

Reliability of the Brazilian version of HCR-20 Assessing Risk for Violence

Confiabilidade da versão brasileira do HCR-20 Assessing Risk for Violence

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Abstract

Objective: Assessing risk for violence is a complex task often based on not objective or structured clinical evaluations. HCR-20 Assessing Risk for Violence has been used in several countries to increase the accuracy of this exam. The purpose of this study was to inform on central aspects of this instrument, as well as the results of the reliability assessment of the HCR-20 Assessing Risk for Violence in a Brazilian inpatient criminal population. **Method:** Two examiners independently assessed a random sample of 30 patients that were under criminal commitment at the Mauricio Cardoso Forensic Psychiatric Institute. **Results:** Mean consensus values means were as follows: Historical = 13.1; Clinical = 4.8 and Risk management = 5.8. The value of the Intraclass Correlation Coefficient for the score of subscale Historical was 0.97, for subscale Clinical it was 0.94, and for subscale Risk management, 0.96. As to the individual items of the HCR-20 Assessing Risk for Violence, the result of the Intraclass Correlation Coefficient was good to excellent (mean = 0.97; interval, from 0.60 to 0.99). **Conclusion:** The interrater reliability of the Brazilian version of the HCR-20 Assessing Risk for Violence scale was similar to the results of studies in other countries.

Descriptors: Forensic psychiatry; Risk assessment; Violence; Reproducibility of results; Evaluation

Resumo

Objetivo: A avaliação de risco de violência é uma tarefa complexa baseada muitas vezes em critérios clínicos pouco objetivos e estruturados. O HCR-20 Assessing Risk for Violence tem sido usado em diversos países para aumentar a precisão deste exame. O presente estudo tem como objetivo informar aspectos nucleares deste instrumento, bem como os resultados da avaliação da confiabilidade do HCR-20 Assessing Risk for Violence em uma amostra da população manicomial brasileira. **Método:** Dois examinadores avaliaram independentemente uma amostra de 30 pacientes selecionada aleatoriamente da população em cumprimento de Medida de Segurança no Instituto Psiquiátrico Forense Maurício Cardoso. **Resultados:** Os valores das médias de consenso entre os entrevistadores foram os seguintes: Histórica = 13,1; Clínica = 4,8 e Manejo de risco = 5,8. O valor do Coeficiente de Correlação Interno para a pontuação da subescala Histórica foi 0,97; para a pontuação da subescala Clínica foi 0,94; e para a subescala Manejo de risco foi 0,96. Quanto aos itens individuais do HCR-20 Assessing Risk for Violence, o resultado do Coeficiente de Correlação Interno foi de bom a excelente (média = 0,97; intervalo de 0,60 a 0,99). **Conclusão:** A confiabilidade entre os avaliadores da versão brasileira da escala HCR-20 Assessing Risk for Violence foi similar aos resultados de estudos em outros países.

Descritores: Psiquiatria legal; Medição de risco; Violência; Reprodutibilidade dos testes; Avaliação

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Introduction

Physicians, especially psychiatrists, are required to carry out the difficult task of assessing and predicting risk of violent behavior, be it in patients in the community, outpatients or inpatients of forensic psychiatry hospitals.¹ Two examples of examinations for risk assessment that have to be performed by Brazilian forensic health professionals are the Verifying of Dangerousness Stoppage Exam and the Drug Addiction Recovery Verifying Exam.^{2,3} Not only in Brazil, but also in several Latin-American countries, these assessments are conducted without much structure and objectivity, based on clinical and social criteria.^{4,5}

Since the end of the 1960s, forensic psychiatrists and psychologists have sought an instrument to increase accuracy in predicting violence. Researchers from the Simon Fraser University, in British Columbia, Canada, developed the instrument HCR-20 Assessing Risk for Violence which systematically presents the essential points of risk of violence assessment.⁶ Since its first version, in 1995, the HCR-20 has been widely tested and used in several Western countries, especially in Canada, Sweden, Germany, Norway, United Kingdom and Belgium.^{7,8} In Latin America, Argentina was the pioneer in its use and validation through a study of the prison population in the city of La Plata.⁹ In Brazil, the HCR-20 was translated and adapted and is being validated by the authors for use in a local forensic population. The current study aims to inform on central aspects of this instrument and the results of its reliability assessment.

1. HCR-20

The HCR-20 provides a guide for the assessment of risk of violence, in contexts in which there is a large number of people with a history of aggression and presumed mental disease or personality disorder. It is appropriate for use in Forensic Psychiatry, Legal Medicine, Forensic Psychology and related disciplines.

The scale was given the name of its three components - Historical (H), Clinical (C) and Risk management (R) - and consisted of 20 items. Subscale H consists of ten items, which cover the prior life of the person being examined: previous violence, young age at first violent incident, relationship instability, employment problems, substance use problems, major mental illness, psychopathy, early maladjustment, personality disorder, and prior supervision failure. Subscale C includes the five current clinical items: lack of insight, negative attitudes, active symptoms of major mental illness, impulsivity, and unresponsiveness to treatment. Subscale R refers to the five future risk management items: plans lack feasibility, exposure to destabilizers, lack of personal support, noncompliance with remediation attempts, and stress. Each item is scored according to the following: 0 (the item definitely is absent or does not apply), 1 (the item possibly is present, or is present only to a limited extent), or 2 (the item definitely is present). The total score thus varies from 0 to 40 points. This instrument allows a multifactorial assessment of the risk of violence, covering static (H) and dynamic (C and R) factors, and provides additional information to prevent future acts of aggression.

Method

1. Design

The study was designed to examine interrater reliability using the Brazilian version of the HCR-20. Two psychiatrists with long forensic experience assigned scores to Historical Factors, Clinical Factors and Future Risk Factors.

2. Setting

The assessments were performed at the facilities of the Mauricio Cardoso Forensic Psychiatric Institute (FPI), the only psychiatric hospital which belongs to the Rio Grande do Sul State Department of Justice and Security (Brazil). This institution is responsible for the treatment of all people under criminal commitment (CC) in the state, and it also centralizes the risk assessments.

3. Sample

The inclusion criteria used for the study was to be a male inpatient under commitment regardless the type of crime or diagnosis, in Unit D, between April, 2007 and April, 2008. Unit D inpatients did not differ from other units' inpatients in demographic characteristics, type of mental or personality disorders, and history of aggression. Unit D was selected to guarantee the study feasibility since two of the authors work there. The sample comprised 30 male patients randomly selected among the population of individuals under CC order in Unit D of the FPI. Patients who were enjoying the benefit of progressive discharge, living outside the institution, and those who had a dementia syndrome were excluded from the study.

The information was obtained during the month of April 2007, through one individual interview with the research's subjects and one interview with a relative, review of therapeutic team records (assistant psychiatrist, psychologist, social worker, and nursing staff) and assessment of the prior forensic psychiatry documentation.

4. Ethical aspects

This study was approved by the Ethics in Research Committee of the FPI and of the PhD Program of the Department of Post-Graduation on Forensic Psychiatry, Universidad Nacional de La Plata (Argentina). The research subjects agreed to participate in this project and signed an informed consent. In the case of incompetent patients, their legal representatives provided the informed consent.

5. Statistical analysis

Statistical analysis was performed with SPSS 11. The interrater reliability for subscales H, C, and R and for the individualized items was estimated using the intraclass correlation coefficient (ICC).¹⁰ The ICC estimates the equivalence of repeated measure performed on the same subject, and expresses the reliability of the score of one rater in relation to the population of raters. The ICC results can be interpreted as follows: value greater than or equal to 0.75 = excellent; value between 0.74 and 0.60 = good; value between 0.59 and 0.40 = acceptable; value less than 0.40 = poor.¹¹ The internal congruence was calculated using consensus scores between the two interviewers as gold-standard with the Cronbach Alpha coefficient.

Results

1. Descriptive variables

The mean age of the population studied was 45 years (\pm 13.7), 83.3% of them were single. The nature of the offenses were: 30% homicide, 23.3% robbery or theft, 20% bodily assault, 13.3% sex crimes and 13.3% other offenses. As to the main diagnosis, 63.3% had a psychotic disorder, 20% personality disorder, 13.3% were mentally retarded, and 3.3% were addicted to alcohol or drugs.

2. Consensus means

The values of the consensus means among the interviewers for each of the subscales were as follows: subscale H = 13.1 (\pm 3.5),

Table 1 - Absolute values, mean scores with standard deviation, interrater reliability with intraclass correlation coefficients (ICC) and 95% confidence intervals (95%CI), and internal congruence with alpha coefficients (r) of HCR-20 itens, subscales and total scale

Item	Absolute values			Statistics				
	0	1	2	Mean	Standard deviation	$r_{\text{total item}}$	ICC	CI
H1	1	1	28	1.9	0.4	0.29	0.91	0.80; 0.96
H2	0	9	21	1.7	0.47	0.4	0.96	0.92; 0.98
H3	1	10	19	1.6	0.56	0.13	0.6	0.15; 0.81
H4	7	11	12	1.17	0.79	0.35	0.92	0.82; 0.96
H5	9	4	17	1.27	0.91	0.34	0.98	0.96; 0.99
H6	4	4	22	1.6	0.72	-0.22	0.95	0.90; 0.98
H7	18	4	8	0.67	0.88	0.81	0.99	0.98; 1
H8	10	8	12	1.07	0.87	0.53	0.94	0.88; 0.97
H9	18	4	8	0.67	0.88	0.81	0.99	0.98; 1
H10	2	12	16	1.47	0.63	0.58	0.89	0.78; 0.95
Subscale H	-	-	-	13.1	3.50	0.87	0.97	0.93; 0.98
C1	5	15	10	1.17	0.7	0.41	0.87	0.74; 0.94
C2	15	8	7	0.73	0.83	0.71	0.94	0.88; 0.97
C3	6	19	5	0.97	0.62	0.06	0.84	0.66; 0.92
C4	4	16	10	1.2	0.66	0.56	0.86	0.70; 0.93
C5	10	18	2	0.73	0.58	0.57	0.7	0.37; 0.86
Subscale C	-	-	-	4.83	1.97	0.82	0.94	0.87; 0.97
R1	2	17	11	1.3	0.6	0.4	0.89	0.76; 0.95
R2	0	13	17	1.57	0.5	0.71	0.94	0.87; 0.97
R3	8	14	8	1	0.74	0.3	0.94	0.87; 0.97
R4	15	11	4	0.63	0.72	0.71	0.95	0.90; 0.98
R5	1	19	10	1.3	0.54	0.47	0.87	0.73; 0.94
Subscale R	-	-	-	5.8	2.09	0.76	0.96	0.92; 0.98
Total scale	-	-	-	23.73	6.25	1	0.96	0.93-0.98

Brazilian version of HCR-20 applied to 30 psychiatric inpatients by two independent raters; absolute values, means with standard deviation and total item correlations based on consensus scores.

subscale C = 4.8 (\pm 1.9), and subscales R = 5.8 (\pm 2.1), which is a mean of 23.7 (\pm 6.25) points for the total scale.

3. Interrater reliability

The value of ICC for subscale H was 0.97 (95% CI: 0.93- 0.98), for subscale C it was 0.94 (95% CI: 0.87- 0.97), and for subscale R, 0.96 (95% CI: 0.92-0.98) – and all of them could be classified as excellent. Taking each item of the HCR-20 into account alone, the ICCs varied from good to excellent (mean = 0.97; interval 0.60 to 0.99) (see Table 1). The higher values were obtained with items H7 and H9. Only item H3 had a coefficient equal to 0.60.

4. Internal congruence

For subscale H the alpha coefficient was 0.63, for subscale C, 0.51, and for subscale R, 0.69. The alpha coefficient for the total scale was 0.79.

Examining each item alone, we found fourteen total item correlations higher than 0.40, indicating that they contribute significantly to the total score of the respective subscales. The items that had the highest correlation were the following in each subscale: items H7 and H9 (r = 0.81), C2 (r = 0.71), and R2 and R4 (r = 0.71).

Discussion

These findings have never been obtained in Brazil, and they show the reliability of the Brazilian version of the HCR-20 in a forensic psychiatry population. The results of the ICCs for the subscales H (0.97), C (0.94) and R (0.96) are excellent and similar to those found in an Argentinean study, whose values were respectively, H (0.94), C (0.75) and R (0.97).¹² The levels of internal congruence found are also similar to those of researches accomplished in other countries.^{7,13-15} The item-total correlation was not excellent for all

items but it did not affect the reliability of each one since intraclass correlation coefficients reached excellent levels. The scale proved reliable in a forensic psychiatry population. It is important to highlight that the conclusions of the evaluation must not be limited to the total score. In a given case, a single item may indicate greater risk of the individual who is being examined. It is also pertinent to recall that the combination of different items may determine added risk, as well as the possibility that different risk behaviors vary over time, place and clinical conditions.¹²

The use of the HCR-20 as a standardized guide makes the violence risk assessment more transparent and ethical, besides being more comprehensive and dynamic, and it even provides further information to prevent future acts of aggression.

The improvement of the risk assessment using an specific instrument for this purpose in a forensic population will help make society and the potential victims safer, and also the people who might perpetrate acts of aggression. It will also prevent possible assessment errors which might deprive people who are not very dangerous of liberty, or minimize the number of people who would reoffend.

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Lisieux Elaine de Borba Telles	IPF	-	-	-	-	-	-
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Jorge Oscar Folino	UNLP	-	-	-	-	-	-
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* Modest

** Significant

*** Significant. Amounts given to the author's institution or to a colleague for research in which the author has participation, not directly to the author.

Note: IPF = Instituto de Psiquiatria Forense Mauricio Cardoso; UNLP = Universidad Nacional de La Plata; UFCSPA = Universidade Federal de Ciências da Saúde de Porto Alegre.

For more information, see Instructions for authors.

References

1. Arboleda-Flórez J. Forensic psychiatry: contemporary scope, challenges and controversies. *World Psychiatry*. 2006;5(2): 87-91.
2. Taborca JGV. Criminal Justice System in Brazil: functions of a forensic psychiatrist. *Int J Law Psychiatry*. 2001;24(4-5):371-86.
3. Abdalla-Filho E. Avaliação de risco. In: Taborca JGV, Chalub M, Abdalla-Filho E. *Psiquiatria forense*. Porto Alegre: Artmed; 2004. p.161-74.
4. Mecler K, Mendlowcz MV, Taivane M. A avaliação da cessação de periculosidade no hospital de custódia e tratamento Heitor Carrilho, no Rio de Janeiro. In: Moraes T. *Ética e psiquiatria forense*. Rio de Janeiro: Edições IPUB/CUCA; 2001. p.217-52.
5. Folino JO, Escobar F. Nuevos aportes a la evaluación del riesgo de violencia. *Rev MedUNAB*. 2004;7:99-105.
6. Webster CD, Douglas KS, Eaves D, Hart SD. *HCR-20 Assessing risk for violence version 2*. Burnaby: Mental Health, Law, and Policy Institute, Simon Fraser University; 1997.
7. Belfrage H. Implementing the HCR-20 scheme for risk assessment in a forensic psychiatric hospital: integrating research and clinical practice. *J Forensic Psychiatry*. 1998;9(2):328-38.
8. Douglas KS, Ogloff JR, Nicholls TS, Grant I. Assessing risk for violence among psychiatric patients: The HCR-20 risk assessment scheme and the psychopathy checklist: screening version. *J Consult Clin Psychol*. 1999;67(6):917-30.
9. Folino JO. *Estudio de Cohorte psiquiátrico: factores de riesgo de violencia*. Trabajo adjudicado con el Premio Anual "Prof. Emérito Dr. Bernardo E. Manzano". Sociedad Médica de La Plata: Argentina; 2006.
10. Shrout PE, Fleiss JL. Intraclass correlation: uses in assessing rater reliability. *Psychol Bull*. 1979;86(2):420-8.
11. Fleiss JL. *The design and analysis of clinical experiments*. New York: Wiley; 1986.
12. Tengström A, Hodgins S, Müller-Isberner R, Jöckel D, Freese R, Özokyay K, et al. Predicting violent and antisocial behavior in hospital using the HCR-20: the effect of diagnoses on predictive accuracy. *Int J Forensic Mental Health*. 2006;5:39-53.
13. Folino JO, Castillo JL, Cáceres MS, Campos ML, Silveri M, Ucin S. Confiabilidad de la versión argentina de la HCR 20. *Medicina Forense Argentina. Bol Asoc Med Forenses Rep Argent*. 2004;27(54):2-5.
14. Douglas KS, Ogloff JR, Hart SD. Evaluation of a model of violence risk assessment among forensic psychiatric patients. *Psychiatr Serv*. 2003;54(10):1372-9.
15. Claix A, Pham TH. Evaluation of the HCR-20 violence risk assessment scheme in a Belgian forensic population. *Encephale*. 2004;30(5):447-53.