

The Effect of Writing Therapy Using Two Methods of Expressive Writing and Daily Activity Writing on Stress, Anxiety and Depression in Primiparous Pregnant Women; A Randomized Clinical Trial

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Abstract

Introduction: Depression, anxiety and stress during pregnancy are associated with detrimental effects on maternal and child health. Writing is a cheap and non-invasive treatment that can improve mental health. This study was aimed to compare the effect of writing in two ways of expressive writing and daily activity writing on stress, anxiety, and depression in pregnant women.

Methods: This clinical trial study was performed on 102 primiparous women with a gestational age of 25-28 weeks referred to the of South Health center of Tehran University of Medical Sciences. The samples were divided into two intervention groups and one control group by block randomization sampling method. Research instruments included demographic questionnaires, Beck Depression Inventory, and Depression Anxiety Stress Scale (DASS21). In the expressive writing group, women were asked to write their deepest feelings. In the daily activity writing group, daily activities were written without involving feelings and emotions. The control group received routine prenatal care. All three groups completed the DASS21 questionnaire before the intervention, four and eight weeks after the intervention. Data were analyzed using SPSS V21 software and ANOVA, Chi-square, and Fisher tests.

Results: The variables of stress, anxiety, and depression were not statistically significant before the intervention in all 3 groups. The mean score of stress, anxiety, and depression in the two groups of expressive writing and daily activity writing was statistically significantly lower than the control group 4 weeks and 8 weeks after the intervention.

Conclusion: According to the results of this study, writing can be recommended as a simple and low-cost method in reducing anxiety, stress, and depression in pregnant women during prenatal care.

Trial registration: **IRCT20170815035722N3**. Registration date: **18-05-2019**

Introduction

The process of becoming a mother is considered as an enjoyable and evolutionary event of women's life (1). This new period involves several psychological, emotional, and physical stresses that require many physiological and psychological changes. Although pregnancy and childbirth are part of the evolutionary and natural process in women, the fact is that despite advances in the care and education of women during pregnancy regarding their physiological aspects, the psychological aspects of pregnant women have rarely been considered (2). Women are more prone to mental disorders during pregnancy, such as stress, anxiety, and depression (3).

Mental health problems during pregnancy are associated with adverse consequences (4). Studies have shown that the stress and anxiety in pregnancy may follow a U-shaped curve, so that it increases in the first and third trimesters of pregnancy (5). Stress is the most obvious sign in the behavior and clinical signs of pregnant women (6). Pregnancy stress may result in structural abnormalities (7), immune and nervous system disorders, low birth weight, preterm delivery, decreased mental development at the age of two, sleep disorders, emotionality, and movement disorders (8).

Anxiety is considered as one of the most dangerous psychological disorders due to its harmful effects on maternal and fetal health. Maternal anxiety can cause preterm labor, fetal death, intrauterine growth retardation, sleep disorders, attention deficit hyperactivity disorder (ADHD), fetal weight loss, restlessness, and low mental development of the infant (9).

10-15% of women experience depression during pregnancy, which is an important risk factor for postpartum depression (10). Depression during pregnancy is more common than postpartum depression (11). Pregnancy depression has many negative effects on both mother and fetus, including reduced maternal self-care, inadequate nutrition, substance abuse, use of harmful substances for mother and the fetus, miscarriage, and preeclampsia (10).

Interventions to prevent and treat psychological problems in pregnancy can be effective in preventing postpartum psychological problems. Today, the treatment of psychological problems focuses on psychotherapy and medication, the effects of which usually occur in the long term. Moreover, medications easily cross the placenta and can have negative impacts on fetal and infant health (12).

The use of writing alone or combined with other therapies has increased substantially in recent years. Various studies suggest that writing about experiences and emotional problems is effective in improving physical and mental health (13). Writing therapy is the art of disclosing emotions through writing (14). In accordance with the individual's experiences, writing leads to the coherence of emotions as well as their evaluation and management. Writing changes an individual's attitude about stressors and has positive effects on physical and mental health as well as quantitative physiological function (15). Expressive writing is a way of writing by which people express their feelings and thoughts. Expressive writing for at least 15 minutes about important life experiences improves physical and mental health over three days. Writing is an inexpensive, convenient and self-directed intervention (16). Therapists have previously used this technique to control post-traumatic stress disorder (PTSD), treat schizophrenia, revive memory, reduce pain, develop creativity, and treat acute and chronic anxiety (17).

Numerous studies have demonstrated the positive impacts of writing emotions on mental and physical health (18–21), such as: reducing stress, anxiety and depression in primiparous pregnant women (18), reducing anxiety and stress in Multiple Sclerosis patients (12), reducing the stress of mothers with preterm neonates admitted to neonatal intensive care unit (NICU) (19), improving the mental health of women with postpartum depression (20), improving the physical and mental symptoms of patients with colorectal, breast and prostate cancer (21).

Despite the high prevalence and the complications of depression, anxiety and stress for mother and child, health care providers continue to neglect the mental state of pregnant mothers during pregnancy. Contrary to the proven benefits of writing on mental health, according to researcher searches no study has been conducted comparing expressive writing and daily activity writing on stress, anxiety, and depression of pregnant women. Therefore, the present study was aimed to compare the effect of writing therapy with two methods of expressive writing and daily activity writing on stress, anxiety, and depression in pregnant women.

Methods

This study is a randomized controlled clinical trial that was performed on 102 primiparous women referred to South Health Centers affiliated to Tehran University of Medical Sciences. The participants were assigned into two groups of experimental and control, from June 1st, 2019 to April 21st, 2020.

The sample size calculation was based on Mir Molaei et al. study (18) that showed a standard deviation of 1.11 and 0.86 for anxiety in intervention and control groups respectively, and to discover a minimum difference of 2.48 among the three groups. Finally, with considering an attrition rate of 20%, the total sample size was calculated as 105 (35 in each group).

Participants

Inclusion criteria include: being primiparous, gestational age of 25-28 weeks, being able to read and write, having singleton pregnancy, having contact number, wanted pregnancy, score of 11-20 from Beck's Depression Inventory (mild depression), mild depression based on the depression subscales', mild to moderate stress and anxiety based on the stress and anxiety subscales' from DASS21 questionnaire.

Exclusion criteria include: having mental problems before pregnancy, using psychotropic drugs, alcohol and cigarette, having high-risk pregnancies that put a lot of stress on the mother, such as (diabetes, cancer, high blood pressure, kidney disease, MS, lupus), having family history of congenital anomalies or fetal abnormalities in the current pregnancy, reporting occurrence of acute stressful events in the last 6 months and during the study (such as the death of relatives, spouse, sudden economic problems, marital problems, and divorce), intrauterine death in the current pregnancy, delivery earlier than 37 weeks of pregnancy during the study, maternal death, unwillingness to continue cooperation for any reason, and writing less than twice a week.

Random allocation, concealment, and blinding

Random allocation was done by a statistician, using an online generated randomization list (provided by sealedenvelope.com). It was done based on random blocking and 6 blocks. A randomized list of researchers conducting assessment and intervention in pregnant women was hidden by sealed envelopes. In this study, the analyst was blind, so he was unaware of the type of grouping and the type of intervention received.

Outcomes and Research Tools

The data were collected using demographic questionnaires, Beck's Depression Inventory and DASS21. The demographic form included seven questions on age, mother's education, mother's occupation, spouse's occupation, financial status, and marriage duration and gestational age.

The Beck's Depression Inventory contains 21 items. These items are related to various symptoms of depression. The participants were asked to rate the severity of these symptoms on a 4-point Likert scale from 0 to 3. These tests are self-assessment and range from 0 to 63. (22). The reliability and validity of this standard inventory have already been examined and approved in several Iranian studies including Ghasemzadeh et al.(23).

The DASS 21 self-report questionnaire was used to measure stress, anxiety, and depression. This is the short form of the DASS42. This questionnaire consists of 7 questions for all three subscales. The scoring for each question is based on a Likert-type scale from "not at all" (0) to "very high" (3) (24). The validity of the Persian version of this questionnaire was confirmed and approved by Mollahadi (2010) and its reliability was confirmed using Cronbach's alpha method of $\alpha = 0.91$ (25).

First, the demographic questionnaire and then Beck's Depression Inventory were given to the individuals for clinical depression screening. If they obtained a score of 11-20 (mild depression) from this questionnaire and were meeting other inclusion criteria, they would enter the next stage. Cases of moderate to severe depression were referred to a psychological consultant.

In the next step, mothers of three groups were given a DASS21 questionnaire. In case of mild depression on the depression subscale, mild to moderate anxiety on the anxiety subscale and mild to moderate stress on the stress subscale, the samples were included in the study.

Intervention

Mothers in expressive writing group were instructed to write twice a week for 2 months about their deep feelings and thoughts about pregnancy, the fetus, and the issues that made them anxious and or happy during this period. Do not worry about spelling and grammatical mistakes. Mothers should write in a quiet environment to stay focused, and they should continue writing for 15-20 minutes. Mothers should pay attention to this point that really should bring their deepest feelings to paper.

Instructions were given to mothers of daily activity writing group and according to these instructions, they were instructed to merely write down their daily activities and they should continue writing for twice a week for two months each time without time limit. Mothers in this group should avoid engaging their thoughts and feelings while writing. The researcher was in contact with the mothers of both test groups every week and supervised their activities and if the participants had any problems or questions, she would answer them.

The control group received routine care according to national guidelines and did not receive any intervention.

All three groups completed the DASS21 questionnaire before the intervention, four and eight weeks after the intervention.

Statistical analysis

Chi-square and Fisher tests were used to analyze qualitative variables and ANOVA test was used to analyze quantitative variables

Results

In this study, one person from the expressive writing group due to preterm labour, one person from the daily activity writing due to intrauterine fetal death and one person from the control group due to preterm labour were excluded from the study. More complete information is displayed in the trial flowchart (figure 1).

Pregnant mothers were homogeneous in all three groups of expressive writing, daily activity writing and control in terms of age, duration of marriage and gestational age and demographic variables and there was no statistically significant difference. The mean age of participants was 26.05 years. 41.2% of pregnant women had 12 years education and more than two thirds of them

(69.6%) were housewives. 72.5% of pregnant women's wives were self-employed and 48% were economically average (table 1). Mean (SD) baseline score of stress, anxiety and depression were not statistically significant (table 2).

The groups had a statistically significant difference in terms of stress, anxiety and depression scores four and eight weeks after the intervention (table 3).

Compared with the control group, the stress score in the expressive writing group was not statistically significant -0.91 (0.47, 0.13) at the 4th week. And only in the daily activity writing group this difference was significant -1.41 (0.47, 0.10). There was no significant difference between the two groups of expressive writing, and daily activity writing 0.50 (0.47, 0.54).

Only the two groups of expressive writing and daily activity writing were not statistically significant at 8th 0.11 (0.46, 0.96).

There was a statistically significant difference between the two groups of expressive writing and daily activity writing compared to the control group at the end of the eighth week -1.79 (0.46, 0.01) and -1.91 (0.46, 0.00) respectively.

Compared to the control group, the anxiety scores in the daily activities writing group were statistically significant in both follow-ups, four weeks after the intervention - 0.67 (0.25, 0.23), eight weeks after the intervention -1.00 (0.31, 0.005). Compared to the control group, the anxiety score in the expressive writing group was not statistically significant at 4th week -0.41 (0.25, 0.23). But this score was significantly lower in at 8th week -1.00 (0.31, 0.005). There was no statistically significant difference between the expressive writing and daily activities writing group in both follow-ups (table 3).

Compared to the control group, the depression scores in both groups of daily activity writing and expressive writing groups were statistically significant at 4th and 8th weeks after the intervention.

There was no statistically significant difference between the two groups of expressive writing and daily activity writing at 4th weeks 0.32 (0.33, 0.60). This score was not significant in at 8th weeks -0.38 (0.33, 0.49). (Table 3)

In this study, writing in both ways did not have adverse effects on maternal and fetal health.

Discussion

In the present study, the mean scores of stress, anxiety, and depression in the two groups of expressive writing and daily activity writing 4 weeks and 8 weeks after the intervention had a statistically significant decrease compared to the control group.

The mean scores of stress, anxiety and depression in both groups of expressive writing and daily activity writing in both follow up were not statistically significant and in this study it can be concluded that writing in both ways can be effective.

The results of the present study are consistent with the study of Montazeri et al. (2020) entitled "The Effect of Writing Therapy on Anxiety in Pregnant Women" (9). In this study, in addition to using counseling sessions, mothers were provided with strategies to cope with anxiety. They were asked to write a story about their problems and tell the causes of their anxiety and the real reason of their problems. They also were provided with solutions based on the training they have received in the counseling sessions. The difference between this study and the present study is the difference in the duration of the intervention, the use of counseling sessions, the difference in the questionnaire, the method of writing, and the content of the writings.

Kadivar's (2016) study showed that expressive writing by parents of preterm neonates admitted to the neonatal intensive care unit (NICU) for 3 times a week for 15-20 minutes each time reduces their stress (19). Although the result of this study is in line with the current study and the expressive writing method is very similar in both studies, the duration of the intervention, the research community and the questionnaires are different. Hasanzadeh's study in 2010 showed that journaling on emotions and feelings improves anxiety and stress in Multiple Sclerosis patients (13). The similarity between Hasanzadeh's study and the current study was applying the same writing method in the writings of Hasanzadeh's intervention group and the expressive writing group of the current study. The questionnaire (DASS21) was also used in both studies; however, the research population and the duration of the intervention were different in the two studies.

In the Mirmolaei (2020) study on pregnant women, expressive writing was performed twice a week for 15-20 minutes for two months. Although anxiety and depression were significantly reduced in the intervention group during 4 weeks, the stress level was not reduced during 4 weeks and this variable was also significant after continuing the intervention for 8 weeks (18). The results of this study are consistent with the results of the present study and the type of research population, type of intervention and questionnaires were similar in these two studies. The Mirmolaei's study was performed using an intervention group and a control group, but the current study has two intervention groups and a control group. It is unclear how writing promotes health, but a complex mechanism may be involved in this process (18).

In the study of three groups by Crawly et al. (2018) entitled "Feasibility and acceptability of expressive writing with postpartum women", women who had passed 6-12 weeks after delivery were asked to write down their deepest thoughts and feelings for 3 days and 15 minutes each time on stressful events related to their pregnancy and childbirth. The women in the second group were asked to write about a room for 15 minutes on three consecutive days, and not to express their feelings and emotions. The third group received only routine care. The results showed that the feasibility of offering expressive writing as a universal self-help intervention to all postpartum women 6 to 12 weeks after birth was low. However, expressive writing is an acceptable intervention for the majority of women who have done it completely (26).

In the Panagopoulou (2009) study, 148 infertile women who were treated were divided into an emotional-writing condition, a fact-writing condition and a control condition. The aim was to investigate the effect of emotional disclosure through writing therapy. The results of this study indicate that the anxiety score did not differ significantly between the three groups and, interestingly, infertility treatment was more successful in the control group than the other groups (27). The results of this study are not consistent with the current study; this might be due to the short duration of the intervention. In Panagopoulou's study, women used the Pennebaker model. They were asked to write about their deepest feelings about infertility and how to treat it 20 minutes before bedtime. Every day, 20 minutes before bed, they wrote about their deepest feelings about infertility and how to treat it; however, the present study was performed for 2 months. Writing in the short period revives negative memories and affects the mood, but in the long period, it reinforces positive emotions (27). A study by Frederiksen et al. (2017) entitled, "The effect of expressive writing intervention for infertile couples: a randomized controlled trial" showed that writing emotion did not reduce stress, anxiety and depression in infertile women (28). and as a result contradicted the results of the present study. This may be due to the short duration of the intervention (3 times for three days) and the time at which the intervention was performed to treat infertility may affect the effectiveness of the intervention.

Crawly believed that there were numerous reasons why emotion writing could be effective: the results of different studies in different countries and with different cultures indicate that cultural differences may enhance the effectiveness of these interventions. Furthermore, using different content of writing in different studies can be a factor in influencing the effectiveness of studies. For instance, in one study, study subjects were asked to write about birth. In another study, they described their stressful experiences of their infant being admitted to the intensive care unit, or the stressful experiences of childbirth or the stress of infertility. The duration of the intervention was also one of the factors influencing the effectiveness of the intervention. This duration varied in different studies from 30 minutes for 4 consecutive days, 15 minutes for 3 consecutive days, 10-15 minutes for twice a day or only once for 10-15 minutes. The time to start the intervention is also important for its effectiveness. For example, in the Crawly's study, it was difficult for a mother to write without distraction during the first week of the childbirth. Therefore, 6-12 weeks after delivery was selected. In the study of Horsch et al. (2016), entitled "Improving maternal mental health following preterm birth using an expressive writing", the intervention was performed 2-14 months after birth (29).

The nature of the stressor can be considered as a factor influencing the effectiveness of interventions (26). In Anderson's study (2010), the effect of writing on sexual assault survivors was examined. The followed up results one month after conducting the intervention showed that there was no statistically significant difference between the two groups regarding stress reduction. However, continuing the intervention for 3 months, some differences were observed. Perhaps the cause is the severity of the intense psychological trauma caused by the sexual assault, which requires more follow-up time (30). Writing transforms meaningless words and feelings into meaningful and understandable words (31).

The strengths of the present study include having three groups, the duration of the intervention, and random allocation. Also, this study was performed only on primiparous women who had no previous experience of pregnancy and childbirth, and in this regard,

homogeneous groups were created for comparison.

This research is carried out in Tehran, the capital of Iran, and due to more care and therapeutic facilities in the capital, the results of this study are not generalized to pregnant women in the city and villages. This study was performed only on healthy primiparous mothers and cannot be generalized to other mothers. It is better to do similar studies on other groups of mothers, such as mothers who are physically or at high risk of pregnancy.

Conclusion

The present study showed that writing either in the form of writing emotions or in a neutral way is effective on reducing stress, anxiety and depression in pregnant women. By identifying women at risk, writing can be recommended as a low-cost and simple way to prevent the adverse effects of stress, anxiety and depression on the mother and fetus. Obviously, such simple interventions reduce the cost of treatment and complex interventions.

Declarations

Ethics approval and consent to participate

This study was designed and implemented based on the Helsinki Convention and was reviewed and approved by the Ethics Committee of the School of Nursing and Midwifery of Tehran University of Medical Sciences (Ethics Approval ID: IR.TUMS.FNM.REC.1397.116). Also, the protocol of this study was registered and approved in the IRCT system on 18/05/2019 (Registration ID: IRCT20170815035722N3). In this study, ethical considerations were considered and after explaining the objectives of the research, written informed consent was obtained from participants. Mothers were told that participation in the study was optional and that they could withdraw from the study at any time, and that this decision would not change their pregnancy care process.

Consent for publication

Not applicable

Availability of data and materials

The datasets generated and analyzed during the current study are not publicly available due confidentiality of information but are available from the corresponding author on reasonable request.

Competing interests

No conflict of interest

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Authors' contributions

F.Kh., S.T.M. designed the study. H. R. analyzed and interpreted the data. F.Kh. wrote and revised the paper. All authors read and approved the final manuscript.

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Tables

Table 1- Participants baseline characteristic after random assignment

		Groups			P-value
		Expressive writing (n=34)	Daily writing (n=34)	Control (n=34)	
		(n=30)			
Age (year), Mean ± SD		26.58(5.24)	26.88(4.02)	24.70(3.58)	†0.08
Marital Time (year), Mean ± SD		2.38(1.70)	2.67(1.55)	1.58(1.10)	†0.07
Gestational Age (Weeks), Mean ± SD		26.29(1.08)	26.76(1.12)	26.44(0.99)	†0.18
Education, n (%)	Beyond High School	13(38.2)	12(35.3)	17(50)	0.39 *
	College and High School	15(44.1)	12(35.3)	13(38.2)	
	University	6(17.6)	10(29.4)	4(11.8)	
Mother's Employment status	Unemployed	26(76.5)	20(58.8)	25(75.3)	0.26 *
	Employed	8(23.5)	14(41.2)	9(26.5)	
Father's Job	Self-employee	25(73.5)	22(64.7)	27(79.4)	0.43 *
	Employee	9(26.5)	12(35.3)	7(20.6)	
Economic Status	Weak	12(35.3)	12(35.3)	13(38.2)	0.98 *
	Medium	17(50)	17(50)	15(44.1)	
	Good	5(14.7)	5(14.7)	6(17.6)	

Table2. Basic level of stress, anxiety and depression of the participants

Variables	Expressive writing	Daily Writing	Control
	Mean(SD)	Mean(SD)	Mean(SD)
STRESS	9.02±1.97	8.52±0.92	8.64±0.91
ANXIETY	4.88±1.29	1.00±4.67	4.17±0.45
DEPRESSION	5.64±0.91	5.82±0.71	5.85±0.85

Table 3. Comparison of anxiety, stress and depression scores at different time-points in the three study groups

Variables	EXPRESSIVE WRITING	DAILY WRITING	CONTROL	Statistical test	Comparison two groups		
					Expressive writing and daily writing	Expressive writing and control	Daily writing and control
STRESS							
after th 4 intervention	7.61 ± 2.22	7.11 ±2.34	1.028.52±	§P=0.013	0.50 (0.47,0.54)	-0.91 (0.47,0.13)	(0.47,0.10)*-1.41
after th 8 intervention	6.97±2.40	±2.006.85	1.04±8.76	§P=0.001	0.11 (0.46,0.96)	(0.46,0.01)*-1.79	000)(0.46,*-1.91
ANXIETY							
after th 4 intervention	3.85±1.15	±1.183.58	±0.704.26	§P=0.030	0.26 (0.25,0.54)	-0.41 (0.25,0.23)	(0.25,0.23)*-0.67
after th 8 intervention	3.23±1.18	±1.753.79	±0.654.23	§P=0.007	-0.55 (0.31,0.17)	-(0.31,0.005)*1.00	(0.31,0.005)*-1.00
DEPRESSION							
after th 4 intervention	±1.264.73	±1.744.41	±1.095.94	§P=0.001	0.32 (0.33,0.60)	(0.33,0.00)*-1.20	(0.33,0.00)*-1.52
after th 8 intervention	±1.613.58	±1.293.97	±1.235.47	§P=0.001	-0.38 (0.33,0.49)	(0.33,0.00)*-1.88	(0.33,0.00)*-1.50

§. ANOVA

*. The mean difference is significant at the 0.05 level.

Figures

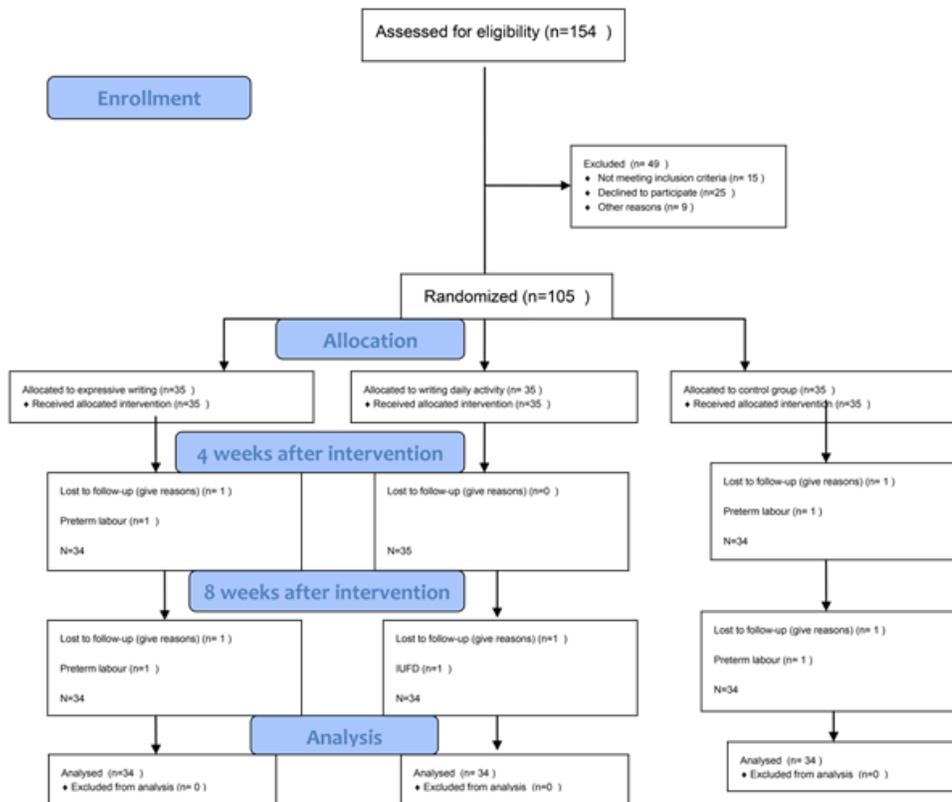


Figure 1

Study Flow diagram