

Expressive writing and relaxation: Psychological interventions for anxiety in individuals with substance use disorder (SUD)

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ABSTRACT

Substance use disorder (SUD) is a global issue, with a high prevalence among laborers in Yogyakarta, Indonesia. Internal and environmental factors contribute to anxiety and disorientation, affecting mental health. This study aimed to evaluate the effectiveness of expressive writing therapy in reducing anxiety among laborers undergoing SUD rehabilitation. A quasi-experimental design with a non-equivalent control group was used, involving 36 outpatients at Dr. S. Hardjolutukito Hospital, Yogyakarta, from June to November 2023. Participants were selected through purposive sampling based on specific criteria. The intervention group engaged in expressive writing and relaxation techniques, while the control group received standard treatment. Anxiety levels were measured using the HRS-A questionnaire before and after the three-month intervention. The Wilcoxon Signed Rank Test showed a significant reduction in anxiety in the intervention group ($p = 0.000$), while no significant change was observed in the control group ($p = 0.513$). These findings suggest that expressive writing therapy effectively reduces anxiety in laborers recovering from psychoactive substance use.

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INTRODUCTION

Substance use disorder (SUD) is a significant global concern. The National Narcotics Agency (BNN) of the Republic of Indonesia reported a total of 2,550 cases of psychoactive substance abuse for the years 2019-2020 (BNN RI, 2025). The Special Region of Yogyakarta documented 143 instances between 2014 and 2022. The Special Region of Yogyakarta is a province in Indonesia characterized by a significant prevalence of psychoactive substance exposure (BNN RI, 2020b). A

significant demographic of SUD comprises labor workers, at 74.8%, surpassing the cohort of teens or students (*BNN RI*, 2020a).

The elevated prevalence of SUD among laborers is attributable to numerous internal and environmental variables. Internal characteristics encompass age, gender, personality, religiosity, education, hedonistic tendencies, and curiosity. External influences encompass social interactions and environment, economic position, familial discord, and group pressure (Hasan & Ilhami, 2021; Indiani et al., 2022; Sholihah, 2015).

People with SUD initially consume narcotics to attain a sense of tranquility and escape from life's pressures; nevertheless, this tranquility is ultimately illusory and devoid of purpose. The psychological effects of drug addiction lead to unstable and unpredictable emotions, melancholy, damaged familial and social connections, disorientation, and anxiety (*BNN RI*, 2020a). Data from the Ministry of Health of the Republic of Indonesia (2020a) indicates that 38.50% of people with SUD experienced anxiety following psychoactive substance use. Anxiety is an unpleasant internal sensation characterized by emotional states such as anxiety, restlessness, tension, doubt, and extreme fear around anticipated challenges or unknown causes (Akbar et al., 2022). The anxiety experienced by a person with a SUD following narcotic consumption may stem from their unfamiliarity and uncertainty over cessation and reduction of intake. This may result from insufficient support from family and the surrounding environment. Anxiety may also manifest in persons following SUD, particularly among labor workers. This anxiety may occur as a result of withdrawal symptoms following prolonged abstinence from psychoactive substances. During this phase, they will likely relapse into the use of psychoactive substances to mitigate their anxiety. Former psychoactive substance users enduring withdrawal typically report symptoms such as mood fluctuations, heightened anxiety, tension, sadness, emotional instability, impaired concentration, weakness, and lethargy (Niarti & Amalia, 2021; Perwitasari 2016).

The significant anxiety levels among laborers with SUD necessitate increased focus, hence requiring the implementation of rehabilitation initiatives. Expressive writing therapy is a viable rehabilitation intervention. A method to achieve this is by documenting notes in a diary (Takariawan, 2021). Expressive writing is an activity that necessitates the synthesis of an individual's thoughts, emotions, and physical skills. When an individual articulates their emotions concerning an incident, their sentiments from that moment and their evaluation of the event reemerge, prompting ideas that culminate in a novel view (Mooney et al., 2009). Expressive writing therapy is a therapeutic approach designed to assist individuals in gaining a deeper understanding of themselves while addressing sadness, discomfort, anxiety, addiction, fear of sickness, and the challenges associated with life changes. This therapy encourages patients to disclose their traumatic experiences and associated feelings to others (Bolton, 2011). Numerous studies have demonstrated that expressive writing enhances emotional regulation, improves mental health, alleviates public speaking anxiety, and elevates self-esteem in SUD rehabilitation programs (Ahmad et al., 2022; Amali, 2020; Bayhaqi et al., 2017; DiMenichi et al., 2019; Hartini et al., 2021; Humaidi et al., 2020; Kristina, 2022; Kupeli et al., 2019; Maulida & Amalia, 2019; Niman et al., 2019; Safaruddin et al., 2020; Shen et al., 2018; Susanti, 2013; Tonarelli et al., 2017; Tresnawati & Musthafa, 2016; Vukčević Marković et al., 2020; Wekoadi et al., 2018). Other studies have suggested numerous supplementary advantages of maintaining a diary, including the clarification of thoughts regarding daily issues, the facilitation of information retention, the enhancement of problem-solving skills, the improvement of environmental awareness, the cultivation of systematic and logical thought organization, and the alleviation of stress (Komaidi, 2007; Pennebaker, 2005).

Anxiety can impede the management of patients with SUD, affecting both therapy adherence and rehabilitation efficacy. Elevated anxiety levels may exacerbate psychological conditions, thereby diminishing motivation and success in the treatment program (Abdurrahman & Mubin, 2020). Consequently, therapies designed to alleviate anxiety are crucial for facilitating the effective management of SUD. Proper management is anticipated to enhance patients' focus and

cooperation during rehabilitation, hence improving the likelihood of optimal recovery. Expressive writing exercises are regarded as beneficial in therapeutic settings for mental health concerns, especially those faced by SUD. This study seeks to assess the impact of expressive writing therapy through diaries on the anxiety levels among laborers with SUD in Yogyakarta.

RESEARCH METHOD

This study employs a quantitative approach utilizing a quasi-experimental design. This study uses a non-equivalent control group design, comprising an intervention group that receives therapy and a control group that does not, to assess the impact of the expressive writing intervention on anxiety levels (Carter et al., 2011; Miller et al., 2020).

The study was performed at the Dr. S. Hardjolukito Hospital in Yogyakarta. This study was undertaken from June 2023 to November 2023. The study respondents are patients with SUD in stable condition receiving outpatient hospital-based treatment at the Dr. S. Hardjolukito Hospital, Yogyakarta. The sampling technique employed was purposive sampling. The criteria for respondent inclusion are: 1) Outpatients with SUD receiving hospital-based treatment at the Dr. S. Hardjolukito Hospital, 2) in stable condition, 3) aged between 25 and 64 years, 4) residing in Yogyakarta, 5) not using psychoactive substances outside the standard treatment administered at the hospital, 6) having completed 3 months of treatment, 7) possessing an HRS-A score of 14-52, 8) willing to participate in the study. The exclusion criteria for patients in this trial include a diagnosis of other severe mental disorders and failure to complete the intervention.

The independent variable in this study is expressive writing. Expressive Writing is a therapeutic technique that entails articulating daily events and stressors to boost physical health, soothe the mind, promote positive behavior, and improve mental well-being (Habsari, 2019). Expressive writing is conducted to articulate internal emotional states by documenting sentiments, emotional events, and potential solutions in a diary (Rohmah & Pratikto, 2019; Safaruddin et al., 2020). This study incorporated regular relaxing techniques facilitated by audio created by the researcher. The expressive writing in this study was performed over three months. This study involved Expressive Writing through the completion of a diary supplied by the researcher, wherein respondents recorded their thoughts, emotions, and troubling issues, then articulating ways to mitigate those distressing feelings, thoughts, and difficulties. The writing outcomes will be reviewed with the therapist during regular hospital check-ups.

The dependent variable in this study is the degree of anxiousness. Anxiety levels in this study were assessed using the HRS-A questionnaire. The anxiety levels of the respondents were measured before and after the intervention over 3 months. The HRS-A questionnaire comprises 81 symptoms categorized into 14 criteria. The HRS-A questionnaire is an ordinal scale that generates scores indicating levels of anxiety: mild anxiety (score 14-20), moderate anxiety (score 21-27), severe anxiety (score 28-41), and panic level anxiety (score 42-52). The HRS-A questionnaire has been subjected to validity and reliability assessments.

The study respondents were categorized into two groups: the intervention group and the control group. The intervention group comprises outpatients with SUD receiving hospital-based treatment, utilizing regular hospital protocols, supplemented by expressive writing in a journal and relaxation techniques. The control group includes outpatients with SUD receiving hospital-based treatment at the hospital without supplementary interventions. Table 1 presents the comparison of control and intervention group.

Table 1. Comparison of control and intervention group

	Intervention group	Control group
Routine Standart Treatment by a psychiatrist at the Hospital	3 months	3 months
Intervention	For three months, executing interventions in the form of:	None

Intervention group	Control group
1. Expressive Writing:	
<ul style="list-style-type: none"> • Completing the diary supplied by the researcher • Documenting ideas, emotions, and distressing issues • Articulating solutions to mitigate those unsettling feelings, thoughts, and concerns • Discussion of expressive writing outcomes with the therapist during a standard hospital evaluation 	
2. Routine Relaxation:	
<ul style="list-style-type: none"> • Conducted individually each day following the prescribed guidelines • Utilizing Relaxation Audio • Documented in the diary supplied by the researcher 	

The data analysis in this study employed univariate tests to examine the respondents' characteristics and bivariate testing to assess the intervention's effect. The bivariate analysis used the non-parametric Wilcoxon Signed Rank Test to determine anxiety levels in respondents prior to and following the intervention on an ordinal scale. The data analysis for this study was performed utilizing IBM SPSS version 23.

This study has obtained ethical approval from the Health Research Ethics Committee (KEPK) of the Faculty of Medicine and Health Sciences at Muhammadiyah University of Yogyakarta, under reference number 202/EC-KEPK FKIK UMY/V/2023.

RESULTS AND DISCUSSIONS

The study respondents included 18 individuals in the intervention group and 18 individuals in the control group, resulting in a total sample of 36 outpatients with SUD receiving hospital-based treatment at the Dr. S. Hardjolukito Hospital, Yogyakarta who met the specified inclusion and exclusion criteria. Table 2 presents the attributes of the respondents in this study.

Table 2. Respondents' characteristic

Characteristic	Frequency (n)	Percentage (%)	
Gender	Male	32	88.9
	Female	4	11.1
Age	25-29	21	58.4
	30-34	5	14.0
	35-39	3	8.4
	40-44	4	11.1
	45-49	2	5.6
	50-55	1	2.8

The study findings indicate that most responders are male with 32 individuals (88.9%). These findings align with earlier research by Fitriani et al. (2017) and Pidada et al. (2021). This outcome demonstrates that guys utilize psychoactive substances more frequently. Prior studies found characteristics that promote greater male involvement in SUD. Men experience more significant external influences, such as occupational and social contexts, which substantially impact psychoactive substance consumption. Furthermore, numerous males often neglect to consider the repercussions or hazards associated with psychoactive substance use. Additionally, men pursue amusement by frequenting nightclubs, which substantially contributes to the SUD (Hasan & Ilhami, 2021).

The study indicates that most respondents are between the ages of 25 and 49, comprising 21 individuals (58.4%), categorizing them as part of the productive age group. According to the National Drug Abuse Survey, the primary age group of drug abusers in the past year is 25-49 years, comprising 56.4%, followed by 15-24 years at 22.5%, and 50-64 years at 21.1% (BNN RI, 2021). Prior research conducted by Murtiwidayati (2018) and Pidada et al. (2021) indicate that the predominant demographic of those utilizing psychoactive substances falls between the age range of 15 to 64 years. Numerous circumstances compel the working-age population to partake in psychoactive substance addiction. An intense eagerness to experiment with novel experiences, along with inadequate awareness of the perils associated with psychoactive substances, is a significant factor contributing to SUD within the productive age demographic. A further aspect is the insufficient comprehension of personal religious values, negative associations, and the accessibility of illicit drugs (Murtiwidayanti, 2018; Pidada et al., 2021).

Anxiety levels of the respondents were assessed prior to and following the intervention (pre-test and post-test) in both the intervention group and the control group. Anxiety levels in both groups are displayed in Tables 3 and 4.

Table 3. Anxiety levels within the intervention group

Anxiety Levels	Pre-Test		Post-Test	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Normal	0	0	3	16.7
Mild Anxiety	1	5.6	1	5.6
Moderate Anxiety	4	22.2	8	44.4
Severe Anxiety	7	38.9	6	33.3
Panic Level Anxiety	6	33.3	0	0

Table 3 indicates that the majority of respondents prior to the intervention (pre-test) had a severe level of anxiety, namely seven individuals (38.9%). Following the intervention (post-test), the majority of responders exhibited a moderate level of anxiety, comprising eight individuals (44.4%).

Table 4. Anxiety levels within the control group

Anxiety Levels	Pre-Test		Post-Test	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Normal	0	0	1	5.6
Mild Anxiety	6	33.3	4	22.2
Moderate Anxiety	6	33.3	5	27.8
Severe Anxiety	5	27.8	7	38.9
Panic Level Anxiety	1	5.6	1	5.6

Table 4 indicates that the majority of respondents before the intervention (pre-test) had mild and moderate anxiety levels, each category comprising six individuals (33.3%). Following the intervention (post-test), the majority of responders exhibited a severe level of anxiety, with seven individuals (38.9%). The intervention group had a more significant percentage of respondents with severe anxiety levels than the control group.

The bivariate analysis employing the non-parametric Wilcoxon Signed Rank test to assess the impact of the expressive writing intervention on anxiety levels within the intervention group is illustrated in Table 5.

Table 5. Outcomes of the wilcoxon signed rank non-parametric test in the intervention group

Group	Normal	Mild Anxiety	Moderate Anxiety	Severe Anxiety	Panic Level Anxiety	p-value
Intervention Pre-test	-	1	4	7	6	0.000

Intervention	3	1	8	6	-
Post-test					

The examination of the impact of the expressive writing intervention on anxiety levels in the intervention group yielded a p-value of 0.000 ($p < 0.05$). The results demonstrate that the expressive writing intervention utilizing a diary influences anxiety levels in the intervention group.

The bivariate analysis employing the non-parametric Wilcoxon Signed Rank test to assess the impact of the expressive writing intervention on anxiety levels in the control group is illustrated in Table 6.

Table 6. Outcomes of the wilcoxon signed rank non-parametric test in the control group

Group	Normal	Mild Anxiety	Moderate Anxiety	Severe Anxiety	Panic Level Anxiety	p-value
Control Pre-test	-	6	6	5	1	0.513
Control Post-test	1	4	5	7	1	

The analytical results regarding the impact of the expressive writing intervention on anxiety levels in the control group indicated a p-value of 0.513 ($p > 0.05$). The results demonstrate no variance in anxiety levels between the pre-test and post-test within the control group.

This study demonstrates that expressive writing interventions utilizing diaries significantly reduce anxiety levels in the intervention group. The findings align with prior research by Pastari et al. (2023), which indicated a reduction in the proportion of respondents exhibiting anxiety levels from 62.96% before the expressive writing therapy intervention to 33.33% post-intervention. A research conducted by Niman et al. (2019) indicated that the anxiety levels before the expressive writing treatment were predominantly moderate. The majority exhibited modest anxiety following expressive writing therapy. Jannah (2022) conducted a comparative analysis of the intervention and control groups following the implementation of diary writing activities. The intervention group demonstrated a statistically significant decrease in anxiety from severe to mild, while the control group exhibited a drop that lacked statistical significance.

An individual requires the opportunity to articulate their emotions to manage the stress they are experiencing. Emotional expression can be conveyed through several means. An individual possessing assertive communication abilities is more inclined to articulate their thoughts and emotions with ease. Nonetheless, certain persons require a method to convey their feelings. Expressive writing is a way of articulating thoughts, experiences, and emotions.

Numerous research elucidates the impact of expressive writing on enhancing an individual's psychological well-being. Documenting painful, stressful, or emotional situations can improve physical and mental well-being by alleviating anxiety and diminishing tension, as it offers a platform for the continual articulation of narratives and challenges. Certain specialists assert that cathartically articulating issues by writing in a book induces a sense of tranquility and relaxation, hence augmenting an individual's capacity for rational thought and improved problem-solving (Bolton et al., 2004; Niman et al., 2019; Yuliansyah et al., 2013). Writing can enhance self-understanding by articulating genuine emotions and thoughts (Purnamarini et al., 2016). Expressive writing therapy is a cognitive psychotherapy strategy that targets depression, anxiety, and stress (Danarti et al., 2018). Expressive writing therapy functions as a conduit for articulating thoughts and emotions, thereby offering relief and enhancing confidence, which facilitates a more effective communication of anxiety (Pastari et al., 2023).

The impact of expressive writing is linked to physiological regulation in managing stress. Individuals experiencing elevated stress levels generally exhibit increased concentrations of the stress hormones cortisol and adrenaline relative to individuals who do not encounter stress. Cortisol can inhibit immune system function, whereas adrenaline elevates blood pressure and

impacts the digestive system. Godsay (2016) asserted that when individuals are afforded the chance to articulate their emotional distress, they often undergo alterations in their immunological and psychological processes. T lymphocytes, a type of immune cell, can be enhanced through writing activities. Expressive writing can diminish long-term stress, restore stress levels to normal, and improve immune system efficiency (Pennebaker et al., 2016).

The alleviation of anxiety through diary-based expressive writing is associated with the brain's functional architecture, which comprises the right and left hemispheres. The left hemisphere possesses analytical and rational characteristics, including the ability to write books, whereas the right hemisphere exhibits creative, imaginative, and expressive qualities. When the left hemisphere is active, the right hemisphere is liberated to create, imagine, and introspect, hence alleviating psychological pressures through writing. Engaging in expressive writing inside a diary facilitates an individual's comprehension of oneself, others, and their environment (Saifudin & Kholidin, 2015; Wekoadi et al., 2018).

The supply of relaxation to the intervention group is advantageous for the study respondents in alleviating anxiety. The reduction in anxiety levels in the body correlates with diminished sympathetic nervous system activity. The decrease in nervous system activity facilitates equilibrium between the anterior nucleus and the hypothalamus, culminating in a more relaxed and tranquil body (Liu et al., 2020). Regular practice of breathing relaxation techniques can improve and promote the transport of oxygen throughout the body. Relaxation techniques can elongate nerve fibers and diminish the transmission of nerve impulses in the brain, consequently reducing cerebral activity and the functioning of other bodily systems. Engaging in relaxation techniques can reduce heart rate, respiratory rate, blood pressure, and oxygen consumption while also augmenting alpha brain activity and peripheral temperature (Potter & Perry, 2010).

CONCLUSION

This study has shown that using diaries for expressive writing interventions can help reduce anxiety levels in individuals with SUD undergoing outpatient hospital-based treatment. These interventions can be incorporated alongside standard treatment for individuals with SUD in such settings.

The results of this study show that expressive writing and relaxation techniques significantly reduce anxiety levels in SUD patients. This finding can be used as a basis for developing community-based intervention modules that are low-cost, non-invasive, and easy to implement in various other rehabilitation centers. This study makes a scientific contribution to the field of clinical psychology and addiction rehabilitation, particularly regarding the effectiveness of non-pharmacological interventions in overcoming anxiety disorders in the SUD population, which have previously been more often treated through medical approaches or pharmacotherapy. Integration of expressive writing as a cognitive therapy that can facilitate emotional processing and increase self-awareness of individuals with addiction.

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