

Research Paper:

Comparison of the Effectiveness of Mindfulness-based Cognitive Therapy and Quality of Life Therapy on Perfectionism and Rumination in Patients With Migraine



Mohammad Shabani^{1*}, Lili Ghari Saadati²

1. Department of Psychology, Faculty of Psychology and Education, Farhangian University, Torbat Heidarieh, Iran.

2. Department of Psychology, Tonekabon Branch, Islamic Azad University, Tonekabon, Iran.



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ABSTRACT

Background: The effectiveness of mindfulness-based cognitive therapy was compared with the quality of life therapy in perfectionism and rumination in patients with migraine.

Objectives: Headache is the most prevalent neural symptom and one of the main medical complaints.

Materials and Methods: The present quasi-experimental study used a pretest-posttest design with 3 groups: 2 experimental groups and 1 control group. The study population consisted of all patients with migraine headache referring to the hospitals and clinics of Torbat Heidarieh, Iran. The sample group consisted of 45 individuals selected by the available sampling method. The participants were randomly divided into 3 groups each with 15 members. The experimental groups underwent therapeutic interventions. The first experimental group received quality of life therapy and the second one received mindfulness-based cognitive therapy. The control group received no intervention. The data were collected by a multidimensional perfectionism scale, Ahvaz migraine questionnaire, and ruminative response scale. The participants filled out the tools before and after the intervention. The data were analyzed by SPSS V. 22.

Results: The mindfulness-based cognitive therapy had no significant effect on perfectionism, and it was effective in rumination in patients with migraine. The quality of life therapy was effective in perfectionism and rumination in the patients. The results supported a significant difference between the two types of treatments in terms of effectiveness in perfectionism and rumination in patients with migraine. With regard to perfectionism, mindfulness-based cognitive therapy was more effective than the quality of life therapy. Moreover, the results did not support a significant difference between the two treatments in terms of their effect on rumination. The effects of the two treatment methods were at the same level.

Conclusion: The treatment based on so-called basic cognitions and the replacement of negative and intrusive thoughts with positive thoughts and avoiding intrusive thoughts through neutralizing based on the two cognitive treatment methods led to notable improvements in the participants in terms of rumination, frequent intrusive thoughts, and perfectionism. In fact, changes in cognitive reactions to pain and change in beliefs and expectations were the main mechanisms of attenuation of headaches.

Keywords:

Mindfulness-based cognitive therapy, Quality of life therapy, Perfectionism, Rumination

* Corresponding Author:

Mohammad Shabani, PhD. Student

Address: Department of Psychology, Faculty of Psychology and Education, Farhangian University, Torbat Heidarieh, Iran.

Tel: +98 (915) 3328361

E-mail: m.shabani52@yahoo.com

1. Introduction

Headache is the most prevalent neural symptom and one of the main medical complaints. Migraine headache is a specific invasive disorder with a one-side headache with or without visual or stomach-intestinal problems (e.g. nausea, vomiting, and photophobia). One probable cause of the headache is intracranial blood pressure [1]. Migraine is a sort of sensory processing disorder with wide branches within the central nervous system. Based on a general agreement, the nervous and vascular elements play a role in migraine. The nervous structures that affect migraines are the cerebral cortex and brainstem [2]. There are two general categories of migraine; migraine without aura and migraine with aura [3].

The latter, also known as classic migraine, is the less prevalent migraine and constitutes 15% to 20% of migraine cases. The difference between the classic migraine and migraine without aura is that in the former case, the patient experiences a series of neural disorders (e.g. the appearance of luminous spots and paresthesia) [4]. Migraine is also related to physical fatigue, emotional stresses, depression, and other psychological factors [5]. Migraine headaches may influence the patients' work and social/private life with negative effects on their quality of life [6]. Recent studies have shown that migraine increases the risk of cardiac diseases, blockage, and hypertension. Authors have argued that the disease creates notable pressure and stress, affecting heartbeat and blood pressure [7]. In addition, psychological problems are common among patients with chronic headaches. A higher percentage of patients with migraine headaches also suffer from depression and anxiety disorders [8].

One of the prevalent patterns of migraine headaches is frequent intrusive thoughts that appear as rumination [9]. Abdolahi reported a relationship between rumination and migraine [10]. Rumination refers to the thoughts that tend to be repeatable and conscious and focused on a specific subject; they even appear in the absence of immediate and essential environmental stimuli [11]. Papajorjio and Wales showed that rumination is a long chain of repetitive, rotating, and self-centered thoughts and responses to primary negative thoughts [12]. Cognitive theory recommends that disastrous interpretation in the area of intrusive thoughts leads to the occurrence and persistence of such thoughts. The comprehensive analysis recommend-s that stimulus intrusive thoughts trigger specific automatic types of thoughts. Accord-

ing to this theory, an intrusive thought leads to mood disorder so that individual belief system finds the intrusive thoughts unacceptable and, consequently, triggers negative automatic thoughts [10]. Ruminative thoughts in response to painful experiences prolong and intensify depressed mood periods. In addition, rumination negatively tilts one's thoughts so that an individual suffering from rumination tends to have lower problem-solving capability [12].

Several studies have focused on the biological and environmental effects and the psychological and social factors effective in the development of headaches. The results have supported the relationship between psychological and personality factors and headaches [13].

Abulghasemi showed a relationship between maladaptive perfectionism and the intensification of migraine headache [14]. Perfectionism is a set of high-performance standard featured with negative self-assessment, criticism, and self-blame. Ambition, discipline, excessive attention to details in daily activities, and excessive sensitivity to life affairs are psychological characteristics of perfectionists, which are also common in patients with migraine [15]. Shirzadi et al. showed a positive relationship between perfectionism and migraine headaches; the former would prepare the ground for psychosomatic disorders such as migraine headache [16]. Colotilo and Bromi reported that chronic pains and migraine experience explained 69% of the variance of disability in women with migraine [17]. Moreover, depression, migraine headaches, and chronic pain explained 8.64% of the variance of quality of life in individuals with migraine. Since the late 1970s, psychological treatments for headaches have drawn a great deal of attention. Research findings have also highlighted the effect of non-drug and cognitive and psychological methods for headache treatment [18-20]. In the same spirit, the present study surveys the effectiveness of quality of life-based treatment and mindfulness-based cognitive treatment.

Psychotherapy based on the improvement of the quality of life is a novel approach in positive psychology that includes continuous integration of cognitive therapy and positive psychology. It is consistent with Becks' latest arrangement of cognitive therapy and cognitive theory of depression and psychopathology [21]. The treatment based on the quality of life is an approach to improve happiness. It is recommended for both clinical and non-clinical service takers [22]. It deals with and emphasizes different aspects of life, prevention, improvement of mental health, and marital satisfaction; it is one of the best approaches to improve the quality of life [23].

The quality of life therapy is based on a 5-way pattern of living conditions, attitudes, standards of fulfillment, importance, and overall satisfaction (CASIO) [24]. The objective of the treatment based on the quality of life is to improve professional self-care or inner enrichment and to prevent depression [22].

Another improvement was the introduction of a new approach by Tisdie and Williams, which was based on a relationship between cognition, emotion, and mind. Their work led to a therapeutic cognitive approach based on mindfulness. The cognitive therapy based on mindfulness was a great advancement toward codifying the cognitive-behavioral therapeutic approach. Teaching mindfulness entails metacognition learning and new behavioral strategies to concentrate on the attention, to avoid rumination, and to tend to worrying responses, which leads to the expansion of new thoughts and attenuation of unwanted emotions. Mindfulness means paying attention in a specific and purposeful manner at the moment and without judgment [13]. Although, soothing is not the main objective of mindfulness, non-judgmental observation, internal negative events, and physiological arousal leads to it [25]. Mindfulness meditation activates an area of the brain that creates positive emotions and useful effects on the immunization function of the body [26]. Grison, Brainard, and Roznoik showed that mindfulness was effective in the attenuation of stress and treatment of physical and mental symptoms in individuals with chronic pains [27]. Regarding the paucity of studies in Iran and other countries on the effect of quality of life therapy and mindfulness-based cognitive therapy on the variables under study (migraine headache, perfectionism, and rumination), as well as comparing the two types of treatments, the present study tries to answer "If mindfulness-based cognitive therapy and the quality of life therapy are effective in perfectionism and rumination in patients with migraine?".

2. Materials and Methods

Study Population, Sample Group, and Sampling Method

The present quasi-experimental study used a pretest-posttest design with 3 groups (2 experimental groups and 1 control group). Rumination was the dependent variable and it was measured for the two experimental groups and the control group before and after the implementation of the independent variables (mindfulness-based cognitive therapy and the quality of life therapy). The study population consisted of all patients with migraine headache referring to the hospitals and

clinics of Torbat Heidarieh, Iran. A sample group (N=45) was selected by the available sampling method and was randomly divided into 3 groups (n=15). The inclusion criteria included interest in participating in the study, education level ranged from high school diploma to bachelors' degree, diagnosed by a specialist, at least 5 years history of the attack, migraine attack ranged from 4-72 hours, one-side headache attack, pulse headache, moderate to severe pain, the feeling of headache when climbing stairs or doing similar activities, nausea and vomiting, and photophobia and phonophobia. The exclusion criteria included diagnosis with psychological disorders, severe physical diseases, drug addiction or abuse, major medical disorders, neurological disorders, or chronic physical disease.

Research tools

Multidimensional Perfectionism Scale

Frost's Multidimensional Perfectionism Scale (FMPS) (1990) is based on a multi-aspect perfectionism model. This model was introduced with 6 elements of concerns about mistakes, doubts about actions, parental expectations, parental criticism, personal standards, and organization. The FMPS also contains 6 subscales, which are measured by 35 statements (Stober, 1998), including 2 positive and 4 negative aspects. The internal consistency of the Farsi version of the scale is 0.86 and 0.85, 0.72, 0.78, 0.47, 0.57, and 0.83 for the subscales of concerns about mistakes, doubts about actions, parental expectations, parental criticism, personal standards, and organization, respectively. Retest coefficients with the 1-week interval for the subscales of concerns about mistakes, doubts about actions, parental expectations, parental criticism, personal standards, and organization are 0.90, 0.084, 0.81, 0.79, 0.53, 0.85, and 0.83. Moreover, the correlative validity of FMPS based on its relevance to the positive and negative perfectionism scale is at an acceptable level [28].

Ahvaz Migraine Questionnaire

The questionnaire was designed and normalized by Najarian [29]. It includes 25 statements and is developed with the participation of 382 students at Shahid Chamran University and the Islamic Azad University of Ahvaz. The statements are designed based on 4-point Likert scale (never=1, rarely=2, sometimes=3, and most of the time=4). The questionnaire was used to determine prevalence and screen and select the sample group. Najarian measured the reliability of the tool through retest and internal consistency and obtained 0.8 and

0.91, respectively. Shirzadi Bistoni [16] measured the validity of the questionnaire, using the hospital anxiety and depression scale, hysteria, hypochondria, anxiety subscale, short-form of Minnesota multiphasic person-

ality inventory, and Ahvaz aggression scale. The correlation coefficients were 0.49, 0.34, 0.36, 0.49, and 0.46, respectively, and all of them were significant ($P=0.05$). He also calculated the correlation coefficient of the Ah-

Table 1. Content of the education and treatment sessions

Sessions	Mindfulness-based Cognitive Therapy	Quality of Life Therapy
1	Determining an approach, taking into account the confidentiality of peoples' information, inviting the participants to introduce themselves, body inspection practice, assigning homework, discussing and determining the weekly schedule of sessions, and handing over types and pamphlets.	Defining the role of quality of life in personal life and introducing treatment based on the quality of life and the new therapeutic approach in psychology. Teaching CASIO 5-pillar model and determining the headlines and general structure of sessions, determining the quality of life profile for individuals, reaching an agreement in the key fields among 16 fields of quality of life-based treatment, and collecting feedback.
2	Relaxation training for 14 muscle groups of the arm, elbow, triceps surae muscle, femoris muscle, stomach, chest, shoulders, neck, eyes, and forehead.	Determining agenda and examining the role of variables effective in mental health and determining self-respect based on the treatment model and teaching and assigning "success note" homework and the second way of success in achieving self-respect ("don't ask please!!"), the third way of success in achieving self-respect (self-acceptance path), the fourth path of success to achieve self-respect (profitable social relationships), the fifth path of success to achieve self-respect (helping others), teaching BAT technique to practice at home, teaching how to use "abilities list", and collecting feedback.
3	Relaxation training for 6 muscle groups of hands, arms, femoris, stomach and chest, forehead, lips, and assigning relaxation homework.	Determining the agenda and reviewing the previous session, checking homework assignments, defining health based on the treatment protocol, defining the relationship among mental health, happiness, and physical health, surveying unhealthy habits, and receiving feedback.
4	Introduce the participant to mindfulness, inhale/exhale technique, relaxation without thinking about anything, respiration observation technique, and mindfulness practice at home before sleep.	Determining agenda and reviewing the previous session, checking homework assignments, an introduction to the role of goals, values, and spiritual life in life satisfaction, discussing about the philosophy of life, practicing goal finding, teaching life drama technique, advantages of religious and spiritual functions, an introduction to the principles of determining goals, and collecting feedback.
5	Teaching the technique of paying attention to body movement while breathing, concentrating on body limb, searching for physical senses, and assigning homework about mindfulness.	Determining the agenda, reviewing the previous session, checking homework assignments, determining relationships in the treatment protocol, and teaching the main ideas of communication in the treatment based on the quality of life.
6	Teaching attention to the mind, positive/negative thoughts, desired and undesired nature of thoughts, allowing negative and positive thoughts to the mind, throwing thoughts out of the mind without judging them or delving deep in them.	Teaching the skills to improve satisfaction with communication, letter writing 1&2, an introduction to teaching sensations dictionary, and collecting feedback.
7	Meditating, revising homework, and practicing how to see the relationship between activity and mood.	Determining agenda, reviewing the previous session, checking homework assignments, defining learning in the treatment based on the quality of life, teaching the 5 skills of improving learning (in desire environment), teaching, studying, and learning skills, and collecting feedback.
8	Planning for the future and using the technique of attending the moment for the rest of life, generalizing the technique to the whole life. Reviewing the course and discussing the techniques and practices that the patient is not going to follow. Motivating the participants to continue the practices by finding positive reasons for doing so.	Determining agenda, reviewing the previous session, checking homework assignment, teaching the difference between "must and wanting activity" and what is playing and having fun? Determining the games that ruin the quality of life. Examining the relationship between happiness and having fun, the effective steps to establish playing and having fun habits. Training and assigning homework on the list of games to be practiced at home and collecting feedback.

vaz migraine questionnaire, using the Ahvaz perfectionism scale and obtained $r=0.50$, which was significant ($P<0.001$).

Ruminative Response Scale

The scale was developed by Hoksma and Maro to measure negative mood reactions. The tool is comprised of two subscales of rumination responses and distraction responses, each of which is covered with 11 statements. The 22 statements of the scale are scored based on 4-point Likert scale (never=1, rarely=2, sometimes=3, and most of the time=4). Bagherinejad, Salehi, and Tabatabaie reported the reliability of 0.90 for the tool and 0.92 and 0.89 for the subscales, using Cronbach's alpha [30]. The validity of the questionnaire was examined by finding a correlation of 0.65 at 0.001 level with the metacognitive belief questionnaire. The validity was confirmed. Tabibzadeh and Sepehrian Azar obtained the reliability of the tool, using Cronbach's alpha of 0.80 [31].

Procedure

After securing the required permission from the research department and making an arrangement with the officials of hospitals and clinics located in Torbat Heidarieh, 45 participants were randomly selected from the patients with migraine referring to the health services facilities. Afterward, they were randomly divided into 3 groups each with 15 members (2 experimental groups and 1 control group) (Table 1). The first experimental group received quality of life therapy and the second one received mindfulness-based cognitive therapy. The control group received no intervention. Before and after the intervention, the participants filled out the research tools.

Data analysis

The collected data were analyzed by SPSS V. 22, using descriptive statistics (Mid and Mean \pm SD) and inferential

statistics (Analysis of covariance [ANCOVA] and independent t-test).

3. Results

Totally, 16 (35.6%) participants were men and 29 (64.4%) were women. In addition, 20 (44.4%) participants aged 22-29 years, 20 (44.44%) aged 30-39 years, and 5 (11.1%) aged 40-42 years. The age range of the participants was 22-42 years and the mean age was 32.22 years. Descriptive indices of perfectionism were measured in the control and experimental groups before and after the intervention. The mean score of perfectionism in the mindfulness group decreased by 5.67 after the intervention (91.4-85.7), the mean score of perfectionism in the quality of life group decreased by 2.67 (90.47-87.8), and the decrease in the control group was 1.34 (90.27-88.3). With regard to the element of perfectionism, there were differences between the pretest and posttest scores to some extent in all groups. Descriptive indices of rumination were measured at pretest and posttest stages for the control and experimental groups. Based on the indices, the mean score of rumination in the mindfulness treatment group decreased by 12 points (52.8-40.8) at the posttest stage and the mean score of rumination in quality of life group decreased by 9.26 points (54.33-45.07) at the posttest stage. The same figure increased by 4.33 points in the control group (53.07-57.4) at the posttest stage. In terms of the elements of rumination, the findings indicated differences among the mean scores at pretest and posttest stages in all groups.

The normal distribution of the data in the groups was ascertained, using the Shapiro Wilk test ($P>0.01$). The results of the Shapiro Wilk test show that the P-value of the two variables in the control and experimental groups is higher than 0.05 ($P<0.05$). In addition, skewness and kurtosis in all variables range from 2 and -2; i.e. normal distribution is supported. Therefore, non-

Table 2. Levene's test (homogeneity of variance) of research variables

Group	Values	Levene's Statistics	df (1)	df (2)	Sig.
Compared with the control group, the experimental group, mindfulness	The total score of perfectionism	0.149	1	28	0.702
	The total score of rumination	0.602	1	28	0.444
Compared with the control group, the experimental group treatment, quality of life	The total score of perfectionism	0.086	1	28	0.771
	The total score of rumination	0.201	1	28	0.657

Table 3. The results analysis of covariance effects of the treatment methods on perfectionism and rumination

Variables	Treatment	F	Sig.	Effect Size
Perfectionism	Mindfulness group therapy	1.467	0.237	0.053
	Quality of life-based group therapy	0.139	0.712	0.0005
Rumination	Mindfulness group therapy	11.784	0.002	0.312
	Quality of life-based group therapy	7.590	0.011	0.226

AJNPP

Table 4. Bonferroni post hoc test in the inter-group effects on perfectionism and rumination in the two experimental groups

Values	Group I	Group J	Difference between Mean Scores (I-J)	SD	Sig.
Perfectionism	Quality of life treatment	Mindfulness treatment	-2.826	3.690	0.450
Rumination	Quality of life treatment	Mindfulness treatment	-3.640	4.979	0.471

AJNPP

parametric tests were used. In addition, equal variance condition was tested, using Levene's test.

As presented in Table 2, the P-values of both variables are higher than 0.05. Therefore, the prerequisite of homogeneity of variances is met ($P < 0.05$).

Hypothesis: There is a significant difference between the effectiveness of mindfulness-based cognitive therapy and quality of life therapy on perfectionism and rumination in patients with migraine. To test the hypothesis, the results of ANCOVA for the two experimental groups were compared.

As presented in Table 3, there was a significant difference between the effect size (η^2) of the mindfulness-based cognitive therapy and quality of life therapy on perfectionism and rumination; that is, in the case of perfectionism, the former treatment is more effective (0.053 vs. 0.005) and in terms of rumination, the former treatment is more effective (0.312 vs. 0.266).

As presented in Table 4, the difference between the two treatment methods in terms of effectiveness in perfectionism and rumination was not significant ($P > 0.05$).

4. Discussion

The effectiveness of mindfulness-based cognitive therapy and quality of life therapy on perfectionism and rumination in patients with migraine was examined. The results of ANCOVA supported the effect of both treatments on perfectionism and rumination. The two meth-

ods were significantly different in terms of effectiveness in perfectionism and rumination. The size effect of mindfulness-based cognitive therapy on perfectionism was higher than that of the quality of life therapy. These findings are consistent with Abdollahi et al., Azargon et al., Mansouri Shahd et al., and Melisa Biveli [9, 13, 31, 32]. Yusefi et al. showed that cognitive intervention based on mindfulness-based cognitive therapy was effective in rumination [33]. Abbas Abadi argued that cognitive intervention based on mindfulness was effective in rumination [34]. Moreover, Shahidi maintained that treatment based on mindfulness was effective in perfectionism [35].

Abdollahi et al. [10] showed that behavioral cognitive treatment was effective in attenuating rumination in patients with migraine, who suffered from the compulsory obsessive disorder. Mansourishad et al. demonstrated that behavioral mindfulness-based cognitive therapy was effective in the attenuation of migraine headache [32]. Yusefi et al. showed that mindfulness-based cognitive therapy was effective in rumination, metacognitive beliefs, and perfectionism in patients with obsessive through disorder. These studies have reported consistent results with the present research [24].

Mindfulness-based cognitive therapy helps the individual to concentrate on the moment rather than the future so that it increases awareness about one's body by improving self-supervision. Such intervention leads to a notable decrease in psychological symptoms and higher self-care. On the other hand, people feel less

motivated to control their environment, following the unexpected diagnosis of migraine [36]. Mindfulness practices create psychological functions and considerable changes in patients' lives. By developing strategies to adapt to their situations and better defensive structures, individuals achieve higher mental welfare. Individuals also learn to positively reevaluate unwanted events such as a migraine.

Through learning coping skills in the face of stressful events, people learn to deal with such situations with self-confidence and optimistically. They tend to see things under control and, in general, use their information processing system in a more efficient way. Patients tend to blame themselves and lose their coping power when a part of their thoughts is focused on the idea that their lifestyle had led to the disease they suffer. Mindfulness-based cognitive therapy helps these individuals to experience emotions neither as positive nor negative [37]. In this way, the individual lets in and out the thoughts and emotions without struggling with them [38].

The first step in mindfulness treatment is the improvement of metacognitive awareness; ie reevaluating one's thoughts and emotions and perceiving them as temporary events rather than reality. It is assumed that this metacognitive awareness leads to less rumination- repetition of negative thoughts- and in turn less catastrophic thinking, rumination, and other symptoms such as stress and ineffective/passive coping skills. These lead to an attenuation of migraine symptoms and a higher quality of life for the patients [39].

To elaborate on the difference between the mindfulness-based cognitive therapy and the quality of life therapy, the former significantly alleviates rumination and perfectionism as it is based on Beck's pathological model and tries to evaluate the fundamental beliefs and assumptions that determine cognitive content in Beck's theory. Therefore, an improvement in efficient attitudes following the treatment is quite expectable. Moreover, throughout mindfulness-based cognitive therapy, more cognitive changes happen in rumination and ineffective attitudes. These therapeutic changes mediate the symptoms of perfectionism. Mindfulness training, through thinking practices, enables the patients to see the negative ruminative responses in their brain more clearly and break the thought patterns. The quality of life therapy is based on the 5-path pattern CASIO [40] that supports the approach of satisfaction with life. However, the objective of mindfulness treatment is to improve professional self-care or inner richness and avoiding depression [22].

The main area of focus under the mindfulness approach is on improving metacognitive awareness and self-knowledge processes that support non-useful reactive and ruminative modes. Here, the effectiveness of mindfulness-based cognitive therapy on rumination and perfectionism was supported. Based on the results of this study, it is suggested that researchers evaluate the effect of mindfulness-based cognitive therapy on gender-specific migraine sufferers, as well as on other types of migraine. It is also suggested that health psychologists use mindfulness-based cognitive therapy to solve problems related to rumination and other mood disorders in migraine headaches. The limitations of this study include the small size that can challenge the validity of the findings and the use of self-report instruments.

The education based on reforming-based cognitions, replacing negative and intrusive thoughts with positive thoughts, and solving intrusive thoughts through neutralization, using mindfulness-based cognitive therapy and quality of life therapy led to a notable improvement in rumination, frequent intrusive thoughts, and perfectionism. In fact, changes in cognitive responses to pain, beliefs, and expectations are the main mechanisms of attenuation of headaches. Cognitions are related to emotional, physiological, and behavioral responses. Therefore, one's thoughts affect the behavior by affecting physiological and emotional responses.

Ethical Considerations

Compliance with ethical guidelines

In this study, all relevant ethical principles, including the confidentiality of the questionnaires, the informed consent of the participants in the research, and the freedom to leave the research were observed. The study was approved by the Ethics Committee of the Islamic Azad University of Mashhad (Code: IR.IAU.MSHD.REC.1397.029).

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Authors' contributions

All authors contributed equally in preparing all parts of the research.

Conflict of interest

The authors declared no conflict of interest.

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