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Sedentary lifestyle as a leading factor in cardiovascular disease in the Honorato Vázquez community in Ecuador

Sedentarismo como factor determinante de enfermedad cardiovascular en la comunidad Honorato Vázquez en Ecuador

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ABSTRACT

Sedentary behavior is a key factor in the development of cardiovascular diseases (CVD), posing an increasing threat to public health. This study aimed to analyze individual, social, and environmental factors influencing the adoption of a sedentary lifestyle in the Honorato Vásquez parish, Santana canton (Manabí, Ecuador). A descriptive study was conducted with 144 participants aged 30 years or older, classified by physical activity levels. Structured surveys assessed knowledge, habits, and conditions related to a sedentary lifestyle. Results revealed that 70% of respondents spent over 10 hours a day sitting, and 60% experienced symptoms like joint pain without physical exertion. Although 80% were aware of the risks and expressed willingness to change, barriers such as lack of time and inadequate public spaces remain. It is concluded that sedentary behavior is a prevalent risk factor that is exacerbated by social and environmental conditions. Community-based strategies are urgently needed to promote active lifestyles and reduce CVD incidence.

Keywords: sedentary behavior, cardiovascular diseases, physical activity, risk factors, community health.

RESUMEN

El sedentarismo es un factor determinante en el desarrollo de enfermedades cardiovasculares (ECV), representando una amenaza creciente para la salud pública. El objetivo de este estudio fue analizar los factores individuales, sociales y ambientales que inciden en la adopción de un estilo de vida sedentario en la parroquia Honorato Vásquez, cantón Santana (Manabí, Ecuador). Se realizó un estudio descriptivo con 144 participantes mayores de 30 años, clasificados por niveles de actividad física. Se aplicaron encuestas estructuradas para evaluar conocimientos, hábitos y condiciones asociadas al sedentarismo. Los resultados mostraron que el 70 % de los encuestados permanecía sentado más de 10 horas al día y el 60 % presentaba síntomas como dolor articular sin ejercicio. Además, aunque el 80 % conocía los riesgos del sedentarismo y mostró interés en cambiar, persisten barreras como la falta de tiempo y espacios adecuados para la actividad física. Se concluye que el sedentarismo es un factor de riesgo prevalente, agravado por condiciones sociales y ambientales. Es urgente implementar estrategias comunitarias que promuevan hábitos activos para reducir la incidencia de ECV.

Palabras clave: sedentarismo, enfermedades cardiovasculares, actividad física, factores de riesgo, salud comunitaria.

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INTRODUCTION

Cardiovascular diseases (CVDs) are the leading cause of morbidity and mortality worldwide, with a sedentary lifestyle being one of the most relevant risk factors in their development (Hernández et al., 2020). According to the World Health Organization (WHO), a sedentary lifestyle is responsible for approximately two million deaths annually. It is among the ten leading causes of death and disability (Delgado et al., 2022). It is estimated that between 60 and 85% of the population, both adults and young people, do not exercise enough to maintain good health, which increases the risk of disease. Physical inactivity contributes significantly to the onset of pathologies such as high blood pressure, coronary artery disease, heart failure, and stroke, which harm quality of life and health systems (Cañarte et al., 2024).

Several studies have shown that sitting for more than 10 hours a day is associated with an increased cardiovascular risk, even in individuals who engage in moderate to vigorous physical activity (Cruz et al., 2021). This phenomenon is particularly concerning in modern societies, where teleworking, excessive use of electronic devices, and urban lifestyles have contributed to the development of sedentary habits that affect all age groups (Zavala et al., 2024).

While regular exercise is a fundamental strategy for CVD prevention, reducing sedentary time is equally crucial (Álvarez et al., 2022). In this context, it is essential to promote interventions focused on education, awareness, and environmental adaptation to promote a more active lifestyle (Prada & Cuevas, 2022).

While genetics influences the predisposition to various diseases, lifestyle plays a crucial role in preventing them. Regular physical activity and a balanced diet can mitigate the effects of hereditary predispositions. However, many people lack motivation or are unaware of the risks associated with a sedentary lifestyle (Ahumada & Toffoletto, 2020).

The COVID-19 pandemic exacerbated this problem, as lockdowns increased downtime due to teleworking and virtual education. This led to greater exposure to screens, increased anxiety, poor nutrition, and a significant reduction in physical activity, resulting in a higher risk of cardiovascular disease and increased mortality (León et al., 2014).

On the contrary, regular physical activity is a fundamental tool for preventing and treating various diseases, playing a key role at all stages of life, including pregnancy and aging. (Barboza

Palomino, 2020) . Additionally, it enhances cognitive function in older adults and contributes to a better quality of life (Paredes, 2024), which is particularly relevant given the close relationship between the nutritional status and quality of life of the elderly, as noted in recent systematic reviews (Angulo et al., 2022).

The impact of a sedentary lifestyle not only affects individual health but also the economy, increasing the financial burden derived from chronic diseases. Despite scientific evidence on the benefits of exercise, work demands and a lack of time remain significant barriers to adopting an adequate physical activity routine (Chalapud & Rosero, 2021). The objective of this study was to analyze the individual, social, and environmental factors that contribute to a sedentary lifestyle in different population groups within the Honorato Vásquez parish of the Santana canton, Manabí province, and to propose effective strategies to encourage a more active lifestyle.

METHODOLOGY

The study focused on a population over 30 years of age, considering a sedentary lifestyle as a determining factor in the development of cardiovascular disease. Participants were selected using a non-probability convenience sampling method, with 65 individuals chosen based on their availability and willingness to provide informed consent. The variables analyzed were classified as dependent, independent, and control variables.

Dependent variables included the level of knowledge about the effects of a sedentary lifestyle on cardiovascular health, familiarity with programs offered by the health center for its prevention, adherence to drug treatment in those with associated conditions, and lifestyle changes. These habits included diet, physical inactivity, and reducing or eliminating the use of harmful substances such as tobacco and alcohol.

The primary independent variable in this study was the age of the respondents, as it is considered a determining factor in the development of cardiovascular diseases associated with a sedentary lifestyle. As people age, there is a natural decline in muscle mass, flexibility, and aerobic capacity, which can lead to less physical activity and, consequently, a more sedentary lifestyle. This behavior increases the risk of high blood pressure, dyslipidemia, insulin resistance, and obesity, all of which are risk factors for cardiovascular disease.

For data collection, previously validated structured surveys were applied to assess

knowledge about high blood pressure, therapeutic adherence, and lifestyle changes.

The methodological process was structured into several stages, beginning with data collection through the administration of an individual questionnaire to each participant. The collected information was then subjected to descriptive statistical analysis, using absolute frequencies and percentages to evaluate categorical variables. To gain a comprehensive understanding of the impact of sedentary lifestyles on cardiovascular health, a 33-question questionnaire was developed. This instrument allowed for a deeper understanding of the most relevant aspects related to knowledge about sedentary lifestyles, participation in physical activity promotion programs, and lifestyle changes among respondents.

The study was conducted in strict adherence to bioethical principles, respecting the guidelines of the Declaration of Helsinki. Data confidentiality and anonymization were ensured by assigning codes instead of names, thereby protecting participant identities. Furthermore, all subjects included provided informed consent, ensuring their voluntary participation. The methodology employed in this research guaranteed the integrity, reproducibility, and scientific validity of the study, enabling the generation of evidence on sedentary lifestyles in a community setting.

RESULTS AND DISCUSSION

Figure 1 shows the age distribution of the study sample. A total of 144 people were analyzed and classified into three groups based on their physical activity level: sedentary, less active, and active. The sample was divided into three groups: 65 participants were classified as sedentary, 43 as less active, and 36 as active.

The highest percentage is observed among people under 30 years of age, suggesting that this group could benefit from strategies promoting physical activity from an early age to prevent long-term risks. As age increases, the proportion of people also increases in certain groups, indicating the need for specific interventions to promote healthy habits and reduce sedentary lifestyles in the older adult population. The implementation of programs focused on mobility, adapted exercises, and education about the benefits of physical activity is key to mitigating the impact of sedentary lifestyles on cardiovascular health in these age groups.

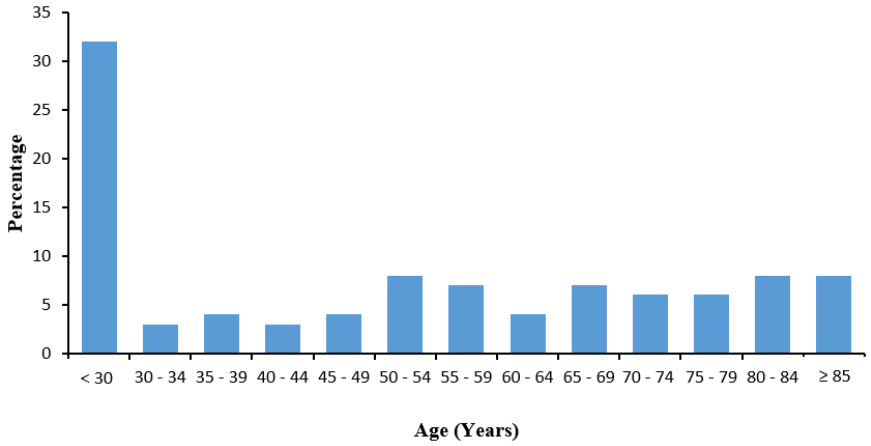

Figure 1. Demographic range.

An analysis of indicators related to sedentary lifestyles and their potential health effects reveals a high prevalence of risk factors in the population (Table 1). It is observed that 70% of people work or study in activities that require them to sit for long periods. In comparison, 65% use public transport for short trips, reflecting a low level of physical activity. Furthermore, 55% report experiencing frequent fatigue, and 60% report muscle or joint pain, even without exercising, which could be associated with inactivity. Additional factors such as tobacco use (20%) and alcohol use (35%), along with a family history of cardiovascular disease in 45% of respondents, increase the risk of developing cardiovascular conditions.

Table 1. Sedentary habits and cardiovascular risk in the population

Indicator	Absolute frequency	Percentage
Use of transport for short trips	94	65
Work or study that requires sitting for long periods	101	70
Frequent tiredness or fatigue	79	55
Muscle or joint pain without exercise	86	60
Frequent consumption of alcoholic beverages	50	35
Tobacco use	29	20
Family history of cardiovascular disease	65	45

These data underscore the importance of implementing strategies that promote physical activity, reduce sedentary lifestyles, and enhance lifestyle habits to prevent chronic diseases and improve the overall quality of life for the population (Table 2).

Table 2. Knowledge and habits about sedentary lifestyles and cardiovascular risk in the population

Indicator	Absolute frequency	Percentage
Sedentary lifestyle	72	50
Knowledge about a sedentary lifestyle	115	80
Interest in adopting more active habits	115	80

Based on the indicators presented, it is observed that 50% of the analyzed population maintains a sedentary lifestyle, which is a significant risk factor for the development of cardiovascular diseases. Furthermore, 80% of people are aware of the adverse effects of a sedentary lifestyle, reflecting a widespread understanding of this behavior. Despite this awareness, 80% also expressed interest in adopting more active habits, suggesting a willingness to improve lifestyles, although a challenge remains regarding the implementation of concrete changes. This overview emphasizes the importance of intervening in the modification of sedentary habits, promoting regular physical activity as a key strategy for preventing cardiovascular diseases (García, 2019).

Figure 2 illustrates the frequency of daily meal consumption in the population, enabling us to analyze their eating habits and assess their potential impact on health. It is observed that the majority eat between one and four meals a day, although a significant percentage consumes only one or two. An insufficient or unbalanced diet, combined with a sedentary lifestyle, can increase the risk of developing cardiovascular disease.

Therefore, it is essential to promote adequate and balanced nutrition, accompanied by regular physical activity, to improve health and prevent long-term complications (Urdánigo et al., 2022). Furthermore, in this context, healthy traditional preparations should also be valued as part of the local cultural identity. Typical Manabí dishes can have a high nutritional energy density when prepared appropriately, reinforcing the need to preserve healthy traditional food practices (Alvarado et al., 2021; Alvarado & Zambrano, 2023).

Several studies indicate that an irregular dietary pattern can be associated with lower nutritional density and energy imbalances, which have also been observed in university populations with unhealthy habits (Forbes-Hernández et al., 2021).

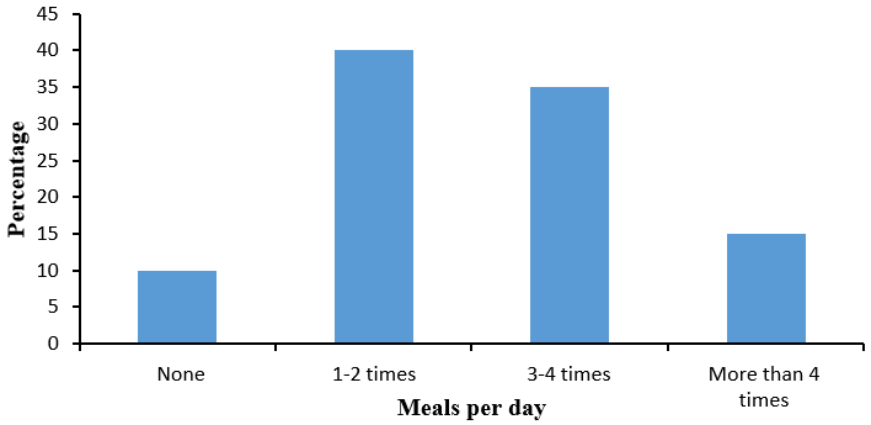

Figure 2. Meals per day.

Figure 3 shows that 40% of the population consumes fast food or ultra-processed foods 2 to 3 times per week, indicating a high frequency of consumption of these products, known for their negative impact on cardiovascular health. Thirty percent of people choose to eat them once a week, which still represents a significant exposure to this type of food. On the other hand, 20% rarely consume fast food or ultra-processed foods, reflecting a more moderate behavior. Only 10% of the population admits to consuming these products daily, which, although low, highlights a concern about eating habits in their daily diet. Furthermore, it has been demonstrated that diets with low total antioxidant capacity, characteristic of populations with high intake of ultra-processed foods, can disrupt the redox balance and increase cardiovascular vulnerability (Forbes-Hernández et al., 2023).

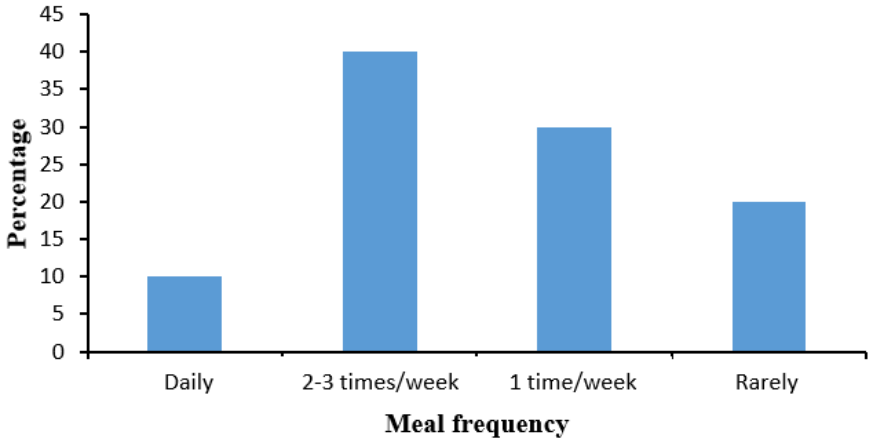

Figure 3. Ultra-processed foods per week.

These consumption patterns highlight the importance of promoting nutritional education to mitigate the risk of diet-related diseases, such as obesity and cardiovascular disease (Garrochamba, 2024). This phenomenon aligns with the social perception of junk food as an accessible and appealing food option, despite its detrimental health effects (Gallardo & García, 2023).

Figure 4 shows that 35% of people consume between 3 and 5 glasses of water per day, while 30% choose between 6 and 8 glasses of water. Only 15% exceed the recommended intake of 8 glasses, indicating that a small portion of the population meets the recommended intake of adequate water. Approximately 20% of people drink fewer than three glasses of water per day, which may not be sufficient to maintain good hydration and promote overall health.

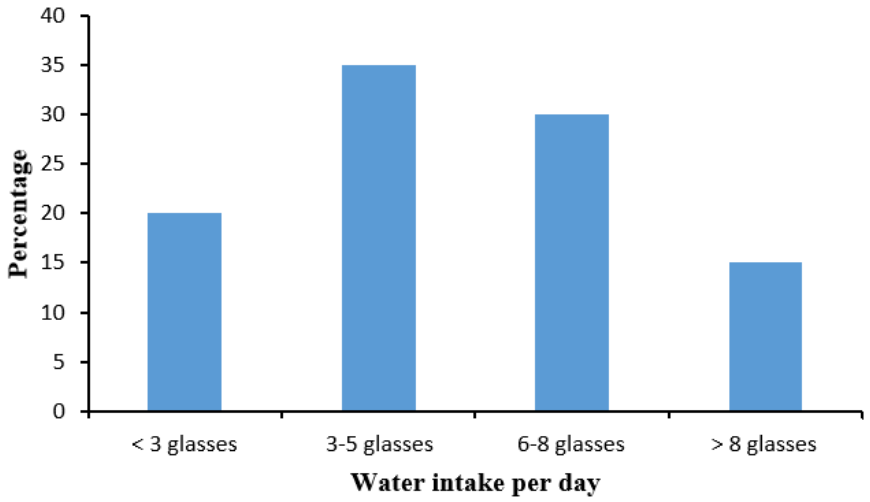

Figure 4. Daily water intake.

These data underscore the importance of promoting good hydration habits, as water is crucial for maintaining optimal body function, including alternatives such as natural functional beverages. Isotonic drinks based on tropical fruits, such as pineapple, have been shown to improve rehydration and provide bioactive compounds beneficial for cardiovascular health (Ruiz & García, 2022; García et al., 2023; Ruiz et al., 2018).

Figure 5 shows that 40% of people sleep between 7 and 8 hours each night, which is adequate rest. 29% sleep between 5 and 6 hours, which may not be enough for a good night's sleep. Another 15% sleep less than 5 hours, which can affect health and daily performance. The other 15% sleep more than 8 hours, which may be excessive for the body. These patterns underscore the

importance of striking a balance in sleep hours to maintain good health (Delgado et al., 2022).

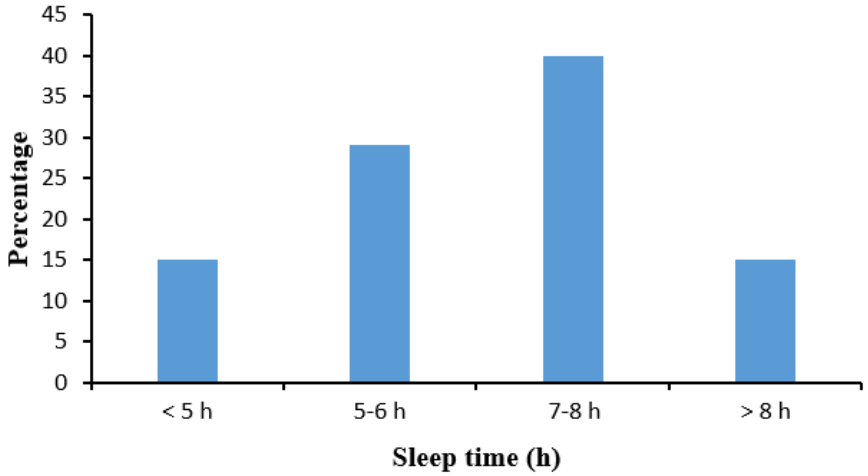

Figure 5. Sleep time.

Figure 6 shows that 40% of people engage in physical activity between one and two days a week for at least 30 minutes. Another 30% do not engage in any regular physical activity, which can increase the risk of disease. Twenty percent exercise between three and five days a week, while only 10% manage to engage in physical activity more than five days a week. These results indicate that, although a portion of the population exercises with some regularity, a significant percentage still fails to meet the minimum physical activity recommendations for maintaining good health.

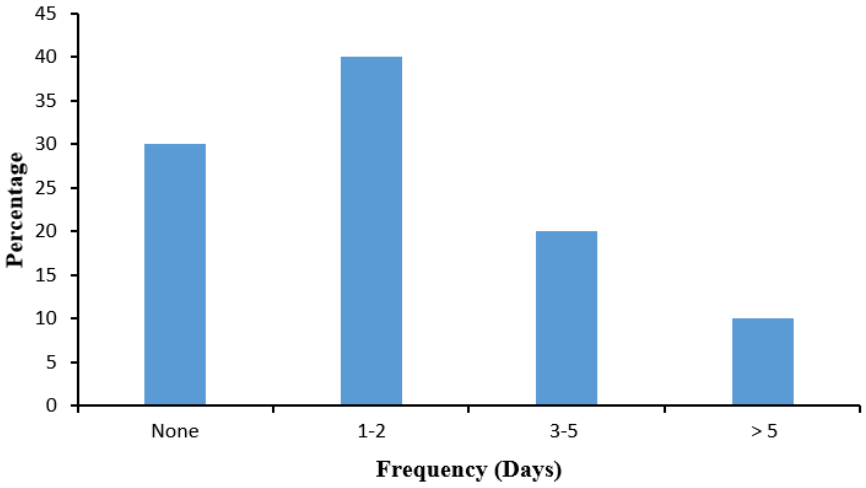

Figure 6. Physical activity**.**

Figure 7 shows that 40% of people spend between 30 minutes and 1 hour outdoors each day, which is a reasonable amount of time to enjoy the benefits of sun exposure and physical activity. A further 25% spend less than 30 minutes outdoors, which could limit these benefits. Another 25% spend between 1 and 2 hours outdoors, which is even better for health. However, only 10% spend more than 2 hours outdoors, which can be ideal for improving physical and mental well-being. These patterns reflect the importance of increasing outdoor time to improve overall health.

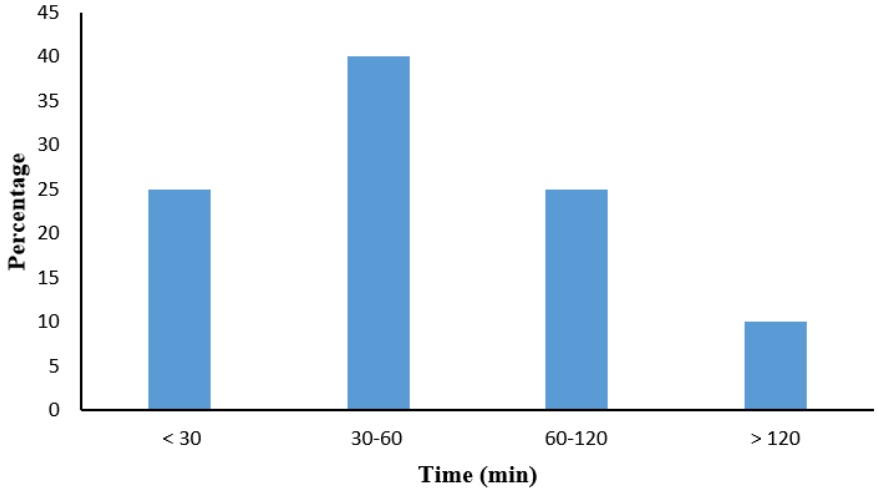

Figure 7. Outdoor time.

The results confirm that a sedentary lifestyle is a key risk factor in the development of cardiovascular disease (CVD). Both the high prevalence of CVD in the sedentary group (60%) and the difference compared to the active participants (22%) demonstrate the negative impact of physical inactivity. Although the inactive group showed a lower prevalence (45%), their activity levels were not sufficient for adequate cardiovascular protection.

Prolonged inactivity was a determining factor: 70% of sedentary individuals spent more than 10 hours a day sitting, compared to only 20% of active individuals. This reinforces the relationship between sedentary behavior and cardiovascular risk, aligning with previous studies that associate inactivity with metabolic disturbances and systemic inflammation.

The main barriers to physical activity were a lack of time, mentioned by 50% of sedentary individuals and 40% of inactive individuals. However, only 20% of active individuals considered

this factor an obstacle, suggesting that time management is key to adopting healthy habits. Furthermore, 80% of sedentary individuals reported a lifestyle that favors inactivity, indicating the significant influence of environmental factors and habits on physical behavior.

These findings underscore the need for interventions to promote physical activity in the Honorato Vázquez parish. Strategies such as awareness campaigns, community programs, and the development of recreational spaces can help reduce the prevalence of CVD. Furthermore, it is essential to address perceived barriers by promoting the integration of exercise into daily life through short, intense activities, active breaks at work, and active transportation.

The results highlight that a sedentary lifestyle is a predominant risk factor for CVD in the Honorato Vázquez parish. The combination of long periods of inactivity, poor eating habits, and barriers to physical activity significantly contributes to the high prevalence of these diseases. Furthermore, the population's lifestyle demonstrated vulnerability to factors that limit mobility. The reduction in physical activity due to sedentary habits had direct consequences for the increased cardiovascular risk.

CONCLUSIONS

A sedentary lifestyle has been recognized as one of the most significant risk factors in the development of cardiovascular diseases, as it contributes considerably to the onset of health problems such as high blood pressure, T2DM, obesity, and dyslipidemia, all of which are closely linked to increased cardiovascular risk. This behavior, characterized by little or no physical activity, has been widely studied in the scientific and medical fields, demonstrating its negative impact on health. In addition to a sedentary lifestyle, other factors influence the development of these conditions, such as poor eating habits, smoking, chronic stress, and genetic predisposition, which together increase the likelihood of suffering from heart and vascular diseases. These findings underscore the importance of implementing strategies that promote health and prevent these diseases through education, awareness, and programs aimed at encouraging a more active and healthier lifestyle. This approach is crucial for mitigating risks and enhancing the quality of life.

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CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

AUTHOR CONTRIBUTIONS

Conceptualization: María M. Orellana and Manuel A. Navarrete. **Data curation:** María M. Orellana and Manuel A. Navarrete. **Formal analysis:** María M. Orellana and Manuel A. Navarrete. **Research**: María M. Orellana, Manuel A. Navarrete, Marcos G. Sabando, Leonardo Quinteros, and Elián Rivadeneira. **Methodology:** Víctor V. Román and Orelvis Rodríguez. **Software:** María M. Orellana and Manuel A. Navarrete. **Supervision**: Víctor V. Román and Orelvis Rodríguez. **Validation**: Víctor V. Román and Orelvis Rodríguez. **Visualization:** María M. Orellana and Manuel A. Navarrete. **Writing of the original draft:** María M. Orellana, Manuel A. Navarrete, Marcos G. Sabando, Leonardo Quinteros, and Elián Rivadeneira. **Writing, review, and editing:** María M. Orellana, Manuel A. Navarrete, Marcos G. Sabando, Leonardo Quinteros, Elián Rivadeneira, Víctor V. Román, and Orelvis Rodríguez.

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