Quality of Life in Patients with Type 2 Diabetes of the Central Hospital of the Peruvian Air Force, 2019

Jared Zavala-Izaguirre[1], Fanny Mego-Llanos[1], Sarita Cornejo-Quispitongo[1], Brian Meneses-Claudio[2,*], Hernan Solis-Matta[1], Lourdes Matta-Zamudio[1]

[1]Faculty of Health Sciences, Universidad de Ciencias y Humanidades, 15314, Lima-Perú

[2]Image Processing Research Laboratory (INTI-Lab), Universidad de Ciencias y Humanidades, 15314, Lima-Perú

A R T I C L E I N F O

A B S T R A C T

This research shows the study carried out on the Health Related to Quality of Life (HRQL) focuses on aspects related to the perception of health experienced and declared by the person, in different dimensions such as physical, mental, social, general perception of health and satisfaction achieved measured at different levels; the objective of the study is to determine the quality of life in patients with type 2 diabetes at the Central Hospital of the Peruvian Air Force, 2019. To determine the validity of the instruments, the Kaiser-Meyer-Olkin (KMO) sample adequacy index was used and the Bartlett sphericity test, which result in a significance value of 0.005, being an acceptable validity of both instruments. Among the most relevant results is that the following dimensions: Energy and Mobility, 147 patients representing 73.5% have low level. Likewise, regarding to Social Burden, 156 patients representing 78.0%, have a low level. Lastly, regarding the Sexual Functioning dimension, 178 patients representing 89.0%, have a low level; patients significantly affect quality of life. "Non-adherence to drug treatment" represents 159 patients, of which 115 who represent 72.3% have a low level with respect to their quality of life, of 44 patients who represent 27.7% have a high level regarding their quality of life; "Adherence to pharmacological treatment" 41 patients representing 92.7% have a low level regarding their quality of life and 3 patients who represent 7.3% have a high level regarding their quality of life.

1. Introduction

According to the International Diabetes Federation, 382 million adults worldwide had diabetes and 5.1 million died from the disease. About half (48%) of those who died were under the 60 years old. Three of four people living with diabetes (352 million) are in an active age (that is, between 20 and 64 years old) this number is projected to increase to 417 million by 2030 and 486 million by 2045 [1].

They also estimate that by 2035, if current trends continue, the global prevalence of diabetes will rise to 592 million, and the World Health Organization predicts that by 2030 it will become the seventh leading cause of death in the world [2].

This disease is considered as one of the main reasons for deaths worldwide, due to the poor quality of life without measuring the complications that it will bring them in the long term [3].

This non-communicable pathology is a worldwide concern, since due to the multiple organic complications it causes deaths, mostly related and complex with the organs of the cardiovascular system [4].

Diabetes is a chronic disease that is released when the pancreas does not produce insulin necessary for the body (a hormone that regulates the level of sugar, or glucose in the blood) or when the body cannot vigorously use the insulin it produces; they have a substantially increased risk of cardiovascular disease. It has also been related to hypertension and hyperlipidemia, it has vascular complications and is considered one of the four non-communicable diseases [5], [6].

Its own symptoms such as thirst, polyuria, blurred vision, weight loss, and sometimes polyphagia is recurrent. Perennially, the symptoms are not severe or may be distant; consequently,

hyperglycemia can provoke functional and pathological changes for a long time before diagnosis [7].

Diabetes is a chronic disease, and the associated stress of long-term symptoms, medical appointments, research, and daily treatments can affect sexual function through a person's mood, anxiety levels, fatigue, and well-being. In general, people with diabetes may have comorbidity of hypertension, hyperlipidemia, cardiovascular disease, or other endocrine dysfunction, and their associated treatments, may affect sexual function [8].

In [9], these problems cannot be addressed without a solid medical and scientific base that allows local solutions to be identified and proposed; unfortunately, the scientific production on diabetes in Peru is limited with only 81 scientific articles published in Web of Science and Scopus between 1996 and 2015.

In [10], diabetes was positioned as the fifth cause of death with 10 528 (7.11%) of the cases, in addition, the numbers of patients with this disease who died from causes of kidney complications were from 2 266 cases (1,191 men and 1,075 women) in 2011 to 3,190 cases (1,638 men and 1,552 women) in 2016.

In [11], this study shows that the mean time of evolution of the disease was 11.37 years old. Quality of life was self-perceived as deficient in 67.57% of older adults at the expense of satisfaction with their health (75.68%).

In [12], it is believed that, in Peru, more than 2 million people suffer from diabetes. The national average is 8% and in Lima, up to 10%. However, it is good to clarify that, in many regions, up to at least 50% of the population does not know if they have diabetes.

According to the [13], 4.0% of the population residing on the Coast reported having diabetes mellitus, being the urban area with the highest incidence of this disease (4.1%) and in the rural area only 2.7%; followed by the jungle regions with 1.9%, the urban area registers 2.7% and rural 1.1%; while the highlands area register 1.6 %, urban area 2.5% and rural with 1.0%.

The objective in this study is to determine the quality of life of patients with diabetes mellitus who come to the consultation of the Central Hospital of the Peruvian Air Force, using the Diabetes questionnaire 39.

2. Methodology

2.1. Research Design Approach

The present study has a quantitative, descriptive, and cross-sectional approach. A survey was carried out as a data collection technique, by applying a questionnaire as a documentary instrument. The study population was made up of patients with diabetes mellitus from the Central Hospital of the Peruvian Air Force [14].

2.2. Inclusion Criteria

All continuous patients over 18 years old with type 2 diabetes mellitus, regardless of the sex treated at the Central Hospital of the Peruvian Air Force.

2.3. Exclusion Criteria

- Patients with type 1 diabetes mellitus or gestational diabetes.

- Patients seen for the first time.
- Resigned with intellectual inability to recognize the question, and those who refuse to report the study.

2.4. Measurement Techniques and Instruments

Data collection technique: The technique used for this study was the survey, it is not the same as the questionnaire, however, the questionnaires are usually used in a survey, which requires a systematic way of collecting the data for the later to be able to analyze them statistically and obtain conclusions about the study population [15].

To measure the quality of life of patients diagnosed with type 2 diabetes mellitus, it will be applied with the diabetes 39 instrument, which includes 39 items that evaluate five domains of the patient's life: energy and mobility (15 items), control of diabetes (12 items), anxiety and worry (4 items), social burden (5 items) and sexual functioning (3 items). Each item is calculated from the evaluation made by the patient itself, in relation to its quality of life, how much was affected during the last month by action or activity that each item expresses- placing an "X" on a scale that is presented as a continuous line, with vertical marks that delimit spaces in which the numbers from 1 to 7 are identified, in which, on the value scales, the number 1 represents the quality of life that was not affected at all, and number 7, extremely affected. Two final items are incorporated into the five domains that rate the patient's perception about their quality of life in general, with a range from 1 (minimum) to 7 (maximum), and the severity of diabetes mellitus with a 1 (no severity) to 7 (extremely serious) [16].

The data collected was entered into a Microsoft Excel 2013 data matrix, to be later exported to the statistical program IBM SPSS Statistics Base 24.0.

Figure 1: Endocrinology area for conducting surveys at the Central Hospital of the Peruvian Air Force.

3. Results

To determine the validity of the instrument, the Kaiser-Meyer-Elkin sample adequacy index (KMO) and the Bartlett's test of sphericity were used. For the Quality-of-Life Test for patients with type 2 diabetes, a sample adequacy coefficient of 0.834 and a significance value of 0.005 (x^2 = 2633,620; gl = 741; p <0.05) were obtained in the test of Bartlett's sphericity.

The reliability of the instrument was determined based on the Cronbach's Alpha statistic. For the instrument Quality of life test

for patients with type 2 diabetes, it was determined that it presents an internal consistency index of 0.741 ($\alpha > 0.6$); while the Morisky-Gree test instrument of adherence to pharmacological treatment has a coefficient of 0.591 ($\alpha < 0.6$). Therefore, a high level of general reliability of the Quality-of-Life Test is identified for patients with type 2 diabetes.

Figure 2: Application of the Survey in the Central Hospital of the Peruvian Air Force

3.1. Sociodemographic characteristics

Regarding the age of the study participants, it was determined that they fluctuate in an interval of 20 to 90 years, with an average of 56.45 ($\pm$ 13,847) years old. Regarding sex, 60% of the sample is male. Likewise, 72.1% of the sample lives with their parents.

Table 1: Quality of life in patients with type 2 diabetes of the Central Hospital of the Peruvian Air Force, 2019 (N = 200)

Quality of life	N	%
Low Level	153	76,5
High Level	47	23,5
Total	200	100,0

In Table 1, it can observe the quality of life in patients with type 2 diabetes of the Central Hospital of the Peruvian Air Force, where 153 patients representing 76.5% have a low level followed by 47 patients representing 23, 5% have a high level.

In Table 2, it can see the quality of life according to its dimensions, in patients with type 2 diabetes of the Central Hospital of the Peruvian Air Force, where the most affected dimension was sexual functioning with 178 patients representing 89% have low level followed by 22 patients representing 11% have high level.

Table 2: Quality of life in patients with type 2 diabetes according to its dimensions, from the Central Hospital of the Peruvian Air Force, 2019 (N = 200)

Dimensions		N	%
Energy-mobility	Low Level	147	73,5
	High Level	53	26,5
Diabetes control	Low Level	132	66,0
	High Level	68	34,0
Control of anxiety - concern	Low Level	85	42,5
	High Level	115	57,5
Social burden	Low Level	156	78,0
	High Level	44	22,0
Sexual Functioning	Low Level	178	89,0
	High Level	22	11,0

The importance of obtaining these results in continuing patients with diabetes mellitus is to be able to identify in which of the dimensions are most affected by this disease and to be able to act in a timely manner in the dimension and above all to teach how to be responsible and aware of the disease. So, they could learn that diabetes is a chronic disease that involves the variation of lifestyles. For its treatment, it is essential that people learn to manage it correctly to have a good quality of life and avoid possible complications.

Table 3: Contingency table between the variables Quality of life and Adherence to pharmacological treatment and chi-square tests

			Quality of life		Total
			Low Level	High Level	
Adherence to pharmacological treatment	Non-adherent	Count	115	44	159
		% within APT	72,3%	27,7%	100,0%
	Adherent	Count	38	3	41
		% within APT	92,7%	7,3%	100,0%
Total		Count	153	47	200
		% within APT	76,5%	23,5%	100,0%
Pearson's chi-square			Valor X^2	g.l.	Sig. (p)
			7,513	1	0,006

APT = Adherence to Pharmacological Treatment

In Table 3; on adherence, it can observe in patients with type 2 diabetes of the Central Hospital of the Peruvian Air Force, where the "Non-adherence" represents 159 patients, 115 of which is equivalent to 72.3% have low level and 44 patients 27.7% with

high level; "Adherence" 41 patients representing 92.7% have low level and 3 patients representing 7.3% have high level.

It is important that people with diabetes and their families should receive education about adherence and non-adherence; ignorance is one of the reasons for not achieving the necessary benefits that medications can provide in their disease; diabetes is a chronic disease that affects different organs of the human body.

4.   Discussions

Quality of Life is a representative variable that allows us to measure the impact it has on a certain pathology (in this case Diabetes Mellitus type II) in the person's life, which has an impact on various biological and psychosocial levels in the individual health.

The results obtained according to the Diabetes 39 questionnaire demonstrate that of a population made up of 200 diagnosed continuing patients who are treated at the Central Hospital of the Peruvian Air Force, the dimensions most affected are determined that, regarding the Energy and mobility dimension, 147 is equivalent to 73.5% have low level. Likewise, regarding to social burden, 156 is equivalent to 78.0%, have low level. Lastly, regarding the Sexual Functioning dimension, 178 is equivalent to 89.0% have low level.

These results coincide and are reinforced by the study carried out in [17]. They show that patients with Diabetes Mellitus regarding their Quality of Life, who were surveyed with 101 diabetics; the most affected domains in order of score were: energy and mobility (60) equal 59.4%, anxiety-concern (62) equals 61.3% and sexual functioning (66) equals 65.3%.

Regarding adherence, it can observe in patients with type 2 diabetes of the Central Hospital of the Peruvian Air Force, where non-adherence represents 159 patients, 115 representing 72.3% have low level and 44 patients representing 27.7% have high level; adherence 41 patients representing 92.7% have low level and 3 patients representing 7.3% have high level. No relationship was found between the percentage of adherence to treatment with sex, age, educational level, and employment status; it is the lack of awareness about its treatment.

According to [18], it was found, the low level was 21 (32.8%) and with high level adherence 24 (37.5%). No relationship was found between the percentage of adherence to treatment with sex, age, educational level, and employment status.

In the analysis of each dimension of the instrument, it was observed that there were significant differences. In the dimension between quality of life and adherence to treatment in patients with treatment, as a strength of the study, it can be highlighted that there was no rejection by the patients, all the questionnaires were correctly filled out, with no missing data or loss in the sample. It is also important to note that a widely used instrument with a good internal consistency index was used.

Among the limitations of the study, the selection of patients is found, since as it is not a probabilistic sampling, there may be the possibility of selection bias. For future studies on the subject in primary care, it would be interesting to carry out a random sampling that provides greater reliability in the results obtained.

Another important aspect to control would be trying to match the sample by sex.

5.   Conclusions

It is concluded that the dimensions that highly affect patients are Energy and Mobility, Social Burden, Sexual Functioning, having a low level of more than 70% of the sampled cases.

In addition, the results of therapeutic adherence show that 72.3% of patients present a low level with respect to their quality of life, therefore, compliance with treatment, physical activities and a balanced diet help diabetic patients a better recovery and a balanced quality of life.

6.   Recommendation

A restructuring of promotional preventive intervention programs targeting such patients with type II diabetes is recommended. This intervention program must involve a multidisciplinary team of professionals, who see aspects related to the disease and the environment of the person and are accelerators for their recovery from physical, biological, and psychosocial health.

It is suggested an awareness program, educational talks for both the patient and family members for their support and control, home health personnel visit programs.

Conflicts of Interest

The authors declare no conflict of interest.

References

[1]   R. Williams, Guía de incidencia política de la novena edición del atlas de la diabetes de la FID 2019, International Diabetes Federation, **9**, 1–28, 2019.

[2]   G. Chen, A. Iezzi, J. McKie, M. Khan, J. Richardson, "Diabetes and quality of life: Comparing results from utility instruments and Diabetes-39.," Diabetes Research and Clinical Practice, **109**(2), 326–333, 2015, doi:10.1016/j.diabres.2015.05.011.

[3]   C.F.D.C. and Prevention, Informe nacional de estadísticas de la diabetes, National Center for Chronic Disease, 1–33, 2017.

[4]   Organización Panamericana de la Salud, El número de personas con diabetes en las Américas se triplicó desde 1980, 2016.

[5]   P. Miguel, Y. Sarmiento, A. Mariño, Y. Llorente, T. Rodriguez, M. Peña, "Prevalencia de enfermedades crónicas no transmisibles y factores de riesgo en adultos mayores de Holguín," Revista Finlay, **7**(3), 155–167, 2017.

[6]   R. Wang, P. Zhang, Z. Li, X. Lv, H. Cai, C. Gao, Y. Song, Y. Yu, B. Li, Y. Cui, "The prevalence of pre-diabetes and diabetes and their associated factors in Northeast China: a cross-sectional study," Scientific Reports, **9**(1), 1–8, 2019, doi:10.1038/s41598-019-39221-2.

[7]   J. French, A. Godoy, ¿Cuál es la definición de diabetes? Criterios diagnósticos (prueba/s a realizar [glucemia plasmática en ayunas, sobrecarga, etc.]) y puntos de corte, Fundación RedGDPS, 1–3, 2015.

[8]   E. Holloway, "Sexual problems in diabetes," Medicine (United Kingdom), **47**(2), 106–109, 2019, doi:10.1016/j.mpmed.2018.11.004.

[9]   R. Carrillo, A. Bernabé, "Diabetes mellitus tipo II en Perú: una revisión sistemática sobre la prevalencia e incidencia en población general.," Rev Peru Med Exp Salud Publica, **36**(1), 36–36, 2019, doi:10.17843/rpmesp.2019.361.4027.26.

[10]   J. Guerrero, L. Parra, J. Mendoza, "Autoeficacia y calidad de vida en pacientes con diabetes mellitus tipo 2 sometidos a hemodiálisis," Revista Cubana de Salud Publica, **42**(2), 193–203, 2016.

[11]   D. Jiménez, P. Casado, R. Santos, D. Jiménez, G. Hernández, "Percepción de la calidad de vida en pacientes adultos mayores con diabetes mellitus tipo II," Revista Electrónica Medimay, **26**(1), 54–62, 2019.

[12]   V. Arrunátegui, "Despistaje de diabetes mellitus tipo 2 en una población adulta urbana del distrito de Coishco, Ancash, Perú.," Revista Medica Herediana, **26**(3), 173, 2015, doi:10.20453/rnp.2015.2585.

[13]   Instituto Nacional de Estadística e Informática, En el Perú 3 de cada 100

personas de 15 y más años reportan tener diabetes., INEI, 2015.

[14] C. Fernández, P. Baptista, Metodología de la Investigación. 6ta ed. México: Mc Graw-Hill/Interamericana., 2015.

[15] R. Ortega, R. Veloso, O. Hansen, "Percepción y actitudes hacia la investigación científica," Revista de Investigación En Ciencias Sociales y Humanidades, **5**(2), 101–109, 2018, doi:10.30545/academo.2018.jul-dic.2.

[16] J. López, R. Rodríguez, "Adaptación y validación del instrumento de calidad de vida Diabetes 39 en pacientes Mexicanos con diabetes mellitus tipo 2.," Salud Publica de Mexico, **48**(3), 200–211, 2006, doi:10.1590/S0036-36342006000300004.

[17] M. Brítez, E. Torres, "Calidad de vida en pacientes con diabetes mellitus tipo 2.," Rev. Nac (Itauguá), **9**(1), 78–91, 2017, doi:10.18004/rdn2017.0009.01.078-091.

[18] Y. Ramos, R. Morejón, Y. Cabrera, D. Herranz, W. Rodríguez, "Adherencia terapéutica, nivel de conocimientos de la enfermedad y autoestima en pacientes diabéticos tipo 2," Gaceta Médica Espirituana, **20**(3), 13–23, 2018.