Adaptation and validation

of the woman abuse screening tool (WAST) in peruvian university students

Adaptación y validación del instrumento de detección del maltrato a la mujer (IDMM) en estudiantes universitarios peruanos

Julio Cjuno; Universidad Cesar Vallejo, School of Medicine, Piura, Peru; EMAIL: jccjunoc@ucvvirtual.edu.pe

Cristian Adriano-Rengifo; Universidad Peruana Unión, Professional School of Psychology, Lima, Peru; EMAIL: cristianadriano@upeu.edu.pe

Edgar Bazan-Palomino; Universidad Cesar Vallejo, School of Medicine, Piura, Peru; EMAIL: edgar.bazan.md@gmail.com

Rodolfo Gonzáles-Ramírez; Universidad Cesar Vallejo, School of Medicine, Piura, Peru; EMAIL: rodolfogonzalezr@gmail.com

Roxy Polo-Bardales; Universidad Cesar Vallejo, School of Medicine, Piura, Peru; EMAIL: rpolo@ucv.edu.pe

Marco Alvarado-Carbonel; Universidad Cesar Vallejo, School of Medicine, Piura, Peru; EMAIL: malvarado@ucv.edu.pe

Ronald M. Hernández; Universidad Católica Santo Toribio de Mogrovejo, School of Psychology, Chiclayo, Perú; EMAIL: ronald.hernandez@outlook.com.pe

Abstract

OBJECTIVE: To adapt and validate the Woman Abuse Screening Tool in Peruvian university students.

METHODOLOGY: Instrumental study developed in 417 female university students selected by non-probabilistic sampling. The adapted and validated instrument was the Woman Abuse Screening Tool (WAST). Descriptive analyses were performed, as well as content validity through Aiken's V, construct validity through confirmatory factor analysis (CFA) and reliability through Cronbach's alpha and McDonald's Omega coefficient. The R study statistical program was used for these analyses.

RESULTS: Adequate values were found in the content validity by V Aiken (V= 0.89 - 1.00); likewise, in terms of factor analysis (CFA) the single factor model showed better values in the fit indices such as $X2=48.037$; GFI=0.997; CFI=0.994; TLI=0.992; SRMR=0.049; RMSEA=0.058 and as for reliability it reported an $\alpha=0.86$ and $\omega=0.90$ those values show that the instrument is reliable.

CONCLUSIONS: The Woman Abuse Screening Tool Peruvian Spanish version demonstrated adequate psychometric values of validity and reliability in university women, so its use in the screening of intimate partner violence is recommended.

Keywords: WAST, Woman Abuse Screening Tool, Intimate Partner Violence, college students.

Resumen

OBJETIVO: Adaptar y validar el Instrumento de Detección de Maltrato a la Mujer en estudiantes universitarias peruanas.

METODOLOGÍA: Estudio instrumental desarrollado en 417 estudiantes universitarias seleccionadas por muestreo no probabilístico. El instrumento adaptado y validado fue el Woman Abuse Screening Tool (WAST). Se realizaron análisis descriptivos, de validez de contenido mediante la V de Aiken, de validez de constructo mediante el análisis factorial confirmatorio (AFC) y de fiabilidad mediante el alfa de Cronbach y el coeficiente Omega de McDonald. Para estos análisis se utilizó el programa estadístico del estudio R.

RESULTADOS: Se encontraron valores adecuados en la validez de contenido mediante la V de Aiken (V= 0,89 - 1,00); asimismo, en cuanto al análisis factorial (CFA) el modelo unifactorial mostró mejores valores en los índices de ajuste como $X2=48,037$; GFI=0,997; CFI=0,994; TLI=0,992; SRMR=0,049; RMSEA=0,058 y en cuanto a la fiabilidad reportó un $\alpha=0,86$ y $\omega=0,90$ dichos valores muestran que el instrumento es fiable.

CONCLUSIONES: El instrumento de tamizaje de maltrato a la mujer versión peruana en español demostró valores psicométricos adecuados de validez y confiabilidad en mujeres universitarias, por lo que se recomienda su uso en el tamizaje de violencia de pareja.

Palabras clave: IDMM, instrumento de detección del maltrato a la mujer, violencia de pareja, estudiantes universitarias.

Introduction

Worldwide, one third of women between 15 and 49 years of age report having suffered some type of violence within the same family environment[1]. For its part, the United Nations[2] reveals that, during the year 2021, a total of 243 million women and girls will have suffered physical and sexual violence by people close to them, such as partners or family members, most of these cases within the home. The problem of violence against women, even before the COVID-19 pandemic, where reports indicate that one in three women suffered physical or sexual violence; during the pandemic, calls to hotlines in cases of domestic violence increased considerably[3]. In the year 2020 in Peru, in a period of six months, 18 439 cases of violence against women and family members have been reported; of these cases: 86% or 15 924 correspond to cases of violence against women and mostly (2537 cases) sexual violence, (8418 cases) physical violence and (7277 cases) psychological violence[4], making the need for interventions from the different spheres of government notorious, however, reliable instruments are also required to identify violence in women victims.

In the United States, a team of researchers seeking to evaluate intimate partner violence developed a screening tool for use in the clinical setting, the Woman Abuse Screening Tool (WAST), with the intention of identifying emotional and physical abuse in women by their partners. This instrument was shown to be unidimensional with 8 items, initially with an alpha coefficient of .95. The items can be answered on a likert-type scale, from 1 to 3, with 1 being the option of least intensity or frequency[5].

Subsequently it was translated and validated in different countries such as Greece in the city of Athens was adapted and validated from English to Greek in women in a public hospital in order to identify emotionally and physically victimized women[6], in Hong Kong, China was adapted from English to Mandarin Chinese to assess dating violence in female university students[7], in Tabriz, Iran was adapted from English to Persian in hospitalized women with mental disorders such as anxiety or depression[8], in Selangor, Malaysia was adapted to Bahasa Malaysia, Tamil and Mandarin Chinese to assess dating violence in hospitalized women with mental disorders such as anxiety or depression[9], Iran adapted from English to Persian in hospitalized women with mental disorders such as anxiety or depression[8], in Selangor, Malaysia adapted to Bahasa Malaysia, Tamil and Mandarin Chinese to assess domestic violence in adult women attending a public hospital[9], in Jakarta, Indonesia adapted from English to Indonesian in women attending two health centers[10].

A first approach to the adaptation of the WAST to Spanish was made in the United States where it was adapted and validated from English to Spanish in Spanish-speaking adult women over 18 years of age in Cuba, Puerto Rico and Mexico[11], in Mexico it was adapted to a population of rural women in a community health center and in an urban center for battered women[12], in Chile the WAST was adapted in a population of women who were treated in a health center[13].

Possibly the reason why they prefer to use the WAST in many countries is because it demonstrated excellent psychometric properties in studies where they sought to assess intimate partner violence and the WAST was more sensitive than the Composite Abuse Scale (CAS) which also assesses the same variable[14], another study in Ontario, Canada showed that the WAST identified a greater number of victims of intimate partner violence than the Partner Violence Screen (PVS) (15), Canada showed that the WAST identified more victims of intimate partner violence than the Partner Violence Screen (PVS)[15], and finally a systematic review determined that the WAST is one of the best instruments for detecting intimate partner violence with a sensitivity of 47% and specificity of 96%, in addition to having excellent validity and reliability properties[16]. In this sense, the aim of the present study is to adapt the Woman Abuse Screening Tool to Peruvian Spanish and to analyze its validity and reliability in Peruvian university students.

Material and methods

Design and context
Non-experimental instrumental study[17], with a non-probabilistic sample of university students from the Faculty of Health Sciences of a private university in Piura, Peru.

Participants
The sample consisted of n=417 women studying at a private university in the city of Piura, Peru. They were included by non-probabilistic convenience sampling, between November and December 2021.

These students were studying health careers and had a mean age of 21.6 (SD=3.91). Regarding residence, 35.2% were from an urbanized area, 35.2% from a human settlement, 21.8% from a rural area and 7.6% from Pueblo joven.

Study variable
The variable under study is intimate partner violence and was evaluated with the Woman Abuse Screening Tool (WAST)[5]. This instrument originally had 7 items, but in a version analyzed in Mexico an item was included that was important to complement the instrument. That modification has been maintained with a robust unidimensional structure in the factor loadings[12]. In this sense, the WAST to be validated in Peru is the Mexican version, thus conforming 8 items that are designed to determine the degree of tension and difficulty existing in the couple's relationship, as well as the presence of violent episodes, both physical and sexual and emotional, which can be answered on a likert-type scale, from 1 to 3, with 1 being the option of least intensity or frequency[13].

Translation and adaptation
The original English version[5] was taken and translated into Peruvian Spanish and then back-translated from Peruvian Spanish into English to verify the quality of the translation[17]. For the cultural adaptation process, 3 psychologists who

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work with women victims of violence were asked to verify the items and their relevance to the construct of intimate partner violence. The psychologists had at least one year of experience in intimate partner violence and all were Peruvian nationals. Those professionals evaluated the clarity, relevance and context for all items in a double round until they gave their approval of the final version of the items.

Subsequently, with the participation of 09 female university students from a private university in Piura, a focus group was conducted through Google Meet where the survey was initially presented to them; once developed, they were consulted on the clarity of the instrument and suggestions for improvement were requested for a better understanding of the instrument. Subsequently, the team of researchers, in a consensus, reviewed all the suggestions for improvement and considered those that were pertinent, thus obtaining the final version of the WAST in Peruvian Spanish.

Data collection procedures
Initially, authorization was requested from the academic authorities of a private university in the city of Piura, followed by coordination with the teachers of the faculties of health sciences in order to coordinate how to present the survey online, through the WhatsApp social network. The collection was carried out in the months of November and December 2021.

In the first part of the survey, the informed consent form explained the objectives of the project and the rights of the participants; once they confirmed their desire to participate, they could access the survey.

The survey was presented up to three times to the students, clarifying that, if the survey had already been developed, it was not necessary to develop it again; the data collection was closed when there were no more students to present the study to. Once the data were collected, they were downloaded from the Google Forms cloud and the data were cleaned and then the instrumental analysis was performed in order to present the results.

Data analysis
In the first phase, the mean, standard deviation, skewness and kurtosis of the four WAST items were calculated; additionally, Aiken's V was evaluated to determine content validity. In the second phase, a confirmatory factor analysis (CFA) was performed, estimating the relevant goodness-of-fit indices. In the third phase, reliability was estimated through Cronbach's alpha and McDonald's Omega coefficient. The R studio statistical program was used for these analyses.

Ethical aspects
The study was approved by the Ethics Committee of the Universidad César Vallejo with Report 022-CE-FCS-UCV-21. Likewise, all the ethical principles of human research of the Helsinki declaration were respected[18].

Results

Table 1 shows that item 3 (When arguments end, do you feel down or bad about yourself?) has the highest mean (M=1.97). In contrast, item 8 (Has your partner ever sexually abused you?) has the lowest mean (M=1.04). Regarding asymmetry, items 4, 6 and 8 present values higher than +/- 2 [19], due to the high frequency of the response alternative "Never" expressed by the participants. This is due to the clinical nature of the instrument, which usually contains very extreme and at the same time very discriminative items[20]. In addition, the coefficient of[21] for kurtosis was calculated and 171.80 was obtained, higher than 70, considering the absence of multivariate normality; the factorial weights are higher than .697[22].

Table 1. Preliminary analysis of the Woman Abuse Screening Tool (WAST) items.

Items	M	DE	g^1	g^2	λ
1	1.60	0.74	0.79	-0.79	.872
	1.73	0.72	0.44	-0.98	.839
	1.97	0.66	0.03	-0.73	.697
	1.13	0.38	2.97	8.64	.857
5	1.33	0.58	1.59	1.45	.871
	1.10	0.33	3.40	11.72	.989
	1.39	0.64	1.38	0.68	.918
	1.04	0.22	6.14	41.03	.733

M=Mean; SD=Standard Deviation; g1=Symmetry; g2=Kurtosis; λ=Factor Loadings.

In Table 2, regarding the content validity evaluated by three expert judges in the care of women victims of intimate partner violence, it has been determined that the Aiken V for item clarity (V= 0.89 - 1.00), relevance (V= 0.89 - 1.00) and context (V= 0.89 - 1.00) are good levels (V>0.76) (23).

Table 2. Content validity of the items of the Woman Abuse Screening Tool.

items	Clarity			Relevance			Context		
	V	95%CI		V	95%CI		V	95%CI	
item 1	0.89	0.71	0.96	0.89	0.71	0.96	0.89	0.71	0.96
item 2	0.89	0.71	0.96	1.00	0.86	1.00	0.89	0.71	0.96
item 3	0.89	0.71	0.96	1.00	0.86	1.00	1.00	0.86	1.00
item 4	0.89	0.71	0.96	1.00	0.86	1.00	1.00	0.86	1.00
item 5	1.00	0.86	1.00	1.00	0.86	1.00	1.00	0.86	1.00
item 6	1.00	0.86	1.00	1.00	0.86	1.00	1.00	0.86	1.00
item 7	0.89	0.71	0.96	1.00	0.86	1.00	1.00	0.86	1.00
item 8	1.00	0.86	1.00	1.00	0.86	1.00	1.00	0.86	1.00

In Table 3, considering that some studies have shown that the WAST has a two-dimensional structure, confirmatory factor analysis was used with the purpose of modeling different factorial structures to establish the best fitting model. Three models were compared: a) Model 1, with a single factor; b) Model 2, with two factors; c) Model 3, with two factors and

seven items. To attenuate the non-normal multivariate distribution, chi-square was used with the Satorra-Bentler(S-B) correction[24]. Table 2 shows that the S-B coefficient of Model 1 has a value closer to 2, indicating a good fit. The other models have values higher than 4. Likewise, it is evident that Model 1 presents fit indexes higher than 0.95, the RMSEA is closer to 0.06[25]. Therefore, it is concluded that Model 1 is the one with the best goodness of fit, showing a unidimensional structure.

Confirmatory factor analysis of the Woman Abuse Screening Tool (WAST).

Table 4								
	X^2 (gl)	p	S-B X^2 /gl	GFI	IFC	TLI	SRMR	RMSEA [CI 90%].
Model 1	**48.037 (20)**	**.000**	**2.40**	**.997**	**.994**	**.992**	**.049**	**.058 [.037 - .079]**
Model 2	2907.133 (20)	.000	145.35	.621	.499	.299	.466	.589 [.571 - .607]
Model 3	3311.010 (14)	.000	236.50	.642	.314	-.029	.412	.752 [.731 - .774]

χ2=chi-square; gl=degrees of freedom; GFI=Goodness of Fit Index; CFI=Comparative Fit Index; TLI=Tucker-Lewis Index; SRMR=Standardized Root Mean Square Residual; RMSEA=Raised Root Mean Square Error of Approximation; CI=Confidence Intervals.

Table 4 shows that the internal consistency of the scale has an Omega coefficient of .90, an indicator of high reliability, above the .85 point (DeVellis, 2012).

Table 4. Reliability of the Woman Abuse Screening Tool (WAST)		
	Cronbach's alpha α	McDonald's Omega ω
Woman Abuse Screening Tool (WAST)	.86	.90

Discussion

Violence against women, especially by intimate partners, is a reality in the world and constitutes a public health problem[1]. During the COVID-19 pandemic, domestic violence in particular, has intensified[2]. In Peru, an increase in the statistics of violence against women has been triggered[4]. Therefore, it is necessary to have a screening tool for early detection that is brief, easy to administer and has adequate psychometric properties for its measurement. For this reason, the main objective of this study was to analyze the psychometric properties of the Woman Abuse Screening Tool (WAST)[5] in a sample of female university students. The scale has been previously studied in different countries from an exploratory perspective, demonstrating adequate percentages of sensitivity and specificity. However, this study seeks to evaluate the internal structure of the scale using Structural Equation Modeling (SEM) through Confirmatory Factor Analysis (CFA).

The CFA evidenced a single-factor internal structure with adequate fit indices and saturations above .60. This is different from the Greek and Chinese validation that found a two-factor

structure using a CFA[6,7]. This differentiation can be understood for two reasons. First, it is possible that it is because of the estimation method used in the AFC of the Greek and Chinese validation. The use of the Maximum Likelihood (or ML) estimator, as is the case in the Greek validation[6], assumes that the data analyzed are continuous. On the other hand, the Weighted Least Squares Robust (or WLSMV) estimator is the most appropriate for Likert-type scales with three response options, as in the case of the WAST, the data should be treated as ordinal and not continuous[17]. Second, the type of sample was a determining factor in the internal structure of the WAST. Violence manifested in a postpartum woman is different because she is in a highly sensitive emotional state as evidenced in the Greek validation[6]. Likewise, the inclusion of males in the Chinese validation sample[7] may have influenced the analysis of the internal structure of the scale, considering that the original scale was designed for women.

Our model is consistent with that proposed by[5], who demonstrated the unidimensionality of the original scale through an exploratory factor analysis. Likewise, validation in Spanish showed adequate indicators of the unidimensional structure of the WAST[12]. In addition, there are several studies in different languages, although they do not make use of a CFA, they support the single factor model of the WAST[8-10,13,26].

Regarding the internal consistency of the WAST, it was decided to estimate it by means of the alpha and omega coefficient following the recommendations of the COSMIN Guide for studies of measurement properties[27]. Cronbach's alpha coefficient obtained α = .86, higher than the cut-off point .80, an indicator of high reliability[28]. Furthermore, the reliability found by means of the alpha coefficient is higher than that reported in the original scale[5] and in other studies[7,8,10]. However, validations in Spanish showed higher alpha coefficients (α= .91)[12,13]. On the other hand, so far, no studies have been found that report reliability using the omega coefficient. The advantage of using the omega coefficient to estimate reliability is that its value is not altered by the number of items and number of response options of the scale as occurs with Cronbach's alpha coefficient[28]. Our study would be the first to report reliability using the omega coefficient, which obtained ω= .90, higher than the .85 cut-off point, an indicator of high reliability[29].

Limitations and strengths

This study has several limitations. One of the limitations was having a sample of only young university women, which prevents generalization to other population groups. Another limitation was not having conducted diagnostic interviews by specialists or having measured intimate partner violence with another instrument for the purpose of obtaining criterion validity of the instrument. However, the self-report survey was conducted anonymously, which minimizes the margins of error. In conclusion, the WAST applied to Peruvian female university students is an instrument that has a single-factor internal structure and meets the criteria of: 1) simple structure, 2) positive factor loadings and 3) simple interpretation. Thus, the WAST can be considered a valid and reliable tool for the detection of violence against women in intimate partner relationships. Its simplicity can be advantageous in the use of

future research, as well as in the management of health personnel in the different programs for the prevention of violence against women in the Peruvian state.

Conclusion

From what has been mentioned so far, the evidence supports the unidimensional model of the WAST with solid values of validity and reliability. Therefore, its use in the screening of intimate partner violence in Peruvian female university students is recommended.

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