Asian Journal of Psychiatry 96 (2024) 104044

Contents lists available at ScienceDirect

Asian Journal of Psychiatry

journal homepage: www.elsevier.com/locate/ajp

Short communication

Comparison of V-RISK-Y and V-RISK-10 for risk of violence: A one-year study from a psychiatric emergency department for adolescents

John Olav Roaldset [a,*], Øyvind Lockertsen [a,c], Carina Chudiakow Gustavsen [b], Torbjørn Landheim [b], Stål Bjørkly [a,d]

[a] Regional Centre of Research and Education in Forensic Psychiatry, Division of Mental Health and Addiction, Oslo University Hospital, Oslo, Norway
[b] Department of Child and Adolescent Psychiatry, Division of Mental Health and Addiction, Oslo University Hospital, Oslo, Norway
[c] Department of Nursing and Health Promotion, Oslo Metropolitan University, Oslo, Norway
[d] Molde University College, Molde, Norway

ARTICLE INFO

Keywords:
Risk screening
Threats
Risk assessment

ABSTRACT

There has been a lack of short and simple screening instruments to assess the risk of violence in youth. Many acute youth departments have used the V-RISK-10, a risk screener for adults. V-RISK-Y is a risk screener based on the V-RISK-10 and adapted to youths. Our aim was to compare the predictive validity between V-RISK-Y and VRISK-10 in an emergency psychiatric adolescent ward. Target population were all 92 patients admitted within one year, and study population consisted of 49 (53 %) patients who had completed data. V-RISK-10 and V-RISK-Y were scored at admission and compared with recorded episodes of violence during the hospitalization. V-RISK-Y showed higher AUC values for recorded violence and some of the individual items also showed better results. Most differences were not significant, but results may still be of clinical interest.

1. Introduction

There has been research on risk factors for violence in adolescence emergency and inpatients units (Copelan et al., 2006; John et al., 2023; Kim et al., 2022). However, to the best of our knowledge, no screener, or short-term instruments for assessing the risk of violence in youths have been validated for clinical use (Senior et al., 2021). Some emergency psychiatric departments for adolescents in and outside of Norway have used the Violence Risk Screening - 10 (V-RISK-10), which is a short-time screener for adults based on risk factors (Hartvig et al., 2011). The development of V-RISK-Y was based on the V-RISK-10 and adapted for youths (Roaldset et al., 2023). Some studies have compared scores on violence risk assessment instruments, for example the risk of sexual violence (Anderson et al., 2021; Sowden and Olver, 2017) or short-term risk assessments (Chu et al., 2013; Yuniati et al., 2020), but we are not aware of studies comparing risk instruments for adolescents. The aim of this article was to compare the predictive validity for violent behavior between the V-RISK-10 and the V-RISK-Y in an emergency psychiatric adolescent ward.

2. Methods

2.1. Design, setting, and participants

The study was conducted at the Emergency Unit in the Department of Child and Adolescent Psychiatry at Oslo University Hospital in Norway (UPA). The project included all patients (aged 12–18) admitted to the UPA within one year (May 2019-May 2020): 92 in total. The study sample was 49 patients (53 %) who had complete data (Fig. 1 Flow Chart).

2.2. Procedure

Both V-RISK-Y and V-RISK-10 were scored by the staff on duty after the clinical admission interview, without the presence of patient or guardians. Episodes of violence or threats during the stay were scored in The Violence and Threats Recording Form by the ward staff. The form was to be filled in as soon as possible by the staff that were present in the situation, and at the latest by the end of the respective shift the episode occurred. Data were anonymized and transferred electronically to the research server at the Oslo University Hospital.

* Correspondence to: Gjerdegata 15, Ålesund 6003, Norway.
E-mail address: johnolr@gmail.com (J.O. Roaldset).

https://doi.org/10.1016/j.ajp.2024.104044
Received 17 February 2024; Received in revised form 19 March 2024; Accepted 2 April 2024
Available online 4 April 2024

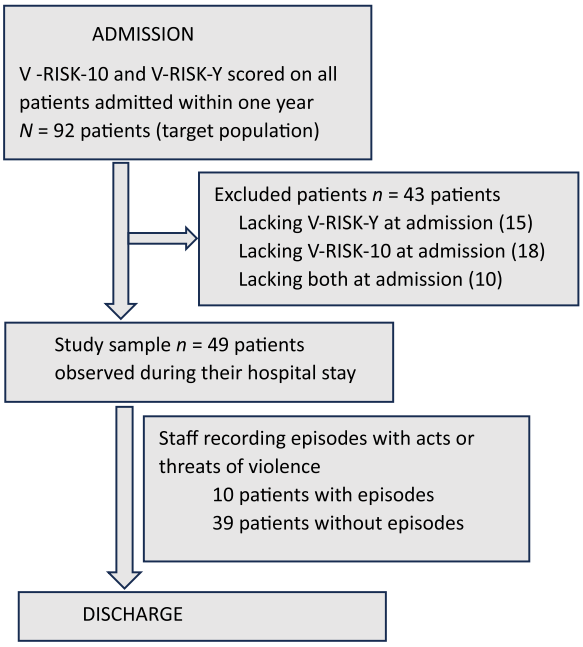

Fig. 1. Flow chart.

2.3. Measures

2.3.1. Baseline measures

V-RISK-10 has been in use since the beginning of the 2000s (Bjørkly et al., 2009; Eriksen et al., 2016; Hartvig et al., 2011). It was supposed to be a simple instrument to help assess the risk of violence in general psychiatry and especially in the emergency context.

V-RISK-Y was developed from 2018, starting from V-RISK-10 and making adjustments and changes adapted to young people (Roaldset et al., 2023). Based on recent research, V-RISK-Y was expanded with two new items. The first new item was related to the association between childhood adversities and later aggressive or violent behavior (Duke et al., 2010; Maas et al., 2008; Salo et al., 2022), and named "11. Prior or current severe trauma". The item conceptualizes severe trauma as whether the youth has been exposed to or witnessed severe trauma (e.g. accidents), repeated physical, sexual, or psychological abuse, or been subjected to neglect.

The second new item, "12. The youth's or guardians' own perception of risk" is in line with recent years' focus on increased user participation in psychiatry, but where this has received little attention in assessments of the risk of violence in psychiatry and with few publications (Lockertsen et al., 2018; Roaldset and Bjørkly, 2010; Skeem et al., 2013). Scoring instructions were based on the results of Lockertsen et al. (2018) and Roaldset and Bjørkly (2010) studies from adult emergency psychiatry. For scorings instructions download English versions of V-RISK-10 and V-RISK-Y for free from http//: www.sifer.no.

2.3.2. Outcome measure

The Violence and Threats Recording Form (see supplemental files) included four categories of violence: verbal threats, physical threats, moderate violent acts, and severe violent acts. Violence was defined as physical attacks against another person to inflict physical injury or bodily harm. Violence also includes verbal and physical threats of violence against other people and included such threats via social media. The definitions accord with international research (Monahan et al., 2005).

2.4. Statistics

SPSS 29 was used for the analyses. The Mann-Whitney U-test, t-test and chi-square test were used to compare groups.

The four scoring options of the items in V-RISK-10 and V-RISK-Y were No = doesn't fit, Don't know = too little or conflicting information, Maybe/Moderate = fits maybe or is present in moderately severe degree, Yes = is present. In the statistics, the values were 0,1,2,3, respectively. The values were used as a continuous variable, and the linearity of the variable was tested by using Fractional polynomials (Hosmer and Lemeshow, 2000).

To increase statistical power, the four categories of violent threats and physical violence in the outcome measure were merged into one category, violence. The area under the curve of the receiver operating characteristics (ROC-AUC) was used to determine overall predictive accuracy of V-RISK-10 and V-RISK-Y. Differences between AUC values of the two tools were calculated by using a non-parametric method (DeLong et al., 1988). Univariate logistic regression was used to compare the Odds Ratios for episodes of violence for the individual items in V-RISK-10 and V-RISK-Y.

2.5. Ethics

The study was conducted in accordance with the Declaration of Helsinki and was approved without the patients' or parents' consent by the Data Protection Official at Oslo University Hospital (ID 20/01146).

For additional information on the Methods, please refer to the Roaldset article (2023).

3. Results

3.1. Comparison of study sample (n = 49) and excluded patients (n = 43)

Mean age was 15.5 years for the study sample versus 15.6 years for excluded patients (t = 0.422, $p = 0.675$). Mean length of hospital stay was 16 days (range 1–71) versus 11 days (range 1–40) (Mann-Whitney U = 1029, $p = 0.026$). Thirty-eight (79 %) versus 31 (71 %) were girls (chi2 = 0.93, df = 1, $p = 0.336$), and 10 patients (21 %) versus 7 patients (16 %) were recorded with violent behavior (chi2 = 0.37, df = 1, $p = 0.543$), respectively. Most of the violent incidents where targeted against staff, and the second most against family members.

3.2. Predictive values

AUC values, and differences between AUC values, are displayed in Table 1A and B. The AUC values for the two new items 11 (trauma) and 12 (user perception) of V-RISK-Y were: 0.35 (95 % CI 0.15–0.54), $p = 0.144$ and 0.73 (95 % CI 0.55–0.90), $p = 0.029$, respectively.

Table 2 shows comparison of the individual items of V-RISK-10 and V-RISK-Y for violence during hospital stay in univariate logistic regression analyses. Result of interaction analyses between item 5 in V-RISK-

Table 1
Comparison of V-RISK-10 and V-RISK-Y: ROC-AUCs of sum-scores and ROC-AUC differences.

	ROC-AUC	(95 % CI)	*P*
A. Sum-scores			
V-RISK-10 (range 0–30)	0.701	(0.497–0.906)	0.052
V-RISK-Y (range 0–36)	0.721	(0.510–0.932)	0.033
VY10[a] (range 0–30)	0.751	(0.550–0.953)	0.015
VY10PD[b] (range 0–30)	0.696	(0.488–0.905)	0.059
B. Difference in AUC values			
V-RISK-Y versus V-RISK-10	0.020	(-0.030–0.069)	0.436
VY10[a] versus V-RISK-10	0.050	(-0.011–0.111)	0.106
VY10[a] versus VY10PD[b]	0.055	(0.000–0.111)	0.050

Notes. [a] For the 10 items from V-RISK-10, which was the basis for V-RISK-Y, 5 items were changed and 5 unchanged; [b] Item 5 Behavioral / Impulsivity Disorder has been replaced by item 5 Personality Disorder in V-RISK-10

Table 2
Univariate analyses of single items of V-RISK-10 and V-RISK-Y for any violence recorded within the hospital stay.

	V-RISK-10			V-RISK-Y		
	OR	95 % CI	*p*	OR	95 % CI	*p*
1. Prior / current acts of violence	2.23	1.1–4.4	0.022	2.33	1.2–4.6	
2. Prior / current threats of violence	2.40	1.3–4.6	0.007	2.74	1.4–5.4	0.004
3. Prior / current alcohol or substance abuse	1.12	0.48–2.6	0.789	1.03	0.38–2.8	0.950
4. Prior / current major mental illness, i.e. psychosis (V-RISK-10)	1.00	0.56–1.8	0.986			
4. Prior / current severe symptoms of mental health disorders (V-RISK-Y)				1.13	0.60-2.1	0.712
5. Personality disorders (V-RISK-10)	0.39	0.11-3.4	0.145	5		
5. Behavioral / Impulsive disorders (V-RISK-Y)				2.15	1.1–4.2	0.028
6. Poor insight into behavior/disorders	1.33	0.75–2.4	0.334	1.15	0.62–2.1	0.659
7. Suspicion	2.08	1.1–3.8	0.018	2.26	1.2–4.1	0.009
8. Demonstrates lack of empathy	1.64	0.83–3.2	0.154	1.86	0.91–3.8	0.089
9. Unrealistic planning	1.04	0.58–1.9	0.886	1.22	0.66–2.3	0.521
10. Future stressful situations	1.37	0.65–2.9	0.408	1.21	0.62–2.4	0.585
11. Prior / current severe trauma (V-RISK-Y)				0.61	0.30–1.2	0.167
12. The youths or guardians' own perception of risk (V-RISK-Y)				1.63	0.91–2.9	0.098

10 and item 5 in V-RISK-Y was OR = 0.58 (95 % CI 0.14–2.5), $p = 0.466$.

4. Discussion

The AUCs of V-RISK-10 and V-RISK-Y were in the moderate / good area, but with wide confidence intervals. The results were generally better for V-RISK-Y compared to V-RISK- 10, but neither the AUC difference between V-RISK-Y and V-RISK-10, nor the relatively large AUC difference between the V-RISK-10 and the VY10 (the 10 items from V-RISK-10 which was the basis for V-RISK-Y) were significant. However, when the item 5. Behavioral / impulsive disorder in VY10 was replaced with item 5. Personality disorders from V-RISK-10, the AUC difference for these two versions of V-RISK-Y was significant (Table 1B). Results in favor of V-RISK-Y may be of clinical interest for violence risk assessment in this youth population.

Comparing the corresponding 10 individual items in V-RISK-Y and V-RISK-10 the results of nine of the 10 items were quite similar (see Table 2), only the Odds ratios of Item 5 (Behavioral / impulsive disorders vs Personality disorders) showed a clear difference. However, interaction analysis showed that the difference was not significant. It may still appear that Item 5 has considerable impact for the AUC differences between V-RISK-Y and VY10, and V-RISK-10.

Regarding the two new items the item 12 User participation seems to strengthen the V-RISK- Y compared to the V-RISK-10 (Table 1B). User participation have been explored in prior research (Lockertsen et al., 2018; Roaldset and Bjørkly, 2010; Skeem et al., 2013), but to our knowledge, V-RISK-Y is the first risk assessment instrument with an item dealing with the users' perception of the risk of violence.

The negative predictive results for the V-RISK-10 item 5. Personality disorders and the V-RISK-Y item 11. Prior / current trauma was not in line with present knowledge. The results may have been particularly affected by the fact that the research project took place during the pandemic, which led to overcrowding in the department of girls with self-harming symptomatology and with prior or current traumatization but without violence. Future research may clarify whether this was a pandemic consequence or whether it persists.

Frustration, irritation and anger in young people can sometimes further develop into aggression and occasionally further into violence. This is not included in the V-RISK-Y, but is a known phenomenon in emergency departments, and in the UPA, where staff are trained in de-escalation techniques to prevent episodes. This applies not only to the staff, but also to the family (Jacob et al., 2013, 2014). In the present study most incidents where targeted against staff, and the second most against family members. The target population comprised all admissions during a year and can be considered representative of the group of young people admitted. However, 79 % were girls, and only half of the target population were included in the study. The excluded sample was not random with a possible preponderance of patients with shorter hospital stays, reducing generalization.

Limitations are a small sample size and involving only one emergency unit increasing the possibility for Type II errors, poor generalizability, and random errors. Predictive studies of adverse events must consider that one cannot just observe but will actively try to prevent the outcome. Merging of the four categories of violence and threats in The Violence and Threats Recording Form into one category "violence" also limits the value of the study, but this combined violence definition gave higher statistical power.

Strengths are the prospective design and including all admitted patients.

Subject to the limitations, conclusion of this comparison indicates that the V-RISK-Y in emergency inpatient settings seems to be more suitable for youths than the "adult" V-RISK- 10.

CRediT authorship contribution statement

John Olav Roaldset: Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Stål Bjørkly:** Conceptualization, Investigation, Methodology, Writing – original draft, Writing – review & editing. **Torbjørn Landheim:** Investigation, Supervision, Writing – original draft, Writing – review & editing. **Carina Gustavsen:** Methodology, Investigation, Conceptualization, Supervision, Writing – original draft, Writing – review & editing. **Øyvind Lockertsen:** Writing – review & editing, Writing – original draft, Supervision, Investigation.

Declaration of Competing Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Acknowledgements

The authors gratefully acknowledge the participation of the management team, mental health professionals, and administrative employees of the Emergency Unit, Department of Child and Adolescent Psychiatry, Division of Mental Health and Addiction, Oslo University Hospital and also gratefully acknowledge Professor emeritus Petter Laake for very valuable advice and help with the statistics and review of the manuscript.

Financial Disclosure

The authors and their institutions have no financial interests in the project.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.ajp.2024.104044.

References

Anderson, R., Garcia, M., Delahanty, D., 2021. Test–retest reliabilities of four tactic-first sexual violence history questionnaires. Psychol. Violence 11 (6), 580–590. Psychology of Violence 11 (6), 580-590.

Bjørkly, S., Hartvig, P., Heggen, F.A., Brauer, H., Moger, T.A., 2009. Development of a brief screen for violence risk (V-RISK-10) in acute and general psychiatry: an introduction with emphasis on findings from a naturalistic test of interrater reliability. Eur. Psychiatry 24 (6), 388–394.

Chu, C.M., Daffern, M., Ogloff, J.R.P., 2013. Predicting aggression in acute inpatient psychiatric setting using BVC, DASA, and HCR-20 Clinical scale. J. Forensic Psychiatry Psychol. 24 (2), 269–285.

Copelan, R.I., Messer, M.A., Ashley, D.J., 2006. Adolescent violence screening in the ED. Am. J. Emerg. Med. 24 (5), 582–594.

DeLong, E.R., DeLong, D.M., Clarke-Pearson, D.L., 1988. Comparing the areas under two or more correlated receiver operating characteristic curves: a nonparametric approach. Biometrics 44 (3), 837–845.

Duke, N.N., Pettingell, S.L., McMorris, B.J., Borowsky, I.W., 2010. Adolescent violence perpetration: associations with multiple types of adverse childhood experiences. Pediatrics 125 (4), e778–e786.

Eriksen, B.M.S., Bjørkly, S., Færden, A., Friestad, C., Hartvig, P., Roaldset, J.O., 2016. Gender differences in the predictive validity of a violence risk screening tool: a prospective study in an acute psychiatric ward. Int. J. Forensic Ment. Health 15 (2), 186–197.

Hartvig, P., Roaldset, J.O., Moger, T.A., Østberg, B., Bjørkly, S., 2011. The first step in the validation of a new screen for violence risk in acute psychiatry: the inpatient context. Eur. Psychiatry 26 (2), 92–99.

Hosmer, D., Lemeshow, S., 2000. Applied Logistic Regression 2ed. Wiley, New York, pp. 101–103.

Jacob, P., Seshadri, S., Girimaji, S.C., Srinath, S., Sagar, J.V., 2013. Clinical characteristics of aggression in children and adolescents admitted to a tertiary care centre. Asian J. Psychiatry 6 (6), 556–559.

Jacob, P., Seshadri, S., Srinath, S., Girimaji, S.C., Sagar, J.V., 2014. In-patient aggression at a tertiary care child and adolescent psychiatry centre: psychosocial variables and caregiver perspectives. J. Indian Assoc. Child Adolesc. Ment. Health 10 (1), 31–46.

John, J.R., Thavalingam, V., Tye, M., Dean, K., Barzman, D., Sorter, M., Lin, P.-I., 2023. Appraising risk factors of aggression in children and adolescents at psychiatric inpatient units. Psychiatry Res. 327, 115368.

Kim, S.C., Kaiser, J., Bulson, J., Hosford, T., Nurski, A., Sadat, C., Kalinowski, N., 2022. Multisite study of aggressive behavior risk assessment tool in emergency departments. J. Am. Coll. Emerg. Physicians Open 3 (2), e12693.

Lockertsen, Ø., Procter, N., Vatnar, S.K.B., Færden, A., Eriksen, B.M.S., Roaldset, J.O., Varvin, S., 2018. Screening for risk of violence using service users' self-perceptions: a prospective study from an acute mental health unit. Int. J. Ment. Health Nurs. 27 (3), 1055–1065.

Maas, C., Herrenkohl, T.I., Sousa, C., 2008. Review of research on child maltreatment and violence in youth. Trauma, Violence, Abus. 9 (1), 56–67.

Monahan, J., Steadman, H.J., Robbins, P.C., Appelbaum, P., Banks, S., Grisso, T., Heilbrun, K., Mulvey, E.P., Roth, L., Silver, E., 2005. An actuarial model of violence risk assessment for persons with mental disorders [see comment]. Psychiatr. Serv. 56 (7), 810–815.

Roaldset, J.O., Bjørkly, S., 2010. Patients' own statements of their future risk for violent and self-harm behaviour: a prospective inpatient and post-discharge follow-up study in an acute psychiatric unit. Psychiatry Res. 178 (1), 153–159.

Roaldset, J.O., Gustavsen, C.C., Lockertsen, Ø., Landheim, T., Bjørkly, S.K., 2023. Validation of a violence risk screening for youth in psychiatric inpatient care—a pilot study of V-RISK-Y. Front. Psychiatry 14, 1210871.

Salo, M., Appleton, A.A., Tracy, M., 2022. Childhood adversity trajectories and violent behaviors in adolescence and early adulthood. J. Interpers. Violence 37 (15-16), NP13978–NP14007.

Senior, M., Fanshawe, T., Fazel, M., Fazel, S., 2021. Prediction models for child and adolescent mental health: a systematic review of methodology and reporting in recent research. JCPP Adv. N./a (N./a, e12034.

Skeem, J.L., Manchak, S.M., Lidz, C.W., Mulvey, E.P., 2013. The utility of patients' self-perceptions of violence risk: consider asking the person who may know best. Psychiatr. Serv. 64 (5), 410–415.

Sowden, J.N., Olver, M.E., 2017. Use of the violence risk scale—sexual offender version and the stable 2007 to assess dynamic sexual violence risk in a sample of treated sexual offenders. Psychol. Assess. 29 (3), 293–303.

Yuniati, W., Putra, K.R., Widasmara, D., 2020. Brøset Violence Checklist (BVC) versus dynamic appraisal of situational aggression-inpatient version (DASA-IV): their sensitivity, specificity and accuracy as a predictor of violence in 24 h among schizophrenia patients. J. Ilm. Ilmu-Ilmu Kesehat. 18 (2), 58–62. https://doi.org/10.30595/medisains.v18i2.7454.