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Lifestyle and quality of life in patients with metabolic syndrome and type 2 diabetes

Estilo de vida y calidad de vida en pacientes con sindrome metabólico y diabetes tipo 2

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ABSTRACT

The objective of the study was to determine the lifestyle and quality of life in type 2 diabetes mellitus and metabolic syndrome patients in the city of Popayán. A descriptive cross-sectional study was carried out with 81 patients with metabolic syndrome and type 2 diabetes mellitus diagnoses. EUROQOL questionnaires of 5 Dimensions-3 Levels were applied, as well as the IMEVID test, in order to evaluate the quality of life and lifestyle of each group of patients. Anthropometric measures were also taken, such as Body Mass Index, Waist-Hip Ratio and skinfolds. Regarding the results, 33.33% of the participants were between 61 and 70 years of age 56.8% presented moderate pain problems/discomfort, 61.7% presented an unhealthy lifestyle and obtained variable relationships such as: waist-hip ratio - glycemia ($p = 0.021$, $r = -0.257$), body density - triglycerides ($p = 0.018$, $r = 0.263$), age and mobility EUROQOL ($p = 0.001$, $r = 0.350$). In conclusion, lifestyle changes are one of the pillars to control metabolic syndrome and type 2 diabetes mellitus. Evaluating the quality of life also makes it possible to understand how compromised patients' abilities are, in order to create relevant strategies and actions that seek their well-being.

Keywords: Metabolism; Lifestyle; Quality of life; Metabolic X Syndrome; type 2 Diabetes.

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RESUMEN

El objetivo del estudio fue determinar el estilo de vida y calidad de vida en pacientes con diabetes mellitus tipo 2 y síndrome metabólico en la ciudad de Popayán. Se realizó un estudio descriptivo de corte transversal con 81 pacientes, a los cuales se le aplicaron los cuestionarios EUROQOL de 5 Dimensiones– 3 Niveles y el test IMEVID para evaluar la calidad de vida y el estilo de vida respectivamente, también se tomaron medidas antropométricas como Índice de masa corporal, índice cintura-cadera y pliegues cutáneos. Respecto a los resultados el 33.33% de los participantes están entre los 61 y 70 años de edad, se identificó que el 56.8% presentan moderados problemas en dolor/malestar, 61.7% presentaron un regular estilo de vida y se obtuvo relación entre variables como: índice de cintura cadera – glicemia (p=0.021; r = -0.257), densidad corporal - triglicéridos (p= 0.018; r= 0.263), edad y EUROQOL movilidad (p= 0.001; r=0.350). En conclusión, la modificación del estilo de vida es uno de los pilares en la prevención y el manejo del síndrome metabólico y la diabetes mellitus tipo 2, así como también la evaluación de la calidad de vida permite generar las estrategias y acciones pertinentes que busquen el bienestar del paciente.

Palabras clave: metabolismo; estilo de vida; calidad de vida; síndrome x metabólico; diabetes tipo 2.

INTRODUCCIÓN

Metabolic Syndrome can be define as a cluster of conditions associated with abdominal obesity, changes in the concentration of cholesterol and high density lipoproteins (HDL-C), high triglycerides, hyperglycemia, and increased blood pressure, which makes it an indicator of mortality, since the impact of cardiovascular disease and type 2 diabetes mellitus (DM2)[1,2] is greater.

In order to diagnose MS, a patient must meet three of the five criteria established and modified by the International Diabetes Federation: triglyceride levels higher than 150 mg/dl, HDL cholesterol level lower than 40 mg/dl in men, and 50 mg/dl in women, blood pressure of 130/85 mm Hg, fasting blood sugar levels of 100 mg-7dl. For those patients already in treatment for these conditions, another criterion is waist circumference, which is specific for each population[3].

Excess weight and central obesity are thought to be the main risk factors for MS; those conditions have been associated with changes in lifestyle, namely a diet rich in carbohydrates and fats, a lack of leisure-time physical activity, and cigarette and alcohol use[4]. Hormonal changes are another factor associated with this issue, since they contribute to increase adipose tissue, hyperglycemia, and dyspledimia. Women can experience these issues during menopause[1].The connection between MS and DM2 can be explained from a physiological perspective: body tissues are resistant to insulin-mediated glucose uptake. Because of this alteration, blood glucose levels increase along with hyperinsulenimia[3].

MS increases the risk of cardiovascular disease up to two times, and the risk of type 2 diabetes mellitus up to five times[5]. Diabetes has had a great impact on global health; nearly 422 million adults suffered from this disease in 2014, and the number has risen every year. In Colombia, there is a prevalence of 8.3%, in addition to fifteen thousand deaths related to DM2 between 2013 and 2014[6]. Between 2008 and 2012, non-communicable diseases have caused more than 727,146 deaths; the global mortality rate for cardiovascular diseases was 129.9 for every 100,000 people[7]. It is worth mentioning that three-fourths of the deaths from cardiovascular disease occur in countries of small and medium resources[8].

Another important issue when discussing MS is central or abdominal adiposity, which is a key factor in glucose intolerance, hypertension, and dysplidemia[9]. In regards to obesity, it has been associated with sleep disorders, non-alcohol-related liver disease, negative mood swings, and colon and rectum cancer[10]. Furthermore, it is important to mention that around 650 million

adults are obese[11] worldwide. These numbers have an impact on the healthcare system, given the elevated costs of treatment, and the poor quality of life and life expectancy of those suffering from this disease[8].

Changes in lifestyle are essential for preventing and treating these diseases[3]. Increased physical activity is also important, since it contributes to glycemic control, lipid profile, visceral adipose tissue, among other issues associated with the syndrome[12]. Changes in diet also result in improvements in blood pressure, sensitivity to insulin, lipid profile, lipoprotein levels, inflammation, oxidative stress, and carotid atherosclerosis[12].

As indicated by the foregoing, is it is necessary to develop research on the fact that lifestyle changes are the most effective way of controlling and preventing these diseases. The reason for this being the impact of this health issue in the patients' quality of life, which is the "property individuals have that allows them to experience the situations and conditions of their environment, depending on the interpretations and evaluations they make on the objective aspects of their environment"[13]. The aim of this study was to determine the lifestyle and quality of life of patients with metabolic syndrome and type 2 diabetes in the city of Popayán.

MATERIALS Y METHODS

Type of investigation

A non-experimental descriptive correlational and cross-sectional design was used in this study.

Participants

Eighty-two people participated in the study, they had seen endocrinologists, and attended programs for chronically ill patients offered by several Health Care Providers (IPS) in the city. In order for them to be included in the study, they had to meet the following criteria: confirmed diagnosis of DM2 and MS, being 18 years of age or older, and volunteering to participate. The exclusion criteria were as follows: a previous history of cosmetic surgery in the abdominal area and/or the arms, cognitive and/or mental impairment, and voluntary withdrawal from the study.

MS was diagnosed when at least three of the criteria established by the NCEP-ATP III were met: waist circumference ≥102cm in men, and ≥ 88cm in women; TG: ≥150 mg/dl; HDL-C <40 mg/dl in men and <50 mg/dl in women; SP: systolic pressure ≥130mmhg, diastolic pressure ≥85mmhg, and fasting blood sugar level ≥110 mg/dl (3). Endocrinology evaluation was crucial when diagnosing DM2, based on the following criteria: symptoms of diabetes, Random Plasma Glucose (RPG) test ≥ 200 mg/dL, presenting polyuria, polydipsia, and unexplained weight loss. Additionally, the following was taken into consideration: patients whose glucose tolerance test showed preprandial glucose levels ≥ 126 mg/dL, and, two hours later, postprandial glucose levels ≥ 200 mg/dL[14].

The sample size was determined using EPIDAT 3.1; the study population consisted of all the people of the city of Popayán (277,340); the level of prevalence in cases of metabolic disorders in the year 2015 was 8.4%[5]; the level of trust was 94%, and accuracy rate of 6%. The study required a minimum of 76 patients, but 81 patient suffering from DM2 and MS participated, in order to avoid attrition bias.

Instruments and Procedure

The EUROQOL 5 dimensions – 3 levels questionnaire (EQ-5D-3L) was used as a reference to evaluate the quality of life. It comprises the following five dimensions: mobility, self-care, usual activities, pain/discomfort and anxiety/depression. Each dimension has 3 levels: no problems, some problems, and extreme problems. The system is available in 170 languages[15,16].

The instrument to evaluate the lifestyle of diabetic patients was the IMEVID test. This is a

specific, standardized, global, self-administered questionnaire for DM2 patients. It consists of 25 closed-ended questions, grouped together in seven dimensions: nutrition, physical activity, tobacco and alcohol use, information about diabetes, emotion management, and adherence to treatment[17]. The creators authorized the use of the instrument IMEVID; and the Euroqol site was used to fill the registration form, as well as the form containing all the information about the study, in order to obtain permission.

Statement on ethical issues

The ethics committee of Cauca University approved the research, and took into consideration all ethical issues established in the Declaration of Helsinki[20] and resolution 008430 of 1993 of Colombia's Ministry of Health and Social Protection[21]. It is worth mentioning that all procedures fitted the rating with no risk, and all participants signed an informed consent document, agreeing to participate in the study. Every procedure of the study, as well as its risks and goals were explained.

RESULTS

In regards to the sociodemographic characteristics of MS and DM2 patients, women predominated by 81.5% (n=66), 67 years old on average, the minimum age was 42 years, and the maximum age was 92 years, DS±10.657. A total of 51.9% (n=42) of the population is married, 48.1% (n=39) work as homemakers, with 61.7% (n=50) coming from urban areas; 46.9% (n=38) of socioeconomic stratum 3. The diagnosis time for DM2 was one year, as a minimum, and 50 years maximum, 11 years on average, and DS±8,930. Treatment time was 10 years on average DS±8,459 (Table 1).

Regarding clinical characteristics, the results showed that 33.3% of the population (n=27) have low levels of C-LDL, 53.1% (n=43) of the population have low levels of C-HDL, 38.3% (n=31) have slightly high triglyceride levels, and 54.3% (n=44) have ideal cholesterol levels. Fasting blood sugar levels of 65.4% (n=53) of the population result in hyperglycemia, and, lastly, 51.9% (n=42) optimal levels of blood pressure (Table 1).

Table 1. Sociodemographic and clinical characteristics of the patients.

Sociodemographic characteristics				**Clinical characteristics**			
Variable		n	%	Variable		n	%
Age in years	<50	5	6.2	Cholesterol LDL	Optimal	25	30.9
	50-60	13	16		Low limit	27	33.3
	61-70	27	33.3		High limit	20	24.7
	71-80	26	32.1		High	8	9.9
	>80	10	12.3		Very high	1	1.2
Gender	Male	15	18.5	Fasting blood sugar	Normal	28	34.6
	Female	66	81.5		Hyperglycemia	53	65.4
Marital status	Single	33	40.7	Cholesterol HDL	Low	43	53.1
	Married	42	51.9		Normal	35	43.2
	Domestic partnership	6	7.4		High	3	3.7
Occupation	Employed	6	7.4	Triglycerides	Normal	19	23.5
	Unemployed	5	6.2		Slightly high	31	38.3
	Independent	11	13.6		High	29	35.8
	Pensioned	20	24.7		Very high	2	2.5
	Homemaker	39	48.1				
Area of origin	Urban	50	61.7	Total cholesterol	Desirable	44	54.3
	Rural	31	38.3		High limit	24	29.6
					High	13	16.0
Socioeconomic stratum	1	11	13.6	Blood pressure	Optimal	42	51.9
	2	19	23.5		Normal	18	22.2
	3	38	46.9		High normal	9	11.1
	4	10	12.3		Grade 1 hypertension	12	14.8
	5	2	2.5				
	6	1	1.2				
Total		81	100			81	100

The following anthropometric characteristics were identified: in regards to the BMI, 55.6% (n=45) of the population were overweight, and, in regards to the BD, 81.5% (n=66) were obese. Regarding the waist-hip ratio WHR, the results showed that 88.9% (n=72) are at risk of comorbidity (Table 2).

Table 2. Anthropometric characteristics of the patients.

Anthropometric characteristics		**n**	**%**
Body Mass Index (BMI)	Low weight	3	2.8
	Normal	16	15.0
	Overweight	56	52.3
	Grade 1, or moderate, obesity	24	22.4
	Grade 2, or severe, obesity	7	6.5
	Grade 3, or morbid, obesity	1	0.9
Waist-Hip ratio (WHR)	No risk of comorbidity	18	8.6
	Risk of comorbidity	89	83.2
Body Density (BD)	Excellent	2	1.9
	Good	2	1.9
	Average	6	5.6
	Poor	17	15.9
	Obese	80	74.8
Total		81	100

Applying the EQ-5D-3L questionnaire made it possible to obtain the following results regarding quality of life. Patients with no mobility issues prevailed, representing a 67.1% (n=67) of the total; 82.7% (n=67) have no issues with personal care; 71.6% (n=58) have no issues with daily activities; 56.8% (n=46) have moderate pain or discomfort, and 64.2% (n=53) do not suffer from anxiety or depression (Table 3). According to the IMEVID questionnaire, which evaluates the lifestyle of patients, 62.7% (n=50) of the population have a moderate quality of life (Table 4).

Statistical significance was found between sociodemographic variables such as: age and mobility (p=0.001) with a directly proportional association (using Spearman's rank correlation coefficient); gender and personal care (p=0,001) (using Kruskal–Wallis one-way analysis of variance); and socioeconomic stratum and body mass index (p=0.006), BMI (p=0.005), with an inversely proportional relationship (Table 5).

Regarding clinical and anthropometric variables, statistical significance was found between the variables of the first domain of quality of life (mobility) and age (p=0,001). Between the fourth domain (pain) and C-LDL (p=0.034), anthropometric variables such as BMI and WHR with stratum (p=0.006 and 0.005 respectively), as well as fasting blood sugar (p=0.021) and TG with body density (p=0.018). Nevertheless, the values of all these variables are far from 1 in the correlation test, which means there is a weak strength of association (Table 5).

Table 3. Quality of life in patients with Metabolic Syndrome

Quality of life = EUROQOL – 5D -3L										
	Mobility		Personal care		Daily activities		Pain/discomfort		Anxiety/depression	
	n	%	n	%	n	%	n	%	n	%
No problems	56	69.1	67	82.7	58	71.6	29	35.8	52	64.2
Some/moderate problems	24	29.6	11	13.6	20	24.7	46	56.8	26	32.1
Many/ extreme problems	1	1.2	3	3.7	3	3.7	6	7.4	3	3.7
Total	81 100%									

Table 4. Lifestyle of patients with Metabolic Syndrome

Lifestyle (IMEVID)		
	n	%
Positive lifestyle	28	34.6
Unheatlhy lifestyle	50	61.7
Negative lifestyle	3	3.7
	81	100

Table 5. Relation between quality of life and lifestyle and sociodemographic, clinical, and anthropomorphic caracteristics, as well as between anthropomorphic characteristics and sociodemographic and clinical characteristics.

	Correlación Rho Spearman								
	EUROQOL 5D-3L								
	1D[a]	2D[b]	3D[c]	4D[d]	5D[e]	IMEVID	IMC[f]	ICC[g]	DC[h]
Age Correlation coefficient Sig. (bilateral)	0.350 0.001	0.157 0.163	0.085 0.452	0.129 0.252	0.037 0.742	-0.146 0.194	0.005 0.962	-0.160 0.154	-0.009 0.935
Stratum Correlation coefficient Sig. (bilateral)	0.008 0.940	-0.037 0.743	-0.076 0.501	-0.085 0.450	-0.152 0.174	0.047 0.679	-0.306 0.006	-0.309 0.005	-0.052 0.642
Fasting blood sugar Correlation coefficient Sig. (bilateral)	-0.069 0.539	-0.010 0.928	-0.018 0.871	0.030 0.788	0.054 0.634	-0.103 0.360	-0.021 0.853	-0.257 0.021	0.060 0.595
C-HDL Correlation coefficient Sig. (bilateral)	0.082 0.466	0.065 0.562	0.107 0.342	-0.021 0.855	0.009 0.938	-0.001 0.989	-0.123 0.275	0.178 0.112	-0.106 0.348
C-LDL Correlation coefficient Sig. (bilateral)	-0.164 0.143	0.108 0.335	-0.004 0.973	-0.235 0.034	-0.009 0.938	-0.035 0.754	-0.011 0.922	0.041 0.715	0.111 0.324
Cholesterol Correlation coefficient Sig. (bilateral)	-0.068 0.547	0.073 0.516	0.109 0.335	-0.092 0.413	0.208 0.062	-0.027 0.814	0.002 0.985	0.149 0.183	0.023 0.836
TG Correlation coefficient Sig. (bilateral)	-0.134 0.233	-0.002 0.987	0.017 0.879	-0.020 0.859	0.001 0.992	-0.167 0.136	0.082 0.467	-0.073 0.516	0.263 0.018
BP Correlation coefficient Sig. (bilateral)	0.136 0.225	0.182 0.105	0.073 0.520	0.140 0.214	-0.063 0.577	0.089 0.427	0.059 0.599	0.167 0.136	0.048 0.672
BMI Correlation coefficient Sig. (bilateral)	0.027 ,808	-0.112 0.318	-0.106 0.347	-0.096 0.395	0.016 0.888	0.090 0.423			
WHR Correlation coefficient Sig. (bilateral)	-0.016 0.889	-0.038 0.734	0.055 0.629	0.017 0.879	0.105 0.350	0.043 0.700			
BD Correlation coefficient Sig. (bilateral)	0.124 0.271	0.047 0.679	0.016 0.887	-0.070 0.532	0.041 0.716	0.112 0.319			

a. Mobility; b. Personal care; c. Daily activities; d. Pain/discomfort; e. Anxiety/depression; f. Body Mass Index; g. Waist-Hip Ratio; h. Body Density. Source: Developed by author

An analysis of odds ratio (OR) and a chi-squared test showed that the male gender is a protective factor for WHR with a risk of cardiovascular disease comorbidity (p=0.000, OR=0.071; IC95%=0.015-0.337). Nevertheless, it is 7.375 times greater risk factor to the domain "care with problems" (p=0.001; OR=7.375; IC95%= 2.047-26.571). High cholesterol is a risk factor for anxiety (p=0.027; OR=2.842; IC95%=1.112-7.267), and being single is a risk factor for low HDL (p=0.042; OR=2.571; IC95%=1.023-6.462) (Table 6.)

Table 6. Risk analysis of sociodemographic, clinical and quality of life characteristics.

	WHR		**EUROQOL care**		**EUROQOL anxiety**		**HDL**	
	With risk	**Without risk**	**With problems**	**Without problems**	**With problems**	**Without problems**	**Low**	**Normal high**
Gender								
Male	9	6	7	8				
Female	63	3	7	59				
p	0.000		0.001					
OR	0.071		7.375					
IC95%	0.015-0.337		2.047-26.571					
Cholesterol								
High					18	19		
Desirable					11	33		
p					0.0027			
OR					2.842			
IC95%					1.112-7.267			
Marital Status								
Single							22	11
Married-domestic partnership							21	27
P							0.042	
OR							2.571	
IC95%							1.023-6.462	

WHR= Waist-Hip Ratio, p≤ 0.005.

DISCUSSION

Lifestyle changes have resulted in an unbalanced diet, increasingly sedentary behavior, and alcohol and tobacco use. These factors are associated with obesity and the increase in cases of metabolic syndrome; they are the most important risk factor for the development of DM2[22].

Regarding the sociodemographic characteristics of the study, the average age was 66.63 years. López, Cifuentes and Sánchez obtained similar results in the city of Cali in 2013, with an average age of 64.4 years. This means that the condition can be associated with aging and bad habits in people older than 40 years of age[23]. Most DM2 and MS patients were women, a result that was similar in the MS research we performed in elderly patients in the city of Medellin, in which 73.8% of patients were women. This can be due to a greater predisposition in women to metabolic and hormonal changes after menopause[1].

Two prevalent factors were being a homemaker as occupation, and being married as marital status. Considering these two elements is important because marital status affects elderly patients. Living with a non-communicable

disease can be easier when patients can rely on a partner, who can also help them to prevent the complications of DM2[24,25]. The average socioeconomic status found in this study differs from several other research, which found that the prevalence of DM2 is associated with lower social status. Diet, health, overweight, and obesity are also associated with a person's socioeconomic status[23,25,26].

In regards to the clinical variables, patients had low cholesterol LDL and HDL levels, hyperglycemia, normal blood pressure, slightly high triglycerides, and a desirable level of cholesterol. This information and these variables were necessary to diagnose MS[27]. Hyperglycemia has proven to be one of the three main components of MS[28]. The prevalence of dyspledimia is considered to be a risk factor for coronary disease; its effects depend on the age of the patient. The younger the patient, the lesser the impact on their health[8]. It is also worth mentioning that taking medication to treat dyspledimia is not an effective way of controlling the disease[29].

Overall, patients had normal blood pressure levels, although it is important to say that cases of hypertension depend on tobacco use, obesity and ethnicity. Physical exercise seems to be the most efficient way of controlling this variable, since it contributes to improve clinical values such as glycemia, blood pressure, lipids, glycated hemoglobin, and high density lipoproteins[29].

With reference to BMI, most participants were overweight or obese; which matches the findings of Domínguez et al. in a 2017 study: in a Mexican population, abdominal obesity was the most prevalent factor, although body mass index (BMI) makes it impossible to differentiate body fat from fat free mass[27]. This rise in obesity can be attributed to globalization, since it causes demographic, social, economic, and technological changes that affect people's consumption of sugar, fats, low fiber foods, and polyunsaturated fatty acids[11]. Additionally, controlling this disease requires quantitative and qualitative modifications in diet and regular physical activity. If a patient loses 5 to 10 percent of his or her body weight, blood pressure decreases, as well as the pharmacological measures required to treat diabetes and glycated hemoglobin (HbA1c)[10].

Regarding lifestyle, the patients' behavior was not healthy; this information is very similar to the one reported in other studies, according to which patients with type 2 diabetes had that same kind of lifestyle[31,32]. It is important to mention that preventing and treating MS and DM2 depends on lifestyle changes; several research associate a decrease of risk factors and long-term complications of these diseases with diet and increased physical activity[2,10,17,33].

In order to increase physical exercise it is recommended to do activities of moderate to high intensity for 30 minutes a day, several times a week, with a weekly goal of 150 minutes. In general, these recommendations contribute to reduce and control glycemia and blood pressure in patients with non-communicable diseases[34]. Other research show that following these indications is not enough, since exercise plans should be customized to the patients preferences and abilities[10]. Córdoba et al. agree with this conclusion, and suggest making lifestyle changes according to people's personal abilities, motivation, and opportunities. Healthy behavior depends on individual needs and a person's openness to change[35].

Quality of life in terms of health means determining the impact diseases and treatment have on people physically, psychologically, and spiritually. This depends on people's perception of their own abilities[23,36]. Results showed that the patients of the city of Popayán did not have problems with mobility, personal care, or daily activities, and did not suffer from anxiety or depression. They did have moderate pain or discomfort, which is similar to what the 2013 study performed in the city of Cali showed. The study evaluated the quality of life of DM2 patients; none of them had problems with

personal care, daily activities, or mobility, but they did report suffering from anxiety/depression and pain/discomfort[23]. Pain has a serious effect on DM2 patient's quality of life. It worsens their health, and causes them to become more dependent and less social, which is why they can suffer from depression and have difficulty treating chronic diseases[37]. Obesity also has mental and physical consequences; people who suffer from it have a lower quality of life[38].

Regarding the relation between age and mobility, personal care and pain/discomfort, results show that age contributes to problems associated with quality of life and personal fulfillment. For that reason, health education programs for the elderly must contribute to improve physical health and a feeling of well-being, to create prevention mechanisms against the changes that come with aging and non-communicable diseases[39]. In addition, it has been reported that people are not as physically active as they age, which is why some of these diseases develop. Physical activity prevents MS and its components[40].

In reference to anthropomorphic characteristics, this study makes it possible to understand the connection between DM2 and MS, based on the presence of adiposity in the abdominal area. It is important to consider that skin fold measurements are taken to determine fat percentage. Even though it is a standardized, valid measure, it has not been considered in previous studies with DM2 and MS patients. It is worth mentioning that BMI measures are not as precise as skin fold measurements; which is why using them should be considered in future studies[27].

Furthermore, an increased prevalence of those pathologies (DM2 and MS) is closely associated with lifestyle. Sedentary behavior and an unhealthy diet are the most frequent risk factors, as are genetic predisposition, body composition, and aging. Health education programs can contribute to people adopting healthy habits in order to prevent those diseases and their complications. It is worth mentioning that it is necessary to continue this kind of research, so that there are improvements in people's health and new treatment possibilities; one of them being physiotherapy as an integral part of primary public health care.

In conclusion, the study showed that patients with metabolic syndrome and type 2 diabetes mellitus had an unhealthy lifestyle, which does not contribute to the control and treatment of these two diseases. Adopting healthy habits such as increased physical activity, healthy diet, among others, is key to mitigate the impact on people's health. The main domains that affect the quality of life of the patients of the city of Popayán are anxiety/depression and pain/discomfort. This is detrimental to the patients' perception of their physical, psychological, spiritual, and social development.

DECLARATION OF CONFLICT OF INTEREST

We, the authors, declare that we have no conflict of interest, and that we worked independently from the institutions that gave us their support. During the execution of the study and the manuscript, the interests and values of this research were the only factors that influenced the authors.

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