Instituto Nacional Cardiovascular
Archivos Peruanos de Cardiología y Cirugía Cardiovascular
Arch Peru Cardiol Cir Cardiovasc. 2024;5(4):187-197. doi: 10.47487/apcyccv.v5i4.435.
Sociedad Científica de Medicina Cardiovascular del Perú

Original article

Trends in the epidemiology of acute myocardial infarction in Peru: An analysis of the official SUSALUD records

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Received: September 23, 2024
Accepted: November 22, 2024
Online: November 25, 2024

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Funding
Self-financed.

Conflicts of interest
The authors are members of the journal's editorial committee and did not participate in the editorial process related to this article.

Cite as
Hernández-Vásquez A, Vargas-Fernández R, Chacón-Díaz M. Trends in the epidemiology of acute myocardial infarction in Peru: An analysis of the official SUSALUD records. Arch Peru Cardiol Cir Cardiovasc. 2024;5(4):187-197. doi: 10.47487/apcyccv.v5i4.435.

ABSTRACT

Objective. To determine the age-standardized rate of acute myocardial infarction (AMI) events and its trend in recent years. **Materials and Methods**. An ecological study of secondary data on morbidity in emergency areas of Peruvian hospitals between 2018 and 2023 was conducted. Cases of AMI in adults aged 20 years or older were identified using the International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10) codes. Age-standardized AMI event rates per 100,000 people were calculated. In addition, the change in event rate between extreme years was calculated, and a Poisson regression was used to estimate the annual percentage change in event rates along with their 95% confidence interval (CI), adjusting for age and calendar year. These rates were stratified by sex and political-administrative regions. **Results**. 28,088 AMI events were recorded between 2018 and 2023. The national age-standardized rate increased from 22.77 in 2018 to 25.60 per 100,000 people in 2023, with an annual percentage change of 6.72% (95% CI: 4.25-9.25). Men had higher AMI event rates compared to women throughout the study period. In addition, the highest event rates were observed in the Constitutional Province of Callao, San Martin, and Loreto. **Conclusions.** Our findings provide a better understanding of the epidemiology of AMI in Peru and its evolution in recent years, as well as important data to improve prevention, treatment, and resource distribution strategies for the management of AMI.

Keywords: Cardiovascular Diseases; Myocardial Infarction; Epidemiology; Peru (Source: MeSH-NLM).

RESUMEN

Tendencias en la epidemiología del infarto agudo de miocardio en el Perú: un análisis de los registros oficiales de SUSALUD

Objetivo. Determinar la tasa de eventos de infarto agudo de miocardio (IAM) estandarizada por edad y su tendencia en los últimos años. **Materiales y métodos.** Se realizó un estudio ecológico de datos secundarios sobre la morbilidad en áreas de emergencia de hospitales peruanos entre 2018 y 2023. Se identificaron casos de IAM en adultos de 20 años o más mediante los códigos CIE-10. Se calcularon las tasas de eventos de IAM por 100 000 personas, estandarizadas por edad. Además, se calculó el cambio de la tasa de eventos entre los años extremos, y se utilizó una regresión de Poisson para estimar el cambio porcentual anual de las tasas de eventos junto a su intervalo de confianza (IC) al 95%, ajustando por edad y año calendario. Estas tasas se estratificaron por sexo y región político-administrativa. **Resultados.** Se registraron 28 088 eventos de IAM entre 2018 y 2023. La tasa nacional estandarizada por edad aumentó de 22,77 en 2018 a 25,60 por 100 000 personas en 2023, con un cambio porcentual anual de 6,72% (IC 95%: 4,25-9,25). Los hombres presentaron tasas de eventos de IAM más altas comparado con las mujeres en todo el periodo de estudio. Además, las tasas de eventos más altas se observaron en la Provincia Constitucional del Callao, San Martín y Loreto. **Conclusiones.** Nuestros hallazgos proporcionan un mejor conocimiento de la epidemiología del IAM en el Perú y su evolución en los últimos años, datos importantes para mejorar las estrategias de prevención, tratamiento y distribución de recursos para el manejo del IAM.

Palabras clave: Enfermedades Cardiovasculares; Infarto del Miocardio; Epidemiología; Perú (Fuente: DeCS-BIREME).

Introduction

Ischemic coronary disease (ICD) is one of the leading causes of morbidity and mortality worldwide, accounting for approximately 9.1 million deaths globally [1]. Acute myocardial infarction (AMI) is the most severe manifestation of ICD and the primary determinant of morbidity and mortality from this cause, with a prevalence ranging from 6.8% in individuals under 60 years old to 9.5% in those over 60 years old [2], highlighting the importance of age in its presentation.

The incidence rate of AMI has decreased in recent years, particularly in high-income countries [3]. For instance, in the United States, the age- and sex-standardized incidence rate dropped from 230.5 cases per 100,000 person-years in 2000 to 168.6 cases per 100,000 person-years in 2008 [4]. Similarly, in Europe, the age-standardized incidence of AMI decreased from 404.5 (interquartile range [IQR]: 282.3-554.7) to 293.3 (IQR: 195.8-529.5) per 100,000 person-years between 1990 and 2019 [5]. These reductions are likely due to improvements in primary prevention.

However, in other regions, its incidence has increased. In China, the rate rose from 216.3 to 231.6 per 100,000 person-years [6], predominantly among men aged 35 to 49 years. Similarly, in South Korea, an increase from 44.7 to 68.3 per 100,000 person-years was recorded [7]. In Latin America, cases have also increased, especially among women and younger individuals [8]. These findings underscore the need for updated epidemiological data to guide public health interventions to prevent and manage AMI.

In Peru, the incidence rate of AMI and its annual trend remain unknown. Therefore, this study aims to determine the age-standardized rate of AMI events and its trend in recent years to support evidence-based strategies for its prevention, accurate diagnosis, treatment, and resource allocation for its management.

Materials and Methods

Study design, context, and data sources

An ecological study was conducted based on the analysis of secondary data obtained from morbidity records in emergency departments of Peruvian hospitals during the 2018-2023 period. The databases were sourced from the National Health Superintendence (SUSALUD) platform, which has centralized national information and has been organizing it quarterly since 2018 (http://datos.susalud.gob.pe/dataset/consulta-c2-morbilidad-en-emergencia-por-ipress).

The available databases contain consolidated morbidity reports from emergencies with detailed information, including the year, month, UBIGEO code, department, province, district, sector of the Health Service Provider Institution (IPRESS), IPRESS category, RENIPRESS code (National Registry of IPRESS), establishment name, sex, age group, diagnosis code according to ICD-10 (International Statistical Classification of Diseases and Related Health Problems, 10th Revision), diagnosis name according to ICD-10, and total number of individuals attended. Regarding age, data are reported in the following groups: 0, 1-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, and 65 years or older. No missing data were found in the included variables, but redundant categories in the age variable were standardized, merging equivalent categories (e.g., "05" and "5") into a single category.

The analysis included all cases identified in the databases with a diagnosis of AMI according to ICD-10 in adults aged 20 years or older between January 2018 and December 2023.

Variables

AMI events were identified using ICD-10 codes [9]. However, the records do not include information on clinical management, length of stay, referral, mortality, or the vital status of patients. AMI events were defined using the following ICD-10 codes: I21.0 (acute transmural myocardial infarction of the anterior wall); I21.1 (acute transmural myocardial infarction of the inferior wall); I21.2 (acute transmural myocardial infarction of other sites); I21.3 (acute transmural myocardial infarction of an unspecified site); I21.4 (subendocardial myocardial infarction); I21.9 (AMI, unspecified); I22.0 (recurrent acute myocardial infarction of the anterior wall); I22.1 (recurrent acute myocardial infarction of the inferior wall); I22.8 (recurrent acute myocardial infarction of other sites); and I22.9 (recurrent acute myocardial infarction, unspecified) [9]. These codes correspond to various forms of AMI classified based on the location of the damage.

Moreover, stratification variables were included, such as sex, age groups (20-44 years, 45-64 years, and 65 years or older), and "subsector of care". The latter groups the different subsectors of the Peruvian healthcare system into four categories: Ministry of Health (MINSA) and Regional Governments, which include healthcare institutions under the Ministry of Health and regional governments; EsSalud, which groups institutions under the Social Health Insurance subsector; Military and Police Health Services, which include the healthcare services of the Armed Forces and the National Police of Peru (National Police Health Service, Air Force Health Service, Army Health Service, and Navy Health Service); and finally, Private and Others, which group private healthcare services and those managed by municipalities.

Statistical analysis

The statistical analysis was conducted using R and RStudio. Initially, AMI events were stratified by age groups, sex, political-

administrative region, and health subsector, where patients were attended each year. Annual AMI event rates per 100,000 people were calculated at the national level for the 2018-2023 period and the departmental level for 2023 using the epitools library [10]. The numerators corresponded to AMI events, and the denominators were derived from population projections for people aged 20 years and older. Population data were obtained from the National Institute of Statistics and Informatics (INEI), using mid-year population projections for 2018 to 2023 at both national and departmental levels (https://m.inei.gob.pe/estadisticas/indice-tematico/population-estimates-and-projections/).

Additionally, AMI event rates were standardized by age using the direct method, with the standard population distribution provided by the World Health Organization (WHO) [11]. Standardized rates were reported per 100,000 people, accompanied by their respective 95% confidence intervals (95% CI). No corrections were made for potential underreporting of cases in hospital records. Political-administrative regions and the Constitutional Province of Callao were classified into quintiles based on AMI event rates during 2023 and represented using a choropleth map.

Following the methodology described by Camacho *et al*. [3], a Poisson regression model was used to estimate the annual percentage change (APC) in AMI event rates. The dependent variable was the number of AMI events, while the independent variables were 5-year age groups and calendar year from age 20 onwards. The mean annual change was calculated as $-100 \times [1-\exp(\beta)]$, where β is the coefficient corresponding to the calendar year. Given the presence of overdispersion in the data, a quasi-Poisson model was applied to account for it. Finally, the annual change for the extreme years was calculated by dividing the difference between the adjusted rate for 2018 and that for 2023 by the adjusted rate for 2018, multiplied by 100.

Ethical Considerations

This study was based on aggregated secondary data, freely available on the SUSALUD website, which were fully anonymized and did not contain personal identifiers (http://datos.susalud.gob.pe/dataset/consulta-c2-morbilidad-en-emergencia-por-ipress). Due to these characteristics, the study was not submitted for review by an ethics committee.

Results

Between 2018 and 2023, 28,088 AMI events occurred out of 61,514,214 emergency morbidity visits in Peru. During this period, the highest number of AMI events was observed in 2023 (n = 5,640), while the lowest occurred in 2020 (n = 3,231). Moreover, a marked decrease in recorded events was observed between 2019 and 2020, followed by a constant increase from that year until 2023 **(Supplementary Material, Figure S1)**.

Of all included events, 14,579 (51.9%) were recorded in people aged 65 years or older and 19,384 (69.0%) in men (compared to 8,704 events in women). In each study year, the highest number of events was recorded in men, who consistently reported more than double the number of events compared to women **(Supplementary Material, Figure S2)**. Likewise, people aged 65 years or older had the highest number of recorded AMI events in each study year compared to those aged 45–64, while those aged 20-44 had the lowest number of events **(Supplementary Material, Figure S3)**. When comparing both sexes by age, the difference in the reported AMI events between men and women aged 45-64 years was greater than that reported in people aged 20-44 years and those aged 65 years or older **(Figure 1)**.

Regarding AMI coding, the highest number of events was recorded with the code I21.9 (acute myocardial infarction, unspecified) in each study year, followed by codes I21.0 (acute transmural myocardial infarction of the anterior wall), I21.1 (acute transmural myocardial infarction of the inferior wall), and I21.2 (acute transmural myocardial infarction of other sites) **(Supplementary Material, Figure S4)**. On the other hand, the highest number of AMI events was reported in EsSalud each year, followed by facilities under the MINSA and private health establishments. In contrast, the lowest number of events was reported in facilities belonging to the Armed Forces and Police **(Figure 2)**.

Regarding the political-administrative regions of Peru, Lima had the highest number of AMI events during the study period. In each study year, the departments with the highest number of events after Lima were Arequipa, Callao, Piura, La Libertad, and Lambayeque, which ranked among the top five departments with the highest number of cases in at least two years of the included period. Moreover, San Martín was the second and fifth department with the highest number of events in 2021 and 2023, while Loreto ranked fourth in 2021. In 2022 and 2023, all the aforementioned political-administrative regions and Ancash reported the highest number of AMI events (200 or more) **(Figure 3)**.

The national age-standardized AMI event rate was highest in 2023 (25.60 per 100,000 people, 95% CI: 24.93-26.28) compared to previous years. This rate increased by 12.43% between 2018 and 2023, showing a significant annual percentage change of 6.72% (95% CI: 4.25-9.25). In men, the highest age-standardized AMI event rate was observed in 2022 (37.04 per 100,000 people, 95% CI: 35.86-38.25), followed by 2023 (36.40 per 100,000 people, 95% CI: 35.25-37.57) and 2019 (35.32 per 100,000 people, 95% CI: 34.11-36.56). For women, lower rates were observed compared to men. In this subgroup, the highest age-standardized AMI event rate occurred in 2023 (15.75 per 100,000 people, 95% CI: 15.03-16.49), followed by

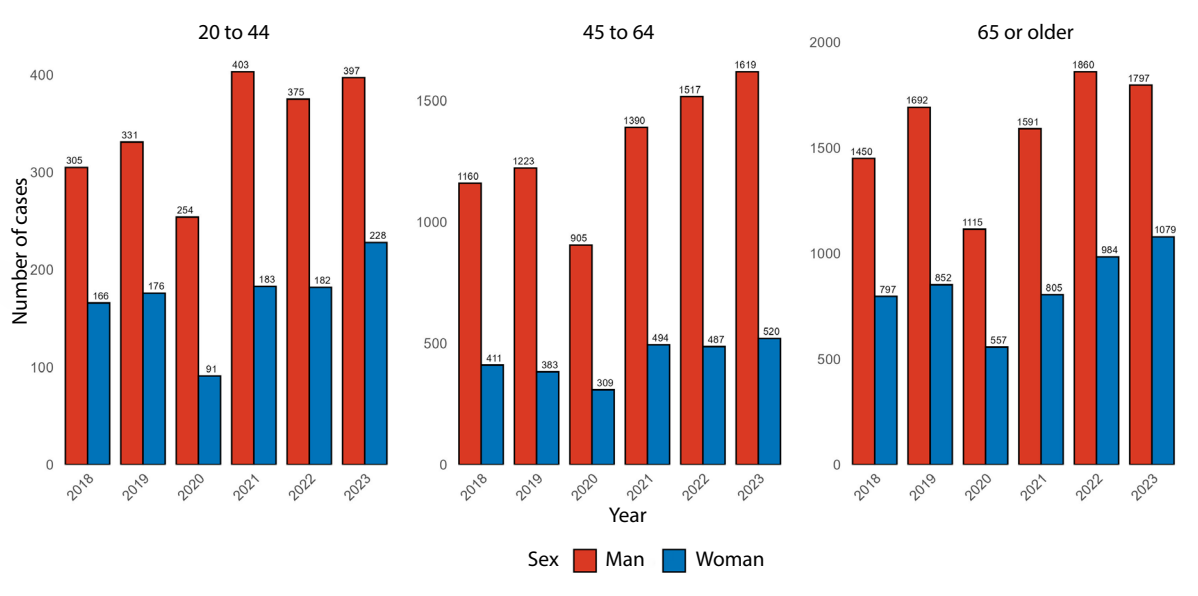
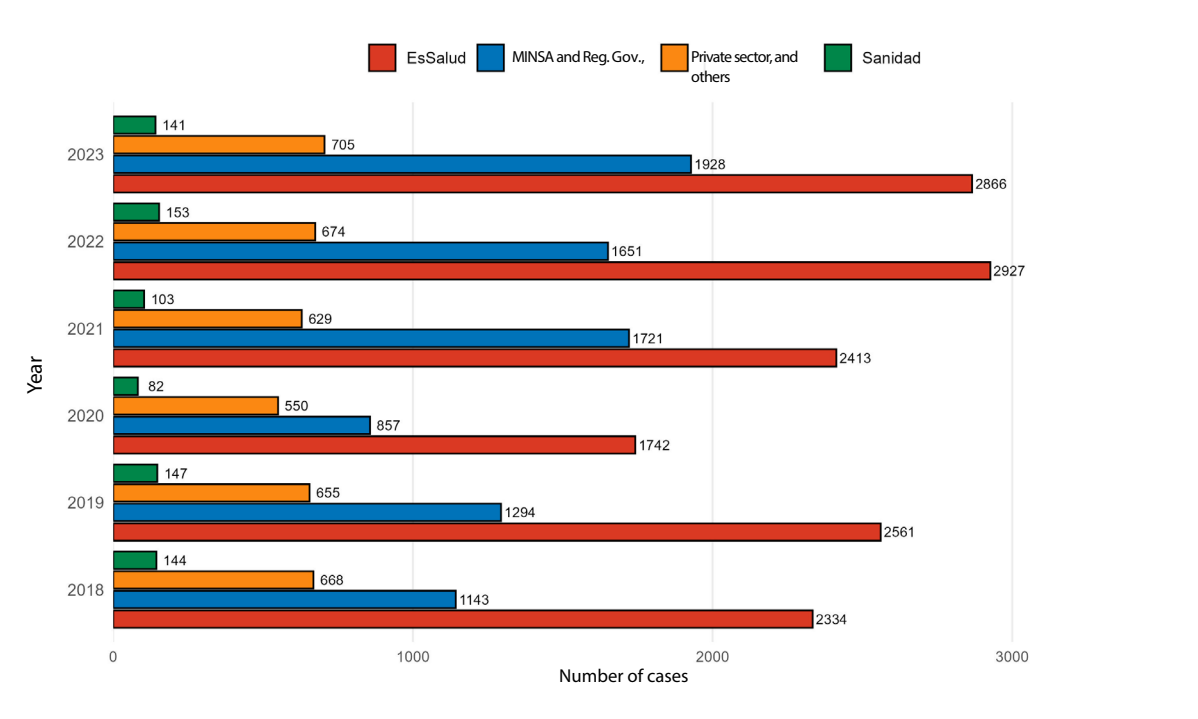


Figure 1. Distribution of myocardial infarction cases by sex, age group, and year (2018–2023).

2022 (14.70 per 100,000 people, 95% CI: 14.00-15.42). In both sexes, the lowest age-standardized AMI event rate was recorded in 2020 (23.84 per 100,000 people [95% CI: 22.87-24.85] in men and 9.07 per 100,000 people [95% CI: 8.51-9.67] in women) **(Table 1; Figure 4)**. Additionally, these rates increased by 11.52% in men and 13.64% in women between 2018 and 2023, showing significant annual percentage changes of 6.51% (95% CI: 4.08-9.00) and 7.19% (95% CI: 4.22-10.25), respectively.



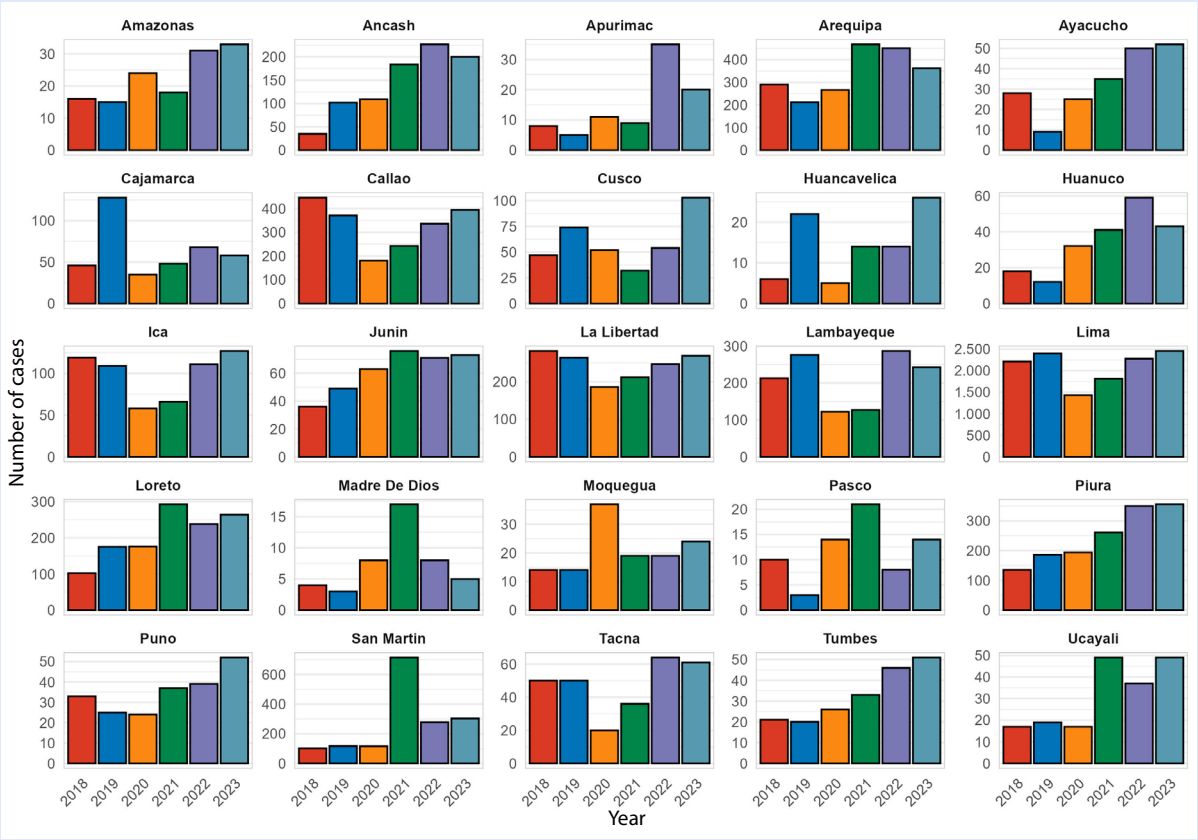


Figure 3. Distribution of myocardial infarction cases by department and year (2018–2023).

Discussion

This study found an age-standardized AMI event rate of 25.6 events per 100,000 people at the national level in 2023, with an annual percentage increase of 6.72% since 2018. Although a higher annual percentage change was observed in women than men, the estimated rates for each study year were consistently higher in men. Most events were reported in people aged 65 years or older, in Lima, and within EsSalud facilities. However, the age-standardized event rate per 100,000 people was higher in some regions outside Lima, such as San Martín, Loreto, Arequipa, and the Constitutional Province of Callao. These findings could assist health managers in decision-making regarding resource allocation, healthcare staff training, prevention strategies, and the adoption of global initiatives such as Stent-Save a Life! [12], among others.

Unlike high-income countries, developing countries have seen an increase in AMI cases in recent years due to the rise of various risk factors such as hypertension, diabetes mellitus, obesity, smoking, dyslipidemia, and other factors like psychosocial stress, lifestyle changes, and urbanization [13–15]. Our findings show that the age-adjusted AMI event rate increased from 22.7 to 25.6 per 100,000 people between 2018 and 2023, representing a 12.43% increase in six years. This rate is lower than the age-adjusted average for Latin America and the Caribbean, with 83.8 (95% CI: 75.9-90.6) new cases per 100,000 person-years in 2021 [16]. Although this rate reflects only the number of AMI events, it could significantly impact the disease burden, as a higher number of severe events may lead to increased mortality and years lived with disability. In Peru, the PERSTEMI II registry reported a 30-day mortality rate of 8.6% following an ST-elevation myocardial infarction (STEMI) [17] and a 1-year survival rate of 15% [18]. These figures, alongside the rising number of AMI events nationally, suggest that the disease burden from this condition may similarly increase. Therefore, our findings could help guide targeted interventions to achieve Sustainable Development Goal (SDG) 3.4 (Reduce mortality from non-communicable diseases and promote mental health), which aims to reduce premature mortality from chronic diseases by one-third by 2030 [19].

Lima reported the highest number of AMI cases during each study year (51.5% of the annual total in 2018 and 43.5% in 2023), with a percentage decrease compared to other regions such as Ancash, San Martín, Piura, and Loreto, which experienced

Table 1. Crude and age-standardized event rates in Peru, 2018–2023

Characteristic	Number of cases	Total population	Crude event rate	Age-standardized event rate* (95% CI)
National				
2018	4289	20673661	20.75	22.77 (22.10-23.47)
2019	4657	21042884	22.13	23.99 (23.31-24.69)
2020	3231	21409464	15.09	16.10 (15.55-16.66)
2021	4866	21773765	22.35	23.46 (22.81-24.13)
2022	5405	22136794	24.42	25.32 (24.65-26.00)
2023	5640	22498018	25.07	25.60 (24.93-26.28)
Men				
2018	2915	10252103	28.43	32.64 (31.46-33.85)
2019	3246	10433662	31.11	35.32 (34.11-36.56)
2020	2274	10613925	21.42	23.84 (22.87-24.85)
2021	3384	10793110	31.35	34.30 (33.16-35.48)
2022	3752	10971690	34.20	37.04 (35.86-38.25)
2023	3813	11149340	34.20	36.40 (35.25-37.57)
Women				
2018	1374	10421558	13.18	13.86 (13.13-14.61)
2019	1411	10609222	13.30	13.78 (13.07-14.52)
2020	957	10795539	8.86	9.07 (8.51-9.67)
2021	1482	10980655	13.50	13.62 (12.93-14.33)
2022	1653	11165104	14.81	14.70 (14.00-15.42)
2023	1827	11348678	16.10	15.75 (15.03-16.49)
Region**				
Amazonas	33	272268	12.12	11.31 (7.77-16.15)
Ancash	200	781138	25.60	25.54 (22.13-29.35)
Apurímac	20	291728	6.86	6.74 (4.10-10.58)
Arequipa	362	972003	37.24	37.59 (33.81-41.67)
Ayacucho	52	455401	11.42	12.10 (9.02-15.96)
Cajamarca	58	1000836	5.80	5.70 (4.33-7.40)
Callao	394	795562	49.52	48.64 (43.95-53.70)
Cusco	103	903990	11.39	11.43 (9.33-13.88)
Huancavelica	26	289342	8.99	10.09 (6.54-15.00)
Huánuco	43	559364	7.69	7.55 (5.46-10.22)
Ica	127	577030	22.01	22.24 (18.54-26.47)
Junín	73	885961	8.24	8.49 (6.65-10.69)
La Libertad	269	1354185	19.86	20.80 (18.39-23.45)
Lambayeque	243	901773	26.95	27.36 (24.03-31.03)
Lima	2458	7716937	31.85	32.89 (31.60-34.22)
Loreto	264	685418	38.52	39.14 (34.54-44.24)
Madre de Dios	5	109130	4.58	4.06 (1.32-11.42)
Moquegua	24	141232	16.99	16.10 (10.29-24.3)
Pasco	14	203356	6.88	7.02 (3.83-12.08)
Piura	356	1250663	25.01	26.49 (23.75-29.57)
Puno	52	958919	5.42	5.87 (4.38-7.73)
San Martín	303	600359	50.47	48.14 (42.85-53.97)
Tacna	61	258502	23.60	22.92 (17.52-29.53)
Tumbes	51	178674	28.54	27.63 (20.53-36.66)
Ucayali	49	354247	13.83	12.89 (9.52-17.17)

CI: Confidence interval
Rates per 100,000 people
*Age-standardized rate calculated using the World Health Organization's standard population.
**Estimates correspond to the year 2023.

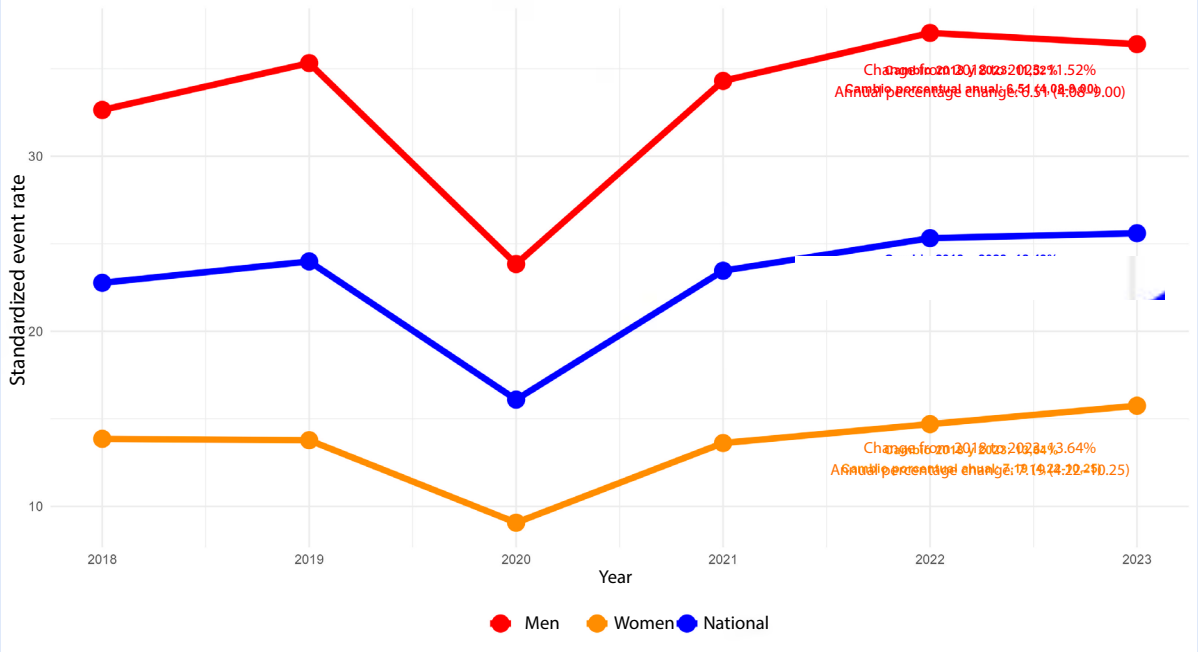


Figure 4. Annual trends in the age-standardized myocardial infarction event rate by sex in Peru (2018–2023).

increases in cases over the past five years of 571%, 300%, 263%, and 258%, respectively. This increase has been more evident since the pandemic. It may reflect the rise in post-pandemic classic coronary disease risk factors and an increase in psychosocial factors and physical inactivity following 2020 [20–23]. As previously described, the COVID-19 pandemic led to a reduction of up to 50% in reported AMI cases, albeit with higher mortality rates [24–26]. This phenomenon was documented in a prior study in Peru on STEMI [27] and is again observed in our study for 2020.

The highest AMI event rate was found in the Constitutional Province of Callao (48.64 events per 100,000 people), followed by San Martín, Loreto, and Arequipa. Among these, only Arequipa has an interventional cardiology center for the treatment of AMI patients within the EsSalud subsystem. As identified in our study, more than 50% of AMI events were reported in this subsystem, highlighting the inadequate distribution of cardiac catheterization centers essential for AMI treatment. Furthermore, the lack of adequate access to healthcare services and limited resources, which are characteristic of public health services in rural areas, may contribute to higher AMI morbidity and mortality in these political-administrative regions [28].

Regarding AMI events by sex, we found that men remain predominant, with a 2.2:1 ratio. However, in people under 45 years and over 65 years, this ratio was lower (1.8:1 and 1.6:1, respectively), consistent with similar data reported in Chile [8] and globally. Worldwide, the incidence rate ratio is 2.72 in favor of males and remains so after adjusting for other risk factors (e.g., dyslipidemia, smoking). This ratio is higher in people under 55 years (3.64) and lower in those over 75 years (1.66) [29]. Similar to the difference in the number of AMI events, the age-standardized event rate was consistently higher in men compared to women throughout the study period. These differences may be related to the earlier onset of traditional cardiovascular risk factors in men, the hormonal protection in women of childbearing age (oestrogens), and the increase in the same risk factors after menopause, which leads to a rise in cases among postmenopausal women [30,31].

The literature describes that non-STEMI (NSTEMI) accounts for more than 50% of total AMI cases [32]; however, in our study, only 2.3% of cases were recorded with the corresponding ICD-10 code for this condition (I21.4). This finding could be attributed to a recording error, as more than 80% of cases reported in our study were classified under the code I21.9 (acute myocardial infarction, unspecified), which may include both STEMI and NSTEMI cases. Therefore, given the inability to accurately determine the proportion of patients with STEMI and NSTEMI within the study population, we suggest interpreting this low proportion of reported NSTEMI cases with caution. Similarly, the coding used by SUSALUD does not consider the clinical modification (ICD-10-CM) [33], which would allow for differentiation of AMI subtypes according to the universal definition of myocardial infarction [34]: Type 1 (secondary to atherosclerosis, plaque rupture, and thrombosis, ICD-10: I21); Type 2 (secondary to an imbalance between myocardial oxygen

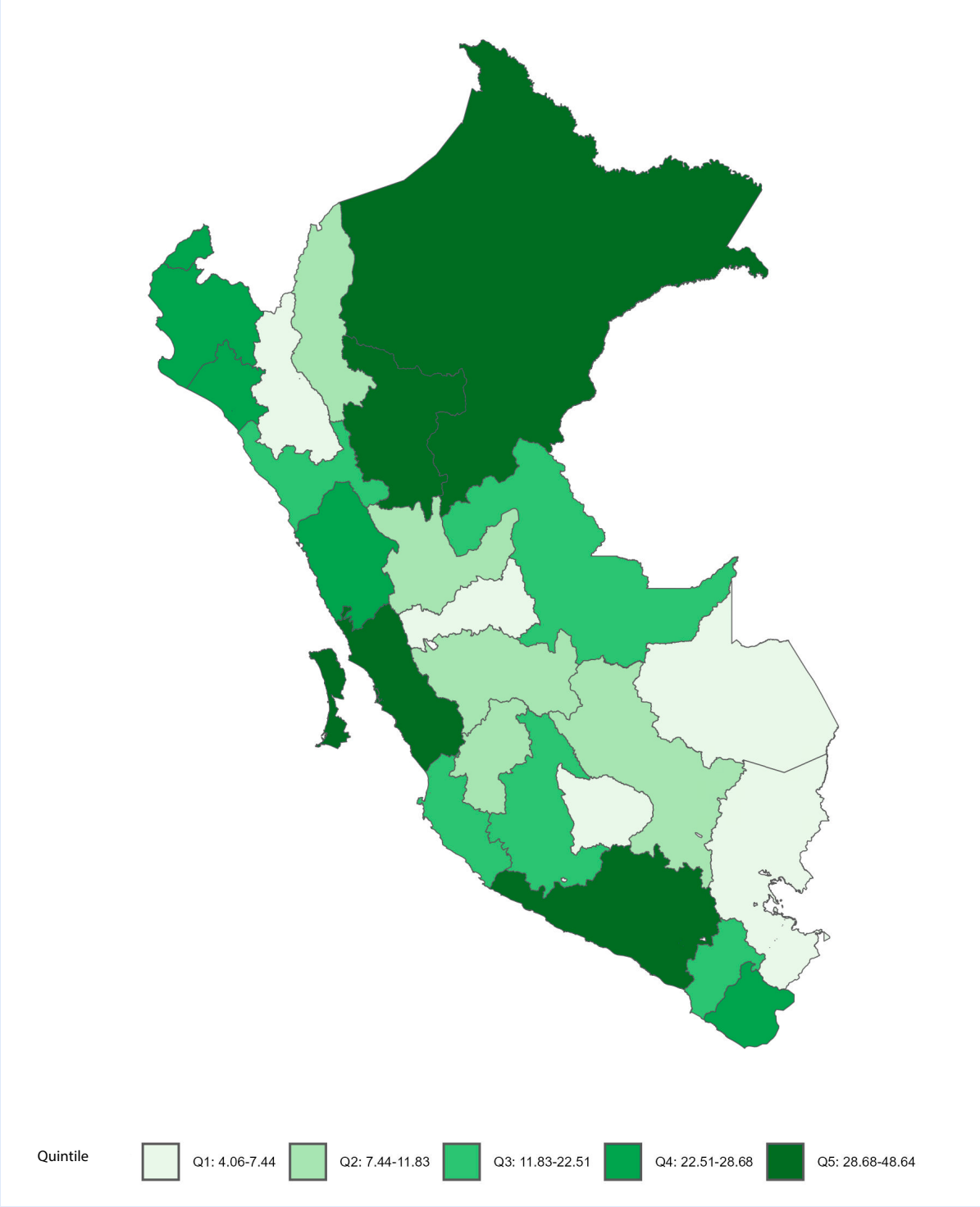


Figure 5. Geographic distribution of the age-standardized myocardial infarction event rate by quintiles in Peru (2023).

demand and supply, ICD-10: I21.A1); Type 3 (sudden death likely caused by AMI); Type 4 (secondary to percutaneous coronary intervention); and Type 5 (secondary to coronary artery bypass graft surgery, ICD-10: I21.A9). It can, therefore, be assumed that the number of Type 1 AMI cases may be lower than reported, as previously demonstrated [35].

A characteristic of the Peruvian healthcare system is its fragmentation into four subsystems: EsSalud, MINSA, the Armed

Forces and Police, and private medical centers and clinics [36]. From our study, it can be inferred that most AMI patients in Peru are treated in EsSalud (around 50%), an important finding considering that EsSalud has only six catheterization labs nationwide. In contrast, the private health subsystem, which treated 15.9% of cases in 2018 and 12.5% in 2023, has approximately 23 catheterization labs, most of them located in Lima (unpublished data obtained from the Peruvian Society of Hemodynamics and Endovascular Intervention - SOPHIE). We also observed an increase in AMI events reported by MINSA, from 26.5% of cases in 2018 to 34% in 2023. This change could be attributed to improved primary prevention practices in the private health subsystem and an increase in previously mentioned risk factors within MINSA, which may explain these shifts in recent years.

Our study is the first to present epidemiological data on the number of AMI cases at the national level and the event rate per 100,000 people, stratified by sex, health subsystems, and political-administrative regions over the past six years. This provides a current overview of a disease with high morbidity and mortality in Peru, aiding in responsible entities' proper planning, resource allocation, and development of primary prevention and AMI treatment strategies. Furthermore, the data obtained can be valuable for the development of future clinical and epidemiological research projects.

However, the study has several limitations. First, the data corresponds to administrative records from various healthcare institutions (IPRESS) nationwide, carrying the inherent risk of coding errors or underreporting. In this regard, it is likely that in the absence of adequate diagnostic capabilities (IPRESS lacking specialists, electrocardiographs, or laboratories for cardiac enzyme testing), many cases of chest pain were coded as ICD-10 I21.9, with patients later referred to more complex centers where the diagnosis might have been confirmed or ruled out. This issue is particularly significant in areas with limited access to healthcare services, such as Peru's highlands, jungle, or rural areas. For instance, 250 cases of AMI were reported in children under 19 years old (excluded from this study), which we believe are likely coding errors. Second, many patients may have been transferred from lower-level IPRESS to more complex facilities within the same department or another, potentially leading to duplicate case counts. However, the data used in the study do not allow us to rule out this possibility, as there is no individual identifier, and the data correspond to cases treated in emergency services, where transfers are typically made to critical care or inpatient services. Third, the codes were sourced from emergency reports, not hospital discharge records. Many patients might have arrived at the emergency department but were not hospitalized (due to death or referral), which could result in some cases initially diagnosed as AMI being subsequently ruled out during their hospital stay or after referral to other centers. These limitations may lead to a misclassification bias in AMI events, potentially impacting the estimates provided in our study. Fourth, age standardization carries inherent methodological limitations, as the numerator is based on INEI population projections that may not accurately represent the population structure during the study period. However, these projections are the country's most reliable and widely accepted official source of population structure. Finally, the study is subject to the ecological fallacy, as the rates were calculated at the population level. Therefore, it is important to consider that we present the currently available administrative data on AMI diagnoses and highlight the need for continuous training of healthcare personnel on proper ICD-10 coding, the digitization of data, and the ongoing monitoring of record quality.

In conclusion, the age-standardized AMI event rate in the Peruvian population has increased in recent years, particularly in regions outside Lima. This rate was consistently higher in men than women throughout the study period. Moreover, the highest number of recorded AMI events was observed in people aged 65 years or older in Lima and the Constitutional Province of Callao and in IPRESS facilities under the Social Health Insurance - EsSalud. Our findings provide a better understanding of the epidemiology of AMI in Peru, enabling informed decision-making by health managers to optimize the treatment of this condition. Furthermore, these results can guide the planning of local and regional clinical intervention studies, contributing to improved understanding and management of AMI.

Author Contributions

AHV: conceptualization, methodology, data curation, validation, formal analysis, investigation, writing - original draft, writing - review & editing, supervision. **RVF:** validation, investigation, writing - original draft, writing - review & editing. **MCD:** conceptualization, validation, investigation, writing - original draft, writing - review & editing, supervision. All authors have read and approved the published version of the manuscript.

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