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## Emotional Journal Writing-Based Stress Management: A Control for Risk Factors of Diabetes Mellitus

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### Abstract

Diabetes Mellitus (DM) is a chronic disease with a steadily increasing prevalence both globally and nationally. In addition to physical factors, chronic psychological stress plays a significant role in increasing blood glucose levels through metabolic imbalance. However, practical, accessible, and independently applicable stress management interventions are still limited. Emotional journaling has the potential to be a simple, low-cost, non-pharmacological intervention alternative in controlling DM risk factors. This study aims to analyze the effect of emotional journaling-based stress management as a risk factor control measure for DM. The study used a quasi-experimental design with a pre-test and post-test approach without a control group, involving 43 respondents over 18 years of age. The sampling technique used purposive sampling with certain inclusion criteria. The intervention consisted of stress management skills based on emotional journaling, with skills measured using a checklist before and after the intervention. Data analysis was performed using the Wilcoxon signed rank test to determine differences in skills before and after the intervention. The analysis results showed a significant increase in skills after the intervention ( $p < 0.000$ ). These findings confirm that stress management based on emotional journal writing has a positive influence and strategic potential in controlling DM risk factors effectively, easily implemented, at low cost, and sustainably based on community empowerment.

**Keywords:** diabetes mellitus, emotional journal writing, health promotion, non-pharmacological interventions, stress management

## Manajemen Stres Berbasis Penulisan Jurnal Emosional: Pengendalian Faktor Risiko Diabetes Mellitus

### Abstrak

Diabetes melitus (DM) merupakan penyakit kronis dengan prevalensi yang terus meningkat baik secara global maupun nasional. Selain faktor fisik, stres psikologis kronis berperan signifikan dalam meningkatkan kadar glukosa darah melalui gangguan keseimbangan metabolik. Namun, intervensi manajemen stres yang praktis, mudah diakses, dan dapat diterapkan secara mandiri oleh masyarakat masih terbatas. Penulisan jurnal emosional berpotensi menjadi alternatif intervensi non-farmakologis yang sederhana dan berbiaya rendah dalam pengendalian faktor risiko DM. Penelitian ini bertujuan menganalisis pengaruh manajemen stres berbasis penulisan jurnal emosional sebagai pengendalian faktor risiko DM. Penelitian menggunakan desain kuasi eksperimen dengan pendekatan pre-test dan post-test tanpa kelompok kontrol, melibatkan 43 responden di atas 18 tahun. Teknik pengambilan sampel menggunakan purposive sampling dengan kriteria inklusi tertentu. Intervensi berupa keterampilan manajemen stres berbasis penulisan jurnal emosional, dengan pengukuran keterampilan menggunakan lembar ceklis sebelum dan sesudah intervensi. Analisis data dilakukan menggunakan uji Wilcoxon signed rank test untuk mengetahui perbedaan keterampilan sebelum dan sesudah intervensi. Hasil analisis menunjukkan peningkatan keterampilan yang signifikan setelah intervensi ( $p < 0,000$ ). Temuan ini menegaskan bahwa manajemen stres berbasis penulisan jurnal emosional berpengaruh positif dan berpotensi strategis dalam pengendalian faktor risiko DM yang efektif, mudah diterapkan, berbiaya rendah, serta berkelanjutan berbasis pemberdayaan masyarakat.

**Kata Kunci:** diabetes melitus, intervensi non-farmakologis, penulisan jurnal emosional, manajemen stres, promosi kesehatan

## Introduction

Diabetes Mellitus (DM) is a chronic disease that occurs due to the body's inability to produce or utilize insulin optimally, causing glucose to be unable to enter cells as an energy source and leading to prolonged hyperglycemia, which carries the risk of damaging various organs and tissues in the body (IDF, 2025a). Symptoms of DM can appear suddenly, but in Type 2 DM, it often develops slowly with mild signs that are often unnoticed for years (Putri, 2025). Commonly experienced complaints include excessive thirst, increased frequency of urination, blurred vision, easy fatigue, and unexplained weight loss (Kotarumalos & Hermanses, 2024). If left uncontrolled, DM can damage blood vessels and nerves in the long term, increasing the risk of heart disease, stroke, kidney failure, permanent vision impairment, and serious foot problems such as slow-healing wounds that could potentially lead to amputation (WHO, 2024).

According to data from the International Diabetes Federation (IDF) in 2025, DM has developed into a worrying global health crisis, with 589 million adults aged 20-79 living with DM, equivalent to 1 in 9 adults worldwide. This number is projected to continue to increase sharply, reaching 853 million people by 2050. Not only does it impact quality of life, but DM also contributes to a high mortality rate, with 3.4 million deaths in 2024, or approximately one death every 9 seconds. The greatest burden is seen in the Western Pacific region with 215.4 million sufferers, followed by Southeast Asia with 106.9 million, and the Middle East and North Africa with 84.7 million, confirming that diabetes is a serious cross-regional threat requiring comprehensive and sustainable prevention efforts (IDF, 2025b).

The surge in DM cases globally is also clearly reflected in Indonesia. Data from the Survei Kesehatan Indonesia (SKI) in 2023 shows that approximately 877,531 people, or 1.7% of all age groups, have been diagnosed with DM by a doctor, with data coverage from 38 provinces. This figure is not evenly distributed, as a number of provinces recorded prevalence rates exceeding the national average. In 2023, DKI Jakarta held the highest position with a prevalence of 3.1%, followed by D.I. Yogyakarta (2.9%), East Kalimantan (2.3%), East Java (2.2%), and Bangka Belitung and North Sulawesi, each reaching 2.1%, indicating that DM

has become a serious health problem in various regions of Indonesia (BKPK Kemenkes RI, 2023).

DKI Jakarta is the center of economic activity and urban lifestyle, holding the highest prevalence of DM in Indonesia. This is closely linked to low physical activity, high-sugar and high-fat eating habits, and high stress levels, making DM an increasingly real health threat to urban communities (Septriani et al., 2023) (Nina et al., 2023). Based on the results of interviews conducted at the RPTRA Kampung Perigi, within the working area of the Kebayoran Lama Public Health Center, South Jakarta, it was found that community understanding of DM still showed considerable variation. Some respondents only associate DM with high blood sugar levels without understanding the risk factors or early signs of the disease. Meanwhile, other respondents recognized DM as a chronic disease but were not yet aware of the importance of regular health checkups and the role of stress management in preventing and controlling the disease. The majority of respondents do not yet understand how to manage stress and tend to ignore daily stress, and a healthy lifestyle has not been consistently implemented in their daily lives. Additionally, blood glucose level examinations of two respondents showed that one person had high blood sugar levels without any complaints, while the other respondent was within normal limits.

Research conducted by Eshete et al. (2023) shows that stress management plays a significant role in improving DM self-care practices ( $p < 0.0001$ ), and individuals with good coping skills have twice the chance of managing their health. This reinforces the importance of developing simple interventions such as emotional journal writing as a stress management strategy in control for risk factors of DM. These findings are in line with research conducted by Bassi et al. (2021), which shows that monitoring the psychological conditions of DM patients, including stress and anxiety, can be effectively carried out through various media, both conventional and digital. These findings reinforce that self-expression-based approaches, such as emotional journal writing, have the potential to be practical stress management strategies in enhancing individuals' skills for control for risk factors of DM.

The increasing prevalence of DM in the adult population indicates that current prevention strategies have not fully addressed the complexity

of existing risk factors (Ethica & Larasaty, 2025). Prevention efforts so far have been dominated by physical approaches, such as dietary adjustments and increased physical activity (Nurhayati et al., 2025). Meanwhile, psychological aspects, particularly chronic stress, often receive inadequate attention (Monica et al., 2024). In fact, poorly managed stress plays a significant role in disrupting metabolic balance and increasing blood glucose levels (Sekarbumi et al., 2025). This condition highlights the need for a more comprehensive and holistic preventive approach. Therefore, a more comprehensive and holistic preventive approach is needed, one of which is thru the application of simple and easily implemented emotional journal writing-based stress management (Ifansyah et al., 2024).

Emotional journaling writing is a reflective writing activity used to express, recognize, and understand the emotions, thoughts, and experiences a person feels in their daily life, serving as a means of stress management and self-awareness enhancement to support mental and physical health (Sulianta, 2025). Writing an emotional journal has advantages as a simple, easy-to-apply stress management method that can be done independently without requiring high costs. Thru the writing process, individuals are able to recognize and manage emotions more adaptively, thereby reducing stress responses that contribute to blood glucose level imbalances (Asmarany et al., 2024). Additionally, emotional journaling promotes increased self-awareness and consistency in healthy lifestyle behaviors, which are important factors in DM prevention efforts (Bistara et al., 2025).

Several studies have demonstrated a strong relationship between stress levels and increased blood sugar levels in DM patients, making stress management a crucial component of early prevention efforts. However, the availability of practical, easily accessible, and self-administered stress management interventions for adults is still limited. Without an applicable and sustainable strategy, the risk of developing DM in the adult population will continue to increase. Therefore, research on emotional journal writing-based stress management becomes very important as a simple and low-cost non-pharmacological intervention. This approach is expected to strengthen self-awareness, establish consistent healthy lifestyle behaviors, and serve as the foundation for

developing more effective and easily implemented strategies for DM prevention.

## Method

This study uses a quasi-experimental design with a pre-test and post-test approach without a control group. This design was chosen to evaluate changes in skills before and after the intervention within the same group. However, this design has limitations in controlling threats to internal validity, such as the maturation effect, testing effect, and Hawthorne effect. Moreover, this study did not use randomization or a comparison group, so the changes observed in the respondents cannot be fully attributed solely to the intervention provided.

The research population includes adult residents (>18 years) residing in Kebayoran Lama Selatan. Sampling was conducted using purposive sampling based on the established inclusion and exclusion criteria. Inclusion criteria include: (1) age >18 years, (2) residing in the research area, (3) never diagnosed with DM, (4) having a random blood sugar level <200 mg/dL, (5) able to read and write, and (6) willing to be respondents by signing the informed consent. Exclusion criteria include: (1) respondents who do not complete the entire intervention series, (2) having cognitive or communication disorders, and (3) withdrawing during the study. Out of the initial 45 respondents, two did not meet the criteria due to blood sugar levels >200 mg/dL, resulting in a final sample size of 43 respondents for analysis.

The research instrument in the form of a skills checklist is used to assess adults' ability to apply stress management based on emotional journal writing. This instrument was developed by the researcher based on stress management and coping theory (Lazarus & Folkman, 1984) as well as the concept of expressive writing, which was then modified according to the research context. The instrument consists of several indicators, including the ability to recognize stress, express emotions, engage in self-reflection, and determine adaptive coping strategies. Each item is rated using a 1–5 Likert scale (1 = not capable, 5 = very capable), with the total score indicating the respondent's skill level.

Content validity was assessed thru expert judgment by two specialists in community nursing and mental health nursing. The validity and reliability tests of the instrument were conducted

on 30 respondents who had similar characteristics to the research subjects. The validity test used the product moment correlation with 41 degrees of freedom and a significance level of 0.05 (two-tailed test), resulting in a table value of  $r$  equal to 0.3008. The test results showed that all items had a correlation coefficient value between 0.660–0.926, thus declared valid because the calculated  $r >$  table  $r$ . The reliability test using Cronbach's alpha yielded a value of 0.947, indicating that the instrument has a very high level of reliability and is suitable for use in research.

The intervention was conducted in a single session lasting approximately 30 minutes, consisting of education, interactive discussions, and practice simulations. In the implementation stage, emotional journal writing is conducted thru reflective writing activities, where participants are asked to write about emotional experiences related to stress for approximately 10–15 minutes. Participants are directed to express their feelings, thoughts, and responses honestly without any restrictions on language structure. Next, participants reflect on the writing by identifying the sources of stress, the responses that emerge, and more adaptive coping strategies, with guidance from the researcher. Skill measurement was conducted twice, namely before (pre-test) and after (post-test) the intervention using the same instrument.

The normality test of the data was conducted using the Shapiro–Wilk test because the sample size was less than 50 respondents. Based on the results of the normality test, the difference analysis was conducted using the Wilcoxon Signed Rank Test. In addition, to determine the strength of the intervention's effect, an effect size calculation was performed using the formula  $r = Z/\sqrt{N}$ . Based on Cohen's (1988) guidelines in (Baidowi. et al., 2024), the absolute value of effect size is interpreted as follows: 0.10–<0.30 indicates a small effect, 0.30–<0.50 indicates a moderate/medium effect, and  $\geq 0.50$  indicates a large effect. However, this study did not report confidence intervals and did not conduct subgroup analyzes based on respondent characteristics such as age, education level, or gender, which constitutes a limitation in the data analysis.

This research has obtained ethical approval from the Health Research Ethics Committee of University of Muhammadiyah Purwokerto (KEPK/UMP/88/VIII/2025), with the application

of research ethics principles thru the provision of informed consent, protection of respondent identity confidentiality, and voluntary participation.

## Result and Discussion

### Univariate Analysis

**Table 1.** Frequency Distribution of Adult Characteristics in Kebayoran Lama Selatan Village, May 2025 (n=43)

Variabel	$\Sigma$	%
<b>Age</b>		
Early Adulthood (18-40 Years)	7	16,28
Middle Adulthood (40-60 Years)	25	58,14
Late Adulthood/Elderly (>60 Years)	11	25,58
<b>Education</b>		
Higher Education (Bachelor's Degree)	4	9,3
Secondary Education (High School/Equivalent)	16	37,21
Lower Education (Elementary School/Middle School)	23	53,49
<b>Gender</b>		
Male	12	27,91
Female	31	72,09

Based on Table 1, the characteristics of the respondents show that the majority are in the middle-aged range (40–60 years), totaling 25 people (58.14%), which is an age group vulnerable to DM. In terms of education level, more than half of the respondents have a lower education level (elementary school/middle school), totaling 23 people (53.49%), which has the potential to affect their understanding and skills in controlling DM risk factors. Meanwhile, by gender, female respondents dominated with 31 people (72.09%), reflecting the active role of women in participating in health activities in the community.

Based on Table 2, the distribution of adult skills before the intervention shows that the majority of adults were in the poor skills category, with 36 respondents (83.72%). After the intervention, there was a significant shift in the distribution of skills, with good skills increasing to 10 people (23.26%), and moderate skills becoming

the largest category with 18 respondents (41.86%). This change indicates that the stress management intervention based on emotional journal writing has strategic potential in enhancing skills in controlling DM risk factors.

### Bivariate Analysis

Based on Table 3, the average adult skills score before the intervention was 22.02 and increased to 31.77 after the intervention, with a difference of 9.75 points. The results of the analysis using the Wilcoxon Signed Rank Test showed a Z value of -5.014 with a p-value of 0.000 ( $p < 0.05$ ), indicating a statistically significant difference. In addition, an effect size of  $r = 0.76$  was obtained, which falls into the category of a large effect. These findings indicate that stress management based on emotional journaling is not only statistically significant but also has a strong influence in improving adult skills before and after the intervention.

### Discussion

The analysis results show a difference in skills before and after the intervention in adults, so it can be concluded that there is an influence of stress management based on emotional journal writing in improving adult skills as a control for risk factors of DM. The results of this study indicate that the intervention provided is not only statistically significant but also has practical significance in enhancing individuals' ability to manage stress.

According to the researchers, stress management based on emotional journal writing is an effective and relevant non-pharmacological intervention to improve adult skills. Emotional journal writing not only helps individuals recognize and express emotions more adaptively but also encourages self-awareness in managing stress that could potentially affect metabolic balance. The improvement in skills after the intervention indicates that this simple and reflective approach is capable of building initial behavioral readiness in managing DM risk factors. Therefore, stress management based on emotional

journal writing has the potential to be strategically developed as part of community-based promotive and preventive efforts.

The results of this study are consistent with research conducted by Septiano and Sutrisno (2025), which showed that first-year students who participated in emotional writing therapy experienced a significant decrease in adaptation stress, with a paired T-test significance value of 0.001 ( $p < 0.05$ ). Additionally, the independent T-Test showed a significant difference in stress levels between the experimental and control groups ( $p = 0.004$ ), confirming the effectiveness of this intervention compared to no treatment. This finding confirms that emotional writing therapy is a simple, effective psychological strategy that can help freshmen cope with academic and social adaptation in a healthier way. Another study conducted by Alim et al. (2025) showed that journaling techniques, including cathartic writing and gratitude journaling, significantly reduced academic stress levels in students. This finding confirms that journal writing is a simple, flexible, and self-administered emotion regulation intervention, making it effective as a long-term stress management strategy.

If linked to respondent characteristics, demographic factors such as age, education level, and gender can influence an individual's ability to receive and implement interventions. Respondents with higher levels of education tend to find it easier to understand instructions and engage in deeper self-reflection, thereby allowing for more optimal skill enhancement (Manoppo, 2024). From the aspect of age, adults generally have more complex life experiences, making them more capable of linking emotional experiences with adaptive coping strategies (Nurhandayani et al., 2025). Meanwhile, gender differences can also affect how individuals express emotions, with women tending to be more open in expressing their feelings through writing compared to men. This indicates that the effectiveness of emotional journaling interventions is not independent of individual characteristic backgrounds (Amran et al., 2025).

**Table 1.** Frequency Distribution of Respondent Characteristics Based on Adult Skills Before and After Intervention in Kebayoran Lama Selatan Village, May 2025 (n=43)

Skill Variable	Before Intervention		After Intervention	
	Σ	%	Σ	%
Good Skills	3	6,98	10	23,26
Average Skills	4	9,3	18	41,86

Poor Skills	36	83,72	15	34,88
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**Table 3.** Differences in Adult Skills Before and After Intervention in Adults in Kebayoran Lama Selatan Village, May 2025 (n=43)

Variable	Mean	Min-Max	Z-Value	P-Value
<b>Skill</b>				
Before	22,02	12-40	-5,014	0,000
After	31,77	14-49		
Difference ( $\Delta$ )	9,75			

According to Amirullah, theoretically, skills are understood as abilities reflected in real actions thru a continuous self-development process, where individuals actively and constantly learn from their experiences (Elisa, 2022). Skills play an important role in behavior change because they serve as a bridge between knowledge and real action, enabling individuals to apply what they know accurately, confidently, and consistently, so that behavior change doesn't just stop at intention but develops into sustainable habits (Riza & Sutajaya, 2024). Additionally, skills also enhance the ability to manage oneself and cope with situations, enabling individuals to respond to stress adaptively, reduce risky behaviors, and maintain positive behaviors in the long term, one of which is thru mastering emotional journal writing skills as a preventive measure for DM in adults (Aulia et al., 2025).

Emotional journaling writing is a reflective method that involves writing to honestly and structurally express an individual's feelings, thoughts, and emotional experiences (Septiani & Andriyani, 2025) (Irdi et al., 2024). Thru emotional journal writing, individuals can identify stress triggers, understand their emotional responses, and develop more adaptive emotional management strategies (Mahyuddin et al., 2025). In the realm of health, this method serves as an effective non-pharmacological intervention to improve psychological well-being while also promoting healthy lifestyle changes (Daud et al., 2024). With the ability to manage stress, the production of hormones like cortisol, which can raise blood glucose levels, becomes more controlled, thus maintaining the body's metabolic balance (Fatih et al., 2023). Additionally, journaling activities enhance self-awareness and personal reflection, motivating individuals to consistently adopt a healthy lifestyle, including a balanced diet, regular exercise, and periodic health checkups, which

directly supports the prevention of DM in adults (Ashadi et al., 2025).

However, although theoretically stress management plays a role in regulating blood glucose levels, this study does not directly measure stress levels or physiological parameters such as glucose or cortisol levels. Therefore, the causal relationship between intervention, stress reduction, and DM risk control in this study remains conceptual and requires further validation thru research with biomarker measurements. In addition, this study has several limitations that need to be considered. From the intervention side, the implementation conducted in only one meeting with a relatively short duration ( $\pm 30$  minutes) allows the results obtained to reflect more of a short-term skill improvement. This study also did not conduct long-term follow-up, so it has not been able to evaluate skill retention or the sustainability of emotional journal writing practices in daily life. In addition, this study has not reported confidence intervals and has not conducted subgroup analyzes based on respondent characteristics, thus limiting the interpretation of the variation in intervention effects.

Nevertheless, this intervention shows potential as an initial step in enhancing stress management skills that can be further developed in a sustainable program. Therefore, further research is recommended to use an experimental design with a control group and a longitudinal approach to obtain stronger and more comprehensive results. Based on this research, it can be concluded that stress management thru emotional journaling can enhance adult skills in recognizing and managing stress, which is one of the important factors in controlling DM risk factors. These findings affirm that this simple, low-cost, and independent approach has the potential to be an effective strategy in building self-awareness and community-based healthy living behaviors.

## Conclusion

The research results show that stress management based on emotional journaling has a positive impact on improving adult skills in recognizing and managing stress as part of controlling Diabetes Mellitus risk factors. This intervention not only shows statistical significance but also has practical implications in building individual behavioral readiness toward a healthier lifestyle. Thru the reflective process, writing emotional journals helps enhance self-awareness and adaptive coping abilities, which play a crucial role in maintaining emotional balance and overall health. Nevertheless, the relationship between stress management and physiological regulation still requires further proof thru biomarker measurements. Therefore, this approach has the potential to become an initial strategy that is simple, low-cost, and applicable in community-based promotive and preventive efforts.

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