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Predictive validity of the HCR-20 for inpatient self-harm

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Abstract

Background: Few instruments have been developed to assess the risk of self-harm by psychiatric patients and the evidence for their predictive validity is limited. Given that individuals who self-harm may also engage in other-directed aggression, and that the behaviour can be a precursor to violence, we tested whether, and for which groups, the commonly used violence risk assessment HCR-20 demonstrated predictive validity for self-harm.

Procedures: A pseudo-prospective cohort study (N = 504) was conducted in a UK secure/forensic mental health setting using routinely collected data. HCR-20 assessments were completed by the clinical team and incidents of self-harm during the 3 months following assessment were coded from patient records.

Findings: The HCR-20 total score, H10 and R5 subscales, and SJ for violence significantly predicted self-harm; however, AUC values did not demonstrate large effect sizes (range .345 to .749). Personality disorder and impulsivity were the strongest predictors of self-harm, but the R5 scale contained the greatest proportion of relevant items. Predictive efficacy was superior for women compared with men and for those with schizophrenia or personality disorder compared with organic and developmental disorders.

Conclusions: The HCR-20 appears to be a significant predictor of self-harm. It may be possible to supplement HCR-20 ratings with case specific knowledge and additional known risk factors for self-harm to make a valuable summary judgement about the behaviour and thus minimise the need for multiple assessment tools.

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1. Introduction

[1]The structured professional judgment approach to risk assessment has primarily focused on the prediction of aggression and violence due to its potentially serious consequences [1]. However, adequate care of mental health inpatients requires the consideration of a range of risk behaviours including self-harm [2]. A recent review found that between 1 and 69% (mean 17.4%) of psychiatric inpatients had self-harmed during their stay; rates were especially high (mean 42.9%) among patients resident on forensic wards [3]. Patients at increased risk for self-harm are younger, female, and those diagnosed with EUPD [4]. It is important to accurately predict patients' engagement in self-injurious behaviour because it has obvious deleterious sequelae for themselves; 12–20% of incidents are classified as severe, resulting in deep cuts, fractures, or internal injuries [3]. In addition, it affects the emotional wellbeing of carers, and contributes to therapeutic nihilism [3] and staff absence [5]; Nijman et al. [5] reported that, in 1 year, 84% of psychiatric nurses witnessed self-harm, 68% a suicide attempt, and 28% a completed suicide. Witnessing such incidents was significantly correlated with number of days absent from work due to illness.

The HCR-20 [6] is not intended to assess risk of self-harm. However, version 3 of the HCR-20 manual [7] states that self-injurious or suicidal behaviour should be categorised as violence if, as a result, others may also suffer physical harm.

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[1] HCR-20, Historical, Clinical, Risk-management-20; START, Short-Term Assessment of Risk and Treatability; SRAMM, Suicide Risk Assessment and Management Manual; SJ, summary judgement; H10, Historical subscale of the HCR-20; C5, Clinical subscale of the HCR-20; R5, Risk-management subscale of HCR-20; OAS, Overt Aggression Scale; ROC, receiver operating characteristics; AUC area under ROC curve; CI, confidence interval; EUPD, emotionally unstable personality disorder.

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Whilst this may not encompass all acts of self-harm occurring within the inpatient setting, research has found that self-harm can be a precursor to violence, particularly in women [8], and that the majority of inpatients who self-harm also engage in outwardly directed aggressive behaviour [4]. Although more recently developed risk assessment tools have been designed to assess risk for self-harm and suicide, such as the START [2] and the SRAMM [9], the ability of the START to predict self-harm is still a matter of some conjecture [10] and the SRAMM has not been widely researched. Whilst the reasons behind the association between self-harm and externally directed aggression in inpatient settings are unexplored, the empirical link between the two [11] suggests that a violence risk assessment might usefully contribute to a self-harm risk assessment irrespective of the theoretical basis for such a link. Given that the HCR-20 is the most commonly used risk assessment tool in medium secure units in England [12], and that time and resources are often limited in clinical practice, it would be pragmatic to determine if the tool is also predictive of self-directed aggression in order to minimise the need for additional assessments.

Very little research has been conducted on the predictive validity of the HCR-20 for inpatient self-harm. Whilst a small number of studies have incorporated self-harm incidents within outcomes categories for 'any aggression', a recent meta-analysis of the tool for inpatient aggression [13] could not examine predictive validity for self-harm due to an insufficient number of studies examining the behaviour as a distinct outcome. Those studies that have examined the predictive validity of the HCR-20 for self-harm in isolation have produced mixed results. Gray et al. [14] found that the tool was not a useful predictor of self-harm over a 3-month period; however, Fagan et al. [15] found that it was predictive of self-harm and suicidal ideation over a 6-month period, and Daffern and Howells [16] found that the clinical scale of the HCR-20 was predictive of self-harm occurring in the day after assessment.

The aim of the current study was to determine the predictive efficacy for inpatient self-harm of the various HCR-20 scales and summary judgement (SJ) for violence; the ability of the SJ for violence to predict inpatient self-harm was examined as the empirical link between the two behaviours suggests that, at least in some cases, those deemed at risk of violence may also be at risk of self-harm. Given that the efficacy of the HCR-20 for violence prediction (e.g. [13,17]), and the prevalence of self-harm [4], has been shown to vary across different clinical and demographic groups, its performance was also evaluated as a function of gender, diagnosis, age, and ethnicity. We also aimed to examine the predictive validity of the individual HCR-20 items, as their relative importance has the potential to inform summary judgements and risk-management plans. Finally, we investigated the degree of overlap between self-harm and aggression against others as this may have implications for the feasibility of using the HCR-20 to examine risk of both outcomes.

2. Method

2.1. Setting and participants

St Andrew's provides inpatient mental health care at four sites in England in a range of medium-secure, low-secure and locked/rehabilitation wards. Specialist care pathways include those for men, women, people with developmental disorder, and neuropsychiatric conditions. The population is mixed in terms of those detained under a forensic commitment (i.e., following a criminal conviction, the offender was sufficiently mentally unwell at the time of sentencing to require hospitalisation, or following conviction was deemed to require transfer from prison to hospital for treatment for mental disorder) and those detained under a civil commitment (i.e., detained in hospital for their own safety or for the protection of others in the absence of criminal conviction). Eligible participants were adult inpatients, without an intellectual disability, who had at least one HCR-20 risk assessment completed, and remained in the service for at least 3 months following assessment. All patients (N = 504) were included in a previous study of the predictive validity of the HCR-20 for inpatient aggression [17]; for full description of study setting and inclusion criteria see O'Shea et al. [17].

2.2. Study design and procedure

The study was approved by the clinical audit and service evaluation committee and followed the same design as that of O'Shea et al. [17]. Participants were assessed for violence risk using the HCR-20 throughout admission by registered psychologists or graduate psychology assistants as part of routine clinical practice. Information about incidents of self-harm was extracted from anonymised versions of electronic patient records for the 3 months following HCR-20 assessment and linked by allocation of a unique client ID number.

Table 1
HCR-20 items.

Historical (H10)	Clinical (C5)	Risk-management (R5)
H1: previous violence	C1: lack of insight	R1: plans lack feasibility
H2: young age at first violent incident	C2: negative attitudes	R2: exposure to destabilizers
H3: relationship instability	C3: active symptoms of major mental illness	R3: lack of personal support
H4: employment problems	C4: impulsivity	R4: noncompliance with remediation attempts
H5: substance use problems	C5: unresponsive to treatment	R5: stress
H6: major mental illness		
H7: psychopathy [omitted from current paper]		
H8: early maladjustment		
H9: personality disorder		
H10: prior supervision failure		

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