Barriers and Facilitators to structured professional risk assessment in forensic services

by

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Thesis Overview

This thesis is presented to meet the requirements for the Doctorate in Clinical Psychology degree at the University of Birmingham. It is structured into three chapters.

Chapter one reports a systematic literature review exploring the predictive validity and Moderators to the predictive validity of the Historical, Clinical, and Risk Management-20 for inpatient aggression.

Chapter two reflects findings from an empirical study exploring barriers and facilitators to forensic structured professional judgement risk assessment in forensic services.

Chapter three consists of a publicly accessible summary of the research findings from both the systemic literature review and the empirical paper.

Dedication

This thesis is dedicated to my loving family. You have all had to endure this arduous journey with me. Thank you for all the sacrifices you have made to help me achieve my dream. It's been a long journey with pitfalls and joy.

To my colleague and dear friend Bekky Harrison, thank you for the endless voice notes, levelling advice, and unwavering support. We did it!

A special thank you to my husband for reminding me of a life outside of this madness.

To my wild little girl, this is for you. A reminder that nothing is impossible.

"It does not do to dwell on dreams and forget to live."

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I want to extend my appreciation to all those who participated in this research and gave up their valuable time to talk with me.

Contents Listing

1. **LITERATURE REVIEW: Chapter One:** A systematic literature review exploring the predictive validity and Moderators to the predictive efficacy Historical, Clinical, and Risk Management-20 for inpatient aggression.

Abstract

Background

Addressing violence and aggression in psychiatric inpatient settings is of significant concern (Spencer et al. 2013). NHS England has mandated the use of the HCR-20 to assess aggressive risk for forensic populations (Coid et al., 2011). Previous research has demonstrated that HCR-20 risk items demonstrate varying predictive validity for institutional violence (Douglas & Shaffer, 2021). O'Shea et al. (2013) conducted a meta-analysis, finding that the HCR-20 showed adequate predictive validity for the HCR20 total scale, C5, and R5 scales. They also found the HCR-20 overall predicted violence better in samples with a higher proportion of males, those with a diagnosis of schizophrenia and with higher proportions of Caucasians in the sample.

Aim

The present meta-analysis examines variations in efficacy concerning the HCR-20's predictive validity with regard to aggression types, HCR-20 scales, and how these variations can be moderated by clinical and demographic variables.

Method

A systematic search of the literature was carried out using the Ovid MEDLINE(R), EMBASE, and PsycINFO databases.

Results

The predictive validity of the H10 scale did not reach acceptable thresholds for all types of aggression. The HCR-20, C5 and R5 all show adequate predictive validity for the 'any aggression' outcome. The reported AUC coefficient for the HCR20, C5 and the R5 was greater in samples containing higher proportions of males and those with a diagnosis of schizophrenia, whereas no statistically reliable association was observed for the relationship between the proportion of Caucasians and predictive validity for any of the HCR20, C5, and R5 subscales.

Conclusion

The HCR 20 subscale was able to adequately predict 'any aggression', 'physical aggression', 'verbal aggression' and 'physical-other'. The HCR-20 subscale struggled to predict physical aggression with the use of objects and 'self-harm'.

Introduction

Aggression can manifest in diverse ways, ranging from verbal aggression and threats to physical aggression and violence (Renwick et al., 2016). Douglas et al. (2013) define violence as "actual, attempted or threatened infliction of bodily harm of another person" (p.36)Research has found that rates of violence and aggression among psychiatric inpatients are highest within Forensic mental health settings. Bowers et al. (2011) reported that in the United Kingdom (UK) up to 48% of patients engaged in violent behaviour.

In the UK, violence and aggression committed by psychiatric inpatients are a significant concern for mental health settings, compromising patient, visitor, and staff safety (Spencer et al., 2013). In addition to physical harm, violence in hospitals can negatively impact patients, visitors, and healthcare staff (Renwick et al., 2016). Spector et al. (2014) meta-analysis of 136 global studies exploring nurses' exposure to violent situations found 36.4% of nurses experienced physical violence and 66.9% non-physical violence. This study highlights the prevalence of violence and its various forms may be experienced by nurses in their work environments. It is important to address these issues to ensure the safety and well-being of nurses. However, research exploring violence and aggression can be difficult to amalgamate. Firstly, there can be differences in the definition of aggressive or violent behaviours (Flannery, 2012). Secondly, reported rates of aggression vary making it difficult to compare and generalise findings (Flannery, 2012) for example some staff may report verbal aggression and others may not.

Increases in violent or aggressive behaviour can lead to restrictive management strategies (Verlinde et al., 2017), and can act as a challenge to rehabilitation (McKenzie & Curr, 2005). As a result, Risk Assessment (RA) and Risk Management (RM) of aggressive behaviour are essential components of inpatient mental health working. Currently, the use of RA tools is considered best practice in forensic mental health and criminal justice settings (Heilbrun et al., 2021).

RAs consist of dynamic and / or static risk factors (Ward & Beech, 2015). Dynamic risk factors are subject to change over time and can be modified over time, through intervention or external influences for example social networks, and engagement with treatment. These factors can fluctuate over time and can affect an individual's level of risk. In contrast, static risk factors remain stable over time and are unalterable for example previous offending history, gender, age of first offence, childhood trauma. RA and routine evaluation of dynamic risk factors can assist in monitoring treatment progress (Andrews & Bonta, 2010), allocate appropriate resources (Mc Sherry, 2004), develop intervention or risk management strategies (Hart & Logan, 2011), guide future inventions (De Vries Robbé et al., 2015), in addition to identifying changes in risk of aggression (Heffernan et al., 2019).

Whilst there is a significant body of research on violence in National Health Service (NHS) healthcare settings, the identification of critical risk factors and their causal relationships is still an ongoing area of study (Sturmey & McMurran, 2011).

According to Singh et al. (2013) the Historical-Clinical- Risk Management- 20 (HCR-20) is one of the most widely used and studied Structured Professional Judgement (SPJ) RA tools for violence in clinical practice. The HCR-20 is a tool devised for clinical practice to aid RA in in-patient and community settings, assessing violence in individuals diagnosed with mental health issues and personality disorders (Douglas et al., 2001). The HCR-20 can be used during admissions, throughout intervention and upon release or discharge (Daffern, 2007).

The HCR-20 is highly regarded in the field of forensic mental health due to its ability to evaluate the risk of violence during admission, throughout treatment and when considering discharge or parole (Daffern, 2007). It was developed by Kevin Douglas, Stephen Hart, and colleagues, translated into multiple languages, and used within a variety of settings around the world (Douglas et al., 2013). The tool has been shown to have strong inter-rater reliability and validity (Douglas et al., 2005). The HCR-20 focuses on factors contributing to violence risk across three domains: Historical, Clinical, and Risk Management. The Historical domain involves the assessment of past behaviours and events that may be relevant to the individual's current risk of violence, for example past offending, substance misuse,

and childhood experiences. The Clinical domain assesses current mental health, including symptoms of mental illness and impulsivity. The Risk Management domain looks at factors related to the individual's current living situation, quality of supervision in the community, and social network.

HCR-20 version 3 requires a presence and relevance rating to be made for each risk item, risk formulation and scenario planning with a view to developing individualised risk management plans for violence or aggression (Hopton et al., 2018; Logan, 2014). Risk Formulation became integral to the risk assessment process in the HCR-20 Version 3 (Douglas et al., 2013), positioned as a pivotal element (Hopton et al., 2018). Its integration into forensic practice has bridged the gap between assessment and management (Lewis & Doyle, 2009). Evaluators are prompted to consider various risk factors and merge them into a meaningful formulation explaining an individual's risk of violence (Logan et al., 2014). The formulation can provide an evidence-based understanding of a person's difficulties and generate an understanding of the aetiology of the problems and presents potential intervention strategies (Logan & Johnstone, 2010). The frequency of updating the HCR-20 is six months and is mandated by NHS England commissioners (Coid et al., 2011).

Evaluating Predictive Validity

When evaluating the accuracy of a forensic RA, research assesses the predictive validity of a risk assessment tool. Predictive validity refers to the precision of an instrument and its capacity to accurately assess the probability of violence (Singh et al., 2013). Receiver Operating Characteristic (ROC) analysis is regularly used to analyse the predictive validity of violent RA (Douglas et al., 1999; Mossman., 1994). The ROC produces statistical predictive accuracy referred to as the Area Under the Curve (AUC). The AUC is calculated by plotting the true positive rate against the false positive rate at different threshold levels. AUC values range from 0 to 1, with a value of 0.5 indicating a chance level of performance. A value of 1 would indicate perfect discrimination. An AUC of 0.7 or above is considered acceptable for a RA tool (Mossman, 1994). Yang et al. (2010) carried out a meta-analysis, finding that the HCR-20 showed predictive validity for violent recidivism.

HCR-20: predictive validity for Secure Inpatient aggression

Despite the HCR-20 being an SPJ in clinical practice, for the purposes of research it is often used as an actuarial tool (Douglas & Reeves, 2011). The sum of the presence risk items can produce a total score in the range of 0 to 40 (Douglas et al., 2001). In comparison with other RA tools, Campbell et al. (2009) found that the HCR-20 demonstrated the largest effect size when predicting institutional violence. Research has found the bigger predictors of inpatient violence are the dynamic C5 and R5 scales as opposed to the H10 scale (Arbach-Lucioni et al., 2011; Belfrage et al., 2000; Daffern & Howells, 2007; Grevatt et al., 2004; McDermott et al., 2008; McKenzie & Curr, 2005; Mudde et al., 2011; Smith et al., 2020). Douglas and Shaffer (2021) meta-analysis found that HCR-20[V3] items were able to predict violence and that dynamic risk factors were related in institutional violence.

With the HCR-20 being employed across a multitude of settings, research has followed. In the context of correctional environments, the HCR-20 has shown fair to excellent predictive validity for institutional violence (Belfrage et al., 2000; Kroner & Mills, 2001; Persson et al., 2017). Furthermore, it has been suggested by Campbell et al. (2009) that the HCR-20 may demonstrate increased efficacy in predicting violence within correctional settings compared to community settings.

McKeown (2010) stated that RA tools such as the HCR-20 were originally designed for males and in recent years have been applied to females. Studies exploring the predictive accuracy of risk assessments between males and females have differed. A meta-analysis conducted by Singh et al. (2011) and found no significant difference in the predictive validity between males and females. However, Geraghty and Woodhams (2015) systematic review found the HCR-20 had larger AUC values for acts of violence committed by females. Within inpatient forensic settings, research has found low to moderate effect sizes in females for predicting violence and recidivism (Coid et al., 2009; Warren at al., 2005). The Female Additional Manual (FAM) (de Vogel et al., 2014) was developed to address the necessity for a gender-sensitive violence risk assessment and serves as a supplement to the

HCR-20. There is limited research available regarding the FAM, although studies have demonstrated moderate to large effect sizes for predicting violence with females (Greig, 2014).

The majority of studies conducted across differing countries investigating the predictive validity of the HCR-20 for inpatient violence have used primarily Caucasian participants (Daffern, 2007). Research has seldom investigated the predictive of the HCR-20 for inpatient aggression based on diagnosis. O'Shea et al. (2013) meta-analysis found that the total HCR-20 effect size was higher for those meeting diagnostic criteria for Schizophrenia.

Contribution of the current study

Issues with violence in secure inpatient services remains an important agenda item (Renwick et al., 2016) and may be mitigated through the use of appropriate RA and subsequent risk management strategies. RAs are essential for patient and public protection therefore concerns arising from false positive and false negative errors should be researched (Douglas et al., 2001; Skeem et al., 2005)

Over a decade ago, O'Shea et al. (2013) conducted a meta-analysis to explore the predictive efficacy of the HCR-20 with relation to aggression in inpatient psychiatric facilities. O'Shea et al. (2013) demonstrated that higher scores on the HCR-20 were predictive of aggressive behaviour within secure inpatient settings. C5 & R5 scales indicated excellent accuracy for predicting future violence. It is now widely accepted that the dynamic risk scales of C5 and R5 are better at predicting inpatient aggression than the historical risk factors (Arbach-Lucioni et al., 2011; Belfrage et al., 2000; Daffern &Howells, 2007; Grevatt et al., 2004; McDermott et al., 2008; McKenzie & Curr, 2005; Mudde et al., 2011).

Since this research was conducted there have been adaptations and updated versions of HCR-20. This research aims to update the meta-analysis completed by O'Shea et al. (2013). The current research aims are to investigate the link between the HCR-20 subscales and inpatient aggression.

Methods

Identifying primary studies

Search of Electronic Databases

A systematic search of the literature was initially carried out in February 2023 using the Ovid

MEDLINE®, EMBASE, and PsycINFO databases. As this review is an extension and update to

O'Shea et al. (2013) the search terms utilised in the previous review were used for this meta-analysis.

The search strategy outlined below (in Table 1) was used to identify the literature.

Table 1. Search Criteria

Construct	Free Text Search Terms	Method of Search	Limits
Risk assessment tool	HCR-20 "Historical, Clinical and Risk Management"	Free search terms All construct terms combined with *OR* *All constructs combined with AND.*	Peer reviewed articles 1967-March 2018 Limit 28 years 1995 to 2023
Patient status	Inpatient* Institut* Patient		
Aggression type	Violen* Agg* Recidiv* Reoffen* Nonviolen* Infract* Physical* Verbal* Misconduct Misbehav* Assault		

Inclusion Criteria

Three versions of the HCR-20 were included in this review (HCR-20, HCR-20 Version 2, and HCR-

20 Version 3). O'Shea et al. (2013) paper was published using version 2 of the HCR-20. However,

since the papers publication there has been an update and HCR-20 Version 3 is currently being used

by clinicians and researchers. The search performed by O'Shea et al. (2013) was between January 1, 1995, and August 14, 2012. The current review sought to identify literature published subsequent that the review by O'Shea (2013), that is between 1995 to 2023, The studies previously identified by O'Shea et al (2013) were also included in this review. Accordingly, the total duration of the search in this review is August 14, 2012, to 20/02/2023.

The scoring system in HCR-20 version 2 differs from version 3. In V3, both the presence and relevance of items are rated. However for research purposes and to align with the V2 scoring system, only the presence of the item was accounted for.

The research inclusion and exclusion criteria are detailed in Table 2 in appendix.

The application of the inclusion and exclusion criteria to the results of the search of the electronic databases is shown in figure 1.

Once duplicate studies were removed, there were 358 remaining studies. Study titles and Abstracts were then screened using the exclusion criteria, resulting in 239 studies being excluded. 119 full text articles were assessed for eligibility and 81 were excluded. Reasons for exclusion are documented in the Exclusion and Inclusion criteria, and are listed in the PRISMA diagram (Figure 1). In addition to the 20 studies described in O'Shea et al. (2013) paper, after applying the exclusion and inclusion rules documented below a further 18 studies were identified.
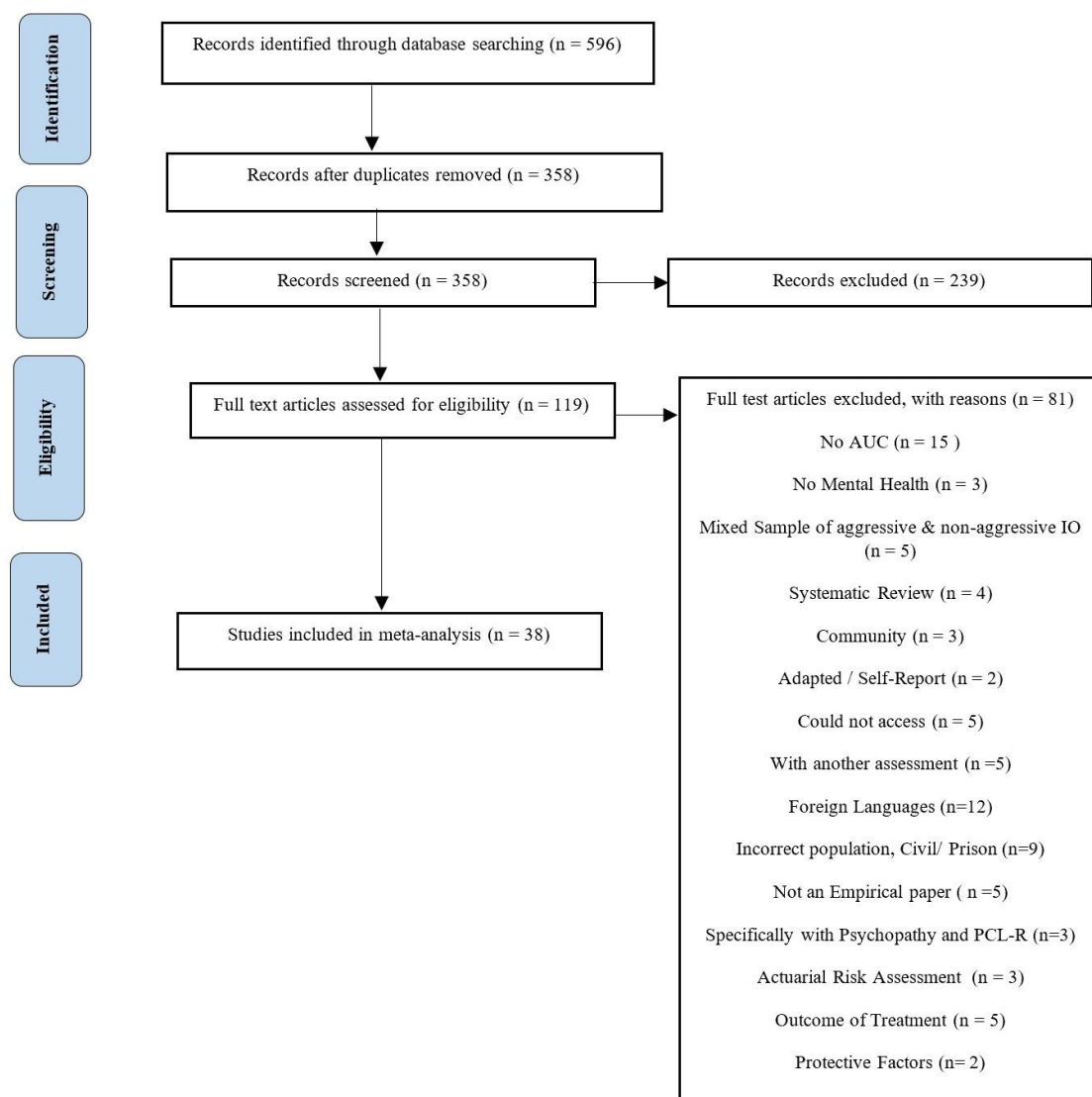
Figure 1. PRISMA diagram of studies included in the meta-analysis

Table 2. Inclusion and exclusion criteria

	Inclusion Criteria		**Exclusion Criteria**
Inpatient Psychiatric Setting	The primary inclusion criterion was that an eligible study must have examined the predictive efficacy of the HCR-20, or any of its subscales, for aggressive behaviour occurring within an inpatient setting. Further, this must be reported independently of	Previous Violence	Studies that only examined the relationship between the HCR-20 and previous violence were excluded because previous violence is one of the items on the HCR-20 and its inclusion would likely falsely inflate estimates of effect size.

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Inclusion Criteria		Exclusion Criteria
Reports Area Under the Curve (AUC)	aggressive behaviour occurring after discharge from such facilities. The Area under the Receiver Operating Curve (AUC) must have been presented, or sufficient statistical information is provided to allow for its calculation. If there was insufficient information to compute the AUC, the authors were contacted and asked to provide the raw data. For example, the study by Chaplin (2015) reported only zero-order correlations between the raw score of the HCR-20 and the total score on the Modified Overt Aggression Scale. Therefore, this study was not included in the current review.	
	No Standardised administration or scoring	Studies that did not score the HCR-20 as instructed in the manual were also excluded as they would not be directly comparable to the remaining studies
	Foreign Languages	Research reported in languages other than English were excluded due to difficulty in obtaining reliable translation
	Mixed Sample of aggressive and non-aggressive index offences	For studies reporting a mixed sample of aggressive and non-aggressive index offences, the study was included if the number of persons presenting with aggressive index offences exceeded those with non-aggressive index offences, otherwise the study was not included in this review. Where the number of persons presenting with aggressive index events exceeded those with non-aggressive index events then the outcome was coded as "any aggression." For example, the study by Adjorlol et al. (2019) reported data from 60 "recidivists" and 60 "non-recidivists", however, 83% of the sample had a non-aggressive index event (i.e., theft, robbery, or handling stolen goods), whereas only 17% of the sample had an if index event (i.e., assault or threat of violence). Therefore, this study was not included in the in the current review.

Data extraction

Coding of predictor variables

Predictor domains were categorised according to their effects on different subscales within the HCR-

20 assessment. These subscales included the total HCR-20 score, H10, C5, R5, the final summary

judgment, or an aggregate of the Historical and Clinical scales, referred to as HC15. In four studies,

the HC15 score was reported instead of the HCR-20 total score (Gray et al., 2003; Grevatt et al., 2004; McKenzie & Curr, 2005; Nicholls et al., 2004).

Coding of outcomes

The present research employed a detailed process of categorisation to classify various forms of aggressive behaviours resulting in six distinct categories. The term "Any inpatient Aggression" was defined in accordance with the Staff Observed Aggression Scale, encompassing "any verbal or non-verbal or physical behaviour that was threatening [to self, others, or property], or physical behaviour that actually did harm [to self, others, or property]" (Nijman et al., 1999, pg.200).

When a study presented various subcategories of aggressive behaviour, like physical aggression against self, objects, or others, the study's effect sizes were combined based on distinct, non-overlapping categories. For example, if the study reported separate effects sizes for aggression against others and aggression against objects, the mean effect sizes for these separate categories would be coded into the broader category labelled as "Any Inpatient Aggression".

Aggressive outcomes were further divided into "Any Physical Aggression" and "Verbal Aggression" categories. "Any Physical Aggression" reflects all instances of physical harm or threat, in comparison to "Verbal Aggression" which includes aggressive communication and may not involve physical harm.

Ethnicity
In cases where studies provided information on participants' ethnic backgrounds, we coded the percentage of participants who identified as Caucasian. Studies were coded as 100% when the entire sample consisted of Caucasian participants, following the methodology outlined by O'Shea et al. (2013). A code was not assigned when the study provided no ethnic information.

Gender

Similar to the coding approach for ethnicity, the variable of gender was coded at the study level, representing the percentage of male participants within each sample. Specifically, all-male samples were coded as 100%, while all-female samples were coded as 0% following the methodology presented by O'Shea et al (2013). In cases where studies reported results separately for different genders, distinct effect sizes were included for each.

Age

The variable of age was coded as a continuous variable representing the mean age of the sample, aligning with the approach described in O'Shea et al. (2013) paper.

Diagnosis

Analysing the percentages of participants with specific diagnoses can provide insights into the distribution and allows for comparisons across studies to explore potential patterns between specific diagnoses and the outcome. The diagnoses investigated included Schizophrenia, Schizoaffective disorder, Learning Disability, and Personality Disorder. Higher percentage values indicate a greater prevalence of the respective diagnostic category within the sample. The coding aligned with O'Shea et al. (2013) study. Even though O'Shea's paper did not differentiate between Schizophrenia and Schizoaffective Disorder, it was believed that including this diagnosis, as some studies did, would add value to the findings. If a paper did not provide information about diagnosis, this information was not included in the coding.

Length of follow-up

In the current meta-analysis, the variable for the duration of follow-up was encoded as a continuous variable, representing the average number of days over which data on aggressive incidents were gathered as per O'Shea et al. (2013) methodology

Extraction of Area Under the Receiver Operator Curve

It is expected that studies will report the area under the receiver operator curve and its associated standard error. If AUC is not reported directly, then the AUC will be calculated from descriptive data (e.g., from reported sensitivity and specificity, or from the table of classification accuracy). If the study contains insufficient descriptive data to calculate the AUC then the authors were contacted and asked to provide the raw data.

The effect size reported in O'Shea et al. (2013) was a Cohen's d standardised mean difference. As this effect size has less intuitive relevance to diagnostic accuracy outcomes, Cohen's d scores were transformed into an Area Under the Receiver Operator Curve coefficient using the formula below.

$$AUC = FishersINV \left(Fishers \left(\frac{d}{\sqrt{d^2 + \frac{(n_1 + n_2)^2}{n_1 . n_2}}} \right) + Fishers(0.5) \right)$$

Where Fishers and FishersINV represent Fisher transformation from r to z and it's inverse from z to r, d represents the Cohen's d effect size and n_1 and n_2 represent the study sample sizes. Where a study had only a single sample, then n_1 and n_2 were given the value N/2.

In order to avoid confidence intervals exceeding the boundaries of the Area Under the Curve (i.e., 0 to 1), all values were converted to Fisher's z values for calculations and then back transformed into AUC for reporting in tables and plots.

Risk of Bias Assessment

The risk of study level bias within primary studies were assessed using a methodology developed by Haney et al. (2012) which was employed in the original O'Shea et al. (2013) meta-analysis. The assessment consists of eight criteria designed to assess the risk of bias for each study. Each criterion was assessed by marking the domain as "yes" (indicating a low risk of bias), "unclear" (indicating an uncertain risk of bias), or "no" (indicating a high risk of bias). After assessing each criteria, an overall risk of bias rating was assigned to each study resulting in a final categorisation of "Low," "Unclear,"

or "High". The overall categorisation is based on the researcher's judgment of the likelihood that potential biases may have impacted the confidence in the study's results. See Table 2 for details of the risk of bias rating criteria.

Table 4. Domains of risk of bias and the criteria for ratings risk of bias

Domain	Details	Risk of Bias
Adequate Description of Population	Was there an adequate description of the population being discussed.	No -no description of population was presented. Unclear - Demographic factors of the population sampled are not fully discussed or had missing data. Yes The study participants were discussed in terms of demographic factors, relevant information about the study setting and ow participants were sampled.
Non-biased Selection	Was there an appropriate description of non-biased selection of participants.	No – sampling of participants is not adequate. Unclear- no description of consecutive or random sample of patients Yes – clear description of eligible participants, consecutive or randomly sampling of participants
Low Loss of Follow- up / Missing Data	Was there reported loss of follow up or missing data? Was this missing data explained? How did the researchers account for any missing data?	No – significant loss to follow-up or missing data. Unclear- missing data is reported inadequately or not commented on. Yes – low follow up or missing data. Explanation provided for missing data.
Standardized method of risk factor assessment and scoring clearly described or referenced	Was there a standardised method of risk factor assessment and scoring that has been clearly described or referenced e.g., HCR-20	No – no method of risk factor assessment and scoring is used. Unclear- a method of risk factor assessment that is not standardised, not clearly described, or not clearly referenced. Yes – a standardised method of risk factor assessment and scoring is clearly described and referenced
Unbiased risk factor assessment by independent assessors	Were risk factors assessed by independent assessors? Were the assessors blind to each other's ratings? Are assessor's independent?	No – risk factors are rated jointly with no comments on blinding. Assessors are part of the clinical team and not independent. Same assessor rated aggressive incidents and risk assessment factors. Unclear- there has been no or little description of assessor independence or blinding. Yes – assessors were independent and blind to each other's rating
Adequate outcome measurement	Was the outcome measure used adequate?	No – aggressive data extraction not described. Unclear- violence has been defined but no explanation of tools or methods of data collection or extraction. Yes – standardised procedure and assessment tools were adequately described.
Unbiased outcome measurement by independent assessors	Was the outcome measure unbiased and competed by an independent assessor?	No – risk factors are rated jointly with no comments on blinding. Assessors are part of the clinical team and not independent. Same assessor rated aggressive incidents and risk assessment factors. Unclear- there was no or little description of assessor independence or blinding.

Domain	Details	Risk of Bias
		Yes – assessors were independent and blind to each other's rating of outcome measure. Independent assessors were blind to the risk assessment when completing the unbiased outcome measure.
Adequate accounting for potential confounder	Did the research take into account potential confounders? Were assessments conducted retrospectively?	**No** – demographic/clinical differences between samples are not commented on and not adjusted for. Also, no mention of potential confounders across groups and no controlling for them **Unclear**- no clear description of confounders **Yes** – prospective assessment was completed on a single cohort. May accept retrospective study design but all risk assessments must occur prospectively.

An assessment of the risk of bias of studies explored in this meta-analysis was conducted. Of the thirty-eight only eight had a low risk of bias papers presented with low risk of bias. Twelve had a high risk of bias and a further seventeen studies demonstrated an unclear risk of bias. A summary of the risk of bias ratings across the studies can be seen in Table 5.

The approach of coding the overall risk of bias categorically as "low," "unclear," or "high" was calculated using guidance from O'Shea et al. (2013). The presence of an unclear level of bias in the majority of studies indicates that there was not enough information available in those studies to definitely assess the risk of bias (see Table 5. Below).

Table 5. Study level ratings of risk of bias

Study	N	Study Design	Adequate description of population	Nonbiased selection	Low loss to follow-up	Standardized method of risk factor assessment	Unbiased risk factor assessment by independent assessors	Adequate outcome measurement	Unbiased outcome measurement by independent assessors	Adequate accounting for potential confounder	Overall assessment of potential for bias
Arbach-Lucioni et al. (2011)	78	Prospective Longitudinal Study	Yes	Yes	Unclear	Yes	Unclear	Yes	Yes	Yes	Low
Chu et al. (2011)	66	Retrospective Cohort Study	Yes	Yes	Yes	Yes	Yes	Unclear	Unclear	Yes	Unclear
de Vogel and de Ruiter (2006)	127	Prospective Longitudinal Study	Yes	Unclear	Yes	Yes	Yes	No	Unclear	Yes	High
Dernevik et al. (2002)	42	Prospective Longitudinal Study	Yes	Yes	Unclear	Yes	Unclear	Yes	Unclear	Yes	Unclear
Desmarais et al. (2012)	120	Retrospective File Review Study	Yes	Yes	Unclear	Yes	Yes	Yes	Unclear	Yes	Unclear
Dolan and Fullam (2007)	136	Prospective Longitudinal Study	Yes	Unclear	Unclear	Yes	Yes	Unclear	Yes	Yes	High
Fagan et al. (2009)	81	Prospective Longitudinal Study	No	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Unclear
Fujii et al. (2005)	41	Retrospective File-Review Study	Yes	Yes	Unclear	Yes	Unclear	Unclear	Unclear	Yes	High
Gray et al. (2003)	34	Prospective Longitudinal Study	Yes	Yes	Yes	Yes	No	Yes	Unclear	Yes	Unclear
Grevatt et al. (2004)	44	Retrospective File-Review Study	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	Low
Langton et al. (2009)	44	Prospective Longitudinal Study	Yes	Yes	Yes	Yes	Unclear	Yes	Unclear	Yes	Unclear
Macpherson and Kevan (2004)	86	Prospective Longitudinal Study	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Low
McDermott et al. (2008)	238	Prospective Longitudinal Study	Yes	Unclear	Unclear	Yes	Unclear	Yes	Unclear	Yes	High

Study	N	Study Design	Adequate description of population	Nonbiased selection	Low loss to follow-up	Standardized method of risk factor assessment	Unbiased risk factor assessment by independent assessors	Adequate outcome measurement	Unbiased outcome measurement by independent assessors	Adequate accounting for potential confounder	overall assessment of potential for bias
McKenzie and Curr (2005)	94	Retrospective File-Review Study	Yes	Yes	Unclear	Yes	Unclear	Yes	Unclear	Yes	Unclear
McNiel et al. (2003)	100	Retrospective Case-Control Study	Yes	Yes	Unclear	Yes	Unclear	Yes	Unclear	Unclear	High
Morrissey et al. (2007)	60	Prospective Longitudinal Study	Yes	Yes	Yes	Yes	Unclear	Yes	Unclear	Yes	Unclear
Nagi et al. (2009)	25	Retrospective File-Review Study	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Low
Nicholls et al. (2004)	162	Retrospective File-Review Study	Yes	Yes	Yes	Yes	No	Unclear	No	No	High
Ogloff and Daffern (2006)	100	Prospective Study	Yes	Yes	Unclear	Yes	Unclear	Yes	Unclear	Yes	Unclear
Tengström et al. (2006)	99	Prospective Longitudinal Study	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	No	High
Lieser et al (2022)	42	Retrospective	Yes	Yes	Unclear	Yes	Unclear	Yes	No	Unclear	Unclear
Arai et al. (2017)	113	Retrospective File-Review Study	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Low
De Vries Robbe (2016)	185	Prospective Longitudinal Study	Yes	Yes	No	Yes	No	Yes	Yes	No	High
Finch (2017)	74	Retrospective Cohort Study	Yes	Yes	Yes	Yes	No	Yes	Yes	No	High
Fitzgerald (2013)	25	Prospective	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Unclear
Gunenc et al (2015)	613	Prospective Cohort Study	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Low
Ho et al (2015)	220	Prospective Longitudinal Study	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Low
Hogan (2018)	18	Prospective Longitudinal Study	Yes	Yes	No	Yes	Yes	Yes	Yes	No	High

Study	N	Study Design	Adequate description of population	Nonbiased selection	Low loss to follow-up	Standardized method of risk factor assessment	Unbiased risk factor assessment by independent assessors	Adequate outcome measurement	Unbiased outcome measurement by independent assessors	Adequate accounting for potential confounder	overall assessment of potential for bias
Kashiwagi (2018)	95	Retrospective Record Study	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Unclear
Neil (2020)	75	Pseudoprospective Design.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Unclear
O'Shea (2015)	109	Naturalistic Pseudo-Prospective Design	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Unclear
O'Shea, Picchioni et al(2014)	349	Pseudo- Prospective Study	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Unclear
Sanchez- San Segundo et al (2018)	51	Prospective Study	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Unclear
Shepherd (2018)	136	Retrospective Follow Up	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Low
Smith (2020)	167	Pseudo-Prospective Cohort Design	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Low
Strand (2019)	76	Retrospective	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Unclear
Strub (2014)	56	Prospective	Yes	Yes	Unclear	Yes	Unclear	Yes	Unclear	No	High
Vojt (2013)	109	Prospective	Yes	Yes	Yes	Yes	No	Yes	No	No	High

Adequate description of the population

Most studies reported demographic information for the participants sampled in the research. However, Fagan et al. (2009) did not include demographic data for the participants in their study, which led it being rated as "no" in terms of reporting demographic information.

Nonbiased selection

Studies were rated as "yes" when participants were randomly selected, or all eligible participants were selected as part of the research sample. Studies were rated as "unclear" because there was no clear description of consecutive or random samples of patients. There were no studies rated "no." The majority of studies were randomly selected; however, four studies did not provide sufficient description of the sampling process in order to identify where the biases are likely to have intruded. Accordingly, the studies were rated as unclear.

Low loss to follow-up

Studies demonstrating a low loss to follow-up rate were rated as "yes." Thirteen studies did not report missing data and were therefore rated as "unclear." Two studies were rated "no."

A standardised method of risk factor assessment and scoring clearly described or referenced.
All studies utilised standardised methods of risk factor assessment and scoring and were rated as "yes".

Unbiased risk factor assessment by independent assessors
Studies were rated "yes" if raters were independent and blind to each other's coding/ ratings. Ten studies were rated "no" as the same rater coded inpatient aggressive incidents and risk assessment information. Studies were rated "unclear" when there was no description of assessor independence or blinding. The use of independent assessors seemed variable, with raters being part of the research and clinical team involved with the service user.

Adequate outcome measurement

If standardized assessment tools and procedures were described in the study, it was rated as "yes." Studies were rated as "unclear" when there was no clear definition of violence, and no explanation of tools or methods of data collection. Studies were rated "no" if they described using unstandardised assessment tools or outcome measures.

Unbiased outcome measurement by independent assessors

Studies were rated as "yes" if they used a prospective assessment of a single cohort. In cases were the study relied on retrospective data, such as Chu et al. (2011) studies were rated "no". all risk assessments were conducted prospectively were rated as "yes."

Adequate accounting for potential confounders

Studies were rated "yes" if they were a prospective assessment based on a single cohort. The only exception was retrospective study design, but RAs were conducted prospectively. Studies were rated as "no" if demographic or clinical difference were not mentioned or adjusted for. Studies were rated as "unclear" if there was no clear description of confounders or clear documentation of how they were controlled for.

Summary

Overall the studies included in this analysis exhibited a varying range of bias levels, with the majority falling into the 'unclear' bias category. This implies that there were variations in the susceptibility to bias among these studies, which could be attributed to differences in their methodological rigor, reporting practices, and potential limitations.

The presence of bias within these studies can have significant implications for the current research. It may introduce systematic errors or distortions that affect both the magnitude and direction of effect sizes, ultimately influencing the interpretation of the meta-analysis results

Results

Selecting the appropriate analytic model

Figure 2 shows the distribution of study level effects using (a) the fixed effects model and (b) the random effects model (calculating between group difference using the restricted maximum likelihood method).
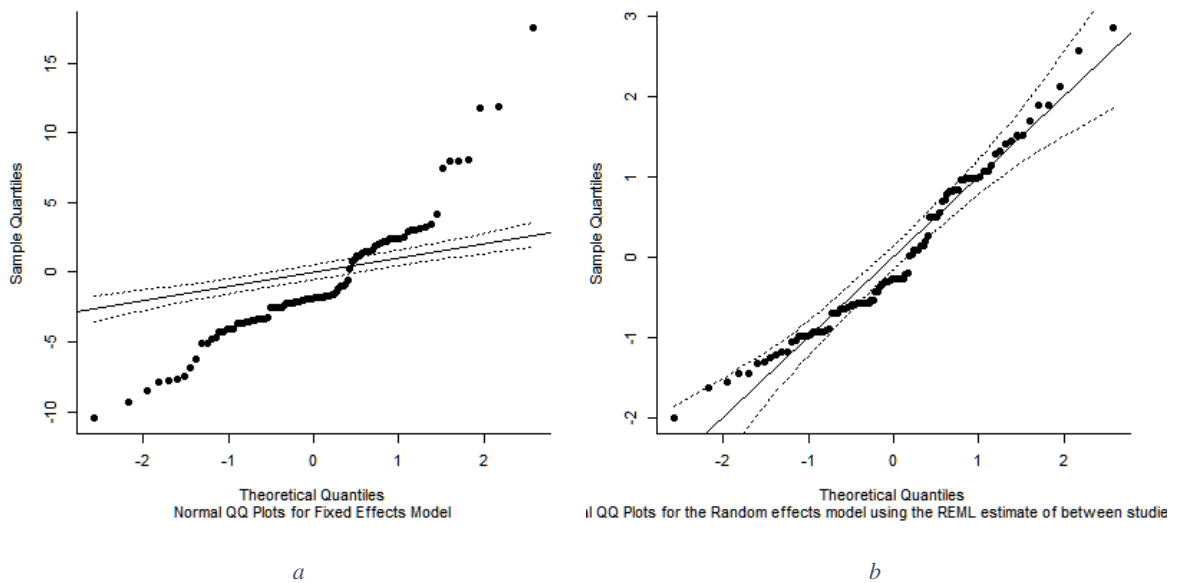
Figure 2: QQ plot of the distribution of study level effects using (a) the fixed effects model and (b) the random effects model calculating between group difference using the restricted maximum likelihood method.

As can be seen from Figure 2, there is clear evidence of non-linearity in the distribution of AUC coefficients when using the fixed effects model. However, this nonlinearity is largely absent when using the random effects model to calculate between-group differences using the restricted maximum likelihood method. Therefore, the random effects model, calculating between group variation (tau^2)

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using the restricted maximum likelihood method, is an appropriate model for calculating the synthesis of these data.

The omnibus test

The weighted mean area under the curve effect sizes for the HCR 20, arranged by the subscales by each of the aggression types, are shown in Table 8.

Table 8: Weighted mean area under the curve effect sizes for the HCR 20 and all of its subscales by each of the aggression types.

		k	AUC	95%-CI Lower	Upper	tau^2	tau	Q	I^2
HCR 20									
	Any aggression	38	0.7376	0.7099	0.7630	0.0293	0.171	562.21	93.40%
	Physical aggression	27	0.7318	0.6986	0.7619	0.0288	0.1696	461.59	94.40%
	Verbal aggression	9	0.7209	0.6630	0.7702	0.0267	0.1635	128.49	93.80%
	Physical - objects	4	0.6623	0 5231	0.7670	0.0439	0.2096	104.05	97.10%
	Physical - others	20	0.7187	0.6753	0.7572	0.0329	0.1815	554.01	96.60%
	Self-harm	2	0.7614	0.4194	0.9141	0.1387	0.3724	6.91	85.50%
H 10									
	Any aggression	38	0.6517	0.6124	0.6878	0.0355	0.1884	1080.12	96.60%
	Physical aggression	29	0.6344	0 5920	0.6733	0.0288	0.1697	580.57	95.20%
	Verbal aggression	11	0.6251	0 5573	0.6847	0.0271	0.1645	119.08	91.60%
	Physical - objects	7	0.6516	0 5646	0.7243	0.0252	0.1589	27.02	77.80%
	Physical - others	19	0.6357	0 5898	0.6776	0.0203	0.1426	296.24	93.90%
	Self-harm	3	0.681	0 5141	0.7982	0.0476	0.2182	139.8	98.60%
C5									
	Any aggression	39	0.7387	0.7108	0.7643	0.0317	0.1781	745.93	94.90%
	Physical aggression	30	0.7308	0.7018	0.7573	0.0246	0.1569	885.23	96.70%
	Verbal aggression	11	0.7486	0.7017	0.7890	0.0262	0.1618	220.35	95.50%
	Physical - objects	6	0.7212	0.6573	0.7748	0.0207	0.1438	97.61	94.90%
	Physical - others	20	0.7428	0.6922	0.7861	0.0527	0.2297	1770.88	98.90%
	Self-harm	2	0.554	0.4782	0.6217	0.0022	0.0469	1.21	17.30%
R5									
	Any aggression	32	0.7032	0.6762	0.7284	0.0176	0.1328	391.49	92.10%
	Physical aggression	24	0.7113	0.6805	0.7397	0.0193	0.1388	396.46	94.20%
	Verbal aggression	9	0.6925	0.6151	0.7567	0.041	0.2026	297.58	97.30%
	Physical - objects	4	0.6272	0.4366	0.7639	0.0715	0.2673	196.14	98.50%
	Physical - others	17	0.6978	0.6521	0.7385	0.0277	0.1664	318.96	95.00%
	Self-harm	1	0.641	0.6097	0.6703	--	--	0	--

Hosmer & Lemeshow (2013) framework offers a valuable guideline for understanding the area under the curve (AUC). In this framework, AUC values falling within the range of 0.5 to 0.7 demonstrate "poor discrimination," while values between 0.7 and 0.8 suggest "acceptable discrimination." AUC values within the range of 0.8 to 0.9 are associated with "excellent discrimination," and AUC values above 0.9 are indicative of "outstanding discrimination." Therefore, the minimally acceptable AUC value is set at 0.7. It is worth noting that particular scores were nearing the threshold of what is considered statistically acceptable, as evidenced by the verbal aggression scale. Whilst this prompts questions about whether these items should be included, it's important to adhere to the cut-off identified in the research for determining inclusion or exclusion limits (Hosmer & Lemeshow., 2013).

It appears that the H10 risk items, as assessed using Hosmer & Lemeshow (2013) framework, demonstrate poor discrimination. Specifically, none of the values for the AUC exceed 0.7. An AUC of 0.7 or above is generally considered acceptable, indicating a reasonable ability of the risk items to differentiate between high and low risk individuals. Therefore, the H10 risk items provide too many subscales with insufficient predictive validity.

The poor discrimination observed in the H10 risk items could be linked to several issues. It could be suggested that the risk items do not adequately capture the factors or variable that are most relevant for predicting inpatient aggression. It may also indicate a high degree of overlap between the risk items which can lead to limited variability and discriminatory power.

In contrast to the H10 subscale, the subscales H20, C5, and R5 exhibit adequate predictive validity. Specifically, the H20 subscale demonstrates acceptable discrimination across the categories of 'any aggression,' 'physical aggression,' 'verbal aggression,' and 'physical aggression towards others.' However, it's important to note that while the H20 subscale also demonstrates acceptable discrimination for 'self-harm,' caution is warranted due to the limited number of studies that included this specific information

The C5 subscale displayed acceptable discrimination across categories such as 'any aggression,' 'physical aggression,' 'verbal aggression,' 'physical aggression towards others,' and 'physical aggression towards objects.' However, it exhibited poor discrimination specifically for the category of 'self-harm

The R5 subscale appeared to have acceptable discrimination for 'any aggression' and 'physical aggression'. Poor discrimination was demonstrated for 'verbal aggression,' 'physical to others,' 'physical- objects' and 'self-harm'.

Therefore, the predictive validity of the H10 falls below the minimally acceptable level and is therefore not included in subsequent analysis. It should also be noted that the HCR-20, C5 and R5 all show adequate predictive validity for the any aggression outcome but each of these subscales have poor prediction for one or more of the outcomes.

Mediator and Moderator Analysis

A series of meta-regressions were calculated to assess whether the predictive validity of the HCR20, C5 and R5 was affected by the presence of specific diagnostic categories, gender, and ethnicity group. Meta-regression provides a measure of strength association (the regression coefficient b) between the predictive validity of the measure and the presence of the moderator within the study. Positive b coefficients suggest that the presence of the moderator is associated with higher levels of predictive validity and a negative b coefficient indicates that the presence of the moderator is associated with lower levels of predictive validity.

Table 10: Moderator analysis for continuous variables

	HCR-20 total	C5	R5
Schizophrenia (% Schizophrenia)			
Number of effects	85	78	59
Unstandardized coefficient b_1	0.3359	0.3206	0.3551
Standard error of b_1	0.0638	0.0958	0.0559
Test of $b_1 \pm 0$	z=5.2672 p <.0001	Z=3.3450 p=0.0008	Z=6.3570 p<.0001
Test of variability not explained by moderator	Q(df = 83) = 1197.7916, p < .0001	Q(df = 76) = 3314.4206, p < .0001	Q(df = 57) = 745.6064, p < .0001
Schizoaffective (% Schizoaffective)			
Number of effects	22	24	20
Unstandardized coefficient b_1	-1.8592	-1.4982	-1.2035
Standard error of b_1	0.5284	0.9430	0.5195
Test of $b_1 \pm 0$	z = -3.5183 p=0.0004	Z=-1.5888 p=0.1121	Z=-2.3166 p=0.0205

Test of variability not explained by moderator	Q(df = 20) = 402.9219, p< .0001	Q(df = 22) = 1699.8788, p < .0001	Q(df = 18) = 130.2196, p < .0001
Personality Disorder (% PD)			
Number of effects	69	65	47
Unstandardized coefficient b_1	-0.0005	-0.0025	-0.0014
Standard error of b_1	0.0020	0.0027	0.0022
Test of $b_1 \pm 0$	z=-0.2349 p=0.8143	Z=-0.9289 p=0.3530	Z=-0.6419 p=0.5209
Test of variability not explained by moderator	Q(df = 67) = 1560.7733, p< .0001	Q(df = 63) = 3181.5380, p < .0001	Q(df = 45) = 814.7034, p < .0001
Learning Disability (%LD)			
Number of effects	74	76	55
Unstandardized coefficient b_1	0.0526	0.1121	0.1527
Standard error of b_1	0.0498	0.1151	0.0619
Test of $b_1 \pm 0$	z=1.0558 p=0.2911	Z=0.9742 p=0 3300	Z=2.4671 p=0.0136
Test of variability not explained by moderator	Q(df = 72) = 1179.8911, p-val < .0001	Q(df = 74) = 2239.8701, p < .0001	Q(df = 53) = 528.3723, p < .0001
Gender (% male)			
Number of effects	70	80	59
Unstandardized coefficient b_1	0.2339	0.2258	0.4186
Standard error of b_1	0.0814	0.1110	0.0658
Test of $b_1 \pm 0$	Z=2.8744 p=0.0040	Z=2.0342 p=0.0419	Z=6.3603 p<.0001
Test of variability not explained by moderator	Q(df = 68) = 974.8726, p < .0001	Q(df = 78) = 3359.2033, p < .0001	Q(df = 57) = 783.1696, p < .0001
Ethnicity (% Caucasian)			
Number of effects	35	39	32
Unstandardized coefficient b_1	0.1013	0.0733	-0.0228
Standard error of b_1	0.0878	0.1653	0.0472
Test of $b_1 \pm 0$	Z=1.1529 p=0.2490	Z=0.4434 p=0.6575	Z=-0.4827 p=0.6293
Test of variability not explained by moderator	Q(df = 33) = 647.1426, p < .0001	Q(df = 37) = 2701.8268, p < .0001	Q(df = 30) = 444.4413, p < .0001

The reported predictive validity coefficient for the HCR20, C5 and the R5 was greater in samples containing higher proportions of people with a diagnosis of schizophrenia.

The reported predictive validity coefficient for the HCR20, and the R5 was greater in samples with a lower proportion of individuals diagnosed with schizoaffective disorder. For the C5 subscale, there was no statistically significant relationship found between the proportion of individuals with a schizoaffective diagnosis and predictive validity.

Similarly, no statistically reliable association was detected between the presence of personality disorder and predictive validity for each of the HCR20, C5, and R5 subscales.

For the HCR20 and C5 subscales there was no statistically reliable association between the presence of persons with learning disability and predictive validity. However, a positive relationship was observed for the R5 subscales.

The reported AUC coefficient for the HCR20, C5 and the R5 was greater in samples containing higher proportions of males, whereas no statistically reliable association was observed for the relationship between the proportion of Caucasians and predictive validity for any of the HCR20, C5, and R5 subscales.

The effect of study level risk of bias

The risk of study level bias within primary studies were assessed using a tool described by Haney et al. (2012). This tool was used as it had been utilised as part of the research design for O'Shea et al. (2013).

The tool consists of eight criteria that evaluate the risk of bias of each study. The assessment of each criterion involved categorising the risk of bias domain as "yes" (indicating a low risk of bias), "unclear" (indicating an uncertain risk of bias), or "no" (indicating a high risk of bias). After assessing each domain, an overall risk of bias is assigned to each study resulting in an overall categorisation of "low," "unclear," or "high".

Table 11: The overall risk of bias level and AUC

	Overall risk of bias	k	AUC		95%-CI	tau^2	tau	x2	p
HCR-20									
	Low	14	0.69	0.65	0.73	0.02	0.13		
	Unclear	25	0.74	0.72	0.76	0.00	0.07		
	High	35	0.75	0.72	0.77	0.04	0.19		
					Between groups difference			6.02	0.0494
C5									
	Low	19	0.72	0.67	0.77	0.04	0.21		
	Unclear	27	0.75	0.74	0.76	0.00	0.05		
	High	36	0.77	0.74	0.80	0.04	0.21		
					Between groups difference			3.01	0.2215
R5									
	Low	14	0.62	0.53	0.70	0.07	0.27		
	Unclear	18	0.76	0.75	0.77	0.00	0.03		
	High	29	0.72	0.69	0.75	0.02	0.15		
					Between groups difference			19.88	<0.0001

Both HCR-20 and the R5 evidenced Statistically significant differences in AUC between the levels of overall risk of bias ratings, with lower levels of bias being associated with smaller AUC's for both subscales. For both the HCR-20 and the R5 the AUC as calculated from the low risk of bias studies was below the minimum threshold of 0.7.

The impact of length of time to follow-up

In order to assess the moderating effects of length of time to follow-up, a meta-regression was calculated in which the dependent variable was the study level AUC value, the predictor variable was length of time to follow-up (in days) and the weight was the study-level sample size. A non-significant effect for time to follow-up was observed for both the HCR-20, C5 and the R5 subscales.

Table 11: The moderating effect of length of time to follow-up upon study level AUC

	estimate	se	zval	pval	ci.lb	ci.ub
HCR-20	-0.0001	0.0001	-1.8921	0.0585	-0.0003	<0.0001
C5	-0.0001	0.0001	-1.6885	0.0913	-0.0003	<0.0001
R5	-0.0001	0.0001	-0.9751	0.3295	-0.0002	0.0001

The impact of publication and small study biases

Publication bias is caused by the tendency for statistically significant results to be published and the reticence to publish papers with non-significant results. Small study bias is the tendency for studies with smaller sample sizes to show greater variability in their measurement of AUC. These biases can be identified a funnel plot which plots the magnitude of the study's AUC estimate against the square root of the study's sampling variances ($standard\ error = \frac{\sigma}{\sqrt{N}}$). If there is an absence of publication bias, the effects from the studies with small sample sizes which show greater variability will scatter more widely at the bottom of the plot compared to studies with larger samples at the top which will lie closer to the overall meta-analytic effect, creating a symmetrical funnel shape. If there is an absence of studies in the area of the plot associated with small sample sizes and non-significant results (for this meta-analysis it will be the bottom right-hand corner) then it is likely there is some publication bias

leading to an overestimation of the true effect. The funnel plot of the reported AUC values is presented in figure 3.
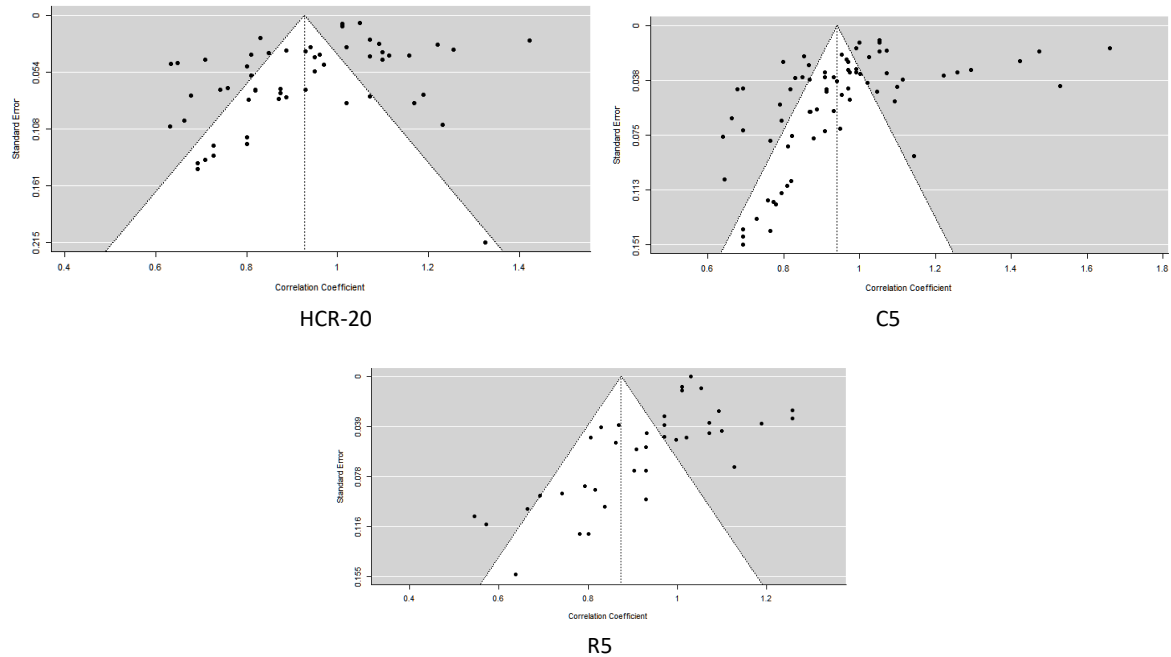
Figure 3: Funnel plot of publication bias and small study effects

As can be seen from figure 3, there is clear evidence of the previously identified heterogeneity in the study level AUC estimates, however, for each of the subscales there is clear evidence of reporting of lower AUC values in studies with smaller sample sizes. Accordingly, no correction for publication bias was calculated.

Accordingly, the prediction of specific aggression outcomes needs to be undertaken with caution, using only subscales which show adequate predictive validity to rate the risk of specific aggression outcomes.

Discussion

The purpose of this meta-analysis was to examine the predictive validity of the HCR-20 with respect to aggressive outcomes. This meta-analysis contributes to the literature on this subject and adds to the body of knowledge that helps refine and improve risk assessment methods for aggression-related incidents amongst forensic inpatient units.

The HCR-20 focuses on factors contributing to violence risk across three domains: historical, clinical, and risk management. It is one of the most widely used SPJ tools in forensic mental health due to its ability to assess the risk of violence at and throughout admission, and upon consideration for discharge or parole (Daffern, 2007).

Historical Subscale

The historical domain involves static risk factors assessing past behaviours and events that may be relevant to the individual's current risk of violence, for example past offending, substance misuse, and childhood experiences (Douglas et al., 2014). This meta-analysis found that the H10 subscale demonstrated inadequate predictive validity (AUC of less than 0.7) for all of the aggression outcomes. This suggests that the historical items should not be used for the prediction of aggression risk. Static factors have shown only moderate accuracy in predicting imminent violence (Starzomski & Wilson., 2015). Research has generally provided consensus that dynamic risk factors may be better placed to predict immediate risk of aggression (Palmstierna & Olsson, 2007; Starzomski & Wilson, 2015; Wilson et al., 2013). Some argue that these historical factors may be better suited for longer-term violence prediction (Quinsey et al., 2006). The HCR-20 may be better at predicting future violence, at approximately 6 months (Gray et al., 2008). Therefore, at least the historical items of the HCR-20 may not be helpful in assessing and managing the imminence of aggression within inpatient stay.

Clinical and Risk Management subscale

The findings suggest that the total items of the HCR20 and subscales C5 and R5 present with adequate predictive validity when considering the any aggression outcome. It should also be noted that each of these subscales presents with AUC less than 0.7 for one or more specific aggression outcomes. This is consistent with findings from Smith et al. (2020). The HCR 20 subscale was able to adequately predict any aggression, physical aggression, verbal aggression and physical-other. The HCR-20 subscale struggled to predict physical aggression with the use of objects and self-harm. The HCR-20 scale was designed to focus on violence and aggressive behaviour. However, clinicians have utilised it to describe acts of violent harm to self. Findings from this meta-analysis indicate that the HCR-20 is unable to adequately predict self-harm. Evaluating self-harming behaviours may require consideration of more complex factors and their combinations (Hooley et al., 2020). Underlying motivations and predictive factors for self-harm vary distinctly from those associated with violence against others or suicidial intent.

In terms of suicide prevention, there is growing recognition that RA tools alone demonstrate little effectiveness (NICE, 2022). Whilst RA tools can be valuable components of suicide prevention efforts, on their own they are not sufficient enough to address the complexities of suicide risk and prevention (NICE, 2022). As discussed, authors of the HCR-20 shifted the focus of the RA in version three to denote the value of formulation. Whilst the HCR-20 risk items may not be linked to self-harming behaviour it may be clinically relevant to include information into a formulation.

The C5 subscale demonstrated adequate predictive validity across the categories of any aggression, physical aggression, verbal aggression, physical aggression with objects, and physical aggression to others. The C5 subscale was not adequate when predicting self-harm. The clinical domain assesses current mental health, including mental illness and impulsivity symptoms. Clinicians looking to assess an individual's risk of engaging in self-harming behaviours may find it beneficial to utilise alternative measures as the HCR-20 and its C5 subscale are not sufficiently effective in assessing this risk. This meta-analysis supports the overall finding that dynamic factors of the HCR-20 are effective in

predicting institutional aggression (Douglas & Shaffer, 2021). Only the C5 subscale demonstrated adequate predictive ability when it came to the use of aggression involving objects.

The R5 subscale demonstrated adequate predictive validity for any aggression and physical aggression. R5 was not adequate at predicting verbal aggression, physical aggression to objects, physical aggression to others or self-harm. The risk management domain looks at factors related to the individual's current living situation, quality of supervision in the community, and social network.

Moderators

With regards to moderators the HCR-20, C5 & R5 subscales were better at predicting aggressive outcomes in samples with a greater proportion of individuals with a diagnosis of Schizophrenia than those with a diagnosis of Personality Disorder. This supports findings from Tengström et al (2006) with the Clinical scale demonstrating moderate predictive accuracy for violent behaviour in inpatients diagnosed with schizophrenia.

However, limited research has delved into assessing the predictive accuracy of the HCR-20 in predicting inpatient aggression, particularly concerning variations based on different diagnosis (O'Shea, et al., 2013).The HCR20, C5 and R5 scales were better at predicting aggressive outcomes in samples with a greater proportion of males. These findings contrast that of Garcia-Mansilla, et al. (2011), and their subsequent conclusion that the HCR-20 does not need to be tailored to females. However, we can agree that the HCR-20 should be applied with caution to a female population. To combat this issue The FAM (de Vogel et al., 2014) was developed. The findings of this meta-analysis support the use of additional measures to account for the lack of the HCR-20's predictive validity for females.

Fujii et al. (2005) found that ethnicity did act as a moderator for predicting aggression in an inpatient sample. However, this meta-analysis found no statistically reliable association between Caucasian ethnicity and predictive validity for any of the HCR-20 subscales.

As the use of violence RA tools has become more prevalent in various legal and mental health settings (Storey et al., 2013), the diversity of professionals conducting risk assessments has expanded. The user manual for the HCR-20 indicates that evaluators should have appropriate experience, education, and knowledge (Douglas et al., 2014) however not all evaluators are equally competent (Fazel, 2019). While SPJ's like the HCR-20 offer a framework when considering risk, they also allow for rater's discretion in the evaluation process and may be vulnerable to rater bias (Guay & Parent, 2018; Murrie et al., 2009). Rater bias occurs when the assessor's subjective judgement, beliefs, or previous experienced influence the assessment process and subsequently the outcome of the RA. Incorrect classifications of risk could impact risk management plans, treatments and interventions and ultimately public safety (Venner et al., 2021). Therefore, it is important to consider that rater bias may have impacted on the outcome of this research and ratings of the HCR-20 overall.

A non-significant effect for time to follow-up was observed for both the HCR-20, C5, and the R5 subscales. The ability of these subscales to predict violent behaviour remained relatively stable across different follow-up periods. A non-significant effect for time to follow-up is not uncommon and can be informative for understanding the stability of the HCR-20. It is mandated by NHS England commissioners that an HCR-20 for forensic patients is updated every six months (Coid et al., 2011). The meta-analysis revealed an overall lack of consistency in follow-up durations across the included studies. Specifically, 7 studies examined follow-up over 12 months, 6 over 6 months, and 6 over 3 months. The minimal follow-up time was 24 hours, while the longest was 2.52 years on average. Four studies captured data from multiple time points and four did not report the time period. This variability in time frames raises concerns about potential gaps in capturing Clinical and Risk Management (C & R) information. In instances of longer follow-up periods, it becomes challenging to pinpoint when the relevant incidents occurred, potentially resulting in a misleading perception of no difference between various follow-up periods. This highlights the importance of careful consideration in interpreting findings related to aggression within different time frames. Overall, it is concerning that

none of the findings indicate excellent or outstanding predictive validity, yet the tool is extensively used in clinical practice with a follow-up period of 6 months. *Limitations of the current research*

Some studies included in this meta-analysis incorporated retrospective study designs. Relying solely on file review information when completing RA can be limiting and may not have provided a comprehensive understanding of an individual overall level of risk (Brookstein at al., 2021). The studies incorporated in this meta-analysis come with their own set of limitations that affect the conclusions that can be drawn from this research. One significant issue was the coding of moderators like gender and ethnicity. O'Shea et al. (2013) coded ethnicity based on Caucasian populations, which was a noteworthy factor. A constraint of this meta-analysis is the inability to thoroughly explore the potential moderating impact of all variables of interest. This is due to insufficient reporting rates for demographic and clinical characteristics in the studies included. The present meta-analysis may have benefitted from having another coder for risk of bias assessment might have improved the accuracy of the coding process.

Mossman (2013) discussed diverse methods used to gauge the effectiveness of risk assessments in predicting future behaviour. The AUC has emerged as a crucial measure of predictive validity, often equivalent with discrimination ability (Singh et al., 2013). Mossman (2013) cautioned against assuming that the predictive power of a risk assessment alone should dictate the allocation of clinical services. Within the statistical field, a threshold of 0.7 is referred to as good discrimination (Singh et al., 2013). However, when considering practical concerns like recidivism in fields such as the court system or forensic mental health, the cost of incorrect risk identification for example missing a genuine risk could be significant. Therefore, whilst 0.7 may be statistically appropriate, the clinical usefulness depends on the context, and potential impact of false positives or negatives (Mossman, 2013).

The current meta-analysis incorporated the O'Shea et al (2015) review papers to increase the sample size and statistical power, thereby enhancing the precision and reliability of the results. Including

studies from previous reviews, facilitated the validation and replication of findings and methodology. However, the O'Shea et al. (2015) review predates the transition from version 2 to version 3 of the HCR-20. Although researchers have continued to utlise the rating systems in an actuarial manner, the disparities between versions may present challenges to the generalisability of the findings given the significant differences between the versions.

The authors of HCR-20 version 3 have transitioned from risk prediction to risk formulation. This shift introduces complexities that could impact the interpretation and utilisation of assessment scores. When studies gather data from clinical records, the influence of risk management strategies in clinical settings might compromise the accuracy of risk predictions derived from that data. Therefore, researchers must navigate these issues with caution to ensure the reliability and validity of their analysis.

Implications

Research Implications

This meta-analysis has found validity for the C5 & R5 subscales of the HCR-20 and aggression. These scales incorporate dynamic risk items such as instability, symptoms of major mental disorder, treatment or supervision response, insight & stress, and coping. Given the dynamic nature of these risk factors, future research could explore item-response theory for the components within the C5 and R5 subscales, evaluating their validity and sensitivity. Additionally, further investigation may shed light on specific risk factors and their correlations with both short-term and long-term risks of aggression.

Future research may seek to explore potential contrasts in study design between prospective and retrospective study design approaches.

Clinical implications

RA is a part of a larger cycle including risk management and treatment Viljoen et al. (2018). The value of RA is not solely in the assessment process but rather in the steps taken based on the assessment's findings. It is beneficial to consider the most appropriate RA tool for the purpose. There may be a tendency to use RA for purpose they were not intended for, for example including aggression to self in the HCR-20. Modification or the inclusion of additional assessment tools can help broaden the scope of RA and risk management plans. Additional tools could better capture issues of diversity for example the FAM, which incorporates female patients or specific types of offending e.g., fire-setting, or sexual violence.

Findings from this meta-analysis and other research indicates that clinicians should proceed with caution when using the HCR-20 to consider aggression bearing in mind potential differences in the validity of the HCR-20 in predicting violence across diagnostic groups (Tengström et al., 2006). Despite NHS England mandating clinicians to update the HCR-20 every six months within forensic services (Coid et al., 2011), the results of this meta-analysis suggests that updating the risk assessment more frequently might be beneficial due to the correlation between dynamic risk factors and inpatient aggression. Additionally, the findings from this meta-analysis do not endorse the idea of assessing every six months, as there was no significant effect observed for time to follow-up. It may be helpful to consider the nature and time specifications for dynamic risk factors and complete risk assessments in line with this.

Summary

This meta-analysis has contributed to previously known research and has illuminated avenues for future research. Future research may focus on item-response theory analysis of the C5 and R5 subscales of the HCR-20, contributing to information regarding the tool's accuracy and usefulness predicting aggression within inpatient settings. In summary, this research has demonstrated limited predictive validity of the measure and that clinicians should consider supplementary assessments to account for moderators such

as diagnosis and gender. Clinicians should continually monitor and reassess patients risk levels in response to changes in their dynamic risk factors. Risk assessments are complex tasks that require aspects of clinical judgement, patient management, intervention, and public safety.

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2. EMPIRICAL PAPER: Barriers and Facilitators to structured professional risk assessment in forensic services

Abstract

Introduction:

Forensic services work with individuals that have engaged in criminal behaviour. As such conducting risk assessments (RA) is an integral part of forensic work (Olsson & Kristiansen, 2017). Historically RA focused on predicting future violence, over time this has evolved to adopting an approach encompassing risk management (McEwan et al., 2011). However, professionals' perceptions about the meaningfulness of RA are under researched (Hurducas et al., 2014). In other settings, professionals have discussed the time-consuming nature of RA, (Derblom et al., 2021) and the need for team working (Raven & Rix., 1999).

This study aimed to explore professionals' understanding of barriers and facilitators to the completion of SPJ tools within forensic services.

Method:

Online semi-structured interviews were conducted with seven participants. Reflexive Thematic Analysis (RTA) was used to analyse the data.

Results:

Three main themes were identified which included 'Forensic World,' 'Barriers to Risk Assessment,' and 'Facilitative Elements of Risk Assessment'. Participants discussed that RA could feel divorced from clinical practice, that they are time consuming, and can be used as part of defensible practice. On the other hand, RA's value was enhanced by team working to communicate multiple perspectives, appropriate formulation, and risk management plans.

Discussion:

The findings from this research indicate that clinicians' experiences of forensic RA are multi-dimensional, encompassing various aspects that can be influenced by working in this complex context. Organisations and stakeholders may wish to consider strategies such as: training and education, encouraging reflective practice, implementing regular case discussions and supervision in addition to reviewing the accessibility of the RA paperwork.

Introduction

Risk assessments (RA) are widely used in forensic services (Olsson & Kristiansen, 2017). On in-patient admission, it is considered best practice for clinicians to complete a clinical RA and risk management plan for service users (National Institute for Mental Health in England, 2004).

The notion of risk can be particularly pertinent following public concern and media interest (Simpson, 2003). Serious Further Incidents have produced inquiries demonstrating failures within Mental Health Services to identify and manage risk which have resulted in serious incidents and harm to patients and the public (Bowers, 2005; Doyle & Dolan, 2002).

Initially, the aim of forensic RA was to predict the likelihood of future offending (Hart and Logan, 2011). However, it is now widely accepted that risk management is the primary goal of risk assessment (Andrews & Bonta, 2010; Douglas & Kropp, 2002). In the latest guidance relating to Self-Harm and Suicidal behaviours, for example, NICE guidance has recommended that instead of prediction, clinicians focus on the management of these behaviours (NICE guidelines, 2022).

Forensic RA protocols have been developed and implemented across a range of settings, including mental health and criminal justice systems in order to support professional's interventions and with the allocation of resources (McSherry, 2004). In practice, it is recommended that decisions regarding risk should be discussed by a multidisciplinary team (MDT) including all the professionals involved in an individual's care (Doyle & Dolan, 2002).

RA protocols typically involve the use of structured risk assessment tools, such as Actuarial, Unstructured Clinical Judgement (UCJ), and Structured Professional Judgement (SPJ) tools, to guide the assessment and management of risk. Forensic risk assessment is a multifaceted and intricate process that involves the integration of a range of information, including biological, psychological, sociological factors, historical and clinical, and situational factors (Brown & Singh 2014). It also

requires understanding of relevant research and theoretical frameworks informing risk assessment and management practices.

Actuarial risk assessment tools are statistical instruments typically consisting of both static and dynamic factors that have been found to be associated with the outcome of interest (Hart, FF1998; Kraemer et al., 1997). Each factor is given a weighted score based on its importance in predicting the outcome and the total score is then used to assign individuals to different risk categories (Grove & Meehl,1996). The data associated with each category is derived from empirical data based on a sample of individuals who were assessed using the tool. These estimates are then used to inform decision-making such as placement of offenders, intervention, or supervision planning (Latessa, 2004).

It is important to note that while actuarial risk assessment tools are useful tools for predicting risk, they have limitations. Due to the nature of the algorithms used for actuarial tools, models focus on general trends with specific populations and are time specific which can overlook individual characteristics (Hart et al.,2007). The models are time specific, relying on particular information from certain demographics applied cross-culturally or in different social contexts (Mossman, 2006; Singh, 2014). It is essential to use them in conjunction with other sources of information, such as clinical judgment and qualitative data to make informed decisions (Brown & Singh 2014). UCJ's have been criticised for their inconsistency, lack of structure and poor inter-relater reliability (NICE, 2007; Doyle & Dolan, 2002).

SPJ tools were developed to address some of the limitations of actuarial tools and UCJ (Kukucka et al., 2017). SPJ tools are structured instruments that include a set of risk and/or protective factors that have been identified through research or theory as being associated with adverse events. Unlike actuarial tools, SPJ tools do not use a statistical algorithm to generate a total score or predict the likelihood of an adverse event occurring. Moreover, in the most recent version of the HCR-20, there has been a shift towards more dynamic uses for risk assessment, including risk management and safety planning elements (Douglas et al., 2014). Dynamic risk items take into account changes in an

individual's circumstances and behaviour which is subject to spontaneous change or in response to treatment (Meaden et al., 2022).

SPJ tools are designed to provide a more flexible approach to risk assessment that integrates both empirical research and clinical judgement (Douglas et al., 2014). By combining objective risk factors with case-specific information, SPJ tools can help clinicians to make informed decisions about risk management and treatment planning in a dynamic and responsive way (Meaden et al., 2022).

SPJ tools also highlight the significance of case-specific information acquired through clinical experience with the client being assessed. Clinicians are encouraged to use their expertise and knowledge of the individual's unique circumstances to supplement the information provided by the SPJ tool and make a comprehensive and individualised risk assessment (Kapp & Mossman, 1996). SPJ tools emphasise the importance of ongoing monitoring and reassessment of an individual's risk level over time. As the individual's circumstances and risk factors change, so too should their risk assessment and management plan (McEwan et al., 2011).

In recent years, there has been a shift within forensic mental health from a focus on predicting future violence (Hanson, 2005) to a more comprehensive approach emphasising violence prevention, management, and treatment (McEwan et al., 2011). As a result of this shift, a number of specialised RA tools have been developed to help clinicians and other professionals assess a variety of risks beyond just the risk of violence, such as the risk of self-harm, stalking, and sexual offending (McEwan et al., 2011). Some of the most commonly used SPJ's include the Historical, Clinical, Risk Management-20 (HCR-20; Douglas et al., 2014), the Sexual Violence Risk-20 (SVR-20; Boer, et al., 1997), and the Short-Term Assessment of Risk and Treatability (START; Webster et al., 2009).

SPJ tools usually comprise a number of steps. Initially collecting information from a multitude of sources including clinical interviews, records, and collateral sources. Then identifying the presence of risk items. The assessor will move on to consider the relevance of these risk items and more towards the development of a formulation of violence risk that reflects the likelihood, severity, and imminence

of risk. Using the formulation, the assessor will present potential scenarios for future risk. Lastly, the assessor will communicate a summary of judgements with consideration for risk management, supervision arrangements, and safety planning (Hart et al., 2016). Numerous studies have demonstrated that structured professional judgment methods are reliable and valid in their application and are widely regarded as 'good practice' in the pursuit of identifying, treating, and managing risk (Borum, 1996; Douglas et al., 1999; Douglas & Kropp, 2002).

The evolution of the HCR-20 version 3 marked a significant shift, where risk formulation became central to the risk assessment process (Hopton et al., 2018). This integration has attempted to close the gap between assessment and management in the forensic field (Lewis & Doyle, 2009). Formulation serves to understand an individual's challenges through the origins of their issues, highlight strengths, and propose potential intervention strategies (Logan & Johnstone, 2010).

In the last decade, researchers have emphasised the need for additional research and policy development to guide the effective implementation of RA tools, ensuring their fair and unbiased use (Desmarais, 2017; Nonstad & Webster, 2011). One criticism of RA in mental health services is that it may lead professionals to prioritise risk management over other professional obligations, namely to their patients (Eastman et al., 2012).

There is little research regarding which RA's are used in practice, why they are chosen, or professional's perceptions about the usefulness of these tools (Hurducas et al., 2014). Staff attitudes and perceptions of RAs are key to understanding their clinical value. Where research does exist, mental health professionals have demonstrated varied attitudes towards the use of RA tools.

Godin (2004) reported that attitudes of community mental health nurses toward risk assessment varied from 'embracing' too 'antagonistic'. The study highlighted that while RA tools play an important role in the evaluation of risk, nurses also utilised their 'professional intuition' in addition to formal RA Some professionals may also feel irritated by completing RA (Maden, 2003). Understandably, hostility towards RAs would arguably undermine any benefits regarding their effectiveness.

Singh and colleagues' (2014) survey of forensic mental health professionals found that the HCR-20 was the most commonly used RA tool, with over 90% of respondents reporting that they had used it in their practice. This reflects the widespread recognition of the HCR-20 as a reliable and valid tool for assessing violence risk in forensic mental health settings. However, it is unclear whether in clinical practice these tools function as support mechanisms for decision-making (Hawley et al., 2010). Hawley et al. (2010) conducted a study investigating the attitudes of staff working in a mental health Trust in England, towards risk assessments and their time cost estimations. The survey received responses from 300 staff members. The study found a significant discrepancy in the amount of time spent completing the Trust's risk assessment form. The median time taken was 18 minutes, with a wide range of completion times, ranging from 1 to 240 minutes. Notable, psychiatrists tended to spend less time on this task compared to nurses on average.

Hawley et al (2010) found that the general profile of attitudes towards RA's was positive in that they were perceived as valid and useful and thought to assist in clinical decision-making. However, there were differences among professionals making up the MDT, with nurses expressing more positive views than psychiatrists did.

The Royal College of Psychiatrists (2008) conducted a survey of 1,937 psychiatrists. They found that 87% believed that RA tools provide a false sense of security for professionals and that there was little evidence to suggest RA tools reduce adverse outcomes. Further to this, Hannah-Moffat et al (2009) argue that RAs are used by agencies primarily for legal and administrative purposes rather than reducing risk or protecting others. The focus lies with protecting themselves from lawsuits by creating a "paper trail" (p.396). This was echoed by Clancy et al (2014) who explored the perspectives of mental health professions regarding RA. They found that professionals described a narrative of fear of legal consequences when discussing RA.

Some research has also been conducted into barriers and facilitators of staff in relation to specific risk assessments. Levin et al. (2018) explored the barriers and facilitators of using the START risk assessment. They found that themes included the perceived complexity of the RA, the time-consuming

nature, and the perceived loss of professional discretion and control. Derblom et al. (2021) found that participants cited lack of time as a barrier to the completion of suicidal RA's.

Risk Assessments are considered to have value, but opinion on them varies, and given the resource required it would be helpful to understand the decision-making process behind the completion or non-completion of risk assessment. Qualitative studies have discussed 'staff perspectives' that risk formulation can aid clinical understanding of a service user (Belfrage., 2015; Hopton et al., 2018; Maltman & Turner., 2017)

When nurses feel the effects of a stretched system, for example, lack of resources, staff shortages and high caseloads, the value of RA may decrease (Ahmed et al., 2021). Aspects of RA have been described in other mental health settings as being valuable, such as formulation (Snowden et al., 2019), team discussions (Raven & Rix., 1999), aiding communication (Hopton et al., 2018) and team dynamics (Derblom et al., 2021). However, there can be a tendency for RA to feel mandated with clinicians discussing the exercise as 'box ticking' (Dickens et al., 2023).

In summary, the field of forensic services involves complex challenges that revolve around balancing legal constraints and addressing mental health concerns, ensuring public safety, and facilitating the reintegration of individuals into the community (Hinsby & Baker, 2004). Risk assessments play a pivotal role in identifying treatment needs (McSherry, 2004), preventing violence, and manging risks (McEwan et al., 2011). Evaluating future risk is a crucial aspect of forensic work (Doyle & Dolan, 2002). Additionally, there is an increasing interest in understanding the experiences of professionals working in forensic services with respect to these risk assessment tools (Nyman et al., 2020).

Given the complexities around the implementation of risk assessments, the present research study seeks to develop an understanding of perceived barriers and facilitators to the completion of SPJ tools within secure forensic services. Therefore, the research is question is: What are the barriers and facilitators to risk assessment in forensic services?

Findings from this study would support staff at a local level but also feed into the broader picture to offer insights that could be used to enhance the RA process.

Method

Qualitative study designs are typically used to explore and understand individuals' experiences, perceptions, sense-making, and meanings (Braun & Clarke, 2021). As a researcher it is crucial to approach the project with a framework of realism and epistemic humility (Kidd, 2015). This stance acknowledges reality and external objective truth, whilst recognising the limitations of human perception with the potential for subjective biases and interpretation. Analysis was conducted using a mix of inductive and deductive analysis. The inductive (or 'bottom-up') method allows researchers to develop new insights, theories, or frameworks grounded in data with no attempts to fit with previous theories (Braun & Clarke, 2021). The deductive (or 'top-down') approach involves starting with an awareness of relevant theories or conceptual framework and factoring these into the analysis (Braun & Clarke, 2021). The present research was primarily inductive as the focus was on developing an understanding of the use of risk assessments in this particular setting, independently of existing knowledge about risk assessment practice. The researcher was aware of existing literature and concepts, and could not completely eliminate the influence of these from the analysis. Reflective processes including discussion in supervision helped manage the impact of existing knowledge so that deductive aspects, although not primary, were factored into the process of analysis where appropriate.Careful consideration of the research aims, and the unique characteristics of the research question informed the decision to use individual interviews for this study. Individual interviews were selected to allow for a high level of focus on personal accounts and experiences which would be

difficult to access through group contexts (Braun & Clarke, 2021). Individual interviews can minimise the potential for group conformity or censoring compared to focus groups (Smithson, 2000).

Ethical Considerations

The study received ethics approval (REC reference: RG_21-167) through the Health Research Authority (HRA; Appendix 4). The Research & Development (R&D) Department associated with the trust gave permission to conduct the study in the three services. Participants were informed of their right to withdraw their data up to two weeks post-interview date through the consent and information sheet. All participants were given pseudo-names with a view to protecting their anonymity. Quotes used within this research have been discussed using the pseudo-names and not participants' names. Participants were allocated identification numbers and were allocated pseudo-names. These allocations allowed participants to share their experiences without fear of identification.

Participants

Seven participants were recruited to take part in the study. Professional's roles among the participants varied, from Consultant Psychiatrists to Occupational Therapist (OT) and Psychologists. One OT, three psychiatrists and three psychologists were interviewed for this research.

Participants were qualified health professionals working across secure forensic mental health services in a single NHS Trust across a large urban area. All professionals taking part in the study had an understanding of the risk assessment process and had experience completing SPJ's which was verified prior to the interview process. Participants were recruited across different functions of the service including male forensic inpatients, step-down community forensic, and female inpatients. Participants' occupations included Psychiatrists, Psychologists, and Occupational therapists. Participants' years of experience varied from three to fifteen with a mean of nine years. To safeguard the anonymity of participants and ensure the legitimacy of the study, additional details about their demographics are not

reported in this paper as the sample was drawn from a very particular group who might be able to identify each other.

Procedure

Participants were recruited through the service via an email sent out to the multi-disciplinary team introducing the project. Individuals were asked to express interest by email to the CI. They were then sent the Participant Information Sheet (Appendix 1). If they agreed to participate, individuals were asked to sign the Informed Consent Form (Appendix 2) and were invited to an interview via Microsoft Teams. Seven participants completed semi-structured interviews, lasting between 35-65 minutes. Interviews were scheduled around participants working schedule. As the interviews were conducted remotely participants had the choice of using their home or work devices. This research sought to understand the experiences and attitudes of participants towards the use of structured professional judgement risk assessment, and an interview schedule was used to guide each semi-structured interview..

Data Collection

Interviews were offered virtually to encourage participation with a view to reducing barriers to participation in the research. Remote interviews also allowed for access to multiple sites. Interviews were conducted using a semi-structured interview schedule (Appendix 3). This was developed by the researcher and refined based on feedback from staff working inpatient forensic services. Participants were given the opportunity to debrief after the interview.

Sample size

Braun & Clarke (2013) recommended 6-10 participants for smaller projects. Therefore, the sample size for this project of 7 participants was deemed sufficient. Multiple attempts were made to contact the nursing teams for participation. However, the hardship of recruiting nurses for this project may be linked to time pressures and constraints of busy ward environments. In terms of data collection, emphasis was placed on generating rich and meaningful data that contributes to a comprehensive

understanding of the research question posed. Semi-structured interviews allowed space for participants to talk in depth and at length about their experiences and were able to reflect on various aspects of risk assessment.

Data Analysis

Reflexive Thematic Analysis (RTA; Braun & Clarke, 2019) was used as the method of data analysis. RTA can be used to identify, analyse, and interpret patterns and themes within the data. RTA allows *"the researcher's reflective and thoughtful engagement with their data and their reflexive and thoughtful engagement with the analytic process"* (Braun & Clarke, 2019. p.594).

The current research used the 6 phases of RTA as outlined by Braun & Clarke (2021), see Table 4. In RTA, codes are used to identify and label interesting features of the data that relate to the research question. These codes can be words, phrases or sentences that capture the essence of a particular concept or idea. Once the codes have been generated, the researcher can identify patterns and connections between them, which can then be grouped into larger themes. These themes can assist in organising and interpreting the data, reflecting concepts and interpretation from the analysis (Braun & Clarke, 2021). These themes can be separated into semantic or latent. Semantic codes are identified through explicit meanings and represent a descriptive analysis of the data. Latent codes look to identify hidden meanings, or implicit assumptions that may inform the descriptive information presented (Byrne, 2022).

By using both semantic and latent codes, researchers can attain a more comprehensive grasp of the data and the nuances of participants' experiences and perspectives across datasets (Byrne, 2022).

Table 4. Braun & Clarke (2021): 6 phases to assist researchers with their analytic process and guide the use of thematic analysis.

6 Phases of Analytic Process for Thematic Analysis	Brief Description

Familiarisation with the Data	Becoming familiar with the dataset through reading and rereading. Making brief notes to identify appropriate information that is relevant to the research.
Coding	Codes can be coded as semantic or latent. Working succinctly to identify data that is linked to the research question. The researcher then applies analytically- meaningful descriptions known as 'code labels.'
Generating Initial Themes	The researcher begins to explore shared patterns of meaning within the dataset, moving towards clustering the core concepts with relation to the research question.
Developing and Reviewing Themes	The researcher assesses the 'fit' of provisional themes. Also, consider the relationship between themes and potentially a central organising concept.
Refining, Defining, and Naming Themes	Ensuring each theme is grounded in a strong core concept. Providing a brief synopsis of each theme.
Writing Up	Familiarising yourself with notes and utilising the reflexive journal. The aim of weaving together an analytic narrative with compelling and coherent discourse.

Thematic Analysis was conducted in phases to identify predominant themes and recurring patterns (Braun & Clarke, 2021), see Table 4. The first phase consists of the researcher performing open coding and line-by-line analysis of the qualitative data. In the second phase, the initial codes were reorganised, combined, and collapsed using conceptual similarities (Braun & Clarke, 2006). The third phase consisted of the researcher connecting with peer researchers to verify the overarching themes

and subordinate themes attached to these. The researcher then reflected on the themes and subordinate themes constructed.

Reflections on the Researcher's Positioning

This research is being completed as part of a doctorate training program with the researcher being a Trainee Clinical Psychologist. As a Trainee commencing further studies toward a doctoral degree, there may be assumptions made about power which may impact participants' experiences of the research process. From one perspective it may enhance the positive experience of formalised research as participants were made aware and signed consent forms which highlighted anonymity as part of the ethical considerations. On the other hand, participants may struggle to perceive the connection between research and their daily clinical practice, and commonly participants asked about how the findings of this research would be disseminated. Participants may have perceived that in the field of research they may not wield much power, however as clinicians they may experience a greater sense of knowledge and power.

An important reflection was the role of the researcher being both a researcher and a clinician. The two positions hold different drivers and values. For example, as a researcher, a primary driver is the ability to recruit participants, whilst a clinician's primary driver may be providing high quality care to service users. At times, these two roles can be competing, and it is helpful to reflect on the roles and subsequent drivers that may motivate one's behaviours or thoughts. The duality in roles was managed by utilising the guiding structure of the semi-structured interview questions, whilst leaving comments for additional comments at the end of the interview, using a reflective diary and discussing transcripts in supervision.

I made a conscious effort to remain neutral and not provide any personal views or opinions on the subject matter being discussed. Psychology plays a role in the assessment of risk and has predominantly constructed the tools discussed in this research. It was important to acknowledge the perceptions of psychology, the power that a psychologist may hold concerning risk assessment tools, and whether this would affect the information participants felt willing to share. With this in mind, each

interview began by focusing on the research credentials of myself and only if asked was my clinical experience disclosed.

I have previously worked in forensic settings and was able to identify with the participant's experiences. A theme constructed by the discussion raised by the participants focused on the concept of the 'Forensic world' being different from other worlds for example other mental health services or custody. Upon reflection, due to my knowledge and prior experience, they may have been accepted or invited into the discussion more readily than someone who may not have had their own experiences of the 'forensic world.'

Whilst I cannot eliminate their position and perspective, I can be aware of it and understand any effect my experiences have on my interpretation of the analysis. To facilitate self-reflection during the analysis a reflective journal was utilised. The reflective journal allowed for open discussion within research supervision. To balance any potential biases that I may display during the initial stage of coding and analysis, I engaged with qualitative peer support groups to focus on coding and the sense-making of the data gathered.

Results

In summary three themes were developed from the data, 'Forensic World,' 'Barriers to Risk Assessment' and 'Facilitative Elements of Risk Assessment.' The theme of 'Forensic World' had three subthemes; *High risk & serious consequences, Confidence in Risk Assessment and Intuitive Understanding of Risk.* The theme of 'Barriers to Risk Assessment' had four sub-themes; *Risk Assessment is divorced from practice, Difficult and challenging feelings when completing an Risk Assessment, Time-consuming and lengthy piece of work* and *External Powers or Pressures Impeding the Usefulness of Risk Assessment.* The final theme was 'Facilitative Elements of Risk Assessment,' which was made of four sub-themes: *Helpful structure of the tools, Making Sense of Risk Through Formulation, Multiple perspectives Enhancing the quality of Risk Assessment* and *Completed Risk*

Assessment tools as a sources of information. The table below demonstrates the theme and sub-themes developed from the data.

Table 5: describing themes and sub-themes developed from the data.

1. Forensic World	
1.1 High Risk & Serious Consequences	*5 participants contributed*
1.2 Confidence in Risk Assessment	*4 participants contributed*
1.3 Intuitive Understanding of Risk	*4 participants contributed*
2. Barriers to Risk Assessment	
2.1 Risk Assessment is divorced from practice	*6 participants contributed*
2.2 Difficult and challenging feelings when completing a Risk Assessment	*5 participants contributed*
2.3 Time-consuming and lengthy piece of work	*6 participants contributed*
2.4 External Powers or Pressures Impeding the Usefulness of Risk Assessment	*5 participants contributed*
3. Facilitative Elements of Risk Assessment	
3.1 Structure of the tools	*6 participants contributed*
3.2 Making Sense of Risk Through Formulation	*4 participants contributed*
3.3 Multiple perspectives Enhancing the quality of Risk Assessment	*5 participants contributed*
3.4 Completed Risk Assessment tools as a source of information	*4 participants contributed*

1. ***'Forensic World'***

Participants spoke about their experiences of working within a 'Forensic world'. This 'world' was described as being different from other mental health services, through the kind of risk levels held within forensic populations, the difference between working, and the confidence of forensic staff to work with risk. Whilst this could be viewed as the 'context' of the setting akin to Psychiatric Intensive Care Unit (PICU) or acute services, it was felt that participants were describing more than the context. They were describing a unique set of pressures, risk, procedures and perspectives that filtered the view of the working world like a lens through which they understood risk and associated factors, and that it was important for viewing the subsequent qualitative information.

The themes of Barriers to Risk Assessment and Facilitative Elements of Risk Assessment can be viewed through the lens of the 'Forensic World'. Whilst some of the subthemes discussed are not localised to secure services such as *Time-consuming and lengthy piece of work (2.3)*, the subthemes can be understood from the view of the 'Forensic World'.

With the theme of 'Forensic World') three subordinate themes were identified, *High Risk & Serious consequences (1.1)*, *Confidence in Risk Assessment (1.2)* and *Intuitive understanding of Risk (1.3)*.

One of the sub-themes of 'Forensic World' was the *High Risk & Serious Consequences (1.1)*. Participants discussed that due to the nature of forensic services, there are high-risk and high-profile cases involving issues of public safety. This was also used as a way to demonstrate the difference between the 'Forensic World' and other worlds.

Robert: "because we work in forensics and because the consequences or some of the index offences of the guys who we work with and the consequences if we don't think about risk assessment consequences for the individual patients, for members of the public and for the hospital because they're quite obvious. I think we need to give it the weight that it needs." (line 384-387)

Risk incidents can be serious and have negative consequences for professionals, service users and the general public. The subordinate theme of *High Risk & Serious Consequences (1.1)* was also compounded by the sense of responsibility.

Robert: "you have a sense of responsibility when you're doing it because it's serious information you're talking about and the process of risk assessment has significant consequences, doesn't it?" (line 102-104)

Another concept linked with the 'Forensic World' was *Confidence in Risk Assessment (1.2)* Participants discussed that having confidence in your ability to Risk Assessment can support informed decisions about risk. This sense of confidence may evolve gradually, perhaps through the accumulation of experience and exposure to the risk assessment process.

Robert: "we were talking about how over time you develop in confidence and competence"(line 391-392)

Nina: "Yeah. And so, I think that's what gives me the confidence. And yes, over the years you build up the experience as well, you know." (line 265-266)

Participants also discussed that the RA's could provide confidence by providing aspects of defensibility. This linked to the concept of 'Forensic World' as discourse highlighted that this may be different from other settings and that this was a factor for forensic working. Narratives included the RA providing protection should serious incidents occur and decisions about risk being defensible if they have been based on information from the RA.

Sue: "And it is also very protective when things go wrong. If you have an up- to-date HCR, that is 30 pages long and is in date and very thorough and you have a very tangible risk asset, we have done a risk assessment and in a very. The world could be very black and white when it comes to looking at our assessments, and that is a very black and white assessment umm which can be quite, umm defensively, quite a useful thing if something goes wrong." (line 179-184)

The concept of defensibility appears to link with the subtheme of *External Powers or Pressures Impeding Usefulness (2.4)* in the second Theme where it will be discussed further. There was a subordinate theme developed regarding the *Intuitive understanding of Risk (1.3)*. Participants spoke to an intuitive understanding or wisdom that staff draw upon when completing RA. The participants struggled to put this concept into words, but it was linked under the 'Forensic World' theme, as this was part of living in the Forensic World.

Robert: " but my gut instinct is telling me and that gut instinct will be based upon in part the HCR 20" (line 209-211)

Gary: "just seeing them and using your, you know, using your experience and what you know about cases and what you've seen to look at a situation broadly and come to a conclusion about what you should be doing next". (line 180-185)

Participants did touch on the development of this intuition and made links with experience when assessing risk. There was discussion that the number of years and exposure in the 'Forensic world' and

subsequently risk assessment can help develop this intuition. As participant's years of experience increased their tolerance to risk changed.

Sam: "How long now, 10, 11 years, something like that. So, like it, I feel like through that time of like accrued a bit of a kind of gut feeling about risk or you know when to panic when not to panic" (line 355-357)

Gary: "I mean I think we all do this when you first start out, you're much more worried about making the mistake of things going wrong and you're naturally are more cautious. And I think as you build experience and you've seen more stuff and you get a feel and it's very unscientific, just get a feel for it and you also get to you know, your team a bit better and you know your service, you know what was sort of thing we can do" (line 373-378)

In summary, the theme of 'Forensic World' provides a useful backdrop providing context for the other two themes. The 'Forensic World' describes the challenges, powers and consequences that differ from other 'worlds'.

2. *Barriers to Risk Assessment*

The second theme of *Barriers to Risk Assessment (2)* felt very clear. Participants were able to readily articulate barriers towards the completion of forensic RA. The barriers have been grouped into four sub-themes; *Risk Assessment is Divorced from Practice (2.1), Difficult and challenging feelings when completing an Risk Assessment (2.2), Time consuming and lengthy piece of work (2.3),* and *External Powers or Pressures Impeding the Usefulness of Risk Assessment (2.4).*

In *Risk Assessment is Divorced from Practice (2.1)*, participants discussed that they feel RA is not aligned with clinical practice. There appeared to be a gap between RA and clinical practice which may create a barrier to its completion.

Nina: "Most of us do it because we have to do it. And I'm not sure anyone ever goes back and reads it for the sake of knowing about the patient. you feel like you're spending a lot of time and effort on something that isn't adding to our clinical practice at the moment"(line 187-189)

Nina: "Yeah. I mean, it feels a bit disconnected" (line 382-384)

Robert: "so even though on a day-to-day basis, you're not thinking what does the HCR 20 say about giving this person access to sharps "-

Sam: "I guess I think some of the reason they perhaps don't prioritise the risk assessment is because they see it as quite detached from kind of the work that they're doing" (line 310-311)

Included in this sub-theme of disconnection from practice, participants used words such as a 'puzzle,' 'jigsaw,' or 'crossword'. This may imply that the process of Risk Assessment could be difficult to complete, something that is cryptic or an activity that does not have the feeling of an everyday, routine task.

Gary: "It's almost like doing a crossword puzzle or thing and you get to the end of it, and you've completed. Everyone heaves a sigh of relief. Thank goodness we've done the HCR 20 right back to the work"(line 170-171)

Gary: "you've got to follow the rules and you do this and you get these things. You do this and then it's finished, and you put it away". (line 495-496)

Robert: " we all have pieces of the jigsaw, don't we? None of us have the entire jigsaw and that's the whole principle guess behind the multidisciplinary working, isn't it? And behind MDT working for risk assessment" (line 129-131)

Joel: "I think maybe because the world of psychology to anybody that's not a psychologist feels really mystical, feels really ethereal, feels really like. Ohh, it's quite. I don't know"(line 164-166)

A sub-theme regarding *Difficult and challenging feelings when completing a Risk Assessment (2.2)* was developed within the overarching theme of *Barriers to Risk Assessment (2)*. This sub-theme focused on the emotional impact of assessing a patient's risk and the feeling associated with completing a Risk Assessment. This appeared to act as a barrier at times for those completing the Risk Assessment. The emotions of fear or anxiety were raised. The previous theme of high risk and serious consequences within the 'Forensic World', can also provide some context for the potentially difficult emotional responses linked to the completion of Risk Assessment's.

Joel: "Maybe feels a bit too. Not scary, but, unknown not known." (line 170)

Robert: "I tried to avoid it as much as possible" (line 200)

Joel: "Maybe there's a fear of repercussions" (line 183)

Sam: "It is intimidating" (line 154)

As part of the difficult and challenging emotions associated with performing risk assessments, a formidable sense of anxiety seemed to occur. The task might seem overwhelming due to an awareness of its significant magnitude. This subordinate theme veers away from the previously discussed concept of *confidence in risk assessments (1.2)*. 2.2 delves into the internal emotional journey clinicians face while conducting or finalising risk assessments. Conversely, the subordinate theme of 1.2 concentrates on the external facets of confidence regarding the execution of the risk assessment, its ultimate conclusion and experience in completing the task.

Participants expressed that the time needed to complete the RA can act as a barrier. This was captured in the sub-theme labelled as *Time consuming and lengthy piece of work (2.3).* Participants went on to describe that RA's can often be lengthy documents that require complex and detailed information to complete. Participants discussed in differing ways the consuming nature of the RA process, in part describing the energy placed into one individual's history or information.

Nina: "But equally, there's something quite overwhelming and… Thinking about one person for an hour or two hours, you know,." (line 383-384)

Joel: "In order to do a risk assessment properly, it's quite a big piece of work. It's, you know, it's not it's not something that you can just knock out in like an hour or an hour and a half. It's like quite an in-depth piece of work"(line 179-181)

Sue: "No, I think the biggest obstacle's time. ….It's a time-consuming job to do HCR20 properly." (line 359-360)

Gary: "it's trite to say, time,."(line 454)

Nina: "Time. And the resources."" (line 365)

Taylor: "This can take a long time to be honest, it's not something that happens quickly"(line 43-44)

In addition, Risk Assessment's also require time to read upon completion. If the document contains a patient's life history this can be a lengthy document. The quotes below illustrate that in addition to the clinician's time needed to gather and write the Risk Assessment, time also needs to be allocated to reading the Risk Assessment. However, participants felt that there was not enough time given to either of these components.

Sam: "Um. I think I guess the challenge with many of the risks assessments is that they are long and therefore time consuming and I think in the current climate where actually everyone is horrendously busy and stretched, I think it does mean that either people go ohh, my gosh, I haven't got time to do all of that or read all of that and or people do it, but it can be a bit of a rush job." (line 121-124)

Sue: "I think it's always pretty lengthy to read on call. There's something about the length of the document, isn't there? You know" (line 128-129)

Robert: "when I think of all the HCR-20's I've read, they just merge into one. Long, you know mass of words" (line 241-242)

Sue: "To keep up to date because it's a big job and six months goes very quickly, so it would be like with like the care plans, it's suddenly they're out of date and you swear blind you just did it last week. (line 375-277)

In the final sub-theme of *External Powers or Pressures Impeding the Usefulness of Risk Assessment (2.4)* participants discussed that pressures from external powers can act as a barrier to the completion of Risk Assessment. The external pressures were described as coming from managers, the NHS Trust and wider systems of mental health and commissioning. There are implications that too much of a focus on external mandates may present as a symptom of wider systemic issues such as under resourcing. Participants described that external powers or pressures can cause people to complete Risk Assessment hastily which can limit their quality and therefore the usefulness of the Risk Assessment can be affected.

Sue: "Umm, I think I it mandated, aren't they? We they are linked to KPI's. I think the flaw is that it's literally, are all the boxes filled in? and what's the date on it?. There's no, no review of quality, however. Certainly, I've used that to our advantage when that's not quite the right way of putting it. But when things are about the data and we haven't got time to do it properly, it's a case of well redate it and we know we need to be done properly. But we haven't got the time to do it properly for this deadline, but we'll meet the KPI, but then it's on our radar that we it's still one for us to properly. Review" (line 382-387)

Gary: "most of them will say, oh, it's because you know, my manager says that it's six months out of date. We've really gotta fill it in. And that's when, you know that you've got it wrong . That so I think that those are the barriers are kind of perception the way they're used and also the kind of the way that you know I had a big, I had a big sort of beef about this because a few years ago because actually they were always done annually and they got moved to six monthly for the reasons I said which is no one nobody can explain which makes it worse. And I was going to say why are we doing these every six months because that really does it just makes it into a chore it any possible value it had is just because you and then when you do it feels because in most time nothing's really changed" (line 463-471)

Participants described that Risk Assessment are updated in accordance with external pressures rather than updated due to clinical usefulness or a clinical change in risk. In these cases, Risk Assessment can feel less useful if they are not grounded in clinical need or practice, linking with discussion for the subtheme of *Risk Assessment as divorced from clinical practice (2.1).*

In summary, participants were clear in identifying barriers to risk assessment. They discussed that risk assessment's can be time consuming and can feel disconnected from clinical practice. Participants comments that external pressures or demands can dilute the usefulness of risk assessments. Again, there was reference to the notion that these barriers relate specifically to the 'Forensic World' environment, which was different to other areas of mental health work.

3. ***Facilitative Elements of Risk Assessmen***

The theme of *Facilitative Elements of Risk Assessment (3)* represents elements working together to affect the assessment's quality, outcomes and ultimately clinician's perceptions and experience using them.

Participants did not always explicitly discuss 'facilitators' but did identify useful aspects of the risk assessment's they completed. The subthemes discussed here can facilitate the completion of RA or can detract from its completion. It appears there are elements of RA that through their inherent value and increase the likelihood of it being completed, for example the structure tools can have.

Four sub-themes capture these practices, experiences and processes that mediate the completion of risk assessments. The first sub-theme was *Structure of the tool (3.1).* Participants described the utility of the structure of RA's, which can be helpful when completing or communicating risk.

Sam: "So, I suppose I've used HCR 20s for a very long time now, and I find the structure and the format very helpful" (line 111-112)

Nina: "The prompts make me think oh shit never thought of this before." (line 229-230)

Sue: "Everybody misses something and which, is why you've got the structured tools in the first place" (line 289-290)

Joel: "I think it is helpful to have something, that kind of orders and structures, the various different types of factors that might be related to risk. I think it's helpful to have them laid out in the way that they are, I think it's helpful"(line 238-240)

Participants also expressed the rigidity of the structure of RA's and that at times this was not helpful.

Robert: "But I guess there's no space outside those categories, are there? So, if you've identified a new 6th current risk factor. Where do you fit it On the HCR-20?" (line 318-139)

Another element of RA that can serve as a facilitator is formulation. This was conceptualised as

Making sense of risk through Formulation (3.2). Participants discussed the helpfulness of the

scenarios and formulation aspects of SPJ's rather than the actuarial risk item side of the assessment.

Robert: "But the there's risk and ohh, what do they call them? Scenarios. That's the word risk scenarios at the end and how you manage those, and you do you write the formulation and something like the 5 p's model is actually very helpful, so that's probably something quite practical that makes the process easier". (line 545-548)

Sue: "And we tend to have more of an interest in formulation. And that's very much bread and butter, isn't it? Formulating behaviour." (line 323-324)

Joel: "for me the crux of a risk assessment is the formulation and the assessment of risk at the end"(line 305-306)

Joel: "Umm formulation that makes sense and actually does sort of explain offending behaviour and does actually then point to treatment needs and then does kind of signpost potential interventions because, I suppose. It's hard to say"(line 411-413)

Participants also considered that the utility of the formulation presented in the RA was contingent on

aspects such as being grounded in the information presented, accurate and relevant information.

Joel: "yeah I think so I think the scenarios are helpful yeah I think if the scenarios make sense again like if the scenarios are grounded in what actually being presented I often I will often sometimes read a bit of A twist scenario and I'm like I'm not quite sure where you've got this as a twist" (line 231-232)

Joel: "it kind of has to make sense like if you've read the hcr 20 and then you read the scenarios and you think oh that doesn't quite gel, then you read the risk management plan and you're like OK but

what about you know what about the I don't know if somebody's got low cognitive functioning, if that's not being considered in, in how somebody needs to be managed in terms of being given information in terms of being I don't know whatever it might be but say if that that's not been included in the risk management plan then actually all you've not paid attention to that HCR 20 or any of the risk items properly have you."(line -340)

Sam: "actually yeah being able to see that there are some scenarios in there that are based on the formulation you can kind of follow it through and go actually. And see how that information has led to that formulation has then led to those scenarios being developed with some good ideas of what could help in those situations" (line 282-285)

The idea of multiple perspectives was discussed among the participants. The Multidisciplinary team

appears to be central to the conversations relating to RA. This was captured in the sub-theme *Multiple*

perspectives Enhancing the quality of Risk Assessment (3.3). The idea of differing professional

perspectives seemed important in being able to identify the risks and support the effective

management of these risks.

Robert: "So we are getting everybody's perspectives on it. And I guess everybody comes using different theories and models and expertise and all the rest of it, which is obviously the purpose of it" (line 81-82)

Sam: "When we as a team, if we're thinking about assessing risk, we would tend to use HCR20 risk assessment to think about risk of someone's violence, and we would aim to do that as a multidisciplinary team. And so, we try and come together and and look at that assessment" (line 40-41)

There appeared to be something useful in the notion of completing RA as a team. Building on the

concepts from previous themes the MDT working may alleviate the sense of responsibility or relieve

feelings of individual pressure.

Sue: "It can't be entirely written by committee. Umm but I think it's really important that there is a true MDT input and it's not just written by one person and or, and even I don't think circulating it for other people to read and comment works because nobody does actually read and comment on it and so or you end up with something with really literally red penned, which is soul destroying. And so, I think it's the most effective way of getting true multidisciplinary perspective on the different items umm in the least painful way if I'm honest." (line 92-97)

Robert: "I suppose the communication allows people to come together to discuss things, make them feel that their perspectives have been heard, that can risk or risks, concerns, anxieties have been shared and considered and mitigated." (line 276-278)

Whilst there were discussions about the usefulness of the Multidisciplinary team and collaboration for risk assessment there was also a narrative that Psychology 'held' the RA tools. As discussed above, the theme of *Facilitative Elements of Risk Assessment (3)* is multifaceted. It appears that when RA is most useful it is completed within the Multidisciplinary team with clear communication. This collaborative approach allows for a comprehensive evaluation of risk and enhances the accuracy and confidence of the assessment. On the other hand, when RA is completed in isolation and responsibility is given to one discipline without the involvement of other team members it may lead to power imbalances, overlooked risk evaluations, and limited perspectives. Participants were clear in identifying a role for psychology within the sphere of risk assessment.

Gary: "Everyone's job is to manage the patient, you know, and it doesn't make any sense. They will. The risk bit is well, it's the psychologist job and it doesn't make sense at all. But yeah, that's kind of. And I think the reasons about a partly historical. Partly pragmatic to do with attitudes and behaviours" (line 559-562)

Taylor: "Umm I think sometimes when completing the risk assessments, it can be seen as oh that's just psychology jobs or role, like psychology coming to get more information"(line 52-54)

Robert: " So I'm just almost thinking so it's almost like psychologists have their reputation is established because they've got that authority that's been proven over time. So, the job falls to them, to do the risk assessment." (line 498-500)

The final sub-theme *Completed RA tools as a source of information (3.4)* reflects participants' acknowledgement of the potential value of RA tools in providing vital information about risk factors. However, participants also emphasised certain aspects that enhance the perceived value and effectiveness of the RA in practice such as being concise, providing summaries, and facilitating sense-making of risk items.

Participants described a completed RA as a form of communication which can be helpful. This can be in relation to communicating and being on the end of that communication.

Nina: "largely as a form of communication because you know you might know someone and their risks, but you know, it's probably the best way to communicate things in in different ways to someone else" (line 28-31)

Sue: "if I was looking for an assessment of violence, I wouldn't look at the level 1. I'd look at the HCR. Ok. And yet they're still valuable in their own merits. If you're kind of depending on what decision you're making may be? And if I'm on call and don't know somebody at all, it's a bit of a one stop shop ". (line 117-120)

Participants discussed that RA's were more valuable if the information contained within was pulled into a meaningful formulation rather than a 'list' of events.

Sue: ""I think it's all useful if there's a formulation, because then it gives you sense that it's not. That some thought being put to it." (line 247-248)

Sam: "I think risk assessments that feel like less helpful often have quite generic information in them about kind of treatment". (line 285-286)

In conclusion, the theme of *Facilitative Elements of Risk Assessment (3)* encompassed four subthemes. In contrast to the *Barriers to Risk Assessment (2)* theme, aspects that facilitated the completion of RA were less clearly identified. This research suggests that there may be less consensus among participants about what supports effective risk assessment. Interestingly, the *Facilitative Elements of Risk Assessment (3)* and its subthemes may be crucial when addressing obstacles to RA and improvements to RA practices.

Discussion

This study aimed to explore the barriers and facilitators of forensic risk assessment. Three main themes were identified which included *Forensic World (1), Barriers to Risk Assessment (2), and Facilitative Elements of Risk Assessment (3).* Findings suggest that the experiences of professionals when using RA tools are multi-faceted and cannot be simply broken down into barriers or facilitators. Hence, the final theme is named *Facilitative Elements of Risk Assessment (3)* as when performed well or not the meaning of the factor for the completion of RA shifts.

1. *Forensic World*

Professionals working in Forensic Mental Health services navigate the challenge between maintaining public safety whilst providing appropriate care to their patients (Kelly et al., 2002; Nyman et al., 2020). Participants described the concept of *High Risk & Serious Consequences (1.1)* with the stakes perceived as high in the 'Forensic World' and the consequences may result in severe incidents compounded with scrutiny from stakeholders. These findings support Dickens et al (2023) respondents who discussed that risk assessment can feel like a litigation avoiding exercise.

2. *Barriers to Risk Assessment*

Participants emphasised that RA tools can be a *Time-consuming and lengthy piece of work (2.3)*. Participants discussed that in addition to difficulty with time to complete the RA's there is also a lack of time to read and digest the information in RA's that have been completed. Levin et al. (2018) also referred to the time-consuming nature of RA as a barrier to engagement with RA's, and this has also been recognised by Derblom et al (2021) in relation to suicidal RA with participants citing lack of time as a barrier.

3. *Facilitative Elements of Risk Assessment*

The subtheme of *Making Sense of Risk Through Formulation (3.2)* was discussed as a facilitative factor to RA completion. Whilst implementing a formulation-based approach to clinical risk management in the WARRN (Wales Applied Risk Research Network), Snowden et al (2019) found formulation enhanced clinical skills. Formulation was also found to increase confidence in safety-planning and communication (Snowden et al., 2019). Interestingly, previous recommendations included formulation-based approaches to risk management (Doyle and Dolan, 2002, 2007).

The present research discussed participant's experience that RA can be *Divorced from Clinical Practice (2.1)*. Previous research has also highlighted the necessity of joining up thinking between RA and clinical practice (Godin, 2004), and strengthening risk procedures into daily practice (Muir-Cochrane et al., 2011). However, as discussed in this research there are situations in which these entities do not connect (Gilbert et al., 2011; Woods, 2013). Dickens et al (2023) stated that to maintain

the effectiveness and relevance of RA, care needs to be taken to ensure that routine RA does not descend into a box-ticking exercise.

Strengths & Limitations of the Current Research

A significant limitation of the current study is that the nursing team is not represented in this research. Whilst attempts were made to pro-actively recruit participants from the nursing team there were none successfully engaged in the research. Mental Health Nurses make up an essential part of the forensic service, spending considerable time engaging with RA's. Hawley et al (2010) found that nurses spend more time completing Trust RA's than Psychiatrists. It is not clear what underpins this lack of representation in the present study. Perhaps the lack of involvement in the project reflects that nursing team members do not feel like they have a voice when it comes to RA. As discussed by participants, nurses may be feeling the effects of a stretched system with a lack of resources, staff shortages, and high caseloads (Ahmed et al., 2021). This may have been reflected in the idea of not being able to take the time to engage with this research. Therefore, we cannot be confident in whether the themes identified in the present research would be relevant for the nursing team. In addition to the nurse's perspective and experience of RA, there may have been a difference in the themes or general feel of the research with their involvement. A contrast in views amongst members of an MDT is not uncommon and can be attributed to various factors such as individual perspectives, professional backgrounds, training, and experiences. Provision of resource to understaffed teams may enhance the opportunity of meaningful engagement with risk assessment.

According to Yardley (2011), qualitative research should be guided by core principles of sensitivity to context, commitment and rigor, and transparency. The present research has demonstrated strength in considering the specific context in which the project was undertaken. The broader context of the current pressure on National Health Services and particular influence of forensic issues that may affect clinician's opinions. The present research has demonstrated a commitment to the research aims and executed research activities with rigor. Examples of this have been using a reflective diary, regular supervision and attending qualitative support group. There has been a continued transparency with

reporting the research process and communication of the findings. Dissemination of the findings have been presented as part of Quality Innovation meeting which included multiple professions and the psychology team meeting as part of sharing best practice. This was also in recognition of participants themes of the disconnect between RA and clinical practice.

Clinical Implications

Given that participants discussed feeling that RA's can be disconnected from their clinical practice, the experience of disconnection may raise questions about who RA is for. The evidence suggests that RA's have moved from predictive in nature to focusing more on risk management (McEwan et al., 2011), however, there was a sense from participants in the current study that current risk management plans are not necessarily embedded in clinical practice. Formulation may serve as a medium to link RA to practice plans, especially as this was raised positively by participants. For example, formulation can be used to inform early warnings signs and contribute to the development of safety planning (Meaden et al., 2022). Collaborating with service users may serve to bring RA closer to clinical practice, providing a clear space for services user voices to be heard (NICE guidelines, 2022).

Participants discussed the notion of external powers impacting on the clinical relevance of RA's. This can perpetuate the notion that RA is decoupled from clinical practice. RA can be transformed into a tick box exercise to please external powers rather than informing care planning. Participants often commented that their mere existence was enough to satisfy external agencies, which contrasts with the focus on quality discussed in the literature. Dickens et al (2023) advocated that to create meaningful RA's their value should be in how they aid risk management, the treatment of risk, and the construction of therapeutic relationships.

Staff training and Clinical Practice Development could increase the meaningfulness of RA by incorporating multiple perspectives and service user involvement. RA could then be used to inform care planning and management plans which would benefit service users and issues of public safety.

Participants' narratives of serious consequences and defensibility may impact their ability to engage with RA's. On a macro level, it reflects the distance between clinicians and external systems. In contrast, if organisations strived to create a culture including open communication, learning from mistakes, and continuous improvement they could promote effective RA and risk management strategies with a focus on enhancing safety and prevention of incidents, rather than a reactive approach. This could be applied clinically with supervision and reflexive practice to ensure RA feels safe and supported.

Participants agreed that the length of RA was a barrier to the usefulness of the document and for the successful completion of the tools. It may be helpful to consider the aspects of the document that communicate risk in a meaningful way for example a grab sheet with the formulation of risk for each individual or perhaps the scenarios attached to the Section 17 leave forms.

Understaffed teams often face limitations in terms of time and physical presence (Godin, 2004; Woods, 2013). Providing additional resources, such as more personnel or support staff can increase the team's capacity to perform thorough risk assessments or reflect on the concept of risk.

As participants commented on the quality of the risk assessment documents, it might be suitable to conduct a service evaluation or audit focusing on the quality of these risk assessments. An audit may be able to highlight areas of strength and good practice in additions to areas of improve. This could help clinicians establish stronger connections with their practice and foster a sense of integration with the assessment process.

Future research recommendations

Future research may explore nurses' experiences of forensic risk assessment. A qualitative piece of work could provide valuable insights into their unique perspectives, challenges, and strengths in relation to assessing risk. Understanding nurse's role in the RA process and how they contribute to overall patient and public safety can help improve RA practices.

Researchers may wish to examine qualitative links between RA and risk management. Qualitative research methods could be used to explore decision-making processes involved in developing risk

management plans based on RA. This could provide valuable insights into the ways that RA tools are utilised in clinical practice and potentially provide effective methods for conveying and mitigating risk.

Services user's experiences of forensic RA could be a point for further research. Research questions could consider the perspectives and experiences of service users when using RA such as how do service users perceive the purpose of and value of RA in their care? Do RA's influence service users well-being and engagement in treatment? Are there any cultural or other diversity factors that impact service users' experience or perspectives on RA? Exploring questions such as these could facilitate crucial insights and improve patient-centred care ensuring that RAs are conducted with collaboration which may strengthen their utility. Future research may also seek to explore whether the themes identified in this research are applicable to services outside of secure care.

Conclusions

Working in a forensic mental health setting was considered unique (the Forensic World), involving a delicate balance of providing care to service users whilst addressing potential risks to the public. The findings from this research indicate that clinicians' experiences of forensic RA are multi-dimensional, encompassing various aspects that can be influenced by working in this complex context. The nature of the patient population can increase the burden of responsibility on clinicians conducting thorough RA and making critical decisions. The current research suggests that some factors are seen to facilitate RA but under particular contexts. A positive and inclusive team environment can enhance the sharing of knowledge, perspectives, and best practices when conducting RA is ideal environment.

The findings of this research have implications for enhancing the support and professional development of clinicians in forensic mental health. Organisations and stakeholders may wish to consider strategies such as:

- Providing training and education to facilitate stronger links between evidence for risk items and RA tools.

- Promoting a culture of open communication and multidisciplinary collaboration fostering shared knowledge among the team.

- Implementing regular case discussions and supervision sessions to address the burden of responsibility and offer support to clinicians dealing with challenging cases.

- Encourage reflective practice, to provide space for clinicians to continuously learn, explore and improve their RA skills and relationship with risk based on their experiences.

- To condense documents concerning risk to aid communication. For example, providing grab sheets or formulations to staff with a view to conveying the most pertinent information in an effective time length (Lewis & Doyle, 2009)

- Provision of resource to understaffed teams may enhance the opportunity of meaningful engagement with risk assessment. Considerations to allocating protected time to staff when completing or reading risk assessments.

By recognising and addressing these multi-dimensional aspects of clinicians' experiences, forensic mental health settings can create a supportive environment that enhances risk assessment practices and promotes the well-being of both patients and professionals.

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3. PRESS RELEASE FOR LITERATURE REVIEW

Press Release: A systematic literature review exploring the predictive validity and Moderators to the

predictive efficacy Historical, Clinical and Risk Management-20 for inpatient aggression.

Background:

Aggression can take many forms, ranging from verbal aggression and threats to physical aggression

and violence (Renwick et al., 2016). Risk assessments such as the HCR-20 have been mandated for

use with forensic populations (Coid et al., 2011). The HCR-20 focuses on factors contributing to

violence risk across three domains: historical, clinical, and risk management (Douglas et al., 2013).

Predictive validity is used in research to assess how well a measure can anticipate future events based on the information it provides. O'Shea et al (2013) conducted a meta-analysis over 10 years ago, finding that the HCR-20 risk assessment showed adequate predictive validity for the HCR20 total scale, C5 and R5 sub-scales.

This research also evaluated whether particular demographic characteristics such as diagnosis, gender, or ethnicity influenced the tool's accuracy in predicting risk.

What did the review find?

The review included thirty-eight studies. The research review found that the historical subscale was not able to adequately predict aggressive behaviour. Results of the study indicate that the HCR-20 total, C5, and R5 were good at predicting aggressive behaviour. The C5 subscale was the only one to adequately predict the use of aggression with an object. R5 was not adequate at predicting verbal aggression, physical aggression to objects, physical aggression to others, or self-harm. HCR-20, C5 & R5 subscales were better at predicting aggressive outcomes in samples with higher rates of Schizophrenia diagnosis and males.

What does this mean?

Findings from this research suggest that the historical subscale should not be used to predict aggression risk. Therefore, clinically the historical items of the HCR-20 may not be helpful in assessing and managing the imminence of aggression within an inpatient stay. Whilst the HCR-20 can be a valuable tool, it may not always provide an accurate assessment of aggression with respect to demographic characteristics and the imminence of risk. In light of this, clinicians should remain vigilant and consider multiple factors when assessing and managing patient's aggressive behaviour. Implications for clinical practice and future research are discussed.

4. PRESS RELEASE FOR EMPIRICAL PAPER

Press release: Barriers and Facilitators to structured professional risk assessment in forensic services.

Background:

A crucial aspect of working in forensic services is producing risk assessments (RA). One such

assessment tool is structured professional judgement (SPJ). SPJ tools provide a systematic framework

for professionals to assess relevant information, based on research evidence and clinical judgement. In

the past, risk assessments have focused on predicting future risk behaviours, however, the approach

has evolved to incorporate a comprehensive risk management perspective (McEwan et al., 2011).

Interestingly, despite the importance of risk assessments in this area, there is limited research on how

professionals perceive the meaningfulness or value of such assessments. This study aimed to explore professionals' understanding of barriers and facilitators to the completion of SPJ tools within forensic services.

What did the study do?

The study explored forensic staff's experiences of engaging in structured professional judgment risk assessments. A total of 7 staff were interviewed, including occupational therapist, psychologists, and psychiatrists. The semi-structured interviews took place online, via a secure video link. Reflexive Thematic Analysis (RTA) was used to analyse the data.

What did the study find?

Three main themes were identified which included 'Forensic World,' 'Barriers to Risk Assessment,' and 'Facilitative Elements of Risk Assessment'.

The 'forensic world' theme reflects the perception that risk assessment in forensic settings can feel different from other services. Participants felt risk assessment was disconnected from everyday clinical practice. This can create a sense of separation between the assessment and practical aspects of patient care.

The 'Barriers to Risk Assessment' theme highlighted some challenges associated with risk assessment. Participants discussed that RA's can be time-consuming, requiring a significant amount of effort and resources. Additionally, it was discussed that RA can be used as part of defensible practice, suggesting that professionals might feel pressured to conduct assessments primarily to provide legal protection.

The final theme of 'Facilitative Elements of Risk Assessment' discussed the value of the RA when facilitating factors are present. Appropriate formulation and development of effective risk management plans were seen as ways to enhance the value of a risk assessment.

APPENDICES
1. Study materials
Participant information sheet

Birmingham and Solihull **NHS**
Mental Health NHS Foundation Trust

UNIVERSITY OF
BIRMINGHAM

PARTICIPANT INFORMATION SHEET

Study Title: Barriers and Facilitators to Risk Assessments within Forensic Services

Researchers: Rebecca Watts and Dr Andrew Fox

Invitation & Brief Summary:

We would like to invite you to participate in a study investigating staff's experience of using structured professional judgement risk assessments. Although much has been written about Risk Assessments, less has been written about the practicalities of achieving meaningful completion or how it feels to complete these risk assessments. This project aims to address this by interviewing staff who have experience using risk assessments in order to provide further literature and support for staff.

You have been asked to take part as you are a staff member of a forensic team. Your experience of assessing risk in a structured way is specific to your job role and it would be beneficial to gain insight into your relationship with risk assessments with the view to improving good practice for using risk assessments.

What's involved?

If you agree to take part in this study, it will involve completing a semi-structured interview which would take approximately an hour of your time. This will be audio recorded and then transcribed, following which any audio will be deleted. Any data collected will be pseudo-anonymised to avoid identification and will be held in University secure storage that will only be accessed by the researchers. Following your interview, the researcher will export and save your transcribed interview on an encrypted memory stick for analysis. Any data will be kept for a period of ten years, in line with the University of Birmingham policy, and destroyed thereafter. The data will be analysed and the main themes from all interviews will be generated. We may use quotes from your interview to illustrate these themes, but they will be attributed to a pseudonym.

What if I change my mind?

You can choose to opt-out of the study at any point before the data is analysed, without giving a reason. You can do this by emailing the lead researcher at
Once the data analysis has begun, we will be unable to remove your data, so please let us know **within two weeks of taking part** if you have changed your mind.

What if there is a problem or I want to raise concerns about the research?

If you have any concerns about the study please speak to the researchers in the first instance, contact details for the research team are available towards the end of this leaflet.

If you would prefer not to contact the researchers
involved in the project, you can contact Dr Chris Jones (Director of Research for the
Doctorate in Clinical Psychology at the University of Birmingham) via email at

If you remain unhappy with their response or wish to make a complaint you can contact the sponsor's Research Governance office via email: researchgovernance@contacts.bham.ac.uk

If you have any concerns about how your information is being used you can contact the University of Birmingham's Data Protection officer via email: dataprotection@contacts.bham.ac.uk

How we will use information about you?

We will need to use information from you for this research project. This information will include your:

- Initials
- Name
- Job title

People will use this information to do the research or to check your records to make sure that the research is being done properly. Those who do not need to know who you are will not be able to see your name or details. Your data will have a code number instead.

We will keep all information about you safe and secure.

Once we have finished the study, we will keep some of the data so we can check the results. We will write our reports in a way that no-one can work out that you took part in the study.

What are your choices about how your information is used?

You can stop being part of the study at any time, without giving a reason, but we will keep information about you that we already have.

We need to manage your records in specific ways for the research to be reliable. This means that we won't be able to let you see or change the data we hold about you.

Where can you find out more about how your information is used?

You can find out more about how we use your information at:

- www.hra.nhs.uk/information-about-patients/
- By asking one of the research team
- By sending an email to the University of Birmingham's Data Protection Officer: dataprotection@contacts.bham.ac.uk

What are the possible benefits of taking part?

While there are no direct benefits to taking part in this study, although the findings will help to increase knowledge of staff experience with risk assessments and could lead to further research in this area.

What are the possible disadvantages of taking part?

Time is a possible cost for taking part in this study. We will ask you to give an hour of your time. There is a risk of participant identification due to use of quotes. In order to minimise this risk all names will be replaced. If there are any concerns regarding professional practice or other areas of risk then the Trust policies will be followed such as raising this with the necessary parties however we would aim to discuss this with you first.

What will happen to the results of the research study?

The results of the study will be written up for the thesis for my Doctorate in Clinical Psychology. The results may be submitted to a peer-reviewed journal for publication and used in associated presentations and training.

Who has reviewed the study?
This study is sponsored and insured by the University of Birmingham and has been reviewed and approved by a Research Ethics Committee (REC).

What happens now?
Please consider the above information carefully and decide whether or not you would like to take part in the study. You may take as much time as you need to make this decision. If you decide you would like to take part in the study, please complete the consent form and email this back to the lead researcher.

Support
Further support can be accessed through BSMHT occupational health, the contact details for MIND can be provided and IAPT services referred to as Birmingham healthy minds.

If you would like to discuss any aspect of this research please contact:

Rebecca Watts
Email:

Dr Victoria Wilkes
Principal Forensic Psychologist
Reaside Clinic and Hillis Lodge
Birmingham & Solihull Mental Health Foundation Trust
Hollymoor Way
Northfield, Birmingham
B31 5HE

Dr Andrew Fox (Supervisor)
School of Psychology
University of Birmingham
B15 2TT

Participant consent form

Birmingham and Solihull **NHS**
Mental Health NHS Foundation Trust

UNIVERSITY OF
BIRMINGHAM

CONSENT FORM

Research site: ....
Participant Pseudonym: ……….............

Title of Project: Barriers and Facilitators to Risk Assessments with Forensic Services

Researcher: Rebecca Watts

Please initial each box

1. I confirm that I have understood the information sheet (Version ____, dated _____) for the above study. I have had the opportunity to consider the information, ask questions, and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time during the research interview, without giving any reason.

3. I understand that the research interview will be audio-recorded and transcribed verbatim.

4. I understand that following the research interview I will have a two-week period for reflection. I can contact the researcher within the two-week period to withdraw my interview entirely or in part, without giving any reason.

5. I understand that my data collected during the study may be looked at by individuals from the University of Birmingham, regulatory authorities, or from the NHS Trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my data.

6. I understand that direct quotes from my interview may be published in any write-up of the data, and used for training purposes, but that my name will not be attributed to any such quotes and my identity will not be revealed.

7. I agree to take part in the above study.

....
Name of participant   Date   Signature

....
Name of researcher   Date   Signature

One copy for the participant, one for the study file

Recruitment Email

Dear Colleagues,

I am Rebecca Watts, a trainee clinical psychologist at University of Birmingham. We are looking for participants to participate in a study investigating staff's experience of using structured professional judgement risk assessments. The project aims to address the practicalities of achieving meaningful completion and how it feels to complete these risk assessments.

If you agree to take part in this study, you will be invited to a semi-structured interview which will take approximately an hour of your time. Any data collected with be pseudo- anonymised to avoid identification.

If you are interested and would like further information please reply to

Best wishes
Rebecca Watts

Interview Guide

Semi- Structured Interview Schedule

- Warm up / context: Please can you tell me about your job? Prompts: Length of time in job? Daily responsibilities? What an average day is like?

- What do you understand by the term 'risk'?
- What do you understand by the term 'risk assessment'? [Clarify the terms – structured professional judgement tools, and what these include such as HCR20]
- Could you describe for me the process of assessing risk in your current role? Prompt: What is involved? How long do they take? Support from other staff? Different professions? Managers?
- What do you think about the format of the risk assessment you use? Prompt: How easy to use? How useful would you say the risk assessments are? How do you feel when completing these risk assessments?
- On a weekly basis how often would you refer to risk assessments completed by other colleagues? How confident do you feel in their risk assessments? What increases your confidence in using other people's risk assessments?
- How confident do you feel in your own decisions about risk? What increases your confidence in your own risk assessment?
- What do you think makes a difference to a good quality risk assessment?
- How important do you think that risk assessment is within your job role? Prompt: What makes risk assessment more or less important? What gets in the way of completing a risk assessment?
- Can you think of anything that makes it easier to complete risk assessments? Can you think of anything that makes it more difficult to complete risk assessments?
- How do you find the digital system that supports the risk assessment?

2. Ethics committee approval letter

Ymchwil Iechyd a Gofal Cymru
Health and Care Research Wales

NHS Health Research Authority

Miss Rebecca Watts
School of Psychology
University of Birmingham
B15 2TTN/A

Email: approvals@hra.nhs.uk
HCRW.approvals@wales.nhs.uk

10 October 2022

Dear Miss Watts

**HRA and Health and Care
Research Wales (HCRW)
Approval Letter**

Study title:	**Barriers and facilitators to structured professional judgment risk assessments within forensic mental health services**
IRAS project ID:	**307025**
Protocol number:	**version 1.0**
REC reference:	**22/HRA/3926**
Sponsor	**University of Birmingham**

I am pleased to confirm that **HRA and Health and Care Research Wales (HCRW) Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further relating to this application.

Please now work with participating NHS organisations to confirm capacity and capability, in line with the instructions provided in the "Information to support study set up" section towards the end of this letter.

How should I work with participating NHS/HSC organisations in Northern Ireland and Scotland?
HRA and HCRW Approval does not apply to NHS/HSC organisations within Northern Ireland and Scotland.

If you indicated in your IRAS form that you do have participating organisations in either of these devolved administrations, the final document set and the study wide governance report (including this letter) have been sent to the coordinating centre of each participating nation. The relevant national coordinating function/s will contact you as appropriate.

Please see IRAS Help for information on working with NHS/HSC organisations in Northern Ireland and Scotland.

How should I work with participating non-NHS organisations?
HRA and HCRW Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to obtain local agreement in accordance with their procedures.

What are my notification responsibilities during the study?

The *"After HRA Approval – guidance for sponsors and investigators"* document on the HRA website gives detailed guidance on reporting expectations for studies with HRA and HCRW Approval, including:
- Registration of Research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics and is updated in the light of changes in reporting expectations or procedures.

Who should I contact for further information?
Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is **307025**. Please quote this on all correspondence.

Yours sincerely,
Barbara Cuddon

Approvals Specialist

Email: approvals@hra.nhs.uk

Copy to: *Dr Birgit Whitman*

4. Analysis

Extract from transcript

	talking about football or areas other things accessing the community and kind of things. but do you do have much input or aware of things like structured professional judgments HCR20 or SAPROFs? How are you involved in those conversations or those particular risk assessments?	
75–81	P:Yeah. Yeah. So I I both at ▮▮▮▮▮▮▮ where I work now, it would it didn't have to be, but it tends to be the psychologist who would write the initial risk assessment, HCR 20 specifically or particularly. And then I guess that would be reviewed in a multidisciplinary team setting. So they would come with the information they would present the risk assessment and we would kind of discuss it. So we are getting everybody's perspectives on it. And I guess everybody comes using different theories and models and expertise and all the rest of it, which is obviously the purpose of it being. Multi-disciplinary, so that would typically be how it was done and and where I am at the minute. They also use the SAPROF though we don't. Interestingly the SAPROF is completed but it's never discussed in the multidisciplinary team, so both ▮▮▮▮▮▮▮ ▮▮▮▮ it was the HCR20 that was the key one that was always discussed.	Multidisciplinary Responsibility Training Differing Perspectives

Discussed and not discussed - communication |
	I: Mm-hmm.	
	P: and I don't know if that linked into KPI's and all of those sorts of things and wider business or structures and accountability.	Responsibility Structures – accountability
	P: Umm, but the SAPROF wasn't used, what's the word, consistently or regularly it is completed at ▮▮▮▮ , but we've never discussed it.	Regular/ repetition/ consistency
	I: have you ever had training on either?	
	P:I had training on the HCR-20. Yeah. So I think when I was at ▮▮▮▮▮▮▮ the psychologists wanted to kind of share. So understandably, the burden of writing HCR-20's because they are complicated involved documents. So they did some training on those. And I think I wrote two in the end. I tried to avoid it as much as possible. But I wrote a couple of those, but never any formalised training on the SAPROF. No.	Training Burdensome Responsibility – share Responsibility – serious information Complicated documents Avoidance Training in some but not others
	I: ok. How come you tried to avoid them?	
103	P: because they were a huge job so if you. Yeah, I mean, I just remember writing, was it one or two patients come into forensic services with soo many reports and background and information attached to them and trawling through all of that, making sense of it and writing it up. I think it took me about two or three days to write one of the hcr 20s which possibly also links. you have a sense of responsibility when you're doing it because it's serious information you're talking about and the process of risk assessment has significant consequences, doesn't it? so you need to do a good job but I just found that it took a lot of time and effort.	Semantic – large task-huge job Detail/ depth of information 'trawl' Large task time

Responsibility Responsibility – serious information Responsibility- significant consequences |

Table 6: Individual study effect sizes.

Study	N	Aggressive.outcome	HCR_20	HCR_20 SE	H10	H10 SE	C5	C5 SE	R5	R5 SE	% Caucasian	% Male	% Schizophrenia	% Schizoaffective	% Personality Disorder	Review
Arbach-Lucioni et al. (2011)	78	Any aggression	0.77	0.01	0.67	0.08	0.78	0.01	0.73	0.04		0.744	0.691	0.103	0.103	Original
Arbach-Lucioni et al. (2011)	78	Physical aggression	0.77	0.01	0.67	0.08	0.78	0.01	0.73	0.04		0.744	0.691	0.103	0.103	Original
Chu et al. (2011)	66	Any aggression	0.74	0.04	0.64	0.10	0.75	0.03	0.75	0.03	0.788	0.803	0.848		0.197	Original
Chu et al. (2011)	66	Physical aggression	0.79	0.02	0.69	0.08	0.75	0.03	0.77	0.01	0.788	0.803	0.848		0.197	Original
Chu et al. (2011)	66	Verbal aggression	0.70	0.07	0.62	0.11	0.75	0.03	0.75	0.03	0.788	0.803	0.848		0.197	Original
de Vogel and de Ruiter (2006)	127	Any aggression	0.84	0.10	0.78	0.01	0.81	0.04	0.80	0.03						Original
de Vogel and de Ruiter (2006)	127	Physical aggression	0.84	0.10	0.78	0.01	0.81	0.04	0.80	0.03						Original
Dernevik et al. (2002)	42	Any aggression	0.66	0.12	0.70	0.09	0.65	0.12	0.65	0.12			0.36		0.14	Original
Desmarais et al. (2012)	120	Any aggression	0.81	0.04	0.75	0.02	0.76	0.02	0.78	0.01	0.758	1	0.85			Original
Desmarais et al. (2012)	120	Physical aggression	0.78	0.01	0.70	0.05	0.76	0.01	0.77	0.00	0.758	1	0.85			Original
Desmarais et al. (2012)	120	Physical - objects	0.80	0.03	0.68	0.06	0.79	0.02	0.78	0.01	0.758	1	0.85			Original
Desmarais et al. (2012)	120	Physical - others	0.77	0.01	0.71	0.05	0.73	0.04	0.77	0.01	0.758	1	0.85			Original
Desmarais et al. (2012)	120	Verbal aggression	0.81	0.04	0.73	0.04	0.76	0.02	0.78	0.01	0.758	1	0.85			Original
Dolan and Fullam (2007)	136	Any aggression	0.74	0.03	0.68	0.06	0.75	0.02	0.70	0.05	0.801	1	0.764	0.103	0.044	Original
Dolan and Fullam (2007)	136	Physical aggression	0.74	0.03	0.68	0.06	0.75	0.02	0.70	0.05	0.801	1	0.764	0.103	0.044	Original
Dolan and Fullam (2007)	136	Physical - others	0.74	0.03	0.68	0.06	0.75	0.02	0.70	0.05	0.801	1	0.764	0.103	0.044	Original
Fagan et al. (2009)	81	Any aggression	0.82	0.08	0.77	0.00										Original
Fagan et al. (2009)	81	Self-harm	0.87	0.22	0.79	0.02										Original
Fujii et al. (2005) _Asian_americans	41	Any aggression	0.60	0.15	0.54	0.16	0.60	0.15	0.56	0.15		0.815	0.204	0.13		Original
Fujii et al. (2005)_Euro_americans	38	Any aggression	0.66	0.12	0.64	0.13	0.60	0.15	0.66	0.12		0.815	0.204	0.13		Original
Fujii et al. (2005)_tive hawiians	29	Any aggression	0.75	0.05	0.61	0.17	0.76	0.03	0.75	0.05		0.815	0.204	0.13		Original
Gray et al. (2003)	34	Any aggression			0.75	0.04	0.75	0.04			0.853	0.765	0.441		0.147	Original
Gray et al. (2003)	34	Physical aggression			0.80	0.06	0.79	0.03			0.853	0.765	0.441		0.147	Original
Gray et al. (2003)	34	Physical - objects			0.82	0.12	0.78	0.02			0.853	0.765	0.441		0.147	Original
Gray et al. (2003)	34	Physical - others			0.78	0.02	0.80	0.05			0.853	0.765	0.441		0.147	Original
Gray et al. (2003)	34	Verbal aggression			0.75	0.04	0.76	0.03			0.853	0.765	0.441		0.147	Original
Gray et al. (2003)	34	Self-harm			0.62	0.15	0.64	0.14			0.853	0.765	0.441		0.147	Original
Grevatt et al. (2004)	44	Any aggression			0.62	0.13	0.74	0.05				1	0.21		0.25	Original
Grevatt et al. (2004)	44	Physical aggression			0.59	0.14	0.65	0.12				1	0.21		0.25	Original
Grevatt et al. (2004)	44	Physical - objects			0.70	0.09	0.67	0.11				1	0.21		0.25	Original
Grevatt et al. (2004)	44	Physical - others			0.55	0.15	0.62	0.13				1	0.21		0.25	Original
Grevatt et al. (2004)	44	Verbal aggression			0.74	0.05	0.82	0.09				1	0.21		0.25	Original
Langton et al. (2009)	44	Any aggression	0.61	0.14	0.53	0.15	0.67	0.11	0.72	0.07		1				Original
Langton et al. (2009)	44	Physical aggression	0.61	0.14	0.53	0.15	0.67	0.11	0.72	0.07		1				Original
Langton et al. (2009)	44	Physical - objects	0.62	0.13	0.56	0.15	0.73	0.06	0.68	0.10		1				Original
Langton et al. (2009)	44	Physical - others	0.60	0.14	0.61	0.14	0.60	0.14	0.75	0.04		1				Original
Macpherson and Kevan (2004)	86	Any aggression	0.67	0.08	0.60	0.10	0.74	0.04	0.58	0.10		1	0.462		0.409	Original
Macpherson and Kevan (2004)	86	Physical aggression	0.56	0.11	0.50	0.11	0.68	0.08	0.50	0.11		1	0.462		0.409	Original
Macpherson and Kevan (2004)	86	Physical - others	0.56	0.11	0.50	0.11	0.68	0.08	0.50	0.11		1	0.462		0.409	Original
McDermott et al. (2008)	238	Any aggression	0.66	0.05	0.58	0.06	0.70	0.04	0.67	0.05	0.63	0.86	0.45	0.26	0.98	Original
McDermott et al. (2008)	238	Physical aggression	0.66	0.05	0.58	0.06	0.70	0.04	0.67	0.05	0.63	0.86	0.45	0.26	0.98	Original
McDermott et al. (2008)	238	Physical - others	0.66	0.05	0.58	0.06	0.70	0.04	0.67	0.05	0.63	0.86	0.45	0.26	0.98	Original
McKenzie and Curr (2005)	94	Any aggression			0.56	0.10	0.70	0.06				0.79				Original
McKenzie and Curr (2005)	94	Physical aggression			0.56	0.10	0.70	0.06				0.79				Original
McNiel et al. (2003)	100	Any aggression	0.67	0.07	0.58	0.10	0.78	0.01	0.60	0.09		0.47	0.26			Original
McNiel et al. (2003)	100	Physical aggression	0.67	0.07	0.58	0.10	0.78	0.01	0.60	0.09		0.47	0.26			Original
McNiel et al. (2003)	100	Physical - others	0.67	0.07	0.58	0.10	0.78	0.01	0.60	0.09		0.47	0.26			Original
Morrissey et al. (2007)	60	Any aggression	0.74	0.04							0.8	1	0.288		0.548	Original
Morrissey et al. (2007)	60	Physical aggression	0.70	0.07							0.8	1	0.288		0.548	Original
Morrissey et al. (2007)	60	Physical - others	0.70	0.07							0.8	1	0.288		0.548	Original
gi et al. (2009)	25	Any aggression			0.59	0.19					0.35	0.755	0.78	0.08		Original
gi et al. (2009)	25	Physical aggression			0.59	0.19					0.35	0.755	0.78	0.08		Original

			HCR_20		H10		C5		R5		%	%	%	%	%	
Study	N	Aggressive.outcome	HCR_20	SE	H10	SE	C5	SE	R5	SE	Caucasian	Male	Schizophrenia	Schizoaffective	Personality Disorder	Review
gi et al. (2009)	25	Physical - others			0.53	0.20					0.35	0.755	0.78	0.08		Original
gi et al. (2009)	25	Physical - objects			0.54	0.20					0.35	0.755	0.78	0.08		Original
Nicholls et al. (2004)	162	Any aggression			0.60	0.07	0.60	0.07				0.604	0.456	0.109	0.387	Original
Nicholls et al. (2004)	162	Physical aggression			0.58	0.08	0.56	0.08				0.604	0.456	0.109	0.387	Original
Nicholls et al. (2004)	106	Any aggression			0.71	0.05	0.72	0.04				0.604	0.456	0.109	0.387	Original
Nicholls et al. (2004)	106	Physical aggression			0.59	0.09	0.64	0.08				0.604	0.456	0.109	0.387	Original
Ogloff and Daffern (2006)	100	Any aggression					0.75	0.02			0.78	0.78	0.77			Original
Tengström et al. (2006)_schizophrenia	99	Any aggression	0.67	0.07			0.72	0.05				0.949	0.458		0.306	Original
Tengström et al. (2006)_schizophrenia	99	Physical aggression	0.67	0.07			0.72	0.05				0.949	0.458		0.306	Original
Tengström et al. (2006)_schizophrenia	99	Physical - others	0.67	0.07			0.72	0.05				0.949	0.458		0.306	Original
Tengström et al. (2006)_PD	66	Any aggression	0.70	0.07					0.67	0.09		0.949	0.458		0.306	Original
Tengström et al. (2006)_PD	66	Physical aggression	0.70	0.07					0.67	0.09		0.949	0.458		0.306	Original
Tengström et al. (2006)_PD	66	Physical - others	0.70	0.07					0.67	0.09		0.949	0.458		0.306	Original
Tengström et al. (2006)_Cognitively_impaired_sample	51	Any aggression	0.62	0.12			0.71	0.08				0.949	0.458		0.306	Original
Tengström et al. (2006)_Cognitively_impaired_sample	51	Physical aggression	0.62	0.12			0.71	0.08				0.949	0.458		0.306	Original
Tengström et al. (2006)_Cognitively_impaired_sample	51	Physical - others	0.62	0.12			0.71	0.08				0.949	0.458		0.306	Original
Lieser et al (2022)	42	Physical - others	0.70	0.08	0.71	0.08	0.74	0.07	0.73	0.07	0.6129	0	0.8065		67.74	Update
Lieser et al (2022)	42	Any aggression	0.71	0.08	0.58	0.10	0.57	0.11	0.52	0.11	0.6129	0	0.8065		67.74	Update
Arai et al. (2017)_3months	113	Physical aggression	0.84	0.03	0.58	0.06	0.90	0.02	0.85	0.03	0	85 % (108)	0.748		0.008	Update
Arai et al. (2017)_6months	108	Physical aggression	0.80	0.03	0.62	0.06	0.77	0.04	0.79	0.04	0	85 % (108)	0.748		0.008	Update
De Vries Robbe (2016)_assessment	185	Physical aggression	0.77	0.03	0.66	0.04	0.75	0.03	0.68	0.04		0.79	0.53		0.89	Update
De Vries Robbe (2016)_12months	185	Physical aggression	0.73	0.03	0.64	0.04	0.72	0.04	0.70	0.04		0.79	0.53		0.89	Update
Finch (2017)_1month	74	Physical - others	0.89	0.02	0.63	0.07	0.93	0.02	0.85	0.03	1	1	0.81	0.1	0.23	Update
Finch (2017)_3month	74	Physical - others	0.82	0.04	0.68	0.06	0.86	0.03	0.73	0.05	1	1	0.81	0.1	0.23	Update
Finch (2017)_6month	74	Physical - others	0.80	0.04	0.64	0.07	0.84	0.03	0.73	0.05	1	1	0.81	0.1	0.23	Update
Finch (2017)_1month	74	Verbal aggression	0.80	0.04	0.54	0.08	0.86	0.03	0.77	0.05	1	1	0.81	0.1	0.23	Update
Finch (2017)_3month	74	Verbal aggression	0.80	0.04	0.55	0.08	0.80	0.04	0.79	0.04	1	1	0.81	0.1	0.23	Update
Finch (2017)_6month	74	Verbal aggression	0.74	0.05	0.58	0.08	0.70	0.06	0.72	0.06	1	1	0.81	0.1	0.23	Update
Finch (2017)_1month	74	Any aggression	0.85	0.03	0.59	0.08	0.89	0.02	0.83	0.04	1	1	0.81	0.1	0.23	Update
Finch (2017)_3month	74	Any aggression	0.85	0.03	0.63	0.07	0.85	0.03	0.80	0.04	1	1	0.81	0.1	0.23	Update
Finch (2017)_6month	74	Any aggression	0.80	0.04	0.64	0.07	0.78	0.05	0.76	0.05	1	1	0.81	0.1	0.23	Update
Fitzgerald (2013)_Learning_Disability	25	Physical aggression	0.77	0.08	0.77	0.08	0.66	0.12	0.73	0.10	0.96	0.92	0.04		0.52	Update
Fitzgerald (2013)_control_group	45	Physical aggression	0.58	0.10	0.42	0.12	0.67	0.08	0.63	0.09	0.91	0.71	0.357		0.8	Update
Fitzgerald (2013)_Learning_Disability	25	Physical - others	0.79	0.08	0.70	0.10	0.64	0.12	0.81	0.07	0.96	0.92	0.04		0.52	Update
Fitzgerald (2013)_control_group	45	Physical - others	0.73	0.07	0.62	0.09	0.72	0.07	0.66	0.09	0.91	0.71	0.357		0.8	Update
Gunenc et al (2015)	613	Verbal aggression	0.68	0.02	0.55	0.03	0.69	0.02	0.65	0.02	0.46	0.68	0.55			Update
Ho et al (2015)_6months	220	Verbal aggression	0.67	0.04	0.67	0.04	0.68	0.04	0.52	0.05		0.75	0.636		0.054	Update
Ho et al (2015)_12months	220	Verbal aggression	0.57	0.05	0.57	0.05	0.59	0.04	0.46	0.05		0.75	0.636		0.054	Update
Ho et al (2015)_6months	220	Physical - objects	0.61	0.04	0.61	0.04	0.60	0.04	0.55	0.05		0.75	0.636		0.054	Update
Ho et al (2015)_12months	220	Physical - objects	0.56	0.05	0.54	0.05	0.69	0.04	0.41	0.06		0.75	0.636		0.054	Update
Ho et al (2015)_6months	220	Physical - others	0.71	0.03	0.70	0.03	0.68	0.04	0.57	0.05		0.75	0.636		0.054	Update
Ho et al (2015)_12months	220	Physical - others	0.69	0.04	0.64	0.04	0.72	0.03	0.59	0.04		0.75	0.636		0.054	Update
Hogan (2018)	18	Any aggression	0.83	0.08	0.66	0.14	0.91	0.04	0.60	0.16		0.842	0.684		0.054	Update
Kashiwagi (2018)_6months	95	Any aggression	0.79	0.04								0.874	0.737		0.105	Update
Kashiwagi (2018)_12months	95	Any aggression	0.67	0.06								0.874	0.737		0.105	Update
Neil (2020)	75	Any aggression	0.64	0.07	0.42	0.10	0.71	0.06	0.69	0.06		<>	0.827		0.04	Update
Neil (2020)	75	Physical aggression	0.59	0.08	0.45	0.09	0.66	0.07	0.64	0.07		<>	0.827		0.04	Update
Neil (2020)	75	Verbal aggression	0.63	0.07	0.38	0.10	0.75	0.05	0.65	0.07		<>	0.827		0.04	Update
O'Shea (2015)_Learning_Disability	109	Any aggression	0.67	0.05	0.55	0.07	0.66	0.05	0.69	0.05	0.45	0.642	0.193		0.284	Update
O'Shea (2015)_control_group	504	Any aggression	0.67	0.02	0.52	0.03	0.74	0.02	0.65	0.03	0.466	0.69	0.437		0.143	Update
O'Shea (2015)_Learning_Disability	109	Physical - others	0.61	0.06	0.48	0.07	0.58	0.06	0.66	0.05	0.45	0.642	0.193		0.284	Update
O'Shea (2015)_control_group	505	Physical - others	0.61	0.03	0.44	0.04	0.66	0.02	0.65	0.03	0.466	0.69	0.437		0.143	Update
O'Shea, Picchioni et al(2014)_males	349	Any aggression	0.70	0.03	0.53	0.04	0.77	0.02	0.65	0.03	0.465	1	0.438		0.143	Update
O'Shea, Picchioni et al(2014)_males	349	Physical aggression	0.62	0.03	0.45	0.04	0.70	0.03	0.62	0.03	0.465	1	0.438		0.143	Update
O'Shea, Picchioni et al(2014)_females	156	Any aggression	0.78	0.03	0.59	0.05	0.76	0.03	0.76	0.03	0.465	0	0.438		0.143	Update
O'Shea, Picchioni et al(2014)_females	156	Physical aggression	0.70	0.04	0.51	0.06	0.67	0.04	0.74	0.04	0.465	0	0.438		0.143	Update
O'Shea, Picchioni et al(2014)	504	Self-harm	0.64	0.03	0.58	0.03	0.54	0.03	0.64	0.03	0.466	0.69	0.437		0.143	Update
Sanchez- SanSegundo et al (2018)	51	Any aggression	0.80	0.05	0.78	0.06	0.75	0.06	0.71	0.07		<>	0.636	0.137		Update

Study	N	Aggressive.outcome	HCR_20	SE	H10	SE	C5	SE	R5	SE	% Caucasian	% Male	% Schizophrenia	% Schizoaffective	% Personality Disorder	Review
Sanchez- SanSegundo et al (2018)	51	Physical aggression	0.79	0.05	0.78	0.06	0.76	0.06	0.71	0.07		<>	0.636	0.137		Update
Shepherd (2018)	136	Any aggression	0.68	0.05	0.66	0.05	0.57	0.06	0.67	0.05		0.7206	0.72			Update
Shepherd (2018)	136	Physical aggression	0.64	0.05	0.62	0.05	0.56	0.06	0.64	0.05		0.7206	0.72			Update
Smith (2020)	167	Any aggression	0.69	0.04	0.51	0.06	0.72	0.04	0.64	0.05		1				Update
Smith (2020)	167	Physical aggression	0.70	0.04	0.50	0.06	0.77	0.03	0.67	0.04		1				Update
Strand (2019)_any_time	76	Physical aggression	0.81	0.04								0				Update
Strand (2019)_just_historical	91	Physical aggression			0.76	0.04						0				Update
Strand (2019)_clinical	94	Physical aggression					0.69	0.05				0				Update
Strand (2019)_riskmagement	79	Physical aggression							0.68	0.06		0				Update
Strub (2014)_offenders	56	Any aggression	0.70	0.07	0.65	0.08	0.72	0.06	0.68	0.07		<>				Update
Strub (2014)_psychiatric_patients	50	Any aggression	0.88	0.03	0.90	0.03	0.75	0.06	0.72	0.07		<>				Update
Strub (2014)_offenders_6_8_months	56	Any aggression	0.79	0.05	0.74	0.06	0.79	0.05	0.74	0.06		<>				Update
Strub (2014)_psychiatric_patients_6_8_months	50	Any aggression	0.70	0.07	0.67	0.08	0.63	0.09	0.72	0.07		<>				Update
Vojt (2013)	109	Any aggression	0.50	0.07	0.54	0.07	0.55	0.07	0.51	0.07		1	0.851		0.073	Update
Vojt (2013)	109	Physical aggression	0.86	0.03	0.68	0.05	0.79	0.04	0.75	0.04		1	0.851		0.073	Update