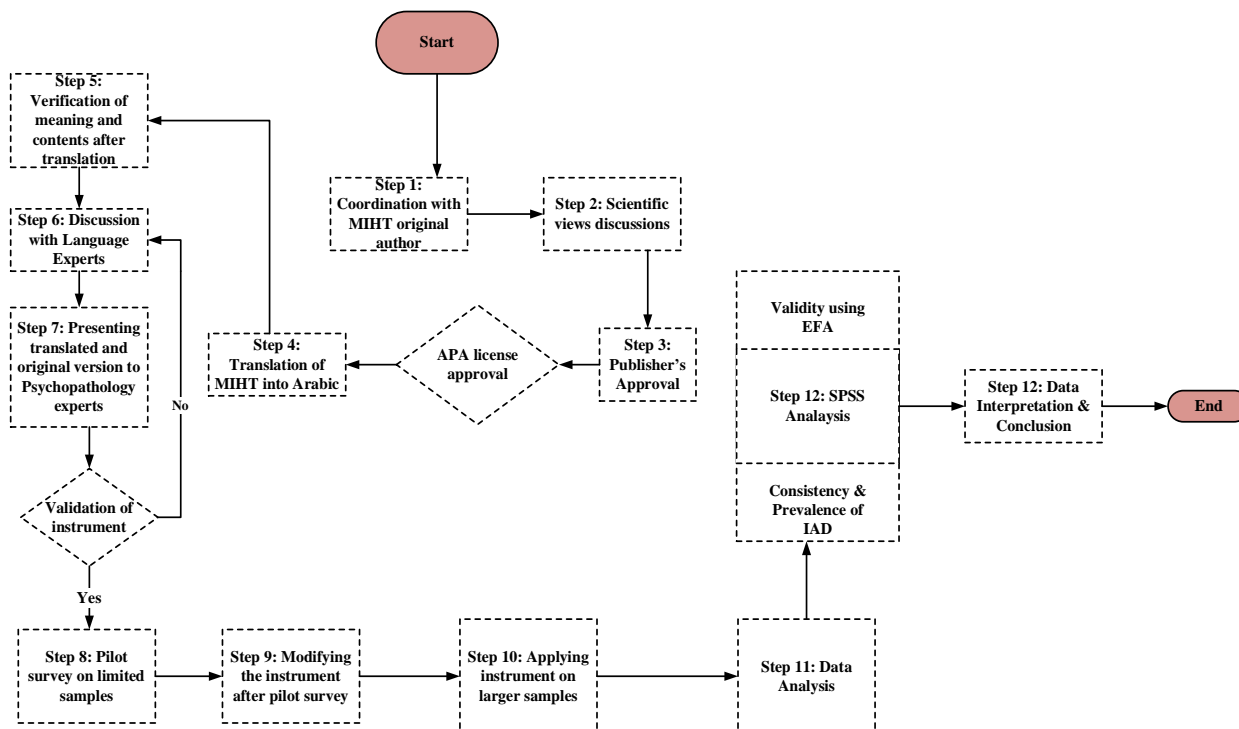


Figure 1: Research Methodology

Participants

The sample of the study consists of a non-clinical sample of 300 seniors and juniors Qatar university students. The sample size of participant included 249 (83%) females, and 51 (17%) male whose age ranges from 18 to 32, with an average of 19.9 years (SD=2.4 years), for further details, see Figure 2. All the participants were volunteers, and no compensations were paid for their participation. They signed a consent form before participation in the survey. The participants were selected from Qatar University with the requirement of no participant below the age of 18 years. Each participant filled out a questionnaire survey. The sample size is confirmed from the study of Hair et al. (2014), according to which number of participants must be at a ratio of 5 with items (i.e. 31 in this case). However, the sample size of this study was kept at a ratio much higher, i.e. 10. The ethical approval was also obtained from the Qatar University review board before starting the study.

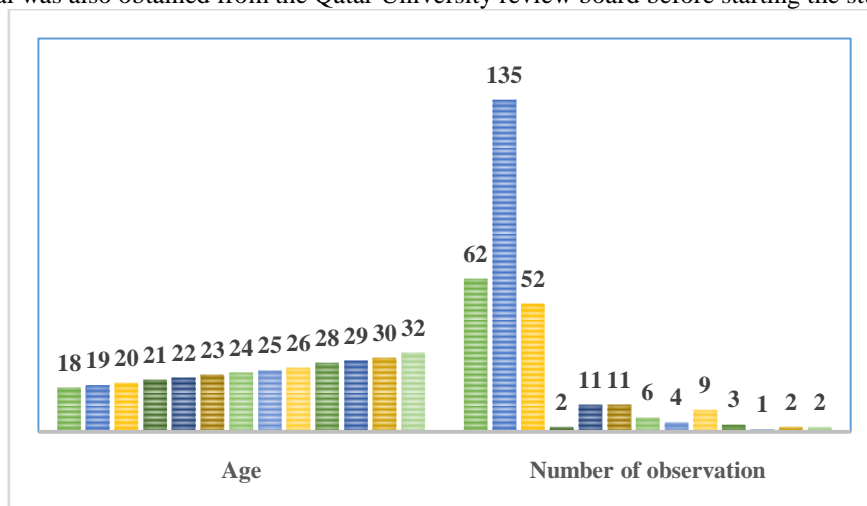


Figure 2: Age-wise distribution of participant

Measures

Structure of Multidimensional Inventory of Hypochondriacal Traits (MIHT)

The structure of MIHT consists of 31 item scale, which primarily serves the purpose of the cognitive-behavioral model of hypochondriasis. This model is proposed by which comprising affective, perceptual, behavioral and cognitive domains. All the underlying four domains slightly differ from each other. The affective factor refers to persistent worries and fears concerned with their own health. The second factor of perceptual which consisting of hypersensitivity to somatic symptoms. The third factor of behavioral domains corresponds to the way of person proceeds while avoidance, whereas, the fourth factor of cognitive entails distorted beliefs towards threats of illness. The MIHT in the light of the aforementioned domains consists of 31 items classified under four dimensions, as shown in Table 1.

Table 1. MIHT's Item classification in four factors

Factor	Quantity of Items	Item's Labelling
Affective	7	21, 6, 11, 7, 29, 23, and 12.
Perceptual	9	3, 30, 9, 17, 19, 13, 28, 22, and 24
Behavioral	8	5, 14, 26, 16, 18, 20, 1 and 25
Cognitive	7	31, 8, 2, 27, 10, 15, and 4

The responses on inventory items are gathered on a 5-point Likert scale ranging from 1-5, where; (1) Strongly disagree; (2) Disagree; (3) Neither agree nor disagree; (4) Agree; (5) Strongly agree. So, the total score on the MIHT ranges from 31-155 ($1*31=31$; $5*31=155$). The higher score indicates higher health anxiety. The scale has a remarkable degree of validity and consistency by many statistical methods in many previous studies. It has had an excellent discriminating capability; it has been applied to samples of students and samples of patients. (Longley et al., 2005)

The MIHT appears to have good psychometric properties in other studies such as; (Stewart et al. 2008; Fergus & Valentiner, 2011; Witthöft & Gropalis, 2015). However, there have been no attempts to use this tool in any Arab environment and Arabic culture. Therefore, the present study is trying to investigate if the tool is accurate and consistent in the Arabic context.

Results

Internal Consistency and Mean Values

Internal Consistency of the Arabic MIHT was examined in SPSS software using Cronbach's Alpha value. The total value of Cronbach was found as 0.89, moreover, as shown in Table 2, the alpha values for each domain of MIHT are as follows; 0.812 for affective, 0.810 for perceptual, 0.787 for behavioral, and 0.706 for cognitive. All computed values are greater than 0.7; hence, the data is reliable (Phogat & Gupta, 2019).

Table 2. Mean, alpha values and standard deviation of four-factor of cognitive-behavioral model

	Affective	Perceptual	Behavioral	Cognitive	Total score
Mean	21.17	28.84	22.61	17.4	90.02
Cronbach's Alpha	0.812	0.810	0.787	0.706	0.89
Standard Deviation	1.310	1.064	1.128	1.234	4.736

The total mean value was computed as 90.02 (out of 155). The mean value of each domain is calculated, as shown in Table 2. The lowest values were achieved for cognitive factor followed by affective, whereas, the highest value was obtained for the perceptual factor. The mean values indicate that our tested sample's health anxiety level was neither too high nor too low. Furthermore, perceptual measure, i.e. hypochondriacal absorption, is found at the peak. Moreover, the smaller value of mean, standard deviation (i.e. 1.184) clarifies that the data sample is nearly closer to the mean value, which again witnesses the quality of the data sample.

Exploratory Factor Analysis

An exploratory factor analysis (EFA) was employed to evaluate the model fitness to MIHT. Before conducting EFA, a few necessary tests are conducted to verify the suitability of EFA to the current problem. In the start, Bartlett's Sphericity test and KMO test was performed. In Bartlett's Sphericity test, interrelationship is computed using a Chi-square test. The Chi-square test is performed at a value of 0.05, which measures the level of satisfactory. For our present case, a value of 0.000, as shown in Table 3 was found, which is satisfactory. Later, a KMO analysis was run where a KMO value of 0.874 was obtained. The higher KMO value measured on a scale of 0 to 1 shows that the sample size is extremely suitable. Any value above 0.5 is considered valid and satisfactory (Phogat and Gupta, 2019).

Table 3. Bartlett's Sphericity test and KMO test results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.874
	Approx. Chi-Square	2985.343
Bartlett's Test of Sphericity	df	465
	Sig.	.000

The factor loadings were computed in SPSS using Principal Component Analysis in SPSS via factor rotations to determine the model fitness. A value above 0.3 for factor loading suggests that the factor has a significant effect on the outcome. The process of factor rotation was performed using orthogonal factor rotation process in SPSS. The results from EFA analysis are demonstrated in Table 4. Examination of factor loading from Table 4 suggests that the four-factor model in its Arabic version could fit into the MIHT. It can be witnessed from the higher factor loading values with none of the items below 0.3. Four items have factor loading equal to or greater than 0.7, which falls under an extremely significant category (two from affective, perceptual and behavioral). 12 items fall under the category of factor loading equal to or greater than 0.6 (two from affective, three from perceptual, four from behavioral, and three from cognitive domain). Further, nine items have factor loading equal or greater than 0.5 (two from affective, four from perceptual, one from behavioral, and two from cognitive). This confirms that 25 out of 31 items having factor loading equal to or greater than 0.5, which witnesses the fitness of the model to MIHT.

Table 4. The Arabic language version of The Multidimensional Inventory of Hypochondriacal Traits (MIHT): Factors and Item Loadings

Factor and item	Item loadings on factors			
	I	II	III	IV
I. Affective component: Hypochondriacal worry				
1. When I experience pain, I fear I may be ill.	.74	.08	.08	.06
2. If I notice a skin blemish, I worry it might lead to something serious.	.71	.17	.14	.03
3. I worry about the physical problems of getting older.	.66	.09	.15	.07
4. I worry a lot about my health.	.60	.33	.10	.18
5. I am concerned with the possibility of being diagnosed with a serious disease.	.59	.18	.15	.21
6. Reading articles about disease makes me worry about my health.	.50	.07	.23	.29
7. I try to avoid things that make me think of illness or death.	.48	.12	.12	.17
II. Perceptual component: Hypochondriacal absorption				
1. I am usually aware of how I feel physically.	.18	.74	.01	.12
2. I am aware of physical sensations.	.14	.65	.08	.09
3. When lying in bed at night, I am often aware of my body.	-.06	.63	.03	-.04
4. Generally, I am sensitive to changes in my body.	.25	.62	.07	.16
5. I keep close track of what is happening to me physically.	.38	.55	.04	.15
6. Even when I listen to a lecture or talk, I am alert to how my body feels.	.24	.52	.15	.09
7. I am aware of how my body feels after a big meal.	.34	.52	.06	.05
8. I am aware of my body position.	-.03	.50	.09	-.03
9. I notice how clothes feel against my body.	.36	.43	.27	.10
III. Behavioral component: Hypochondriacal reassurance				
1. When I am hurt or ill, I like to have someone help me	.22	.11	.70	.03
2. Telling people about my health problems makes me feel better.	.05	.17	.69	.27
3. If my symptoms worry me, I appreciate sympathy from others.	-.08	.13	.67	.13
4. When I feel physical pain, I let others know.	.14	-.04	.66	.00
5. It is important that others care about my health complaints	.21	.16	.60	.27
6. I turn to others for support when I do not feel well.	.20	-.03	.55	-.06

Factor and item	Item loadings on factors			
	I	II	III	IV
7. When I was ill as a child, I liked to have my parents' fuss over me	.24	.30	.41	-.03
8. I like to be reassured when I feel sick.	.32	.35	.38	.05
IV. Cognitive component: Hypochondriacal alienation				
1. Sometimes others do not seem very concerned about my health complaints.	.04	.15	.07	.67
2. Others do not seem sympathetic to my health problems.	.13	-.01	.03	.67
3. The more I talk about my health problems, the fewer others seem to listen.	.15	.06	-.02	.61
4. People seem unconvinced that my symptoms are signs of illness.	.00	.06	.11	.59
5. I get upset about the way others respond to my illness.	.28	-.04	.07	.51
6. I wish others took my health complaints more seriously	.26	.25	.30	.46
7. Few people take my health concerns as seriously as I do.	.23	.27	.01	.32

Standardization of the Arabic MIHT

Based on sample responses of 300 students, standardization of Arabic MIHT was performed. The aggregate value was 90.2, with an average variance of 18.1 between 36 and 140, in order to assess a significant presence and intensity of symptoms in the populations. There is no regulated criterion-referenced cutoff standard. Therefore, the requirements outlined in Table 5 were instead defined as a standard referenced evaluation based on Arabic MIHT scores rather than an external subjective benchmark. For the raw ratings, the intensity ranged from "very low" to "very high" from 125 to 155. Consistent with Pontes and Griffiths (2015), a stricter binary scoring system with points 1 to 4 (strongly disagree, disagree, neutral, agree) were excluded from agreement to the disorder's diagnostic criteria. Whereas, it counts (point 5 or "Strongly Agree") as a diagnostic criterion for the occurrence of the disorder as per the suggestions of (Pontes et al. 2016). Therefore, the prevalence of the disorder is 2% (N=6), as shown in Table 5, and the severity of the disorder ranged from 125-155. This smaller value confirms the standardization of the Arabic MIHT.

Table 5. Raw scores and percentiles for the MIHT

Likert-Scale	Sum of respondents	Percent	severity
1 Strongly disagree	0	0%	Very low 31
2 Disagree	23	7.6%	Low 32-62
3 Neither agree nor disagree	140	46.6%	Average 63-93
4 Agree	131	43.6%	High 94-124
5 Strongly agree	6	2%	Very high 125-155

Discussion

The MIHT four-factor model of health anxiety was developed to account for the four most significant medical anxiety factors. The method establishes a purely dimensional view and regards health concerns as a natural characteristic. Independent students thoroughly analyzed different samples by exploratory factor analysis. The scale measures illness tendencies and cognitive factor, which involves person-to-people agitations to reinforce internal beliefs that others do not share. This is significantly influenced by the interpersonal health anxiety model, which defines medical anxiety as an imperfect manifestation of bond insecurity (Singleton & Longley, 2019).

The present research analyzed the psychometric features of a non-clinical student population. In general, Arabic MIHT should have good internal constancy, analytical factor validity, and psychometric properties. In short, Arabic MIHT would probably be a valuable clinical tool to test IAD among students at universities. The results obtained from four-factor models are entirely satisfactory. According to Longley et. al. (2005), while constructing the MIHT, the research must focus on a factor-based scale with strong psychometric characteristics to assess each four-factor model's domain. From the obtained results of EFA analysis, it was found that the model is fitted well as most items have factor loading above 0.5, which confirms the tool's strong validity. In

addition to this, a high value of Cronbach's alpha also witnesses that the developed tool is highly reliable. The percentage prevalence was close to that obtained in a number of studies such as Manore et al. 2018, which found a prevalence of 3.28% among a non-clinical sample of college students. It is also close to the prevalence reported in DSM5, which ranges from 3-8% (APA, 2013).

The MIHT appears to be an optimal solution for affective, behavioral, cognitive and perceptual sub-scales. The most cognatic hypotheses contribute to the development and maintenance of severe health concerns. The absence of a magnitude to determine somatic symptoms, however, limits the MIHT. The perceptual scale focuses not on the physical pain that is part of the cognitive-compliance model but on the body's concern. The new conception of hypochondriasis in DSM-5 makes this factor all the more critical. Two diagnostic labels have separated the old diagnosis of hypochondria into two conditions. For those with extreme anxiety and severe somatic signs, the new diagnostic tag is a "somatic symptom disorder" mark for those with severe health fear and severe somatic symptoms (Tudor, 2008).

It should be noted that the psychometric properties of MIHT are significantly lower in the sample of hypochondriasis patients than in the entire mixed population of patients/controls. Owing to the slight difference in the category of hypochondriasis patients, differences are likely because the anxiety is similar in health. Simultaneously, there was internal consistency and a convergent and discriminatory scale in selecting the patients with hypochondriasis linked to affective and perceptual MIHT (Boudouda, 2020). Regarding the validity issues, the convergent validity values of MIHT in hypochondria patient patients compared to the overall mixed sample are substantially lower (Boudouda, 2020). This finding and theoretical considerations that there is significant variation in the content and conceptualization of MIHT and other medical anxiety assessment instruments may indicate how clinical settings and the emphasis on multiple (at least two) measures of medical anxiety are not only one action, but also one process.

Conclusion

The research aims to validate the MIHT tool in Arabic version to evaluate the IAD among the non-clinical population. A license from APA was approved with ethical approval from the university before conducting this research. For this purpose, reliability and validity analysis were performed in SPSS on 300 non-clinical university students. The analysis results strongly supports the model fitness. The reliability values in terms of Cronbach's alpha shows that the Arabic version of MIHT is exceptionally reliable. Further, the exploratory factor analysis was conducted to evaluate the model fitness. The higher values of factor loading witness the model suitability and its validity. Moreover, standardization of the Arabic MIHT was performed via computing the prevalence of the disorder, which was found 2%, which confirms the standardization of the Arabic MIHT. The results indicate a valuable and reliable research method used in the general population to test various forms of health anxiety and studies of hypochondriasis patients. The differentiation of four sub-scales (affective, perceptual, behavioral and cognitive) provides a broad panorama of the health anxiety model's core elements. The applicability of MIHT for profound health anxieties in cognitive-behavioral psychotherapy should be further explored. The various MIHT subscales will act as indications for various psychotherapeutic treatments. The quality and performance of psychotherapy can also be enhanced by the adaptation of specific treatment to the four MIHT subscales' test profiles.

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