Quality of Life in People with Type 2 Diabetes Residing in a Vulnerable Area in the Los Olivos district - Lima

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**A B S T R A C T**

Non-communicable chronic diseases are more frequent in developing countries, having a significant impact on morbidity, mortality, health care costs and productivity. A study indicates that physical exercise, glucose control, complications, hypertension, duration of diabetes, diet and depression are associated with the quality of life in patients with type 2 diabetes. The purpose of the study is to determine the quality of life in people with Type 2 Diabetes who reside in a vulnerable area of Los Olivos. The focus of this study is quantitative, its design is descriptive because it allows the study population to be described at a given moment. The population was 173 people with type 2 diabetes, from the Juan Pablo II Confraternity Maternal and Child Center in Los Olivos. The diabetes 39 questionnaire (D-39) was applied, made up of 39 items grouped into five dimensions, which measures the quality of life in diabetes. The results showed a half quality of life (51.4%), followed by high (26%) and low (22.5%). These results support the importance of promoting and educating about healthy habits in the diabetic patient, so that they can maintain an adequate quality of life. Type 2 diabetes is a silent and progressive disease in its initial stage, public health systems must increase efforts to make timely diagnoses, where the disease can be controlled avoiding the presence of complications and sequelae that can be fatal for the patient.

1. Introduction

Worldwide, the total number of people detected with type 2 diabetes mellitus (DM2) has increased considerably in the last three decades, although we know that diabetes mellitus is one of the noncommunicable diseases that can cause death [1].

DM2 is well known globally, since the rapid increase in the prevalence of this disease is evidenced and it has been confirmed that in 2019, 488 million in the ages of 20 to 99 years old suffer from this disease. Where the last decade the countries of type two diabetes mellitus have been the countries of China, India, the United States, Pakistan and Brazil respectively [2].

Diabetes is an incessant chronic condition where it causes a high level of sugar in the blood [3]. This is due to the decrease in the mechanism of beta cells of the pancreas [4], generating various stimuli in various parts of the body, among them, they are pancreatic failure, increased risk of cardiovascular system diseases, hypertension, kidney failure, neuropathy, problems with foot vascularization, ketoacidosis, visual problems, among others [5], [6].

The International Diabetes Federation (IDF) warned that the number of people with T2DM disease will rise worldwide from 325 million in 2017 to 629 million with diabetes in 2045 [7].

In Latin America, the IDF estimated that 9.4% of adults had diabetes and 7.9% had impaired fasting blood glucose (IFG) in 2015, and these numbers are expected to increase to 11.9 % and 9.4%, respectively, in 2040 [7].

In Latin America and the Caribbean, since 2015 it has been calculated in people aged 20 years and over, who suffered from DM2. Therefore, DM2 has represented an economic burden in the countries of Latin America and the Caribbean in 2015 [8].

The factors that mainly compromise health and cause DM2 worldwide are overweight and obesity, sedentary lifestyle and an inadequate diet [9][10]. Also, complications at the cardiovascular level in people with DM2 due to the factors that compromise their health are the main causes of morbidity and mortality, in addition to the kidney complications present in diabetic people [1].

Although, when you have DM2 and other cardiovascular diseases that occur at a younger age, they tend to develop...
aggressively, compromising the health of the diabetic person [11]. It can also lead to low life expectancy and this as a consequence causes a decline in quality of life [12].

In the same way, heart disease and other cardiovascular diseases can be generated quickly if the diabetic patient is depressed, mental health in diabetic patients is important since it maintains life expectancy and thus there is no complications in the patient [13].

In [14], the authors mentioned differences between social overload and sexual behavior, where they specified that sexual behavior had a high impact on the quality of life of the Brazilian population in the study and that social burden affected the quality of life, out of shame to present DM2, to be called diabetic and to present DM2 interrupting their family life.

In [15], the authors mentioned in their study the evaluation of the quality of life in people with DM2 and that in their results it is observed that the social burden domain is the one that has the highest incidence in quality of life (56.26 ± 12.07) followed by the domain of sexual functioning (54.35 ± 9.47), the domain of anxiety and worry (54.33 ± 7.76), the domain of energy and mobility (51.46 ± 8.73) and the domain of diabetes control (50.08 ± 10.84) concluding that the Sex life and mobility of the diabetic person is affected by age.

In [16], it was observed in the results of quality of life in the participants where 62.3% had an average quality of life, regarding the subjective perception of the state of health, 46.7% considered having adequate health well-being, expressing that a healthy diet, physical activities and a controlled treatment will allow an improvement in the quality of life in diabetic patients in the long term.

In [17], the authors interpreted that patients who have regular consultations and treatments for diabetes control, expressed that they improved their quality of life, on the other hand, in patients with comorbidities they demonstrated a considerable decrease in their quality of life. Its systematic review study, it was observed in 31 studies in patients with DM2, that 50% of the studies reported that diabetic patients received some treatment to control their disease.

In [18], the authors in their study of quality of life and depression in patients with diabetes, interpreted that 54.1% of the majority of participants perceived depression with the Patient Health Questionnaire-9 (PHQ-9) score of 6.15 ± 5.01 on a scale of 0-27. On a scale of 0 to 100, the highest mean quality of life score was reported in the social relationship domain (57.32 ± 11.83), followed by the environment domain (54.71 ± 7.74), psychological health (53.25 ± 10.32) and physical health (50.74 ± 11.83). Concluding that a study should be carried out on depression, since this factor affects more the quality of life, being associated with negativity, affecting its treatment and glycemic control of diabetes. In the absence of a timely and pertinent detection of depression, emotional problems may be exacerbated, and therefore the quality of life and well-being would be affected, all this will ultimately trigger an oversight in the health of the diabetic, and their adherence to treatment and control of the disease will not be fully assumed. This could be translated into the presence of hyperglycemia symptoms, which is the beginning for the irreversible damage to the target organs of the disease to be evident.

Diabetes is a health problem that affects global public health, in Perú, the care and monitoring of people affected with this disease is essential, since it will allow this disease not to evolve and generate sequelae or death in the person. Valuing the quality of life allows generating scientific evidence that serves as a basis to improve health strategies aimed at the care and care of these patients who become vulnerable due to the systemic damage that is characteristic of this type of metabolic disease. This non-communicable disease is considered one of the 11 health problems (health problem no. 3: metabolic and cardiovascular diseases) indicated in the document Prioridades Nacionales de Investigación en Salud en Perú 2019-2023, prepared by the Instituto Nacional de Salud and the endorsement of the Ministerio de Salud of our country.

The main objective of the research work is to determine the quality of life in people with Type 2 Diabetes who reside in a vulnerable area of Los Olivos. Due to the complications and costs that type 2 diabetes generates for the patient, the family, and the country: it is of utmost importance to take care of the health of these patients, it is necessary that they come to their medical control periodically where their levels of glycemia, weight and the impact of the medication are mainly valued. But it knows that the disease and its pathophysiology generate an impact in other areas such as social, emotional, limitations in the development of activities of daily living, etc., therefore it is important to assess the quality of life related to the health of these people, because, it will have evidence of how the disease affects other dimensions of the patient's life. It means a scientific evidence that allows health and nursing personnel to improve their professional practice aimed at the care and self-care of these people affected by this systemic disease.

Therefore, the objective of the research work is to determine the quality of life in people with Type 2 Diabetes living in a vulnerable area of Los Olivos - Lima.

The hypothesis of the research work is that type 2 diabetes mellitus negatively affects the quality of life of the patient, even though they have knowledge about the risk of the disease reported in their routine controls.

2. Methods
2.1. Research type and Design

The present study is of a quantitative approach, since the main variable will be measured with a quantitative data collection instrument and will be used for the analysis of the data collected, mainly descriptive statistical processes. The methodological design is a descriptive and cross-sectional research, it is descriptive because reality is described as it is presented and it is transversal because the process of measuring the variable was carried out only once in time by each participant [19].

2.2. Population and sample

We worked with the sample of the total population of diabetic patients in the jurisdiction of each health center. According to the
initial standard, 187 participants with type 2 diabetes were identified, then 14 of them did not decide to participate by their own decision or did not meet some of the selection criteria (inclusion and exclusion) indicated below, finally the population was made up of 173 patients diagnosed with type 2 diabetes.

Table 1: Sociodemographic data in people with type 2 diabetes residing in a vulnerable area in Los Olivos (n=173)

| Information of the participants | Total Value |
|---------------------------------|-------------|
|                                 | n | % | Sig. (p) |
| Total                           | 173 | 100 | 0.000 |
| Age                             |   |   | 0.730 |
| Adult (30 to 59 years old)      | 91 | 52.6% | 0.171 |
| Older Adult (60 and over)       | 82 | 47.4% | 0.578 |
| Sex                             |   |   | 0.093 |
| Female                          | 88 | 50.9% | 0.138 |
| Male                            | 85 | 49.1% |
| Marital Status                  |   |   | 0.000 |
| Single                          | 6  | 3.5% |
| Married                         | 92 | 53.2% |
| Widowed                         | 9  | 5.2% |
| Cohabitant                      | 55 | 31.8% |
| Divorced                        | 11 | 6.4% |
| Types of Family                 |   |   | 0.000 |
| Nuclear                         | 104| 60.1% |
| Extended                        | 32 | 18.5% |
| Expanded                        | 26 | 15.0% |
| Single Parent                   | 9  | 5.2% |
| Reconstituted                   | 2  | 1.2% |
| Degree of Study                 |   |   | 0.000 |
| No Education                    | 1  | 0.6% |
| Primary Education               | 18 | 10.4% |
| Secondary Education             | 140| 80.9% |
| Higher University Education     | 2  | 1.2% |
| Higher Non-university Education | 12 | 6.9% |
| Occupation Condition            |   |   | 0.000 |
| Stable Worker                   | 4  | 3.2% |
| Eventual                        | 114| 65.9% |
| No Occupation                   | 44 | 25.4% |
| Retired                         | 11 | 6.4% |

In Table 1, it has the sociodemographic data of the study participants, there were 173 people affected with diabetes. The minimum age was 38 years old; the maximum was 77 years old and the mean was 58.35 years.

Regarding the participant’s sex, 88 that represent 50.9% correspond to female and 85 that represent 49.1% correspond to male. Regarding the degree of study, 140 participants representing 80.9% have secondary education, 18 participants representing 10.4% have primary education, 12 participants representing 6.9% have Higher non-university education, 2 participants representing 1.2% have higher university education and 1 participant representing 0.6% have no education. Regarding marital status, the married with 92 (53.2%) cases predominate, followed by the cohabitant with 55 (31.8%) cases, divorced with 11 (6.4%) cases, widowed with nine (5.2%) cases and finally single with 6 (3.5%) cases. Regarding the type of family, nuclear families predominate with 104 (60.1%) cases, followed by extended families with 32 (18.5%) cases, expanded with 26 (15%) cases, single parent with nine (5.2%) cases and reconstituted with two (1.2%) cases. Regarding the occupation condition, the eventual prevails with 114 (65.9%) cases followed by the no occupation with 44 (25.4%) cases, retired with 11 (6.4%) cases, and finally stable worker four (2.4%) cases.

One aspect to highlight is that within the sociodemographic data. It was found that there is a significant relationship between age and quality of life with a (p=0.000).

2.3. Inclusion Criteria

The inclusion criteria are adults (30 to 59 years old) and older adults (60 to more years old) with a medical diagnosis of type 2 diabetes, also who are in treatment and are continuing patients (have at least one control medical consultation) in the health center of the jurisdiction. Moreover, participants who are residents in the area with their own home, also who voluntarily agreed to participate in the study and agreed to sign the informed consent and finally, those who did not meet at least one of the selection criteria were not included in the study.

2.4. Technique and Instrument

To measure the quality of life in Diabetes, the data collection instrument called the Diabetes 39 questionnaire was used. Before its application in the field work, its validity and reliability were verified.

To measure the quality of life in Diabetes, the data collection instrument called the Diabetes 39 Questionnaire was used, this is an instrument originally developed in the English language and specifically designed to determine the health-related quality of life of people with diabetes type 2 mellitus. It has currently been validated and translated into the Spanish language and its use is widespread in many other languages. This instrument is made up of 39 items which are distributed in 5 dimensions or factors: Energy-Mobility, which refers to the limitation of the level of energy and daily activities, decrease in visual acuity and disturbed sleep (consisting of 15 items); Diabetes control, which refers to the impact of medical treatment based on the therapeutic plan, glycemic control and diet (consisting of 12 items); Anxiety-concern, which are the concerns that the person has about economic issues, life stresses and future life (consisting of 4 items); Social burden, which refers to the limitations of diabetes mellitus that interfere with family and friends life (made up of 5 items) and sexual functioning, which refers to the impact of diabetes on sexual abilities and functioning (made up of three items) [20][21].

Validity was determined by expert judgment, consulting five health professionals about the content and statements of the instrument used in this study. The content validity of the instrument was 86.2%, which is interpreted as good. Then a pilot study was developed in which 30 people between adults and older adults participated. Statistical validity and reliability were calculated with this sample. Statistical validity was obtained using the Kaiser-Meyer-Olkin (KMO) sample adequacy tests and the

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Bartlett sphericity test. The sample adequacy test gave a score of 0.963 (KMO>0.5) and the Bartlett specificity test gave a significance level of 0.000 (p<0.001). Both tests affirm the instrument's validity hypothesis. The reliability of the instrument was determined based on the Cronbach's alpha coefficient. A high value of internal consistency was obtained between the results of the instrument which is 0.996 (α>0.6), confirming the reliability of the measuring instrument.

Participants answer how much their quality of life has affected in the last month by an action expressed by each item, marking an X on a modified visual analog type scale, whose scale of values goes from one to seven, where one corresponds if it is not affected at all and seven corresponds to extremely affected quality of life [20].

2.5. Place and Application of the Instrument

The data collection process was carried out during the last quarter of 2019. Prior, coordination was carried out to obtain data on patients with type 2 diabetes who live in the jurisdiction of the Health Establishment called the Centro Materno Infantil Confraternidad - Juan Pablo II located in the Los Olivos district. Each participant was visited at home, spending with each of them an approximate time of 15 to 20 minutes to complete the data sheet. Nursing staff was the one who mainly participated in the work of filling in data sheets, this due to their important participation in Primary Health Care areas such as Family Health, Community Health and Health Promotion. In addition, it had the support of the health promoters in the area, who facilitated the identification of the participants' homes. At the end of completing each data sheet, it was revised to ensure that it has its complete data coding and entry.

For the data analysis, a guide to the diabetes instrument Diabetes 39 was used, which gives details of how the quality of life in diabetes is evaluated for each of the five dimensions. The software used for data entry and management were Excel and the Statistical Package for the Social Sciences (SPSS).

3. Results

In Table 2, it can see the quality of life in people with type 2 diabetes, where the medium quality of life predominates with 51.4% (n = 89), followed by the high quality of life with 26% (n = 45), and finally the low quality of life with 22.5% (n = 39).

| Quality of life          | n  | %   |
|-------------------------|----|-----|
| Low quality of life     | 39 | 22.5|
| Medium quality of life  | 89 | 51.4|
| High quality of life    | 45 | 26.0|
| Total                   | 173| 100.0|

Table 2: Quality of Life in people with Type 2 Diabetes residing in a vulnerable area in Los Olivos (n=173)

In Table 3, it can see the quality of life in its energy and mobility dimension, where the medium quality of life predominates with 69.4% (n = 120), followed by the high quality of life with 26% (n = 45), and finally the low quality of life with 4.6% (n = 8).

In Table 4, it can see the quality of life in its diabetes control dimension, where the medium quality of life predominates with 51.4% (n = 89), followed by the high quality of life with 26% (n = 45), and finally the low quality of life with 22.5% (n = 39).

Table 3: Quality of life according to its energy and mobility dimension, in people with type 2 Diabetes residing in a vulnerable area in Los Olivos (n=173)

| Energy and mobility | n  | %   |
|---------------------|----|-----|
| Low quality of life | 8  | 4.6 |
| Medium quality of life | 120 | 69.4|
| High quality of life | 45 | 26.0|
| Total               | 173| 100.0|

Table 4: Quality of life according to its diabetes control dimension, in people with type 2 diabetes residing in a vulnerable area in Los Olivos (n=173)

In Table 5, it can see the quality of life in its anxiety and concern dimension, where the medium quality of life predominates with 52% (n = 90), followed by the high quality of life with 26% (n = 45), and finally the low quality of life with 22% (n = 38).

Table 5: Quality of life according to its anxiety and concern dimension, in people with type 2 Diabetes residing in a vulnerable area in Los Olivos (n=173)

| Anxiety and concern | n  | %   |
|---------------------|----|-----|
| Low quality of life | 38 | 22.0|
| Medium quality of life | 90 | 52.0|
| High quality of life | 45 | 26.0|
| Total               | 173| 100.0|

Table 6: Quality of life according to its social burden dimension, in people with type 2 Diabetes residing in a vulnerable area in Los Olivos (n=173)

The results of this study constitute scientific evidence that allows to understand the health situation of these patients with type 2 diabetes in a greater dimension, which allows a more holistic and comprehensive assessment of the evolution of their disease, thus the professional health will make more timely and relevant decisions that translate into improving their well-being.

4. Discussion

This research work on quality of life in diabetes is part of the research line of chronic non-communicable diseases, this one has an approach from the perspective of health promotion that should be promoted from primary health care.

Regarding the quality of life in people with diabetes, the medium quality of life prevailed, therefore, the hypothesis established in the research work is accepted, that is, the person...
with diabetes mellitus has an unsatisfactory quality of life, even though they have knowledge about the risks that this disease generates.

The results interpret that diabetes mellitus negatively exposes the quality of life of the person, factors such as sedentary lifestyle and inadequate nutrition further compromise the well-being of the person. In [16], the authors argue that the quality of life in people with diabetes mellitus is not only based on rigorous treatment and physical activity in order to maintain their health, but also on the emotional support they have from their family in order to maintain their mental health and thus allow them to improve their quality of life.

In [15], the authors observed that the diabetes control dimension is affected by the time of the disease and the degree of education of the patient.

The results of glycemic control observed in patients with DM2 is low, so an approach is considered where a strategy is sought to improve knowledge about their disease and their adherence to treatment [4]. DM2 is one of the diseases that is most associated with cardiovascular diseases; studies have shown that glycemic control reduces diabetic vascular complications [3]. In [17], the authors reported that the control of diabetes and continuous treatment is very important because it allows the prevention of certain comorbidities since patients with DM2 are exposed to contracting diseases that are mainly cardiovascular.

In [14], they indicated that the quality of life was greatly affected in the items related to the social burden dimension: shame of having diabetes, being called diabetic and having diabetes interfering in their family life. This result deserves special attention in diabetes, where educational programs are carried out, to incorporate strategies that facilitate the approach of aspects related to the impact of diabetes.

Life-altering change is a diagnosis of type 2 diabetes, people must cope with the diagnosis to accept type 2 diabetes. Anxiety, depression, stress, and angst from diabetes were identified as key influential psychosocial factors. The emotional responses to the diagnosis were related to depression and anxiety. Negative styles of resignation, protest, or isolation were higher in women and were associated with poorer quality of life, while avoidance was associated with increased diabetes-related distress and depressive symptoms [10]. In [18], they argued that depression and anxiety are factors that predispose diabetic patients to a poor quality of life, because their psycho-emotional health is altered by suffering from the disease and also having a negative attitude, sadness and shame as this interrupts their daily routines.

People with DM2 express concern due to insulin prices, therefore, it generates a negative impact on their state of mind [11], since personal care and living with complications related to DM2, causes negativity at a psychosocial level affecting health in it.

The frequency of depression in patients with diabetes raises the need to consider depression as an additive factor to the disease burden of this condition. Type 2 diabetes is a silent and progressive disease in its initial stage, public health systems must increase efforts to make timely diagnoses, where the disease can be controlled avoiding the presence of complications and sequelae that can be fatal for the patient [13].

5. Conclusions
It is concluded that the nursing staff has an important role in educating and guiding diabetics, with its science of care, it must contribute to generating behavioral changes in this type of patients, only in this way, it could guarantee that they have a controlled disease and carry a full and quality life.

It is concluded that nutritional counseling for patients should be considered mainly for the families of older adults and thus they are oriented in what needs the older adult is going to present at home.

It is concluded that patients must have a correct management of the disease, as well as psychological support, both family and professional, to improve their quality of life.

The limitation in the present research work is that it was considered that in Peru there is little research on quality of life in patients with diabetes, so it is necessary that several studies be carried out to improve knowledge about the quality of life in people with diabetes.

Conflicts of Interest
The authors declare that they have no conflict of interest.

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