Application of Stress Management on Quality of Life of Diabetes Mellitus Patients at Diabetes Center, Ternate, Indonesia

Amira Bin Seh Abubakar[1*], Muhlisa[2], Fadila Abdullah[3]

Nursing Department, Poltekkes Ternate, Maluku Utara, Kota Ternate, 97713[1,2,3]

Corresponding Author: 1*

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ABSTRACT

Diabetes mellitus is a progressive disease that can cause various complications, both acute and chronic if not managed properly. resulting in various chronic complications, such as cerebrovascular disease, coronary heart disease, leg vascular disease, eye, kidney and nerve disorders. People with diabetes mellitus have a 2 times greater risk of developing coronary heart disease and cerebral vascular disease, 5 times more likely to suffer from ulcers/gangrene, 7 times more likely to develop terminal renal failure, and 25 times more likely to be blind due to retinal damage than patients. non-diabetic. The purpose of this study was to determine the effect of the application of stress management on the quality of life of people with Diabetes Mellitus in the Diabetes Center, Ternate City. This research was conducted in the working area of the Diabetes Center, Ternate City. The design of this study was a quasi-experimental study, which was a pre and post-test design without a control group. Participants in this study were selected using a technique using simple random sampling with a total sample of 61 people, where the data were analyzed using the t-test statistical test, Anova and correlation. The results of the study found that there was a significant difference between the quality of life of DM sufferers before and after the application of stress management. The patient's quality of life score also increased after stress management was carried out in the form of deep breath relaxation techniques and five-finger hypnosis (p-Value: 0.0005 α: 0.05), while the characteristics of the respondents included gender, marital status, education, family history, and medication do not affect the quality of life.

1. Introduction

According to WHO, the number of people with diabetes increased from 108 million people in 1980 to 422 million in 2014. In 1980, less than 5% of adults (over 18 years) had diabetes in the world in 2014, the rate was 8.5%. The International Diabetes Federation (IDF) estimates that nearly 80% of adults with diabetes live in middle or low-income countries, where eating habits are changing rapidly. The International

Diabetes Federation estimates that nearly 80% of adults with diabetes live in middle or low-income countries, where eating habits are changing rapidly [2].

Diabetes Mellitus Type 2 has an impact not only on physical conditions but also on the overall Quality of Life (QoL). according to [4], long-term impact on people with DM2 can affect the Quality of Life (QoL) or quality of life. Several previous studies that also examined QoL in patients with type 2 diabetes showed that patients had lower QoL compared to patients or other people who did not have type 2 diabetes [4].

Based on data from the UPTD Diabetes Center Ternate, the number of visits by diabetes patients in 2017 was 3018 visits, then in 2018 the number of visits increased to 3498 and in 2019 increased to 3937 visits (UPTD Center Work Profile, 2019). The latest data obtained is that the number of visits decreased from 2020 to 1965 visits due to the COVID-19 pandemic.

Findings from the meta-analysis revealed that the prevalent cardiovascular metabolic comorbidities with COVID-19 were hypertension (17.1%) and cardio-cerebrovascular disease (16.4%), followed by DM (9.7%). Patients with DM or hypertension in this report had a 2-fold increased risk of severe disease and the need for admission to the intensive care unit (ICU). DM patients are immunocompromised hosts because they have immune dysfunction related to the ability to fight infection [9].

[12] showed that all domains of quality of life showed a significant decrease compared to the quality of life of the normal population, namely the physical health domain, the psychological domain, the social relationship domain, and the environmental domain. The psychological damage from COVID-19 is irresistible; the psychological, mental and stress dimensions of this disease are nothing less than the dangers of the disease. Anxiety and worry about family and fear of being infected with the disease are very important [1]. This study, it will begin by measuring the quality of life of diabetic patients, then provide interventions in the form of stress management, namely deep breathing relaxation techniques and 5 finger hypnosis to respondents, and end with measuring the quality of life again.

2. MATERIALS AND METHOD

The design of this study was quasi-experimental, namely in the form of a pre and post-test design without a control group. This study uses a data collection tool in the form of a quality of life questionnaire, where measurements of the quality of life of Diabetes Mellitus patients will be carried out before and after receiving interventions in the form of applying stress management and obtaining mutually agreed procedures.

The population in this study were all Diabetes Mellitus patients in the City Diabetes Center working area in the past year (2019) with the number of samples in this study 61 people who diligently made visits for the last 3 months.

The sampling technique in this study used simple random sampling. In this study, the DM quality of life questionnaire was modified and then modified from Diabetes Quality of [19] which sees only 3 domains, namely the physical, psychological and social domains.

3. RESULTS

1.   Differences in Quality of Life Scores for DM Patients Before and After Application of Stress Management by Gender, Marital Status, Family History, Medication and Education Level

Table 1. Differences in the quality of life of DM patients before and after the application of stress management by gender, marital status, family history, and medication

Variables	Mean	SD	N	df	T	pValue
Sex				59	1.934	0.660
• Male	114.53	7.24	12			
• Female	113.13	10.26	49			
Marital status				59	1,164	0,058
• Widow/ widower	110.77	8.26	27			
• Married	115.49	10.35	34			
Family History				59	0.894	0.375
• Yes	114.65	9.66	27			
• No	112,41	9,76	34			
Treatment				59	0,362	0,719
• Oral Drugs	113,26	10,02	55			
• Insulin Injection	114,78	6,54	6			

In table 1 above, it can be seen that the average quality of life score for male DM patients is 114.53 while the average score for female DM sufferers is 113.13. The results of statistical tests showed that there was no significant difference between the quality of life of male and female DM patients (p-Value: 0.660, α: 0.005) so it can be concluded that gender is not related to the quality of life of DM patients.

The average score of the quality of life of DM patients with the status of widows/widowers is 110.77 while the average score of the quality of life of DM patients who are married is 115.49. The results of statistical tests showed that there was no significant difference between the quality of life of DM patients with widow/widower status and those who were still married (p-Value: 0,058, α: 0,005) so that it can be concluded that marital status is not related to the quality of life of DM patients.

The average score of quality of life for DM patients with a family history of DM is 114.65 while the average quality of life score for DM patients without a family history of DM is 112.41. The results of statistical tests showed that there was no significant difference between the quality of life of DM patients based on family history (p-Value: 0.375: α: 0,005) so that it can be concluded that family history is not related to the quality of life of DM patients.

The average score of quality of life of DM patients with treatment received in the form of oral drugs was 113.26 while the average score of quality of life of DM patients who used insulin injection was 114.78. The results of statistical tests showed that there was no significant difference between the quality of life of DM patients with oral treatment and insulin injection (p-Value: 0.719, α: 0,005) so that it can be concluded that the treatment received is not related to the quality of life of DM patients.

In table 2 below, it can be seen that the average score of quality of life for DM sufferers whose education level did not finish elementary school was 111.79, the average score for those who finished elementary school was 110.62, the average score for junior high school graduates was 109.56, then those who graduated from high school were 116.5 and those whose education was Academy/PT 116,73. The results of statistical tests showed that there was no significant difference between the quality of life of DM patients based on their education level (p-Value : 0.188, α: 0,005) so that it can be concluded that the level of education is not related to the quality of life of DM patients.

Table 2. Analysis of differences in quality of life scores after the application of stress management with the education level of people with DM

No	Education	Mean	SD	N	F	pValue
1	Not completed in primary school	111.79	12.85	5	1.595	0,188
2	Graduated from Elementary School	110.62	8.34	8		
3	Junior High School	109.56	11.62	16		
4	Senior High School	116.15	8.27	25		
5	Bachelor	116.73	6.51	7		

2.   Analysis of Differences in Quality of Life Scores for DM Patients Before and After the Application of Stress Management

Table 3. Analysis of Differences in Quality of Life Scores for DM Patients Before and After the Application of Stress Management

Nurse Performance	Mean	SD	N	Df	t	pValue
			61	60	4,643	0,0005
Before application	76.27	6.29				
After application	113.41	9.69				
Difference	37.14	6.61				

Table 3 shows that the average score of quality of life for DM patients before the application of stress management was 76.27, which increased by 37.14 after the application of stress management to 113.41. The results of the analysis show that there is a significant difference between the quality of life of DM patients, before and after the application (p Value: 0,0005 α: 0.05). Meanwhile for the quality of life component in table 4 shows that the average score of physical function on the quality of life of DM patients increased by 34.02 after the application of stress management, the average score of psychological function increased by 2.77 after the application of stress management, the average score the average social function increased by 0.31 after the application of stress management. The results of the analysis can be concluded that there is a significant increase in the physical and psychological components (p Value < α: 0.05).

Table 4. Analysis of Differences in Components of Quality of Life Scores for DM Patients Before and After the Application of Stress Management

Performance Components	Mean	SD	N	Df	t	pValue
Physical Function			61	60	56,73	0,0005
Before	36,00	3,88				
After	70,07	6,24				
Difference	34,02	4,69				
Psychological Function			61	60	8,36	0,0005
Before	24,44	1,992				
After	27,20	2,73				
Difference	2,77	2,93				

Social Function			61	60	1,38	0,174
Before	15,83	1,87				
After	16,13	1,99				
Difference	0,31	1,74				

4. DISCUSSION

4.1 Effect of Characteristics of DM Patients with Quality of Life After Application of Stress Management

The results of the analysis showed that most of the people with diabetes who were in the working area of the DM centre were women (80.3%). [18] also found that 70.8% of DM patients were female this was usually related to obesity, diet and physical activity [11] found a difference between the quality of life between men and women, where the quality of life for men tends to be better than the quality of life for women. This is different from the results obtained by researchers where the results of statistical tests show that there is no significant difference between the quality of life of male and female DM patients. (p Value: 0.660, α: 0.005) so that gender is not related to the quality of life of DM patients in line with the findings [15] that men and women have no different quality of life.

This study shows that 44.3% of patients are widows/widowers and 55.7% are still married. This shows that DM sufferers are elderly who have lost their partners. The results of the analysis show that there is no significant difference between the quality of life of DM patients with widow/widower status and those who are still married (p Value: 0,058, α: 0.005) so it can be concluded that marital status is not related to the quality of life of DM patients. Marital status is not the only factor that affects the quality of life of diabetics. [13], [7] argue that even marital quality is associated with quality of life. Better marital satisfaction is associated with less diabetes impact, less diabetes-related stress, and a better diabetes-specific quality of life and quality of life in general.

From univariate data, 34 people (55.7%) had no family history of DM than those who had a family history of DM (44.3%). The results of statistical tests showed that there was no significant difference between the quality of life scores of DM patients based on family history (p Value: 0.375, α: 0.005) so it can be concluded that family history is not related to the quality of life of DM patients.

Talking about heredity (genetic), genes are factors that determine the inheritance of certain traits from a person to their offspring. However, the increased risk does not mean that the person will have diabetes. Hereditary factors are a contributing factor to the risk of Diabetes Mellitus, this condition will be exacerbated by a bad lifestyle [17]. A better understanding of genetic susceptibility to disease and its influence on environmental risk factors could help in developing future prevention strategies for type 2 diabetes [3].

The treatment received by DM patients was mostly oral medication by 54 people (90.2%). The results of statistical tests showed that there was no significant difference between the quality of life scores of DM patients between oral treatment and insulin injection (p Value: 0.719, α: 0.005) so it can be concluded that the treatment received is not related to the quality of life of DM patients. QoL scores Patients receiving combination therapy with insulin and OHA performed better than patients receiving single therapy with insulin or OHA alone. This may be attributed to the fact that using combination therapy of insulin and OHA provides better glycemic control [14].

The results showed that 25% of DM patients had a high school education, from further statistical tests there

was no significant difference in scores between patients with various educational backgrounds (pValue: 0.188). This is not the same as research [20]. What illustrates the high quality of life of highly educated individuals is that they tend to find out more about diseases from various information media. Adequate knowledge allows respondents with higher education to better recognize the problem of symptom frequency and dietary satisfaction that must be done. The higher a person's education level, the easier it will be for that person to receive information.

[10] stated that the education factor is one of the variables that have a significant relationship with the compliance of diabetes respondents in managing stress, anxiety and distress. But in this study, the level of education did not show different results on the quality of life score. To be happy and to be able to control stress is not influenced by the level of education but rather how the person lives his life with gratitude.

4.2 Differences in the Quality of Life of DM Patients Before and After the Application of Stress Management

A retrospective study of 451 people with COVID-19 with diabetes and/or hyperglycemia from the US reported that people with uncontrolled hyperglycemia had longer hospital stays and higher mortality than people without diabetes or uncontrolled hyperglycemia [6]. For this reason, in this condition, efforts are needed to control blood sugar, one of which is controlling the stress and anxiety of the sufferer.

According to [8], Relaxation exercises can cause a feeling of comfort in individuals which triggers blood pressure to become normal. In addition, relaxation exercises can also reduce oxygen consumption, stabilize breathing rhythm, and reduce muscle tension. In addition, research by Gardiner, Sadikova, Filippelli, Mitchell, White, Saper, Kaptchuk, Jack, and Fredman (2015) shows that providing stress management by including relaxation exercises to participants can optimize their ability to deal with sources of stress they have.

In this study, the stress-management intervention program that the researcher gave to the participants consisted of psychoeducation about stress and DM, deep breathing relaxation exercises and five finger hypnosis to explore the gratitude gained during life. From this application, participants reported that deep breathing relaxation exercises and five-finger hypnosis had an impact that could be felt directly by them. This makes participants more motivated to practice it regularly and makes them calmer.

[16], found that there is a relationship between stress management and the quality of life of the elderly (p-value = 0.000) where effective stress management is very much needed by the elderly in improving their quality of life. Stress management intervention programs in groups can reduce stress levels experienced by elderly people with chronic diseases [5]. This is certainly in line with the results obtained by researchers where the quality of life scores of DM patients increased significantly after being given stress management exercises which included deep breathing techniques and five-finger hypnosis. Likewise, research conducted by Darwin D, et al (2017) found that there was a relationship between stress management and the quality of life of patients with type 2 diabetes mellitus with a p value of 0.000.

5. CONCLUSION

a. The results of the study on 61 respondents found that there was a significant difference between the quality of life of DM patients before and after the application of stress management. The patient's quality of life score also increased after stress management was carried out in the form of deep breathing relaxation techniques and five finger hypnosis (p Value: 0,0005 α: 0.05).

b. For respondent's characteristics which include gender, education, marital status, family history and

medication, it is not related to the quality of life of DM sufferers after the application of stress management; deep breathing relaxation techniques and five finger hypnosis.

c.   In improving the quality of life of DM patients, in addition to medication and diet to control sugar levels, it is also necessary to have the ability to process thoughts and feelings through stress management by mastering deep breathing relaxation techniques and five finger hypnosis.

6. REFERENCE

[1] Alimehr, M., Malayen, S., Vafa, F. S., Tahmasebi, M. J., Nikbina, M., & Doostifar, K. (2021). The impact of coronavirus disease (COVID-19) on quality of life in diabetic patients. Clinical Diabetology, 10(3), 237–242. https://doi.org/10.5603/DK.a2021.0024

[2] Direktorat P2PTM. (2018, December). Diabetes :Penderita di Indonesia - Direktorat P2PTM. http://p2ptm.kemkes.go.id/artikel-sehat/diabetes-penderita-di-indonesia-bisa-mencapai-30-juta-orang-pada-tahun-2030

[3] Enzo Bonora; Ralph A. DeFronzo. (2018). Diabetes. Epidemiology, Genetics, Pathogenesis, Diagnosis, Prevention, and Treatment. In Springer.

[4] Farahdina, E. (2018). Uji Validitas Konstruk Alat Ukur Diabetes Quality Of Life (DQOL). Jurnal Pengukuran Psikologi Dan Pendidikan Indonesia (JP3I), 3(4). https://doi.org/10.15408/jp3i.v3i4.9321

[5] Hanum, L., Daengsari, D. P., & Kemala, C. N. (2016). Penerapan Manajemen Stres Berkelompok dalam Menurunkan Stres pada Lanjut Usia Berpenyakit Kronis. Jurnal Psikologi, 43(1), 42. https://doi.org/10.22146/jpsi.11501

[6] Hartmann-Boyce, J., Morris, E., Goyder, C., Kinton, J., Perring, J., Nunan, D., Mahtani, K., Buse, J. B., Del Prato, S., Ji, L., Roussel, R., & Khunti, K. (2020). Diabetes and COVID-19: Risks, management, and learnings from other national disasters. Diabetes Care, 43(8), 1695–1703. https://doi.org/10.2337/dc20-1192

[7] KIRIM, A. S. (2014). Assessment of health related quality of life of type ii diabetes mellitus patients attending general out patient clinic of the jos university teaching hospital , jos . Medical college of nigeria in partial fulfillment of. 2005, 1–180.

[8] Kwekkeboom, K. L., & Gretarsdottir, E. (2006). Systematic review of relaxation interventions for pain. Journal of Nursing Scholarship, 38(3), 269–277. https://doi.org/10.1111/j.1547-5069.2006.00113.x

[9] Mukona, D. M., & Zvinavashe, M. (2020). Self- management of diabetes mellitus during the Covid-19 pandemic: Recommendations for a resource limited setting. In Diabetes and Metabolic Syndrome: Clinical Research and Reviews (Vol. 14, Issue 6, pp. 1575–1578). Elsevier Ltd. https://doi.org/10.1016/j.dsx.2020.08.022

[10] Nisbah, N. Q., Harmayetty, H., & Dewi, L. C. (2020). Pengaruh Pemberian Dzikir Terhadap Stres Dan Gula Darah Acak Pada Pasien Diabetes Mellitus. Psychiatry Nursing Journal (Jurnal Keperawatan Jiwa), 2(1), 38. https://doi.org/10.20473/pnj.v2i1.19475

[11] Nofitri, N. F. M. (2009). Gambaran Kualitas Hidup Penduduk Dewasa pada Lima Wilayah di Jakarta. Fakultas Psikologi.

[12] Patrika, F. J. (2018). Efektivitas Pelatihan Regulasi Emosi untuk Menurunkan Stres dan Meningkatkan Kualitas Hidup Pada Penderita Diabetes Mellitus Tipe II. Persona:Jurnal Psikologi Indonesia, 7(2), 135–150. https://doi.org/10.30996/persona.v7i2.1701

[13] Pisimisis, T. (2013). Quality of Life of People with Diabetes Mellitus in Greece. 1–444.

[14] Prajapati, V. B., Blake, R., Acharya, L. D., & Seshadri, S. (2017). Penilaian kualitas hidup pada pasien diabetes tipe II menggunakan kuesioner kualitas hidup diabetes yang dimodifikasi (MDQoL) -17. 53(4), 1–10.

[15] Resmiya, L., & Misbach, I. H. (2019). Pengembangan Alat Ukur Kualitas Hidup. 3(1), 20–31.

[16] Sari, H., & Yuslia, C. (2013). Hubungan Manajemen Stres Dengan Kualitas Hidup Lansia Di Gampong Peuniti Banda Aceh. Idea Nursing Journal, 4(2). https://doi.org/10.52199/inj.v4i2.1565

[17] Sutanto;, T. (2013). Diabetes, Deteksi, Pencegahan, pengobatan. Buku Pintar.

[18] Teli, M. (2017). Quality of Life Type 2 Diabetes Mellitus At Public Health Center Kupang City Kualitas Hidup Pasien Diabetes Melitus Tipe 2 Di Puskesmas Se Kota Kupang (Vol. 15, Issue 1).

[19] Tyas, M. D. . (2010). Hubungan Perawatan Diri dan Persepsi Sakit Dengan Kualitas Hidup Pasien Diabetes Melitus Tipe 2 dalam Konteks Keperawatan di Kota Blitar. Kuesioner Calon, 36.

[20] Wahyuni, Y., N, N., & Anna, A. (2014). Kualitas Hidup berdasarkan Karekteristik Pasien Diabetes Melitus Tipe 2. Jurnal Keperawatan Padjadjaran, v2(n1), 25–34. https://doi.org/10.24198/jkp.v2n1.4