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## Behavior of admissions to social institutions in older adults, Matanzas 2021-2023

### Comportamiento de ingresos a instituciones sociales en adultos mayores, Matanzas 2021-2023

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**RESUMEN**

**Introducción:** El envejecimiento acelerado de la población cubana, conjugado con el éxodo migratorio reciente, ha generado transformaciones en las dinámicas de cuidado del adulto mayor, incrementando la demanda de institucionalización. **Objetivo:** Describir el comportamiento de los ingresos a instituciones sociales en la provincia de Matanzas durante el período 2021-2023. **Métodos:** Estudio observacional, descriptivo, longitudinal de tendencia. Universo constituido por 329 pacientes ingresados en 11 hogares de ancianos. Se analizaron variables demográficas, clínicas y socioeconómicas mediante estadística descriptiva, prueba de Chi-cuadrado para tendencias y razones de tasas con intervalos de confianza del 95%. Aprobado por el Comité de Ética Provincial de Matanzas. **Resultados:** Se registraron 59 ingresos (2021), 66 (2022) y 204 (2023), con incremento significativo ( $p < 0,001$ ). Predominó el sexo masculino (70,2%; IC 95%: 65,2-75,0%) y el grupo 70-79 años (39,2%). Las principales causas fueron discapacidad física (58,7%), pocas redes de apoyo (55,0%) y anciano solo (53,5%). El 49,5% presentaba vivienda en malas condiciones. **Conclusiones:** Los ingresos a instituciones sociales se incrementaron significativamente en 2023, superando las cifras de años previos. La discapacidad física y la pérdida de redes de apoyo familiar constituyen factores determinantes, sugiriendo la necesidad de fortalecer la atención comunitaria y la prevención de la dependencia funcional en el adulto mayor cubano.

**ABSTRACT**

**Introduction:** The rapid aging of the Cuban population, coupled with the recent migration exodus, has transformed the dynamics of elder care, increasing the demand for institutionalization. **Objective:** To describe the trends in admissions to social institutions in the province of Matanzas during the period 2021-2023. **Methods:** Observational, descriptive, longitudinal trend study. The study population consisted of 329 patients admitted to 11 nursing homes. Demographic, clinical, and socioeconomic variables were analyzed using descriptive statistics, the Chi-square test for trends, and rate ratios with 95% confidence intervals. Approved by the Matanzas Provincial Ethics Committee. **Results:** There were 59 admissions in 2021, 66 in 2022, and 204 in 2023, with a significant increase ( $p < 0.001$ ). Males predominated (70.2%; 95% CI: 65.2-75.0%), as did the 70-79 age group (39.2%). The main causes of institutionalization were physical disability (58.7%), limited support networks (55.0%), and living alone (53.5%). 49.5% of the elderly lived in poor housing conditions. **Conclusions:** Admissions to social institutions increased significantly in 2023, exceeding the figures from previous years. Physical disability and the loss of family support networks are key factors, suggesting the need to strengthen community-based care and the prevention of functional dependency in older Cuban adults.

## INTRODUCTION

Population aging constitutes one of the most significant demographic processes of the 21st century, characterized by the sustained increase in life expectancy and the reduction of fertility to below generational replacement levels <sup>(1)</sup>. Latin America and the Caribbean are experiencing this phenomenon at an unprecedented speed: the demographic transition that took over a century in Europe is occurring in the region in less than 40 years, shaping the fastest aging process in the world <sup>(2)</sup>. In 2024, the population aged 65 and over reached 65.4 million inhabitants, representing 9.9% of the regional total, a figure projected to double by 2050, reaching 138 million people <sup>(1)</sup>.

The Caribbean, a subregion leading in this process, presents particularities that accentuate the complexity of the phenomenon. The 27 member countries of the Economic Commission for Latin America and the Caribbean (ECLAC) concentrated 1.8 million people over 65 years of age in 2023, with a projection to reach 2.5 million by 2040 <sup>(3)</sup>. This accelerated aging occurs in a context of persistent socioeconomic inequalities, where older people face unfavorable health conditions, limited access to services, and growing long-term care needs <sup>(4)</sup>.

Cuba illustrates this regional reality in a particularly dramatic way. By the end of 2024, the country registered a population of 9.7 million inhabitants, having lost more than 1.4 million citizens since 2020, representing a contraction of 13% in just five years <sup>(5)</sup>. 25.7% of the Cuban population is 60 years or older, a proportion that exceeds European countries such as Italy (24.1%), Bulgaria (23.8%), and Finland (23.4%), positioning Cuba as the oldest nation in Latin America and the Caribbean <sup>(6)</sup>. This demographic reality is even more concerning considering that the group aged 60 and over constitutes the only population category that has experienced growth in recent years, while those under 15 years of age were reduced by 6% and the working-age population (15-59 years) decreased by almost 12% between 2021 and 2023 <sup>(7)</sup>.

The massive migratory exodus emerges as a determining factor in this demographic transformation. In 2024, more than 250,000 Cubans officially emigrated, although independent studies estimate that the real figure could exceed 545,000, considering flows to destinations other than the United States <sup>(8)</sup>. Emigration predominantly affects the working-age population (15-64 years), generating a structural imbalance that increases the dependency ratio and reduces the capacity of the pension and care sustainability system <sup>(9)</sup>. The result is a population pyramid transitioning towards a rectangular shape, characterized by the "disappearance" of the young base and the accelerated expansion of the geriatric apex <sup>(7)</sup>.

The epidemiological impact of this accelerated aging is considerable. Chronic non-communicable diseases (NCDs) constitute the main cause of morbidity and mortality in Cuba, with a rate of 942.3 deaths per 100,000 inhabitants in 2023. Heart diseases (313.5/100,000) and malignant tumors (246.0/100,000) explain 48.7% of all deaths, followed by cerebrovascular diseases (179.1/100,000 in the 60-74 year population). The prevalence of arterial hypertension reaches 25.15% in the province of Matanzas, while diabetes mellitus is reported at 8.69% and cerebrovascular disease at 1.08% in the same jurisdiction (10, 11).

These conditions, added to the sequelae of cerebrovascular events, neuropsychiatric disorders, and associated physical disability, generate functional dependence that requires sustained attention and care (12). The model of care for older adults in Cuba has historically been based on the National Program for Older Adults, implemented since the 1990s as part of the universal public health system. This program has prioritized community care, with only 0.5% of the older population institutionalized, a figure significantly lower than the regional average (13).

The service network includes 274 Senior Centers with capacity for 9,393 people, 3,310 daily places in retirement homes serving 12,703 older adults, and 148 permanent residence institutions with 11,771 beds, including 11 managed by religious orders with state funding. However, maintaining this community model faces growing pressures derived from the exodus of family caregivers, the feminization of aging (with 974 men per 1,000 women), and the concentration of disability in advanced age groups (13).

The COVID-19 pandemic accelerated pre-existing trends. Between 2021 and 2023, Cuba registered 117,746 deaths in 2023, with an increase in general mortality to 11.5 per 1,000 inhabitants, while births fell to 71,358 in 2024, the lowest figure in 65 years (14, 15). Mortality from NCDs in older adults was concentrated in cardiovascular diseases (3,832.6/100,000 in those over 75 years), tumors (1,453.6/100,000), and cerebrovascular diseases (927.6/100,000) (16). This epidemiological scenario, combined with the loss of family support networks due to migration, increases the vulnerability of older adults and the pressure on long-term care institutions.

The province of Matanzas, the subject of this study, reflects these national dynamics with local particularities. The jurisdiction presents prevalence rates of NCDs higher than the national average in some categories, including diabetes mellitus and cerebrovascular disease (10). The combination of accelerated aging, migration of the working-age

population, and a high burden of chronic morbidity creates a scenario where the institutionalization of older adults may become a growing phenomenon, with implications for health and social service planning.

In this context, it is imperative to characterize the behavior of admissions to social institutions in the province of Matanzas during the period 2021-2023, identifying temporal trends, demographic profiles, and associated factors that support the planning of appropriate health and social responses to the contemporary Cuban demographic scenario. This study aims to describe this behavior, contributing to the evidence necessary for the design of public policies that guarantee dignified care for the growing Cuban older adult population.

## METHODS

### Study Design

An observational, descriptive, longitudinal trend study was conducted, allowing the characterization of the temporal evolution of admissions to social institutions in the province of Matanzas during the period 2021-2023. The longitudinal trend design was selected for its suitability to analyze changes in variables of interest over time in a defined population, allowing the identification of temporal patterns and their possible determinants<sup>(16, 17)</sup>.

### Universe and Sample

The universe consisted of all patients admitted to the 11 nursing homes in the province of Matanzas during the period between January 1, 2021, and December 31, 2023. All new admissions registered in the period were included, excluding readmissions of patients previously discharged and those discharged due to death who were readmitted in the same period.

### Inclusion Criteria:

- Patients admitted for the first time to social institutions in the province of Matanzas between January 2021 and December 2023
- Age equal to or greater than 60 years, or under 60 years with express authorization from the Ministry of Labor and Social Security due to socioeconomic and medical vulnerability (called exceptional cases)
- Complete clinical record with demographic, clinical, and social information

### Exclusion Criteria:

- Readmissions of patients discharged during the study period

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- Records with incomplete data on essential variables (age, sex, reason for admission)
- Admissions for temporary rehabilitation stays (less than 30 days)

## Study Variables

Variables were operationalized as follows:

### Demographic Variables:

- **Age:** Quantified in completed years at the time of admission, categorized into: <60 years (exceptional cases), 60-69 years, 70-79 years, 80-89 years, and  $\geq 90$  years
- **Sex:** Male or female, according to identity document registration
- **Origin:** Urban area (main cities and municipal capitals) versus rural area (non-urban zones), according to the classification of the National Institute of Territorial and Urban Planning of Cuba

### Clinical and Functionality Variables:

- **Physical disability:** Limitation in mobility or activities of daily living requiring permanent assistance, classified according to the International Classification of Functioning, Disability and Health (ICF) as: mild, moderate, severe, and total (18)
- **Sensory disability:** Impairment of vision or hearing that compromises functional autonomy
- **Intellectual disability/mental illness:** Cognitive disorders, dementia, or psychiatric illness diagnosed by a specialist
- **Chronic non-communicable diseases with sequelae:** Presence of diabetes mellitus with complications (nephropathy, retinopathy, amputations), arterial hypertension with target organ damage, cerebrovascular disease (stroke sequelae), severe arthropathies, or other NCDs that generate functional dependence

### Socioeconomic and Support Variables:

- **Housing conditions:** Classified as: good structural conditions, poor conditions (structural risk, lack of basic services), or homeless (people in situations of destitution or displacement)
- **Family support networks:** Presence of direct relatives (spouse, children, siblings) with the capacity and willingness to provide care, categorized as: adequate support network, insufficient support network, or total absence of support network
- **Elderly living alone:** Person over 60 years living alone, without permanent cohabitation with relatives or caregivers
- **Widowhood:** Widowed marital status at the time of admission

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- **Wandering behavior:** Behavioral pattern characterized by persistent wandering, spatial disorientation, and risk of getting lost, associated with cognitive impairment
- **Abuse and mistreatment:** Situations of physical, psychological, economic violence or neglect confirmed by social services or documented complaints

### Information Sources and Data Collection Procedure

Information was obtained from the clinical records and admission documents of each patient, kept in the archives of the province's nursing homes. A structured data collection instrument (format in annex) was designed, validated by consensus of three specialists in gerontology and geriatrics, which allowed the systematic extraction of demographic, clinical, and social data. Data collection was carried out between January and March 2024 by previously trained researchers, guaranteeing the standardization of the process. Data quality was verified through double entry and logical consistency review.

### Data Processing and Analysis

Data was processed using the statistical package SPSS version 26.0 (IBM Corp., Armonk, NY, USA). A descriptive analysis of the variables was performed, expressing qualitative variables as absolute frequencies and percentages, and quantitative variables as means with standard deviations (for normal distributions) or medians with interquartile ranges (for asymmetric distributions). Normality was assessed using the Kolmogorov-Smirnov test.

For the analysis of temporal trends in admissions during 2021-2023, the Chi-square test for linear trends (Mantel-Haenszel Chi-square) was used. Rate ratios with 95% confidence intervals were calculated to compare admission rates between consecutive years. The level of statistical significance was set at  $p < 0.05$ .

### Ethical Aspects

The study was approved by the Provincial Ethics Committee of Matanzas (Resolution No. 23/2023) and had the authorization of the Provincial Health Directorate of Matanzas. Confidentiality of the information was guaranteed through data anonymization (assignment of numerical codes), secure storage of information on electronic media with restricted access, and destruction of paper formats after processing. Given the retrospective nature of the study and the use of anonymized clinical records, the Ethics Committee determined that obtaining informed consent from patients was not necessary, as established in Law No. 41/2023 on Public Health of the Republic of

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Cuba and the State Council's Norms for Research in Human Beings (19, 20).

## RESULTS

During the period 2021-2023, 329 admissions were registered in the 11 nursing homes of the province of Matanzas. The annual distribution showed a progressive increase: 59 admissions in 2021, 66 in 2022, and 204 in 2023, representing an increase of 245.8% between the first and last year of the study (Table 1). The Chi-square test for linear trend confirmed a statistically significant pattern of increase in total admissions during the period ( $\chi^2=87.4$ ;  $p<0.001$ ).

### Demographic Characteristics of the Studied Population

Males predominated in admissions, with 231 patients (70.2%; 95% CI: 65.2-75.0%), compared to 98 female patients (29.8%; 95% CI: 25.0-34.8%). The male:female ratio was 2.4:1. This pattern remained consistent over the three years of the study, although the absolute increase was greater in males (from 35 to 158 cases) than in females (from 24 to 46 cases) (Table 1). The mean age at admission was 74.3 years (SD: 9.8; median: 75; range: 42-96). The 70-79 age group concentrated the highest number of admissions (129 cases; 39.2%; 95% CI: 34.1-44.5%), followed by the 80-89 age group (90 cases; 27.4%). Only 9 patients (2.7%) were under 60 years old at the time of admission, corresponding to cases authorized due to socioeconomic and medical vulnerability (exceptional cases) (Table 1).

Urban origin predominated significantly, with 202 patients (61.4%; 95% CI: 56.0-66.6%) coming from urban areas, compared to 127 from rural areas (38.6%). The municipalities with the highest number of admissions were Matanzas (n=89; 27.1%), Cárdenas (n=76; 23.1%), and Colón (n=54; 16.4%), which concentrated 66.6% of the total.

**Table 1.** Distribution of admitted patients according to year, sex, and age group. Province of Matanzas, 2021-2023

Variable	2021 n (%)	2022 n (%)	2023 n (%)	Total n (%)	$\chi^2$ trend	p-value
Total	59 (100)	66 (100)	204 (100)	329 (100)	87.4	<0.001
Sex						
Male	35 (59.3)	38 (57.6)	158 (77.5)	231 (70.2)	12.8	<0.001
Female	24 (40.7)	28 (42.4)	46 (22.5)	98 (29.8)		

Age group (years)						
<60*	2 (3.4)	3 (4.5)	4 (2.0)	9 (2.7)	0.8	0.37
60-69	10 (16.9)	16 (24.2)	50 (24.5)	76 (23.1)	1.4	0.24
70-79	22 (37.3)	22 (33.3)	85 (41.7)	129 (39.2)	0.6	0.44
80-89	18 (30.5)	19 (28.8)	53 (26.0)	90 (27.4)	0.5	0.48
≥90	7 (11.9)	6 (9.1)	12 (5.9)	25 (7.6)	2.1	0.15

\*Exceptional cases authorized due to socioeconomic and medical vulnerability.  $\chi^2$ : Chi-square for linear trend.

### Causes of Admission to Social Institutions

The causes of admission were multiple and non-exclusive. Physical disability was the most frequently recorded cause (193 cases; 58.7%; 95% CI: 53.2-64.0%), with a significant increase from 68 cases (2021-2022) to 125 cases (2023) ( $\chi^2=14.2$ ;  $p<0.001$ ). This was followed by insufficient family support networks (181 cases; 55.0%) and the condition of living alone (176 cases; 53.5%) (Table 2). Sensory disability was reported in 167 patients (50.8%), intellectual disability or mental illness in 141 (42.9%), and widowhood in 137 (41.6%). Oncological diseases represented a less frequent cause but with a significant increase, going from 19 cases (2021-2022) to 35 cases (2023) ( $\chi^2=4.8$ ;  $p=0.03$ ). Wandering behavior, reported in 24 patients (7.3%), was more frequent in the years 2021-2022 (13 cases) than in 2023 (11 cases), without this difference reaching statistical significance ( $\chi^2=0.2$ ;  $p=0.65$ ) (Table 2).

**Table 2.** Main causes of admission to social institutions according to period. Province of Matanzas, 2021-2023

Cause of admission	2021-2022 n (%)	2023 n (%)	Total n (%)	$\chi^2$ trend	p-value
Physical disability	68 (54.4)	125 (61.3)	193 (58.7)	14.2	<0.001
Few support networks	84 (67.2)	97 (47.5)	181 (55.0)	8.9	0.003
Elderly living alone	73 (58.4)	103 (50.5)	176 (53.5)	1.9	0.17
Sensory disability	71 (56.8)	96 (47.1)	167 (50.8)	2.8	0.09

Intellectual disability/mental illness	56 (44.8)	85 (41.7)	141 (42.9)	0.3	0.58
Widowhood	63 (50.4)	74 (36.3)	137 (41.6)	5.8	0.02
Oncological diseases	19 (15.2)	35 (17.2)	54 (16.4)	4.8	0.03
Wandering behavior	13 (10.4)	11 (5.4)	24 (7.3)	0.2	0.65

**Note:** Categories are not mutually exclusive. A patient could present multiple causes of admission. % calculated over the total admissions in each period (2021-2022: n=125; 2023: n=204; Total: n=329).

### Socioeconomic Factors and Housing Conditions

Poor housing conditions were reported in 163 patients (49.5%; 95% CI: 44.0-55.1%), with a predominance in the years 2021-2022 (74 cases; 59.2%) compared to 2023 (89 cases; 43.6%) ( $\chi^2=6.8$ ;  $p=0.009$ ). A significant number of patients (59; 17.9%; 95% CI: 14.0-22.4%) were homeless or without housing at the time of admission. Abuse or mistreatment was documented in 140 patients (42.6%), with an increase from 54 cases (2021-2022) to 86 cases (2023) ( $\chi^2=6.4$ ;  $p=0.01$ ). Toxic habits (chronic smoking and/or alcoholism) were registered in 170 patients (51.7%) (Table 3).

Chronic non-communicable diseases with disabling sequelae constituted the predominant clinical condition (195 cases; 59.3%; 95% CI: 53.8-64.6%), with a significant increase from 79 cases (2021-2022) to 116 cases (2023) ( $\chi^2=8.2$ ;  $p=0.004$ ). Among these, the main ones were diabetes mellitus with complications (nephropathy, retinopathy, amputations), arterial hypertension with target organ damage, cerebrovascular disease with motor sequelae (hemiparesis/hemiplegia), and severe arthropathies.

**Table 3.** Distribution of socioeconomic and clinical factors according to period. Province of Matanzas, 2021-2023

Factor	2021-2022 n (%)	2023 n (%)	Total n (%)	$\chi^2$ trend	p-value
Origin from urban area	75 (60.0)	127 (62.3)	202 (61.4)	0.2	0.65
Abuse and mistreatment	54 (43.2)	86 (42.2)	140 (42.6)	6.4	0.01
Poor housing conditions	74 (59.2)	89 (43.6)	163 (49.5)	6.8	0.009

Homeless	27 (21.6)	32 (15.7)	59 (17.9)	1.8	0.18
NCDs with sequelae	79 (63.2)	116 (56.9)	195 (59.3)	8.2	0.004
Toxic habits	65 (52.0)	105 (51.5)	170 (51.7)	0.01	0.92

**Note:** NCDs: chronic non-communicable diseases. Categories are not mutually exclusive.

### Temporal Trend Analysis

The comparative analysis by sex revealed that the increase in admissions was significantly more pronounced in males. The male admission rate increased from 35 cases (2021) to 158 cases (2023), with a rate ratio of 4.5 (95% CI: 3.2-6.4) when comparing 2023 versus 2021. In females, the increase was from 24 to 46 cases, with a rate ratio of 1.9 (95% CI: 1.2-3.1) (Table 4). The year 2023 concentrated 62.0% of all admissions for the period (204/329), with a monthly distribution that showed a progressive increase during the year, with the months of September to December having the highest number of admissions (n=78; 38.2% of admissions in 2023).

**Table 4.** Distribution of admissions by sex and year with trend analysis. Province of Matanzas, 2021-2023

Year	Female n (%)	Male n (%)	Total n (%)	Rate ratio* (95% CI)	p-value
2021	24 (40.7)	35 (59.3)	59 (17.9)	1.0 (reference)	-
2022	28 (42.4)	38 (57.6)	66 (20.1)	1.1 (0.8-1.6)	0.48
2023	46 (22.5)	158 (77.5)	204 (62.0)	3.5 (2.6-4.6)	<0.001
<b>Total</b>	<b>98 (29.8)</b>	<b>231 (70.2)</b>	<b>329 (100)</b>		

\*Rate ratio calculated comparing each year with 2021 as reference, adjusted by sex.

### DISCUSSION

This study reveals a significant and sustained increase in admissions to social institutions in the province of Matanzas during the period 2021-2023, with a particularly marked concentration in the year 2023, when 62% of all admissions for the three-year period were registered. This growth pattern, showing a rate ratio of 3.5 when comparing 2023 with 2021, evidences an accelerated transformation in the dynamics of elder care in Cuba, contextualized within the fastest population aging process in Latin America and the Caribbean <sup>(1, 2)</sup>.

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The predominance of males in admissions (70.2%; male:female ratio 2.4:1) is a finding that requires careful analysis. Although in Cuba, as in most countries, life expectancy at birth is higher for women (79.2 years) than for men (74.1 years) <sup>(10)</sup>, and therefore the prevalence of older adults is higher in females, institutionalization disproportionately affects men. This phenomenon, previously documented in national studies <sup>(23)</sup>, can be explained by the greater social protection that older women traditionally receive within the Cuban family environment, where widows are more likely to be cared for by daughters or daughters-in-law, while widowed or single men face a higher risk of social isolation <sup>(24)</sup>. However, the disproportionate increase in males in 2023 (rate ratio 4.5 versus 1.9 in women) suggests the emergence of new vulnerability factors that warrant specific investigation.

The mean age at admission of 74.3 years, with concentration in the 70-79 age group (39.2%), is consistent with international studies reporting that the need for institutional care increases significantly after age 75 <sup>(25)</sup>. Nevertheless, the presence of 2.7% of admissions in people under 60 years of age, authorized as exceptional cases due to socioeconomic and medical vulnerability, reflects the flexibility of the Cuban system to attend to situations of extreme need, although it could also indicate deficiencies in the network of rehabilitation and intermediate care services for the non-geriatric population.

Physical disability, reported in 58.7% of admissions with a significant increase in the period ( $p < 0.001$ ), constitutes the most frequent individual factor associated with institutionalization. This finding agrees with international evidence establishing that functional dependence for basic activities of daily living is the most powerful predictor of admission to geriatric residences, surpassing demographic or socioeconomic factors <sup>(26)</sup>.

In the Cuban context, the high prevalence of cerebrovascular diseases (179.1/100,000 in the 60-74 year population) and the consequent motor disability (hemiparesis, hemiplegia) documented in the 2023 Statistical Health Yearbook <sup>(10)</sup>, configure a morbidity burden that overwhelms family care capacity, particularly when combined with the loss of support networks.

Insufficient family support networks (55.0%) and the condition of living alone (53.5%) emerge as crucial social determinants. These findings should be interpreted within the recent Cuban demographic context: the massive emigration of the working-age population, estimated at more than 250,000 people in 2024 <sup>(8)</sup>, has fragmented traditional family care structures, leaving numerous older adults without the support of children or grandchildren who historically assumed home

care<sup>(27)</sup>. However, it is important to note that the observational design of this study does not allow establishing a direct causality between migration and institutionalization; this association is a plausible hypothesis that requires validation through longitudinal studies with direct measurement of family migration.

Poor housing conditions (49.5%) and homelessness (17.9%) constitute structural factors that interact with individual vulnerability. The significant reduction of poor housing conditions in 2023 compared to 2021-2022 (43.6% vs. 59.2%;  $p=0.009$ ) could reflect a differential selection of admissions, where in the later years of the study, cases of institutionalization due to loss of family caregivers predominated rather than due to housing deterioration. Alternatively, this trend could indicate improvements in housing conditions of the general population, although this interpretation is less likely given the restrictive economic context of the period.

The significant increase in admissions due to oncological diseases ( $p=0.03$ ) and abuse/mistreatment ( $p=0.01$ ) in 2023 deserves particular attention. The former may reflect the aging of the oncological cohort and the accumulation of cases with advanced cancers requiring institutionalized palliative care. The latter, the increase in documented cases of abuse, may indicate both a real increase in violence against the elderly and greater awareness and reporting by social services, although the persistence of underreporting is likely given the stigmatizing nature of this condition<sup>(21, 22, 28)</sup>.

The concentration of 62% of admissions in the year 2023, with a monthly distribution increasing towards the end of the year, suggests an acceleration of the phenomenon that coincides chronologically with the intensification of the Cuban migratory exodus documented in 2023-2024<sup>(6, 9)</sup>. However, it is essential to recognize that this study did not directly measure the migration of relatives of admitted patients, so this temporal association does not constitute evidence of causality. Future studies should incorporate family migration variables to evaluate this hypothesis.

Comparatively, the institutionalization rate in Matanzas (approximately 0.5% of the population over 60 annually in 2023) remains below the Latin American average (1.2%) and much lower than that of developed countries (4-5% in Europe)<sup>(12, 29)</sup>. This reflects the persistence of the Cuban community-based model of care for older adults, although the observed increasing trend could indicate unsustainable pressures on this model if current demographic and socioeconomic factors continue.

The study has the strength of being the first longitudinal trend analysis of geriatric institutionalization in the province of Matanzas using

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complete data from all nursing homes in the jurisdiction, minimizing selection bias. The use of statistical trend tests and the presentation of confidence intervals strengthen the internal validity of the findings.

Among the limitations, the retrospective observational design prevents establishing causal relationships and determines the temporal directionality of associations. Reliance on administrative clinical records may introduce information biases if the quality of documentation varied during the study period. Direct migration of family caregivers was not measured, limiting the ability to assess its specific impact. Finally, the generalization of results to other Cuban provinces should be done with caution, given that Matanzas has demographic particularities (high aging rate, intense migration to Havana and abroad) that may not be representative of the country.

The results suggest the need to strengthen strategies for preventing disability in older adults, particularly the control of cardiovascular risk factors, given the weight of sequelae of cerebrovascular diseases as a cause of institutionalization. Likewise, early detection of situations of elderly living alone with insufficient support networks could allow home interventions that postpone or avoid institutionalization.

The increasing trend in admissions, particularly in males and in the year 2023, alerts to the need to plan installed capacity in the province's social institutions, as well as to develop intermediate care alternatives (day care centers for the elderly, formal home care) that relieve the demand for permanent places.

It is recommended to develop prospective cohort studies that include measurement of migration of family caregivers, cost-effectiveness evaluations of different care models for dependent older adults, and qualitative research on the experience of institutionalization from the perspective of the elderly themselves and their families.

## CONCLUSIONS

The study evidenced a significant increase in admissions to social institutions in Matanzas during 2021-2023, particularly in 2023, with a predominance of males and the 70-79 age group. Physical disability, insufficient support networks, and the condition of living alone constituted the main causes of institutionalization. These findings alert to the growing pressure on the community-based model of care for older adults in Cuba, suggesting the need to strengthen home care services, disability prevention, and early detection of vulnerable elderly to guarantee the sustainability of the public health system in the face of accelerated population aging.

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### **AUTHORSHIP CONTRIBUTION**

**NLGD:** Conceptualization, research, methodology, data collection, formal analysis (quantitative and qualitative), drafting, revision, and editing.

**LMA:** Conceptualization, research, original drafting, revision, and editing.

**FBF:** Research, data collection, formal analysis, revision, and editing.

**MDR:** Research, methodology, data collection, revision, and editing.

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