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Experimental Testing of a Short Model of Integrative Psychotherapeutic Intervention to Reduce Suicidal Behavior and Ideation in Depressed Patients Admitted to the Psychiatric Ward

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Abstract: *This study investigates the efficacy of a short-term integrative psychotherapeutic intervention designed to reduce suicidal behavior and ideation in depressed patients admitted to a psychiatric ward. Suicidal risk, influenced by mental health disorders, personal crises, social isolation, substance abuse, and trauma, is typically treated with pharmacotherapy and psychotherapy. The study focuses on combining various psychotherapeutic techniques including Cognitive-Behavioral Therapy (CBT), Dialectical Behavior Therapy (DBT), and Mindfulness-Based Cognitive Therapy (MBCT) into a cohesive intervention program.*

The intervention, delivered over four weeks, included six modules encompassing psychoeducation, behavioral activation, cognitive restructuring, mindfulness practices, and personal development strategies. Participants were divided into an experimental group receiving both the psychotherapeutic intervention and medication and a control group receiving only medication.

The study measured changes in hopelessness and depression using the Beck Hopelessness Scale (BHS), Montgomery-Åsberg Depression Rating Scale (MADRS), and the DASS-21R depression scale. The study concludes that integrative psychotherapeutic intervention significantly improves psychological outcomes for depressed patients at risk of suicide, offering a viable complement to pharmacological treatments. These findings support the potential of combining cognitive-behavioral and mindfulness techniques for the holistic management of depression and suicidal ideation in clinical settings.

Results indicated significant reductions in hopelessness and depression among the experimental group. Specifically, the BHS and MADRS scores showed substantial decreases post-intervention, highlighting the immediate efficacy of the integrated psychotherapeutic approach. However, the DASS-21R results did not demonstrate statistically significant differences.

Keywords: *suicidal risk; integrative psychotherapeutic intervention; depression reduction; mindfulness-based cognitive therapy - MBCT; cognitive-behavioral therapy – CBT*

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1. Introduction

Suicidal risk refers to the likelihood or probability that an individual may engage in self-harming behaviors, specifically those that involve intentional and potentially fatal harm to oneself. Factors contributing to suicidal risk can include mental health disorders, personal crises, social isolation, substance abuse, or a history of trauma. Assessment of suicidal risk involves evaluating a person's thoughts, emotions, and behaviors to determine the severity of their distress and the potential for self-harm (Turecki & Brent, 2016).

According to DSM-5 (2013), suicidal risk can be treated through two forms of therapy, applied independently or in combination: pharmacotherapy and psychotherapy. In primary intervention, antidepressant medication is predominantly used to balance the neurotransmitters responsible for the emotional state: serotonin, norepinephrine, and dopamine (Nicoară, 2019).

Psychotherapy is an effective form of intervention for treating suicidal risk. This is undisputed. What is controversial is the reason for its efficacy. To date, several specific psychotherapeutic intervention forms have been developed that address suicidal behavior both preventively and interventionally. According to the literature, cognitive-behavioral therapy (Ellis & Dryden, 2007; Ellis, 1962; Haaga & Beck, 1995; Beck, 2011; Cuijpers et al., 2008) and dialectical behavior therapy (Linehan, 2014; Kuehn et al., 2020) seem to be the most used and effective psychotherapeutic interventions for patients with suicidal ideation or suicide attempts, even in the short term (Nicoară, 2019).

2. Cognitive-Behavioral Therapy (CBT)

Developed by Aaron T. Beck, CBT is the most widely used psychotherapy technique for reducing suicidal risk. CBT is an umbrella term for various psychotherapy techniques that focus on cognitive modifications (through cognitive restructuring) and behavioral changes (through graded exposure and relaxation training). Suicidal cognitions and behaviors clearly exist, but only a minority of individuals will progress from suicidal thoughts and self-harm to suicide attempts. Regardless of the severity, these cognitions and behaviors can constitute risk factors for committing suicide, which is why it is crucial to address them in psychotherapeutic interventions (Beck & Beck, 2011; Rothbaum et al., 2000).

The cognitive theory explains both the onset and maintenance of depression through a cognitive triad: distorted and negative thinking about oneself, the world, and the future. Based on this conceptualization, A. T. Beck developed his model following a framework proposed by Albert Ellis (Ellis & Dryden, 2007; Ellis, 1962).

Cognitive-Behavioral Therapy for Suicide Prevention (CBT-SP)

Developed by Stanley in 2009, CBT-SP is a CBT treatment aimed at adolescents who have recently attempted suicide (within 90 days). It is also applicable to those experiencing acute suicidal ideation, rather than chronic, persistent ideation. The primary objectives of CBT-SP are to reduce suicidal risk factors, enhance coping skills, and prevent future suicidal behavior (Stanley et al., 2009).

CBT-SP is grounded in a stress-diathesis model of suicidal behavior, which posits that suicidal tendencies arise from a combination of factors such as gender, religion, family and genetic influences, childhood experiences, and the availability of psychosocial support. In this model, stressors—like interpersonal conflicts or difficulties at work or school—can trigger suicidal behavior in individuals with these vulnerabilities. CBT-SP aims to alter reactions to both acute and chronic stress within this context of vulnerability (Stanley et al., 2009).

A key focus of CBT-SP is identifying the stressors, including emotional, cognitive, behavioral, and familial processes, that are active before and after the adolescent's suicide attempt or recent suicidal crisis. The therapy includes both acute and continuation phases, typically completed within six months.

The acute treatment phase lasting for the first three sessions is composed of five components: chain analysis, safety planning, psychoeducation, developing reasons for living and hope, and case conceptualization. Safety planning, psychoeducation, and chain analysis are usually carried out within the first two sessions, whereas the third session is focused on developing reasons for living and case formulation. Family members are involved in all initial sessions. A detailed chain analysis of events leading up to the suicide attempt or crisis forms the core strategy of CBT-SP and establishes its theoretical framework (Stanley et al., 2009).

3. Mindfulness-Based Cognitive Therapy (MBCT)

Also known as mindfulness-based cognitive techniques (MBCT) (Segal, Teasdale, & Williams, 2004), this form of psychotherapy was developed by Mark G. Williams. It "refers to a process leading to a mental state characterized by awareness of the present experience, observing one's thoughts, bodily sensations, emotions, whatever and however many they may be, with openness, curiosity, and acceptance" (Kabat-Zinn, 2003).

The goal of mindfulness-based cognitive therapy (MBCT) is to become aware of and learn how to live with our thoughts and emotions, rather than trying to escape from them. Jon Kabat-Zinn (Kabat-Zinn, 2003) and other authors like Bishop and Hayes (Bishop, 2002) emphasize that the idea behind mindfulness meditation is regulating attention and focusing on the present with openness, curiosity, and receptivity.

This method can counteract the effects of stress. Focusing on the present helps eliminate the causes of stress, which are often placed in either the past or the future. Additionally, it teaches us to accept life experiences and react to them deliberately, helping eliminate avoidant behaviors towards undesirable experiences, which are believed to exacerbate suffering and maintain mental disorders. Breath control helps balance the responses of the sympathetic and parasympathetic nervous systems, eliminating somatic symptoms of stress.

Another study (Spijkerman, Pots, & Bohlmeijer, 2016) confirms that mindfulness therapy has an efficacy comparable to antidepressant medication. Piet and Hougaard (2011) state that mindfulness-based cognitive therapy significantly reduces the risk of relapse in patients with depression. Kuyken et al. (Kuyken et al., 2016) confirmed this result. Moreover, Hofmann et al. (2010) showed that mindfulness-based therapy not only has preventive effects but also significantly alleviates acute symptoms of depression and anxiety.

Additionally, the therapy has helped moderately alleviate acute symptoms of depression and anxiety related to cancer. Various authors (Khoury et al., 2013) examined the effects of mindfulness-based cognitive therapy and found that this form of psychotherapy was particularly effective in alleviating psychological issues such as anxiety, depression, stress, and other mental health disorders. However, it proved less effective in addressing symptoms related to medical conditions.

4. Dialectical Behavior Therapy (DBT)

Developed by Marsha M. Linehan, it was created to support individuals with a history of multiple suicide attempts and self-harm. Over time, it has become the gold standard for treating borderline personality disorder. It has proven effective for a wide range of other conditions, including addictions, anxiety, eating disorders, post-traumatic stress disorder, and emotional disorders in adolescents. (Linehan, 1993, 2014; Kuehn et al., 2020).

Derived from cognitive-behavioral therapy, it is among the first forms of psychotherapy to emphasize mindfulness, having deep connections with Buddhist philosophy. It combines classical techniques of cognitive restructuring, self-monitoring and reward, and concepts such as reality acceptance, present-moment awareness, and balance between extremes. Dialectical behavior therapy has multiple studies demonstrating its efficacy in reducing suicidal behavior (DeCou, Comtois, & Landes, 2019), being among the few scientifically proven forms of psychotherapy.

The goal of DBT is to help clients build a life worth living through four components: skills training, individual therapy, telephone coaching, and the therapeutic team. Because individuals with borderline personality disorder have grown up in invalidating environments with multiple forms of invalidation, DBT creates a framework for (re)learning a set of skills.

These skills improve the functioning of the adult person, with the capacity for emotional response to pain and stress, emotional regulation, and interpersonal effectiveness. A scientific article that includes research on suicidal behavior published by Marsha M. Linehan is: "Understanding the Behavioral Cycle of Suicidal Behavior: Understanding Repeated Suicide Attempts among Individuals with Borderline Personality Disorder and a History of Suicide Attempts" (Kuehn, King, Linehan, & Harned, 2020).

The golden rule for acquiring these skills is practice. The techniques proposed in the distress tolerance module emphasize that practicing these skills does not substitute for seeking professional psychological assistance, which alone can help overcome the perceived need to promote dysfunctional behavior such as self-harm (Linehan, 2014).

5. Interpersonal Psychotherapy (IPT)

Interpersonal Psychotherapy (IPT) was developed by Gerald Klerman and Myrna Weissman. It is a well-structured, documented form of short-term psychotherapy consisting of 12-16 weekly sessions. Initially named "high contact therapy," IPT was first developed at Yale University in 1969 as part of a study designed by Gerald Klerman, Myrna Weissman, and colleagues to test the efficacy of an antidepressant with and without psychotherapy as a maintenance treatment for depression (Linehan et al., 2006; Weissman, 2006; Markowitz & Weissman, 2012).

IPT has been studied in many research protocols for its development (Weissman et al., 1979; Klerman et al., 1974). Interpersonal Psychotherapy (IPT) is an individual therapy based on attachment theory. The goal of interpersonal psychotherapy is to alleviate depressive symptoms by resolving current interpersonal problems and helping the patient improve and attempt to re-establish secure attachment bonds with people in their social environment. It does not address interpersonal issues from the past. The model of interpersonal psychotherapy primarily focuses on treating depression, the main cause of suicide (Klerman et al, 1974).

Interpersonal psychotherapy consists of three stages. In the first stage, the therapist gathers information, analyzes the interpersonal relationships of the person with a depressive episode, and makes a diagnosis.

In the second phase, the actual problem is addressed. Symptoms of the depressive episode are associated with one of the four categories of problems (according to IPT theory): grief over the death of a loved one; personal conflicts in couples or with family members, such as parents or children, or conflicts with colleagues; changes in interpersonal roles, such as recent marriage, recent divorce, or a new professional role following a promotion or demotion; and a deficient ability to form and maintain interpersonal relationships. In the final phase, the progress made during psychotherapy should be evaluated, and possible strategies to avoid new depressive episodes should be discussed.

These interpersonal problems are associated with life events. People who suffer from depression need social skills to respond to these demands. Social skills are developed within the psychotherapeutic process (Markowitz et al, 1998). IPT is a form of psychotherapy that includes work outside of the session, and the therapist and client work together in a problem-focused manner (Markowitz et al, 1998).

Interpersonal therapy (IPT) for depression is based on the medical model, taking a pragmatic approach and focusing on curing depression (Cuijpers et al., 2008). This may or may not be associated with antidepressants and other psychotropic medications. Therefore, in its original form, this type of psychotherapy is a short-term psychotherapy (Markowitz et al, 1998; Cuijpers et al., 2008; Brown et al., 2000).

6. The current study

The study is based on existing literature regarding the development of resilience in depressed patients and the experimental testing of a short psychotherapeutic intervention model to reduce suicidal risk in depressed patients admitted to the psychiatry ward, based on the six proposed resilience strategies (Ellis & Grieger, 1986; Loh et al., 2014; Deady et al., 2017; Leppin et al., 2014).

Resilience is the individual's ability to maintain a state of balance in the context of extremely unfavorable circumstances (Pfennig et al., 2020; Loh et al, 2014). Data on the effectiveness of strategies for developing resilience are quite numerous but still insufficiently elucidated. Some authors (Loh et al, 2014; Deady et al., 2017; Leppin et al., 2014; Edward, 2005) propose six general strategies for developing resilience in depression, as follows: psychoeducation measures, development of personal autonomy, mindfulness and compassion-based methods and techniques, strategies for training problem-solving skills, social connection strategies, and personal development strategies.

The current study introduces several innovative aspects in the domain of psychotherapeutic interventions aimed at reducing suicidal risk and depression among patients admitted to psychiatric wards. The novelty of the study can be delineated through the following points:

This study uniquely combines cognitive restructuring, emotional validation, and behavioral activation techniques with mindfulness-based cognitive therapy (MBCT). While each of these techniques has been individually validated in prior research, their integration into a cohesive intervention program specifically targeting suicidal risk and depression represents a novel approach. This comprehensive method leverages the strengths of each technique, potentially enhancing overall therapeutic efficacy.

The psychotherapeutic intervention program was designed as a short-term, intensive course, conducted over four weeks with six modules delivered at a high frequency of two per week. This contrasts with the more extended and less frequent intervention schedules typically explored in previous studies. The short duration, combined with the intensive nature of the program, aims to produce rapid improvements in psychological outcomes, which is particularly critical for patients at acute suicidal risk.

While much of the existing literature emphasizes the long-term outcomes of psychotherapeutic interventions, this study focuses on the immediate post-intervention effects. By assessing changes in hopelessness and depression levels right after the completion of the intervention, the study provides insights into the short-term efficacy of the program. This immediacy is crucial for clinical settings where quick stabilization of patients' psychological states is necessary.

The implementation of the intervention program within a psychiatric ward setting enhances the study's practical relevance. This real-world application ensures that the findings are not only theoretically significant but also practically viable. The study demonstrates the feasibility and effectiveness of integrating psychotherapeutic interventions into routine clinical practice, providing a model that can be adopted and adapted by psychiatric facilities worldwide.

6.1. Hypotheses

The general hypothesis for our psychotherapeutic intervention program is the assumption that it positively influences the emotional, cognitive, and social state of depressive patients, and significantly reduces the suicidal risk. Subordinate to these objectives, the following hypotheses were formulated:

Hypothesis 1: There are differences between the pre-test and post-test regarding the degree of hopelessness before and after the psychotherapeutic intervention.

Hypothesis 2: There are differences between pre-test and post-test regarding the degree of depression before and after the psychotherapeutic intervention.

6.2. Materials and methods

This study received approval from the Ethics Committee of the "Iuliu Haţieganu" University and complies with the provisions of the Helsinki Declaration. It was organized and conducted following good clinical practice guidelines. The design is a cross-sectional study with two parallel groups: an experimental group that received the psychotherapeutic intervention program along with medication, and a control group that received only medication.

The psychotherapeutic intervention program was conducted at the Psychiatry III Clinic of the Cluj County Emergency Hospital over four weeks, during which participants completed six modules, two per week.

The patients were enrolled only after they agreed to and signed the informed consent form. Throughout the study, patients' privacy was respected in that patients' codes were used instead of names. The sample included patients diagnosed in the Psychiatric Unit III (Cluj County Emergency Clinical Hospital, Cluj-Napoca) according to diagnostic tools ICD-10 and DSM-5.

The sequence of Steps: Selection of eligible patients; Obtaining informed consent for study participation; Administration of pre-intervention psychological evaluation questionnaires; Conducting the psychotherapeutic intervention concurrently with medication administration in the experimental group and only medication in the control group; Administration of post-intervention psychological evaluation questionnaires.

The initial psychological evaluation, conducted before the psychotherapeutic intervention, included assessing depressive symptoms and the degree of hopelessness. The psychotherapeutic intervention consisted of six sessions, based on behavioral activation and problem-solving therapy. The basic elements of the intervention are psychoeducation, behavioral activation, systematic problem solving, sessions on sleep, rumination, and relaxation, and psychoeducation on relapse prevention.

The final psychological evaluation was conducted after the completion of the psychotherapeutic intervention and included a reassessment of depressive symptoms and the degree of hopelessness. The main medication administered to patients was fluoxetine according to the treatment protocol.

6.3. Data analysis

Qualitative data were described using absolute and relative frequencies. Quantitative data that did not follow a normal distribution were described using the median and quartiles. Comparison between two independent groups for qualitative variables was performed using the Chi-square test, or Fisher's exact test if more than 20% of the expected cells had values less than 5. Comparison between two independent groups for quantitative variables that did not follow a normal distribution was performed using the Mann-Whitney U test. Comparison between two dependent groups for quantitative variables that did not follow a normal distribution was performed using the Wilcoxon signed-rank test for dependent samples. For differences between medians, a 95% confidence interval was calculated using the bootstrapping method.

Three multiple linear regression models were created, with MADRS score, DASS depression score, and BHS as dependent variables, according to treatment, and adjusted for sex, origin environment, education, and marital status. Adjustment variables were chosen based on their potential to influence the dependent variable, as is known from the literature.

Table 1. Content of the modules in the psychotherapeutic intervention program

Module 1	**Psychoeducation module** – includes understanding the specific notions of resilience, understanding and recognizing one's own emotions, understanding and recognizing the early and improving signs of the depressive episode	It answered and explained what depression is, and at the same time it identified what are the causes of one's depression (sources of distress, feelings of dissatisfaction with life)
Module 2	**Developing autonomy of antidepressant behaviors** - and a balanced lifestyle, identifying and developing skills, such as engaging in various activities and hobbies, and developing and practicing self-care skills: cooking, cleaning, shopping, etc.	it intervenes on the factors that cause dissatisfaction, identified from the 16 areas of life (quality of life questionnaire: QoLI)
-Module 3	**Optimizing the way of solving one's problems** - includes learning and practicing strategies for practicing cognitive-emotional and behavioral skills: journaling, gradual exposure, homework and exercises, and exploring options with the help of role-playing	work is done with the strategies and ways of cognitive-emotional and behavioral coping (SACS and CERQ questionnaires)
Module 4	**Mindfulness meditation** – includes learning and practicing strategies to focus on living in the present, detaching negative emotions through emotion regulation techniques to diminish rumination, self-blame, etc., as well as focusing on positive feelings and positive experiences from the past and present	We work with mindfulness exercises that develop the ability to focus on the present and that develop the ability to consider thoughts and emotions (mental processes) as fleeting messages like fleeting noises and tactile sensations
Module 5	**Optimizing the process of deliberation, decision-making, and problem-solving through social connection** - includes learning and practicing engaging in satisfying and quality social activities, learning and practicing negotiation skills, managing conflicts, verbalizing one's own emotions and asking for help	The patient is helped to identify the role of emotions in solving problems through cognitive-emotional reassessment techniques
Module 6	**Prevention of relapses through personal development** – includes identifying and developing new skills by promoting one's projects and life goals, promoting personal values in everyday life, understanding and recognizing early signs of relapse into a new depressive episode	It helps the patient learn to monitor negative thoughts and identify automatic thoughts and maladaptive beliefs

To avoid the phenomenon of overfitting, it was ensured that there were 63 observations, and care was taken that the number of degrees of freedom, given by the independent variables, did not exceed the number of observations divided by 10. Since some adjustment variables had numerous categories, some with very few subjects, categories were grouped so that there were two categories per variable. For regression models, multicollinearity was checked using the variance inflation factor (VIF); normality of residuals was checked using quantile-quantile plots; heteroscedasticity was checked using scatter plots of observed values on the x-axis and standardized residuals on the y-axis, as well as the Breusch-Pagan test. Since heteroscedasticity was observed, confidence intervals and p-values of the unstandardized regression coefficients were calculated using sandwich estimators. For each model, the statistical significance and the adjusted coefficient of determination were verified.

For all statistical tests, a two-tailed p-value was used, with a significance threshold of 0.05. Statistical processing was performed using the R statistical computing and graphics environment, version 4.1.2 (Team, 2017).

7. Results

The study included 65 participants, aged between 18 and 59 years, with a median (IQR) age of 40 (32 - 53), of which 32 were in the clinical group (49.23%) and 33 were in the non-clinical group (50.76%). The sample consisted of 31 men (47.7%) and 34 women (52.3%), with 45 participants from rural areas (69.2%) and 20 from urban areas (30.8%).

Table 2. Comparison of socio-demographic characteristics between the control group and the experimental group

	Treatment (TAU)(n=33)	**Treatment (TAU) + psychotherapy (n=32)**	**P-value**
Age (years), median (IQR)	36 (32 - 45)	49 (32 - 54.25)	0.178
Sex (Masculin), nr (%)			
Sex (Feminin), nr (%)	18 (54.55)	16 (50)	0.714
Environment of origin (Rural), no (%)	30 (90.91)	15 (46.88)	< 0.001
Marital status (Married vs. unmarried), no (%)	10 (30.3)	14 (43.75)	0.261
Status marital, nr (%)			**0.015**
married	10 (30.3)	14 (43.75)	
divorced	2 (6.06)	9 (28.12)	
widower	4 (12.12)	1 (3.12)	
unmarried	17 (51.52)	8 (25)	
Education (Primary and secondary vs. higher), no (%)	22 (66.67)	23 (71.88)	0.649
Detailed studies, no (%)			0.001
Primary education	0 (0)	1 (3.12)	
Secondary education	0 (0)	3 (9.38)	
High school education	10 (30.3)	18 (56.25)	
Post-secondary education	12 (36.36)	1 (3.12)	
License	7 (21.21)	8 (25)	
Master	4 (12.12)	1 (3.12)	
Statut socioeconomic, nr (%)			**< 0.001**
Student	1 (3.03)	5 (15.62)	
employee	24 (72.73)	9 (28.12)	
unemployed	0 (0)	4 (12.5)	
No occupation	0 (0)	6 (18.75)	
disability pensioner	8 (24.24)	8 (25)	

Based on education level: 1 participant had primary education (1.5%), 3 had middle school education (4.7%), 28 had high school education (43.1%), 13 had post-secondary education (20.0%), and 13 had university undergraduate education (23.1%), with 5 participants having a master's degree (7.7%).

Regarding marital status: 25 were single (38.5%), 24 were married (36.9%), 11 were divorced (16.9%), and 5 were widowed (7.7%). In terms of socio-economic status: 6 were students (9.2%), 33 were employed (50.7%), 4 were unemployed (6.2%), 6 were not working (9.2%), and 16 were retirees (24.6%).

Based on personal medical history: 40 had no history (61.5%), 25 had psychiatric history (38.5%), 32 had suicidal tendencies (49.2%), and 33 had no suicidal tendencies (50.8%).

Table 3. Evolution of depression and hopelessness scores on the control group and control group

Moment:	Initial evaluation	Post-intervention	Difference (95% CI)	P-value
Treatment				
MADRS, median (IQR)	30 (26 - 35)	25 (22 - 26)	5 (5 - 8.5)	< 0.001
DASS depresion, median (IQR)	15 (12 - 19)	13 (9 - 15)	2 (3 - 3.5)	< 0.001
BHS, median (IQR)	12 (10 - 14)	10 (10 - 12)	2 (1.5 - 2)	< 0.001
Tratament + psihoterapie				
MADRS, median (IQR)	27.5 (24 - 41)	15 (13.75 - 19.5)	12.5 (11 - 16.5)	< 0.001
DASS depresion, median (IQR)	17 (14 - 19)	11 (8 - 13.25)	6 (4.5 - 6)	< 0.001
BHS, median (IQR)	11 (10 - 16)	7.5 (6 - 10.25)	3.5 (3.5 - 4.5)	< 0.001

IQR, interquartile range; CI, confidence interval.

To test the first hypothesis of the study (H1: There are differences between pre-test and post-test in terms of the degree of hopelessness before and after psychotherapeutic intervention), multiple linear regression was used, with the Beck Hopelessness Scale (BHS) score as the dependent variable, adjusted for treatment, sex, background, education, and marital status.

Controlling for confounding variables, the group that received psychotherapy had significantly greater decreases in MADRS scores compared to the group that did not receive psychotherapy. The statistical significance of the model was $p < 0.001$ (F statistic = 15.48 with 5, 59 degrees of freedom). The model had an adjusted coefficient of determination = 0.53.

Table 4. Multiple linear regression model with BHS score as dependent variable, depending on treatment and adjusted for sex, background, education, and marital status

Feature	B	(95% CI)	p
Group (Treatment + Psychotherapy vs. Treatment)	3.11	(2.17 - 4.05)	< 0.001
Sex (Masculin vs. Feminin)	-0.43	(-1.01 - 0.15)	0.152
Background (Urban vs. Rural)	-0.81	(-1.78 - 0.16)	0.108
Education (Higher vs. Primary and Middle)	-0.21	(-0.84 - 0.41)	0.504
Marital Status (Unmarried vs. Married)	0.09	(-0.63 - 0.8)	0.808

CI, confidence interval calculated by sandwich estimators.

To test the second hypothesis of the study (H2: There are differences between pre-test and post-test in terms of the degree of depression before and after psychotherapeutic intervention), multiple linear regression was used, with the MADRS score as the dependent variable, adjusted for treatment, sex, background, education, and marital status.

Controlling for confounding variables, the group that received psychotherapy had significantly greater decreases in MADRS scores compared to the group that did not receive psychotherapy. The statistical significance of the model was $p < 0.001$ (F statistic = 6.74 with 5, 59 degrees of freedom). The model had an adjusted coefficient of determination = 0.31.

Table 5. Multiple linear regression model with MADRS score as dependent variable, depending on treatment and adjusted for sex, background, education, and marital status

Feature	B	(95% CI)	p
Group (Treatment + Psychotherapy vs. Treatment)	8.1	(4.3 - 11.91)	< 0.001
Sex (Masculin vs. Feminin)	-0.82	(-3.76 - 2.12)	0.585
Background (Urban vs. Rural)	0.06	(-4.69 - 4.8)	0.982
Education (Higher vs. Primary and Middle)	-2.87	(-5.95 - 0.21)	0.073
Marital Status (Unmarried vs. Married)	1.6	(-1.42 - 4.62)	0.302

CI, confidence interval calculated by sandwich estimators.

Additionally, a multiple linear regression model was created with the DASS depression score as the dependent variable, adjusted for treatment, sex, background, education, and marital status. Controlling for confounding variables, the group that received psychotherapy had significantly greater decreases in DASS depression scores compared to the group that did not receive psychotherapy. The statistical significance of the model was $p < 0.001$ (F statistic = 6.58 with 5, 59 degrees of freedom). The model had an adjusted coefficient of determination = 0.3.

Table 6. Multiple linear regression model with the DASS depression score as a dependent variable, depending on treatment and adjusted for sex, background, education, and marital status

Feature	B	(95% CI)	p
Group (Treatment + Psychotherapy vs. Treatment)	2.63	(1.69 - 3.57)	< 0.001
Sex (Masculin vs. Feminin)	0.25	(-0.53 - 1.03)	0.534
Background (Urban vs. Rural)	-0.82	(-1.91 - 0.27)	0.147
Education (Higher vs. Primary and Middle)	0.54	(-0.35 - 1.43)	0.238
Marital Status (Unmarried vs. Married)	0.7	(-0.17 - 1.57)	0.12

CI, confidence interval calculated by sandwich estimators.

8. Discussion

In the present study, our main objective was to observe the evolution of the psychological state of patients with suicidal risk as a result of undergoing the psychotherapeutic intervention program. We aimed to assess the degree of hopelessness as well as the level of depression before and after completing the psychotherapeutic intervention program.

The results obtained support the first hypothesis, indicating that there are differences between the pre-test and post-test in terms of the degree of hopelessness before and after the psychotherapeutic intervention. Thus, the treatment group (TAU) has higher values than the Treatment (TAU) + psychotherapy group by 2.5 (95% CI 1 - 4) regarding the difference between the medians of the BHS post-intervention variable, p = < 0.001, (with a parameter of 792) (Mann-Whitney U test), the difference being statistically significant.

Regarding the second hypothesis, it was partially confirmed, indicating that there is no statistically significant difference between pre-test and post-test regarding the diagnosis of depression. For the DASS-21R depression scale, the Treatment (TAU) group has higher values than the Treatment (TAU) + psychotherapy group by 2 (95% CI 0 - 3) regarding the difference between the medians of the DASS depression post-intervention variable, p = 0.077, (with a parameter of 662). The Mann-Whitney U test shows that the difference is not statistically significant.

Regarding the degree of depression evaluated using the MADRS scale, the Treatment (TAU) group has higher values than the Treatment (TAU) + psychotherapy group by 10 (95% CI 6 - 10) regarding the difference between the medians of the MADRS post-intervention variable, p = < 0.001, (with a parameter of 893.5) (Mann-Whitney U test), the difference being statistically significant.

Among the possible reasons for the reduction in the level of hopelessness and depression is the use of cognitive restructuring techniques, emotional validation, and behavioral activation associated with mindfulness-based cognitive therapy (MBCT) techniques (Nicoară et al., 2022; Nicoară, Coman, & Cosman, 2022; Nicoară et al., 2023).

The findings of this study are consistent with some previous studies that conducted similar research and demonstrated that psychotherapeutic intervention is effective and has an equivalent effect to medication treatment (D'Zurilla et al., 1998; Butler et al., 2006). Patients who completed MBCT showed significant reductions in depressive symptoms (Calati & Courtet, 2016; Cladder-Micus et al., 2018).

The limitations of the research that warrant caution in generalizing the results are both theoretical and methodological. A primary limitation of the research stems from the tools used: this is due to the self-assessment scales where the results depend on the honesty and reflective capacity

of the respondents. Another limitation of the research arises from the convenience sampling of participants and the characteristics of the population investigated: the sample size and the fact that patients are from a single geographical area. Additionally, the monitoring of patients included in the study was conducted over a short period. It would have been necessary for the monitoring and follow-up of patients to be conducted over a longer period to determine whether the cognitive-emotional and behavioral changes achieved through the psychotherapeutic program are sustained over an extended period.

9. Conclusions

This study aimed to assess the efficacy of a psychotherapeutic intervention program in improving the psychological state of patients at risk of suicide, with a specific focus on evaluating changes in hopelessness and depression levels pre and post-intervention.

The findings strongly support the primary hypothesis that psychotherapeutic intervention significantly reduces the degree of hopelessness among patients. The data revealed that the Treatment As Usual (TAU) group exhibited significantly higher levels of hopelessness compared to the Treatment (TAU) + Psychotherapy group post-intervention. Specifically, the median difference in the Beck Hopelessness Scale (BHS) scores was 2.5 points (95% CI 1 - 4) with a p-value of < 0.001 (Mann-Whitney U test), indicating a substantial and statistically significant decrease in hopelessness attributable to the psychotherapeutic intervention.

The results for the DASS-21R depression scale only partially confirmed the secondary hypothesis. The difference between pre and post-test depression levels in the TAU group compared to the TAU + Psychotherapy group was not statistically significant (median difference of 2 points; 95% CI 0 - 3; $p = 0.077$), suggesting that while there was a reduction in depression, it was not significant enough to conclude robust efficacy based on this measure alone.

Conversely, the Montgomery-Åsberg Depression Rating Scale (MADRS) results provided strong evidence of the intervention's effectiveness. The TAU group had significantly higher post-intervention depression levels compared to the TAU + Psychotherapy group, with a median difference of 10 points (95% CI 6 - 10) and a p-value of < 0.001, clearly indicating the intervention's substantial impact on reducing depressive symptoms.

The significant improvements observed in hopelessness and depression can be attributed to the combination of cognitive restructuring, emotional validation, and behavioral activation techniques integrated with mindfulness-based cognitive therapy (MBCT). These therapeutic components collectively contributed to the enhanced psychological outcomes for patients.

These findings are consistent with existing literature, which supports the effectiveness of psychotherapeutic interventions in treating depression and reducing suicidal risk. The study corroborates previous research indicating that psychotherapy can produce results comparable to pharmacological treatments, particularly noting significant reductions in depressive symptoms among patients who completed MBCT.

In conclusion, the study provides compelling evidence for the efficacy of psychotherapeutic interventions, particularly those incorporating cognitive-behavioral and mindfulness techniques, in reducing hopelessness and depression among patients with suicidal risk. These interventions offer a viable alternative or complement to pharmacological treatments, contributing to the holistic management of depressive symptoms and suicidal tendencies. The research highlights the need for continued exploration and validation of these therapeutic approaches to ensure their broad applicability and effectiveness across diverse patient populations.

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