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Investigating the Effectiveness of the Logo therapy on the CD4 amount of HIV+ Depressed Patients

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ABSTRACT: This study aimed to investigate the effectiveness of Logo therapy on CD4 of HIV-positive patients with depression in behavioral disorders center of Mazandaran University of Medical Sciences, Sari, Iran. This study was semi-experimental as pretest and posttest with control group and random placement. The study population included all the depressed patients of HIV-positive that have referred to the counseling center of behavioral disorders in behavioral health center of Sari, Iran, in 2015. Among these, 30 patients, who were volunteered to participate in research projects, were selected, and randomly divided into two experimental and control groups and the experimental group was treated in 10 sessions of one hour, and one session every week. Research data were collected by using the Beck Depression Inventory and CD4 test (evaluation of blood immune cells in laboratory), and they were analyzed by covariance analysis test and SPSS17 software. The results showed that there was a significant relationship between test scores of depression and CD4 cell counts in two experimental and control groups in post-test and post-treatment. According to the results, it can be concluded that the Logo therapy can be effective in increasing the CD4 cell counts and in improving the depression of HIV-positive patients with depression.

Keywords: CD4 Cell, Depression, HIV Positive, Logo Therapy.

INTRODUCTION

HIV virus infection in today's society and its psychological and physical consequences has caused more attention to this disease. HIV infects a large group of immune system cells called T cells from the type of CD4+ (subset of white blood cells) that cause the AIDS. HIV use T cells to increase, spreads throughout the body and cause the reduction of these cells. Because the proteins that produce HIV can be easily separated from the virus and enters the blood, these proteins stick T cells together like glue, and kill them. When the number of these cells fall to a certain extent (less than 200 cells per micro liter), HIV-infected person becomes susceptible to a range of diseases that the body cannot usually inhibit it, and it eventually leads to the death of the patient (Haji Abdolbaghi et al., 2009).

AIDS is one of the economic, social, political, cultural, etc. difficulties and problems of the present time. Long period of infection is one of the features of this disease that the person and those around him are not aware of its existence, but the disease can be transferred to others. Also, because of the fear of the disease that are caused by the

lack of knowledge about the ways of transmission and non-transmission of the disease, which is accompanied by unacceptable behavior s in society and death (Afsar Kazerouni, 2005).

Depression is the most common mood disorder that has been growing over the last fifty years, and is considered as the most common cause of hospitalization (Faghihi et al., 2007). Depression is a disorder characterized by loss of energy and motivation, feeling guilty, difficulty in concentrating, loss of appetite, thoughts of death and suicide, and it's accompanied by changes in activity level, cognitive abilities, speech, sleep, appetite and other biological rhythms, and it is one of the most important causes of disability in all countries and the most common mental disorder that featured as a global health problem in all cultures. Some people are vulnerable to this disorder, because of special situation (Taghipour & Rasouli, 2008). Depression is the most common secondary complications related to HIV+ infection. These people may have more painful experiences of HIV disease, without any signs or physical symptoms (Valnet, 2003). Research of Bangsberg (2003), in relation to the treatment of the depression of HIV-infected patients, showed that depression essentially increases the relative risk of death in HIV-infected patients. High rates of depressive symptoms in depressed patients are after discontinuation of the medicine. Relieving depression, in addition to improve the quality of life, it will facilitate the adherence of treatment and medication, increase self-care and decrease the self-destructive behaviors, that all these variables have been attributed to reduce corruption, transmission of HIV and deaths (Mc Daniel & Gillenwater, 2004).

One of the factors that may be associated with depression is the lack of meaning in life. Search of meaning for humans is the first motivation in life, and it's not a justification for his innate instincts (Viktor E. Frankel, 2004). Frankel had stated that the lack of meaning is a major source of stress and anxiety. Psychological pressure of everyday life can gradually affect the activities of different body systems including the immune system and weaken and disrupt them. Depression is a mental illness that weakens the immune system and makes the body susceptible to physical diseases (Zhao et al., 2011).

According to the World Health Organization, health has three dimensions of physical, mental and social, and changes in each of these dimensions would have an impact on other dimensions (Costello & Costello, 1994, Pour Afkari, 1996).

Calman said that the quality of life is the extension and expansion of the hopes and dreams that come from life experiences (Calman, 1984). Obviously, for any reason that depression is created, loss of life expectancy will be its inevitable consequences. On the other hand, Affleck & Tennen (1996), quoted by Bijari et al (2009), believed that hope have an important role in improving an illness by creating positive thoughts about life and tendency to identify positive aspects of traumatic situations.

Logo therapy tells people to work and try. Logo therapy is a therapeutic theory that focuses on the aspirations of individuals, to respond about how and why they can live. Logo therapy gives patients the ability to find the cause or purpose of their life, and to find the strength to accept responsibility for their lives and to be able to freely enjoy their life (Viktor and Frankel, 2014). Frankel's approach to mental health had a major emphasis on the will to meaning. There is only one fundamental motivation in the intellectual system: the will to meaning is so strong that it can overshadow all other human motivation. The will to meaning is crucial for mental health, and it is necessary for minimal survival in the acute conditions. Frankel wrote that: This is only a feature of human that they can live by viewing the future. Some research indicated that logo therapy can affect different mental and physical diseases, even the immune cells.

On a research that was conducted as the effectiveness of logo therapy in combination with Quran recitation and praying on depression and the CD4 +T cell, 50 depressed women who have no immune deficiency diseases were examined from psychotherapy and counseling offices and centers. 30 patients were randomly selected, and were treated in 12 sessions of logo therapy with recitation of verses from the Holy Quran and prayer and praise. But the 20-person control group received no intervention. Then the symptoms of depression and immune cell activities of the two groups were evaluated at different stages of before treatment, after treatment and at 3-month follow-up period. The results revealed a significant difference between the experimental and control groups, in terms of symptoms of depression and CD4+T cells. Symptoms of depression in the experimental group, in compare to pretest and control group had been significantly decreased, but the amount of immune cells was increased (Hamid & Wasy, 2012). In a study that was conducted on determining the effectiveness of Logo therapy on pain, meaning-seeking and spiritual well-being, it was concluded that the Logo therapy has been effective in reducing pain and improving the meaning of life, and it can be used to avoid personal distress and to improve the quality of life (Kang et al., 2009).

According to the mentioned cases, this study examined that whether the Logo therapy can affect the amount of CD4 cells and depression or not?

First hypothesis: Logo therapy increases the amount of CD4 cells in depressed patients with HIV+.

Second hypothesis: Logo therapy decrease depression in HIV+ patients.

Third hypothesis: there is a significant relationship between depression and the amount of CD4 cells in HIV + patients with depression.

MATERIALS AND METHODS

This study was semi-experimental as pretest and posttest with control group and random placement. The study population included all the depressed patients of HIV-positive that have referred to the counseling center of behavioral disorders in behavioral health center of Sari, Iran, in 2015. They were selected by using voluntary sampling method. The sample size, according to the research method, was 30 people in total (15 for the experimental group and 15 in control group). The interview and Beck Depression Inventory were taken from the patients, and each mode in the test included four questions that were scored from 0 to 3. Finally, to interpret the table, scores will be summed: Normal 1 to 10, mild depressed 11-16, Borderline clinical depression 17-20, moderate depression 21-30, severe depression 31-40, and extreme depression More than 40. Also, CD4 tests were used to evaluate the amount of CD4 cells. According to inclusion and exclusion criteria, 30 patients were selected from volunteers and were assigned into two control and experimental groups. In this study, the experimental group received a total of 10 Logo therapy sessions during 10 weeks, one session per week. So, after placing any of the subjects in the experimental groups and the control group, the experiment group received Logo therapy treatment as a group in behavioral health counseling center.

To analyze the data, spss17 software program was used. Analysis of covariance was used in discussions of descriptive statistics with existing methods, mean and standard deviation of variables, and in inferential statistics to confirm or reject the hypothesis.

Measuring tool: Beck Depression Inventory (BDI): This questionnaire was consisted of 21 questions, which was made to assess feedbacks and symptoms of depression, and its materials were primarily provided on the basis of observation and summarizing attitudes and the common symptoms among depressed psychiatric patients. In other words, these materials have been selected logically (Marnat, 2007). In 1996, Beck and his colleagues had a fundamental revision to cover a wide range of symptoms and for more coordination with diagnostic criteria of depressive disorders for Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). In this revised version, four materials were altered to reflect symptoms, which are associated with more severe depression (for example anxiety, feelings of worthlessness, difficulty in concentrating and loss of energy). Also, to show the loss of appetite and sleep, two materials were revised (Beck et al., 1988).

Counseling sessions as group Logo therapy

First session: Familiarizing the members with each other and the counselor, determining the objectives of treatment and rules of the group and tasks of members, trying to have good relations, increasing the members' knowledge about the impact of Logo therapy on decreasing depression and immune system, the overall concept of Logo therapy.

Assignment: Thinking about the contents of the meeting.

Second session: Consolidation of the counselor's relationship with members, raising the problems of the members, analysis of the roots of the problem, identifying the causes of anxiety, depression and ways to deal with it (recognition of anxiety), reviewing the assignment of the previous session and giving feedback, talking about the problems that members currently have and expressing their experiences in that field.

Assignment: What behavior would cause stressful for you?

Third session: awareness of responsibility and its role in achieving success and awareness of freedom, reviewing the meaning by searching through our past and experiences in our lives, members' awareness of the rules and expectations that have always influenced the course of their lives, preparing members to reach a new phase of personal growth (revising some values), reviewing the previous session assignments and giving feedback. Posing the question: What would you do for satisfaction and fulfillment of others? And what have you done for your own satisfaction? Who had the greatest influence on you?

Assignment: Who do you have in your life as a model? Identify them and write the reasons for your choice.

Fourth session: raising self-awareness, teaching meaningfulness in work, love and suffering as a result of changing attitudes, members' awareness of the rules and expectations that have always influenced the course of their

lives, preparing members to reach a new phase of personal growth. Posing the question: What works don't you like to do?

Assignment: specify the behavior and actions that you have done under the laws and expectations of others, write its results (summarization).

Fifth Session: Creating a new interpretation of death as a positive force in life, supporting the members against the fear and anxiety of death, considering the members about the necessity of changing the life goals, reviewing the assignment of the previous session, describing anxiety, talking about the limitations of life and creating motivation to improve lifestyle. Mental imagery: imagine a person dying, what would you think and how did you feel at that moment?

Assignment: Write down five goals of your life and prioritize them in terms of their importance to you.

Sixth Session: Member's emotional support from each other, gaining a perspective and a variable for sources of meaning in life through the discussion on some sentences, investigating the sources of suffering, summing up the previous discussion, completing unfinished sentences like (I feel good when other people ...). Posing the questions: when human existence would be valuable in your idea and what does it mean to you? Someone who has a reason to live can live by any way. People were analyzing you, how would you feel about your body? Have you got some demands from the society in this case?

Assignment: write on paper about your perceptions from the suffering that you have endured, and hold it until the end of the session (summarization).

Seventh Session: Introduction to the types of values: Moral values, empirical values, attitudinal values, choosing values and their acceptance and responsibility, finding the meaning through experiential values, creative and attitudinal, recognizing the creative value.

Reviewing the assignment of previous session, and giving Logo therapy feedback to give meaning to the life suggests three ways, which correspond to three fundamental systems of values.

Assignment: What art do you enjoy and what plans do you have?

Eighth Session: Introduction to existential isolation and existential guilt, reviewing the new chosen values, improving the sense of concrete experience in changing life, reviewing the assignment of previous session, describing the existential isolation and existential guilt. Posing the question: Why don't you speak about the parts of your life that you do not feel alive in them? When do you have feeling like death? Mental imagery: Imagine you're in a situation of illness or death, what meanings would you find from it?

Assignment: do some works by the new demands and values corresponding with it, and write down the results.

Ninth Session: Introduction to self-improvement, discovering meaning through personal aspirations, strengthening members in lovemaking and accepting a sense of responsibility, reviewing the assignment of previous session, encouraging and supporting the members by counselor. Posing the question: How do you see your religious beliefs? Is this belief according to your wishes or others? Training the stroking skills (kind words), completing unfinished sentences: I want… Posing the question: What dreams is significance in your life and how will you attempt to achieve them?

Assignment: have a kind speech with those around you and write down your feeling and its results.

Tenth session: summaries and conclusions of the sessions, implementation of the posttests, reviewing the assignment of the previous session and giving feedback, reviewing the topics of the second to the ninth session as theoretically or briefly.

RESULTS

A: Descriptive statistics

Table 1. Comparison of pretest and posttest of CD4 cells amount in both control and experimental groups.

Statistical groups and indicators		CD4 pretest	CD4 posttest
Experimental	Mean	362.00	552.27
	Number	15	15
	Standard deviation	179.28	174.59
Control	Mean	263.07	332.8
	Number	15	15
	Standard deviation	56.73	42.92

As it can be seen in the table above, posttest of CD4 cells amount, in compare to pretest, had been increased in both groups, but the experimental group showed a greater increase.

Table 2. Comparison of pretest and posttest of depression in both experimental and control groups.

Statistical groups and indicators		Depression pretest	Depression posttest
Experimental	Mean	32.8	10.13
	Number	15	15
	Standard deviation	2.18	2.45
Control	Mean	33.07	31.27
	Number	15	15
	Standard deviation	2.37	2.15

As it can be seen in the table above, posttest of depression, in compare to pretest, had been decreased in both groups, but the experimental group showed a greater decrease.

B) Inferential statistics

For peer review of the two groups, t test was used on the pretest scores of experimental and control groups.

Table 3. T test statistics for the pretest scores of two independent groups.

Variable	indicators group	Mean	SD	N	df	t	t	Sig.
The amount CD4 cells	Experimental	362	179.28	15	28	2.038	2.048	0.051
	Control	263.07	56.73	15				
Depression level	Experimental	32.8	2.18	15	28	0.321	2.048	0.751
	Control	33.07	2.37	15				

Since the calculated ,t for the pretest of the control and experimental groups of the variables of CD4 cells amount (t= 2.038) and depression (t= 0.321) with freedom degrees of 28 and at 95 percent significance level (α=0.05) are smaller than the number of critical table (t= 2.048), so, there is no significant difference between the mean of the pretest scores of these two variables in the table above, between the two groups of control and experimental, and both groups were peered for the variables.

In parametric tests, with few samples, scores should be distributed normally. Kolmogorov Smirnov test was used to determine the normal distribution of the scores of CD4 amount and depression.

Table 4. Mean, median and the Z score of Kolmogorov-Smirnov and its significance level.

Group	Variable	Number	Mean	Median	Z Kolmogorov-Smirnov	Sig.
Experimental	CD4 pretest	15	362	330	0.749	0.629
	CD4 posttest	15	552.27	560	0.935	0.364
	Depression pretest	15	32.8	32	0.762	0.607
	Depression posttest	15	10.13	10	0.988	0.283
Control	CD4 pretest	15	263.07	260	0.551	0.922
	CD4 posttest	15	332.8	332	0.345	1
	Depression pretest	15	33.07	33	0.547	0.926
	Depression posttest	15	31.27	31	0.819	0.513

According to the results obtained from descriptive statistics and noted in the above table, in CD4 pretest and CD4 post-test variables and the levels of depression pretest and posttest, the mean and median are close, which is the sign of normal distribution. The achieved significance level for Z value obtained from the Kolmogorov Smirnov test for all of them are all larger than 0.05. So, Kolmogorov-Smirnov test also confirmed the normal distribution of scores.

First hypothesis: Logo therapy increases the amount of CD4 cells in depressed patients with HIV+.

Table 5. Levine's test for determining the equality of error variance of the dependent variable for the both control and experimental groups.

F	Df1	Df2	Sig.
23.237	1	28	0.000

Since the obtained significant level (0.000) is smaller than 0.05, so, the null hypothesis of equality of covariance error of the dependent variable could not be accepted for both groups.

Studying the homogeneity of the estimations of covariance parameters in both control and experimental groups:

Table 6. Tests of Between-Subjects Effects (interaction).

Source	SS	df	MS	F	Sig.
Group	1031.517	1	1031.517	0.635	0.433
Pretest	99266.328	1	99266.328	61.088	0.000
Pretest* group	3985.803	1	3985.803	2.435	0.129
Error	42249.25	26	1624.963		
Total	6688832	30			

R Squared = 0.948 (Adjusted R Squared = 0.942)

In the table, the interaction of group and pretest (pretest *group) is the only rows that is important to us. Here, because the obtained f ratio with freedom degrees of 1 and at the 95 percent significance level have the P value =0.129, which is greater than $\alpha = 0.05$, so, the interaction of the pretest and posttest group is not effective in increasing CD4 cells. In other words, covariance test can be used and pretest scores would have no effect in Logo therapy.

The adjusted R value (0.942) shows that 94.2 percent of the variance of the dependent variable (the CD4 cell posttest) can be explained by the group, the rest of variance (2.5%) would be expressed by other unknown factors; it means that the model is very convenient.

Table 7. Tests of Between-Subjects Effects (interaction).
Dependent variable: CD4 cells posttest

Source	SS	df	MS	F	Sig.
Adjusted model	767524.638(a)	2	383762.319	224.108	0.000
Without intervention	110151.781	1	110151.781	64.326	0.000
Pretest	406282.505	1	406282.505	237.259	0.000
Group	110106.932	1	110106.932	64.300	0.000
Error	46234.828	27	1712.401		
Total	6688832	30			
Total adjusted	813759.467	29			

R Squared = 0.943 (Adjusted R Squared = 0.939)

The obtained F ratio in Table 7 (F= 64.300) for the group, at 95 percent significance level of 0.05 was greater than the F ratio of critical table (F= 4.21), and this showed the significant effects of logo therapy treatment in increasing the amount of CD4 cells in HIV + depressed patients in the experimental group. In other words, the null hypothesis is rejected and the research hypothesis is confirmed.

Second hypothesis: Logo therapy decrease depression in HIV+ patients.

Table 8. Tests of Between-Subjects Effects (interaction).

Source	SS	df	MS	F	Sig.
Group	47.598	1	47.598	8.962	0.006
Posttest	1.821	1	1.821	0.343	0.563
Posttest* group	9.377	1	9.388	1.767	0.195
Error	138.092	26	5.311		
Total	16353	30			

R Squared = 0.961 (Adjusted R Squared = 0.956)

In the table above, the interaction of group and pretest (pretest *group) is the only rows that is important to us. Here, because the obtained f ratio with freedom degrees of 1 and at the 95 percent significance level have the P value =0.195, which is greater than $\alpha = 0.05$, so, the interaction of the pretest and group is not effective in decreasing depression. In other words, covariance test can be used and the pretest scores would have no effect in Logo therapy. The adjusted R value (0.956) shows that 95.6 percent of the variance of the dependent variable (depression level of posttest) can be explained by the group, the rest of variance (4.4%) would be expressed by other unknown factors; it means that the model is very convenient.

Table 9. Tests of Between-Subjects Effects (interaction).
Dependent variable: depression posttest.

Source	SS	df	MS	F	Sig.
Adjusted model	3350.82(a)	2	1675.10	306.727	0.000
Without intervention	41.806	1	41.806	7.672	0.01
Posttest	1.187	1	1.187	0.217	0.645
Group	3329.779	1	3329.779	609.602	0.000
Error	147.48	27	5.462		
Total	16353	30			
Total adjusted	3498.300	29			

R Squared = 0.958 (Adjusted R Squared = 0.955)

The obtained F ratio in Table 9 (F= 609.602) for the group, at 95 percent significance level of 0.05 is greater than the F ratio of critical table (F= 4.21), and this shows the significant effects of logo therapy treatment in decreasing the amount of CD4 cells in HIV + depressed patients in the experimental group. In other words, the null hypothesis is rejected and the research hypothesis is confirmed.

Third hypothesis: there is a significant relationship between depression and the amount of CD4 cells in HIV + patients with depression.

Because the variables of CD4 cells and depression are quantitative, the relationship between them can be acquired by Pearson correlation test.

Table 10. Results of correlation between the amount of CD4 cells and the level of depression.

Group	Variable	Mean	SD	N	df	r	r	Sig.
Experimental	CD4 cells pretest	362	179.28	28	0.121	2.048	0.668	362
	Depression pretest	32.8	2.18					32.8
Control	CD4 cells pretest	263.07	56.73	28	-0.39	2.048	0.151	263.07
	Depression pretest	33.07	2.37					33.07
Experimental	CD4 cells posttest	552.27	174.59	28	-0.001	2.048	0.997	552.27
	Depression posttest	10.13	2.45					10.13
Control	CD4 cells posttest	332.8	42.92	28	0.17	2.048	0.545	332.8
	Depression posttest	31.27	2.15					

Since the calculated correlation coefficients of r between the amount of CD4 cells and depression in the pretest and posttest of the control and experimental groups, with freedom degrees of 28 and at 95 percent significance level (α=0.05) are lower than the number of critical table (r= 2.048), so, So the null hypothesis is confirmed and research hypothesis is rejected. It means that there is no significant difference between the CD4 cell amounts and depression in both pretest and posttest of the control and experimental groups of depressed patients with HIV+.

DISCUSSION AND CONCLUSION

This study aimed to investigate the effectiveness of Logo therapy on CD4 of HIV-positive patients with depression in behavioral disorders center of Mazandaran University of Medical Sciences, Sari, Iran. Results of this research showed that logo therapy influenced the amount of CD4 cell in depressed patients with HIV+. And there are significant differences between the two experimental and control groups, in terms of CD4 cells amount and depression, meaning that the Logo therapy had a positive effect on CD4 amount and depression. The result showed that there are significant differences between the two experimental and control groups, in terms of CD4 cells amount and depression level, meaning that the Logo therapy had a positive effect on CD4 amount and depression. The results of this research were consistent with research findings of Ironson (2003), Hamid and Wasy (2012), Solgi et al., (2007). To explain the findings Konvisser (2006), it is believed that the people who feel meaning in their life and are eligible to have meaningful relationships with others, and have certain calm and composure due to the conformist attitudes that they have in the face of traumatic life events, so, they trying to look at the problems from different angles without losing the emotional and behavioral control to logically solve their problem. So, they can help the individual to find meaning in his life, by having meaning, social support and being active, communicating with others or creating a plan and also by teaching them how to get involved and express emotions to others (Mohammad Pour Yazdi, 2005). Thus, it can be said that the creation of meaning in life, dealing with the reality of death, accepting responsibility can provide peace and subsequently lead to the feeling of better quality of life and well-being.

The results of the second hypothesis showed that logo therapy affect the HIV+ patients with depression. There is a significant difference between the experimental and control groups in terms of depression ($p<0.019$); which means that logo therapy had a positive effect on depression. The results of the research was consistent with the findings of the researches by Paul Bolton (2004) Rebecca and Jiaqing (2011), Steger et al (2009), Snyder et al. (2006), Kang et al (2009), Rezaei and Shafi Abadi (2008), Bagherpour (2006).

Logo therapy training with an emphasis on freedom and responsibility will help patients to control their situation and change their position, and also strengthen their desire to live and cope with their anxieties and increase their sense of internal control, and finally to be more hopeful about the future and to get what they expect. In this regard, Kumar (1995 quoted by Robat Miri, 2008) confirms the impact of Logo therapy on patients with depression and anxiety who have a negative attitude towards life, and Govahi (2005) considered logo therapy as useful in the people's behavior, which is due to the changes in their attitude. So, it can be assumed that Logo therapy, by changing negative and inefficient attitudes of depressed patients with HIV+ about the future, has been able to reduce depression and increase their CD4 amount.

The results of the third hypothesis showed that there is no significant relationship between depression and the amount of CD4 cells in HIV+ patients with depression. Individuals' depression do not indicating a low level of CD4 cells, but this indicates that low levels of CD4 cells would be related to the immune disorders. In fact, awareness of the disease and the course of the disease would cause depression.

Considering the results that Logo therapy had significant effect in elimination of depression and increasing the CD4 amount in depressed patients with HIV+, it can be concluded that logo therapy in the treatment process, by encouraging people to find meaning in life and the hardships of life and by creating a structure and purpose in people's lives, help people to be hopeful by looking to the future and deal with the difficulties and hardships of their lives in any way. As "Nietzsche" said: Who has a reason to live, we will with it in any way. Certainly, any research has its restriction on their way to be done; this research also has restrictions that some of them will be mentioned: Limitation of research in terms of the number of patients, low educational level of the participants in group therapy sessions, the presence of other co morbidities affecting depression, such as drug use and personality disorders. It is also recommended for the future researches to be done on other groups and populations to increase the generalizability of the study. In future research, the study of the signs in the equal CD4 of the people should be done with or without intervention.

Conflict of interest

The authors declare no conflict of interest

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