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Research Article

The Relationship Between Family Support and Quality of Life in Diabetes Patients At Parongpong Community Health Center

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Abstract: Diabetes mellitus constitutes a chronic pathological condition that necessitates continuous therapeutic management throughout a patient's lifetime and has been widely recognized as a major factor contributing to the deterioration of patients' physical, psychological, and social well-being, thereby reducing their overall quality of life. Within this context, familial support emerges as a pivotal determinant that not only facilitates patients' psychosocial adaptation to their illness but also enhances adherence to treatment regimens and coping mechanisms in daily life. Hence, the present study was conducted with the objective of elucidating the relationship between family support and the quality of life among individuals diagnosed with diabetes mellitus who receive treatment at Parongpong Public Health Center. This investigation employed a descriptive correlational research design with a cross-sectional orientation, encompassing a total of 34 respondents who were carefully selected through purposive sampling techniques based on predetermined inclusion criteria. The collected data were subjected to statistical analysis using the Pearson Product Moment correlation test to determine the strength and significance of the association between the studied variables. The findings revealed a statistically significant correlation between family support and quality of life ($p = 0.009$; $r = 0.440$), indicating a moderate positive relationship, wherein higher levels of family support corresponded to better perceived quality of life among patients. In light of these findings, it can be inferred that the presence of consistent and meaningful familial involvement contributes substantially to the enhancement of the overall quality of life in diabetes mellitus patients at Parongpong Public Health Center.

Keywords: Diabetic Patients; Family Support; Health Center; Parongpong; Quality Life;

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1. Introduction

Diabetes mellitus (DM), commonly referred to as diabetes, is a long-term medical condition characterized by the increasing of glucose in blood caused by the body's unable to make insulin or to make it function effectively (International Diabetes Federation, 2021). In the world today, there are more than one in ten adults now living their life with diabetes. It is estimated that, the prevalence of diabetes among adults in range of age 20–79 has more than three times, from the amount of 151 million (4.6% of the global population at that time) to 537 million (10.5%). Without proper intervention, this number most probably will rise to 643 million (11.3%) by the year of 2030 and 783 million (12.2%) by year 2045 (IDF, 2021).

According to a recent report in The Lancet for World Diabetes Day, the number of adults that has been living with diabetes worldwide has surpassed incredible number which is 800 million, four times higher than in year 1990. Findings from the Non-Communicable Disease Risk Factor Collaboration (NCD-RisC), under the auspices of the World Health Organization (WHO), underscore the formidable magnitude of the global diabetes epidemic and emphasize the pressing imperative for more robust international intervention, especially within low- and middle-income nations. Between 1990 to 2022, global diabetes prevalence among adults increased from 7% to 14%. Meanwhile, access to treatment remains limited,

leading to an increasing gap in care. In the year of 2022, about Roughly 450 million persons within the age bracket of 30 years and beyond, nearly Among those with diabetes, approximately 59% were not getting treatment, heralding a 3.5-fold escalation since 1990. Approximately 90% of these untreated cases were encountered in countries with low to intermediate economic standing (WHO, 2024). According to *Tempo* (2024), WHO also reported that In 2021, 1.6 million deaths were attributed to diabetes, nearly half manifesting in those below 70 years.

In Indonesia, the prevalence of diabetes is estimated at 10.8%, with approximately 19,465,102 adults affected out of a population of 179,720,500 (IDF, 2021). Diabetes mellitus is positioned among the leading three mortality drivers in the nation, exhibiting a death rate of 57.42 per 100,000 inhabitants in 2019 (Institute for Health Metrics and Evaluation). The IDF further predicts that the number of diabetes cases will increase by 47%, reaching 28.57 million by 2045 (Direktorat Pengembangan Usaha UGM, 2023).

In West Java Province, the number of diabetes cases has fluctuated over recent years. In 2019, there were 848,455 reported cases, which increased to 1,078,857 in 2020 before decreasing to 925,675 in 2021 and 644,704 in 2022. However, the number slightly rose again to 645,390 in 2023. In West Bandung Regency, cases remained at 17,009 in both 2020 and 2021, rose to 19,675 in 2022, and then decreased to 15,874 in 2023 (Syavera & Syazali, 2024).

Management of diabetes is based on five key pillars: diabetes education, physical activity, dietary regulation, medication or insulin adherence, and structured blood glucose monitoring (Martiningsih et al., 2022). These efforts are more effective when supported by strong family involvement. Family support plays an essential role in maintaining patients' physical and psychological well-being (Saviqoh et al., 2021). According to Savitri et al. (2022), family support significantly influences patients' dietary adherence. This support may include emotional, informational, instrumental, and appraisal assistance. Similarly, Suhailah et al. (2023) reported that six out of ten patients regularly attended health check-ups because of reminders and encouragement from family members such as spouses, children, or siblings. Many patients also mentioned that family support had a positive impact on their treatment compliance, physical activity, and overall quality of life. Conversely, patients who lacked family support often attended health services alone due to family members' busy schedules.

Preserving the quality of life demands support from family members (Manalu, 2020). A patient's condition might worsen without it. A person's quality of life can be influenced by a number of multifaceted elements, such as social and familial support, the environment, the severity of the sickness, and the length of the illness (Adriani et al., 2022). According to Kurniasih and Sartika (2023), patients' stress levels were linked to treatment duration, exhaustion, role changes, and family support. According to Derang et al. (2023), 45.8% of the 83 respondents had moderate levels of stress. Irawan and associates (2021) additionally The quality of life among people with diabetes was found to be significantly correlated with sex, length of disease, cognition, anxiety, stress, family support, and autocare ($p < 0.05$). Physical, psychological, social, and environmental aspects can all be used to assess quality of life (Wulfovich et al., 2022).

A number of studies (Aryanto et al., 2024; Erda et al., 2020; Zanzibar & Akbar, 2023; Rahmadhani et al., 2024; Ratnawati et al., 2019; Nuryatno, 2019; Jais et al., 2021; Meidikayanti & Wahyuni, 2017; Angraini et al., 2020; Pujiwati et al., 2023; Retnowati & Satyabakti, 2015; Tamara et al., 2014; Suwanti et al., 2021; Zovancha & Wijayanti, 2021). Suardana et al. (2015), however, found no connection between diabetic patients' quality of life and family social support. In the meantime, studies of the literature by Kalzan et al. (2020), Hindriyastuti et al. (2023), and Runtuwarow et al. (2020) came to the conclusion that family support is crucial for enhancing diabetes patients' quality of life.

The authors' study, "The Relationship Between Family Support and Quality of Life Among Diabetes Mellitus Patients at Parongpong Public Health Center," was based on these discoveries.

2. Preliminaries or Related Work or Literature Review

Plenty of investigations have been done on the connection between diabetes mellitus patients' quality of life and family support. In general, prior research has consistently demonstrated the critical role that family support plays in assisting patients in managing chronic illnesses and enhancing their general quality of life.

Aryanto et al. (2024) discovered a favorable relationship between diabetes mellitus patients' quality of life and family support. Patients are better able to adjust to lifestyle changes

brought on by the illness when family members are involved in offering emotional support, encouragement, and help with day-to-day care. According to Erda et al. (2020), family support improves the psychological well-being of older individuals with type II diabetes mellitus and lowers stress levels. Furthermore, after adjusting for diabetic problems and education, Rahmadhani et al. (2024) found that a 35% improvement in quality of life was associated with an increase of one unit in family support.

These results were corroborated by Suwanti et al. (2021), who found that type II diabetes patients' quality of life at Siti Aisyah Islamic Hospital in Madiun was positively correlated with family support. Strong family support helps patients maintain their physical stability and gives them a sense of security. Suardana et al. (2015), however, revealed no significant correlation between patients' quality of life and family social support. These discrepancies could result from differences in the characteristics of the respondents, the educational attainment of their families, or other sources of support like community networks or healthcare providers.

Overall, research shows that family support has a major impact on diabetes mellitus patients' quality of life. However, how such support is given and viewed may be influenced by social and cultural contexts. Thus, taking into account the local context and respondent characteristics that set this study apart from others, it seeks to further investigate the relationship between family support and the quality of life among diabetes mellitus patients at Parongpong Public Health Center.

Diabetes Melitus

Hyperglycemia brought on by decreased insulin secretion, action, or both is a hallmark of diabetes mellitus (DM), a chronic metabolic disease. The number of people with diabetes worldwide keeps rising annually. The International Diabetes Federation (2021) estimates that 537 million adults between the ages of 20 and 79 have diabetes, and by 2030, this figure is expected to increase to 643 million. According to the Ministry of Health (2023), adults in urban regions had a greater incidence of diabetes, with a prevalence of 2.6% in Indonesia.

Numerous factors affecting diabetes treatment and quality of life have been studied in the past. Al Hayek et al. (2020) discovered, for example, that patients with high levels of family participation had better emotional and glycemic management. The importance of social support in encouraging adherence to food and medication regimes was also highlighted by Adisasmito et al. (2021). However, other studies, as Pratiwi (2020), found that patients with diabetes had a reduced quality of life despite the presence of family members due to a lack of information and inadequate health education.

The relationship between family support and patients' quality of life has been the subject of few studies in Indonesia, particularly in primary health care settings like Puskesmas, despite the fact that a great deal of study has been done worldwide. There is a knowledge gap on the psychosocial aspects of diabetes care because the majority of studies focus on clinical outcomes or lifestyle changes. Thus, by examining the connection between family support and quality of life among diabetes mellitus patients at Parongpong Public Health Center, the current study seeks to close this gap.

Etiology

Dewi (2021) states that there are two primary categories of causes of diabetes mellitus. Numerous variables contribute to Type 1 Diabetes Mellitus. Rather than the disease itself being directly inherited, genetic factors have a role through an inherited predisposition. This genetic propensity increases the risk of Type 1 diabetes in those with particular Human Leukocyte Antigen (HLA) types. An aberrant immune response, in which antibodies wrongly target and assault the body's own normal tissues, recognizing them as alien substances, is another immunological element at play. Environmental factors can also cause processes that harm or kill pancreatic beta cells, such as exposure to specific viruses or poisons. In the meantime, a number of risk factors for Type 2 Diabetes Mellitus, such as obesity, a family history of the disease, and advanced age, all contribute to poor glucose regulation and decreased insulin sensitivity.

Risk Factor

Both modifiable and non-modifiable risk variables have an impact on diabetes mellitus, according to Dewi (2021). Obesity, food habits, and lifestyle choices are modifiable risk

factors. A person's everyday habits and activities are reflected in their lifestyle. Type 2 Diabetes Mellitus can be brought on by unhealthy behaviors such eating fast food frequently, exercising infrequently, and consuming sugary or carbonated drinks. Another major factor is an unbalanced diet. Dietary management for diabetes should consider energy, protein, fat, and carbohydrate intake. Foods rich in cholesterol, trans fats, saturated fats, and sodium contribute to a higher risk of diabetes. Diets high in fat, salt, and sugar often encourage overeating and can lead to elevated blood glucose levels. Another major factor contributing to elevated blood sugar levels in contemporary society is the prevalence of processed or fast foods. Another significant risk factor is obesity. Insulin resistance is brought on by excess body fat, especially central or abdominal fat, which obstructs insulin's ability to carry glucose into cells. Consequently, blood glucose levels rise, resulting in hyperglycemia.

Age, family history, and gestational diabetes history are examples of non-modifiable risk variables. As physiological systems deteriorate with age, the chance of acquiring diabetes rises. Compared to younger people, those over 40 have a higher risk of developing diabetes. Another important factor is family history; those with diabetic parents are approximately 3.4 times more likely to have the disease if their mother has the condition, 3.5 times more likely if their father has it, and up to 6.1 times more likely if both parents have it. Finally, Type 2 Diabetes Mellitus is more likely to develop later in life in women who had gestational diabetes or gave birth to kids weighing more than 4.5 kg.

Pathophysiology

Insulin resistance, a disease associated with Type 2 Diabetes Mellitus (T2DM), is a decrease in tissue sensitivity to insulin. Because there are fewer functioning beta cells, insulin is released more slowly, and peripheral tissues are less sensitive to insulin, this resistance frequently gets worse as people age. Unlike Type 1 Diabetes, Type 2 Diabetes is not primarily caused by a lack of insulin secretion, but rather by the inability of target cells to respond effectively to insulin. Insulin resistance is frequently linked to aging, obesity, and inactivity.

Beta cells show reduced first-phase insulin production in the early stages of type 2 diabetes, which means that the amount of insulin generated is not enough to make up for the resistance in bodily tissues. If this malfunction is not treated, it worsens and eventually causes pancreatic beta cells to be destroyed. The pancreas eventually becomes unable to produce enough insulin as the damage worsens, resulting in insulin insufficiency that necessitates exogenous insulin therapy. As a result, the majority of people with Type 2 Diabetes have both insulin resistance and insulin insufficiency, both of which are crucial to the disease's advancement.

Diagnostic Criteria

According to Dewi (2021), the diagnostic criteria for Diabetes Mellitus are based on specific blood glucose measurements. If one or more of the following criteria are satisfied, a person is diagnosed with diabetes: Fasting is defined as consuming no calories for at least eight hours, and fasting blood glucose levels are ≥ 126 mg/dL. Following the injection of 75 grams of anhydrous glucose dissolved in water, two-hour plasma glucose levels during an Oral Glucose Tolerance Test (OGTT) are ≥ 200 mg/dL. If the test is conducted in a well-standardized laboratory, a hemoglobin A1C (HbA1C) score of ≥ 6.5% also suggests diabetes. The diagnosis of diabetes is further supported by a random plasma glucose level of ≥ 200 mg/dL combined with characteristic symptoms including polyuria (frequent urination), polydipsia (excessive thirst), and polyphagia (increased hunger).

Management

Both immediate and long-term objectives are sought after in the treatment of diabetes mellitus (DM). While the long-term goals are on preventing or slowing the course of microvascular and macrovascular issues, the short-term objectives are to remove symptoms, enhance quality of life, and lower the risk of acute consequences. Reducing diabetes-related morbidity and mortality is the ultimate goal of successful care. The five main pillars of diabetes management are self-monitoring blood glucose, physical exercise, medication, medical nutrition therapy, and education.

Education is a crucial component of all-encompassing diabetes care since it is the foundation for encouraging healthy living and averting complications. Active involvement from patients, their families, and the community is critical to effective blood glucose management. Since Type 2 DM often develops as a result of long-standing unhealthy habits,

achieving behavioral change requires thorough education, including an understanding of the disease, the importance of glucose control, potential complications, pharmacological and non-pharmacological interventions, hypoglycemia, specific patient challenges, support systems, and how to use healthcare facilities effectively. Positive behaviors including upholding a healthy diet, increasing physical activity, taking medications on a regular basis, and self-monitoring blood glucose are encouraged through individualized teaching that employs a problem-solving approach.

A crucial part of managing diabetes is nutritional treatment, which aims to keep blood glucose levels steady. The glycemic response to food depends on preparation methods, processing, and nutrient composition (carbohydrates, fats, and proteins). The recommended macronutrient distribution includes 45–65% carbohydrates (preferably high-fiber), 20–25% fats (avoiding saturated and trans fats), and 10–20% proteins from lean sources such as fish, skinless poultry, legumes, and low-fat dairy. Sodium intake should not exceed 3000 mg (about 1 teaspoon of salt) per day. Dietary fiber should be 25 g per 1000 kcal, preferably from fruits, vegetables, and legumes. Artificial sweeteners may be used within safe limits, but excessive fructose intake should be avoided. After accounting for variables including age, sex, and degree of activity, caloric requirements are calculated using 25–30 kcal/kg of ideal body weight. The modified Broca formula or Body Mass Index (BMI) can be used to assess ideal body weight; a BMI between 18.5 and 22.9 is regarded as normal.

Regular physical exercise is another fundamental aspect of diabetes management. Physical activity enhances insulin sensitivity, improves circulation, and helps maintain a healthy weight. Depending on their age and physical condition, patients are recommended to exercise moderately three to four times a week for thirty to forty-five minutes.

Pharmacological treatment is used in conjunction with nutrition therapy and regular exercise. It includes both oral and injectable medications. Oral hypoglycemic agents are categorized based on their mechanisms of action: (a) insulin secretagogues (such as sulfonylureas and glinides) stimulate insulin secretion; (b) insulin sensitizers (like metformin and thiazolidinediones) improve insulin sensitivity; and (c) Postprandial glucose levels are regulated by glucose absorption inhibitors, such as α-glucosidase inhibitors, DPP-IV inhibitors, and SGLT-2 inhibitors.

Self-monitoring of blood glucose enables patients to track their glucose levels regularly after receiving proper training from healthcare professionals. SMBG provides valuable information about daily glucose variations such as before meals, one to two hours after meals, or during specific conditions. Studies indicate that SMBG significantly improves glycemic control, reduces morbidity and mortality, and helps lower long-term healthcare costs associated with diabetes complications.

Family Support

Family plays a central role in shaping individuals' behavior, values, and ability to adapt to illness. As the smallest unit of society, it serves as the primary social institution where individuals learn emotional regulation, social interaction, and basic life skills (Awaru, 2020; Ariyanto, 2024). A supportive family environment is especially important when a member faces chronic diseases such as diabetes mellitus.

The term "family support" describes the instrumental, emotional, informational, and physical help that family members give to those who are dealing with health issues. (Jais, 2021; Erda, 2020). According to Pujiwati et al. (2023), family support can enhance patients' comfort and motivation in managing their illness. Patients with diabetes who have a loving and involved family had better medication adherence, better glucose control, and less emotional distress (Al Hayek et al., 2020).

Several forms of family support, including as emotional, instrumental, informational, and appraisal assistance, have been identified in earlier research (House, 1981). Informational support offers counsel and direction, evaluation support bolsters self-assurance and a positive identity, instrumental support includes practical assistance like financial aid or help with everyday duties, and emotional support offers compassion and understanding. Research by Fatmawati (2021) demonstrated that emotional and instrumental support significantly reduce patients' stress levels and improve their treatment compliance.

However, other studies have shown mixed results. Pratiwi (2020) found that even with family presence, a lack of health literacy and poor communication may lead to inadequate support. Additionally, differences in socioeconomic status, education, and cultural background affect how families provide care and understanding to diabetic patients (Widiawati,

2018). Despite extensive study on the subject worldwide, few studies in Indonesia, especially in primary health settings, have examined the direct relationship between family support and diabetes mellitus patients' quality of life.

By examining the connection between the degree of family support and the quality of life of diabetes mellitus patients at Parongpong Public Health Center, this study seeks to close this gap. This study advances our knowledge of how family support might maximize the management of chronic diseases in community-based healthcare settings by combining theoretical viewpoints with empirical data.

Family Functions

According to Siregar and Samosir (2022), the family has several essential functions that support the well-being and development of its members. Biologically, the family functions to continue the lineage, nurture and raise children, provide meals and nutritional needs, maintain and protect the health of its members, and offer opportunities for recreation. Psychologically, the family serves as a source of identity, comfort, and love, helps in shaping maturity and personal growth, provides emotional security, and fosters relationships with other families or the wider community. From a sociocultural perspective, the family plays a role in preserving cultural values, promoting socialization, and instilling norms and proper behavior throughout different stages of life. Economically, the family is responsible for obtaining and managing resources to meet daily needs, allocate funds for expenses or savings, and ensure proper financial management. Lastly, the educational function of the family involves teaching skills, behavior, and knowledge related to other family roles, preparing children for adult life, and helping each member fulfill their responsibilities as mature individuals.

Types of Family Support

Depending on how family members aid and engage with one another, there are several sorts of family support. The term "informational support" describes the family's function as a repository and distributor of helpful information. This includes offering advice, suggestions, and information that help individuals understand and manage their problems. Such support helps reduce stress by giving individuals clarity and specific guidance. It may also involve practical help, such as providing money, goods, food, or services, which can directly ease material-related stress and help solve immediate problems.

Appraisal support involves giving constructive feedback, guidance, and validation to help individuals evaluate their situations and make better decisions. The family acts as a source of encouragement, appreciation, and attention. This type of support allows individuals to recognize their strengths and cope more effectively with difficulties through advice and feedback about their condition.

Instrumental support refers to the provision of tangible, practical assistance to meet the physical needs of the family member, such as ensuring proper nutrition, sufficient rest, and preventing fatigue. It focuses on concrete actions that help maintain the patient's daily well-being.

Emotional support emphasizes creating a safe and peaceful environment where the individual feels loved, cared for, and understood. It includes affection, trust, attention, and active listening. This form of support helps the person feel secure and valued, providing emotional stability and strength, especially during uncontrollable or stressful situations.

Factors Influencing Family Support

Widiawati (2018) states that a number of elements, which may be broadly classified into internal and external factors, affect the degree and quality of family support. Developmental stage, amount of education or knowledge, emotional state, and spirituality are examples of internal influences. The developmental stage affects how individuals perceive and respond to health changes. Each age group, from infants to the elderly, has a different level of understanding and reaction to illness. Education and knowledge shape beliefs about health and the importance of support. A person's cognitive ability, educational background, and past experiences influence how they interpret health issues and apply their knowledge to maintain well-being. Emotional factors also play a key role; individuals who experience stress during life changes may perceive illness as a threat, while those who manage emotions effectively are more likely to respond calmly and accept treatment. Spirituality reflects how someone builds meaningful connections with family and friends, finds hope, and seeks purpose in life, all of which contribute to emotional resilience and positive coping.

External factors include family practices, socioeconomic status, and cultural background. Family practices determine how support is expressed and modeled, patients are more likely to adopt healthy behaviors when family members do the same. For instance, a child raised in a family that values regular health check-ups will likely continue this habit into adulthood. Socioeconomic factors influence how individuals recognize and respond to illness. Higher economic stability often leads to quicker health responses and access to medical care, while social and psychological conditions such as marital stability, lifestyle, and work environment shape attitudes toward health. Lastly, cultural background impacts beliefs, values, and habits related to health and caregiving, influencing how families provide support and manage illness within their traditions and norms.

Quality of Life

A person's assessment of their place in life, including their physical, emotional, social, and psychological aspects within the framework of their culture and value systems, is referred to as their quality of life (QoL) (Pujiwati et al., 2023; Rahmadani et al., 2024). It reflects how individuals respond to their circumstances and evaluate the meaning and satisfaction they derive from life (Leni'ah, 2023). According to the World Health Organization, quality of life (QoL) is a wide, multifaceted notion that encompasses subjective assessments of both good and negative elements of life.

The four primary areas of quality of life are physical health, psychological well-being, social interactions, and environmental factors, according to the WHOQOL-BREF framework (Ramadhanty, 2019). The physical health dimension covers daily activities, mobility, pain, fatigue, and dependence on medication. The psychological domain encompasses cognitive ability, positive and negative emotions, physical image, and self-esteem. The social domain focuses on interpersonal relationships, social support, and personal connections, while the environmental domain involves financial stability, housing, safety, and access to leisure and healthcare services.

Similarly, Ferrans and Powers' Quality of Life Index categorizes QoL into four dimensions: health and functioning, socioeconomic well-being, psychological/spiritual satisfaction, and family relationships. These frameworks suggest that both material and non-material aspects such as physical health, emotional resilience, social support, and spiritual beliefs, jointly shape the perception of well-being (Ramadhanty, 2019).

Several factors influence quality of life, including independence, life satisfaction, physical and mental health, socioeconomic status, and environmental conditions (Moons, cited in Ramadhanty, 2019). The WHO also highlights additional factors such as spirituality, cultural background, and social environment. According to research, individuals with chronic illnesses like diabetes mellitus frequently have lower quality of life (QoL) because of the demands of long-term therapy, physical discomfort, and emotional stress (Rahmawati, 2022). However, studies by Nuraini et al. (2023) and Fatmawati (2021) demonstrated that strong social and family support significantly improve QoL by reducing anxiety and enhancing self-care adherence.

Despite these results, little research has been done in Indonesia on the complex interaction between family support and quality of life in patients with diabetes mellitus receiving care in community settings. By assessing how different family support levels affect the general quality of life of diabetic patients at Parongpong Public Health Center, this study seeks to close that gap.

Dimensions of Quality of Life

The World Health Organization created a number of quality of life dimensions through the WHO Quality of Life Instruments, which evaluate a person's well-being under diverse life conditions, according to the WHOQoL Group (as stated in Ramadhanty, 2019). Environmental influences, social relationships, psychological well-being, and physical health are some of these elements.

The ability to perform daily tasks, which offer experiences crucial for personal development, is related to the physical health dimension. It includes things like day-to-day functioning, pharmaceutical dependence, energy and exhaustion, mobility, pain and discomfort, and work capacity.

The psychological dimension reflects the individual's mental state and their ability to adapt to internal and external demands. It includes body image and appearance, positive and

negative emotions, self-esteem, personal beliefs, concentration, and overall psychological outlook.

The social relationship dimension concerns how individuals interact and influence one another within their social environment. It includes personal relationships, social support, and sexual activity. This dimension also relates to public self-consciousness, emphasizing how individuals communicate and connect with others.

Lastly, the environmental dimension focuses on the individual's living conditions and surroundings. It includes access to financial resources, safety, housing quality, recreational opportunities, and environmental conditions such as pollution, noise, climate, and transportation. This dimension highlights one's awareness and sensitivity toward their physical and social environment, which plays an important role in maintaining overall life satisfaction.

But according to Ferrans and Powers (quoted in Ramadhanty, 2019), who created The Quality of Life Index, there are four primary aspects to quality of life: Health and Functioning, Socioeconomic, Psychological/Spiritual, and Family.

The Health and Functioning dimension reflects an individual's ability to be useful to others, maintain physical well-being free from illness, take responsibility for their actions, manage stress and anxiety, enjoy leisure time, maintain sexual health, and access proper healthcare services.

The Socioeconomic dimension relates to one's standard of living, including personal income, housing conditions, employment status, national conditions, friendships, emotional support, and education level.

The Psychological/Spiritual dimension focuses on life satisfaction, happiness, sense of purpose, inner peace, self-image, and faith in God.

Lastly, the Family dimension emphasizes family happiness, relationships with one's spouse and children, and the overall health of family members.

In summary, physical health, psychological well-being, social interactions, and environmental elements are only a few of the many aspects that make up quality of life. The WHOQOL-BREF dimensions are used as a framework in this study because they offer a thorough description of the different factors that influence a person's quality of life.

Factors Influencing Quality of Life

Moons (quoted in Ramadhanty, 2019) asserts that a number of variables can affect a person's quality of life. One of them is independence, which is the capacity to make one's own choices, exercise self-control, and protect one's privacy. Another important factor is expressing satisfaction, which relates to life satisfaction, psychological well-being, and a positive self-image. Physical and mental health also play a major role, as they determine a person's ability to perform daily tasks and work productively. Economic and social status influence quality of life through income level, job stability, and home ownership. In addition, living environment affects how safe, comfortable, and supported individuals feel within their community and its norms. Finally, a person's total quality of life is also influenced by cultural characteristics like age, gender, socioeconomic class, ethnicity, and religion.

Additonally, according to World Health Organization (as cited in Ramadhanty, 2019), other factors that affect quality of life include physical health, encompassing energy levels, fatigue, pain, and comfort, as well as sleep quality. Psychological health involves body image, appearance, emotional states, self-esteem, and cognitive abilities like concentration and memory. Level of independence covers mobility, daily activities, and work capacity, while social relationships include personal connections, social support, and sexual life. The environmental factor relates to property ownership, personal safety, social concern, access to healthcare, and opportunities for information and services. Lastly, spirituality refers to personal beliefs and religious faith that provide meaning and purpose in life.

3. Proposed Method

The independent and dependent variables in this study were measured and analyzed at a single moment in time using a cross-sectional technique in conjunction with a descriptive-analytic method. Because the researcher planned to use a questionnaire as a method to ascertain whether there is a relationship between the independent and dependent variables within a single assessment period, the cross-sectional design was selected. This study's primary goal

was to investigate the connection between diabetes mellitus patients' quality of life at Parongpong Public Health Center and family support. Data collection for the study took place over the course of two weeks, from August 10 to August 22, 2025. The Parongpong Public Health Center, situated at Jl. Karyawangi, Karyawangi, Pa-rongpong District, West Bandung Regency, West Java, 40559, was the site of the study.

Following the distribution and collection of questionnaires from patients with diabetes mellitus at the Parongpong Health Center, the information was processed and examined in order to meet the goals of the study. Data processing was done in a number of steps. Verifying the accuracy and coherence of each questionnaire's results was the first step in the editing process. Any incomplete or illogical data were excluded to maintain the validity of the analysis. Each response was given a numerical value in the second stage, coding, according to the family support and quality of life variables' measuring scale. To enable statistical analysis, all coded data had to be entered into the Statistical Package for the Social Sciences (SPSS) version 25 for Windows in the third step, data entry. In order to describe the characteristics, family support, and quality of life levels of the respondents, the fourth stage, tabulating, displayed the processed data as frequency distribution tables.

After that, two types of data analysis were carried out: univariate and bivariate analysis. The distribution of respondent characteristics, family support levels, and quality of life levels were described by the univariate analysis and presented in tables with percentages and frequencies. The purpose of the bivariate analysis was to ascertain the association between quality of life (the dependent variable) and family support (the independent variable). For normally distributed data, the Pearson Product Moment correlation test was utilized; for non-normally distributed data, the Spearman Rho test was employed, with a significance level of $\alpha = 0.05$. The alternative hypothesis (Ha), which indicated a significant relationship between family support and quality of life, was accepted if $p < 0.05$; if $p \geq 0.05$, the null hypothesis (H_0), which indicated no significant relationship between the two variables, was accepted.

Algorithm/Pseudocode

Algorithm Data Processing and Analysis Procedure
INPUT: Family support data (HDFSS), quality of life data (DQOL)
OUTPUT: Pearson correlation value between family support and quality of life

1: Collect data : Distribute and collect completed questionnaires from diabetes melitus patients at Parongpong Public Health Center
2: Editting : Check each questionnaire for completeness and consistency
3: Coding : Assign numerical codes to each response according to the measurement scale for both family support and quality of life variablels
4: Data Entry : Enter all coded data into SPSS version 25 for Windows
5: Tabulating : create frequency distribution tables to describe respondents' characteristics, family support levels, and quality of life levels.
6: Normality Test : Test data for normal distribution to determine the appropriate correlation test
7: Bivariate analysis: If data are normally distributed, perform Pearson Product Moment correlation test. If data are not normally distributed, perform Spearman Rho correlation test.
8: Determine Significance : Compare p-value with $\alpha = 0.05$. If $p < 0.05 \rightarrow$ reject H_0, meaning there is a significant relationship. If $p \geq 0.05 \rightarrow$ accept H_0, meaning no significant relationship.
9: Interpret Results : Conclude the strength and direction of the correlation between family support and quality of life

Formatting of Mathematical Components

Slovin's formula was used to calculate the study's sample size. The formula used to determine the sample size is displayed in Eq. (1):

$$n = \frac{N}{1 + N.e^2}$$

where (e) is the margin of error (0.1), (n) is the sample size, and (N) is the population size (50 patients). The number of respondents required for this investigation was calculated using Eq. (1). 33 respondents were determined to be the sample size with a 10% error margin.

Because the data were normally distributed, the Pearson correlation coefficient was used to examine the link between family support and quality of life. The formula is shown in Eq. (2):

$$r = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{[n\Sigma x^2 - (\Sigma x)^2][n\Sigma y^2 - (\Sigma y)^2]}}$$

The correlation between family support (X) and quality of life (Y) is computed using equation (2). Higher family support is linked to greater quality of life for DM patients, as indicated by a positive (r).

Theorem 1: The significance of Pearson correlation

The correlation is deemed statistically significant if the p-value is less than 0.05. If not, it doesn't matter. This theorem guarantees that the observed correlation between variables is unlikely to be the result of chance. Proof of Theorem 1. The t-distribution is used to assess the Pearson correlation's significance:

$$t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

where (r) is the Pearson correlation coefficient and (n) is the sample size. The correlation is deemed significant if the computed t-value is greater than the crucial t-value from the t-table at df = (n-2) and $\alpha = 0.05$.

4. Results and Discussion

Hardware and Software

SPSS version 25 was used for data analysis on a typical computer that could process quantitative data. This software was used to perform frequency distribution, normality tests, and Pearson Product Moment correlation analysis.

Dataset Sources

There were 34 respondents with diabetes mellitus who took part in Puskesmas Parongpong's Prolanis program provided the dataset. Purposive sampling was used to choose respondents who met the following inclusion criteria: they had to be diagnosed with diabetes mellitus, be literate, be older than 17, be enrolled in the Prolanis program, and be willing to take part in the study.

Initial Data Analysis

Respondents' Characteristics

Patients undergoing treatment at the Parongpong Health Center in West Bandung Regency, West Java, served as the study's responders. A total of 34 participants completed the questionnaire correctly and were included in the analysis.

Table 1. Respondents' Characteristics based on age.

Age Range (Year)	Frequency	Percent (%)
39-49	4	11.8
50-59	9	26.5
60-69	19	55.9
70-79	2	5.8
Total	34	100

Considering the information shown in Table 1, most respondents were aged 60–69 years (55.9%), followed by those aged 50–59 years (26.5%). A smaller proportion were aged 39–49 years (11.8%) and 70–79 years (5.8%). These results show that the majority of Parongpong Health Center patients with diabetes mellitus are old. This aligns with existing evidence showing that the risk of diabetes increases with age due to physiological changes and decreased insulin sensitivity.

Table 2. Respondents' Characteristics based on gender.

Gender	Frequency	Percent (%)
Man	4	11.8
Woman	30	88.2
Total	34	100

Table 2 shows that 88.2% of respondents were female and only 11.8% were male. This suggests that women make up the majority of Pa-rongpong Health Center's diabetes mellitus patients. This issue may be impacted by a number of circumstances, including the fact that women are more likely than males to have diabetes or to be more aggressive in seeking medical attention and maintaining their health.

Table 3. Respondents' Characteristics based on Occupation.

Occupation	Frequency	Percent (%)
Unemployed	30	88.2
Retired	1	2.9
Civil Servant	1	2.9
Entrepreneur	1	2.9
Laborer	1	2.9
Total	34	100

Given on the table 3, most respondents were unemployed (88.2%). This finding suggests that many diabetes mellitus patients at Parongpong Health Center are elderly or no longer in the productive age group. Meanwhile, a small portion of respondents were still working, including retirees, civil servants, entrepreneurs, and laborers. This condition may influence their daily activity patterns and how they manage their health.

Table 4. Respondents' Characteristics based on duration of diabetes.

Duration of Diabetes (Year)	Frequency	Percent (%)
<1	5	14.7
1-5	18	52.9
6-10	7	20.6
>10	4	11.8
Total	34	100

Based on table 4, most respondents had been living with diabetes mellitus for 1–5 years. This finding suggests that while many patients have gained experience in managing their condition, they still require consistent family support to maintain adherence to treatment and improve their quality of life

Family Support Distribution

Table 5. Distribution of Family Support among Respondents.

Family Support	Frequency	Percent
Good	16	47.1
Moderate	15	44.1
Low	3	8.8
Total	34	100

To address the question, "What is the level of family support among diabetes mellitus patients at Parongpong Public Health Center?", Family support statistics were displayed as percentages divided into three categories: good, moderate, and bad. The outcomes, as shown in Table 5, indicate that most patients received good family support (47.1%), followed by moderate support (44.1%), and poor support (8.8%). These findings suggest that the majority of families have provided adequate attention, emotional assistance, and support in managing the condition of diabetes mellitus patients. Patients who have strong family support are better able to follow their treatment plans and keep control of their health.

Life Quality Distribution

Table 6. Distribution of Quality of Life among Respondents.

Family Support	Frequency	Percent
Good	13	38.2
Moderate	11	32.4
Low	10	29.4
Total	34	100

In order to respond to the inquiry, "What is the quality of life among diabetes mellitus patients at Parongpong Public Health Center?" quality of life statistics were displayed as percentages divided into three categories: good, moderate, and poor. According to Table 6, 38.2% of patients had an excellent quality of life, 32.4% had a moderate quality of life, and 29.4% had a bad quality of life. These results imply that while some patients still have emotional or physical limits, the majority of patients are able to adjust to their situation.

Results

To ascertain the connection between quality of life and family support, a Pearson correlation test was performed. The results are as follows:

Table 7. Correlation between Family Support and Quality of Life.

Variables	Quality of Life
Family Support	r = 0.440
Sig (2-tailed)	0.009
N	34

The data on this association were displayed as percentages divided into good, moderate, and bad levels in order to address the question, "Is there a relationship between the level of family support and the quality of life among diabetes mellitus patients at Parongpong Public Health Centre?" The Pearson Product Moment correlation test yielded a r value of 0.440 with a p value of 0.009 ($p < 0.05$), according to the results, which are displayed in Table 7. This result indicates that the quality of life of patients with diabetes mellitus at Parongpong Public Health Center is positively and significantly correlated with family support. In other words, patients' reported quality of life increases with the amount of family support they receive. The strength of this relationship is considered moderate, as the correlation value falls between 0.40 and 0.59.

5. Comparison

The impact of family support on the quality of life of patients with diabetes mellitus at Parongpong Public Health Center is well explained in this conversation. Patients' quality of life and the degree of family support they receive are reviewed in the analysis, and then the correlation between the two variables is examined. This section aims to provide a comprehensive knowledge of how family support helps patients manage their chronic condition and how it affects their social, psychological, and physical well-being. Designing family-based intervention strategies to improve patients' quality of life is anticipated to be based on the findings.

With a correlation coefficient of r = 0.440 and a p-value of 0.009, the study's findings showed a strong positive relationship between family support and the quality of life of diabetes mellitus patients at Parongpong Public Health Center. This suggests that patients' quality of life is positively correlated with increased family support. The results highlight the critical importance of families in supporting patients in maintaining treatment adherence, adopting healthy lifestyles, and continuing to participate in social and spiritual activities, even when the correlation strength falls within the moderate range.

These findings are consistent with a study by Aryanto et al. (2024) that showed a strong correlation between family support and quality of life in people with diabetes mellitus. This finding highlights the essential role of families in assisting patients through treatment and

lifestyle adjustments due to chronic illness. Emotional encouragement, motivation, and active family involvement in care can boost patients' confidence to continue performing daily activities.

The results of this study are also in line with those of Erda et al. (2020), who found that among older patients with type II diabetes mellitus, family support, stress levels, and quality of life were significantly correlated. Family support enhances patients' overall quality of life by lowering stress and promoting psychological well-being. Similarly, Rahmadhani et al. (2024) found that an increase of one unit in family support led to a 35% improvement in quality of life after controlling for education level and diabetes complications. This further reinforces the idea that families play a major role in guiding patients to remain compliant with treatment and maintain healthy living habits.

Suwanti et al. (2021) came to a similar result when they discovered that among patients with type II diabetes mellitus at Siti Aisyah Islamic Hospital in Madiun, family support positively correlated with quality of life. Patients who have strong family support feel safe, are encouraged, and are helped to maintain stable physical conditions.

The findings of this study, however, are different from those of Suardana et al. (2015), who found no connection between diabetes mellitus patients' quality of life and family social support. This discrepancy may be due to differences in respondents' characteristics, family education levels, or the intensity of support provided. In some cases, patients may have developed strong coping mechanisms or received support from other sources such as healthcare providers, friends, or community groups.

Overall, this study confirms that family support is essential for preserving and enhancing diabetes mellitus patients' quality of life. Family members can help patients feel accepted, powerful, and hopeful in dealing with their disease by offering care, inspiration, physical support, or spiritual encouragement. Therefore, healthcare professionals, especially nurses, should involve families in every stage of the care process to achieve optimal disease management outcomes.

6. Conclusions

The purpose of this study was to investigate the connection between diabetes mellitus patients' quality of life and family support at Puskesmas Parongpong. The primary results suggest a somewhat positive connection ($r = 0.440$, $p = 0.009$) between DM patients' quality of life and their level of family support.

The findings support the research hypothesis and highlight the importance of family involvement in patient care, particularly in helping patients adhere to diet, physical activity, and medication. This evidence underscores the relevance of including family-based interventions in chronic disease management programs like Prolanis.

The study shows quantifiable advantages of family support on patients' quality of life, advancing knowledge of chronic disease management in Indonesian primary healthcare.

This study's limitations include its concentration on a single healthcare facility and somewhat small sample size, which may restrict its generalizability. For further research, it is recommended to include larger, multi-center samples and explore additional factors influencing quality of life, such as stress levels, comorbidities, and socioeconomic conditions.

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