Reliability and validity of the Management of Aggression and Violence Attitude Scale (MAVAS-BR) for use in Brazil

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Abstract

Background: Aggression and violent behavior against health care professionals is a serious problem today and has aroused the interest of researchers and authorities. **Objective:** The purpose of this study was to examine the reliability and validity of the Management of Aggression and Violence Attitude Scale – Brazil (MAVAS-BR) for use with Brazilian nurses. **Method:** The MAVAS-BR was applied in a convenience sample of 262 nurses, the data were submitted to an exploratory factor analysis, and reliability was estimated using Cronbach's alpha. **Results:** The MAVAS-BR is composed of 23 items distributed among four factors, and the Cronbach's alpha was σ = 0.75. **Discussion:** The MAVAS-BR is a reliable instrument for measuring the attitudes of Brazilian nurses facing aggression and violent behavior. The scale has shown to possess validity and the recommended reliability criteria; however, additional studies using this scale should be performed to offer further evidence of its validity in the context of Brazilian nursing.

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Introduction

Aggression and violent behavior against health care professionals is a serious problem today and has aroused the interest of researchers and authorities[1]. Although this problem is not exclusive to mental health services, the likelihood of violent behavior among psychiatric patients is higher than that found among the general population[2]. The workers in these services, particularly nurses, who spend extended periods with these patients, are the professionals most vulnerable to these types of behaviors in their work environment[3,4].

A previous study[5] that evaluated the rates of violence suffered by mental health workers showed that nurses and psychiatrists were the healthcare professionals who suffered more aggressions from patients. The comparison of the frequency and the characteristics of the violence suffered by nurses in different healthcare services indicated that 84% of those working in psychiatric services reported having experienced at least one episode of violence in the last three years; among these episodes, 64% occurred in general hospitals, and 54% occurred in emergency units[6].

A Canadian study[7] revealed that 20% of psychiatric nurses have been physically assaulted, 43% have experienced threats of physical violence, and 55% have been verbally assaulted at least once during a normal working week.

In Brazil, the few published studies on this topic[8] have evaluated the profile of patients treated at psychiatric emergency services[9]. The studies that have evaluated the attitudes of nurses towards the problem are scarce, although this problem has been extensively studied in other countries[10-12].

The identification of the attitudes of nurses working in mental health services towards aggression and violent behavior is of utmost importance for the practice of psychiatric nursing. In this respect, there is evidence that their attitudes towards this problem can affect the manner in which they manage these types of behavior, such that positive attitudes may contribute to the development of interpersonal approaches, whereas negative attitudes may contribute to the use of coercive measures[10] and may consequently increase the

unnecessary use of physical and chemical restraint[13]. On the other hand, the identification and characterization of the attitudes of health workers towards the management of aggressive behaviors may serve as a strategy to cope with this situation[9], to promote more humanized care[9], and to help develop protective measures for their own emotional health[4].

Considering the need for more studies to identify the attitudes of nurses towards aggression and violent behavior in health care, particularly in mental health services, and the limited availability of psychometric instruments to investigate this problem in Brazil[9], a scale developed in England, the "Management of Aggression and Violence Attitude Scale (MAVAS)"[14,15], was translated and culturally adapted for use in Brazil (MAVAS-BR) and presented adequate content validity[9].

Despite its validity from a cultural point of view, the psychometric properties of the MAVAS-BR[9] have not yet been tested. Therefore, this study aimed to validate the MAVAS-BR.

Management of Aggression and Violence Attitude Scale (MAVAS)

Originally, the MAVAS was developed on the basis of three explanatory models for aggressive behavior: an internal model, an external model, and a situational model[9,14,15]. This scale was designed to help improve and train professionals working in services where aggressive behaviors are common[14] and assumes that the knowledge of these professionals on the prediction and management of violent behavior also involves the recognition of their attitudes toward this problem.

Four items in the original version of the MAVAS[14] translated and adapted to Portuguese[9] were excluded during content validation (8, 9, 22, and 26)[9]. This revised version consists of 23 items divided into four factors, which correspond to interactional/situational, external, and biological perspectives and the attitudes of these professionals towards the management of patient aggression and violence[14]. Previous studies[14,15] on the psychometric qualities of the MAVAS showed good reliability indices (r = 0.89).

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The MAVAS-BR is a Likert scale with response options that range from 1 to 5, where 1 represents "strongly agree" and 5 represents "strongly disagree". The lower the score, the greater the agreement of the subject with the explanatory model of violent behavior to which each scale item is related.

Method

This methodological study aimed to validate the MAVAS-BR scale, which was translated and culturally adapted for use in Brazil[9]. This study presents the phase subsequent to content validation, represented by the measurement and functional equivalence, i.e., the validity of the construct.

Data collection

Data were collected between July 2012 and April 2013 from health services that provided psychiatric emergency care in four municipalities, two in the state of Paraná and two in the state of São Paulo, Brazil.

Sample

The convenience sample consisted of 262 nurses working in mental health services in the four cities investigated. The respondents were predominantly women (77%), married (44%), with a mean age of 35.4 ± 3.7 years, and with between 5 and 10 years of professional experience (35%). Of these respondents, 78% reported having taken a post-graduation course (lato sensu), and 22% of these individuals studied psychiatric and mental health nursing.

Ethical aspects

The study was approved by the Human Research Ethics Committee of the Municipal Department of Health of São Paulo (Comitê de Ética em Pesquisa com Seres Humanos da Secretaria Municipal de Saúde de São Paulo – CEP-SMS) under protocol number 029/12, and all participants signed an informed consent form.

Data analysis

Considering that the instrument model was validated in the context in which it was developed and on the basis of content validation[9], which maintained the factor distribution of the original instrument[14], initially, the data were submitted to confirmatory factor analysis (CFA); poor model fit was observed.

On the basis of this result, we verified whether the data met the criteria of normality and sphericity using the Kaiser-Meyer-Olkin test and Bartlett's test of sphericity. Subsequently, the study sample (N = 262) was subjected to exploratory factor analysis (EFA) with principal axis extraction and Oblimin rotation; the latter was calculated because a correlation between the extracted factors was expected.

The latent root criterion was used to calculate the number of factors to be selected to obtain the ideal number of factors for the MAVAS-BR, and this criterion selected only the factors with eigenvalues > 1[16]. Following the same validation criteria of the original version[14,15], the items with a factor loading of ≥ 0.30 were kept on the scale.

After Oblimin rotation, we verified whether any of the remaining items presented significant loading on more than one factor and whether any of these items negatively affected the reliability coefficients.

The reliability of the MAVAS-BR was tested by calculating the internal consistency coefficient using the Cronbach's alpha for the entire instrument and for each of the extracted factors. All statistical tests were performed using Statistical Package for Social Sciences (SPSS) software version 18.0®, adopting a significance level of $p < 0.05$.

Results

The normality and sphericity criteria determined using the Kaiser-Meyer-Olkin and Bartlett's sphericity tests were met, and their values were 0.80 and $p < 0.0001$, respectively. The application of the latent root criterion identified four factors with eigenvalues > 1, corresponding to 44.2% of the total variability. This result was also adequate for the criterion of percentage of variance, which suggests that a minimum explanation of 30% of the variability is sufficient.

On the basis of the eigenvalues, the factors of the MAVAS-BR were determined (Table 1). The model, consisting of 23 items divided into four factors (Table 1), was subjected to a refinement process in which the factor loading of each items was evaluated. All 23 items had a factor loading of ≥ 0.30 and did not present a significant loading on more than one item after rotation.

The results of the EFA indicated that three items were assigned to factors different from the original factors. Item 13, "Medication is a valuable approach in the treatment of aggressive and violent behavior", which was initially allocated to factor 4, "Management of aggression and violence", in the original version[14] was allocated to factor 1 in the Brazilian version: "Interactional and situational perspective". Item 23, "In general, the situations cause aggressiveness in patients", which was originally assigned to factor 1, was allocated to factor 2 in the Brazilian version: "External or environmental perspective". Finally, item 15: "Negotiation could be used more efficiently when dealing with aggression and violence", originally allocated to factor 4[14]: "Management of aggression and violence", was allocated to factor 1 in the Brazilian version: "Interactional and situational perspective".

After the completion of the test refinement, the reliability coefficient was calculated using Cronbach's alpha, with the previous verification of whether the exclusion of each of the remaining items negatively affected its value. None of the 23 items jeopardized the reliability coefficient, which was evaluated using Cronbach's alpha for the full scale (α = 0.75) and for each of the four factors individually, and appropriate indices were observed in both cases (Table 2). The hypothesis that the scale factors were correlated with each other was confirmed, and correlations among these factors and between these factors and the full scale were observed (Table 2).

Discussion

The exploratory factor analysis conducted with our data resulted in a distribution of items similar to that of the English version of the MAVAS[14]. Three items (Item 13: "Medication is a valuable approach in the treatment of aggressive and violent behavior", item 15: "Negotiation could be used more efficiently when dealing with aggression and violence", and item 23: "In general, situations cause aggressiveness in patients") had significant loading on factors that were different from those proposed in the original version.

The relocation of these items may be due to the characteristics of the EFA, in which the relocation of items and even factors is expected[17] and may be associated with theoretical and cultural differences that may influence the attitudes of nurses towards violent behavior.

Brazilian nurses sometimes regard the use of medication as an additional resource to be used situationally other than for the management of violence. This approach may be related to the training of psychiatric nurses in emergency care in Brazil, in which verbal approaches are recommended to encourage the cooperation of patients for the use of chemical restraints[18], i.e., administration of medication, leading these professionals to perceive verbal command as a resource to stimulate medication use.

Originally, the MAVAS consisted of 27 items, of which 13 were related to the causes of aggression and violence and reflected the internal, external, and situational/interactional models of violent behavior, and 14 items represented different approaches to the management of aggression[14,15]. Owing the results of the content validation[9] that excluded the items 8, 9, 22, and 26, and the relocated another 3 items (13, 15, 23). In the Brazilian version, 14 items are related to the causes of aggression and violence, and nine items address the strategies used for the management of these situations.

Table 1. Description of the items and factor matrix of the MAVAS-BR scale, São Paulo, Brazil, 2015

Items	Factor 1	Factor 2	Factor 3	Factor 4
Interactional/situational perspective				
02. Other individuals make patients become aggressive or violent	0.380			
03. Patients usually become aggressive because employees do not give them enough attention	0.420			
06. Miscommunication with health professionals can make patients aggressive	0.320			
13. Medication is a valuable approach in the treatment of aggressive and violent behavior	0.372			
20. Improvement in the relationship between professionals and patients can reduce the incidence of patient aggression	0.470			
15. Negotiation could be used more efficiently when dealing with aggression and violence	0.770			
External or environmental perspective				
01. Patients are aggressive because of the environment in which they live		0.570		
16. Environments with very strict care can contribute to aggression and violence		0.590		
23. In general, situations cause aggressiveness in patients		0.420		
27. If the physical space were different, patients would be less aggressive		0.470		
Biological perspective				
04. It is difficult to prevent patients from becoming violent and aggressive			0.450	
05. Patient aggression is due to sickness			0.300	
07. Some types of patients often become aggressive with health professionals			0.490	
14. Aggressive patients calm down naturally if left alone			0.360	
Management of aggression and violence				
10. When a patient is violent, isolation is one of the most effective strategies to use				0.456
11. Violent patients are often restrained for their own safety				0.300
12. The isolation of violent patients should be avoided				0.330
17. Patient aggression does not always require the intervention of health professionals				0.430
18. Physical restraint is sometimes used more often than necessary				0.790
19. Alternatives to the use of restraint and sedation to deal with patient violence can be used more often				0.355
21. Patient aggressiveness can be managed more efficiently in this health unit				0.340
24. Isolation is sometimes used more often than necessary				0.650
25. Prescription drugs should be used more often to help aggressive and violent patients				0.554

Table 2. Correlations between the factors that compose the MAVAS-BR and the psychometric characteristics obtained via exploratory factor analysis. São Paulo, Brazil, 2015

Correlation between the factors	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1	**0.77**			
Factor 2	0.38*	**0.70**		
Factor 3	0.34*	0.46	**0.60**	
Factor 4	0.29*	0.48†	0.40*	**0.71**
MAVAS-BR	0.65*	0.70*	0.35†	0.32*
Eigenvalue	4.0	2.8	1.7	1.2
% explained variance	21.3	8.7	5.8	8.4
% cumulative variance	21.3	30.0	35.8	44.2

* Significant correlation at the 0.01 level; † Significant correlation at the 0.05 level.

Elements in boldface in the main diagonal of the correlation matrix for the factors correspond to factor reliability.

The correlations between items and factors were positive and ranged between 0.30 and 0.79. The reliability of the full scale, although lower (0.75) than that observed in the English version of the MAVAS (0.89)[13,15], can be considered satisfactory, whereas the coefficients observed in the isolated factors ranged from excellent (0.77) to adequate (0.60)[19].

Only factor 3 did not exceed the recommended criterion for internal consistency indices of at least 0.70[19]. When interpreting these values, it is necessary to consider that the technique selected to estimate the reliability in this study, internal consistency analysis, using Cronbach's alpha, was different from that used in the original version, stability coefficient, which was estimated using test-retest reliability. We chose to not use the test-retest reliability technique in this study because of the sample size, which could limit interpretation and could generate bias for the observed indexes.

It is possible that the observed difference can be attributed not only to the smaller number of items of the Brazilian version but also to the type of test used for its determination[14,15]. A previous study[12] evaluated the confirmatory factor analysis in a population from a forensic psychiatric service and indicated a distinct factor structure, with only three factors. This result is corroborated by the literature[17], which supports that an instrument is valid for a specific population.

The explained variance of the MAVAS-BR of 44.2% is considered satisfactory, and the first factor concentrated more than 20% of data variability. It was observed that all of the factors evaluated had statistically significant correlations among them and with the full scale; the correlation coefficients ranged between $r = 0.32$ ($p < 0.01$) and $r = 0.70$ ($p < 0.01$). The highest correlation coefficient ($r = 0.70$) was observed between factor 2, "External or environmental perspective", and the full version of the MAVAS-BR, and the lowest coefficient of correlation was observed between factor 4, 'Management of aggression and violence', and the full version ($r = 0.32$).

The results of this study have important implications for the advancement of knowledge by providing a valid and reliable instrument for use in Brazil to assess the attitudes of nurses facing aggression and aggressive behavior.

The identification of their attitudes towards this problem not only can contribute to the advancement of knowledge and research on this topic, which has been little explored in Brazil, but also can serve as a guide for training and other interventions aimed at the education of nurses to deal with aggressive behavior in psychiatric services.

The continued exposure to any type of violence can result in negative outcomes for the mental and emotional health of nurses[4]. Therefore, among the implications for nursing practice, the MAVAS-BR has the potential for developing protective strategies for professionals, and the assessment of their attitudes can help develop techniques aimed at minimizing the emotional impact of this problem.

Ultimately, the recognition of the attitudes of nurses contributes to a safer practice and has institutional benefits because in addition to work absenteeism, higher frequencies of medication errors, and complaints of physical and emotional distress[20], the high incidence of violence in the workplace contributes to increased staff turnover and the difficulty in keeping nurses in this specialty service[4,20].

Conclusion

The results of this study indicate that the MAVAS-BR is a reliable instrument to assess the attitudes of Brazilian nurses towards aggression and violent behavior and that its validity and reliability criteria are adequate; however, future studies using this instrument should be conducted to provide greater evidence of its validity in different contexts of nursing practice in Brazil.

Acknowledgments

References

1. Silva IV, Aquino EML, Pinto ICM. Violência no trabalho em saúde: a experiência de servidores estaduais da saúde no estado da Bahia, Brasil. Cad Saude Publica. 2014,30(10):2112-22.
2. Swinson N, Flynn SM, While D, Roscoe A, Kapur N, Appleby L, et al. Trends in rates of mental illness in homicide perpetrators. Br J Psychiatry. 2011;198(6):485-9.
3. Anderson A, West SG. Violence against mental health professionals: when the treater becomes the victim. Innov Clin Neurosci. 2011;8(3):34-9.
4. Stevenson KN, Jack SM, O'Mara L, LeGris J. Registered nurses' experiences of patient violence on acute care psychiatric inpatient units: an interpretive descriptive study. BMC Nursing. 2015;14:35.
5. Privitera M, Weisman R, Cerulli C, Tu X, Groman A. Violence toward mental health staff and safety in the work environment. Occup Med (Lond). 2005;55(6):480-6.
6. Ferri P, Reggiani F, Di Lorenzo R. [Aggressive behavior toward nursing staff in three different health care settings. [corrected]. Prof Inferm. 2011;64(3):143-50.
7. Hesketh KL, Duncan SM, Estabrooks CA, Reimer MA, Giovannetti P, Hyndman K, et al. Workplace violence in Alberta and British Columbia hospitals. Health Policy. 2003;63(3):311-21.
8. Souza FSP, Silva CAF, Oliveira EN. Emergency psychiatric service in general hospitals: a retrospective study. Rev Esc Enferm USP. 2010;44(3):796-802.
9. Soares MH, de Vargas D. [The translation and cultural adaptation of the Management of Aggression and Violence Attitude Scale – MAVAS – for nurses in Brazil]. Rev Esc Enferm USP. 2013;47(4):899-906.
10. McCann TV, Baird J, Muir-Cochrane E. Attitudes of clinical staff toward the causes and management of aggression in acute old age psychiatry inpatient units. BMC Psychiatry. 2014,14:80.
11. Pulsford D, Crumpton A, Baker A, Wilkins T, Wright K, Duxbury J. Aggression in a high secure hospital: staff and patient attitudes. J Psychiatr Ment Health Nurs. 2013;20(4):296-304.
12. Dickens G, Piccirillo M, Alderman N. Causes and management of aggression and violence in a forensic mental health service: perspectives of nurses and patients. Int J Ment Health Nurs. 2013;22(6):532-44.
13. Nakahira M, Moyle W, Creedy D, Hitomi H. Attitudes toward dementia-related aggression among staff in Japanese aged care settings. J Clin Nurs. 2009;18(6):807-16.
14. Duxbury J. Testing a new tool: the Management of Aggression and Violence Attitude Scale (MAVAS). Nurse Res. 2003;10(4):39-52.
15. Duxbury J, Hahn S, Needham I, Pulsford D. The Management of Aggression and Violence Attitude Scale (MAVAS): a cross-national comparative study. J Adv Nurs. 2008;62(5):596-606.
16. Kaiser HF. A note on Guttman's lower bound for the number of common factors. Br J Statistical Psychol. 1961;14(1):1-2.
17. Pasquali L. Taxonomia dos instrumentos psicológicos. In: Pasquali L, organizador. Instrumentos psicológicos: manual prático de elaboração. Brasília (DF): LabPAM- IBAPP; 1999. p. 27-35.
18. Prates JG, Vargas D. Abordagens frente à agitação psicomotora e comportamento violento em emergências psiquiátricas In: Pronto-Socorro: Condutas do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo. 2ª ed. Barueri: Manole; 2008. p. 1526-33, v. 1.
19. Gliem JA, Gliem RR. Calculating, interpreting, and reporting Cronbach's Alpha reliability coefficient for Likert-type scales. In: Paper Presented at the Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education; 2003; Columbus, OH. Columbus: Ohio State University; 2003.
20. Roche M, Diers D, Duffield C, Catling-Paull C. Violence toward nurses, the work environment, and patient outcomes. J Nurs Scholarsh. 2010;42(1):13-22.