Aggression and Violent Behavior 18 (2013) 255–270

Contents lists available at SciVerse ScienceDirect

Aggression and Violent Behavior

Moderators of the predictive efficacy of the Historical, Clinical and Risk Management-20 for aggression in psychiatric facilities: Systematic review and meta-analysis

Laura E. O'Shea, Amy E. Mitchell, Marco M. Picchioni, Geoffrey L. Dickens *

St Andrew's Academic Centre, Kings College London, Institute of Psychiatry, Billing Road, Northampton NN1 5DG, United Kingdom

ARTICLE INFO

Article history:
Received 24 September 2012
Received in revised form 7 November 2012
Accepted 8 November 2012
Available online 22 November 2012

Keywords:
HCR-20
Aggression
Risk assessment
Mental health
Inpatient

ABSTRACT

This paper presents results from a systematic review and meta-analysis of studies of the predictive efficacy of the Historical, Clinical, and Risk Management-20 (HCR-20) for aggressive behavior in residential psychiatric facilities. Variations in efficacy were investigated based on aggression-type, HCR-20 scale used, and as moderated by clinical, demographic and methodological variables. Comprehensive terms were used to search seven electronic databases between January 1995 and August 2012. Additional papers were located by examining references lists and hand-searching. Twenty non-overlapping studies involving 2067 participants were identified. Few ($n=4$) studies reported methodology and results sufficiently to ensure a transparently low risk of bias. The summary judgment ($d_w=1.166$) had the largest mean effect size for prediction of any inpatient aggression. HCR-20 had best predictive efficacy among samples containing higher proportions of patients with schizophrenia, women, Caucasians, and those with greater risk of bias. Predictive efficacy was reduced in studies containing higher proportions of patients with personality disorder. HCR-20 is a significant predictor of aggression in residential psychiatric facilities but does not appear to have equal efficacy across groups. Future research should aim to verify current findings using more heterogeneous samples and should report methodology with greater rigor.

Contents

Abbreviations: HCR-20, Historical, Clinical, and Risk Management-20; H10, historical subscale; C5, clinical subscale; R5, risk-management subscale; HC15, composite of the historical and clinical scales; SJ, Summary Judgment; PCL-R, Psychopathy Checklist Revised; DOR, diagnostic odds ratio; AUC, area under the receiver operating curve; ICC, intraclass correlation coefficients.

* Corresponding author. Tel.: +44 1604 616362; fax: +44 1604 616265.
E-mail address: gdickens@standrew.co.uk (G.L. Dickens).

1359-1789/$ – see front matter © 2012 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.avb.2012.11.016

1. Introduction

Violence and aggression by psychiatric inpatients are common and have a profound impact on the maintenance of a therapeutic clinical environment (McKenzie & Curr, 2005). Latest figures from a meta-analysis of 122 studies of inpatient violence and aggression (Bowers et al., 2011) show that rates vary widely between countries, settings and depending upon the operational definitions of violence and aggression used. Highest rates are in forensic mental health settings where 48% of patients in studies had been violent (Bowers et al., 2011). There are on average 3 violent events per 100 occupied bed days equating to 3.5 incidents per week on a 16-bed inpatient unit. Between 2% and 13% of these incidents result in serious injury and 5%–28% in moderate to severe injury. Prevention of inpatient aggression holds the potential therefore to reduce all of the negative costs with which it is associated. Violence risk assessment is 'the process of evaluating individuals to (1) characterize the likelihood they will commit acts of violence and (2) develop interventions to manage or reduce that likelihood' (Hart, 1998, p. 122). It is considered best practice that on admission, all individuals should have a clinical risk assessment and a risk management plan put in place (National Institute for Mental Health in England, 2004). Specialized actuarial and structured clinical judgment tools have been developed to assist violence risk assessment and are widely used in secure forensic settings (Khiroya, Weaver, & Maden, 2009; Vitacco, Erickson, Kurus, & Apple, 2012).

1.1. Risk assessment with the HCR-20

The Historical, Clinical, and Risk Management-20 (HCR-20; Webster, Douglas, Eaves, & Hart, 1997; Webster, Eaves, Douglas, & Wintrup, 1995) is a structured tool for use by trained evaluators to aid risk assessment for institutional and community violence in people with mental and personality disorders as an integral part of clinical practice (Douglas, Webster, Hart, Eaves, & Ogloff, 2001). Its use has been advocated in forensic psychiatric settings due to its ability to assess risk at and throughout admission, and upon consideration for release (Daffern, 2007). In the UK it is used frequently in most (72%) medium-secure forensic services (Khiroya et al., 2009). The HCR-20 is an example of a structured clinical judgment, such that decision making is facilitated by guidelines that define the risk being considered, discuss qualifications for conducting a risk assessment, recommend what information should be reviewed as part of the process and identify a set of core risk factors through consideration of the scientific and professional literatures. The tool comprises 20 items; the Historical Scale (H10) contains ten items that are thought to be relatively static, and reflect the individual's psychosocial adjustment and history of violence, the Clinical Scale (C5) includes five dynamic risk factors reflecting the individual's current or recent mental health-related functioning and the Risk Management Scale (R5) includes five dynamic risk factors that reflect professional opinions regarding the individual's ability to adjust to the institution or community (Douglas et al., 2001). The HCR-20 guidelines state that evaluators should determine the presence, possible presence or absence of the 20 risk factors based on collateral source information and clinical interview with the subject where possible (Douglas et al., 2001). Each item is then coded based on the scoring system developed for the Psychopathy Check List — Revised (PCL-R; Hare, 1991) as: "available information contraindicates the presence of the item" (0 or No); "available information suggests the possible presence of the item" (1 or Possible); or "available information indicates the presence of the item" (2 or Yes) (Douglas, Ogloff, Nicholls, & Grant, 1999). These ratings are supplemented with any case-specific "*other considerations*" before summary judgments are made about the degree of effort and resources that risk management strategies will require. There is empirical support for the reliability of HCR-20 coding, with inter-rater reliability coefficients generally greater than .80 (Douglas, Guy, Reeves, & Weir, 2002–2008). The HCR-20 has also demonstrated convergent validity with other tools used to predict inpatient aggression including the Violence Risk Scale (Langton, Hogue, Daffern, Mannion, & Howells, 2009), the Violence Risk Scale Second Edition (Dolan & Fullam, 2007), the PCL-R (Warren et al., 2005) and the Violence Risk Appraisal Guide (Doyle, Dolan, & McGovern, 2002).

1.2. Predictive validity of HCR-20

1.2.1. Predictive validity compared with other risk assessment tools

For research, the HCR-20 is often used as an actuarial instrument, by summing the presence of risk factors to yield a total score (minimum score 0 to maximum score 40) (Douglas et al., 2001). Previous meta-analyses examining the predictive ability of the HCR-20 have done so alongside other risk assessment tools designed to predict aggressive and violent behavior. As a result, most have investigated how the tools fair in comparison with one another, generally producing favorable results for the HCR-20. For example in a recent comparison of six risk assessment tools, the HCR-20 produced the largest mean effect size for