

Relationship between age and self-care level with quality of life of type 2 diabetes mellitus patients in the working area of mojo public health center, Surabaya city

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Abstract

Diabetes mellitus is a chronic disease or metabolic disorder with multiple etiologies characterized by high blood sugar levels and disturbances in carbohydrate, lipid, and protein metabolism as a result of insufficient insulin function. Type 2 diabetes mellitus patients are at risk of experiencing a 6.75-fold decrease in quality of life (ADA, 2014). Quality of life itself is influenced by various factors. The research objective is to determine the relationship between age and self-care level with quality of life of type 2 diabetes mellitus patients in the working area of Mojo Public Health Center, Surabaya City. Data analysis in this study used the SPSS application through univariate analysis to determine the frequency distribution of each variable and bivariate analysis using the *chi-square* statistical test with a confidence level of 95% ($\alpha = 0.05$). The research results showed that the statistical analysis of age with the quality of life of type 2 DM patients using the *chi-square* test resulted in a *p-value* of 0.478, which means $p > 0.05$. And statistical analysis of the self-care level using the *chi-square* test resulted in a *p-value* of 0.024, which means $p < 0.05$. It can be concluded that there is no significant relationship between age and the quality of life and there is a significant relationship between the level of self-care and the quality of life of Type 2 Diabetes Mellitus patients in the working area of Mojo Public Health Center, Surabaya City.

Keywords: Age; Self-Care Level; Quality of Life; Diabetes Mellitus

1. Introduction

Diabetes mellitus is a chronic disease or metabolic disorder with multiple etiologies, characterized by high blood sugar levels and disturbances in carbohydrate, lipid, and protein metabolism as a result of insufficient insulin function. Blood sugar levels typically exceed normal levels, with random blood sugar levels equal to or exceeding 200 mg/dl, and fasting blood sugar levels equal to or above 126 mg/dl. Diabetes mellitus is caused by poor lifestyle choices, including dietary patterns, physical activity, and others. It is also known as a silent killer because it is often not recognized by the sufferers, and when detected, complications have usually occurred [1].

The International Diabetes Federation (IDF) states that the prevalence of diabetes mellitus worldwide is 1.9%, making Diabetes Mellitus the seventh leading cause of death globally. This prevalence is expected to continue to rise due to technological advancements that facilitate changes in lifestyle, including reduced physical activity and unhealthy eating habits. Regionally, Southeast Asia ranks third in prevalence at 11.3%. The only Southeast Asian country to be among the top ten in the highest number of diabetes patients in 2019 was Indonesia, with a figure of 10.7 million, ranking seventh. This is attributed to genetic and environmental factors that can alter an individual's lifestyle, especially the habit of consuming fast food. Fast food consumption is risky as it can lead to obesity, eventually resulting in type 2 diabetes [2].

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Patients with type 2 diabetes mellitus are at risk of experiencing a 6.75-fold decrease in quality of life [3]. World Health Organization defines quality of life as an individual's perception or view of their position in life in the context of the value system and culture in which they live, and in relation to their goals, expectations, standards, and concerns. Patients' quality of life can be influenced by several factors such as age, gender, level of education, knowledge, complications, duration of illness, depression, stress, anxiety, family support, and self-care [4]. Based on this exposition, the researchers are interested in studying the relationship between age and the level of self-care with the quality of life of patients with type 2 diabetes mellitus in the Mojo Public Health Center area in Surabaya City.

2. Material and methods

2.1. Study Design

This study uses a cross-sectional study design aimed at determining the relationship between the disease (dependent variable), namely the quality of life of patients with Type 2 Diabetes Mellitus, and the exposure (independent variables), namely age and the level of self-care in patients with Type 2 Diabetes Mellitus..

2.2. Population and Sample

The population in this study consists of all patients with Type 2 Diabetes Mellitus recorded in the Mojo Public Health Center in Surabaya City, totaling 1,087 people. The sample for the study is a portion of the patients with Type 2 Diabetes Mellitus recorded in the Mojo Public Health Center in Surabaya City who meet the inclusion criteria, including being able to perform independent activities, read and communicate well, reside in the Mojo Surabaya Public Health Center area, and agree to be respondents in this study. Exclusion criteria include respondents with physical limitations, such as hearing or vision impairments, not engaging in physical activity due to certain conditions, and having comorbidities. The minimum sample size used in this study is 76 samples.

2.3. Data Measurement

The variable for the quality of life of patients with Type 2 Diabetes Mellitus uses the WHOQoL-BREEF questionnaire, which consists of 26 questions. The variable for the age of patients with Type 2 Diabetes Mellitus uses a questionnaire regarding the characteristics of respondents related to age. The variable for the level of self-care activity of patients with Type 2 Diabetes Mellitus uses the Summary of Diabetes Self-Care Activities (SDSCA) questionnaire, consisting of 14 questions.

2.4. Data Collection

The data used in this research consists of primary data and secondary data. The primary data in this study is obtained through direct interviews with research subjects and the completion of questionnaires covering information related to the quality of life, age, and self-care level of Type 2 Diabetes Mellitus patients. Meanwhile, the secondary data in this study is sourced from Mojo Public Health Center Surabaya regarding the number of visits and the number of Type 2 Diabetes Mellitus patients in the Mojo Public Health Center's working area.

2.5. Data Analysis

Data analysis in this study uses the SPSS application with univariate analysis to determine the frequency distribution of each variable and bivariate analysis using the *chi-square* statistical test at a 95% confidence level ($\alpha=0.05$) to determine the relationship between variables and to ascertain the magnitude of the risk of independent variables on the dependent variable expressed by the *Prevalence Ratio* (PR).

3. Results

Table 1 shows that the majority of respondents were female, with a frequency of 45 people or 59.2%, while there were 31 males, accounting for 40.8%. Furthermore, for the elderly age group (≥ 60 years), there were 37 people, accounting for 48.7%, and for the non-elderly age group (< 60 years), there were 39 people, accounting for 51.3%. Regarding the level of education, the majority of respondents were high school graduates with a total of 34 people or 44.7%, and the fewest were junior high school graduates (SMP) with a total of 8 people or 10.5%. Additionally, respondents who had been suffering from Type 2 DM for more than 10 years were 32 people, accounting for 42.1%, while those suffering for less than 10 years were 44 people, accounting for 57.9%. Regarding the level of distress, the majority were at a low level/no distress, with 59 people accounting for 77.6%, while the lowest was severe distress, with 4 people accounting for 5.3%. As for respondents with a low level of self-care, there were 19 people, accounting for 25.0%, while those with

a high level of self-care were 57 people, accounting for 75.0%. Lastly, respondents with poor quality of life were 41 people, accounting for 53.9%, while those with good quality of life were 35 people, accounting for 46.1%.

Table 1 Frequency Distribution of Respondents Characteristics

No.	Characteristics	Frequency	%
1	Gender		
	Female	45	59.2
	Male	31	40.8
2	Age Category		
	Elderly Age \geq 60 years	37	48.7
	Non-Elderly Age < 60 years	39	51.3
3	Education Level		
	Bachelor's Degree/College Diploma/Associate Degree	10	13.2
	High School	34	44.7
	Junior High School	8	10.5
	No School/Elementary School	24	31.6
4	Duration of Type 2 Diabetes Mellitus		
	More than 10 years	32	42.1
	Less than 10 years	44	57.9
5	Level of Distress		
	Severe	4	5.3
	Moderate	13	17.1
	Mild/No Distress	59	77.6
6	Level of Self-care		
	Low	19	25.0
	High	57	75.0
7	Quality of Life		
	Poor	41	53.9
	Good	35	46.1

In Table 2, the results of the statistical analysis using the *chi-square* test yielded a *p-value* of 0.478, indicating that $p > 0.05$. Consequently, it can be concluded that there is no significant relationship between age and the quality of life of Type 2 Diabetes Mellitus patients in the working area of Mojo Public Health Center Surabaya. Additionally, the table reveals that the *Prevalence Ratio (PR)* value for the age variable regarding the quality of life of Type 2 Diabetes Mellitus patients is 1.220, signifying that $PR > 1$. Hence, from these results, it can be said to carry a risk. Thus, it can be concluded that Type 2 Diabetes Mellitus patients aged ≥ 60 years are at 1.220 times greater risk of having poor quality of life compared to Type 2 DM patients aged < 60 years. However, a 95% *CI value* of 0.804 to 1.853 was obtained, indicating that it surpasses 1, rendering the *PR value* nonsignificant or inconclusive.

Table 2 Bivariate Analysis Between Age and Quality of Life of Type 2 Diabetes Mellitus Patients in the Working Area of Mojo Public Health Center, Surabaya City

Age Category	Quality of Life				Total		<i>p-value</i>	PR (CI 95%)
	Poor		Good					
	n	%	n	%	N	%		
Elderly Age (≥ 60 years)	22	59.5	15	40.5	37	100	0.478	1.220 (0.804 – 1.853)
Non-Elderly Age (< 60 years)	19	48.7	20	51.3	39	100		
Total	41	53.9	35	46.1	76	100		

Table 3 Bivariate Analysis Between Self-care Level and Quality of Life of Type 2 Diabetes Mellitus Patients in the Working Area of Mojo Public Health Center, Surabaya City

Level of Self-care	Quality of Life				Total		<i>p-value</i>	PR (CI 95%)
	Poor		Good					
	n	%	n	%	N	%		
Low	15	78.9	4	21.1	19	100	0.024	1.731 (1.200 – 2.497)
High	26	45.6	31	54.4	57	100		
Total	41	53.9	35	46.1	76	100		

In Table 3, the results of the statistical analysis using the *chi-square* test yielded a *p-value* of 0.024, indicating that $p < 0.05$. Therefore, it can be concluded that there is a significant relationship between the level of self-care and the quality of life of Type 2 Diabetes Mellitus patients in the working area of Mojo Surabaya Public Health Center. Furthermore, the table indicates that the *Prevalence Ratio (PR)* value for the self-care level variable concerning the quality of life of Type 2 DM patients is 1.731, which means that the *PR value* is > 1 , indicating a risk. Additionally, a 95% *CI value* of 1.200 - 2.497 was obtained, which does not surpass 1, indicating that the *PR value* is statistically meaningful. Therefore, it can be concluded that Type 2 Diabetes Mellitus patients with a low level of self-care are at 1.731 times greater risk of having a poor quality of life compared to Type 2 Diabetes Mellitus patients with a high level of self-care.

4. Discussion

4.1. Relationship between Age and Quality of Life of Type 2 Diabetes Mellitus Patients in the Work Area of Mojo Public Health Center Surabaya

The research results show that there is no significant relationship between age and the quality of life of Type 2 Diabetes Mellitus patients in the working area of Mojo Surabaya Public Health Center (*p-value* = 0.478). This is in line with previous research that also stated the absence of a relationship between age and the quality of life of Type 2 Diabetes Mellitus patients [5]. However, this study also found that poor quality of life is more prevalent among the elderly age group (≥ 60 years) compared to Type 2 Diabetes Mellitus patients in the non-elderly age group (< 60 years). Patients with diabetes who have a poor quality of life are more common among respondents aged ≥ 60 years, at 87.3% [6]. The study also found a relationship between age and the quality of life of Type 2 Diabetes Mellitus patients (*p-value* = 0.009), with Type 2 Diabetes Mellitus patients aged 45 years and older being more at risk of having a poor quality of life. Another study, also stated that age is related to the quality of life status [7]. The differing research results can be attributed to the fact that age is not the primary factor and is only one of several risk factors; there are many other factors related to the quality of life of Type 2 Diabetes Mellitus patients.

4.2. Relationship between Self-Care and Quality of Life of Type 2 Diabetes Mellitus Patients in the Work Area of Mojo Public Health Center Surabaya

The research results show that there is a significant relationship between the level of self-care and the quality of life of Type 2 Diabetes Mellitus patients in the working area of Mojo Surabaya Public Health Center, with a *p-value* of 0.024 and (PR = 1.731; 95% CI = 1.200 - 2.497). This means that Type 2 Diabetes Mellitus patients with low self-care levels are at a 1.731 times greater risk of having a poor quality of life compared to Type 2 Diabetes Mellitus patients with high self-care levels. There is a relationship between self-care and the quality of life of Type 2 Diabetes Mellitus patients, with a *p-value* of 0.000 [8]. In this study, 94.3% had good self-care levels, and 5.7% had poor self-care levels. Additionally, 85.7% of respondents had a good quality of life, while 14.3% had a poor quality of life. Self-care practices by patients include following a dietary therapy, taking medication as prescribed by the doctor, engaging in regular physical activity, routinely monitoring blood sugar levels, and taking care of their feet. The term "quality of life" in this context refers to a person's satisfaction, feeling free, and primarily being happy when performing daily activities independently. A study also found that there is a relationship between self-care management and an improvement in the quality of life of Diabetes Mellitus patients, meaning that good self-care practices can lead to an enhanced quality of life [9].

5. Conclusion

From the research results, it can be concluded that there is no significant relationship between age and the quality of life of Type 2 Diabetes Mellitus patients. This study also found that poor quality of life is more prevalent among the elderly age group (≥ 60 years) compared to Type 2 Diabetes Mellitus patients in the non-elderly age group (< 60 years). Conversely, the research results show a significant relationship between the level of self-care and the quality of life of Type 2 Diabetes Mellitus patients in the working area of Mojo Surabaya Public Health Center. Type 2 Diabetes Mellitus patients with low self-care levels are at a 1.731 times greater risk of having a poor quality of life compared to those with high self-care levels. Therefore, it is necessary to enhance self-care practices to improve the quality of life of Type 2 Diabetes Mellitus patients.

Compliance with ethical standards

Acknowledgements

This article was conducted in the working area of Mojo Public Health Center, Surabaya City. Mojo Public Health Center is one of the first-tier public health service units with non-inpatient services located in RW 005, RT 009, Mojo Village, Gubeng District, Surabaya City, which directly borders the working area of Pucang Sewu Public Health Center. The types of services available at Mojo Public Health Center include general examination services, dental and oral health services, maternal and child health and family planning services, immunization services, counseling services, laboratory services, and pharmacy services. Mojo Public Health Center has several integrated health service posts, including 88 integrated posts for child health, 22 integrated posts for the elderly, 15 integrated posts for non-communicable diseases, 1 integrated nutrition kitchen post, and 1 integrated health promotion post. The creation of this article was also assisted by the supervising lecturer, the esteemed Dr. Arief Hargono, drg., M.Kes.

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

This research has obtained ethical approval from the Research Ethics Committee of the Faculty of Dental Medicine, Airlangga University, with the issuance of an Ethical Clearance Certificate numbered 070/HRECC.FODM/I/2023.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

- [1] Ministry of Health of the Republic of Indonesia. Situation and Analysis of Diabetes. Jakarta: . Ministry of Health of the Republic of Indonesia 2014.
- [2] WHO. Global Report On Diabetes. France: World Health Organization. 2017.
- [3] ADA. Introduction:Standards of Medical Care in Diabetes. 2018.

- [4] Chaidir, R., Wahyuni, A. S., Furkhani, D. W., Studi, P., Nursing, I., Yarsi, S., & Bukittinggi, S. "The Relationship of Self-care to the Quality of Life of Patients with Diabetes Mellitus". *Jurnal Endurance*, 2(2), 132, 2017, [Online]. Available: <https://doi.org/10.22216/jen.v2i2.1357>
- [5] J. A. Paseki et al., "The Relationship of Type II Diabetes Mellitus with the Quality of Life of Patients at Pancaran Kasih Hospital, Manado," 2022.
- [6] Kurniawati, P., The Relationship Between Individual Characteristics, Comorbidities, and Duration of Illnes with the Quality of Life of Diabetes Mellitus Patients. Syarif Hidayatullah State Islamic University 2022.
- [7] Mandagi, A. M. Factors Associated with the Quality of Life Status of Diabetes Mellitus Patients. *Journal of Health Research*. Faculty of Health Airlangga University Surabaya. 2010.
- [8] H. Saragih, M. Sari Dewi Simanullang, L. Florentina Br Karo, and Stik. Santa Elisabeth Medan, The Relationship Between Self-care and Quality of Life of Type 2 DM Patients, *Scientific Journal of Nursing IMELDA*, vol. 8, no. 2, 2022, [Online]. Available: <http://jurnal.uimedan.ac.id/index.php/JURNALKEPERAWATAN>
- [9] Asnaniar, W. O. S. The Relationship Between Self-care Management of Diabetes and the Quality of Life of Type 2 Diabetes Mellitus Patients. *Journal of Health Research Suara Forikes*, 10(4), 2019.