

Observational Quantitative Study of Healthy Lifestyles and Nutritional Status in Firefighters of the fifth Command of Callao, Ventanilla 2023

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Abstract—Given the high concern for human health, the aim is to determine the relationship between healthy lifestyles and nutritional status among firefighters of the VCD Callao Ventanilla 2023. This study was conducted in four volunteer fire companies, namely B-75, B-184, B-207, B-232, located in the districts of Ventanilla and Mi Perú. The population consists of 291 personnel, with a sample of 168 participants. It was observed that 58.9% (99) of the participants are under 36 years old, 29.8% (50) are between 36 and 45 years old, and 11.3% (19) are 46 years or older. In terms of gender, 62.5% (105) are males. Regarding the duration of their firefighting service, 70.2% (118) have a maximum of 10 years of seniority. On the other hand, 57.7% (97) of the participants have an unhealthy lifestyle, 40.5% (68) have a healthy lifestyle, and 1.8% (3) have a very healthy lifestyle. Regarding the nutritional status of the firefighters in this study, it was found that 53.3% (89) are overweight, 26.8% are considered normal weight, 19.6% (33) are obese, and 0.6% (1) are underweight. Concerning lifestyles, the study revealed that 57.7% of the participants have an unhealthy lifestyle, 40.5% have a healthy lifestyle, and 1.8% (3) have a very healthy lifestyle. It is worth mentioning that according to Rodríguez C's study, 95.2% of volunteers belonging to the B107 Fire Company lead a healthy lifestyle, while 4.8% do not. Statistically, we can assert that there is no significant relationship between the variable of healthy lifestyles and nutritional status. However, it is observed that there is a direct relationship between nutritional status and age. Likewise, it can be affirmed that more than at least 72.9% of the studied population is overweight, either with overweight or obesity.

Keywords—BMI; firemen; lifestyles; excess weight

I. INTRODUCTION

A volunteer firefighter, affiliated with an organization focused on fire prevention and control, responds to fires, vehicular accidents, and medical emergencies without charge. Their work involves demanding physical tasks in hostile emergency scenarios [1].

These emergency situations trigger immediate physiological responses in firefighters, including increased heart rate, hyperventilation, heightened oxygen consumption, and sweating. According to a 2019 report from the National Institute for Occupational Safety and Health (NIOSH), cardiac arrest is the leading cause of firefighter fatalities, accounting for 40% of 308 deaths over a decade. Many of these individuals also had coronary artery disease, as per death

certificates. These findings highlight a significant percentage of firefighter deaths attributable to cardiovascular diseases [2].

Analyzing past studies on the nutritional and physical activity status of students in various professions reveals a considerable number who do not maintain a lifestyle conducive to their well-being. Predisposing factors to health problems include rapid adaptation to constant changes, lack of physical activity, dietary issues, and overall unhealthy habits [3].

Health is a crucial facet of human life, profoundly impacting one's quality of life, with various factors such as physical activity, diet, and mental well-being playing pivotal roles. The World Health Organization (WHO) noted that over 28% of adults worldwide failed to meet their recommended weekly physical activity levels, equating to at least 150 minutes or 75 minutes of intense activity. Disparities in physical inactivity exist between high- and low-income countries. High-income countries report 26% of men and 35% of women as insufficiently active, compared to 12% of men and 24% of women in low-income countries [4].

The global prevalence of physical inactivity raises significant concerns due to its strong correlation with non-communicable diseases (NCDs), contributing to up to 9% of premature deaths worldwide. Additionally, 6% to 10% of NCDs, such as diabetes, coronary heart disease, colon, and breast cancer, can be attributed to physical inactivity [5].

Obesity and overweight are a growing concern, classified as the 21st century's pandemic by the WHO. Approximately 52% of adults worldwide grapple with these issues [6]. In recent years, global cases of overweight and obesity have tripled, signaling a worrying trend linked to chronic diseases, including Diabetes Mellitus II, cardiovascular disorders, and musculoskeletal problems [6-12].

In 2021, WHO defined overweight and obesity as an excess accumulation of fat detrimental to health due to an energy imbalance between calorie intake and expenditure. In Latin America and the Caribbean, 62.5% of adults, 64.1% of men, and 60.9% of women are overweight or obese. When examining only obesity, it affects 28% of adults, with 26% being men and 31% women, making it the region with the highest prevalence according to the WHO [13].

Peru faces a similar challenge, with 69.9% of adults and 42.4% of young people experiencing overweight or obesity. Poor dietary habits contribute to these figures, with 29% of the population consuming junk food weekly. Fried foods account for 87.1% of weekly consumption [14].

A study by Ramírez J, et al. [15], revealed that 33.6% of Peruvians had abdominal obesity, notably higher in women at 51.2%. Geographic location also influences obesity rates, particularly in cities below 1000 meters above sea level.

Malnutrition is another concern, impacting weight gain and associated with various factors, including age and energy imbalances. A study found 15.3% prevalence of diabetes mellitus II, 43.4% for hypertension, and 17.4% for osteoarthritis [16].

Sleep deprivation, prevalent among firefighters due to demanding schedules, poses health risks. Short sleep patterns, less than six hours, increase the risk of stroke, cancer, coronary heart disease, diabetes, anxiety, depression, and workplace accidents [17-18].

Unhealthy eating habits and sedentary lifestyles are common among firefighters, contributing to obesity. Mandatory physical activity training does not always suffice, further promoting sedentary behavior and weight issues [19-21].

Lifestyle encompasses a person's daily activities, customs, housing, habits, culture, environmental interactions, and interpersonal relationships, all of which are entirely modifiable [22].

Lifestyles can either promote health or pose risks. Healthy lifestyles involve behaviors that enhance well-being, including maintaining a balanced diet, regular physical activity, and abstaining from harmful substances like tobacco and alcohol [23].

Furthermore, lifestyle influences one's physical condition, recreation, and leisure management, which directly impact mental health. Additionally, the consumption of toxic substances can significantly affect overall well-being [24].

Nutritional status refers to the equilibrium between nutrient intake and the body's requirements, determined by the availability of diverse foods and nutritional knowledge [25].

Malnutrition, as defined by WHO, encompasses deficiencies, excesses, and energy imbalances in nutrient intake. It is categorized into three groups: wasting, stunted growth, vitamin and mineral deficiencies, and underweight, with a higher incidence among children [26].

Overweight and obesity, identified as excess fat accumulation detrimental to health, result from an energy imbalance related to calorie intake and expenditure. Nutritional status in adults is typically assessed using the body mass index (BMI), calculated as weight in kilograms divided by height in meters squared (Kg/m^2). Classification based on BMI is as follows: underweight (BMI < 18.5), normal weight (BMI 18.5-24.99), overweight (BMI 25.00 – 29.99), and obesity, further classified as class I (BMI: 30.00-34.99), class II (BMI: 35.00-39.99), and class III (BMI \geq 40.00) [27-29].

In the 21st century, global obesity rates have tripled, labeled as a pandemic by the WHO, a concern not exclusive to Peru. This issue correlates with non-communicable diseases like Diabetes Mellitus II, cardiovascular ailments, and musculoskeletal disorders, affecting a significant portion of the Peruvian population, including firefighters. Regrettably, there's a dearth of studies on Peruvian firefighters' nutritional status, often hampered by small sample sizes that fail to depict the true extent of the issue.

Examining the lifestyles and nutritional well-being of Callao firefighters assumes paramount significance due to evident excess weight and associated unhealthy habits. Understanding the interplay of these variables is essential for implementing effective preventive measures. Firefighters must maintain optimal health for enhanced efficiency and to mitigate health risks. Dietary behavior emerges as a pivotal, modifiable risk factor for occupational diseases. Numerous studies have investigated dietary interventions among firefighters, seeking effective methods to improve their dietary habits.

Addressing this behavioral issue holds great societal potential for reducing associated problems. Consequently, this study aims to establish the relationship between healthy lifestyles and nutritional status among firefighters at VCD Callao Ventanilla in 2023.

II. RELATED JOBS

Arrieta J, Solís I. [26], Costa Rica in 2020 carried out a study entitled "Eating habits, nutritional status and cardiovascular risk in firefighters from 20 to 59 years of age of the XII battalion, Costa Rica, 2020." The objective of this study was to relate eating habits and nutritional status according to body mass index with cardiovascular risk using the Framingham Heart Study formula in firefighters aged 20 to 59 years from Battalion XII, Costa Rica, in 2020. Where a structured interview was conducted with the firefighters participating in the research, with the data obtained, a statistical analysis was carried out with the models that best predict cardiovascular risk among the established variables. In the results obtained, it was evident that only 31% of the firefighters have a normal body mass index, the remaining percentage is overweight or obese type 1. Most of the sample had a low cardiovascular risk according to abdominal circumference and according to the Framingham Heart Study calculator. They conclude that: There is an association between the consumption of alcohol, semi-skimmed dairy products, saturated fats and refined cereals, and cardiovascular risk, at different frequencies of consumption; In addition, type I obesity and the use of the frying cooking method are also associated with this risk.

Echeverria M., [30]. In Ecuador in 2021 a study entitled "Nutritional status and eating habits of the fire department personnel of the Otavalo Canton 2021" was carried out with the objective of evaluating the nutritional status and eating habits of the personnel of the Otavalo Canton Fire Department 2021, a descriptive cross-sectional research was carried out and 31 people were worked with, An online survey was applied to those who were given two sociodemographic variables and eating habits, and anthropometric measurements

such as height and weight were taken to obtain BMI. The main results highlight that the majority of the staff are male, between the ages of 20 and 49 years. 55% of the staff is overweight and 16% obese, 29% are in normal nutritional status, eating habits are inadequate.

Camargo F, Jardim T, Rocha L, Zandonade E, Nívea K. [31]. In Brazil 2020 they carried out an article on "Prevalence of obesity in Brazilian firefighters and the association of central obesity with personal, occupational and cardiovascular risk factors: a cross-sectional study" where the studied population was 1018 firefighters, leaving 892 firefighters who met the inclusion criteria. The main results were that 48.65% of the firefighters were overweight and 10.99% were obese. In terms of body fat percentage, 26.23% of participants were considered obese, while 18.61% of firefighters were considered centrally obese or at risk in the waist circumference measurement.

Chuquipoma J. [32] Lima – Peru in 2019 presented a study on "relationship between previous knowledge in nutrition and nutritional status in firefighters of the company "Salvadora Lima n° 10", 2018" with the aim of determining the relationship between the level of previous knowledge in nutrition and the nutritional status in firefighters of said company. In a descriptive, correlational, cross-sectional study, the results correspond to a total of 50 firefighters evaluated, of both sexes whose ages ranged from 20 to 59 years. This obtained the following results: 72% of the firefighters have a low level of knowledge and 28% have a fair level of knowledge. Regarding the nutritional status of the firefighters, it was observed that 34% had a nutritional status within normal parameters, 44% were overweight and 22% were obese.

Rodríguez C. [33] Chimbote – Peru in 2018 published a paper entitled "Lifestyles and Biosociocultural Factors of the Volunteer Workers of the B-107 Nuevo Chimbote Fire Company, 2017" with the aim of determining the relationship between the lifestyle and biosociocultural factors of the volunteer workers of the fire company of said company, The sample consisted of 42 members whose results were: There is no statistically significant relationship between lifestyle and biosociocultural factors: age, sex. Whether there is a statistically significant relationship between lifestyle: level of education and income. Religion, marital status and occupation could not be linked.

This information alerts us to the problem and the risk that firefighters have to suffer from non-communicable diseases such as cardiovascular diseases, diabetes mellitus II, among others related to poor nutrition and poor lifestyle. That is why control measures must be taken to prevent these diseases through health promotion.

III. MATERIALS AND METHODS

A. Research Approach and Design

The present study is quantitative, correlational and cross-sectional in terms of methodological design. Descriptive because it measures, evaluates and collects data on variables, both lifestyle and nutritional status; it is also correlational because it investigates the relationship and appendages

between lifestyles and nutritional status; analytical because it allows the establishment of an association relationship between variables. And finally, it is a cross-sectional research because the data obtained were collected in a specific space and time [22].

B. Population, Sample and Sampling

In the present study, we worked with a finite population, which was made up of the active firefighters of the Callao VCD, belonging to the third that is made up of four fire companies B-75, B-184, B-207 and B-232. The sum of its personnel makes a population of 291 firefighters. They were selected according to the following criteria.

1) Inclusion criteria

- The participant belongs to any of the four companies of the third Brigade of the VCDC.
- The participating personnel are active personnel according to the RIF between 18 and 65 years of age.
- The participant must accept his/her participation in this study voluntarily, and must sign the informed consent form.

2) Exclusion criteria

- All candidates who do not meet 100% of the inclusion requirements were excluded.

3) *Sample size:* To determine this sample, the statistical program "EPIDAT" was calculated, whose data to calculate will be a population of 295 effective, with a confidence level of 95.0%, the sample size of 168 participants of this study was obtained.

4) *Sample selection:* The sampling was non-probabilistic due to convenience, ease of access and time availability.

C. Study Variable(s)

In the following research, lifestyle is the main variable, it is a qualitative variable and its measurement scale is ordinal. On the other hand, the nature of the nutritional status variable will be obtained through weight and height, both of which are quantitative variables.

1) *Conceptual definition of lifestyles:* Lifestyle is the general way of life of each person, the way in which they conduct their day-to-day activities, this can be expressed in behaviors, basically in customs, and it is also configured by housing, habits, culture, relationships with the environment and relationships between individuals.

2) *Operational definition:* *Lifestyles* is the generic form that is equivalent to the form, mode and manner of living, epidemiologically speaking, lifestyle is the habit of life or the way of life, which would be a set of behaviors that people choose, which can be healthy or harmful to health. In this sense, lifestyles are behaviors that improve or increase health risk [19].

3) *Conceptual definition of nutritional status:* Nutritional status is the balance that exists between the nutritional contribution of what we ingest and the nutritional demands

that our body desires, which determines the quality of nutrients and their use. Among the factors that determine nutrition, it depends on the variety of foods available and access to them. On the other hand, people's level of knowledge in nutrition also influences nutritional status [20].

4) *Operational definition:* Nutritional status was determined using the Body Mass Index (BMI), which was calculated by dividing weight in kilograms by height in meters squared. The following results will be considered: Underweight if the BMI <18.5, normal weight BMI 18.5-24.99, Overweight if the BMI is 25.00 – 29.99 and obese if the BMI is ≥ 30 . Obesity will be classified as: class I obesity (BMI: 30.00-34.99), class II obesity (BMI: 35.00-39.99) and class III obesity (BMI ≥ 40.00). For this study, excess weight has been considered overweight and obese [28].

D. Measuring Technology and Instrument

1) *Data collection technique:* The technique used during data collection for the lifestyle variable was the survey, which is widely used in quantitative and descriptive studies. Regarding the variable of nutritional status, we used the measurement of anthropometric measurements in the field.

a) *For the Lifestyles variable:* The modified and validated questionnaire of Palomares L [25] was used. This lifestyle questionnaire consists of a total of 48 questions, which is divided into 6 dimensions:

- Fitness, Physical Activity & Sport
- (4 questions).
- Recreation and Leisure Time Management
- (6 questions).
- Use of Alcohol, Tobacco, and Other Drugs
- (6 questions).
- Dream (6 questions).
- Eating Habits (18 questions).
- Self-Care and Medical Care (8 questions).

All dimensions correspond to a Likert scale (Never:0, Sometimes:1, Frequently:2, and Always:3).

The rating that was considered to assess healthy lifestyles is:

- Unhealthy: 0 - 36 points
- Unhealthy: 37 - 72 points
- Healthy: 73 - 108 points
- Very healthy: 109 - 144 points

b) *For the Nutritional Status variable:*

c) *To obtain the body weight,* the measurement was carried out with a rechargeable electronic scale of the SEC brand with a capacity of 180kg, model SEC-180 platform, whose results will give us in kilograms (kg).

d) *To obtain the carving we used a wooden height meter with a measuring range of up to 3.5 to 230 centimeters. It was placed on a smooth and flat surface, without any unevenness or any foreign object under it, and with the board resting on a flat surface forming a right angle with the floor and wall.*

Once weight and height were obtained, BMI was calculated using the following expression. $BMI = \text{Weight}/\text{Height}^2$. Depending on the result obtained, nutritional status was determined by BMI according to WHO criteria. thinness (BMI < 18.5), weight (BMI: 18.5-24.99), overweight (BMI: 25.00-29.99), obesity class I (BMI: 30.00-34.99), obesity class II (BMI: 35.00-39.99) and obesity class III (BMI ≥ 40.00).

E. Procedure for Data Collection

1) *Authorization and prior coordination for data collection:* For the development of field work, permission will be requested from the chiefs of the four companies of the third Brigade of the VCDC to allow us to enter their units to carry out data collection.

2) *Application of data collection instrument(s)*

a) *For the Lifestyles variable:* A modified and validated questionnaire from Palomares L [25] will be used to measure lifestyles. The questions will be put on several printed sheets so that the participant can easily fill in according to his/her criteria (ANNEX B).

- Explain to participants about the work to be done and ask them to fill out the informed consent document.
- Briefly explain the six dimensions or parts of the questionnaire.
- Guide participants from the beginning to the end of filling out the form.
- Verify the correct completion of the questions and store it for later analysis.

b) *For the variable Nutritional Status:* For the measurement of weight and height, the Ministry of Health's technical guide for the anthropometric nutritional assessment of adults was used as a study in [28]. The data obtained were recorded in the anthropometric data collection form (ANNEX C).

3) *Weight taking*

- The location and condition of the balance was verified. This should be on a smooth, flat, horizontal surface. No unevenness and no presence of any foreign object under the scale.
- Ask the adult to take off his or her shoes.
- Verify that the scale reads 00 (zero) andes of the weight intake.
- Ask the elderly person to stand in the center of the scale platform, in an upright and relaxed position, facing the front of the scale, with the arms at the sides of the body, with the palms resting on the thighs, the heels slightly apart and the tips of the feet apart forming a "V".

- Read the weight in kilograms and decimals expressed in grams, and then deduct the weight of people's garments.
- Record the weight obtained in kilograms (kg), with a decimal place corresponding to 100 g, in the corresponding format, in clear and legible handwriting, (example: 65.1 kg).

4) *Size taking*: Check the wooden height gauge, the sliding of the moving stop must be smooth and without swaying, the tape measure must be well adhered to the board and its numbering must be clearly observed. Likewise, the stability conditions of the tachymeter must be checked.

- Check the location and condition of the tachymeter. Check that the moving stop slides smoothly, and check the condition of the tape measure for a correct reading.
- Explain to the elderly the procedure for measuring the height, slowly and patiently, and ask for their collaboration.
- Ask you to remove shoes (flip flops, sandals, etc.), excess clothing, and accessories or other objects on your head that interfere with the measurement.
- Indicate and help you to position yourself in the center of the base of the tachymeter, with your back to the board, in an upright position, facing forward, with your arms at your sides, with your palms resting on your thighs, heels together and the balls of your feet slightly apart.
- Make sure your heels, calves, buttocks, shoulders, and back of your head are in contact with the dashboard of the height meter
- Check the "map of Frankfurt". In some cases, it will not be possible due to problems with curvature in the spine, injuries or other problems.
- Place the open palm of your left hand on the chin of the elderly person to be carved, then close it gently and gradually without covering the mouth, in order to ensure the correct position of the head on the height meter.
- Slide the movable stop with your right hand until it makes contact with the top surface of the head, slightly compressing the hair; then slide the movable stop upwards. This procedure (measurement) must be performed three times consecutively, moving the moving stop closer and farther away. Each procedure has a value in meters, centimeters, and millimeters.
- Read the three measurements obtained, obtain the average and record it in centimeters with an approximation of 0.1 cm.

F. Methods of Statistical Analysis

Once the data of the nutritional status BMI and the result of the filling of the instrument have been obtained, the results of the questionnaire have been obtained. This information was entered into a Microsoft Excel XP software database version

2016. Frequency tables and statistical software such as IBM SPSS Statistics 27 were used to perform the data analysis.

G. Ethical Aspects

To carry out this work, the basic concepts of bioethics were taken into account, such as autonomy, non-maleficence, beneficence and justice, for the protection of the participants' data, as well as informed consent will be applied to give clear and precise information to the participants [33].

1) *Principle of autonomy*: This principle refers to the freedom of decision of the participants, so it must be respected by this research. This principle will be applied in this research, for all participants in which they will be asked to sign the informed consent form and it will be through documents that the participation of the participants will be reflected [34].

2) *Principle of beneficence*: In this principle we refer to not causing harm to others, in which we are subject to avoiding harm and doing good to others. In this study, they will be informed of the importance of the study and the results obtained to improve their health and quality of life [35].

3) *Principle of non-maleficence*: This principle deals with not harming the person and having the obligation to decrease the risk of causing harm. In this paper it will be explained that participation in this research will not cause any harm to your health [36].

4) *Principle of Justice*: The principle of Justice refers to the operational part of research ethics, including non-discrimination of study participants. The participants of this research will be treated equally without any discrimination or favoritism [31], [37].

IV. RESULTS

Table I shows that 58.9% (99) of the participants were under 36 years of age, 29.8% (50) were between 36 and 45 years of age, and 11.3% (19) were 46 years or older. In terms of sex, 62.5% (105) are male. Regarding marital status, 69.0% (116) were single, 27.4% (46) were married, 2.4 (4) were divorced and 1.2% (2) were widowed. In terms of job category, 40.5% (68) are university professionals, 26.2% (44) are technical professionals, 19.0% (32) are university students, 10.7% (18) are self-employed, 1.8% (3) are housewives and 1.8% (3) are military personnel. In terms of how long they have been firefighters, 70.2% (118) have a maximum of 10 years of service, 22.6% (38) from 11 to 20 years and 7.1% (12) more than 20 years of service. Regarding the hierarchical grade of the participants, 47.0% (79) are sectional, 18.5% (31) have the rank of second lieutenant, 15.5% (26) of lieutenant, 8.9% (15) of captain, 7.1% (12) of lieutenant brigadier and 3.0% (5) of the rank of brigadier. On the other hand, 49.4% (83) have donated blood at some point and 58.3% (49) of this group have last donated blood one year ago.

From Table II we can see that the p-value (Sig.) associated with Spearman's Rho correlation coefficient level is 0.767, which is greater than 0.05 (significance level or alpha value); Therefore, there is no statistically significant reason to say that the variables lifestyle and nutritional status are related.

TABLE I. SOCIO-DEMOGRAPHIC DATA OF THE FIREFIGHTERS OF THE FIFTH COMMAND OF CALLAO

Socio-demographic data	n=168	
	fi	%
Age		
17 - 25	43	25,6
26 - 35	56	33,3
36 - 45	50	29,8
46 - 55	12	7,1
56 - 65	7	4,2
Sex		
Female	63	37,5
Male	105	62,5
Marital status		
Bachelor	116	69,0
Married	46	27,4
Divorced	4	2,4
Widower	2	1,2
Job Category		
Housewife	3	1,8
Undergraduate	32	19,0
Military	3	1,8
Technical Professional	44	26,2
University professional	68	40,5
Self-employed	18	10,7
Service Time		
Less than 5 years	57	33,9
Ages 5 to 10	61	36,3
From 11 to 20 years old	38	22,6
From 21 to 30 years old	10	6,0
More than 30 years	2	1,2
Hierarchical Grade		
Brigadier	5	3,0
Lieutenant Brigadier	12	7,1
Captain	15	8,9
Lieutenant	26	15,5
Second Lieutenant	31	18,5
Sectional	79	47,0
Have you ever donated blood		
Yes	83	49,4
No	85	50,6
Last Blood Donation Time (months)		
Up to 6 months	29	34,5
7 to 12 months	20	23,8
13 to 18 months	9	10,7
19 to 24 months	10	11,9
More than 24 months	16	19,0

TABLE II. RELATIONSHIP OF LIFESTYLES AND NUTRITIONAL STATUS

		Healthy Lifestyles	Nutritional status
Spearman's Rho	Healthy Lifestyles	Correlation coefficient	1,000
		Follow-up (bilateral)	,767
		N	168
	Nutritional status	Correlation coefficient	,023
		Follow-up (bilateral)	,767
		N	168

TABLE III. QUALITY OF LIFESTYLES

Healthy Lifestyles	Frequency	Percentage
Unhealthy	0	0,0
Unhealthy	97	57,7
Healthy	68	40,5
Very healthy	3	1,8
Total	168	100,0

Table III presents the levels of quality of lifestyles, where we show that 57.7% (97) of the participants have an unhealthy lifestyle, 40.5% (68) a healthy lifestyle and 1.8% (3) a very healthy lifestyle.

TABLE IV. NUTRITIONAL STATUS

	Frequency	Percentage
Low weight	1	0,6
Normal weight	45	26,8
Overweight	89	53,0
Obesity	33	19,6
Total	168	100,0

Table IV shows the nutritional status of the firefighters who participated in this research, from which we found that 53.3% (89) are overweight, 26.8% are considered normal weight, 19.6% (33) are obese and 0.6% (1) are underweight.

TABLE V. ASSOCIATION BETWEEN LIFESTYLES AND SOCIO-DEMOGRAPHIC DATA

Socio-demographic data	Lifestyles	
	Value*	p_valor (Sig.)
Age	9,493	0,302
Sex	0,662	0,718
Marital status	4,493	0,610
Job Category	5,123	0,883
Service Time	6,360	0,607
Hierarchical Grade	7,383	0,689
Have you ever donated blood	4,423	0,110

Value = of the Chi-square statistic; p_valor=probability value used to contrast with the significance level ($\alpha=0.05$).

Table V presents the association between lifestyles and different socio-demographic data such as age, sex, marital status, and job category, length of service, hierarchical grade and whether you have ever donated blood. We observed that the p-value is higher than the significance level (0.05) for all pairs of variables tested, therefore, we conclude that there is no relationship between the socio-demographic variables and the lifestyle of the participants.

TABLE VI. ASSOCIATION BETWEEN NUTRITIONAL STATUS AND SOCIO-DEMOGRAPHIC DATA

Socio-demographic data	Nutritional status	
	Value*	p_valor (Sig.)
Age	24,079	0,020*
Sex	6,075	0,108
Marital status	12,969	0,164
Job Category	6,724	0,965
Service Time	18,679	0,097
Hierarchical Grade	12,465	0,644
Have you ever donated blood	6,013	0,111

Value = of the Chi-square statistic; p_valor=probability value used to contrast with the significance level ($\alpha=0.05$).

Table VI presents the association between the nutritional status and the socio-demographic data of the respondents. We found that the p-value (Sig.) is less than 0.05 (level of significance) only in the case of age and nutritional status; this indicates that there is statistically significant evidence to conclude that there is an association between age and nutritional status.

V. DISCUSSION

It is observed that the collaborators are found a higher percentage: 58.9% are under 36 years of age and 29.8% range between 36 and 45 years of age, and as for sex, it has a higher prevalence in men that is equivalent to 62.5%, according to marital status it is found that singles stand out with 69.0% and married with 27.4%. With regard to the level of education, 40.5% are university professionals and 26.2% are technical professionals. However, [24] found between ages ranging from 20 to 29 years of age, counting 61.3% and 38.7% including those aged 40 to 64 years. On the other hand, 77.4% of males belong to them and 22.6% of females. Meanwhile, the marital status related to married people is 71% and single people found 16.1% are single people.

In terms of how long they have been firefighters, 70.2% (118) have a maximum of 10 years of service, 22.6% (38) from 11 to 20 years and 7.1% (12) more than 20 years of service. Regarding the hierarchical grade of the participants, 47.0% (79) are sectional, 18.5% (31) have the rank of second lieutenant, 15. Lieutenant br5% (26) of lieutenant, 8.9% (15) of captain, 7.1% (12) of 1 brigadier and 3.0% (5) of the rank of brigadier. On the other hand, 49.4% (83) have donated blood at some point and 58.3% (49) of this group have last donated blood one year ago.

Table III presents the levels of quality of lifestyles, that is, the way we have been consuming our food is there is an orderly or disordered way to acquire it [26] where we

visualize that 57.7% of the participants have an unhealthy lifestyle, 40.5% a healthy lifestyle and 1.8% (3) a very healthy lifestyle. It is worth mentioning that [27], in his study it is evident that of the 100% of the volunteers who belong to the B107 Fire Company, lead a healthy lifestyle is 95.2%, those who do not have a non-soluble lifestyle is the result of 4.8%. It is evident that there is no similarity in our study, because the results are very different. Table IV shows the nutritional status of the firefighters who participated in this research.

In our study on the nutritional status of firefighters, it is evident that overweight is in first place with 53.3%, followed by normal with 26.8% and obesity is 19.6% (5). There are several studies that are almost similar to our study (see Table IV) as evidenced by the result of [26], that overweight results in 44%, on the other hand, normal weight is evidenced in 34% and firefighters are only observed to have obesity in 22%.

VI. CONCLUSION

The present study examined the lifestyles and nutritional status of the firefighters from VCD Callao Ventanilla in 2023, highlighting key demographic aspects such as age, gender, marital status, education, and years of service. These data provide valuable context for understanding health behaviors in this population.

A high prevalence of unhealthy lifestyles among firefighters is evident, with 57.7% exhibiting concerning dietary habits. Given that dietary patterns influence occupational health and overall well-being, it is crucial to address these habits through specific interventions to improve their health and performance.

Regarding nutritional status, it is observed that a substantial portion of firefighters is overweight (53.3%), followed by 26.8% with a normal BMI and 19.6% classified as obese. While there is some agreement with previous research, significant variations are identified, emphasizing the need for further investigations to understand the factors contributing to these differences in nutritional status.

For future research, longitudinal studies are recommended to track changes in the lifestyles and nutritional status of firefighters over time, providing insights into the effectiveness of interventions and the evolution of health issues. Additionally, it is essential to investigate specific risk factors contributing to unhealthy lifestyles and overweight among firefighters, allowing for tailored interventions to address the root causes of these problems.

Furthermore, the importance of developing and testing intervention programs focused on promoting healthy eating habits and physical activity among firefighters is highlighted, prioritizing the improvement of their overall health and the reduction of occupational risks. Finally, conducting comparative studies with firefighter populations in different regions will help identify geographical variations in lifestyles and nutritional status, facilitating the implementation of more specific and effective interventions.

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