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Risk Assessment and Management of Violence in Patients with Mental Disorders: A Review

Akihiro Shiina*

Department of Psychiatry, Chiba University Hospital, Chiba, Japan

Abstract

The assessment and management of the risk for violence in the patients with mental disorders have been extensively debated. Some mental disorders, as well as specific genetic factors, have been shown to modify the risk of violence. Skills for accurate assessment and management of risks are essential for forensic psychiatrists and other clinicians involved in the treatment of mental disorders, to prevent undesirable outcomes. Historically, risk assessment was conducted on the basis of the evaluators' clinical impressions. This unstructured clinical judgment was subsequently replaced by actuarial risk assessment, or structured clinical judgment. Despite the recent development of risk assessment strategies, there is an inevitable risk of incorrect estimation of future violence. Managing the risk of violence is strongly connected to risk assessment. Four methods are predominantly used in risk management: monitoring, supervision, treatment, and victim protection. A recent trend in this field is considering protective factors, and some useful tools focused on this have been introduced in clinical setting. In future, biological factors may be incorporated into risk assessment and evaluation of treatment responses.

Keywords: Forensic mental health; Risk assessment; Risk management; PCL-R; HCR-20; SAPROF

Introduction

The assessment and management of risk for violence presents significant challenges for forensic mental health practitioners. Mentally Disordered Offenders (MDOs) are subjects of forensic psychiatry, and psychiatric nurses are therefore exposed to a high risk of victimization [1]. In addition, accurate estimation of risk and effective interventions for the risk of violence, are necessary to advance toward the deinstitutionalization of patients with mental disorders [2]. Despite some opinions opposing the involvement of

*Corresponding author: Akihiro Shiina, Department of Psychiatry, Chiba University Hospital, Chiba, Japan, Tel: +81 432227171; Fax: +81 432262297; E-mail: shiina-akihiro@faculty.chiba-u.jp

psychiatrists in violence risk management, mental health professionals are expected to evaluate the risk of violence and estimate the necessity of detention for patients with mental disorders. Ultimately, mental health professionals need to develop skills to evaluate and manage the risk of premature mortality in the patients and others in the patients' environment through risk assessment [3].

Risk assessment is the process of using risk factors to estimate the likelihood of an outcome occurring in a specific population [4,5]. Risk management refers to the process of ameliorating a patient's propensity for violence to reduce the risk of undesirable outcomes [6,7]. The present paper discusses the biological basis of violence, the relationship between mental illnesses and violence, the history of risk assessment, and introduces some modern procedures. Finally, I outline the need for risk management and discuss the future direction of risk management.

Biological Basis of Violence

There are several biological factors relevant to the emergence of violence. The amygdala is considered to play a central role in impulsiveness, alongside the hypothalamus and prefrontal cortex. Stimulation of the anterior, lateral, ventromedial, and dorsomedial nuclei in the hypothalamus causes aggression. The amygdala deregulates fear and anxiety, also resulting in aggression. Prefrontal cortex dysfunction can lead to disinhibition of reckless behavior [8].

Some neuro chemical transmitters also regulate aggressiveness. Low serotonin and gamma-aminobutyric acid are correlated with impulsivity. In addition, high concentrations of nor-adrenaline, acetylcholine, and dopamine have been estimated to cause aggression [9].

Genetic factors have also been under focus in relation to aggressive behavior [10]. Brunner reported on a Dutch family whose members were affected be intellectual disabilities and impulsive aggression, a condition subsequently named Brunner syndrome [11]. Since then, variations of the Monoamine Oxidase A (MAOA) coding gene have been examined. A recent meta-analysis showed that reduced MAOA activity is linked to aggressive behavior [12]. The gene environment relationship in MAOA activity has become a key discussion topic in predicting future violence [13].

Unfortunately, there is scarce evidence of utilizing these biological factors being used in risk assessment and management, despite recent advances in the knowledge base. It remains unrealistic to rely on biological markers to predict future violence in clinical settings, an attitude that contrasts with other areas of medical science such as the recurrence of breast cancer [14].

Mental Disorders and Violence

The relationship between certain mental disorders and violence has been debated for several decades. In the past, the existence of such a relationship was doubted. Monahan reviewed several early studies on risk assessment, and initially concluded that the best predictors of violence among MDOs were the same demographic factors as for non-disordered offenders, and psychological factors such as personality traits had little value in predicting violence [15]. However,

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his finding was later challenged by studies demonstrating links between specific clinical diagnoses and violence [16]. The MacArthur Violence Risk Assessment Study [17], one of the broadest and best structured studies on this topic, highlighted the significance of clinical factors such as substance misuse and psychopathy. This result was supported by a later meta-analysis [18]. Currently, psychotic symptoms are widely considered to be correlated with an increased likelihood of violence [18,19], even considering differences in definition [20]. The meta-analysis conducted by Douglas et al., concluded that psychosis increased the risk of violence by 49-68% [21]. Recent studies have focused on mediators between mental disorders and violence, such as anger [22] and impulsiveness [23].

Development of Risk Assessment Strategies

Historically, psychiatrists and psychologists engaged in risk assessment based on their own knowledge and clinical impressions. This type of engagement, or unstructured clinical judgment, was dominant until the 1970s. However, systematic evaluation of the validity of unstructured clinical judgment found that there was no difference between offenders classified by professionals as dangerous to others and those not classified as having an actual likelihood of offending [24]. Several other studies also found that unstructured clinical judgment was not effective in predicting the risk of recidivism [25]. It is currently accepted that we should not rely on clinical impressions to evaluate the risk of violence in MDOs [26]. In particular, adoption of such methods may lead to an over estimation of risk, resulting in an increase in unnecessary detentions [6].

Actuarial tools for risk assessment were introduced to compensate for the disadvantages of unstructured clinical judgment. These methods focused on identifying several variables associated with violence. Actuarial risk assessment excluded arbitrary impressions of evaluators, instead, aiming to mathematically calculate the likelihood of future violence from detailed objective information about the subjects [27]. An actuarial approach provides a systematic and concrete procedure of risk assessment. It also prevents any bias from the evaluator. Many studies have noted that this approach is superior to unstructured clinical judgment in terms of accurate estimation of risks [28-31].

The Psychopathy Check List and its Revised version (PCL-R) [32] is a successful actuarial violence risk assessment tool, although its aim is not to predict future violence of the subject [33]. The PCL-R is the golden standard to evaluate psychopathic traits of a subject. Its accuracy for predicting future violence of MDOs highlights the relationship between psychopathy and violent behavior.

However, there are some disadvantages in adopting actuarial risk assessment tools in a clinical setting. First, these tools rely heavily on static factors and neglect factors amendable to treatment. Second, this method cannot detect change in the risk over time. Third, it is difficult to use actuarial risk assessment tools to evaluate the treatment responsiveness of forensic patients. Finally, as actuarial methods depend on statistical evidence, they are not suitable for use in cases with an extraordinary character, or "outlier" cases, despite such cases often having disastrous outcomes if overlooked.

These structural problems in actuarial risk assessment made it necessary to develop a more practical and responsive method [5]. One solution was Structured Professional Judgment (SPJ), a method of risk assessment that is currently dominant. This method emphasizes the importance of both static and dynamic factors of the subjects,

meaning SPJ has overcome the shortcomings of both unstructured clinical judgment and actuarial risk assessment. In addition, SPJ allows evaluators to consider case specific factors, and to modify the overall level of risk. This format allows evaluators to recognize how the assessment informs an intervention to reduce the risk of violence [34]. SPJ may therefore be superior to actuarial risk assessment in terms of clinical feasibility. Evidence also suggests that SPJ has almost the same accuracy in risk prediction as actuarial methods [30,35].

HCR-20

Several risk assessment tools have been developed based on the SPJ concept, according to specific conditions. Among these, a frequently used tool is the Historical Clinical Risk management-20 (HCR-20). The HCR-20 has been broadly applied in conditional release and other MDO contexts, and has been shown to have good reliability and validity in terms of risk prediction [36].

The HCR-20 is an example of SPJ used for the purpose of violence risk assessment and management, and was originally developed in 1995 [37]. In 2013, version 3 (HCR-20V3) was released [38], containing 20 risk factor items across three scales. The Historical (H) scale has 10 items focusing on the past status and behaviors of the subject, the Clinical (C) scale contains five items dealing with the subject's recent emotional, cognitive, and behavioral functioning, and the Risk management (R) scale pertains to future functioning of the subject. The R scale can be rated with consideration of the subject's living circumstance (institution or community). The multi-disciplinary clinical team scores each item as "no", "possible or partial", or "yes" according to the intensity of each factor. A summary risk of low, moderate, or high can then be determined. In the HCR-20V3, additional options such as risk for serious physical violence and risk for imminent violence have been added.

The evaluators have to construct potential risk scenarios for the subject, in which the likelihood, severity, duration, and potential victims of each incident are identified. The purpose of scenario planning is to estimate the future of the subject. This allows risk reduction and management through identifying case specific warning signs and event triggers, and assists the decision making of practitioners in terms of how the subject should be treated (e.g., unescorted leave or conditional discharge). Scenario planning has a well-established history in decision making strategy [39,40], but was first introduced in this field in 2003 with the development of risk for sexual violence protocol [36,41].

Limitation of the SPJ

Current, SPJ is the most sophisticated and widely used methods for risk assessment. However, the effectiveness of SPJ in violence risk assessment is still controversial. It is noteworthy that some studies warn of limitations in its use.

Fazel et al., conducted a meta-analysis to estimate the predictability of risk assessment tools [42]. They reviewed a total of 68 studies in which several actuarial instruments and structured clinical judgment tools were examined, and evaluated the predictive validity. They calculated that the number needed to detain (defined as the number of people judged at risk who would need to be detained to prevent one subsequent violent incident [43,44]) was two, and the number safely discharged (the number of participants judged low risk who could be discharged into the community before a single act of violence occurs) was ten. They concluded that these instruments

should not be relied on for the purpose of risk assessment, because current tools can only classify each case into groups by the level of risk.

Large et al., attempted to calculate the proportion of risk categorization using a known rate of adverse events in schizophrenic patients [45]. Their result suggested a serious limitation of risk categorization. A considerable number of patients had therefore been incorrectly classified as being at high risk of violence.

Ryan et al., investigated violence prediction instruments derived from the MacArthur study [46-49] to evaluate their value in risk categorization. They found that the majority of patients categorized as high-risk were not later involved in any harmful behaviors [2]. This indicates that clinical decision making on the basis of risk assessment can lead to misdistribution of medical and social resources.

In contrast, some meta-analyses have suggested that instruments designed to assess risk for specific outcomes have better predictive values than those designed to assess risk for general outcomes [35,42]. These findings coincide with the development of several risk assessment tools in specific fields, such as Sexual Violence Risk-20 (SVR-20) for sexual offending [50] and Structured Assessment of Violence Risk in Youth (SAVRY) for youth offenders [51]. SPJ tools have many components; clinicians should be aware of these variations and make a decision as to which tools can be adopted effectively to evaluate and manage risk in each patient.

There is also some debate regarding the type of models used in risk assessment. Previous research has relied on a regression model, only considering the association between variables that potentially influence the likelihood of future violence. As causal analysis for simulating potential interventions may be required, particularly for adequate risk management, adopting a Bayesian network model [52] has been recently attempted [53].

Management of the Risk

Predicting the risk of violence is not, in itself, an intervention. However, risk management is closely connected with risk assessment. The idea that risk assessment is completely independent of risk management is a myth that emerged during the strategy's early development [54]. In recent years, risk assessment strategies were linked with research evidence in clinical practice, and risk assessment tools began to incorporate aspects of risk management. Risk assessment was redefined as "the process of identifying and studying hazards to reduce the probability of their occurrence [55]". This indicates a shift from prediction to the prevention of offending [56,57].

Structured risk assessment can guide us in alleviating the actual risk of violence to others through a risk management strategy [58], as mentioned in the discussion of the HCR-20. Another myth about risk assessment and management is that they are exclusively the responsibility of forensic psychiatrists. On the contrary, clinicians, including general psychiatrists, are involved in risk assessment and management regardless of whether they want to be or not [59].

The concept of risk management covers a range of approaches [60]. There are four primary methods of risk management: monitoring, supervision, treatment, and victim protection. Monitoring involves continuous observation of the subject to identify, as soon as possible, the triggers that could potentially lead to an incident [61,62]. Supervision includes detention, probation, and other restrictive orders by authorities [63]. Treatment can directly reduce future risk

and includes medication for major mental illnesses [64] and psychotherapy to enable the subject to cope effectively with stress [65,66], and offering social resources for a stabilized lifestyle [67]. Victim protection includes direct and passive guarding of potential victims, such as ex-partners, neighbors, and those previously subjected to the offender's delusions. To combine these solutions for each unique case, functional collaboration among multiple facets of organization, including police, probation offices, court, medical practitioners, and social work staff, is necessary. Multiagency public protection arrangements in England and Wales are an example of trans-organizational team work for risk management [68].

As mental health clinicians are at risk of being physically attacked [69,70], it is crucial for medical practitioners, especially in emergency departments [71], to have the skills to deal with imminent risk of violence. Developing variety of intervention skills including verbal communication, physical control, medication strategies, and restraint techniques is important to allow flexibility in responding to an agitated patient [72]. Designing best practices for training in effectively handling at risk patients in specific facilities or local situations is desirable [73].

Recent Development: Protective Factors

A disadvantage of the SPJ approach is the lack of consideration of protective factors. Rogers suggested that conventional risk assessment measurements were imbalanced, being inclined to risk factors and disregarding protective factors, and cautioned about creating stigmatization and unnecessary detention [74]. Since the 2000s, there has been a trend to focus on the personal strengths that will aid each patient's reintegration into the society, such as the Good Lives Model [75] and desistence [76]. Recently, SPJ tools have been developed such as Structured Assessment of PROtective Factors for violence risk (SAPROF) [77] and Short Term Assessment of Risk and Treatability (START) [78]. These new tools incorporate protective factors into risk assessment. They have been shown to have benefits in evaluating both risk and protective factors of violence, although their predictive value for adverse incidents is not superior to other SPJ tools [79].

The concept of considering some protective factors in risk assessment is consistent with clinical practice in the field of rehabilitation. It may also have the benefit of motivating offenders to participate in risk management. Furthermore, it reminds us that risk needs to be managed rather than merely predicted.

Conclusion

Risk assessment and management are essential tasks for forensic psychiatrists and other relevant professionals. General psychiatric practitioners can often be involved in this challenging work, as inevitably. Thus, precise and well-balanced risk assessment methods are needed. In future, it is expected that some biological factors may be integrated into risk assessment procedures, following the development of this knowledge base. For example, a reduced risk after treatment could be visualized with functional brain imaging, similar to an attempt to evaluate cognitive behavioral therapy using measurements of brain metabolism [80]. However, we should always be aware that risk assessment has substantive uncertainty and that risk management has historically been biased to the deprivation of human rights. We should never forget that risk assessment and management are tools for the benefit of patients as well as society.

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