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PREVALENCE AND FACTORS ASSOCIATED WITH CONSTIPATION IN ELDERLY PEOPLE LIVING IN A COMMUNITY IN THE CITY OF MACEIÓ, ALAGOAS – BRAZIL

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João Araújo Barros-Neto[1], Jessiane Rejane Lima Santos[2], Bárbara Morgana Medeiros Lacerda[3], Anthony Batista de Oliveira Lopes[4], Maria do Socorro Meneses Dantas[5], Celina de Azevedo Dias[6], Maria Cláudia Silva[7] and Müller Ribeiro-Andrade[8].

ABSTRACT

Objective: To identify the prevalence of constipation and possible factors associated with this clinical condition in community-dwelling older adults living in Maceió, a city in the Northeast region of Brazil. Materials and methods: cross-sectional study with people aged ≥ 60 years, of both sexes, living in Maceió. Sociodemographic and economic information, health conditions, cognitive ability and anthropometric measurements were gathered. The evacuatory pattern was evaluated based on the ROMA IV criteria. Results: The prevalence of constipation found was 40.0%. Among the frequent symptoms were reported the sensation of incomplete emptying (n = 89; 37.2%), the presence of hardened stools (n = 88; 36.7%), and evacuatory effort (n = 65; 27.1%) Mild depression (OR = 2.29; p < 0.01), hypertension (OR = 0.55; p = 0.03), and polypharmacy (OR = 0.41; p = 0.03) were associated with the outcome. The diagnosis of mild depression remained associated, increasing the chances of the elderly person having constipation by two times (OR = 2.10 p = 0.02). Conclusion: The prevalence of constipation in the study population was high and was associated, in univariate analysis, with the diagnosis of hypertension, use of polypharmacy and depression.

Keywords: Dysbiosis, Aging, Digestive System Disorders.

[1] Corresponding author
Faculty of Nutrition - Federal University of Alagoas
E-mail: joao.neto@fanut.ufa.br
[2] Institute of Biological and Health Sciences - Federal University of Alagoas
[3] Faculty of Nutrition - Federal University of Alagoas
[4] Institute of Biological and Health Sciences - Federal University of Alagoas
[5] Institute of Physical Education and Sport - Federal University of Alagoas
[6] Institute of Biological and Health Sciences - Federal University of Alagoas
[7] Institute of Biological and Health Sciences - Federal University of Alagoas
[8] Institute of Biological and Health Sciences - Federal University of Alagoas

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INTRODUCTION

Without proportional advances in living conditions and access to health services, changes in the population age profile generated major impacts (Romero; Maia, 2022). In view of the rapid demographic transition in Brazil, active aging and the promotion of health and autonomy of the elderly have become central agendas (Oliveira Neto, 2020).

In Brazil and Alagoas, the elderly population represents, respectively, 15% and 9% of the domiciled population (Alagoas, 2020; IBGE, 2022). This age group demands high resources from the high-complexity health system, especially due to conditions that are easily avoidable, if inserted in an effective context of promoting autonomy and longevity. One such condition is constipation (Deb; Prichard; Bharucha, 2020; Oliveira et al., 2021).

Constipation is a functional disorder characterized by difficult, infrequent, or incomplete defecation. Among elderly individuals, its estimated prevalence is 19% and 10% when evaluated based on the Rome IV criteria, being associated with age, sex, income, and opioid medications (Barberio et al., 2021; Salari et al., 2023). However, there is still no specific data on the prevalence of this condition among community residents of this age group in the capital of Alagoas, nor the associated factors.

The etiology of constipation in the elderly population includes physiological changes resulting from the senescence process, metabolic and neurological disorders, nutritional inadequacies, psychobehavioral aspects and lifestyle. All these factors exert a direct and indirect influence on gastrointestinal motility and motricity, compromising the general state of health as a result of intestinal dysfunction (Diaz et al., 2024; Leung et al., 2011).

Constipation in older people is associated with serious complications, such as fecal incontinence, seen in 1.7% of cases, due to the overflow of liquid stools. In addition, rectal prolapse, with a risk increased by up to six times, can lead to intestinal perforation and stercoral peritonitis, fatal conditions. Likewise, intestinal obstruction by impacted feces increases the risk of cardiovascular diseases and stroke, due to excessive effort during evacuation. This effort can also cause hemorrhoids, anal fissures and affect mobility due to pain and local and abdominal discomfort during and after bowel movements. Thus, early diagnosis and proper management are essential to avoid these scenarios (Leung et al., 2011; Zheng et al., 2024).

Although constipation is a common problem among older people, the importance of maintaining gut health in this group is still underestimated. On the other hand, identifying its occurrence and associated factors can help define effective care strategies for this

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population (Deb; Prichard; Bharucha, 2020). In this sense, this study aimed to help fill this information gap, presenting data on the prevalence and factors associated with constipation in elderly people living in communities in the city of Maceió, capital of the state of Alagoas.

MATERIALS AND METHODS

ETHICAL ASPECTS

The Macroproject of which he was part, called I Alagoas Diagnosis of Health, Nutrition and Quality of Life of the Elderly, was submitted to and approved by the Research Ethics Committee of the Federal University of Alagoas (UFAL) (CAAE nº 39960320200005013). All the proposing researchers and institutions were aware of and complied with the provisions of Resolutions 510/16 and 466/2012 (Brasil, 2013, 2016). All participants signed the Informed Consent Form.

STUDY TYPE, SAMPLE POPULATION AND DATA COLLECTION

It is a cross-sectional population-based.

To determine the sample size in the present study, the percentage of elderly people in relation to the total number of inhabitants of Maceió was considered (Alagoas, 2020). Based on this, plus the estimated prevalence of constipation in the age group of 19%, precision of 5% and 95% confidence interval, the calculation was 237 elderly people (Salari et al., 2023).

The city of Maceió was divided into census tracts, to define the collection locations. In each tract drawn, data collection was initiated through systematic selection of households, based on the drawing of a starting point of the count.

The main study was collected from April 2022 to June 2023, through a home visit, when a questionnaire validated in a pilot test was completed. The form dealt with sociodemographic and economic information, health status, lifestyle, cognitive ability, and nutritional status.

INCLUSION CRITERIA

People aged 60 years or older, both sexes and being a fixed resident of the city of Maceió were included.

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SOCIODEMOGRAPHIC, ECONOMIC AND LIFESTYLE DETERMINANTS

Identification data (gender, age, race) and demographic information (study, income, family nucleus) were collected, described as sex: male and female, age: 60-79 years and ≥ 80 years, self-declared race: black (black, brown) and other ethnicity (white, yellow, indigenous), schooling: ≤ 4 and > 4 years, family nucleus: single-person (living alone) and composite (living with two or more people). Family income was expressed as a measure of central tendency.

Lifestyle was assessed by identifying alcohol consumption, smoking habit and regular practice of Physical Activity (PA).

Alcoholics/smokers were defined as all those who reported using alcoholic beverages and tobacco or similar beverages in the last month at least once.

For the PA variable, the International PA Questionnaire - IPAQ was used. The instrument considers the weekly time in PA optional, allowing the estimation of the time in inactivity and intensity physical effort. Based on this information, the participants were grouped into physically active (≥150 min.) and insufficiently active (<150min.) (Kasai et al., 2015).

HEALTH CONDITION

Health status was analyzed by diagnosis of chronic non-communicable disease (NCD), use of medication, depressive symptoms, cognitive ability and nutritional status.

Self-reported diabetes (DM) and systemic arterial hypertension (SAH) were considered, which are the two NCDs of greatest interest in the country (Brasil, 2021). The medication, evaluated for continuous, was presented in polypharmacy (≥ 5 drugs) and non-polypharmacy (0-3 drugs) (WHO, 2017).

Symptoms of depression were assessed using the Geriatric Depression Scale (GDS-15), Brazilian version. The scale consists of a test consisting of 15 questions with answers in the affirmative/negative format. Scores 0-4 characterize normality, ≥ 5 were understood as mild depression and ≥ 11 as severe depression (Almeida; Almeida, 1999).

Cognitive ability was assessed using the Mini Mental State Examination, Brazilian version (Brucki et al., 2003). This is the age-specific cognitive screening pattern. The score ranges from 0 to 30, defined by education (Teigão; Moser; Fidalski, 2024). In this study, cognitive deficit (points/years of schooling) was assumed to < 13 points/0 years, < 18 points/1-8 years, and < 26 points/9 years or more.

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Nutritional status was assessed using anthropometric measurement of weight and height, applied in formula. All instruments of anthropometric analysis were calibrated at the beginning of the collection, and the use on a regular surface was recommended.

To measure weight, a portable digital scale was used, with a capacity of 150kg and a precision of 100g. The subjects were weighed without shoes and without adornments, remaining in an orthostatic position, shoulders relaxed and arms loose laterally. Height was obtained by reading on a portable stadiometer, graduated in centimeters (limit: 200 cm), affixed to a surface. Those with low mobility were fitted with a knee caliper (limit: 90.00 cm), with the right leg at a 90° angle, measured from the heel to the head of the fibula, which was inserted in a predictive formula, specific for age, and height was estimated in meters (Chumlea; Roche; Steinbaugh, 1985; Lohman; Roache; Martorell, 1992; Lohman, 1992).

For diagnostic purposes, the Body Mass Index (BMI) was calculated by the ratio between weight and square of height, the values were defined as underweight (< 22kg/m²), normal weight (22 to 27kg/m²) and overweight (> 27kg/m²).

BOWEL EVACUATORY PATTERN

To assess intestinal motility, the evacuatory profile, the Bristol Scale, and the ROMA IV guideline were addressed (Sobrado et al., 2018).

Participants were asked about their evacuatory activity in the last 7 days for spontaneous evacuation (never, sometimes, always) and with effort (yes/no), melena and/or hematochezia (present/absent), stool leakage [never (not once), weekly (at least 1 episode in 7 days), daily (at least 1 episode every day)].

The Bristol Scale is a clinical tool that classifies the shape and consistency of stools, helping to assess intestinal health and bowel movement pattern (Sobrado et al., 2018). From the visualization of the scale, the participants reported the most frequent stools. For description, constipation (types 1 and 2), desirable (types 3 and 4) and diarrhea (types 5, 6 and 7) were provided.

The ROMA IV criteria are systematized in seven domains to establish the presence of functional gastrointestinal disorders. For constipation, five symptoms are synthesized (Sobrado et al., 2018). These symptoms were organized by reported frequency [never or rarely, sometimes (< 1 in 4), often (> 1 in 4), and always]. Individuals who reported some alteration to two or more domains in the last 6 months, which typifies a minimum of 25% of bowel movements, were considered to have constipation.

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DATA ANALYSIS

For the statistical analysis, the software Software Jamovi version 8.1.2.0 was used.

The behavior of the variables was verified in terms of the assumption of normality (Lilliefors test) and the homogeneity of the variance of the residuals (Levene test). The non-parametric distribution was found for the variables age and income, the measures of central tendency (median) and dispersion [minimum (min.) and maximum (max.) value] were calculated, and the relative and absolute frequencies were verified for the categorical variables.

Univariate and multivariate logistic regressions were performed to verify the association between the study variables and the outcome constipation. Multivariate logistic regression analysis was adjusted for sex, age, physical activity, alcohol consumption, and smoking.

For all analyses, an alpha value of 5% was adopted.

RESULTS

This study consisted of 240 participants. Most of the sample was female (n = 165; 68.8%), black (n=167; 69.6%) and aged 60-79 years (n = 204; 85.0%), with a median of 69 years (min.-max.: 60-99 years). The median family income was R$2,400.00 (min.-max.: R$500.00-35,000.00) and 14.0% (n = 33) lived alone (Table 1).

Alcohol and smoking habits were above 10.0% for both, and 31.7% (n = 76) of the participants were insufficiently active. Hypertension and overweight were frequent conditions. Depressive symptoms were observed in 28.2% (n = 66) and cognitive deficit in 12.9% (n = 31) (Table 1).

Table 1. Sociodemographic characteristics and health conditions of older people living in communities in the city of Maceió, Alagoas, 2024

Variables		N	%
Sociodemographic and lifestyle			
Age			
	60-79 years	204	85,0
	≥ 80 years	36	15,0
Sex			
	Female	165	68,8
	Male	75	31,2
Schooling			
	≤ 4 years of study	116	48,3
	> 4 years of study	124	51,7
Self-declared race			
	Black	167	69,6
	Other ethnicities	73	30,4

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Family Starter			
	Family	33	14,0
	Composite core	202	86,0
Styling			
	Yes	41	17,2
	No	198	82,8
Smoking			
	Yes	29	12,1
	No	211	87,9
Physical activity			
	Active	164	68,3
	Insufficiently active	76	31,7
Health conditions			
Diabetes			
	Yes	73	31,1
	No	162	68,9
Hypertension			
	Yes	154	65,5
	No	81	34,5
Medication use			
	Polypharmacy	27	11,3
	Non-polypharmacy	212	88,7
Depressive symptoms			
	No symptoms	168	71,8
	With depressive symptoms	66	28,2
	Mild depression	56	84,8
	Severe depression	10	15,2
Body Mass Index			
	Low weight	30	13,4
	Eutrophic	64	28,6
	Overweight	130	58,0

Source: authors, 2024.

In the evaluation of the recent evacuatory profile, 27.1% (n = 65) reported exertion and 21.3% (n = 51) complained of constipation. In this sample, 3.8% (n = 9) of the participants reported the presence of rectofecal bleeding. According to ROMA IV, the prevalence of functional constipation was 40.0%. Among the symptoms evaluated, incomplete emptying (n = 89; 37.2%) and the presence of hardened stools (n = 88; 36.7%) were frequent (Table 2).

Table 2. Evacuatory pattern and prevalence of constipation in older adults living in communities in the city of Maceió, Alagoas, 2024

Variables		**n**	**%**
Bowel evacuatory profile			
Strain when evacuating			
	Yes	65	27,1
	No	175	72,9
Spontaneous evacuation			
	Never	45	18,8
	Sometimes	47	21,6
	All the time	148	61,7

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Leakage of feces			
	Never	216	90,0
	Weekly	19	8,0
	Daily	5	2,0
Bristol Scale			
	Constipation	51	21,3
	Desirable	158	65,9
	Diarrhoea	4	1,7
Melena and/or hematochezia			
	Present	9	3,8
	Absent	231	96,3
ROMA IV criteria			
Effort to defecate			
	Never or rarely	153	63,8
	Sometimes	44	18,3
	Frequently	30	12,5
	All the time	12	5
Hardened stools			
	Never or rarely	151	62,9
	Sometimes	54	22,5
	Frequently	23	9,6
	All the time	11	4,6
Sensation of incomplete evacuation			
	Never or rarely	151	62,9
	Sometimes	57	23,8
	Frequently	22	9,2
	All the time	10	4,2
Locked feces stuck, no passage			
	Never or rarely	161	67,1
	Sometimes	51	21,3
	Frequently	17	7,1
	All the time	11	4,6
Fecal disimpaction maneuver			
	Never or rarely	212	88,3
	Sometimes	19	7,9
	Frequently	9	3,8
	All the time	0	0
Diagnosis of Constipation ROMA IV			
	With functional constipation	96	40
	No functional constipation	144	60

Source: authors, 2024.

Table 3 shows the analyses of the univariate association between constipation and sociodemographic variables and health conditions. Bowel dysfunction was associated with SAH (OR = 0.55; p = 0.03), polypharmacy (OR = 0.41; p = 0.03), and mild depression (OR = 2.29; p < 0.01).

Table 3. Univariate analysis of factors associated with constipation in older adults living in communities in Maceió, Alagoas, 2023.

Variables	Constipation		Normal evacuatory pattern		OR	p
	n	%	n	%		
Female	68	28,3	97	71,7	0,85	0,57
Age < 80 years	80	33,3	124	66,7	1,24	0,55

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Studied 4 years or more	54	56,3	70	29,2	1,35	0,24
Black self-reported race	66	68,8	30	31,3	1,06	0,81
Family	15	45,5	18	54,5	0,77	0,49
Alcoholist	17	17,7	24	10,0	0,93	0,85
Smoker	12	12,5	17	7,1	0,93	0,87
Insufficiently active	69	71,9	95	39,6	0,75	0,33
Diabetes (sim)	35	36,8	38	16,2	0,63	0,11
Hypertension (yes)	69	73,4	85	36,2	0,55	0,03
Polypharmacy	16	16,7	11	4,6	0,41	0,03
Depressive symptoms	-	-	-	-	-	0,01
Mild depression	31	32,3	25	10,7	2,29	0,00
Severe depression	6	6,3	4	1,7	2,77	0,12
BMI Categories	-	-	-	-	-	0,51
Low weight	9	10,2	21	9,4	0,58	0,26
Overweight	52	59,1	78	34,8	0,91	0,77
Rectofecal blood	4	44,4	5	55,6	0,82	0,78

Source: authors, 2024 * Univariate logistic regression. OR = Odds ratio.

In a multivariate analysis adjusted for sex, age, smoking, alcoholism, and physical activity, to identify the factors associated with constipation, it was observed that the classification of mild depression remains associated with constipation, increasing the chances of the elderly person having constipation by two times (OR = 2.10 p = 0.03) (Table 4).

Table 4. Multivariate analysis of risk factors for constipation in older adults living in communities in Maceió, Alagoas, 2023.

Variables	**Constipation**		
	OR	**IC 95%**	**P***
Adjusted analysis [#]			
Use of 4 or more medications	0,46	0,19-1,08	0,07
Hypertension	0,57	0,30-1,07	0,08
Depressive symptoms	-	-	0,03
Mild depression	2,11	1,07-4,11	0,03
Severe depression	4,01	0,88-18,14	0,07

* Multivariate logistic regression.
OR = Odds ratio. 95% CI = 95% Confidence Interval.
[#] Adjusted for sex, age, education, physical activity, alcohol consumption, and smoking.

DISCUSSION

This study investigated the prevalence of constipation in community-dwelling elderly people in Maceió, analyzing sociodemographic and economic factors, health conditions, evacuatory pattern, nutritional status, and cognitive capacity.

The high prevalence of constipation in elderly people observed in this study corroborates the results found by Klaus et al. (2015), who reported 42.5% in the same age group, however, it is important to highlight that this research was carried out in long-term care institutions, where, given the precarious health conditions, they report a greater

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dependence on care, constipation is a frequent condition in this population group. Carneiro et al. (2018) identified this clinical condition in approximately 23% of the sample of elderly people living in the community in the State of Paraná. Physiological changes in the large intestine associated with aging, such as reduced collagen and myenteric plexuses, may contribute, although the direct relationship is still lacking evidence (Conrado et al., 2018; Terra et al., 2022).

In this study, constipation was more prevalent among women, a finding consistent with other studies (Amiri; Hassanzadeh; Rahimi, 2024; Gomes; Duarte; Santos, 2019). A possible explanation is the laxity of the floor, the most common dysfunction in this population, which interferes with the defecation process (Gorzoni; Marrochi, 2018; Leung et al., 2011). Despite the high frequency, there was no significant association between constipation and schooling or insufficient physical activity, although previous studies indicated a higher risk for these factors (Carneiro et al., 2018).

Physical inactivity is recognized as one of the main risk factors and aggravation of constipation. However, the insufficiently active lifestyle of most of the elderly people in this study was not associated with this clinical condition (Freitas et al., 2022). Garda et al. (2024), identified an association between constipation and a sedentary or insufficiently active lifestyle, where 44.4% of constipated older people were classified as sedentary. This fact can be explained by the induction of peristaltic movements produced by the practice of regular physical activity, in addition, physical exercise directly contributed to the development of the abdominal and pelvic muscles fundamental for the evacuatory process (Jesus; Diniz, 2017). It is important to highlight that the World Organization of Gastroenterology recommends the practice of regular activity for the management of constipation (Lindberg et al., 2010).

Smoking and alcohol consumption were not associated with constipation, confirming previous results (Amiri; Hassanzadeh; Rahimi, 2024; Carneiro et al., 2018). On the other hand, arterial hypertension was the most prevalent chronic disease in the sample and with a statistically significant association. Studies suggest that constipation may coexist with cardiovascular risk factors due to evacuatory effort, which can increase blood pressure, triggering cardiovascular events (Elliott; Ram, 2011; Ishiyama et al., 2019). In addition, some classes of antihypertensive drugs, such as calcium channel blockers, are associated with constipation (Hojo; Shibuya; Nagahara, 2023; Zheng et al., 2024).

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In univariate analysis, polypharmacy showed an initial association with constipation, but lost significance in multivariate analyses. However, medications such as anticholinergics, opioids, and nonsteroidal anti-inflammatory drugs often contribute to the condition (Ness et al., 2006). Klaus et al. (2015) observed that 97.7% of the elderly used medications with a potential constipating effect. Medications such as anticholinergic agents, opioids, calcium supplements, and nonsteroidal anti-inflammatory drugs can reduce intestinal motility, contributing to the regular use of laxatives (Ness et al., 2013).

Depression was the only psychosocial factor associated with this evacuatory disorder ($p < 0.05$), corroborating studies that relate psychological disorders and constipation (Antunes et al., 2019; Corrêa Neto et al., 2020). Psychological conditions such as anxiety, stress, and depression increase susceptibility to constipation, usually secondary to treatment with neuroleptics (Antunes et al., 2019). Tricyclic antidepressants, often used in the treatment of depression, have adverse effects, such as blocking muscarinic receptors, causing constipation (Júnior et al., 2021; Silva et al., 2022).

Constipation in the elderly population requires a comprehensive and multidimensional approach, encompassing nutritional, behavioral, and emotional factors (Diaz et al., 2024; Gorzoni; Marrochi, 2018; Leung et al., 2011). The cross-sectional design of this study and the use of screening instruments for mental health, although validated for this age group in Brazil, limit causal inferences, highlighting the need for longitudinal studies that better clarify the relationship between this clinical condition and sociodemographic factors, lifestyle, and health conditions, in order to guide interventions to promote the health and quality of life of older adults.

CONCLUSION

The prevalence of constipation in the population group studied was high, corroborating what other authors had already reported about this condition being very prevalent in elderly people. This condition can be associated with intrinsic factors related to advancing age or extrinsic factors, such as lifestyle habits, diet, activity levels, medications, psychological condition.

The diagnosis of systemic arterial hypertension, the use of polypharmacy, cognitive deficit and the presence of depressive symptoms, in univariate analysis, were factors associated with constipation in this population, and in multivariate analysis, only depression maintained this association. Given the limitations of the study design, further studies are

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needed in order to understand more clearly the cause-effect relationship between this frequent bowel movement disorder in human aging and the associated factors.

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AUTHOR CONTRIBUTIONS

- Study design: João A. Barros-Neto; Maria do S. C. Dantas; Müller R. Andrade; Maria Claudia Silva.
- Data collection: Anthony B. de O. Lopes; Bárbara M. M. Lacerda; Celina de A. Dias; Jessiane R. L. Santos; Maria do S. C. Dantas.
- Data analysis: João A. Barros-Neto; Müller R. Andrade. Maria Claudia Silva.
- Writing of the manuscript: Anthony B. de O. Lopes; Bárbara M. M. Lacerda; Celina de A. Dias; Jessiane R. L. Santos.
- Critical revision: João A. Barros-Neto; Maria do S. C. Dantas; Müller R. Andrade.

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