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ORIGINAL RESEARCH

THE EFFECT OF DIABETES SELF-MANAGEMENT EDUCATION ON LIFESTYLE PATTERNS AMONG ELDERLY PATIENTS WITH DIABETES MELLITUS

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Abstract

Background: Diabetes mellitus (DM) is a chronic metabolic disease that significantly affects the elderly, often leading to complications and reduced quality of life. Lifestyle management plays a crucial role in controlling DM, and palliative care education can enhance self-care and well-being among elderly patients.
Purpose: This study aimed to examine the effect of palliative care teaching methods on the lifestyle patterns of elderly patients with diabetes mellitus at Lima Ilir Community Health Center in 2025.
Methods: A quantitative quasi-experimental study with a one-group pretest-posttest design was conducted. Thirty-one elderly patients with DM were selected using purposive sampling. The intervention involved palliative care teaching using brochures as educational media. Lifestyle patterns were measured before and after the intervention using the Health-Promoting Lifestyle Profile II (HPLP II) questionnaire. Data were analyzed using paired sample t-test with SPSS.
Results: The results showed a significant improvement in lifestyle patterns after the intervention. Before the intervention, 54.8% of participants had poor lifestyle habits, while 22.6% and 22.6% were categorized as moderate and good, respectively. After the intervention, no participants remained in the poor category; 25.8% were moderate, 54.8% good, and 19.4% very good. Statistical analysis revealed a significant difference in lifestyle scores before and after the intervention ($p = 0.000$, $p < 0.05$).
Conclusion: The palliative care teaching method effectively improves lifestyle patterns among elderly patients with diabetes mellitus. Providing structured education and guidance enhances patients' understanding of self-management, including diet, physical activity, stress management, and adherence to medication, thereby promoting better quality of life.

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1. Pendahuluan / Introduction

Elderly individuals are defined as those aged 60 years and above, representing the final stage of the life cycle. Aging is a natural process that begins at birth and continues throughout life (Manurung et al., 2023, p.17). As individuals age, they undergo biological, physical, psychological, and social changes that significantly affect their health. One of the most prevalent conditions among the elderly is Diabetes Mellitus (DM) (Lilyana & Kristina Pae, 2024).

Diabetes Mellitus (DM) is a metabolic disorder often referred to as a "silent killer" because it commonly progresses without symptoms while leading to serious complications, such as cardiovascular disease, kidney failure, visual impairment,

neuropathy, and even the risk of amputation (Nopriani & Saputri, 2021). In older adults, the occurrence of diabetes is influenced by genetic factors, age, and sex. However, unhealthy lifestyles—including physical inactivity, inadequate rest, poor dietary habits, stress, anxiety, and sleep disturbances—play a crucial role in the development of diabetes among the elderly (Solpani et al., 2025).

According to WHO (2019), diabetes mellitus accounts for 1.5 million deaths annually, 48% of which occur in individuals under the age of 70. The International Diabetes Federation (IDF) (2021) reported that approximately 537 million people, or 10% of the global population aged 20–79 years, were living with diabetes. This number is projected to increase to 643 million by 2030 and 783 million by 2045, with an estimated 240 million cases remaining undiagnosed. In Indonesia, there are approximately 19.4 million people with diabetes among 179.7 million individuals aged 20–79 years, representing a prevalence rate of 10.6% (1 in 9 people). In South Sumatra Province, data from the Central Statistics Agency (BPS) show that the number of diabetes cases has risen from 172,044 to 279,345, reaching 435,512 cases (Syafitri & Nopriani, 2024).

Elderly individuals are particularly vulnerable to diabetes mellitus because aging reduces the body's tolerance to glucose. Approximately 15% of individuals aged ≥40 years are affected, especially those between 40–60 years. Lifestyle changes, particularly reduced physical activity and poor dietary patterns, are major contributors (Meilani et al., 2022). Diabetes mellitus not only affects physical health but also diminishes quality of life (Eltrikanawati et al., 2020). Therefore, elderly patients with diabetes require holistic management, including palliative care.

Palliative care plays a pivotal role in managing symptoms of chronic illness and improving the quality of life of elderly patients with diabetes mellitus (DM). Proper understanding and implementation of palliative care can alleviate patient suffering and provide support to families, particularly in end-of-life contexts (Marselinus et al., 2024). Palliative care is a holistic approach that addresses physical, psychological, social, and spiritual needs. Its goal is to enhance quality of life at the end of life, ensure a peaceful death, and support the bereavement process for families. Early initiation of palliative care has been shown to improve patients' quality of life during their final stages (Faidah et al., 2023).

Research conducted by Nurhayati et al. (2022), entitled "Training on Palliative Care for Diabetes Mellitus Patients in Tanjung Gusta Village, Medan," revealed that training programs on palliative care for elderly patients with diabetes mellitus improved patients' quality of life and provided greater understanding for both patients and their families. The program included structured training and mentoring, and findings indicated that participants—both patients and families—developed better skills in applying appropriate palliative care practices, ultimately improving patient well-being.

Similarly, Mahendra et al. (2023), in their study "The Influence of Community Lifestyle on Diabetes Mellitus in Tengah Village, Pantai Labu Subdistrict," reported that community members, including the elderly, who adopted healthy lifestyle practices significantly reduced their risk of developing diabetes mellitus. These practices included balanced diets, regular exercise, and effective stress management.

In another study, Marselinus et al. (2024), titled "Palliative Care Education for Healthcare Workers at the Non-Independent Melania Nursing Home, North Jakarta," it was demonstrated that palliative care education improved healthcare workers'

knowledge and skills, thereby enabling them to deliver more effective palliative care services to patients in need.

One of the efforts that can be applied to support elderly patients with diabetes mellitus is through palliative care teaching. The primary aim of such teaching is to increase patients' knowledge and self-management skills, particularly in managing pain, thereby maintaining their quality of life. In this study, brochures were utilized as an educational medium due to their practicality, readability, and usability for independent reference. Brochures also help elderly patients recall essential information about pain management, thus boosting their confidence in maintaining healthier and more comfortable lifestyles (Kurniadi, 2022).

The urgency of this research lies in the increasing prevalence of diabetes mellitus among the elderly, which can lead to long-term complications that diminish quality of life. Unhealthy lifestyles and limited knowledge of pain management exacerbate these problems. Palliative care, which addresses physical, psychological, social, and spiritual aspects, is considered effective in helping the elderly manage chronic conditions, particularly pain caused by diabetes. Hence, palliative care interventions are essential for enabling elderly patients to live healthier, more meaningful lives.

A preliminary survey conducted at Lima Ilir Community Health Center on April 11, 2025, identified 32 elderly patients diagnosed with diabetes mellitus. Interviews and observations with 10 of these patients revealed that most had not yet adopted optimal healthy lifestyle practices. Among them, 8 reported irregular physical activity, 6 complained of poor dietary habits, and 7 had not engaged in effective stress management. Observed symptoms included fatigue, persistent pain, and heightened concern about their health status. These findings highlight the urgent need for palliative care teaching interventions to support elderly patients in modifying their lifestyles to better cope with diabetes mellitus.

2. Metode / Methods

2.1. Research design

This study employed a quantitative research approach using a pre-experimental one-group pretest–posttest design. The study aimed to examine changes in participants' outcomes following the intervention, without the inclusion of a control group. Measurements were conducted on a single group of participants before and after the intervention to identify differences in lifestyle patterns after the educational program was implemented. This design allows for the assessment of intervention-related changes; however, causal inferences should be interpreted cautiously due to the absence of a comparison group (Abraham & Supriyati, 2022).

2.2. Setting and samples

This study was conducted at Lima Ilir Community Health Center, Palembang, from May 14 to May 28, 2025. The population in this study consisted of 102 individuals, defined as all elements—both objects and subjects—that share specific characteristics and serve as the target group for drawing research conclusions (Amin et al., 2023). The sampling technique applied was purposive sampling, in which participants were selected based on predetermined criteria. A total of 31 elderly individuals with diabetes mellitus (DM) who met the eligibility requirements were included as research subjects.

The inclusion criteria in this study were as follows: participants had to be present during data collection, willing to participate as respondents, aged 50–65 years,

diagnosed with diabetes mellitus, and not experiencing cognitive impairment (Nurfalah et al., 2023). Meanwhile, the exclusion criterion was respondents who withdrew during the research process.

2.3. Intervention (applies to experimental studies)

The intervention in this study consisted of the implementation of the Palliative Care Teaching Method aimed at improving the lifestyle patterns of elderly individuals with diabetes mellitus. The intervention was delivered through educational leaflets, which served as the primary medium due to their practicality, ease of use, and ability to facilitate independent learning among the elderly. The content of the leaflet included information on health-promoting behaviors, pain management strategies, and guidance for maintaining physical, psychological, social, and spiritual well-being.

The intervention was conducted in a single session with each participant. Prior to the intervention, a pretest using the Health-Promoting Lifestyle Profile II (HPLP II) questionnaire was administered to assess baseline lifestyle behaviors. Following the delivery of the intervention, participants were encouraged to apply the recommended lifestyle practices in their daily routines. Two weeks after the intervention, a posttest was conducted using the same HPLP II questionnaire to measure changes in lifestyle patterns and evaluate the effectiveness of the teaching method. The intervention was guided by a Standard Operating Procedure (SOP) developed by the researcher to ensure consistency and uniformity in the delivery of the teaching method across all participants.

2.4. Measurement and data collection

The instruments used in this study consisted of two parts: one for the independent variable and another for the dependent variable. The instrument for the independent variable was the Standard Operating Procedure (SOP) for the Palliative Care Teaching Method, developed by the researcher based on relevant literature and palliative care practice guidelines. The SOP outlined the steps for implementing the teaching intervention provided to the respondents, including teaching materials, methods of delivery, and the duration of implementation. The use of this SOP served as a standardized guideline to ensure that the intervention was carried out uniformly across all respondents, thereby enhancing the validity of the intervention process.

For the dependent variable, namely the lifestyle patterns of elderly individuals with diabetes mellitus, the study employed the Health-Promoting Lifestyle Profile II (HPLP II). The HPLP II is a standardized questionnaire designed to assess health-promoting behaviors. It consists of 52 items distributed across six dimensions: nutrition, physical activity, stress management, interpersonal relations, health responsibility, and spiritual growth. Each item evaluates the extent to which individuals practice lifestyle behaviors that support overall health. The instrument has been adapted into Indonesian by Ifroh et al. (2022), demonstrating high reliability with a Cronbach's alpha of 0.945. Examples of items in the six dimensions include health responsibility (e.g., conducting monthly personal health checks), nutrition (e.g., consuming 2–4 servings of fruit daily), physical activity (e.g., engaging in fitness or exercise programs), interpersonal relations (e.g., maintaining positive relationships with friends or others), spiritual growth (e.g., preparing for a better future), and stress management (e.g., getting sufficient daily rest). The HPLP II employs a four-point Likert scale with response options ranging from "never" to "routinely." Scores are

calculated as mean values and classified into four levels: poor (1.00–1.73), fair (1.74–2.48), good (2.49–3.23), and very good (3.24–4.00) (Ifroh et al., 2022).

The data collection procedure was carried out from May 14 to May 28, 2025. The research process began with the preparation of a thesis proposal, which was subsequently presented in a proposal seminar at the Bachelor of Nursing Program, Mitra Adiguna Palembang. On May 10, 2025, the researcher verbally invited all 102 potential respondents to participate in the study, explaining its objectives and procedures while emphasizing that participation was voluntary. On May 14, 2025, prior to data collection, the researcher again explained the study objectives and potential impacts to the respondents. From this population, 31 elderly individuals with diabetes mellitus were selected as research participants based on the inclusion and exclusion criteria. Informed consent was explained to the participants, and their voluntary participation was emphasized. Those who agreed signed the informed consent form, while those who declined were not required to sign. All selected respondents provided their consent voluntarily, and no obstacles were encountered at this stage.

Before the intervention, a pretest was administered using the Health-Promoting Lifestyle Profile II (HPLP II) questionnaire on May 14, 2025. The intervention consisted of the Palliative Care Teaching Method, delivered through a leaflet as the primary educational medium in a single session. Following the intervention, a posttest was conducted on May 28, 2025, using the same questionnaire to measure changes in lifestyle patterns among the respondents. At the end of the data collection process, participants were provided with small tokens of appreciation for their willingness to participate in the study.

2.5. *Data analysis*

Univariate analysis was employed to describe the characteristics of each research variable independently. The primary aim of this analysis was to provide a general overview of the data distribution for each variable. In this study, univariate analysis was used to illustrate the lifestyle patterns of elderly individuals with diabetes mellitus, both before and after the implementation of the palliative care teaching method. The results of the analysis of characteristics were presented in the form of frequencies and percentages to clearly demonstrate the distribution of each variable. The variables analyzed in the univariate analysis included age (ordinal), gender (nominal), occupation (nominal), marital status (nominal), and lifestyle patterns (ordinal).

Bivariate analysis was conducted to examine the relationship or correlation between two variables. In this study, the analysis was applied to assess the effect of the independent variable on the dependent variable, specifically to evaluate the differences in lifestyle patterns of elderly patients with diabetes mellitus before and after the intervention of the palliative care teaching method. Data processing was performed using the Statistical Package for the Social Sciences (SPSS). The statistical test applied in this bivariate analysis was the Paired Sample t-test, conducted with the assistance of SPSS software.

2.6. *Ethical considerations*

Following this, the researcher obtained ethical clearance with reference number 199/EC/STIKES-MAG/V/2025. A research recommendation letter was then requested from the study program, which was forwarded to the Head of the National Unity and Political Agency of Palembang City, the Palembang City Health Office, and finally to

Lima Ilir Community Health Center as the research site. The researchers carefully considered the ethical and legal aspects of this study, addressing all potential physical and psychological risks or discomforts for participants (Hansen et al., 2023, p.20). Ethical considerations included confidentiality, justice, beneficence, and anonymity. Confidentiality required that the researchers present data honestly and objectively, free from any external pressure or influence, ensuring that the research findings could be scientifically accountable. Justice was maintained by providing the intervention equally to all participants, without discrimination based on religion, ethnicity, or race. Beneficence was prioritized by maximizing benefits for all participants before, during, and after the intervention while minimizing potential harm. Finally, anonymity was ensured by safeguarding personal information from the moment it was collected. Participants were informed about, and consented to, how their identifiable data would be stored and shared, in accordance with privacy principles (Hansen et al., 2023, p.20).

3. Hasil / Results

The purpose of the univariate analysis in this study was to describe the independent variables and the lifestyle patterns of elderly individuals with diabetes mellitus before and after the implementation of the palliative care teaching method at Lima Ilir Community Health Center. Data on the respondents' characteristics were collected, including age, gender, occupation, and marital status, as well as information on their health condition and lifestyle behaviors. This information was essential to provide an overview of the respondents' profiles and to help understand the factors that may influence lifestyle changes in elderly participants following the palliative care teaching intervention. The results of the respondents' characteristics were presented in frequencies and percentages to clearly illustrate the distribution of each variable.

3.1. *Demographic characteristics of the respondents*

The frequency distribution of respondents based on age indicated that the majority were in the 50–55 years and 56–60 years age groups, with 12 individuals each (38.7%). Meanwhile, the 61–65 years age group comprised 7 respondents (22.6%). These results suggest that most participants were between 50 and 60 years old. Regarding gender, the majority of respondents were female, totaling 24 individuals (77.4%), while males accounted for 7 respondents (22.6%), indicating higher female participation in this study.

In terms of employment status, most respondents were not working, comprising 17 individuals (54.8%), whereas 14 respondents (45.2%) were still employed. This finding reflects that a significant proportion of elderly individuals in the study area were no longer actively engaged in work activities. Concerning marital status, the majority of respondents were married, with 23 individuals (74.2%). Seven respondents (22.6%) were widowed, and only one respondent (3.2%) was divorced, while no respondents were single. These results indicate that most elderly participants either had a living spouse or had been married previously.

Table 1. Frequency Distribution of Respondents Based on Characteristics at Lima Ilir Community Health Center, 2025

Characteristics	Frequency (n)	Percentage (%)
Gender		
Female	24	77.4
Male	7	22.6

Age (years)		
50–55	12	38.7
56–60	12	38.7
61-65	7	22.6
Occupation		
Employed	14	45.2
Unemployed	17	54.8
Marital Status		
Married	23	74.2
Single	0	0
Divorced	1	3.2
Widowed	7	22.6

3.2. *Lifestyle Patterns of Elderly Individuals with Diabetes Mellitus Before and After the Implementation of the Palliative Care Teaching Method at Lima Ilir Community Health Center, 2025*

This study aimed to assess lifestyle patterns among elderly patients with diabetes mellitus before and after the implementation of the Diabetes Self-Management Education (DSME) program delivered through educational brochures at the Lima Ilir Community Health Center. Lifestyle patterns were measured using the Health-Promoting Lifestyle Profile II (HPLP II) instrument. The measurements were conducted to identify changes in lifestyle patterns following the educational intervention. The results are presented in terms of minimum and maximum values, mean scores, and standard deviations, as shown in Table 2.

Table 2. Description of Lifestyle Patterns of Elderly Individuals Before and After the Implementation of the Palliative Care Teaching Method, 2025

Lifestyle	Before the Intervention	After the Intervention
Poor	17 (54,8 %)	-
Fair	7 (22,6 %)	8 (25.8 %)
Good	7 (22,6 %)	17 (54.8 %)
Very Good	-	6 (19.4 %)

The lifestyle patterns of elderly individuals before and after the implementation of the Palliative Care Teaching Method in 2025 are presented in Table 2. Prior to the intervention, the majority of respondents exhibited poor lifestyle patterns, with 17 individuals (54.8%), while 7 respondents (22.6%) had moderate lifestyles, and another 7 respondents (22.6%) demonstrated good lifestyles. No respondents were classified as having very good lifestyle patterns before the intervention. Following the intervention, significant improvements were observed. The number of respondents with good lifestyle patterns increased to 17 (54.8%), 8 respondents (25.8%) maintained moderate lifestyles, and 6 respondents (19.4%) achieved very good lifestyle patterns. Notably, none of the respondents were classified as having poor lifestyles after the intervention, indicating a positive effect of the Palliative Care Teaching Method on the lifestyle behaviors of elderly participants.

3.3. *The Effect of the Palliative Care Teaching Method on the Lifestyle of Elderly Individuals with Diabetes Mellitus at Lima Ilir Community Health Center, 2025*

The effect of the Diabetes Self-Management Education (DSME) program on lifestyle patterns among elderly patients with diabetes mellitus at the Lima Ilir Community Health Center was analyzed using a paired sample t-test. This analysis was

conducted to compare lifestyle pattern scores before and after the educational intervention. The results of the data analysis are presented in Table 3.

Table 4. The Effect of the Palliative Care Teaching Method on the Lifestyle of Elderly Individuals with Diabetes Mellitus at Lima Ilir Community Health Center, 2025

Intervention	N	Mean	Mean diference	95 % Confidence Interval of the Difference		Sig. (2-tailed)
				Lower	Upper	
Pretest	31	82.29	49.097	56.141	42.053	0.000
Posttest	31	131.39				

Based on Table 4, a significant effect was observed on the lifestyle patterns of elderly individuals with diabetes mellitus before and after the implementation of the Palliative Care Teaching Method. Prior to the intervention, the mean lifestyle score of the elderly participants was 82.29. After the intervention, the mean score increased to 131.39, resulting in a mean difference of 49.097. The findings indicate that the Palliative Care Teaching Method significantly influenced the lifestyle patterns of elderly individuals with diabetes mellitus at Lima Ilir Community Health Center, as evidenced by a significance value of 0.000 ($p < 0.05$). This result demonstrates that the difference in lifestyle scores before and after the intervention is statistically highly significant.

4. Pembahasan / Discussion

Based on the results of this study, most elderly individuals with diabetes mellitus registered at Lima Ilir Community Health Center in 2025 were aged between 50 and 60 years. The 50–55 years and 56–60 years age groups each comprised 12 respondents (38.7%), indicating that this age range is most commonly observed among elderly individuals with diabetes mellitus. Meanwhile, the 61–65 years age group included 7 respondents (22.6%), representing a smaller proportion compared to the younger age groups.

Diabetes mellitus (DM) is particularly prevalent in the elderly due to age-related changes in glucose tolerance. Approximately 15% of individuals aged ≥40 years suffer from DM, especially between 40 and 60 years, with lifestyle factors such as lack of physical activity and unhealthy diet playing a significant role (Meilani et al., 2022). DM can affect both physical health and overall quality of life (Eltrikanawati et al., 2020), necessitating holistic management approaches such as palliative care.

Elderly individuals often experience altered pain perception, resulting in persistent and difficult-to-manage pain. With advancing age, pain tolerance generally decreases, influenced by various factors including existing medical conditions, psychological or psychiatric states, and other physiological changes (Wahyudi et al., 2025).

Regarding employment status, the majority of respondents were not working, totaling 17 individuals (54.8%), while 14 respondents (45.2%) were still employed. This indicates that most elderly in the Lima Ilir area were no longer economically active, which is common among older age groups. Consistent with Rany et al. (2024), socio-economic factors, including employment status, influence the incidence of diabetes mellitus in the elderly. Unemployed elderly individuals often have limited access to resources, education, and healthcare services necessary for DM management, which can hinder regular blood glucose control and adherence to a healthy lifestyle.

Research by Azhari & Septimar (2022) indicates that unemployed elderly individuals tend to have reduced daily physical activity, more sedentary behavior, and irregular dietary patterns, increasing the risk of insulin resistance and exacerbating DM. Armansyah et al. (2025) found that elderly individuals who remain active through informal work, such as gardening or small trading, have better blood glucose control and higher quality of life compared to those who are not working, likely due to sustained physical activity and social engagement.

Ricco Habil & Berlianti (2023) also reported that employment status affects the income level of the elderly, influencing their ability to purchase medications, attend medical check-ups, and access nutritious food. Unemployed elderly are more vulnerable to malnutrition and delayed diagnosis of DM complications. Furthermore, Hendra & Fahlevi (2024) noted that non-working elderly individuals are more prone to mental health decline, including mild stress and depression, contributing to hormonal imbalances such as elevated blood glucose levels. Reduced social roles and activity also diminish motivation for DM self-management.

Regarding marital status, the majority of respondents were married (23 individuals, 74.2%), followed by widowed respondents (7 individuals, 22.6%) and one divorced respondent (3.2%). No respondents were single. This indicates that most elderly participants either have a living spouse or were previously married, though some have lost a partner due to death or divorce.

These findings align with Ulfa & Muflihatin (2022), who reported that most elderly individuals with diabetes mellitus are married, which significantly affects quality of life. A spouse often serves as a primary support system, assisting with disease management, including maintaining diet, reminding about medication, and providing emotional support. Marital status is a demographic factor significantly associated with type 2 DM in the elderly, with a significance value of $p = 0.000$. Elderly individuals with a spouse generally have stronger social support, contributing to disease prevention and control (Oktavia et al., 2024).

Arini et al. (2022) emphasized that family support, particularly from a spouse, plays a crucial role in elderly self-care practices, including diet, exercise, and medication adherence. The presence of a spouse fosters shared responsibility, enhancing motivation for health maintenance. Similarly, Pratama et al. (2023) noted that having a partner positively affects elderly engagement in treatment and routine monitoring, as they feel more cared for and less isolated.

Overall, marital status enhances the general quality of life for elderly individuals. While not specific to those with DM, the presence of a spouse provides psychological comfort and strengthens social support, which supports overall health, including effective diabetes management (Setryawati et al., 2025).

The results of the study indicate a significant improvement in the lifestyle patterns of elderly individuals with diabetes mellitus after receiving the Palliative Care Teaching Method. Before the intervention, most elderly participants had poor lifestyle patterns, with 17 individuals (54.8%) classified in this category, while the remaining participants were in the fair and good categories, each comprising 7 individuals (22.6%). No participants were classified as having a very good lifestyle at this stage.

However, after the intervention through palliative care teaching, notable improvements were observed. There were no longer any participants in the poor lifestyle category. Eight participants (25.8%) were classified as fair, 17 participants (54.8%) as good, and six participants (19.4%) achieved a very good lifestyle. These

findings demonstrate that palliative care has a positive effect on improving the lifestyle of elderly individuals with diabetes mellitus.

Supporting these findings, Nurhayati et al. (2022) in their study titled "Training on Palliative Care for DM Patients in Kelurahan Tanjung Gusta Medan" found that palliative care training for elderly patients with diabetes mellitus improved both patients' quality of life and their understanding, along with that of their families. The intervention included staged training and guidance, which enhanced participants' comprehension of proper palliative care practices, thereby improving their quality of life.

Similarly, Mahendra et al. (2023), in the study "The Influence of Community Lifestyle on Diabetes Mellitus in Desa Tengah, Kecamatan Pantai Labu", reported that community members, including the elderly, actively practiced healthy lifestyle behaviors, which positively impacted the prevention of diabetes mellitus. Regular habits such as balanced nutrition, routine physical activity, and stress management were shown to reduce the risk of DM.

Marselinus et al. (2024) in "Palliative Care Education for Healthcare Workers at Non-Independent Elderly Care Facility Melania Pademangan, North Jakarta" highlighted that education on palliative care enhanced healthcare workers' knowledge and skills in providing better care to patients requiring palliative services. Training interventions proved effective in improving understanding and practical skills among caregivers.

One approach to assist elderly individuals with diabetes mellitus is through palliative care education, aimed at improving their understanding of self-managing pain to maintain quality of life. In this study, brochures were used as an educational medium due to their practicality, ease of use, and capability for independent reference. Brochures also help elderly participants recall critical information about pain management, boosting confidence in adopting a healthy and comfortable lifestyle (Kurniadi, 2022).

Palliative care is essential in managing chronic disease symptoms and enhancing patients' quality of life, particularly among elderly individuals with diabetes mellitus. Proper understanding and application of palliative care can alleviate patient suffering and provide support to families, especially at the end of life (Marselinus et al., 2024). Palliative care is a holistic approach involving patients and families, focusing on physical, psychological, social, and spiritual aspects. Its goals are to improve quality of life, ensure a peaceful death, and provide appropriate bereavement support to families. Early implementation of palliative care can significantly enhance patients' quality of life at the end of life (Faidah et al., 2023).

Improving lifestyle in individuals with diabetes mellitus can be achieved through healthy diet management, regular physical activity, stress management, smoking cessation, and routine blood glucose monitoring. These five practices collectively support blood sugar control and prevent complications, thereby enhancing the quality of life of patients with DM (Cristinawati & Purwanti, 2025).

Elderly individuals are particularly vulnerable to degenerative diseases such as diabetes mellitus, hypertension, and hypercholesterolemia. Unfortunately, many elderly lack sufficient knowledge regarding these conditions. Their lifestyle should be guided through early detection and health education. Routine screenings, such as blood glucose and blood pressure checks, are essential for preventing complications. Adopting a healthy diet, engaging in light physical activity, and adhering to prescribed medication

are integral components of a proper lifestyle. Additionally, a palliative approach is necessary for elderly individuals with severe conditions to maintain quality of life (Nugraha et al., 2024).

The researchers assume that the implementation of the Palliative Care Teaching Method can enhance the lifestyle of elderly individuals with diabetes mellitus. Before the intervention, many participants maintained unhealthy lifestyle habits due to insufficient knowledge and understanding of the importance of palliative care in managing chronic diseases like DM. After receiving the intervention through educational materials such as brochures, elderly participants became more knowledgeable about self-management, including maintaining a balanced diet, engaging in regular physical activity, managing stress, and adhering to treatment regimens.

The Palliative Care Teaching Method was found to have a significant effect on the lifestyle of elderly individuals with diabetes mellitus at Puskesmas Lima Ilir, as indicated by a significance value of 0.000 ($p < 0.05$). This value demonstrates that the differences in lifestyle before and after the intervention are statistically highly significant.

This finding aligns with the study conducted by Latifah et al. (2022), which showed that palliative care education for patients with diabetes mellitus (DM) directly impacts positive changes in patients' lifestyle behaviors. Through empowerment and educational approaches—including counseling, training, and guidance—DM patients gained better understanding of self-care practices, particularly regarding diet management, physical activity, and psychological support. The results indicated a significant improvement from previously unhealthy and irregular lifestyle patterns to more structured and health-promoting behaviors consistent with palliative care principles.

Similarly, Munthe et al. (2023) reported that palliative care significantly improved the quality of life in patients undergoing hemodialysis. Using an analytic cross-sectional design with an observational approach, the study found that patients who received palliative care experienced enhancements across physical, psychological, social, and spiritual domains. Statistical testing yielded a significance value of $p = 0.000$, indicating a highly meaningful relationship between palliative care and patients' quality of life.

Research by Nurhayati et al. (2021) also demonstrated that counseling on palliative care increased public, particularly DM patients', understanding of the importance of palliative care in improving quality of life. Health cadres gained enhanced knowledge and skills to provide comprehensive physical and psychological care. The program promoted active community involvement and strengthened family support for patients from initial diagnosis through the terminal phase. Statistical analysis confirmed the intervention's significant effect, with a significance value of $p = 0.000$.

Eva et al. (2022) investigated palliative care education for DM patients in Kelurahan Tanjung Gusta, Medan, and found similarly significant outcomes. Following the educational intervention, participants' knowledge and understanding of proper palliative care practices improved markedly. Statistical testing showed a significance value of $p = 0.000$, demonstrating that the training substantially enhanced both knowledge and quality of life among DM patients.

Moreover, Siagian et al. (2024) reported that health education significantly increased pre-elderly participants' knowledge about diabetes mellitus complications. Prior to the educational intervention, most respondents had limited awareness of potential DM-related complications, such as cardiovascular disease, renal damage, and neuropathy. Post-intervention, participants showed marked improvements in understanding, with Wilcoxon statistical testing confirming significance at p = 0.000.

Based on these findings, the researchers conclude that the Palliative Care Teaching Method can positively influence lifestyle changes among elderly individuals with diabetes mellitus, particularly in aspects of self-management such as diet, physical activity, and psychosocial and spiritual support. Furthermore, the greater the elderly participants' understanding of palliative care principles, the more likely they are to adopt lifestyle behaviors that promote disease control and enhance overall quality of life.

5. Conclusion

Based on the results of the study conducted at Puskesmas Lima Ilir in 2025, it can be concluded that the Palliative Care Teaching Method has a significant effect on the lifestyle of elderly individuals with diabetes mellitus. Following the intervention, there was a marked improvement in the quality of elderly patients' lifestyles, indicated by a reduction in the number of participants with poor lifestyle habits and an increase in those achieving good to very good lifestyle behaviors.

The findings demonstrate that providing education and guidance through the Palliative Care Teaching Method can enhance elderly patients' understanding of self-management, including diet, physical activity, stress management, and adherence to medication. The better the elderly participants understand the principles of palliative care, the more likely they are to adopt lifestyle behaviors that support diabetes management and improve overall quality of life.

These results are consistent with previous studies indicating that education, guidance, and palliative care approaches have a positive impact on lifestyle changes and quality of life among patients with diabetes mellitus, particularly in the elderly population.

Author Contribution

Nurjannah contributed to the conceptualization, methodology, data collection, formal analysis, investigation, visualization, and writing of the original draft. Desy Marta contributed to the conceptualization, review, and editing of the manuscript, as well as supervision throughout the study. Both authors read and approved the final manuscript, ensuring the accuracy and integrity of the work.

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this study. All research procedures, data collection, analysis, and reporting were conducted objectively and independently, without any financial, personal, or professional influences that could have affected the results.

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