

RESEARCH ARTICLE

Evaluation of the measurement properties of intimate partner violence screening instruments for the general population: A COSMIN-based international systematic review

Yanjia Li¹ , Guiyun Wang² , Jiarui Chen ^{1,3,4*}, Qing Xia³, Keyi Chen³, Suqi Ou¹, Siyuan Tang^{1,4}

1 Xiangya School of Nursing, Central South University, Changsha, China, **2** Shandong Xiehe University, Jinan, China, **3** Changsha Medical College, Changsha, China, **4** Xiangya Center for Evidence-Based Nursing Practice & Healthcare Innovation: A JBI Centre of Excellence, Changsha, China

 These authors contributed equally to this work.

* chenjr@csu.edu.cn



OPEN ACCESS

Citation: Li Y, Wang G, Chen J, Xia Q, Chen K, Ou S, et al. (2024) Evaluation of the measurement properties of intimate partner violence screening instruments for the general population: A COSMIN-based international systematic review. PLoS ONE 19(11): e0310297. <https://doi.org/10.1371/journal.pone.0310297>

Editor: Stefano Federici, University of Perugia: Università degli Studi di Perugia, ITALY

Received: May 4, 2024

Accepted: August 28, 2024

Published: November 14, 2024

Peer Review History: PLOS recognizes the benefits of transparency in the peer review process; therefore, we enable the publication of all of the content of peer review and author responses alongside final, published articles. The editorial history of this article is available here: <https://doi.org/10.1371/journal.pone.0310297>

Copyright: © 2024 Li et al. This is an open access article distributed under the terms of the [Creative Commons Attribution License](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Data Availability Statement: All relevant data are within the paper and its [Supporting information](#) files.

Abstract

Aim

To systematically appraise, compare, and summarize the measurement properties of intimate partner violence screening instruments for the general population and provide recommendations.

Methods

We searched PubMed, Embase, Web of Science, ProQuest Dissertations & Theses Global and EBSCO Psychology Behavioral Sciences Collection from their establishment to March 2024 using systematic search strategies. The methodological quality of the instruments that met the inclusion criteria and their measurement properties were assessed using the COSMIN methodology, and the COSMIN recommendations were followed. We reported this study using PRISMA 2020 checklist.

Results

A total of 23 studies were eventually included, and 18 instruments were identified. The evaluation of the methodological quality indicates poor content validity but good structural validity; however, that of the criterion validity in most of the studies was inadequate. Measurement error and responsiveness were not assessed. Four screening instruments could be used in the interim. The remaining 14 instruments were not recommended for use.

Conclusions

The overall methodological quality of most of the assessed instruments was insufficient. A rigorous intimate partner violence screening instrument with good measurement properties

Funding: This research was funded by the Natural Science Foundation of Hunan Province (grant number 2022JJ40641) and the Changsha Natural Science Foundation (grant number kq2202114). The funders had no role in the methods, data extraction, data synthesis, or preparation of the manuscript.

Competing interests: No conflict of interest has been declared by the authors.

is urgently required to identify and screen for intimate partner violence in the general population.

PROSPERO number

[CRD42022365247](https://doi.org/10.1186/1745-6215-42022365247).

Introduction

Intimate partner violence (IPV) is a major public health issue that affects the human rights of people in various cultures and societies [1–3]. IPV refers to the infliction of physical, psychological, or sexual harm by a partner or ex-partner [4]. It encompasses physical violence, sexual violence, emotional-psychological abuse, and controlling behaviors according to the World Health Organization [5]. Intimate partners may include couples, ex-couples, boyfriends/girlfriends, dating partners, sexual partners, or other romantic type of relationship. They can also be current or former partners, of the same or opposite sex, and may or may not be cohabitating [6]. The term “domestic violence” is a broader term that contains the abuse of children or the elderly or the abuse by any member from the family, while it was used in many countries to refer to intimate partner violence [5]. In this study, we therefore conducted a database search using the term “Intimate Partner Violence.”

In a study by the World Health Organization, 27% of women aged 15–49 years had been subjected to physical and/or sexual violence by their partners, and 13% of them had experienced such events in the previous 12-month period [7]. IPV can result in negative physical and emotional outcomes for the people who experience violence and their families [2]. The physical health consequences include acute illnesses and chronic and pain-based disorders, such as respiratory, urinary tract, and sexually transmitted illnesses, insomnia, headache, menstrual-related disorders, pelvic pain, and functional gastrointestinal and reproductive diseases [8–10]. Mental health issues are also reported among people who are experiencing or have experienced IPV, and these can have potentially serious consequences. Anxiety, depression, posttraumatic stress disorder, and suicide are all common among this population [11, 12]. Importantly, the severity of these mental health issues tends to escalate with the severity of the IPV experienced.

In 2009, a systematic review [13] summarized existing psychometric data of four IPV screening instruments in healthcare settings based on the U.S. Preventive Services Task Force criteria. Whereas results showed the psychometric properties of all screening instruments were not well-established. In 2012, another systematic review [14] identified two most feasible IPV screening instruments in primary healthcare settings in Afghanistan and Pakistan using the modified versions of the critical appraisal skills pro-gramme criteria not focused on the psychometric properties. However, in 2016, there was a systematic review [15] focused on the psychological properties of IPV screening instruments to screen men and women in mental health settings using the effective public health practice project criteria, which identified ten IPV screening instruments. In 2022, a systematic review [16] focused on risk assessment instruments for IPV not screening IPV instruments, but this systematic review noted implications for prediction and prevention on IPV and gave us future research directions on summarizing risk assessment instruments for IPV. In 2022, there were two important systematic review summarizing the psychometric properties using the COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) methodology, but one [17] focused on all psychometric properties of dating violence screening instruments among

adolescents and young people between 15 and 24 years of age, another [18] only evaluated reliability and/or validity of included all IPV screening instruments.

Multiple instruments have been developed to screen for IPV, whereas the latest information on their comprehensively methodological quality and psychometric properties have not been assessed. Moreover, the components of IPV screening instruments have not been compared. Researchers and health professionals therefore face challenges regarding which IPV screening instruments to use. Although most IPV screening currently targets women, study [19] still showed that men may also be the victims of IPV. In this study, we hope to explore the methodological properties of IPV screening instruments targeting general population in non-specific population. Therefore, we will include the studies on IPV screening instruments targeting both males and females.

To the best of our knowledge, a systematic review of IPV screening instruments and, specifically, the measurement properties of IPV screening instruments for the general population have not been conducted. The main purpose of this systematic review was therefore to identify the current IPV screening instruments in use for the general population and to evaluate their measurement properties based on the COSMIN methodology for systematic reviews of patient-reported outcome measures (PROMs) [20, 21] and the COSMIN Risk of Bias checklist for systematic reviews of PROMs [22]. We believe that our critical evaluation of the measurement properties of IPV screening instruments will provide useful practical references for other researchers and health professionals who have an interest in IPV among the general population.

Methods

Study design

This systematic review was conducted according to the COSMIN guideline for systematic reviews of PROMs and reported in accordance with the PRISMA 2020 checklist [23]. The COSMIN guideline [20] provides methodology on addressing the risk of bias in studies that aimed at instruments developing, rating their measurement properties, evaluating the overall quality of evidence for each measurement property, and providing recommendations based on the overall quality evidence. The methodology of the current study was based on our published protocol (10.3390/ijerph20021541). The protocol [24] for this study was registered in the International Prospective Register of Systematic Reviews (PROSPERO; number CRD42022365247 [24]). Our study did not involve human participants or animals, ethical approval was not applicable.

Search methods

In March 2024, comprehensively searching in PubMed, Embase, Web of Science, ProQuest Dissertations & Theses Global (PQDT Global), and EBSCO Psychology Behavioral Sciences Collection (PBSC) published databases was done. The Medical Subject Headings (MeSH) terms and 2 keywords in the title (Intimate Partner Violence; Screening Instruments) and abstract were combined with the Boolean operators “AND” and “OR” for the search following a group discussion and assistance from librarians. The search strategies were refined and optimized for each database. An example is shown about the detailed search strategy for the PubMed database in [Table 1](#). The reference lists of review articles identified in the literature search were checked for relevant studies.

Table 1. An example of the search strategies used in PubMed.

#	Search phrase
#1	Intimate partner violence [Mesh] OR Spouse Abuse [Mesh]
#2	Spouse Abuse [T/A] OR Intimate partner violence[T/A] OR IPV[T/A] OR Partner Violence, Intimate[T/A] OR Violence, Intimate Partner[T/A] OR Intimate Partner Abuse[T/A] OR Abuse, Intimate Partner[T/A] OR Partner Abuse, Intimate[T/A] OR Dating Violence[T/A] OR Violence, Dating[T/A]
#3	Mass Screening [Mesh] OR Multiphasic Screening [Mesh]
#4	Screening instrument* [T/A] OR Screening tool* [T/A]
#5	Mass Screening* [T/A] OR Screening*, Mass [T/A] OR Screening* [T/A]
#6	Multiphasic Screening* [T/A] OR Screening*, Multiphasic [T/A] OR Automated Multiphasic Health Testing [T/A]
#7	Screened [T/A] OR detect [T/A] OR detected [T/A] OR detection [T/A]
#8	(#1) OR (#2)
#9	(#3) OR (#4) OR (#5) OR (#6) OR (#7)
#10	(#8) AND (#9)

<https://doi.org/10.1371/journal.pone.0310297.t001>

Inclusion and/or exclusion criteria

In this study, we included primary studies that (1) reported screening IPV instruments designed for people in the general population who were victims of IPV, (2) described the processes of development and/or evaluation of one or more measurement properties for the eligible instrument(s), (3) had full-text availability, and (4) articles were published in English. According to the COSMIN guideline, we excluded original studies that used the IPV screening instruments only for outcomes measurements not evaluating measurement properties.

Study selection

After conducting the search, we used EndNote to manage the references and remove duplicates. We then imported the articles into Joanna Briggs Institute SUMARI search filters to identify the studies with psychometric properties linked to terms related to IPV screening instruments. Two independent researchers (Q.X. and K.C.) undertook the first manual filtering of the articles' titles and abstracts based on the eligibility criteria. The full-text articles not excluded in the second manual screening phase were read independently by two researchers (Y.L. and G.W.). All different opinions between the researchers were resolved under the help of the third researcher (S.O.).

Data extraction

First, we customized the data extraction table following a discussion in the research group. Then, two researchers (Y.L. and G.W.) separately extracted the corresponding data based on the content of the data extraction table. Finally, the third researcher (J.C.) would examine the extracted data and address any differences encountered. Furthermore, when more than one primary article evaluated the same participants (or the evaluated participants overlapped), information was retrieved from the article that evaluated the larger sample, and the remaining articles were filtered to obtain additional information that was not provided in the main article.

The extracted data included (in Tables 3 and 4): (1) general information about the included studies, such as the publication year and first author's name; (2) the basic characteristics of the identified instruments, including the name of the instrument, original language, target population, country and available translated version, participants and settings, mode of

administration, number of participants (N), item generation, number of items, range of scores, and response options; (3) the results of the measurement properties of the identified instruments, namely, structural validity, internal consistency, cross-cultural validity/measurement invariance, reliability, measurement error, criterion validity, hypothesis testing, and responsiveness; and (4) the feasibility of the instrument, which was not a measurement property but indicated the ease of use of the PROM in its specific context and depended on the acceptability of the research objects, the time and cost to complete the scale, and the scale quality. The feasibility of all the included instruments would be compared to identify the most appropriate screening instruments from those in the same category.

Quality appraisal and data synthesis

Two researchers (Y.L. and G.W.) independently assessed the measurement properties of the IPV screening instruments using the COSMIN methodology. The third researcher (J.C.) handled any disagreements related to the process. The quality assessment process was divided into three steps: (1) an evaluation of the methodological quality of the included studies; (2) an overall rating of the measurement properties of the included IPV screening instruments; (3) a grading of the quality of the generated evidence. The results of the assessments of the methodological quality of the included studies and the measurement properties of the included IPV screening instruments are shown in Table 5. A detailed description follows.

After first identifying which measurement properties were used in each article, we applied the COSMIN Risk of Bias checklist [22] to assess the methodological quality of the studies included, which encompassed the development of the IPV screening instruments. Each study's quality was assessed independently based on the specific measurement properties, utilizing the corresponding COSMIN box. The quality of each study was rated from "inadequate" to "very good".

Second, we used the updated criteria for good measurement properties to rate the results for the measurement properties of each study. Each result was categorized as either "-" (insufficiency), "?" (indeterminacy), or "+" (sufficiency). Subsequently, the results for each measurement property were aggregated, and the combined or summarized results per measurement property per PROM were re-evaluated utilizing the same criteria. The overall rating of the pooled or summarized results was presented as follows: (1) "+" (sufficient) was given if >75% of the results met the criteria; (2) "-" (insufficient) was given if >75% of the results did not meet the criteria; (3) "±" (inconsistent) was given if no results exceeded 75% and it was not possible to properly explain the inconsistency; and (4) "?" (indeterminate) was given if all the single results were indeterminate.

Third, according to the modified Grading of Recommendations Assessment, Development, and Evaluation approach based on the COSMIN guidelines [20] for the systematic reviews of PROMs, the quality of the evidence was graded from high to very low, which indicated whether the pooled or summarized results were trustworthy, and this was determined by risk of bias, inconsistency, imprecision, and indirectness.

Recommendations formation

To provide evidenced-based suggestions on the use of IPV screening instruments for researchers, we classified the PROMs into three categories in line with the recommendations in the COSMIN guidelines [20]. Consequently, if a PROM demonstrated sufficient evidence of content validity (at any level) along with at least satisfactory evidence of internal consistency, it was categorized as "A". However, if a measurement property lacked sufficiency despite

possessing high-quality evidence, the PROM was categorized as "C". When the PROM was neither A nor C, the PROM would be classified as "B".

It is noticeable that the PROMs in category A are recommended, but those in category C are not. Of course, the PROMs in category B that have the best content validity could also be used in the interim, but it would be necessary to evaluate the quality of these PROMs further so that better evidence can be provided. Notably, we will give our recommendations comprehensively considering evaluation of the measurement properties and the instrument's feasibility.

Results

Search results summary

A total of 9719 records were initially identified through the systematic data search: 2927 in PubMed, 100 in Embase, 6103 in Web of Science, 285 in PQDT Global, and 304 in EBSCO PBSC. After removing the duplicates, screening the titles and abstracts, retrieving the full-text articles, and identifying records from the references of the included studies, 23 studies were eventually included in this systematic review. The process of searching and selection are depicted in Fig 1.

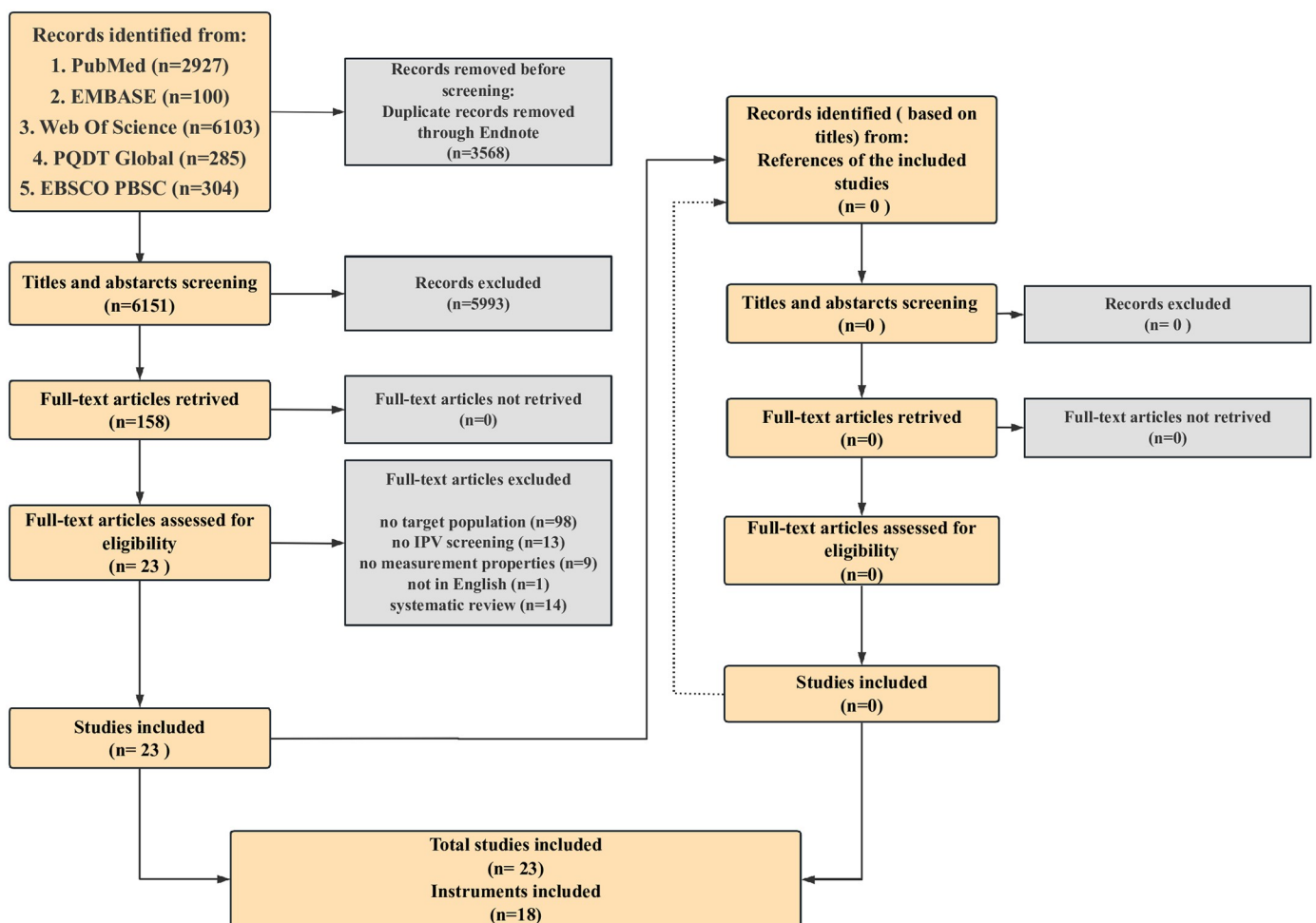


Fig 1. The process of research searching and selection.

<https://doi.org/10.1371/journal.pone.0310297.g001>

Characteristics of the included studies

The included studies were published in English between 1997 and 2022. From these studies, we identified 18 instruments that were specifically developed or translated to screen for IPV in the general population: Partner Violence Screen (PVS) [25–27], the modified version of Partner Violence Screen (M-PVS) [28], the revised Conflict Tactics Scale (CTS-2) [27, 29–31], Abuse Assessment Tool (AAT) [32], Abuse Screening Inventory (ASI) [33], Abuse Behavior Inventory (ABI) [34], the Assessment Screen to Identify Survivors Toolkit for Gender Based Violence (ASIST-GBV) [35], Women’s Coerced First Sexual Intercourse (WCFSI) [36], the short form of Sexual Coercion in Intimate Relationships Scale (SCIRS-SF) [37], The South Asian Violence Screen (SAVS) [38], a screening instrument for domestic violence (a screening instrument for DV) [39], a single violence question [40], Haj-Yahia’s questionnaire [41], Humiliation-Afraid-Rape-Kick (HARK) [42], NorVold Domestic Abuse Questionnaire (NORAQ) [43], the short form of Psychological Maltreatment of Women Inventory (PMWI-SF) [44], the short version of Multidimensional Scale of Dating Violence (MSDV-2.0) [45], and Intimate Partner Violence—Brief Self-Screener (IBV-BSS) [46]. The detailed information of included studies and instruments is presented in Table 2.

The general information of the included instruments is performed in Tables 3 and 4. Out of the 23 included studies, a total of 18 IPV screening instruments were reported. The 18 instruments were mainly (17 instruments) original developed in English. Among them, M-PVS was

Table 2. The number of included studies and instruments.

Included instrument		Author, Year
full name	acronym	
Partner Violence Screen	PVS	Harriet 2006
		Kim 1997
		Trevor 2005
the modified version of Partner Violence Screen	M-PVS	Nuberg 2008
the revised Conflict Tactics Scale	CTS-2	Maria 2014
		Claudia 2002
		Helen 2015
		Trevor 2005
Abuse Assessment Tool	AAT	Leila 2006
Abuse Screening Inventory	ASI	KATARINA 2007
Abuse Behavior Inventory	ABI	Zink 2007
the Assessment Screen to Identify Survivors Toolkit for Gender Based Violence	ASIST-GBV	Wirtz 2016
		Alexander 2016
Women’s Coerced First Sexual Intercourse	WCFSI	Shan Shan He 2013
the short form of Sexual Coercion in Intimate Relationships Scale	SCIRS-SF	Guilherme 2021
The South Asian Violence Screen	SAVS	Lenore 2021
a screening instrument for domestic violence	a screen instrument for DV	Taghi 2016
a single violence question	a single violence question	Young-Ju 2017
Haj-Yahia’s questionnaire	Haj-Yahia’s questionnaire	Sahar 2022
Humiliation-Afraid-Rape-Kick	HARK	Hardip 2007
NorVold Domestic Abuse Questionnaire	NORAQ	Linda 2011
the short form of Psychological Maltreatment of Women Inventory	PMWI-SF	Rita 2018
the short version of Multidimensional Scale of Dating Violence	MSDV-2.0	Maria 2022
Intimate Partner Violence—Brief Self-Screener	IPV-BSS	Victoria 2021

<https://doi.org/10.1371/journal.pone.0310297.t002>

Table 3. Description of the included IPV screening instruments.

Instrument	Categories of Questions	Number of Items	Item generation	Mode of Administration	Response Options	Range of Scores
PVS	①+safety	3	the original version of PVS	self-report	yes or no	not applicable
		3	not applicable		yes or no	not applicable
		3	the original version of PVS		yes or no	not applicable
M-PVS	①	5	the original version of PVS	interview	yes or no	not applicable
CTS-2	①②③④	78	the original version of CTS	self-report	8-point-likert-type	78~624
	①②③④	78	the original version of CTS		8-point-likert-type	78~624
	①③④	32	the original version of CTS		8-point-likert-type	32~256
	①②③	78	the original version of CTS		7-point-likert-type	0~468
AAT	①②③④	67	the finding of a qualitative study and literature review	self-report	5-point-likert-type	0~268
ASI	①②③	16	the texted version of ASI	interview	11-point-likert-type and yes or no	not applicable
ABI	①③	29	not applicable	self-report	5-point-likert-type	29~145
ASIST-GBV	①②③④	7	the qualitative research and systematic review	self-report	yes or no	not applicable
		7	the qualitative research and systematic review		yes or no	not applicable
WCFSI	①②③④	33	the original version of SCIRS	self-report	6-point-likert-type	0~215
SCIRS-SF	②	9	the original version of SCIRS	self-report	6-point-likert-type	0~45
SAVS	①③	14	literature review & the first author's over 20-year experience	self-report	5-point-likert-type	14~70
a screen instrument for DV	①②③	20	HITS & VAWI	self-report	5-point-likert-type	0~80
a single violence question	①	1	The partner table	interview	yes or no	not applicable
Haj-Yahia's questionnaire	①②③④	32	CTS+PMWI+MWA+ISA+ABI	self-report	dichotomous scale	not applicable
HARK	①②③④	4	AAS	self-report	yes = 1 & no = 0	0~4
NORAQ		10	the English version of NORAQ	self-report	yes or no	not applicable
PMWI-SF	①②③	14	the Portuguese version of PMWI	self-report	5-point-likert-type	14~70
MSDV-2.0	①②③④	42	the original version of MSDV and new items related to online violence and sexual violence	self-report	5-point-likert-type	42~210
IPV-BSS	①②③④	4	WHO-IPV	self-report	yes or no or not applicable	not applicable

①physical violence; ② sexual violence; ③emotional-psychological abuse; ④controlling behaviors

<https://doi.org/10.1371/journal.pone.0310297.t003>

translated from English to German, CTS-2 was translated into two languages, namely Italian and Portuguese, WCFSI was translated from English to Chinese, SCIRS-SF was translated from English into Portuguese, a single violence question was translated from Spanish to English, Haj-Yahia's questionnaire was translated from English into Persian, NORAQ was translated from English into Arabic, PMWI-SF was translated from English into Portuguese, and MSDV-2.0 was translated from English into Spanish. The other instruments used a single language (English or Persian) and tested in their target population. The 18 instruments' target

Table 4. The language and participants of the included IPV screening instruments.

Instrument	Original Language	Target Population	Country & Available Translated Version	Participants & Settings	N
PVS	English	all noncritical English-speaking women	Canada & English	English-speaking women & health care settings	1602
			Denver & English	all noncritical English-speaking women & hospital-based ED	322
			America & English	male victims of IPV & ED	116
M-PVS	English	women in different institutions from German-speaking countries	Basel & German	German-language women & psychiatric clinic settings	115
CTS-2	English	couples in general population	Italy & Italian	non-abused women and victims of IPV & primary health care centers and women's shelters	209
			Rio de Janeiro & Portuguese	pregnant women and premature childbirth & Brazilian context	774
			Victoria & English	separated couples & Family mediation settings	121
			America & English	male victims of IPV & ED	116
AAT	English	Jamaican women	Jamaica & English	Jamaican women & primary health care clinics and crisis centers	205
ASI	English	random female Swedish sample	Sweden & English	randomized sample of women & health care settings	699
ABI	English	English-speaking women	Ohio & English	White, African, and American Women & primary care waiting rooms	392
ASIST-GBV	English	refugees and internally displaced persons	Ethiopia and Colombia & English	female refugees and internally displaced persons & humanitarian settings	503
			Ethiopia and Colombia & English		998
WCFSI	English	intimate relationships	China & Chinese	university students & heterosexual dating settings	927
SCIRS-SF	English	heterosexual romantic relationships	America and Brazil & Portuguese	Brazilians & heterosexual dating settings	181
SAVS	English	South Asian immigrant women	Chicago & English	SAI women & most recent relationships	116
a screen instrument for DV	Persian	Iranian married women	Iran & Persian	married Iranian women & health and social research settings	334
a single violence question	English	Latina women	Chicago & Spanish or English	Mexican and Puerto-Rican women & community-based healthcare settings	657
Haj-Yahia's questionnaire	English	female population	Iran & Persian	married women & community-based settings	471
HARK	English	women in general practice	London & English	women in general practice waiting rooms & clinical settings	232
NORAQ	English	Arab and Middle Eastern women	Jordan & Arabic	Arab and Middle Eastern women & health -maternal and health care centers	175
PMWI-SF	English	Portuguese women	Portugal & Portuguese	colleague students & university-based settings	506
MSDV-2.0	English	dating relationships	Andalusia & Spanish	university students & educational settings	1091
IPV-BSS	English	large-scale community populations	Kenya & English	women clients in mental health agencies & clinical and community settings	8674

<https://doi.org/10.1371/journal.pone.0310297.t004>

populations contained women or married women, couples, intimate/romantic/dating relationships, and community populations among general population. Six screening instruments were tested in women and men, and twelve screening instruments only tested in women. Item generation was based on existing IPV screening instruments, literature reviews, reviews of material from service organizations, and/or scholarly work. Fifteen instruments could be administered by self-report, and three instruments required face-to-face interviews. The number of items included in the instruments were diverse and ranged from 1 to 78. The response options were also varied, such as yes or no, 5-point-Likert, or dichotomous.

Methodological quality and measurement property ratings

The methodological quality and measurement property ratings assessed against the criteria for good measurement properties for each instrument based on the GRADE criteria as well as the PROMs categories are presented in [Table 5](#). The two most frequently reported measurement properties in the included studies were internal consistency and criterion validity. The two least frequently reported measurement properties in the included studies were cross-cultural validity and hypotheses testing. Two measurement properties (i.e., measurement error and responsiveness) were not assessed. In terms of methodological quality, the structural validity of the studies in this systematic review was rated as “very good,” “adequate,” or “doubtful.” The most of the studies’ internal consistency, reliability, and cross-cultural validity were rated as “very good.” The methodological quality of the hypothesis testing was found to be “very good” in only one study, while the methodological quality of the criterion validity of most of the studies was “inadequate.”

Recommendations

We developed our recommendations based on the COSMIN guidelines. We classified screening instruments for domestic violence, Haj-Yahia’s questionnaire, NorVold Domestic Abuse Questionnaire, and the short version of Multidimensional Scale of Dating Violence in category “B”, so they can be used in the interim until better evidence can be provided. Considering the inadequate methodological of the content validity of the studies, the other 14 instruments are not recommended to use.

Discussion

In this review, we identified 18 instruments that had been developed to screen for IPV in the general population. To the best of our knowledge, this is the first systematic review to critically evaluate the methodological quality of individual IPV screening instruments and the quality of their measurement properties based on the COSMIN methodology [20, 21]. In this review, four instruments were classified as category “B” and could be used in the interim, and 14 instruments were classified as category “C” and cannot be recommended for use. Further studies are therefore needed to develop instruments that can better screen for IPV in the general population. Although multiple instruments have been used to screen IPV in the general population, many issues still need to be resolved.

A lack of content validity with sufficient methodological quality may affect all the other measurement properties, which represents the relevance, comprehensiveness, and comprehensibility of an instrument [21]. It is essential for an IPV screening instrument to have sufficient content validity, as this contributes to the overall quality of the screening. None of the studies adhered to the minimum requirement recommended by the COSMIN Risk of Bias checklist that 30 experts evaluate the content validity of an instrument [22]. According to many systematic reviews based on COSMIN methods, it is common for content validity to be of a doubtful or inadequate methodological quality [47, 48]. In our opinion, there are two reasons for this phenomenon. First, researchers may overlook the basic criteria and importance of evaluating the content validity of an instrument as per the COSMIN Risk of Bias checklist. Second, the minimum number of experts suggested in the COSMIN Risk of Bias checklist to assess content validity is difficult for researchers to achieve.

The evaluation of structural validity usually uses confirmatory factor analysis and exploratory factor analysis based on the classical test theory. Confirmatory factor analysis is superior to exploratory factor analysis in determining the methodological quality of structural validity according to the COSMIN Risk of Bias checklist [22]. In this systematic review,

confirmatory factor analysis was used to test the structural validity of five instruments, and confirmatory factor analysis and exploratory factor analysis were used in one [39]. Because no detailed exploratory factor analysis criteria were provided to assess structural validity, we made our final judgements using the confirmatory factor analysis results. Detailed criteria for assessing the results of studies that use exploratory factor analysis should be reported in the COSMIN Risk of Bias checklist in the future [22] so that the methodological quality of instruments can be assessed comprehensively based on the results of confirmatory factor analysis and exploratory factor analysis, and the consistency and comparability of the results can be maintained.

In our review, 11 studies [25, 33, 34, 38, 44] reported the criterion validity of 9 instruments, and the methodological quality of these studies were either very good or inadequate. The common issue regarding the inadequate methodological quality of the criterion validity was that the researchers did not calculate the correlations or the area under the receiver operating curve. Based on the COSMIN guideline, we suggest that researchers select a reasonable “gold standard” to calculate the correlations with the IPV screening instruments they have developed or plot the area under the receiver operating curve to better reflect the criterion validity.

Only one study [37] in our systematic review clearly reported the measurement properties of the comparable instruments when conducting hypothesis testing of the construct validity. When a newly developed instrument is compared to another instrument, the construct of the comparable instrument should be known, and the instrument itself should be of sufficient quality [20]. Future studies should also report the measurement properties of the comparative instruments when developing IPV screening instruments.

Through the above analysis, future studies on developing IPV screening instruments can consider the following points: 1) recognize the importance of content validity and 30 experts evaluate the content validity of an instrument, 2) use confirmatory factor analysis to test structural validity, 3) select an appropriate “gold standard” to calculate the correlations or the area under the receiver operating curve to reflect criteria validity, 4) compare the measurement properties between new IPV screening instruments and other existed IPV screening instruments, and 5) report all measurement properties as much as possible according to the COSMIN guideline, which will benefit the IPV screening instruments elevating from category “B” to “A”.

Additionally, the IPV screening instruments in our review could be administered via self-report [45] or face-to-face interviews [28, 40]. We had difficulty identifying which method would be better for screening IPV in the general population. Due to cultural factors, irrespective of whether self-report or face-to-face interviews are used, this population often does not actively disclose their experiences of IPV in their daily lives and even conceal the fact of experiencing IPV. It is noticeable that a cross-sectional study [49] among general population has suggested women reported higher levels of concerns and psychological distress than men. We therefore suggest that future studies using IPV screening instruments should combine self-report and face-to-face interviews to compare the prevalence of IPV among women and men in the general population. The IPV screening instruments in our review had many response options [41, 45, 46], which means there is no unified standard with which to determine the severity of IPV or to measure the cut-off scores of IPV screening instruments. As we mentioned before, because of unwilling disclosing or concealing the experiences of IPV, the results of screening cannot meet the cut-off scores, leading to the prevalence of IPV would be underestimated. In future studies, we hope that researchers will establish a rigorous standard that considers the severity of IPV as well as consistent cut-off scores.

Limitations

This systematic review had some limitations that need to be acknowledged. First, we only searched five published databases using refined and optimized search strategies, so some articles may have been overlooked. In future studies, more diverse databases should be utilized to ensure a more comprehensive search for articles. Second, we were not able to obtain the measurement errors and responsiveness information from the included instruments. We therefore recommend that, in future studies, researchers examine the measurement properties of the developed IPV screening instruments using the COSMIN methodology as a guideline.

Implications for future research and clinical practice

This systematic review gives several areas of research on nursing practice that need further exploration. Establishing a unified standard for determining the severity of IPV is essential for consistent assessment and intervention. Further research should focus on developing and validating such standards to ensure accurate identification and classification of IPV cases. Future research is needed to determine cut-off scores for IPV screening instruments, which will enhance the effectiveness of screening protocols by providing clear thresholds for identifying individuals at risk of or experiencing IPV. Further study is also needed to develop screening instruments on different types of IPV following the COSMIN guideline, which can ensure the reliability, validity, and responsiveness of screening tools across diverse populations and settings.

Implementing standardized assessment for the psychological properties of IPV screening instruments based on COSMIN methodology can help nurses and healthcare professionals to select an appropriate instrument to enhance the identification of IPV in general population. Our findings can inform the development of healthcare policies aimed at addressing IPV. Policymakers can use evidence-based recommendations to advocate for the implementation of comprehensive IPV screening programs and the integration of IPV services into healthcare systems. The safety of general population that experiencing or have experienced IPV will hopefully increase, when these advances are made in the process of healthcare, practice, policy, and research.

Conclusion

This is the first systematic review to provide a comprehensive overview of the quality of the measurement properties and methodological quality of IPV screening instruments for the general population. Based on the COSMIN guideline, the four instruments in category “B” can be used as interim measures; however, the quality of these PROMs will need to be assessed in future studies so that better evidence can be provided. The overall methodological quality of majority of the evaluated instruments was insufficient. While the methodological quality of the structural validity, internal consistency, and reliability of most of the studies was very good, the methodological quality of the criterion validity and content validity was inadequate. Based on the results of this systematic review, we recommend that nursing and healthcare researchers follow the COSMIN guideline when developing IPV screening instruments. A rigorous IPV screening instrument with good measurement properties is urgently required to identify and screen for IPV in the general population.

Supporting information

S1 File. PRISMA 2020 checklist.
(DOCX)

S2 File. Search strategies.

(DOCX)

S1 Table. The extraction process information.

(DOCX)

S2 Table. Boxes of COSMIN risk of bias checklist of the included studies.

(DOCX)

S1 Data. Retrieve records.

(XLSX)

Acknowledgments

We would like to thank our university librarian Xiaoting Huang for her help with determining the finally refined and optimized search strategies in each database for this study. We also would like to thank the fundings provided support for the design of this study.

Author Contributions

Conceptualization: Siyuan Tang.

Data curation: Qing Xia, Keyi Chen, Suqi Ou.

Formal analysis: Yanjia Li, Qing Xia, Keyi Chen.

Funding acquisition: Jiarui Chen.

Methodology: Yanjia Li, Guiyun Wang, Qing Xia, Keyi Chen.

Project administration: Jiarui Chen.

Software: Yanjia Li, Guiyun Wang, Qing Xia, Keyi Chen.

Supervision: Jiarui Chen, Siyuan Tang.

Validation: Guiyun Wang, Suqi Ou, Siyuan Tang.

Visualization: Suqi Ou.

Writing – original draft: Yanjia Li, Guiyun Wang.

Writing – review & editing: Jiarui Chen, Suqi Ou, Siyuan Tang.

References

1. Atsbaha M, Alemayehu M, Mekango DE, Moges S, Ejajo T, Erkalo D, et al. Prevalence and associated factors of intimate partner violence among pregnant women attending health care facilities, Northern Ethiopia: comparative cross-sectional study. *J Obstet Gynaecol.* 2022; 42(5):1155–62. <https://doi.org/10.1080/01443615.2022.2026900> PMID: 35142250
2. Kyle J. Intimate Partner Violence. *Med Clin North Am.* 2023; 107(2):385–95. <https://doi.org/10.1016/j.mcna.2022.10.012> PMID: 36759104
3. Tsegaw M, Mulat B, Shitu K. Intimate partner violence and associated factors among reproductive age women in Liberia: a cross-sectional study using a recent Liberian demographic and health survey. *BMC Womens Health.* 2022; 22(1):238. <https://doi.org/10.1186/s12905-022-01830-x> PMID: 35715767
4. Ma N, Chen S, Kong Y, Chen Z, Geldsetzer P, Zeng H, et al. Prevalence and changes of intimate partner violence against women aged 15 to 49 years in 53 low-income and middle-income countries from 2000 to 2021: a secondary analysis of population-based surveys. *Lancet Glob Health.* 2023; 11(12): e1863–e73. [https://doi.org/10.1016/S2214-109X\(23\)00417-5](https://doi.org/10.1016/S2214-109X(23)00417-5) PMID: 37973337
5. WHO. Understanding and Addressing Violence Against Woman 2012 [http://apps.who.int/iris/bitstream/10665/77432/1/WHO/_RHR_12.36_eng.pdf]

6. Chan B, Sachs CJ. Intimate Partner Violence and Sexual Violence. *Emergency Medicine Clinics of North America*. 2023; 41(2):369–80. <https://doi.org/10.1016/j.emc.2023.01.007> PMID: 37024170
7. Sardinha L, Maheu-Giroux M, Stöckl H, Meyer SR, García-Moreno C. Global, regional, and national prevalence estimates of physical or sexual, or both, intimate partner violence against women in 2018. *Lancet*. 2022; 399(10327):803–13. [https://doi.org/10.1016/S0140-6736\(21\)02664-7](https://doi.org/10.1016/S0140-6736(21)02664-7) PMID: 35182472
8. Campbell JC. Health consequences of intimate partner violence. *Lancet*. 2002; 359(9314):1331–6. [https://doi.org/10.1016/S0140-6736\(02\)08336-8](https://doi.org/10.1016/S0140-6736(02)08336-8) PMID: 11965295
9. Lutgendorf MA. Intimate Partner Violence and Women's Health. *Obstet Gynecol*. 2019; 134(3):470–80. <https://doi.org/10.1097/AOG.0000000000003326> PMID: 31403968
10. Sugg N. Intimate partner violence: prevalence, health consequences, and intervention. *Med Clin North Am*. 2015; 99(3):629–49. <https://doi.org/10.1016/j.mcna.2015.01.012> PMID: 25841604
11. Hogan KF, Clarke V, Ward T. The Impact of Masculine Ideologies on Heterosexual Men's Experiences of Intimate Partner Violence: A Qualitative Exploration. *Journal of Aggression Maltreatment & Trauma*. 2022.
12. Paphitis SA, Bentley A, Asher L, Osrin D, Oram S. Improving the mental health of women intimate partner violence survivors: Findings from a realist review of psychosocial interventions. *PLoS One*. 2022; 17(3):e0264845. <https://doi.org/10.1371/journal.pone.0264845> PMID: 35299229
13. Rabin RF, Jennings JM, Campbell JC, Bair-Merritt MH. Intimate partner violence screening tools: a systematic review. *Am J Prev Med*. 2009; 36(5):439–45.e4. <https://doi.org/10.1016/j.amepre.2009.01.024> PMID: 19362697
14. Vogel J. Effective gender-based violence screening tools for use in primary health care settings in Afghanistan and Pakistan: a systematic review. *East Mediterr Health J*. 2013; 19(3):219–26. PMID: 23879072
15. Arkins B, Begley C, Higgins A. Measures for screening for intimate partner violence: a systematic review. *J Psychiatr Ment Health Nurs*. 2016; 23(3–4):217–35. <https://doi.org/10.1111/jpm.12289> PMID: 27029235
16. Garcia-Vergara E, Almeda N, Fernández-Navarro F, Becerra-Alonso D. Risk Assessment Instruments for Intimate Partner Femicide: A Systematic Review. *Front Psychol*. 2022; 13:896901. <https://doi.org/10.3389/fpsyg.2022.896901> PMID: 35712218
17. Tarrío-Concejero L, Gil-García E, Barrientos-Trigo S, García-Carpintero-Muñoz M. Instruments used to measure dating violence: A systematic review of psychometric properties. *J Adv Nurs*. 2023; 79(4):1267–89. <https://doi.org/10.1111/jan.15374> PMID: 35872612
18. Alexander EF, Backes BL, Johnson MD. Evaluating Measures of Intimate Partner Violence Using Consensus-Based Standards of Validity. *Trauma Violence Abuse*. 2022; 23(5):1549–67. <https://doi.org/10.1177/15248380211013413> PMID: 33969760
19. Taylor JC, Bates EA, Colosi A, Creer AJ. Barriers to Men's Help Seeking for Intimate Partner Violence. *J Interpers Violence*. 2022; 37(19–20):Np18417–np44. <https://doi.org/10.1177/08862605211035870> PMID: 34431376
20. Prinsen CAC, Mookkink LB, Bouter LM, Alonso J, Patrick DL, de Vet HCW, et al. COSMIN guideline for systematic reviews of patient-reported outcome measures. *Qual Life Res*. 2018; 27(5):1147–57. <https://doi.org/10.1007/s11136-018-1798-3> PMID: 29435801
21. Terwee CB, Prinsen CAC, Chiarotto A, Westerman MJ, Patrick DL, Alonso J, et al. COSMIN methodology for evaluating the content validity of patient-reported outcome measures: a Delphi study. *Qual Life Res*. 2018; 27(5):1159–70. <https://doi.org/10.1007/s11136-018-1829-0> PMID: 29550964
22. Mookkink LB, de Vet HCW, Prinsen CAC, Patrick DL, Alonso J, Bouter LM, et al. COSMIN Risk of Bias checklist for systematic reviews of Patient-Reported Outcome Measures. *Qual Life Res*. 2018; 27(5):1171–9. <https://doi.org/10.1007/s11136-017-1765-4> PMID: 29260445
23. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Bmj*. 2021; 372:n71. <https://doi.org/10.1136/bmj.n71> PMID: 33782057
24. Li Y, Zhou K, Tang S, Chen J. Intimate Partner Violence Screening Instruments: A Protocol for a COSMIN-Based Systematic Review. *Int J Environ Res Public Health*. 2023; 20(2). <https://doi.org/10.3390/ijerph20021541> PMID: 36674295
25. Feldhaus KM, Koziol-McLain J, Amsbury HL, Norton IM, Lowenstein SR, Abbott JT. Accuracy of 3 brief screening questions for detecting partner violence in the emergency department. *Jama*. 1997; 277(17):1357–61. PMID: 9134940
26. MacMillan HL, Wathen CN, Jamieson E, Boyle M, McNutt LA, Worster A, et al. Approaches to screening for intimate partner violence in health care settings: a randomized trial. *Jama*. 2006; 296(5):530–6. <https://doi.org/10.1001/jama.296.5.530> PMID: 16882959

27. Mills TJ, Avegno JL, Haydel MJ. Male victims of partner violence: prevalence and accuracy of screening tools. *J Emerg Med.* 2006; 31(4):447–52. <https://doi.org/10.1016/j.jemermed.2005.12.029> PMID: [17046494](https://pubmed.ncbi.nlm.nih.gov/17046494/)
28. Nyberg E, Hartman P, Stieglitz R, Riecher-Rössler A. [Screening domestic violence. A German-language screening instrument for domestic violence against women]. *Fortschr Neurol Psychiatr.* 2008; 76(1):28–36.
29. Cleak H, Schofield MJ, Axelsen L, Bickerdike A. Screening for Partner Violence Among Family Mediation Clients: Differentiating Types of Abuse. *J Interpers Violence.* 2018; 33(7):1118–46. <https://doi.org/10.1177/0886260515614559> PMID: [26681786](https://pubmed.ncbi.nlm.nih.gov/26681786/)
30. Moraes CL, Reichenheim ME. Cross-cultural measurement equivalence of the Revised Conflict Tactics Scales (CTS2) Portuguese version used to identify violence within couples. *Cad Saude Publica.* 2002; 18(3):783–96. PMID: [12048604](https://pubmed.ncbi.nlm.nih.gov/12048604/)
31. Signorelli MS, Arcidiacono E, Musumeci G, Di Nuovo S, Aguglia E. Detecting Domestic Violence: Italian Validation of Revised Conflict Tactics Scale (CTS-2). *Journal of Family Violence.* 2014; 29(4):361–9.
32. McWhinney-Dehaney L. The development and psychometric testing of the Risk for Abuse Assessment Scale and the Abuse Assessment Tool for use in Jamaican women 2006.
33. Swahnberg K, Wijma K. Validation of the Abuse Screening Inventory (ASI). *Scand J Public Health.* 2007; 35(3):330–4.
34. Zink T, Klesges LM, Levin L, Putnam F. Abuse behavior inventory: cutpoint, validity, and characterization of discrepancies. *J Interpers Violence.* 2007; 22(7):921–31. <https://doi.org/10.1177/0886260507301228> PMID: [17575069](https://pubmed.ncbi.nlm.nih.gov/17575069/)
35. Vu A, Wirtz A, Pham K, Singh S, Rubenstein L, Glass N, et al. Psychometric properties and reliability of the Assessment Screen to Identify Survivors Toolkit for Gender Based Violence (ASIST-GBV): results from humanitarian settings in Ethiopia and Colombia. *Confl Health.* 2016; 10:1. <https://doi.org/10.1186/s13031-016-0068-7> PMID: [26865857](https://pubmed.ncbi.nlm.nih.gov/26865857/)
36. He S, Tsang S, Li C. A revision of the sexual coercion in intimate relationships scale for young adults in China. *Violence Vict.* 2013; 28(3):483–95. <https://doi.org/10.1891/0886-6708.11-00124> PMID: [23862311](https://pubmed.ncbi.nlm.nih.gov/23862311/)
37. Lopes GS, Holanda LC, DeLecce T, Holub AM, Shackelford TK. Sexual Coercion, Mate Retention, and Relationship Satisfaction in Brazilian and American Romantic Relationships. *J Interpers Violence.* 2021; 36(13–14):6647–69. <https://doi.org/10.1177/0886260518821458> PMID: [30596353](https://pubmed.ncbi.nlm.nih.gov/30596353/)
38. Soglin LF, Ragavan MI, Li JC, Soglin DF. A Validated Screening Instrument for Identifying Intimate Partner Violence in South Asian Immigrant Women. *J Interpers Violence.* 2021; 36(13–14):Np7027–np44. <https://doi.org/10.1177/0886260518822344> PMID: [30646792](https://pubmed.ncbi.nlm.nih.gov/30646792/)
39. Azadarmaki T, Kassani A, Menati R, Hassanzadeh J, Menati W. Psychometric Properties of a Screening Instrument for Domestic Violence in a Sample of Iranian Women. *Nurs Midwifery Stud.* 2016; 5(1):e27763. <https://doi.org/10.17795/nmsjournal27763> PMID: [27331052](https://pubmed.ncbi.nlm.nih.gov/27331052/)
40. Kim YJ, Montano NP. Validity of Single Question for Screening Intimate Partner Violence among Urban Latina Women. *Public Health Nurs.* 2017; 34(6):569–75. <https://doi.org/10.1111/phn.12348> PMID: [28833482](https://pubmed.ncbi.nlm.nih.gov/28833482/)
41. Sotoodeh Ghorbani S, Ghaffari M, Hashemi Nazari SS. Psychometric properties of Haj-Yahia's questionnaire of violence against women in a sample of married women in Tehran, Iran. *BMC Public Health.* 2022; 22(1):448. <https://doi.org/10.1186/s12889-022-12831-8> PMID: [35255890](https://pubmed.ncbi.nlm.nih.gov/35255890/)
42. Sohal H, Eldridge S, Feder G. The sensitivity and specificity of four questions (HARK) to identify intimate partner violence: a diagnostic accuracy study in general practice. *BMC Fam Pract.* 2007; 8:49. <https://doi.org/10.1186/1471-2296-8-49> PMID: [17727730](https://pubmed.ncbi.nlm.nih.gov/17727730/)
43. Haddad LG, Shotar A, Younger JB, Alzyoud S, Bouhaidar CM. Screening for domestic violence in Jordan: validation of an Arabic version of a domestic violence against women questionnaire. *Int J Womens Health.* 2011; 3:79–86. <https://doi.org/10.2147/IJWH.S17135> PMID: [21445377](https://pubmed.ncbi.nlm.nih.gov/21445377/)
44. Começanha R, Maia Â. Screening Tool for Psychological Intimate Partner Violence: Portuguese Validation of the Psychological Maltreatment of Women Inventory. *Violence Vict.* 2018; 33(1):75–90. <https://doi.org/10.1891/0886-6708.VV-D-16-00060> PMID: [29436362](https://pubmed.ncbi.nlm.nih.gov/29436362/)
45. García-Carpintero-Muñoz M, Tarrío-Concejero L, Gil-García E, Pórcel-Gálvez AM, Barrientos-Trigo S. Short version of the Multidimensional Scale of Dating Violence (MSDV 2.0) in Spanish-language: Instrument development and psychometric evaluation. *J Adv Nurs.* 2023; 79(4):1610–31. <https://doi.org/10.1111/jan.15300> PMID: [35608045](https://pubmed.ncbi.nlm.nih.gov/35608045/)
46. Mutiso VN, Musyimi CW, Gitonga I, Rebello TJ, Tele A, Pike KM, et al. Toward Community Coverage on Self-Screening, Diagnosis, and Help-Seeking Behavior for Both Gender Victims of Intimate Partner Violence (IPV) in a Kenyan Setting: The Development of IPV-Brief Self-Screener (IPV-BSS) Version of

- the WHO-IPV Instrument. *J Interpers Violence*. 2021; 36(17–18):Np9344–np63. <https://doi.org/10.1177/0886260519855666> PMID: 31208269
47. Middlebrook N, Rushton AB, Abichandani D, Kuithan P, Heneghan NR, Falla D. Measures of central sensitization and their measurement properties in musculoskeletal trauma: A systematic review. *Eur J Pain*. 2021; 25(1):71–87. <https://doi.org/10.1002/ejp.1670> PMID: 33034137
 48. Qian M, Shi Y, Lv J, Yu M. Instruments to assess self-neglect among older adults: A systematic review of measurement properties. *Int J Nurs Stud*. 2021; 123:104070. <https://doi.org/10.1016/j.ijnurstu.2021.104070> PMID: 34520885
 49. Shechory Bitton M. Intimate partner violence in the shadow of COVID-19 and its associations with stress, function and support among the Israeli general population. *Stress Health*. 2023; 39(3):673–83. <https://doi.org/10.1002/smi.3217> PMID: 36583565