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ORIGINAL PAPER

THE LIFESTYLE ASSOCIATED WITH THE CONTROL OF ARTERIAL HYPERTENSION AND DIABETES MELLITUS IN A CARE CENTER IN LIMA, DURING THE COVID-19 PANDEMIC

ESTILO DE VIDA ASOCIADO AL CONTROL DE HIPERTENSIÓN ARTERIAL Y DIABETES MELLITUS EN UN CENTRO DE ATENCIÓN EN LIMA, DURANTE LA PANDEMIA DE COVID-19.

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ABSTRACT

Introduction: Hypertension and diabetes mellitus 2 are prevalent diseases. The COVID-19 pandemic has changed lifestyle and disease control, which can trigger serious complications. Objectives: To determine the association between lifestyle and the control of chronic non-communicable diseases: arterial hypertension and diabetes mellitus during the COVID-19 pandemic in patients of an Urgent Care Center. **Methods:** Observational, cross-sectional and analytical study. A sample of 158 patients, between 30 and 79 years old, was included. Control files and medical records were analyzed, anthropometric values were measured, and lifestyle was evaluated through surveys. **Results:** 51.3% were male, an average of 61 years, 57.6% with married marital status and 51.9% with higher educational level. In the multivariate analysis of patients with arterial hypertension, a significant association between non-control of the hypertensive disease and an unhealthy lifestyle was evidenced (PR = 2.538; p = 0.000; 95% CI = 1.608-4.006). On the other hand, the diabetic population obtained a significant association between the lack of control of diabetes mellitus with an unhealthy lifestyle (PR = 5.498; p = 0.013; 95% CI = 1.440-20.995), in addition to the prevalence of glycemic lack of control in patients with pathological abdominal girth was 1.6 times more than in people with normal abdominal girth (PR = 2.623; p = 0.038; 95% CI = 1.057-6.508). **Conclusions:** Lifestyle is significantly associated with the control of arterial hypertension and diabetes mellitus. There is a significant association between abdominal circumference and control in patients with type 2 diabetes mellitus.

Keywords: Lifestyle, hypertension, diabetes mellitus, COVID-19, pandemic, glycemic control, blood pressure.

RESUMEN

Introducción: La hipertensión arterial y la diabetes mellitus 2 son enfermedades prevalentes. La pandemia por COVID-19, ha evidenciado la importancia del estilo de vida en el control de enfermedades crónicas, pudiendo desencadenar serias complicaciones. **Objetivos:** Determinar la asociación entre el estilo de vida y el control de enfermedades crónicas no transmisibles: hipertensión arterial y diabetes mellitus durante la pandemia de COVID-19 en pacientes de un Centro de Atención de Urgencias. **Métodos:** Estudio de tipo observacional, transversal y analítico. Se incluyó una muestra de 158 pacientes, entre 30 y 79 años. Se analizó las fichas de control e historias clínicas, se midieron los valores antropométricos y se evaluó el estilo de vida mediante escalas validadas. validadas. **Resultados:** El 51,3% fue de sexo masculino, la media de edad fue de 61 años, el 57,6% declaró estado civil casado y el 51,9% con nivel educacional superior. En el análisis multivariado de los pacientes con hipertensión arterial se evidencio una asociación significativa entre el estilo de vida no saludable y el no control de la enfermedad hipertensiva (RP=2,538; p=0,000; IC95%=1,608-4,006). Por otro lado, en la población diabética se obtuvo una asociación significativa entre el estilo de vida no saludable y el no control de la diabetes mellitus tipo 2 (RP=5,498; p=0,013; IC95%=1,440-20,995), además la prevalencia de descontrol glucémico en pacientes con perímetro abdominal patológico fue 1,6 veces más que en las personas con perímetro abdominal normal (RP=2,623; p=0,038; IC95%=1,057-6,508). **Conclusiones:** El estilo de vida está asociado significativamente con el control de la hipertensión arterial y diabetes mellitus. Existe asociación significativa entre el perímetro abdominal y el control de la diabetes mellitus tipo 2.

Palabras clave: Estilo de vida, hipertensión arterial, diabetes mellitus, COVID-19, pandemia, control glucémico, presión arterial.

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INTRODUCTION

Chronic non-communicable diseases (NCDs) are part of the leading cause of death worldwide, responsible for at least 41 million deaths. And while they can affect all age groups, an estimated 15 million deaths occur between 30 and 69 years of age. According to figures from the World Health Organization (WHO), cardiovascular diseases cause 17.9 million deaths per year; 9 million for cancer; 3.9 million for respiratory diseases and 1.6 million for diabetes[1].

At the national level, arterial hypertension (HT) and diabetes mellitus (DM) are health research priorities because they are part of the health problems that most affect the population and require effective and efficient responses. In 2019, it was reported that the prevalence of HT was 19.7% in people over 15 years of age, being the male gender the most affected (21.7% vs. 17.8% in women), on the other hand, the prevalence of DM in people over 15 years of age was 3.9%, this time the female gender was more affected (4.3% vs. 3.4% in men)[2].

On the other hand, lifestyle is an important pillar in the prevention and treatment of NCDs. Mainly HT and DM include lifestyle modification in non-pharmacological treatment, especially in terms of exercise and diet. In addition, it is known that a healthy lifestyle reduces the number and doses of drugs used to manage these diseases and prevent future complications[3].
On March 11, 2020, the WHO declared a pandemic due to the new SARS-COV 2 coronavirus[4]. In our country, the first infected person was confirmed on March 6, 2020, rapidly increasing the number of cases, presenting the first fatalities on March 19[5]. Therefore, a state of emergency was declared at the national level[6].

The containment measures allowed the exclusive transit of "front line" personnel[6], while the rest were forced to continue their work by virtual means. Likewise, the health centers focused on the care of patients with COVID-19, referring patients with CNCD to teleconsultations.

These changes in routine, increased stress, unemployment, social isolation, fear of being infected by COVID-19 when attending laboratories for routine examinations, and lack of access to their usual medications can generate negative behaviors in patients' lifestyle and in the management of their diseases. On the contrary, the greater availability of time to spend with the family, cook healthily and carry out physical activity could improve the lifestyle and the control of these pathologies[7].

As this issue is a worldwide concern, different countries conducted studies in the last year covering the other side of the COVID-19 pandemic, in this case, the impact that quarantine could have as a determining factor in the change in the style of life, eating habits, physical activity and routine disease control, in those patients with chronic non-communicable diseases [7,11]. In the context of the situation above, we set the following objective: To determine the association between lifestyle and the control of chronic non-communicable diseases: arterial hypertension and diabetes mellitus during the COVID-19 pandemic in patients from an Urgent Care Center.

METHODOLOGY

Type and design

An observational, cross-sectional, analytical, quantitative study was carried out in an emergency care center in Lima. The Urgent Care Center (CAU) - Emergency Control Unit (UCE), is a non-profit organization attended by patients with chronic diseases not related to COVID-19.

Population and Sample

This study includes all adult patients between 30 and 79 with arterial hypertension or diabetes mellitus who attended the CAU-UCE. Those patients who had only one chronic non-communicable disease were included: arterial hypertension or diabetes mellitus who had fasting blood pressure and glucose data on their control charts. Those with both diseases were excluded. The sample size was determined using the finite population formula, for which the work of Samaneh Akbarpour, et al[12], showing a total of 158 patients. Statistical power of 80% and a confidence level of 95% were used. A non-probabilistic sampling was carried out because the study units have been selected for convenience, from the CAU-UCE, in the district of Lince.

Variables and instruments

The main variables were: lifestyle (independent variable) and control of arterial hypertension or diabetes mellitus (dependent variable). To assess lifestyle, two types of questionnaires were used, the Lifestyle Profile of Nola Pender, in 1987 (PEPS I), adapted by Arrioja[13] in patients with arterial hypertension,

which consists of 36 questions, showing a final score, where a score of 36 to 58 qualifies as unhealthy and from 59 to 144 as healthy. The general scale had Cronbach's Alpha 0.90, which is why it is considered acceptable[14]. Likewise, the questionnaire "Instrument to Measure the Lifestyle in Diabetics" (IMEVID) applied in patients with type 2 diabetes mellitus was used in a study carried out by Guzman and Ttupa, where a Cronbach's Alpha was obtained from 0.85 total instruments. (fifteen) This questionnaire consists of 25 questions, showing a final summation, where 0 to 74 points are considered unhealthy, and from 75 to 100 points is considered healthy.

To interpret and classify the results of the clinical variables related to the control of the disease in patients with HT and / or DM, the Ministry of Health's Clinical Practice Guide for the Diagnosis, Treatment and Control of hypertensive arterial disease and diabetes mellitus was used. Those who presented the last 6 blood pressure measurements <= 140/90 mmHg in the case of hypertensive patients were classified as "controlled patients"; and the last 2 fasting blood glucose measurements <= 130 mg / dL in the case of the diabetic patient.

Other variables studied were: age group, gender, marital status, educational level, length of illness, personal history of COVID-19, family history of COVID-19, and comorbidity. Likewise, during triage, the abdominal perimeter was measured, classifying the patient as normal risk (women <82cm, men <95 cm), high (women 82-87 cm, men 95-101 cm), and very high (women > 87 cm, males> 101 cm), height and weight were measured to obtain the calculation of the body mass index (BMI). The values were noted on the data collection form.

Procedures

Participation was openly voluntary, and written informed consent was requested from each participant who met the study's inclusion criteria. The questionnaires were applied to the patients during the waiting time for their appointment in the general medical office, from 9:00 a.m. to 3:00 p.m., between October and November of 2020. Weight and height measurements were carried out, and abdominal girth using a smart scale and tape measures. Subsequently, the data collected was stored in a Microsoft Excel spreadsheet, where validation criteria were included to avoid possible typing errors.

Statistical Analysis

The quantitative variables were analyzed through measures of central tendencies, such as the mean. The measures of dispersion used to evaluate the frequency distribution of the variables were the mean and standard deviation when the distribution approached a normal one. For the qualitative variables, tables of frequencies and contingency were constructed.

To evaluate the association between the qualitative variables, the Chi-square test of independence was used. The prevalence ratio (PR) with its respective 95% confidence interval was used to evaluate the association between lifestyle and disease control. Finally, the adjusted PRs were calculated through a Poisson regression model. The processing, recoding and validation, and statistical analysis were carried out in SPSS version 25.

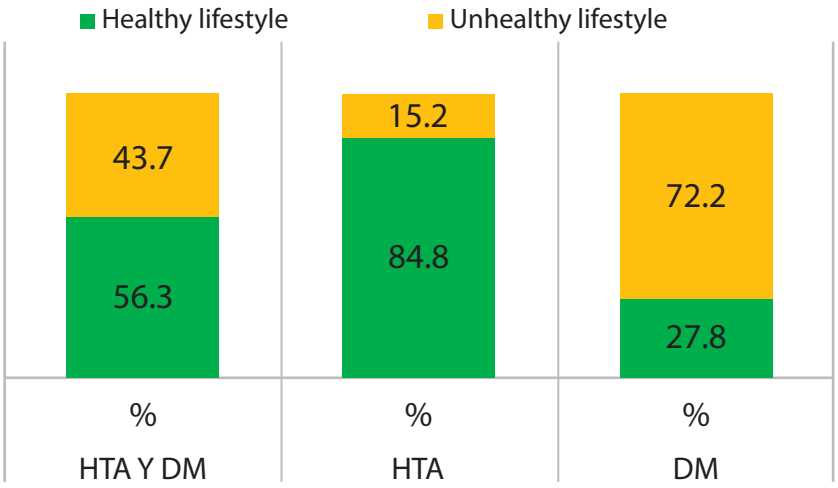
Ethical Aspects

The present study was prepared to consider the ethical principles for medical research in human beings of the Declaration of Helsinki of the World Medical Association and its subsequent amendments. It was developed in the INICIB thesis degree course and had the approval of the Research Ethics Committee of the Faculty of Human Medicine of the Ricardo Palma University.

RESULTS

Of the total of 158 respondents, it is observed that 51.3% of the population is made up of the male gender; 57.6% have a married marital status, and 51.9% have a higher educational level. Regarding the age of the patients, it is observed that the age was 39-79 years, the mean was 60.9 and with a standard deviation of 9.8. (Table 1)

Control of the disease was reflected in 55.7% of the general population; It can also be shown that the majority of hypertensive patients have a healthy lifestyle (84.8%), in contrast to diabetic patients who have a higher percentage of an unhealthy lifestyle (72.2%). (Graph 1) With regard to BMI, overweight prevails in the population with 48.7% and an abdominal circumference with high risk in 36.7%. (Table 1)



HTA: Arterial hypertension. DM: Type 2 diabetes mellitus
Figure 1. Lifestyle frequency according to arterial hypertension and type 2 diabetes mellitus.

Table 1. General characteristics of the population in an Emergency Care Center, period October - December 2020.

GENERAL CHARACTERISTICS		General		HTA		DM	
		N°	%	N°	%	N°	%
Gender	Female	81	51,3	34	43,0	43	54,4
	Male	77	48,7	45	57,0	36	45,6
Marital status	Single	30	19,0	17	21,5	13	16,5
	Married	91	57,6	42	53,2	49	62,0
	Widowed	11	7,0	6	7,6	5	6,3
	Divorced	14	8,9	8	10,1	6	7,6
	Cohabiting	12	7,6	6	7,6	6	7,6
Educational level	University / Institute	82	51,9	40	50,6	42	53,2
	High school	65	41,1	35	44,3	30	38,0
	Primary school	11	7,0	4	5,1	7	8,9
Age Group	Adult	75	47,5	38	48,1	37	46,8
	Older adult	83	52,5	41	51,9	42	53,2
Disease	control Controlled patient	88	55,7	46	58,2	42	53,2
	patient	70	44,3	33	41,8	37	46,8
lifestyle	Healthy	89	56,3	67	84,8	22	27,8
	Unhealthy	69	43,7	12	15,2	57	72,2
Time of illness	Less than 10 years	84	53,2	43	54,4	41	51,9
	More than 10 years	74	46,8	36	45,6	38	48,1
Comorbidity	No	89	56,3	40	50,6	49	62,0
	Yes	69	43,7	39	49,4	30	38,0
BMI	Normal	49	31,0	21	26,6	26	32,9

IMC	Overweight	77	48,7	43	54,4	36	45,6
	Obesity grade I	31	19,6	15	19,0	16	20,3
	Obesity grade III	1	0,6	0	0,0	1	1,3
Abdominal	circumference Normal risk	47	29,7	23	29,1	24	30,4
	High risk	58	36,7	29	36,7	29	36,7
	Very high risk	53	33 5	27	34 2	26	32 9
History of COVID-19	No	137	86,7	71	89,9	66	83,5
	Yes	21	13,3	8	10,1	13	16,5
Family history of COVID-19	No	128	81,0	67	84,8	61	77,2
	Yes	30	19,0	12	15,2	18	22,8
Total		**158**	**100**	**79**	**50**	**79**	**50**

HT: Arterial hypertension. DM: Type 2 diabetes mellitus. BMI: Body mass index

Regarding comorbidities, 43.7% of the population does present some other disease, the most frequent being: dyslipidemia, osteoarthritis and migraine.

In the bivariate analysis of patients with arterial hypertension, it is evident that the variables that showed a significant association with the lack of control of the disease are: unhealthy lifestyle (PR = 3.190; p <0.001; 95% CI = 2.233-4.558), Pathological BMI (PR = 3.621; p = 0.003; 95% CI = 1.225-10.701), abdominal perimeter of pathological risk (PR = 2.988; p = 0.005; 95% CI = 1.173-7.560) and family history of COVID-19 (PR = 2.094; p = 0.011; 95% CI = 1.321-3.319). (Table 2)

Table 2. Bivariate analysis of the population with arterial hypertension at the Emergency Care Center, October - December 2020

GENERAL CHARACTERISTICS		DISEASE CONTROL						
		Total	Uncontrolled Controlled	patient patient	Chi square	P value	PR	CI 95%
Total		79 (100%)	33 (41,8%)	46 (58,2%)				
Lifestyle	Unhealthy	12 (100%)	12 (100%)	0 (0%)	19,723	0,000*	3,190	2,233-4,558
	Healthy	67 (100%)	21 (31,34%)	46 (68,66%)	Ref.	Ref.	Ref.	Ref.
Age group	Older adult	41 (100%)	14 (34,15%)	27 (65,85%)	2,038	0,153	0,683	0,400-1,165
	Adult	38 (100%)	19 (50%)	19 (50%)	Ref.	Ref.	Ref.	Ref.
	Female	34 (100%)	15 (44,12%)	19 (55,88%)	0,135	0,713	1,103	0,653-1,863
	Male	45 (100%)	18 (40%)	27 (60%)	Ref.	Ref.	Ref.	Ref.
Status	With partner	48 (100%)	22 (45,83%)	26 (54,17%)	0,8295	0,362	1,292	0,731-2,282
	No partner	31 (100%)	11 (35,48%)	20 (64,52%)	Ref.	Ref.	Ref.	Ref.
educational level	College	39 (100%)	20 (51,28%)	19 (48,72%)	2,864	0,091	1,578	0,915-2,721
	Superior	40 (100%)	13 (32,50%)	27 (67,50%)	Ref.	Ref.	Ref.	Ref.
Time of illness	More than 10 years	36 (100%)	15 (41,67%)	21 (58,23%)	0,000	0,986	0,995	0,588-1,685
	Less than 10 years	43 (100%)	18 (41,86%)	25 (58,14%)	Ref.	Ref.	Ref.	Ref.
BMI	Pathological	58 (100%)	30 (51,72%)	28 (48,28%)	8,885	0,003	3,621	1,225-10,701
	Normal	21 (100%)	3 (14,29%)	18 (85,71%)	Ref.	Ref.	Ref.	Ref.

Abdominal	circumference Pathological risk	56 (100%)	29 (51,79%)	27 (48,21%)	79,295	0,005	2,978	1,173-7,560
	Normal risk	23 (100%)	4 (17,39%)	19 (82,61%)	Ref.	Ref.	Ref.	Ref.
Personal history of COVID-19	Yes	8 (100%)	5 (62,50%)	3 (37,50%)	1,572	0,210	1,585	0,858-2,926
	No	71 (100%)	28 (39,44%)	43 (60,56%)	Ref.	Ref.	Ref.	Ref.
family members of COVID-19	Si	12 (100%)	9 (75%)	3 (25%)	6,423	0,011	2,094	1,321-3,319
	No	67 (100%)	24 (35,82 %)	43 (64,18%)	Ref.	Ref.	Ref.	Ref.
comorbidity	If	39 (100%)	19 (48,72%)	20 (51,28%)	1,528	0,216	1,392	0,816-2,375
	No	40 (100%)	14 (35%)	26 (65%)	Ref.	Ref.	Ref.	Ref.

BMI: Body Mass Index

* Fisher's exact probability test between disease control and lifestyle in patients with HTN at the Urgent Care Center, October - December 2020 period.

n the bivariate analysis of the population with type 2 diabetes mellitus, a significant association is shown between non-control of diabetes mellitus 2 and the following variables: unhealthy lifestyle (PR = 6.754; p <0.001; CI95 % = 1.758-25.948), pathological BMI (PR = 2.102; p = 0.013; 95% CI = 1.065-4.150), abdominal perimeter of pathological risk (PR = 2.793; p = 0.002; 95% CI = 1.244-6.320) and time of disease older than 10 years (PR = 0.584; p = 0.030; 95% CI = 0.350-0.977), the latter being a protective factor. (Table 3)

Table 3. Bivariate analysis of the population with diabetes Type 2 Mellitus P-value Chi-square patient in the Emergency Care Center, October - December period September 2020.

GENERAL CHARACTERISTICS		DISEASE CONTROL						
		Total	Uncontrolled Controlled	patient patient	Chi square	P value	PR	CI 95%
Total		79 (100%)	37 (48,8%)	42 (53,2%)				
Lifestyle	No healthy	57 (100%)	35 (61,40%)	22 (38,60%)	17,446	0,000	6,754	1,758-25,948
	Healthy	22 (100%)	2 (9,09%)	20 (90,91%)	Ref.	Ref.	Ref.	Ref.
Age group	Senior	42 (100%)	19 (45,24%)	23 (54,76%)	0,092	0,762	0,9298	0,5798-1,491
	Adult	37 (100%)	18 (48,65%)	19 (51,35%)	Ref.	Ref.	Ref.	Ref.
Gender	Female	43 (100%)	18 (41,86%)	25 (58,14%)	0,938	0,333	0,793	0,495-1,271
	Male	36 (100%)	19 (52,78%)	17 (47,22%)	Ref.	Ref.	Ref.	Ref.
Marital Status	With partner	55 (100%)	27 (49,09%)	28 (50,91%)	0.369	0,543	1,178	0,681-2,038
	Without partner	24 (100%)	10 (41,67%)	14 (58,33%)	Ref.	Ref.	Ref.	Ref.
educational level	School	37 (100%)	19 (51,35%)	18 (48,65%)	0.57	0,450	1,198	0,747-1,921
	Superior	42 (100%)	18 (42,86%)	24 (57,14%)	Ref.	Ref.	Ref.	Ref.
Time disease	Over 10 years	38 (100%)	13 (34,21%)	25 (65,79%)	4,687	0,030	0,584	0,350-0,977
	Less than 10 years	41 (100%)	24 (58,54%)	17 (41,46%)	Ref.	Ref.	Ref.	Ref.
BMI	Pathological	53 (100%)	30 (56,60%)	23 (43,40%)	6,171	0,013	2,102	1,065-4,150
	Normal	26 (100%)	7 (26,92%)	19 (73,08%)	Ref.	Ref.	Ref.	Ref.

Abdominal	Circumference Pathological risk	55 (100%)	32 (58,18%)	23 (41,82%)	9,360	0,002	2,793	1,234-6,320
	Normal risk	24 (100%)	5 (20,83%)	19 (79,17%)	Ref.	Ref.	Ref.	Ref.
Personal history of COVID-19	Yes	13 (100%)	6 (46,15%)	7 (53,85%)	0,003	0,957	0,983	0,516-1,872
	No	66 (100%)	31 (46,97%)	35 (53,03%)	Ref.	Ref.	Ref.	Ref.
Family history of COVID-19	If	18 (100%)	8 (44,44%)	10 (55,56%)	0,054	0,817	0,935	1,676-0,620
	No	61 (100%)	29 (47,54%)	32(52,46%)	Ref.	Ref.	Ref.	Ref.
Comorbidity	Yes	30 (100%)	13 (43,33%)	17 (56,67%)	0,238	0,625	0,885	0,535-1,462
	No	49 (100%)	24 (48,98%)	25 (51,02%)	Ref.	Ref.	Ref.	Ref.

BMI: Body mass index

In the multivariate analysis of patients with arterial hypertension, a significant association between the lack of control of the hypertensive disease and an unhealthy lifestyle is evidenced (PR = 2.538; p = 0.000; 95% CI = 1.608-4.006). (Table 4)

Tabla 4. Multivariate analysis of patients with arterial hypertension in the Emergency Care Center, October - December 2020.

GENERAL CHARACTERISTICS ARTERIAL		HYPERTENSION			
		P-value	RP adjusted	95% IC	
				Lower	Upper
Lifestyle	Nohealthy	0,000	2,538	1,608	4,006
	Healthy		1		
BMI	Pathological	0,240	2,270	0,578	8,912
	Normal		1		
waist circumference	Pathological	0,451	1,581	0,480	5,206
	Normal		1		
Family history of covid-19	Yes	0,916	1,025	0,653	1,607
	No	1			

BMI: Body mass index

Finally, in the multivariate analysis of the diabetic population, a significant association was obtained between the non-control of diabetes mellitus with the following variables: unhealthy lifestyle (PR = 5.498; p = 0.013; 95% CI = 1.440 -20.995) and abdominal girth of pathological risk (PR = 2.623; p = 0.038; 95% CI = 1.057-6.508). (Table 5)

Tabla 5: Multivariate analysis of patients with type 2 diabetes mellitus in the Emergency Care Center, October - December 2020.

GENERAL CHARACTERISTICS		DIABETES MELLITUS			
		P-value	RP adjusted	95% IC	
				Lower	Upper
Style of living	Unhealthy	0,013	5,498	1,440	20,995
	healthy		1		
BMI	Pathological	0,491	0,778	0,380	1,592
	Normal		1		
Abdominal	Pathological	0,038	2,623	1,057	6,508
	Normal		1		
Length of illness	More than 10 years	0,096	0,677	0,428	1,071
	Less than 10 years		1		

BMI: Body Mass Index

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DISCUSSION

In the present study, a significant association between unhealthy lifestyle and non-control of HT and DM2 was determined in patients who attended the Emergency Care Center - UCE, during the COVID-19 pandemic. Within the population with arterial hypertension, the prevalence of non-control of NCD was 1.5 times more in patients with an unhealthy lifestyle than those with a healthy lifestyle (PR = 2.538; p = 0.000; 95% CI = 1.608-4.006). A study carried out by Hernández et al., in Mexico, in 306 hypertensive patients obtained similar results. They concluded that there is a significant association between lifestyle and control of hypertension, demonstrating that patients with worse lifestyles do not present control of disease (p= 0.0001)[16]. Yokokawa et al, in a study conducted in Japan in hypertensive patients, revealed that maintaining a healthy lifestyle was a significant protective factor to in achieving target blood pressure: <140/90 mmHg (OR = .51; 95% CI = 0.36-0.72)[17]

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In the present investigation, it was obtained that the population of patients with type 2 diabetes mellitus shows a significant association between an unhealthy lifestyle and the lack of control of the diabetic disease (PR = 5.498; p = 0.013; 95% CI = 1,440-20,995). In a study similar to ours, carried out in Cajamarca by Asenjo, in a total of 102 patients with DM2, it was concluded that there is a direct and significant relationship between lifestyle and metabolic control (p <0.001)[18]. Likewise, the study carried out by Vásquez et al. In Mexico, a sample of 330 patients with DM2 was taken, it was found that a good lifestyle is a protective factor for glycemic control (OR = 0.026; p = 0.001; 95% CI = 0.009-0.077), unlike our study In this, HbA1c <7% was used as a glycemic control parameter[19].

In the context of conducting this study in the midst of a pandemic in conjunction with those described above, Mattioli et al. emphasize that the change in lifestyle and routine activities are consequences of stress related to confinement, which includes changes in nutritional habits, which may be due to less availability of products in the market, limited access to stores due to changes in their opening hours and the preference for unhealthy foods (processed foods, packaged foods) for their longer duration, as the large amounts of salt, sugar or trans fats they contain increase their life span useful[11].

It is known that confinement generates high levels of stress, which affects the balance in the sympathetic-parasympathetic nervous system and the hypothalamic-pituitary-adrenal axis, causing direct cardio-stimulatory effects (positive chronotrope and inotrope), vasopressor effects, increased insulin resistance, increased lipolysis and acceleration of the atherosclerotic process, negatively affecting the cardiovascular and metabolic system[11]. Likewise, Laura

Di Renzo et al., in their study carried out on 3,533 people in Italy, observed that 37.3% of the population had modifications in their lifestyle and eating habits during the quarantine pandemic by COVID-19, where 16.7% made positive modifications[8] . In the same way, in the study by Cancello et al, carried out in northern Italy, in a sample of 490 adults, it is concluded that more than a third of the people were able to make a positive change in their styles life during home quarantine[7]. In contrast to this, Muhammad's study applied to 181 participants in Pakistan shows that 45% of the population had a negative effect on their health, pointing out certain challenges due to quarantine: difficulty exercising (66%), missing to their routine check-ups (53%) and to miss their regular laboratory tests (42%)[9].

This would be consistent with a study carried out virtually by Chudasama on 202 health professionals in 47 different countries, most of them belonging to the European continent (47%), where it is evidenced that most of the patients had a negative impact on the routine care of their chronic diseases since the beginning of the pandemic (46%), and 47.8% of the population was affected by the shortage of medicines; also reports that diabetes and arterial hypertension (30%) were the two comorbidities for which care was most affected in this quarantine period[10].

Likewise, the present study shows that in the population with type 2 diabetes mellitus, the abdominal girth of pathological risk and glycemic lack of control were shown to have a significant association (p = 0.038), with a prevalence of non-control of the disease of 1.6 times more in those patients with pathological risk abdominal girth compared to patients with normal abdominal girth (OR = 2.623; 95% CI =1.057-6.508). It is known that multiple factors intervene in the control of the disease, one of the most studied is the anthropometric values (BMI and abdominal circumference). Obesity (BMI> 30) is considered a pro-inflammatory state; Likewise, the increased abdominal girth is considered a marker of insulin resistance. Both parameters are usually associated with poor control of the disease in patients with HT and DM2. Pérez et al, in their study carried out in Spain in 5591 patients with DM2, found that the time of evolution of the disease <10 years (OR = 1.385; p <0.0001; 95% CI = 1.21-1.586), the absence of dyslipidemia and abdominal girth in normal values (OR = 1.410; p <0.001; 95% CI = 1.187-1.675) are factors associated with adequate glycemic control [20]. On the other hand, Vásquez et al., evidence in their study that the increase in BMI is significantly associated with the increased risk of glycemic uncontrol in patients with DM2 (OR = 2.70; p = 0.001; 95% CI = 2.00- 3.65)[19].

In the present study, the history of COVID-19 is divided into two categories, one indicates the personal history of having had the disease, and the other indicates the history that a relative who lives with the patient presented the disease. According to this, it is evident that there is no significant association between this variable and the control of the disease. It is known that those people who suffer from CNCD and become infected with COVID-19 have a high probability of progressing to severe disease, with a significant increase in mortality, with arterial hypertension and diabetes mellitus being the most frequent comorbidities in patients hospitalized for COVID-19.

CONCLUSIONS

A healthy lifestyle is significantly associated with the control of arterial hypertension and also with type 2 diabetes mellitus in adult patients during the COVID-19 pandemic. On the other hand, non-control of diabetes mellitus is 1.6 times more prevalent in diabetic patients with abnormal abdominal girth than in diabetic patients with normal abdominal girth. Finally, the sociodemographic factors (age group, gender, marital status, educational level) did not significantly affect hypertension and Dm2.

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