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IMPLEMENTATION OF LOW INTENSITY PSYCHOLOGICAL INTERVENTION (BUTTERFLY HUG, GROUNDING) AND ASSERTIVENESS TRAINING USING "SIMOJI" WEB BASED APPLICATION ON THE REDUCTION OF PSYCHOMOTOR AGITATION IN SCHIZOPHRENIA PATIENTS WITH RISK OF VIOLENT BEHAVIOUR

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ABSTRACT

Introduction: Schizophrenia is a chronic mental illness characterized by disturbances in thinking, perception, emotion, and behavior. Nursing implementation still relies on manual/paper-based methods in the current era of digitalization. **Objective:** To identify the application of low intensity psychological intervention (butterfly hug, grounding) and assertiveness training using a digital application SIMOJI on the reduction of psychomotor agitation in Schizophrenia patients with risk of violent behavior in the Gatot Kaca ward, Marzoeki Mahdi Hospital.**Method:** A quasi-experimental study using one group without a control group, involving 31 patients with risk of violent behavior selected according to inclusion criteria, with agitation measured using the OASS (Overt Agitation Severity Scale) instrument. **Results:** The butterfly hug, grounding, and assertiveness training interventions using a digital application significantly reduced psychomotor agitation in risk of violent behavior patients ($p < .001$), with the median score decreasing from 23 (pretest) to 20 (post butterfly hug and grounding) and to 3 (post assertiveness training). Assertiveness training was proven to be more effective than butterfly hug and grounding, and a history of substance abuse was found to be significantly associated with the level of psychomotor agitation in patients ($p < .001$). **Recommendation**: Low Intensity Psychological Intervention (Butterfly Hug, Grounding) can be performed by ward nurses, while assertiveness training should be delivered by mental health specialist nurses to reduce psychomotor agitation using the SIMOJI application

Keywords: Low intensity psychological intervention (butterfly hug, grounding); assertiveness training; OASS (Overt Agitation Severity Scale); risk of violent behavior; SIMOJI

INTRODUCTION

Schizophrenia is a chronic mental illness characterized by disturbances in thought, perception, emotion, and behavior, which are marked by positive symptoms such as hallucinations and delusions, as well as negative symptoms such as decreased motivation and emotion (American Psychiatric Association, 2022). Schizophrenia affects 23 million people worldwide, equivalent to 1 in 345 people (0.29%) in the global population, with the prevalence among adults specifically rising to 1 in 233 people (0.43%) (WHO, 2025). The prevalence of schizophrenia in Indonesia is estimated at 2.6 million people; the 2023 Indonesian Health Survey indicates that the prevalence of households with a household member experiencing psychosis/schizophrenia in Indonesia is 3 per 1,000 households (Kemenkes RI, 2025). Manifestations in schizophrenia patients is violent behavior, which is often related to impaired emotion regulation and impulse control. Research shows that violent behavior in schizophrenia patients can recur, particularly during active psychotic states and when adaptive communication skills are limited (Wang et al., 2025). Risk for violent behavior (RPK) or behavioral aggression is a form of maladaptive behavior that can be expressed verbally or non-verbally, arising from impaired impulse control and emotion regulation, and influenced by internal and external individual factors ee(Elyadini et al., 2024). Behavioral aggression in schizophrenia patients is 33.3% with violent behavior manifesting as verbal aggression (42.6%), property damage (23.8%), physical aggression toward others

(23.7%), and auto-aggression/self-harm (23.5%) (Li et al., 2020). The impact of untreated RPK in mental disorders includes increased relapse rates, reduced employment opportunities, and a heightened burden on families. Studies report that patients with violent behavior or RPK experience social difficulties within the community (Hodgins et al., 2007; Huang et al., 2023) Based on these explanations, can be concluded that serious management is crucial in addressing patients at risk for violent behavior.

Management of RPK includes preventive, anticipatory, and restraint measures such as deep breathing relaxation, physical release techniques (e.g., pillow/mattress striking), verbal and written de-escalation, spiritual practices, and medication adherence (Keliat et, 2019) which have been shown to reduce RPK signs and symptoms, not yet optimally ((Anggraini et al., 2024) and to improve the ability to control violent behavior while reducing hallucination symptoms ((Efendi et al., 2020) Assertiveness training (AT), a specialist psychiatric nursing intervention, has been demonstrated to reduce signs and symptoms and enhance patients' ability to control violent behavior (Limanauw, 2024; Mahmud et al., 2023; Setyani et al., 2020) Meanwhile, the butterfly hug, a bilateral stimulation technique, has been shown to reduce emotional distress following trauma (Jarero & Artigas, 2012, 2023) supported by evidence that emotion dysregulation combined with weak inhibitory control significantly increases the risk of physical aggression (Bounoua et al., 2022) as well as findings on the effectiveness of other bilateral stimulation techniques, such as EMDR, in reducing PTSD-related emotional symptoms among patients with severe mental illness (Marlow et al., 2024). Data from Marzoeki Mahdi Hospital that RPK is the second most common nursing diagnosis (92.8%); however, low intensity psychological interventions (butterfly hug, grounding) and assertiveness training delivered through a digital application have never been implemented, highlighting the limited utilization of digital technology in supporting the implementation of psychiatric nursing care in this setting.

MATERIALS AND METHODS

This study employed a quasi-experimental one-group pre-post-test design to evaluate two successive interventions: butterfly hug and grounding using by digital application-based Assertiveness Training. Approved by Ethic Clearance of Facult of Nusing Research Ethics Committee University of Indonesia (No. KET-205/UN2.F12.D24/PPM.00.02/2026), the research was conducted at the Gatot Kaca Ward of Dr. Marzoeki Mahdi Hospital, Bogor, from February to June 2026, with implementation occurring from late March to May 2026 with 31 patient diagnosis of risk for violent behavior. This Intervention was delivered using SIMOJI (Sistem Monitoring Keperawatan Jiwa) a web based nursing information developed to standarized and digitez intervention for patient with risk of violent behavior. Interventions were conducted in a private and relaxing room, using standardized clinical protocols for Low Intensity Psychological Interventions and Assertiveness aining (4–5 sessions over 2–4 meetings, 45–60 minutes per session) prior to discharge evaluation. Primary data were collected directly from patients using the SIMOJI digital application, which served simultaneously as the operational tool for nursing care implementation and symptom self-monitoring.

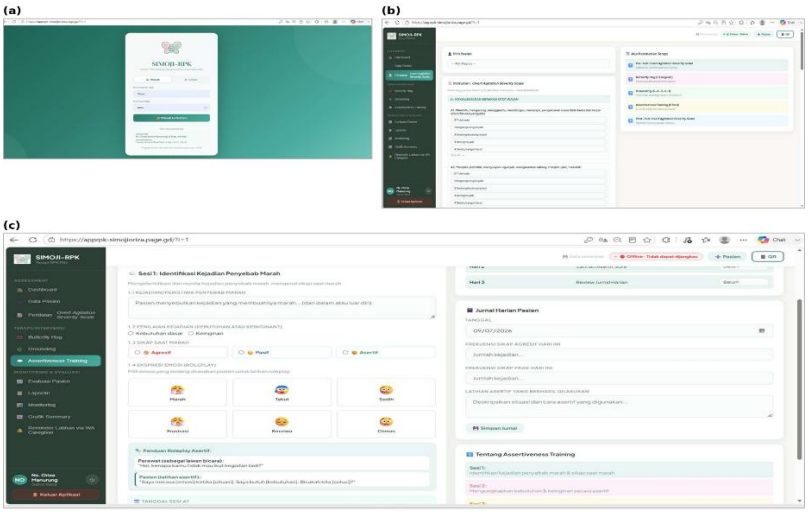


Figure 1 User Interface of the SIMOJI Web Based Application

The application integrates five sequential clinical modules: patient registration, OASS-based agitation assessment (pre-test, post-test 1, and post-test 2), a structured intervention module comprising Butterfly Hug (5 steps), Grounding 5-4-3-2-1, and Assertiveness Training (5 sessions), an automated evaluation and reporting

module, and a WhatsApp-based reminder feature for caregivers. Each intervention step was guided by standardized on-screen instructions and completed under the supervision of the ward nurse (for Butterfly Hug and Grounding) or a psychiatric specialist nurse (for Assertiveness Training), with session completion, dates, and clinical observations automatically recorded by the system, while secondary demographic data (age, education, employment, marital status, hospitalization history) were extracted from electronic medical records. Agitation severity was measured using the Overt Agitation Severity Scale Instrument (OASS; range: 0–48, no cutoff score), which exhibits strong validity (r = 0.951 with PANSS-EC, p = 0.001), internal consistency (alpha = 0.76), and inter-rater reliability (r = 0.711–1.000) based on published validation procedures. Statistical analysis comprised univariate measures (frequency distributions for demographics; central tendencies for clinical metrics) and bivariate non-parametric tests, applied because Kolmogorov-Smirnov tests indicated non-normal data distributions across all time points: pre-test (p = 0.002), post-test 1 (p = 0.003), and post-test 2 (p = 0.00)

RESULTS AND DISCUSSION

1. Demographic Characteristics of Respondent

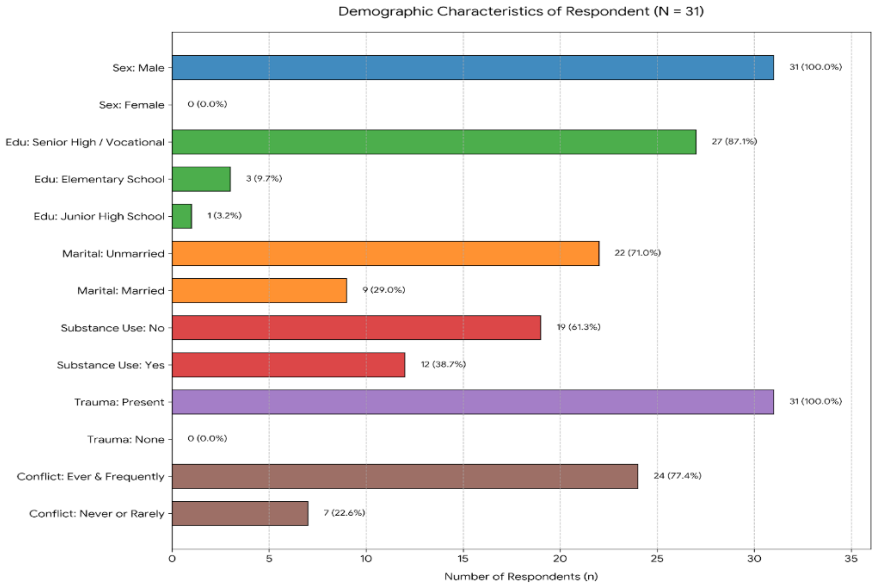


Figure 2 Demographic Characteristic of Respondent (n=31)

Data recorded through SIMOJI showed a significant reduction in psychomotor agitation among the 31 based on Figure 2 above, it can be seen that 87.1% of patients had a last education level of Senior High/Vocational School), 71% were unmarried, 100% had an unpleasant/traumatic experience, and 77.4% frequently experienced conflict with their surrounding environment. Several systematic reviews and meta-analyses indicate that childhood trauma, including physical, sexual, and emotional abuse, neglect, bullying victimization, and parental loss, constitutes a consistent environmental risk factor associated with an increased incidence of psychosis and schizophrenia (Inyang et al., 2022) A dose-response meta-analysis of 21 studies comprising nearly 60,000 participants found that cumulative childhood adversity was consistently associated with the risk of adult psychosis, with greater cumulative trauma exposure linked to a higher subsequent risk of psychosis (Flinn et al., 2025) This trauma-psychosis association persists even after controlling for genetic risk factors, suggesting an interaction between genetic vulnerability and environmental exposure (gene-environment interaction) in the pathogenesis of schizophrenia.

2. Analysis of the Effect of Implementing Low Intensity Psychological Intervention (Butterfly Hug, Grounding) Using SIMOJI Web Based Application on Psychomotor Agitation in Patients with Risk of Violent Behavior .

Analysis using wilcoxon signed rank test to identify and compare the change in score from pretest to post test 1, presented in table 1.

Table 1 Analysis OASS Scores After Low Intensity Psychological Intervention (Butterfly Hug, Grounding) Using SIMOJI Web Based Application on Psychomotor Agitation in Patients with Risk of Violent Behavior Marzoeki Mahdi Hospital (n=31)

Measurement	Median	SD	Minimum	Maximum	Z	p-Value
Pre (before Butterfly Hug, Grounding)	23.00	7.85	12	44	-4.489	0.00
Post 1 (after Butterfly Hug, Grounding)	20.00	6.44	11	38		

Based on Table 1, the Wilcoxon Signed Ranks Test showing a significant decrease in the median (middle) OASS score, from 23.00 at pretest to 20.00 at posttest 1, along with a decrease in the maximum score from 44 to 38. The statistical test results show a Z value of -4.489 with a p-value of 0.00, which proves that there was a statistically significant and meaningful change in the reduction of OASS scores before and after the administration of Butterfly Hug and Grounding. These findings demonstrate that digital delivery of the butterfly hug and grounding techniques via SIMOJI web Based application yields a clinically meaningful 13.04% reduction in median agitation scores alongside a reduction in peak severity, even when evaluated within a brief 24-hour post-intervention window. Utilizing SIMOJI as a digital point-of-care tool facilitated real-time self-monitoring and guided tactile execution, enhancing patient engagement and adherence to bilateral stimulation protocols. The underlying neurophysiological mechanism aligns with established bilateral simulation theory, wherein rhythmic self-tapping shifts attention away from internal psychotic distress toward concrete sensory anchors, thereby restoring emotional regulation and physiological calm (Cagaoan et al., 2023; NHS, 2024) Furthermore, integrating grounding within a structured digital framework echoes broader evidence on mindfulness-based strategies that reduce reactivity and aggressiveness by strengthening executive inhibitory control (Heppner et al., 2008; Walker et al., 2010) Although low-intensity interventions alone are not a standalone solution for acute violent behavior, delivering them via SIMOJI provides an accessible, non-pharmacological pathway to de-escalate emotional turmoil and stabilize psychomotor agitation in acute psychiatric wards

3. Results and discuccion of the Analysis of the Effect of Implementing Assertiveness Training Using SIMOJI web Based Digital Application on Psychomotor Agitation in Patients with Risk of Violent Behavior

A Wilcoxon Signed-Rank Test was conducted to evaluate changes in psychomotor agitation following digital application-based Assertiveness Training (AT) by comparing baseline (T_0) with post-test 2 (T_2) Overt Agitation Severity Scale (OASS) scores. As shown in Table 2, the median OASS score dropped dramatically from 23.00 (SD = 7.85; range: 12–44) at baseline to 3.00 (SD = 6.44; range: 1–12) at post-test 2, alongside a reduction in the maximum score from 44 to 12. Statistical analysis yielded $Z = -4.866$ ($p < 0{,}00$), demonstrating a highly significant reduction in psychomotor agitation following the completion of the digital Assertiveness Training program.

Table 2 Analysis OASS Scores After Receiving Assertiveness Training on the Reduction of Psychomotor Agitation in Marzoeki Mahdi Hospital (n=31)

Measurement	Median	SD	Minimum	Maximum	Z	p-Value
Pre (before Assertiveness Training Intervention)	23.00	7.85	12	44	-4.866	0.00
Post 2 (after Assertiveness Training)	3.00	6.44	1	12		

Based on Table 2. using the Wilcoxon Signed Ranks Test show a fairly significant decrease in the median (middle) OASS score, from 23.00 at pretest to 3.00 at posttest 2, along with a decrease in the maximum score from 44 to 12. The statistical test results show a Z value of -4.866 with a p-value of 0.00, which proves that

there was a statistically significant and meaningful change in the reduction of OASS scores before and after the administration of Assertiveness Training.

The implementation of Assertiveness Training using SIMOJI web Based digital application resulted in a substantial 86.96% reduction in median psychomotor agitation scores, outperforming reduction rates reported in previous studies, such as the 54.6% symptom reduction observed following standard generalist care combined with assertive training and family psychoeducation (Anggraini et al., 2024) This superior outcome is largely attributable to the higher frequency and structured intensity of sessions delivered in this study, further enhanced by SIMOJI's interactive features that reinforced learning, self-reflection, and skill repetition. Mechanistically, assertiveness training empowers psychiatric patients to express thoughts, feelings, and boundaries openly and constructively without resorting to maladaptive aggression or interpersonal conflict (Vagos & Pereira, 2016) These results align with established literature demonstrating that AT significantly alleviates violent behavior symptoms in schizophrenia (Limanauw, 2025; Priyanto & Permana, 2019; Wahyuningsih et al., 2011) while building essential social skills that facilitate inpatient recovery and discharge readiness (Speed et al., 2018) Integrating AT into a digital platform like SIMOJI provides an effective, structured, and scalable specialized nursing intervention to achieve long-term de-escalation of violent behavior risk.

4. Results and discuccion of the Analysis of Factors Associated with Psychomotor Agitation in Patients with Risk of Violent Behavior.

Table 3 Analysis of Factors Associated of Psychomotor Agitation in Risk of Violent Behavior patien in Marzoeki Mahdi Hospital (n=31)

No	Variable	Statistical Value	Pre	Post 1	Post 2
1	Age	p-Value (Sig.)	p=0.290	p=0.455	p=0.510
		Correlation Coefficient (r)	r=-0.196	r=-0.139	r=-0.123
2	Occupation	p-Value (Sig.)	p=0.522	p=0.564	p=0.394
		Correlation Coefficient (r)	r=0.119	r=0.108	r=-0.159
3	Education	p-Value (Sig.)	p=0.291	p=0.785	p=0.785
		Correlation Coefficient (r)	r=0.196	r=-0.036	r=-0.036
4	Marital Status	p-Value (Sig.)	p=0.815	p=0.180	p=0.394
		Correlation Coefficient (r)	r=-0.044	r=0.247	r=0.159
5	History of Substance (NAPZA) Use	p-Value (Sig.)	p=<0.001	p=0.021	p=0.004
		Correlation Coefficient (r)	**r=-0.653****	**r=-0.413***	**r=-0.505****
6	Unpleasant Experience	p-Value (Sig.)	p=0.093	p=0.117	p=0.124
		Correlation Coefficient (r)	r=-0.307	r=-0.287	r=-0.282
7	Conflict	p-Value (Sig.)	p=0.022	p=0.028	p=0.523
		Correlation Coefficient (r)	**r=-0.411****	r=-0.394	r=-0.119
8		p-Value (Sig.)	p=0.890	p=0.626	p=0.869

No	Variable	Statistical Value	Pre	Post 1	Post 2
	History of Hospital Admission (MRS)	Correlation Coefficient (r)	r=-0.026	r=0.091	r=-0.031

Based on the data in Table 3. the analysis using Spearman's Rho correlation test was used to determine the relationship and direction of correlation between the independent characteristic variables and psychomotor agitation in patients with risk of violent behavior, using the OASS score at 3 measurement points (pretest, post 1, and post 2). The analysis results show that the history of substance (NAPZA) use variable has a statistically significant relationship with a weak strength of association p< 0.00.

The Spearman's Rho correlation results show that history of substance (NAPZA) use has a statistically significant, though weak, relationship with psychomotor agitation (p<.001), a finding that still warrants attention in mental health nursing care in the Gatot Kaca inpatient room and is consistent with prior research reporting that substance abuse (45.3%) among schizophrenia patients was associated with severe aggressiveness, predominantly in males (73.4%) with a mean age of 32 years (Elyadini et al., 2024) as well as with evidence that alcohol consumption, substance abuse, and prefrontal cortex dysfunction leading to impaired executive function are among the key neurobiological contributors to aggressive behavior in patients with mental disorders, manifesting as emotional outbursts (Girasek et al., 2022). The analysis also found a weak but significant correlation between a history of conflict and psychomotor agitation (p=0.028; r=-0.394), consistent with earlier findings that a criminal history or history of conflict with others is the strongest predictor (OR: 3.50), followed by alcohol abuse (OR: 2.36), among patients with mental health disorders (Lagerberg et al., 2025) in the Gatot Kaca room, patients frequently experienced conflict with family and community, which appears to be a recurring reason for their readmission to Marzoeki Mahdi Hospital.

CONFLICT OF INTEREST

The authors declare no competing financial, personal, or professional conflicts of interest regarding the research, authorship, and/or publication of this article. The SIMOJI web based application evaluated in this study was independently developed by the authors solely for academic research and nursing care implementation, with no commercial or financial gain. This research was self-funded and received no external grants or financial support from any funding agencies in the public, commercial, or non-profit sectors

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