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Psychological Pain, Anger Rumination, and Its Relation with Suicidal Ideations among Patients with Major Depressive Disorder

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ABSTRACT

Background: Worldwide, anger rumination has been associated with aversive psychological outcomes including depression and suicidal ideation over time. Psychological pain has been supposed to be a robust predictive variable for suicide. **Aim:** This study intended to explore the correlation between anger rumination, psychological pain, and suicidal ideations among patients diagnosed with major depressive disorder. **Subjects and Method:** A descriptive correlational research design was employed. The study subjects encompassed a purposive sample of 84 patients with major depressive disorder recruited from inpatients' departments of Port Said Psychiatric Health and Addiction Treatment Hospital. The participants were asked to fulfill predesigned three Instruments which were; Personal and Clinical Data Questionnaire, Anger Rumination Scale, and Mee-Bunney Psychological Pain Rating Scale. **Results**: The studied depressed patients with suicidal ideations had statistically significant higher mean scores of overall anger rumination and its sub-dimensions than those without suicidal ideations at $p \leq 0.05$. Besides, the studied patients with suicidal ideations had significantly higher mean scores of psychological pain than those without suicidal ideations as $p = 0.001$. **Conclusion**: There were statistically significant positive correlations between mean scores of psychological pain and overall anger rumination and its sub-dimensions among the studied major depressive patients who had suicidal ideations at $p \leq 0.05$. **Recommendations**: Mindfulness based-cognitive behavioral therapy may be ultimately effective in reducing anger rumination and psychological pain through challenging cognitive distortions, exchanging it with rational beliefs, effective coping resources, and execution of problem-solving skills. Consequently, help to reduce suicide risk.

Keywords: Anger Rumination, Psychological Pain, Suicidal Ideation, Major Depressive Disorder.

Introduction

Worldwide, suicide is acknowledged as a chief communal problem in several republics. Approximately 800,000 persons globally commit suicide each year (World Health Organization, 2018). Suicide is a preventable syndrome, but it is the eradicator in young individuals aged between 15 toward 29 years (World Health Organization, 2014). In a study of 2964 suicide cases that lead to deaths, over 90% of those who died had a psychiatric illness (Takizawa, 2012). The highest suicidal rate was established among patients with depressive disorder. Around three-quarters of patients with depression had suicidal thoughts (Helvacı Çelik & Hocao˘glu, 2016).

Major depression is one of the most common psychological disorders that is accompanied with compromised emotional regulation (Jormann & Gotlib, 2010). Major depression is a disorder of low mood that can disturb an individual's behavior, thoughts, feelings, and sense of welfare. Individuals with a depressed mood may exhibit feelings of constant sadness, dejection, hopelessness, helplessness, worthlessness, weakness, unwillingness, guilty feelings, and negative perspectives, besides, poor concentration, irritability, and some physiological features (Geraei, Shakibaei & Mazaheri, 2018). Furthermore, depressive people may experience anger rumination (Yildiz & Eldeleklio˘glu, 2019).

Rumination is a passive and monotonous emphasis on depressive symptoms. It is a response style branded by a repetitive focusing on problematic states, cognitions, actions, or events without taking an action. Anger rumination is unintended and persistent cognitive process that arises during and persists after an episode of anger experience. It is responsible for the duration and intensification of anger. Ruminants are highly vulnerable to depressive indicators. Anger rumination intensifies the possibility of exacerbation, onset, chronicity, plus maintenance of depression, extends dysfunction, sustains signs, and escalates tension (Nolen- Hoeksema et al., 2008; Rood et al., 2010). Recalling previous anger involvements can activate new anger conducts and aggression (Peled & Moretti, 2010). A positive association between anger rumination and depression was discovered (Besharat et al., 2013).

Rumination is viewed as a maladaptive cognitive emotion regulation approach. Individuals possibly utilize cognitive replies as rumination to evade the experience of unbearable emotions (Hofmann et al., 2012). While, Liverant et al., (2011) stated that, rumination was definitely connected with the suppression of negative emotions and adversely related to the approval of negative emotion, signifying that rumination may aid to suppress annoying feelings.

Alternatively, Law & Tucker, (2018) suggested that rumination may evade persons to take action to modify their conditions by permitting them to improve a belief that their situations are despairing plus wholly trying to change them might be unsuccessful that contributes to suicidal ideation. Rumination intensifies aversive negative affect that thinking about suicide serves as a way to provide relief. Anger rumination is a significant influence allied to the likelihood of suicide. Undesirable emotions as anger could turn into unmanageable psychological pain (Karatas & Çelikkaleli, 2018).

Psychological pain, mental pain, or psych-ache is an inner experience of negative emotions, and mental suffering that may be triggered by the experience of severe emotional traumatic events, thwarting to meet psychological needs, as desire of attachment, affection plus security, and requirement to evade disgrace, organizing life, avoidance of criticism, and disappointments resolution (Demirkol, Namlı & Tamam, 2019).

Individuals demonstrate psychological pain various times in their lifetime at fluctuating degrees, remarkably in social circumstances for instance; a relationship fragmentation, job discharge, or loss of an important one. Psychological pain goes along with difficult feelings such as uneasiness, sorrow, dishonor, jealousy, embarrassment, guilt, painful rumination, hopelessness, self-worthlessness, and loneliness (Eisenberger, 2015).

Unbearable psychological pain can be defined as an emotionally based tremendously aversive feeling that may be knowledgeable as torment (Mee et al., 2011). Meerwijk & Weiss (2014), suggested a definition of psychological pain as a lasting, unpleasant, and unsustainable feeling branded by a negative evaluation of an inability or deficiency of the self. Psychological pain has been hypothesized as a state with profound risks for health and survival in humans and an alarm system of social withdrawal. Thus, it denotes the soul of the human social experience, and a fundamental tool for social and emotional maintenance (Meerwijk et al., 2013). Although psychological pain is often a normal phenomenon, it was a prominent symptom in more pervasive psychiatric conditions such as depression (Ducasse et al., 2017).

Intolerable psychological pain is the most frequently motive for suicide. Individuals may search for death by suicide as a method to be released of a painful state. Suicidal ideation can be used as a managing tool whereby some individuals can bear high levels of pain by telling themselves that if their psychological pain comes to be intolerable, they have the choice of terminating the pain via suicide. By means of, suicidal behavior turns out to be a problem-solving conduct. Intolerable psychological pain leads to suicide and is essential for suicide to happen (Conejero et al., 2018).

Psychological pain was considered to be a resilient predictor of suicidal ideas, while

compared to other risk influences such as hopelessness and despair (Troister et al., 2015). Furthermore, Verrocchio et al., (2016) clarified that, individuals who experience psychological pain had a significant risk of suicidal ideas, suicide attempts, and suicide. It was clear that psychological pain was a significant target of the therapeutic interventions in suicidal crisis (Yovell et al., 2016). Ducasse et al., (2017) disclosed that psychological pain is greater in suicide attempters than non-attempters. Also, it was observed an analogous decrease in psychological pain and suicidal ideation during care (Cáceda et al., 2017).

Significance of the Study:

Suicidal behavior is an imperative concern had a necessity to be identified, prohibited, and required straight emergency interference by mental health specialists. Suicidal behavior comprises suicide, suicide attempt, and suicide ideation (Alawam, 2014; Aslan & Hocaoˇglu, 2014). Being capable of recognizing and preventing suicide earlier through evaluating the hazard of suicide turns out to be tremendously significant, particularly for psychiatric nurses who are in continuous communication with the patient (Yaˇgcı et al., 2018).

The difficulty of predicting when individuals will attempt suicide, suicide prevention eff orts should focus on the phases of suicidal ideation and suicidal intent. Efforts aimed at lessening suicide rates begin with an essential knowledge of factors that place individuals at an intensified danger for suicide. Psychologists have pursued to recognize proximal issues predicting suicidal ideation which would provide an important guide toward increasing the efficiency of suicide prevention. Up to the end of our knowledge, no obtainable Egyptian studies addressed whether psychological pain and anger rumination among patients with major depression leading to a suicide probability. Thus, this work was conducted to elucidate these issues, and consequently, lead to the expansion of preventive efforts for suicide attempts via the exploration of definite probable risk issues.

Aim of the Study:

This study intended to explore the correlation between anger rumination, psychological pain, and suicidal ideations among patients diagnosed with major depressive disorder (MDD).

Research Questions:

The research questions for which the researchers tried to find out the answers were:

1. Are suicidal ideations predominant among patients with major depressive disorder?
2. Is anger rumination prevalent among patients with major depressive disorder who had suicidal ideations?
3. Is psychological pain prevalent among patients with major depressive disorder?
4. Is there a correlation between anger rumination, psychological pain, and suicidal ideations among patients diagnosed with major depressive disorder?

Subjects and Method:

Research Design:

This contemporary study followed a descriptive correlational research design, which depends on the study of a particular phenomenon by describing and showing its relationship to other phenomena.

Setting:

The present work was applied at inpatients' departments of Port Said Psychiatric Health and Addiction Treatment Hospital, Egypt. It is joined to General Secretariat of Mental Health and Addiction Treatment (GSMHAT), Ministry of Health. The hospital's capacity is 140 beds; delivers care to psychiatric patients and substance abusers. It serves all the catchment areas in Port Said and three neighboring governorates (El-Ismailia, Sina, and El Suez). The hospital comprises five inpatient psychiatric departments, one men's department for addiction treatment, and one outpatient clinic for children. Furthermore, psychiatric outpatient clinics which are accessible from 10 a.m. to 2 p.m. 6 days per week. It involves three rooms specialized for treatment and continuation of patients with mental illness.

Research Subjects:

The study subjects encompassed a purposive sample of 84 psychiatric inpatients with MDD who were previously diagnosed with MDD by specialized professionals of the above-mentioned hospital following the Diagnostic and Statistical Manual of Mental Disorders – Five Edition (DSM-V) criteria. They were recruited based on the following criteria:-

1) Aged 18 years or more.
2) Both sexes.
3) Absence of speech, hearing impairments, and neurological disorders that may prevent study instruments from being completed.
4) Not having other psychiatric disorder as schizophrenia, personality disorders, and substance misuse.
5) Willing to participate in the study.

Sample Size:

It was estimated by means of the subsequent formula ***(Dawson & Trapp, 2004).***

$$n = \left[\frac{Z_{\alpha/2} + Z_{\beta}}{\frac{1}{2}\log\frac{1+r}{1-r}}\right]^2 + 3$$

<u>Where</u>

- **n**= sample size
- **Z α/2 =** 1.96 (The critical value that divides the central 95% of the Z distribution from the 5% in the tail).
- **Zβ** = 0.84
- **r** =0**.**611 (Uğur & Polat, 2021).

Sample size (n) = **84** patients with MDD.

Instruments of Data Collection:-

The study data were collected by using the following instruments to fulfill the aim of the study:-

Instrument (I): Personal and Clinical Data Questionnaire:

This structured interview questionnaire was prepared by the researchers in an Arabic language, it comprised personal features including age, sex, marital status, level of education, employment status, residence, monthly income, and living status. It also comprised questions that covering data related to clinical characteristics which are duration of disease, smoking, substance abuse, history of suicidal attempts, and the presence of suicidal ideations among the studied major depressive patients.

Instrument (II): Anger Rumination Scale (ARS):

ARS was established by Sukhodolsky et al. (2001), and translated to an Arabic language by Tahoon (2021), it is a self-report scale constructed from 19 items. It was developed to assess the tendency for ruminating over present aggressive situations and recalling past aggressive episodes, and the causes and consequences of these episodes. The questionnaire assesses the four subscales of anger rumination which are angry afterthought, thoughts of revenge, angry memories, and understanding of causes.

The Arabic version of ARS showed validity and remarkable internal consistency, using Cronbach's alpha α = 0. 93. Validity was done by a panel of experts to test it for face and content validity and decided that the scale was valid (Tahoon, 2021).

Scoring system, the questionnaire used a 4-point Likert response format, extending from (1) " almost never," (2) " sometimes," (3) " often," and (4) " almost always." There are no reverse-scored items. For every sub-dimension, the scores of the items were summed-up and the whole was distributed by the number of the items, attaining a mean score for every sub-dimension. A higher total score across items or high sub-dimension scores correspond to a higher tendency towards ruminating on angering content in overall or high levels in the relevant sub-dimensions.

Instrument (III): Mee-Bunney Psychological Pain Rating Scale (MBPPAS):

This scale was developed by Mee et al. (2011), in an English language. It is a short self-report scale utilized for rapid assessment of both intensity and frequency of psychological pain in general clinical settings, it inquiries for the current psychological pain, and the last 3 months.

Scoring system, The MBPPAS comprised 10 items, each item ranked by participants along a five-point continuum scale (1-5). The severity of psychological pain is appraised ranging from none to unbearable, and its frequency ranges from never to always. The greater the score to be attained reveals that there is high psychological pain. A pre-determined threshold was set at 32 representing 0.5 standard deviations above the mean for major depressive patients as a cutoff point for high psychological pain (Mee et al., 2011).

Validity and Reliability of the Study Instrument:

For the aim of the contemporary study, the MBPPAS **(Instrument 1II)** was translated into Arabic language. The two main stages of translation encompassing forward and backward were completed. Two bilingual experts did the forward translation, and then the Arabic version of the MBPPAS was then translated back into an English language by two other linguistic specialists who were unaware of the original version. Then, the researchers reviewed these translations and compared them with the original version to assure the accuracy of the translation and eradicate any differences.

Besides, a final Arabic version was evaluated by a panel of experts who absolutely decided that the translated instrument was valid. A board comprised one professor and two assistant professors from Psychiatric Nursing and Mental Health department, Faculty of Nursing, and two professors from Psychiatric Medicine department, Faculty of Medicine, and two assistant professors from the Psychology department, Faculty of Arts, Port Said University. Based on their evaluation, the required modification was taken into consideration accordingly. The stage of evidencing validity of the translated tool continued for one month.

Reliability:

An Arabic version of the MBPPAS was evidenced to be reliable as Cronbach's alpha coefficient was reasonable as α = 0.85. The period of confirming reliability continued for one week.

Pilot Study:

Before commencing the actual collection of data, a pilot study was conducted on 10% of the studied patients had major depressive disorder that represent 9 patients. It was implemented in order to evaluate the significance, lucidity, practicability, and feasibility of the utilized study instruments, and to appraise the time required to fill in the used instruments. Conferring to the findings of the pilot study, no modifications were done. The study instruments were guileless and vibrant. The patients who encompassed the pilot study were not involved in the main study sample to assure the reliability of the attained results. The pilot study was conducted at the time from the first to the mid of January 2021.

Data Collection Process:

Originally, an official letter was issued from the Dean of the Faculty of Nursing; Port Said University to the Director of the above-mentioned setting requesting his/her collaboration and promise to conduct the study, after duly elucidating the drive of the study. Consequently, the director referred the researchers to the responsible nurse of each department, the researchers attended each responsible nurse's office to introduce themselves, clarify the aim of the study, and pursue for agreement. After that, the researchers interviewed patients had major depressive disorder who met the inclusion criteria and provided their informed consent. The data

were collected over 2 days (Monday and Tuesday) per week. The collection of data covered a period of four months from the first of February 2021 to the end of June 2021.

The data collection procedure was conducted by means of face-to-face interview method that was done on an individual basis and this was done on a private area in the inpatient department to ensure discretion and confidentiality of the collected data. A number vacillating from 3 to 4 of MDD patients were interviewed daily from 10 a.m. to 2.00 p.m. Each instrument lasted from 15 to 20 minutes to be filled out depending on patients' responses. After accomplishment, the researchers ensured that all items involved in the study instruments were completed. Then, the studied patients were acknowledged for the time and effort they kindly offered.

Statistical Analysis:

Data were fed to the computer and analyzed via IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp). The Kolmogorov-Smirnov test was used to verify the normality of distribution. Quantitative variables were presented using descriptive statistics including means, and standard deviations. Qualitative data were described through frequencies and percentages. For normally distributed quantitative variables, t-test was used to compare between two studied categories. Qualitative categorical variables were compared utilizing Chi-square test. Fisher's Exact or Monte Carlo correction for chi-square when more than 20% of the cells have expected count less than 5.

The Arabic version of **MBPPAS'** internal consistency was assessed by measurement of Cronbach's alpha coefficient. Besides, Pearson coefficient to correlate between two normally distributed quantitative variables was utilized. Regression analysis was applied to detect the independent factors affecting suicidal ideation with 95% confidence interval. A statistical significance of the obtained findings was considered at the 5% level.

Ethical Considerations:

Preceding the beginning of this work, an ethical approval was attained from the Scientific Research Ethics Committee of the Faculty of Nursing; Port Said University. An approval was obtained from the selected setting from which the data were collected. An informed agreement was attained from the studied patients after a plainly description of the intention of the study. Anonymity was strictly maintained through a code number attached to each studied patient's instruments. Voluntary participation of the studied patients was guaranteed as they were well-informed that they had the aptitude to extract from the study at any period whenever they wanted without any negative consequences. Confidentiality was affirmed to all participants in the study and researchers declared that information would be used merely for the research aim. Finally, the process of data collection was not disturbing the harmony of the work of the above-mentioned setting.

Results:

Table 1, reveals the relation between personal characteristics and suicidal ideations among the studied patients with major depressive disorder. As elicited, there were statistically significant differences in sex and age between the studied patients with major depressive disorder who had suicidal ideations and those who had not as p =0.014, and 0.007 respectively at $p \leq 0.05$. The results also indicated that, there were no statistically significant differences between the studied patients with major depressive disorder who had suicidal ideations and those who had not in relation to the level of education, marital status, employment status, monthly income, residence, and living status.

Table 2, puzzles out the relation between clinical characteristics and suicidal ideations among the studied patients had major depressive disorder. It was clear that patients with suicidal ideations had statistically significant greater rates of smoking, substance use, besides previous suicidal attempts than those didn't have suicidal ideations (p = 0.016, 0.007, and 0.003 respectively) at $p \leq 0.05$.

Figure 1, it was vibrant from the figure that almost two-thirds of the studied patients (No.55) with major depressive disorder above the threshold of 32 indicating a high level of psychological pain.

Table 3, describes the comparison of mean scores of overall anger rumination and its sub-dimensions, and psychological pain among the studied patients who had suicidal ideations and those without. As elicited, the studied patients with suicidal ideations had statistically significant higher mean scores of overall anger rumination and its sub-dimensions including angry afterthoughts, thoughts of revenge, angry memories, and understanding of their causes than those without suicidal ideations at $p \leq 0.05$. Besides, results indicated that the studied patients with suicidal ideations had significantly higher mean scores of psychological pain than those without suicidal ideations as p = 0.001 at $p \leq 0.05$.

Table 4, it was evidenced that there were statistically significant positive correlations between mean scores of psychological pain and overall anger rumination and its sub-dimensions among the studied patients had suicidal ideations whereby $p \leq 0.05$. By means of as psychological pain mean score of depressive patients with suicidal ideations increased, the total mean scores of angry afterthoughts, thoughts of revenge, angry memories, understanding of their causes, and overall anger rumination increased significantly.

Table 5, submits the independent factors at risk for suicidal ideations among major depressive patients via univariate and multiple logistic regression models. Initially, concerning the univariate logistic regression model, obviously the influence of age, sex, smoking, substance abuse, previous suicidal attempts,

psychological pain, and overall anger rumination on suicidal ideations was statistically significant among the studied patients whereby $p \leq 0.05$ for each.

Secondly, the findings of multiple logistic regression model verified that overall anger rumination, previous suicide attempts, plus psychological pain were the strong predicting independent factors for suicidal ideations among the studied major depressive patients disorder as p = 0.010, 0.012, and 0.028, respectively.

Table (1): Relation between personal characteristics and suicidal ideations among the studied patients with major depressive disorder (n = 84)

Personal Characteristics	Suicidal Ideations				χ^2	p
	Present (n =55)		Not Present (n =29)			
	No.	%	No.	%		
Sex						
Male	17	30.9	17	58.6	6.052*	0.014*
Female	38	69.1	12	41.4		
Age (year)						
< 30	21	38.2	3	10.3	9.818*	0.007*
30 <50	26	47.3	15	51.7		
≥ 50	8	14.5	11	37.9		
Level of education						
Not read and write	11	20.0	2	6.9	7.033	MCp= 0.067
Primary	27	49.1	15	51.7		
Secondary	6	10.9	9	31.0		
University	11	20.0	3	10.3		
Marital status						
Single	27	49.1	12	41.4	3.028	MCp= 0.412
Married	20	36.4	10	34.5		
Divorced	6	10.9	7	24.1		
Widow	2	3.6	0	0.0		
Employment status						
Working	23	41.8	12	41.4	1.305	MCp= 0.817
Not working	28	50.9	15	51.7		
Retried	2	3.6	0	0.0		
Student	2	3.6	2	6.9		
Family income/ month						
Enough	21	38.2	12	41.4	0.081	0.775
Not enough	34	61.8	17	58.6		
Residence						
Rural	20	36.4	9	31.0	0.239	0.625
Urban	35	63.6	20	69.0		
Living status						
With a family member	43	78.2	18	62.1	2.479	0.115
Alone	12	21.8	11	37.9		

χ^2: Chi square test **MC: Monte Carlo**

***: Statistically significant at $p \leq 0.05$**

Table (2): Relation between clinical characteristics and suicidal ideations among patients with major depressive disorder (n = 84)

Clinical Characteristics	Suicidal Ideations				χ^2	p
	Present (N =55)		Not Present (N =29)			
	No.	%	No.	%		
Duration of illness (year)					5.622	0.060
<5	27	49.1	22	75.9		
5 –10	19	34.5	5	17.2		
>10	9	16.4	2	6.9		
Smoking					5.797^*	0.016^*
Yes	41	74.5	14	48.3		
No	14	25.5	15	51.7		
Substance use					7.202^*	0.007^*
Yes	34	61.8	9	31.0		
No	21	38.2	20	69.0		
Previous suicidal attempts in the past					8.970^*	0.003^*
Yes	**41**	**74.5**	**12**	**41.4**		
No	14	25.5	17	58.6		
If yes, suicidal attempts in the last 1 month	**(n = 41)**		**(n = 12)**		2.270	$^{FE}p=$ 0.183
Yes	27	65.9	5	41.7		
No	14	34.1	7	58.3		

χ^2: Chi square test **FE: Fisher Exact**

***: Statistically significant at $p \leq 0.05$**

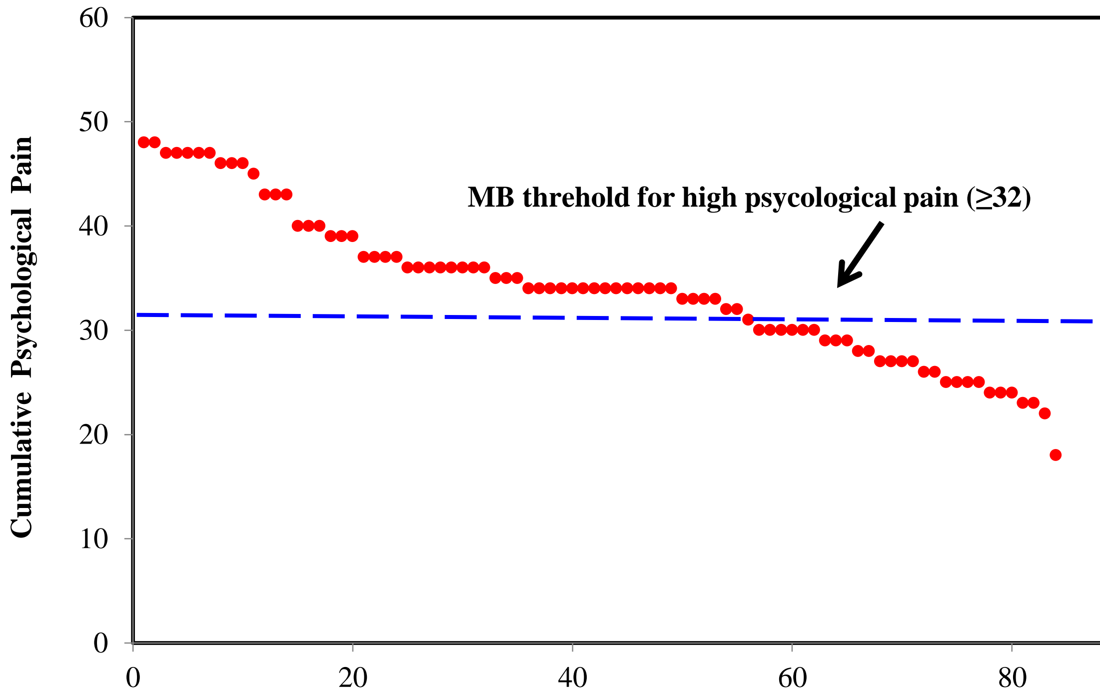

Figure (1): Distribution of the studied patients with major depressive disorder according to Mee-Bunney Psychological Pain Rating Scale

Table (3): Comparison of mean scores of overall anger rumination and its sub-dimensions, and psychological pain according to suicidal ideations among patients with major depressive disorder

Mean Scores of	Suicidal Ideations		t	p
	Present (n =55)	Not Present (n =29)		
	Mean ± SD.	Mean ± SD.		
Angry afterthoughts	17.60 ± 2.85	16.17 ± 3.09	2.121*	0.037*
Thoughts of revenge	11.62 ± 2.14	10.45 ± 2.16	2.374*	0.020*
Angry memories	14.16 ± 2.72	13.34 ± 2.54	1.341	0.183
Understanding of causes	11.73 ± 2.63	10.76 ± 2.57	1.618	0.110
Overall anger rumination	55.11 ± 8.07	50.72 ± 7.71	2.403*	0.019*
Psychological pain	35.87 ± 7.14	30.76 ± 5.65	3.343*	0.001*

SD: Standard deviation **t: t-test**

***: Statistically significant at $p \leq 0.05$**

Table (4): Correlation matrix between anger rumination scale sub-dimensions and total score, and psychosocial pain according to suicidal thoughts among patients with major depressive disorder (n = 84)

Total Scores of		Psychological Pain	
		Suicidal ideation	
		Present (n =55)	Not Present (n =29)
Angry afterthoughts	r	0.330*	0.011
	p	0.014*	0.955
Thoughts of revenge	r	0.265*	0.243
	p	0.050*	0.204
Angry memories	r	0.195	0.205
	p	0.153	0.287
Understanding of causes	r	0.262	-0.071
	p	0.053	0.716
Overall anger rumination	r	0.341*	0.133
	p	0.011*	0.490

r: Pearson coefficient ***: Statistically significant at p ≤ 0.05**

Table (5): Univariate and multiple logistic regression analysis of factors affecting suicidal ideations among patients with major depressive disorder

Independent Factors	Univariate		#Multivariate	
	p	OR (95% C.I)	p	OR (95%C.I) (LL–UL)
Sex				
Male	0.016*	3.167 (1.244 – 8.062)	0.461	1.686 (0.420–6.770)
Female®	–	–	–	–
Age				
< 30	0.003*	9.625 (2.117 – 43.753)	0.331	2.691 (0.365–19.825)
30 <50	0.125	2.383 (0.785 – 7.236)	0.962	1.039(0.212–5.099)
≥ 50 ®	–	–	–	–
Smoker				
Yes	0.018*	3.138 (1.216 – 8.097)	0.179	3.419 (0.569–20.532)
No®	–	–	–	–
Substance use				
Yes	0.009*	3.598 (1.382 – 9.363)	0.922	1.087 (0.207–5.719)
No®	–	–	-	–
Previous Suicide attempt in the past				
Yes	0.004*	4.149 (1.595 – 10.794)	0.012*	8.090 (1.593–41.073)
No®			–	–
Overall anger rumination	<0.001*	1.110 (1.057–1.165)	0.010*	1.094 (1.021–1.171)
Psychological pain	<0.001*	1.070 (1.031–1.109)	0.028*	1.066 (1.007–1.130)

Dependent variable: Suicidal ideations
OR: Odd`s ratio
CI: Confidence interval **LL: Lower limit** **UL: Upper Limit**
#: All variables with p<0.05 was included in the multivariate
***: Statistically significant at p ≤ 0.05**

®: Reference group

Discussion:

Major depressive disorder (MDD) plays a crucial role in suicide, and that utmost of depressed patients attempt suicide during major episodes (Mattisson et al., 2015). There has been accumulative research on major depressive disorder to examine the role of anger rumination about one's depression and exacerbation, onset, remission, chronicity, and maintenance of symptoms. Rumination is frequently accompanying with negative thoughts and is believed to maintain and strengthen negative affect. Therefore is viewed as a maladaptive affect regulation strategy. Rumination has been identified as a risk factor for aggression, suicidal ideation, and suicidal intent. However, it remains unclear whether rumination is also linked to actual suicide attempts (Nolen-Hoeksema et al., 2008; Grassia & Gibb, 2011).

Psychological pain which is an inner experience of negative emotions and a mental state caused by ungratified psychological needs has been supposed to be a strong predictive variable for suicide (Zou et al., 2017). Thus, the aim of this study was to explore the correlation between anger rumination, psychological pain, and suicidal ideation among patients diagnosed with major depressive disorder.

One of the imperative findings of the existing study was that, the studied patients with suicidal ideations had statistically significant greater mean scores of overall anger rumination and its sub-dimensions including angry afterthoughts, thoughts of revenge, angry memories, and understanding their causes when compared to depressive patients didn't have suicidal ideations. This may be due to that, rumination has been publicized to escalate the exacerbation of depressive reactions and contribute to reducing effective problem-solving techniques, helplessness, hopelessness, more pessimistic views, negative coping strategies, self-blaming through persistently thinking around their negative emotional states, and dysfunctional attitudes which factors that are conferred risk for suicidal ideations.

This result was in the same track with Rogers & Joiner (2017), who cited that anger rumination is a proximal risk factor to suicidal ideations, and association between global rumination and suicide attempts was noteworthy, Also, Peters et al. (2017), conveyed a connection between anger rumination and anger eruptions and self-destructive conduct. Similarly, Lin et al. (2022), conducted a study entitled " Shame-proneness and suicidal ideation: The roles of depressive and anger rumination" mentioned that ruminating on angering memories directed at oneself may place individuals in notably vulnerable positions in developing suicidal ideations. Overall, angry memories promote the facilitation and maintenance of feeling angry, which subsequently trigger self-

perceptions of global deficiency, and increasing risks for suicidal ideations. Besides, U˘gur & Polat (2021), clarified that the overall anger rumination and its subscales scores excluding the angry memories subscale among patients had suicidal thoughts were greater than patients without suicidal thoughts.

Unlikely, a research paper directed by Cho et al. (2020), noted that anger rumination didn't link with suicidal ideations and suicide attempts. Furthermore, Cheavens et al. (2016), verified an opposing correlation between suicide risk and angry memories. In this respect, Liverant et al. (2011), emphasized that anger rumination was definitely connected with the suppression of undesirable emotions and contrariwise allied to the approval of negative emotion, signifying that rumination can help to suppress annoying feelings. Additionally, anger rumination has not been comprised in contemporary studies of suicide risk factors (May & Klonsky, 2016).

The current study results indicated that the studied patients with suicidal ideations had significantly higher mean scores of psychological pain than those without suicidal ideations at $p \leq 0.05$. This may be related to that, the escalation in psychological pain and the associated intensification of depressive thoughts may lead to an extra-strong sense of anger. The person who goes to ruminative thoughts with passionate anger can reveal the sense of anger to self. Besides, recalling previous anger involvements can activate novel anger conducts. Obviously, undesirable emotions as anger can be converted into psychological pain. An escalation in suicidal behavior among persons with extraordinary psychological pain may be owing to the sense of anger and the ruminative ideas that go along with it.

This is in parallel with a line of existing study which studied 198 depressives and referred to that psychological pain level was higher in the group with previous suicidal attempts (Demirkol et al., 2020) Likewise, U˘gur et al. (2020), conveyed that psychological pain was a resilient predictor of suicide attempts, and that psychological pain was higher in the group of patients diagnosed with depressive disorder with preceding suicidal attempt. Psychological and physical pain measures were correlated with suicidal ideas (Jollant et al., 2019).

In line with the foregoing, Cáceda et al. (2017), described higher scores for mean, and worst psychological pain among suicide attempters. Equally, Mee et al. (2011), in their study entitled "Assessment of psychological pain in major depressive episodes" clarified a statistically noteworthy correlation between psychological pain and suicidal scores. Besides, Zou et al., (2017) in a Chinese study proved that psychological pain theory–based cognitive therapy (PPTBCT) remarkably diminishes suicide risk in patients with major depressive

disorder, while the influences of its application need to be confirmed. Conversely, Troister & Holden (2012) and Ducasse et al. (2017), concluded that the connotation between psychological pain and suicidal ideas and acts was more limited than predictable. Also, Trakhtenbrot et al. (2016), in a study of individuals with histories of medically serious suicide attempts, could not confirm a link between psychological pain and suicidal acts.

The ultimate goal of the existing work was to explore the correlation between anger rumination, psychological pain, and suicidal ideations among patients with major depressive disorder. The results publicized that, there were statistically significant positive correlations between mean scores of psychological pain and overall anger rumination and its sub-dimensions among the studied patients had suicidal ideations. This may be owing to that, persons who are ruminating stay fixated on the difficulties and on their feelings around them without action, concentrating particularly in negative thoughts which may lead to unbearable psychological pain and consequently exacerbation of suicidal ideations.

This finding was confirmed by a study conducted by U˘gur & Polat (2021), who elucidated a positive weighty association between psychological pain and beck depression, and the whole score of anger rumination and its sub-dimensions among depressed patients with suicidal ideations and also those without suicidal ideations. Also, Rogers & Joiner (2017), illustrated that depressive negative thoughts cause greater psychological pain and therefore intensifying suicidal ideations, and rumination might be a great danger for suicide. Likewise, Martino et al. (2017), submitted an association between anger rumination with suicidal behavior.

The present study also verified that no significant difference was established between the depressed patients with and without suicidal ideations in relation to the level of education, marital status, employment status, monthly income, residence, and living status. In this respect, U˘gur & Polat (2021), indicated that the absence of significant difference between the studied participants with and without suicidal ideations concerning sex, conjugal status, occupation, educational level, illness duration, and substance misuse.

The outcomes of the contemporary study revealed statistically significant greater rates of smoking, and substance use among depressive patients who had suicidal ideations. This may be explained by that, individuals smoke as an approach of escaping from stressful situations. Consistently, Ilgün et al. (2019), conveyed that smoking was associated with suicidal behavior. Differently, U˘gur & Polat (2021), showed that smoking is greater among patients without suicidal ideations.

The findings of this study broadcasted that, overall anger rumination, previous attempts of suicide, plus psychological pain remained the strong predicting independent factors for suicidal ideations among the studied patients with major depression. In this sense, a study by Rogers & Joiner (2017), conveyed a significant and large in magnitude connotation between overall rumination and suicidal ideation. Jollant et al. (2020), confirmed a strong significant positive relationship amid psychological pain and suicidal ideations. Furthermore, those with a suicidal plan had great levels of psychological pain whereas those with no suicidal plan had evenly distributed mental pain, suggesting that mental pain is a necessary but insufficient condition toward suicidal ideas and the progression toward a plan. Also, Conejero et al. (2018), emphasized the strong relationship between psychological pain and suicidal behavior. Additionally, U˘gur & Polat (2021), clarified that previous suicide attempts pose a risk to suicidal ideation among patients diagnosed with major depressive disorder. Moreover, Sevik et al. (2012), stated that the presence of suicidal behavior in the past is a risk factor for suicidal ideation.

Without the least doubt, this current study is significant for both theoretical and clinical applications, as it shed light on the importance and necessity of considering anger rumination and psychological pain as pathways leading to and reinforcing a patient's tendency towards suicidal ideation. An understanding of the motivations of individuals with suicide risk is a key to alleviating this risk. Suicide as a state-like variable can be reduced via eff ective intervention strategies, thus, illuminating the relations among these risk factors, may help to improve targeted approaches to suicide prevention among patients with major depressive disorder by aiding specialists to recognize patients who are at high risk and assist them to improve more constructive methods of cognitively replying to their depressive symptoms and negative thoughts.

Strengths and Limitations:

The practical and theoretical consequences of this study disclose its significance and will provide suggestions for future studies. In clinical implication, the results of the study verify the significance and inevitability of bearing in mind psychological pain, anger rumination, and previous suicidal attempts as effective factors on suicide. Ascertaining these psychological variables can be reflected as a first step toward preventing suicidal behavior. Organizing and preparing training and interfering programs in order to reduce and manage anger rumination are other practical measures that may be taken for razing anger rumination among vulnerable individuals. More research is necessary to better understand the role of anger rumination and psychological pain in conferring risk for suicidal behaviors. Theoretically, the results of this work can be

valuable in theories related to emotional regulation in psychopathology region.

One limitation of the existing study has to be underlined is that, the studied sample was small, and a study was carried out in only one hospital. Subsequently, this may hinder the generalization of the reached findings. Upcoming research comprising more such participants is exceedingly suggested in order to realize representation and generalizability of the results.

Conclusion and Recommendations:

- In inference, it is obvious from the current study results that, anger rumination and psychological pain amongst patients with major depressive disorder had a straight relation with suicidal ideations. There were statistically noteworthy positive correlations amongst mean scores of psychological pain and overall anger rumination plus its sub-dimensions among the studied patients diagnosed with major depressive disorder had suicidal ideations. As well, the most predictor had a noteworthy effect on suicidal ideations was anger rumination followed by previous suicidal attempts, and psychological pain.
- Mindfulness based-cognitive behavioral therapy may be ultimately effective in reducing anger rumination and psychological pain through challenging cognitive distortions, replacing them with rational beliefs, effective coping resources, learned problem-solving skills. Consequently, help to reduce suicide risk.
- Designing and applying psycho-education programs to teach patients how to manage psychological pain and anger rumination, and to develop their coping approaches, stress-control strategies, cognitive restructuring, and problem-solving skills in the face of distress.
- Future studies are crucial to be conducted using large probability samples to gain awareness about factors pose risk to suicide. Also, it may be valuable for upcoming research to study diverse types of rumination that may predominantly malicious in relation to suicidal ideations and behavior.

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