Prevalence and Associated Factors of Frailty Syndrome in Older Cancer Patients in Itaguaí, Rio de Janeiro, Brazil

https://doi.org/10.32635/2176-9745.RBC.2025v71n3.5155EN

Prevalência e Fatores Associados à Síndrome da Fragilidade em Idosos com Diagnóstico de Câncer em Itaguaí, Rio de Janeiro, Brasil

Prevalencia y Factores Asociados al Síndrome de Fragilidad en Personas Adultas Mayores con Diagnóstico de Cáncer en Itaguaí, Río de Janeiro, Brasil

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ABSTRACT

Introduction: Frailty syndrome in older adults (FSOA) reflects vulnerability to adverse outcomes such as functional decline, falls, and hospitalizations, associated with comorbidities, cognition, and aging. **Objective:** To screen for FSOA in older adults diagnosed with cancer between 2017 and 2021, residing in Itaguaí, Rio de Janeiro. **Method:** A cross-sectional observational study using the self-reported FSOA screening tool. Sociodemographic and clinical data were collected during home visits using a specific instrument, in addition to the Mini-Mental State Examination (MMSE), Geriatric Depression Scale (GDS-15), handgrip strength (HGS), calf circumference (CC), weight, and height measurements. **Results:** A total of 279 older adults were analyzed. The age range was 60 to 95 years, with a 69.5 (± 6.2) years mean. Participants were predominantly men with prostate cancer and women with breast cancer. 79.9% of patients could not be located for interviews, primarily due to death (41.9% of cases). Among the 56 older adults included in the frailty study, reduced HGS was observed in 35.7%, depressive symptoms in 26.8%, cognitive decline in 32.1%, and reduced muscle mass in 14.3%. FSOA was observed in 39.3% of participants, associated with factors such as sedentary lifestyle, chronic pain, history of falls, low handgrip strength, and depressive symptoms. **Conclusion:** The high prevalence of FSOA and its associated factors highlight the need for interventions to improve the quality of life and autonomy of these individuals.

Key words: Frailty/diagnosis; Frail Elderly; Neoplasms/epidemiology; Surveys and Questionnaires; Mass Screening.

RESUMO

Introdução: A síndrome da fragilidade em idosos (SFI) reflete vulnerabilidade a desfechos adversos, como perda funcional, quedas e internações, e está associada a comorbidades, cognição e envelhecimento. **Objetivo:** Rastrear a presença da SFI em pacientes que receberam diagnóstico de câncer entre 2017 e 2021, residentes no município de Itaguaí-RJ. **Método:** Estudo observacional transversal utilizando um instrumento autorrelatado para rastreio da SFI. Foram coletados em visitas domiciliares dados sociodemográficos e clínicos, por meio de instrumento específico e miniexame do estado mental (MEEM), escala de depressão geriátrica (GDS-15), força de preensão palmar (FPP), circunferência da panturrilha (CP), peso e altura. **Resultados:** Foram analisados 279 idosos. A idade variou de 60 a 95 anos, com média de 69,5 (± 6,2) anos. Os participantes eram predominantemente homens com câncer de próstata e mulheres com câncer de mama. Não foi possível localizar para entrevista 79,9% dos pacientes, sendo o principal motivo o óbito (41,9% dos casos). Entre os 56 idosos incluídos no estudo de fragilidade, observou-se FPP diminuída em 35,7%, sintomas de depressão em 26,8%, declínio cognitivo em 32,1% e redução da massa muscular em 14,3%. A SFI foi observada em 39,3% dos participantes, sendo associada a fatores como sedentarismo, dor crônica, histórico de quedas, baixa FPP e sintomas depressivos. **Conclusão:** A alta prevalência de SFI e os fatores a ela associados destacam a necessidade de intervenções para melhorar a qualidade de vida e a autonomia desses indivíduos.

Palavras-chave: Fragilidade/diagnóstico; Idoso Fragilizado; Neoplasias/epidemiologia; Inquéritos e Questionários; Programas de Rastreamento.

RESUMEN

Introducción: El síndrome de la fragilidad en personas adultas mayores (SFA) refleja vulnerabilidad ante resultados adversos como pérdida funcional, caídas y hospitalizaciones, asociado a comorbilidades, cognición y envejecimiento. **Objetivo:** Rastrear la presencia del SFA en paciente que recibieron diagnóstico de cáncer entre 2017 y 2021, residentes en el municipio de Itaguaí-RJ. **Método**: Estudio observacional transversal utilizando un instrumento autorreportado para el rastreo del SFA. Se recolectaron datos sociodemográficos y clínicos en visitas domiciliarias, utilizando un instrumento específico y mini examen del estado mental (MEEM), escala de depresión geriátrica (GDS-15), fuerza de prensión palmar (FPP), circunferencia de la pantorrilla (CP), peso y altura. **Resultados:** Se analizaron 279 personas adultas mayores (edad: 60-95 años; promedio: 69,5 ± 6,2 años). Predominaron hombres con cáncer de próstata y mujeres con cáncer de mama. No se localizó para la entrevista al 79,9% de los pacientes, principalmente por fallecimiento (41,9%). Entre los 56 ancianos evaluados, se observó FPP disminuida (35,7%), síntomas depresivos (26,8%), declive cognitivo (32,1%) y reducción de masa muscular (14,3%). El SFA se identificó en el 39,3% de los participantes, asociado a sedentarismo, dolor crónico, caídas previas, baja FPP y síntomas depresivos. **Conclusión:** La alta prevalencia del SFA y sus factores asociados destacan la necesidad de intervenciones para mejorar la calidad de vida y autonomía de estos individuos.

Palabras clave: Fragilidad/diagnóstico; Anciano Frágil; Neoplasias/epidemiología; Encuestas y Cuestionarios; Tamizaje Masivo.

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INTRODUCTION

In Brazil, adults over 60 years of age are classified as older population, the group with the highest estimate of growth worldwide. Given the innumerous diseases and comorbidities associated with aging, one of the indicative factors of how aging is progressing is the loss of autonomy and independence[1]. By itself, aging is a risk factor for a large number of health damages as non-communicable chronic diseases, very expressive for this age range just like functional loss associated or not with diseases that induce clinically measurable frailty for this group of individuals[2].

Knowing what the frailty syndrome of older adults (FSOA) entails in conjunction with existing studies appear to be relevant in this context. It is a widely investigated clinically condition which reflects the degree of vulnerability of the older adult to adverse outcomes related to functional loss, falls and hospitalization[3]. Its prevalence may be related to functional capacity, comorbidities, cognition, perception of health and progressive aging[4].

The prevalence of FSOA, depending on the diagnostic criteria utilized, can range between 7.7% and 42.6% for adults aged 65 or more[5]. Age is the main isolated risk factor, estimating that 10% of older than 65 years of age presents FSOA and above 85 years, it can reach 45%[2]. If early identified, FSOA can be reversed through rehabilitation and intervention with multidisciplinary team, a key aspect to consider[6].

Neoplasms are among the aging-related diseases, highly incident for this population. According to the World Health Organization (WHO), nearly 53% of all types of cancer occurred in individuals aged 65 years or older in 2022[7]. Given that the majority of cancer cases is associated with aging which is closely related to other health conditions as FSOA, some studies suggest a strong interaction between these two conditions for this group of individuals[8]. A review study published in 2020 showed that 59% of the patients diagnosed with cancer at older ages presented risk of developing FSOA after 70 years of age, demonstrating that cancer by itself and oncologic treatment are related to the development of other diseases and comorbidities after oncologic remission[8].

There is a great effort in Brazil to control cancer and improve the quality of life of oncologic patients and offer interventions for patients with FSOA in order to interrupt or delay its progression. However, few studies and initiatives correlate these two health conditions. Thus, the objective of this study is to screen FSOA in patients with cancer in the municipality of Itaguaí, State of Rio de Janeiro.

METHOD

Cross-sectional, observational study with older adults diagnosed with cancer between 2017 and 2021 living in Itaguaí-RJ, registered at SisReg for diagnostic referral and treatment in oncology services of the National Health System (SUS).

Individuals aged 60 years or older diagnosed with cancer between 2017 and 2021 living in Itaguaí registered at the regulation system (SisReg-RJ) for referral to oncology services of SUS have been enrolled in the study. Older individuals who declined to participate, those diagnosed with non-melanoma skin cancer (low aggressiveness, little impact on the quality of life and high curability compared to other topographies), who moved away from the city, whose address was not found, living in long-term care facilities, unknown telephone number and Mini Mental State Examination (MMSE) lower than 14[2] have been excluded. After selecting eligible cases, the names of the patients were run at the webpage of the Judicial Administrative Department of Rio de Janeiro[9] to identify the deceased.

Initially, older adults were invited to join by phone call and if they accepted, their home address was identified to schedule the home visit. The informed consent form (ICF) was read in their presence, and again they were able to decline if they wished. Upon confirmation, sociodemographic and clinical data were obtained and the self-reported FSOA screening instrument of Nunes et al.[10] was applied. If unable to respond to the questions, the companion could potentially answer. If the participant or the companion were not present at the scheduled home visit, three rescheduling attempts were made within seven days.

The self-reported questionnaire proposed by Nunes et al.[10] was utilized. It addressed the perception of the older adults or their informants about the FSOA consisting in: self-reported unintentional weight loss, exhaustion evaluated by self-reported fatigue, strength decline, low level of physical activity and reduction of gait speed.

Unintentional weight loss occurs when more than three kilos were lost in the last 12 months, equivalent to one point. The patients were asked whether they felt less strong in the same period, if yes, it counts as one point. If they felt their gait was slow in the last 12 months, it counts as one point. The last topic is self-reported fatigue with two questions: the first is whether in the last week they noticed they were unable to complete any activity of the daily life and the second, whether great effort was required to perform the daily tasks in the last week. If the response was "sometimes" or "most of the time" for any of the questions, it counts as one point.

Both for self-reported instrument proposed by Nunes et al.[10], and by Fried et al.[11], older adults are classified as: 0 points = non-frail, one and two points = pre-frail and three or more, frail.

Sociodemographic characteristics: age (<75 years or ≥75), sex, education (illiterate, 14-years, 5-8, 9 years and more), current occupation (retired, home activities, active), family network (lives alone, with spouse or with relatives), net family income in the last month (< one minimum wage, one to three minimum wages, > three minimum wages), life habits: smoking (yes or no, ex-smoker and never smoked), alcohol use (yes, no, ex-user and never used) and regular physical activity (yes, at least 150 minutes per week and no).

Clinical characteristics: body mass index (BMI) – classified according to Lipschitz[12] where low weight is equivalent to BMI < 22 kg/m^2, eutrophy, between 22 and 27 kg/m^2 and overweight, above 27 kg/m^2 –, calf circumference (CC) – measured as the largest circumference of the left lower limb with anthropometric tape; for older adults, body mass loss is equivalent to < 33 for women and < 34 for men, as recommended by Gonzalez et al.[13] –, handgrip strength (HGS) – measured at the dominant hand following the recommendations of the American Society of Hand Therapists (ASHT)[14,15]; strength was considered reduced for values lower than 27 kgf for men and 16 kgf for women according to the Sarcopenia: Revised European Consensus[16].

Test was repeated three times for each participant and the best result was considered. Comorbidities were also evaluated (self-reported systemic arterial hypertension and diabetes *mellitus*), chronic pain (persisted or repeated pain for more than three months as proposed by Treede et al.[17]), impairment (visual, hearing, physical or intellectual/cognitive), health self-perception (excellent, very good, regular or poor), history of falls in the last 12 months, history of hospitalizations in the last 12 months, polypharmacy (five or more medications/day), depression symptoms – measured through the Geriatric Depression Scale 15 (GDS-15), scores ≥ 6 to determine the presence of depressive symptoms in older adults as recommended by Paradela, Lourenço and Veras[18] – and cognitive decline (MMSE scores < 18 for illiterate and < 24 for literate individuals).

According to the Census 2010 of the "*Instituto Brasileiro de Geografia e Estatística (IBGE)*", 109,091 individuals live in Itaguaí, of which 11.4% (12,436) are older adults; assuming that the prevalence of FSOA is 24%[19], it is estimated that 57 older adults should be included, with accuracy of 10% for a finite population of 280 older adults with cancer[20].

For descriptive statistics, proportions of categorical variables and means and medians were adopted followed by variation ranges or standard-deviation (SD) for continuous variables according to the distribution of the data. Kolmogorov–Smirnov[21] was utilized to test the normality of the continuous variables. Pearson's chi-square test was utilized to compare the distribution of the variables according to the categories of FSOA. The software SPSS[22] version 24.0 was adopted for the analyzes. Values of $p < 0.05$ were considered statistically significant.

INCA's (National Cancer Institute) Ethics Committee approved the study, report number 5,389,560 (CAAE submission for ethical review: 56237022.3.0000.5274) in compliance with Directive 466[23] dated December 12, 2012 and 510[24] dated April 7, 2016 of the National Health Council (CNS).

RESULTS

PART I – OLDER PATIENTS WITH CANCER LIVING IN ITAGUAÍ – RJ

279 older adults were diagnosed with cancer based on SisReg-RJ. Two cases without reported sex have been excluded. Of the 277 included, 155 were men (55.95%). The distribution per sex and topography is presented in Figure 2. The age ranged from 60 to 95 years old, mean of 69.5 (± 6,2) years. The most frequent cancer types in men were prostate (45.5%), intestine (9.0%) and esophageal (7.7%), while breast (31.9%), intestine (12.3%) and body of the uterus were more prevalent in women (9.8%) (Figure 1).

PART II – SCREENING OF FSOA IN PATIENTS WITH CANCER LIVING IN ITAGUAÍ – RJ

Frailty was not evaluated for patients who moved away from the city, whose telephone was not informed, deceased, who declined to participate or home address not found. There were no exclusions according to the MMSE or residents in long-term care facilities (Figure 2).

According to Table 1, the patients enrolled were poorly educated (71.4%), earned up to one minimum wage (50.0%) and presented arterial hypertension and/or diabetes (67.8%). 35.7% of older adults had reduced HGS, 26.8%, symptoms of depression, 32.1%, cognitive impairment and 14.3% had reduced muscle mass.

39.3% were classified as frail, 37.5%, pre-frail and 23.2%, not frail. Still, 68.2 of frail patients were women while 66.7% of pre-frail patients were males (Figure 3).

As portrayed in Table 2, not-smoking ($p = 0.005$), no physical activities ($p < 0.001$), history of falls ($p = 0.015$), chronic pain ($p = 0.017$), reduced HGS ($p = 0.002$), signs of depression ($p = 0.013$) were associated with FSOA.

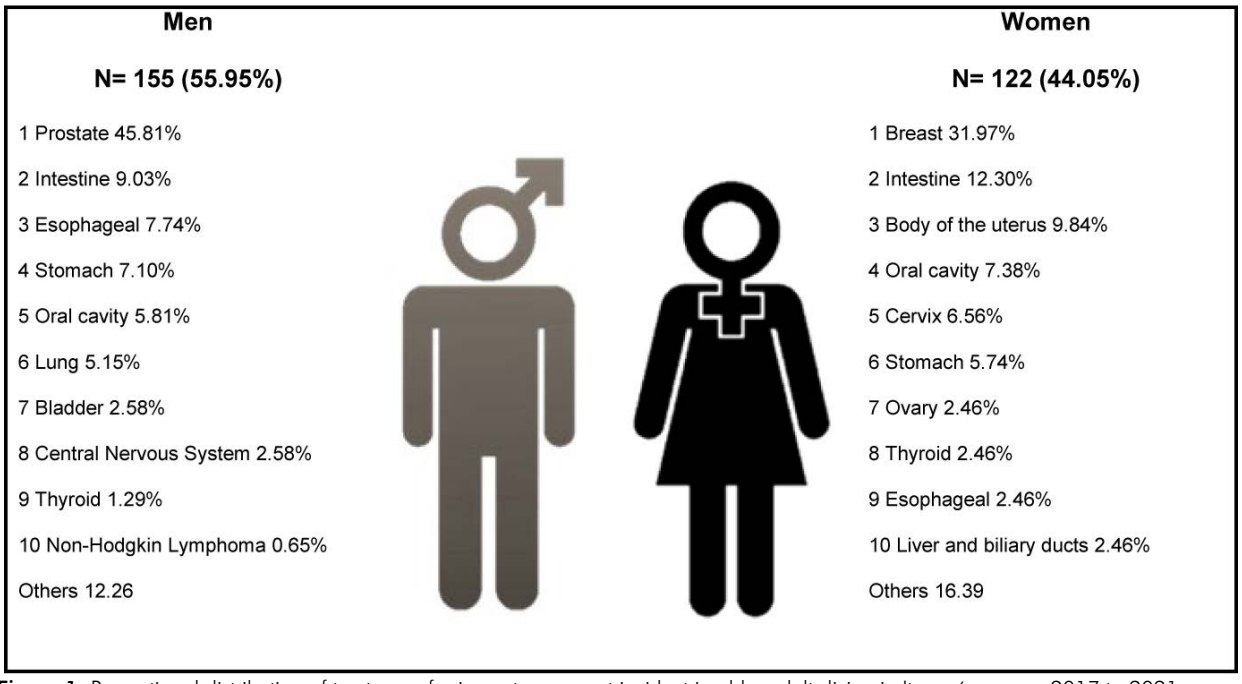

Figure 1. Proportional distribution of ten types of primary tumor most incident in older adults living in Itaguaí, per sex, 2017 to 2021 (n=277)

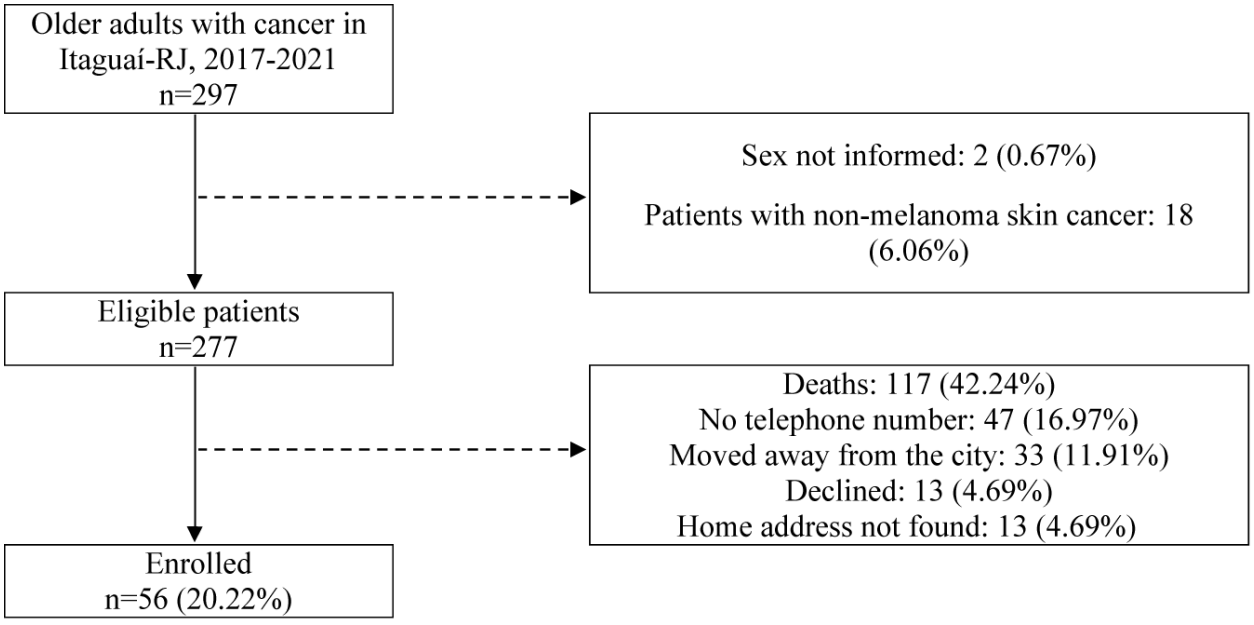

Figure 2. Flowchart of patients included in the study

DISCUSSION

The prevalence of FSOA in patients with cancer living in Itaguaí-RJ was 39.3%, 35.7% were classified as pre-frail and 23.2% as non-frail. In addition, association of frailness with six factors has been found: not practicing physical activity, chronic pain, history of falls, not smoking, reduced HGS and signs of depression.

According to a systematic literature review by Handforth et al.[25] with 20 studies addressing 2,916 older adults with cancer, the prevalence of frailness was 42%, pre-frailness, 43% and non-frailness, 32%, which corroborates the present study. None of these 20 articles was conducted in Brazil, revealing the relevance of the present study to characterize the prevalence of FSOA in patients with cancer in the country.

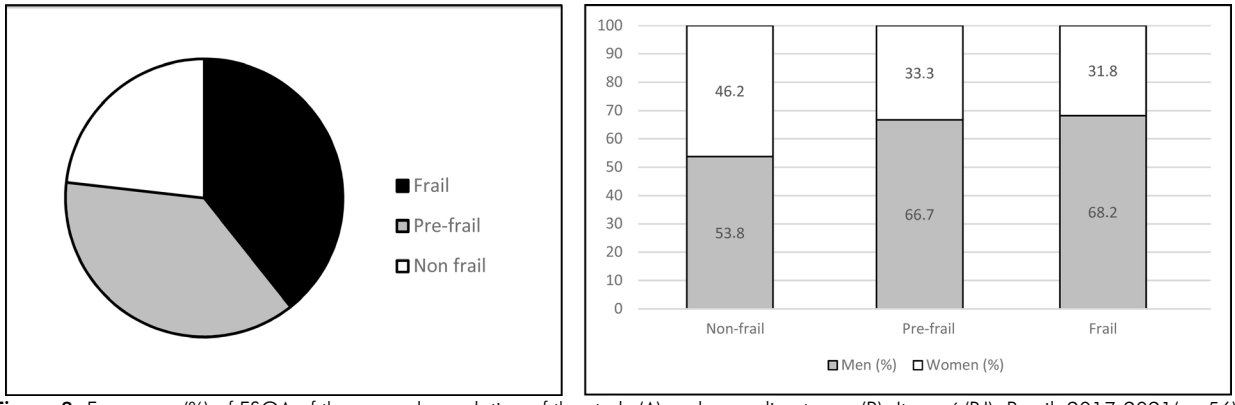

Figure 3. Frequency (%) of FSOA of the general population of the study (A) and according to sex (B). Itaguaí (RJ), Brazil. 2017-2021(n=56)

The Brazilian consensus of frailness in older adults[26], the result of an experts task force in aging, have presented a systematic literature review with 72 articles, including the validation of a self-reported instrument by Nunes et al.[10]. The prevalence of frailness in older adults ranged between 6.7% and 71.4%. However, none of the studies included was exclusive for patients with cancer. According to the authors, the main sources of variation were the different instruments adopted and the evaluation scenario (community, hospital, outpatient or long-term care facilities). Another literature systematic review published in 2016 by Da Mata et al.[5] revealed that the prevalence of frailness in non-institutionalized older adults living in Latin American and Caribbean ranged from 7.7% to 42.6%. On the other hand, a study with older adults by Pinheiro et al.[19] referred to a geriatric and gerontology service at the Federal District, the prevalence was 24% of frail older adults, 32.9%, pre-frail and 42.1%, non-frail. Nunes et al.[10], while validating an instrument utilized in this study, even with a more expressive quantity of 433 older adults, classified 37% as frail, 45.9%, pre-frail and 17.1%, non-frail. These results are close to the outcome of the present study although older adults with cancer were not evaluated.

There was a slight predominance of males (51.8%) in the present study, different from other studies with older population. Silva et al.[6], in a study with 5,532 older community-dwelling adults of several Brazilian cities identified that 65.6% were women. Lourenço et al.[2], in a study with 461 non-institutionalized older adults in the city of Juiz de Fora, Minas Gerais, indicated that the percentage of women was 69.6%, reinforcing the predominance of females in studies with older adults. However, in studies with older patients diagnosed with cancer like the study of Lopes et al.[27] with 200 older adults assisted at INCA's nutrition ward, males predominated with 53.5%. In a more recent study by Reis et al.[28], conducted at the same institution with older adults diagnosed with kidney and bladder cancer, the percentage of men was 70.5% and 54.5%, respectively. It was noticed a difference in these studies in relation to sex with and without diagnostic of cancer, similar to the findings of the present study.

71.4% of the study population had less than nine years of education, equivalent to incomplete elementary grade. In the study of Fioritto et al.[29], involving 339 older adults, low education reached the expressive number of 86.1%, revealing the predominance for this age range.

Smoking is one of the factors associated with FSOA in this study, being observed association with its absence (p = 0.005). The relation between smoking and FSOA in patients with cancer is still unclear. Some studies showed positive association between smoking and frailness, while others did not find this relation[30].

According to Drope et al.[31], smoking is an important risk factor for many types of cancer but also the main avoidable single cause of sickening and early deaths worldwide. In this scenario, the result found can be observed due to early death of older adults smokers because smoking impacts the appearance of non-communicable diseases as cancer, stroke and heart complications.

For Zaitune et al.[32], the impact of smoking in older adults is not similar to young adults because of longer exposures and usually to high nicotine unfiltered cigarettes. Therefore, the risk of developing tobacco-related diseases is even bigger. For that reason, the prevalence of smoking in that age range is lower since it is associated with the smoker's low life expectancy. Consequently, participants least exposed to tobacco may have been selected, underestimating the actual risk.

In addition, smokers have unhealthy life habits mainly related to feeding and sedentarism. Interestingly, the data of the present study revealed that 68.2% of frail adults never smoked and 31.8% are ex-smokers. Surprisingly, there are no frail adults among smokers. While in the current study only 12.5% of older adults with cancer reported they were smokers, in a population-based

Table 1. Absolute and relative distribution of sociodemographic data of older adults diagnosed with cancer in Itaguaí (RJ), Brazil, 2017-2021 (n=56)

Variables	n	%
Sex		
Male	29	51.8
Female	27	48.2
Age (years)		
Mean (±SD)	69.5 (± 6.2)	-
Education		
Illiterate	7	12.5
1-4 years	19	33.9
5-8 years	14	25.0
9 years or more	16	28.6
Total family income		
Up to 1 minimum wage	28	50.0
More than 1 to 3 minimum wages	3	5.4
More than 3 minimum wages	25	44.6
Current occupation		
Retired	14	25.0
Home activities	33	58.9
Active	9	16.1
Family network		
Lives alone	17	30.4
With spouse	20	35.7
Lives with family	19	33.9
Smoking		
Yes	7	12.5
Ex-smoker	25	44.6
Never smoked	24	42.9
Alcohol use		
Yes	13	23.2
Ex-user	20	35.7
Never used	23	41.1
Physical activities		
Yes	9	16.1
No	47	83.9
History of falls		
Yes	25	44.6
No	31	55.4
Chronic pain		
Yes	25	44.6
No	31	55.4
History of hospitalizations		
Yes	16	28.6
No	40	71.4
Comorbidities		
SAH	20	35.7
DM	4	7.1
SAH and DM	14	25.0
None	18	32.1
Impairment		
Yes	5	8.9
No	51	91.1
Health self-perception		
Negative	26	46.4
Positive	30	53.6
Body mass index		
Low weight	7	12.5
Eutrophic	23	41.1
Overweight	26	46.4
Polypharmacy		
5 or more medications	13	23.2
1 to 4 medications	37	66.1
No medications	6	10.7
Handgrip strength		
Reduced	20	35.7
No changes	36	64.3
Depression symptoms (GDS-15)		
Yes	15	26.8
No	41	73.2
Cognitive Impairment (MMSE)		
Yes	18	32.1
No	38	67.9
Calf circumference		
Muscle mass loss	13	23.2
No changes	43	76.8
Total	56	100

Captions: GDS-15: 15-item Geriatric Depression Scale; MMSE: Mini Mental State Examination; SAH: Systemic Arterial Hypertension; DM: Diabetes *Mellitus*; SD: standard deviation. National minimum wage in 2023 R$1,302.00.

Table 2. Comparison of sociodemographic, epidemiologic and clinical data of older adults diagnosed with cancer in relation to frailty. Itaguaí (RJ), Brazil, 2017-2021 (n=56)

Variables	Non frail		Pre-frail		Frail		*p*
Sex							0.072
Male	6	46.2	14	66.7	7	31.8	
Female	7	53.8	7	33.3	15	68.2	
Age (years)							0.160
< 75 years	12	92.3	14	66.7	14	63.6	
≥ 75 years	1	7.7	7	33.3	8	36.4	
Education							0.431
Illiterate	1	7.7	4	19	2	9.1	
1-4 years	3	23.1	7	33.3	9	40.9	
5-8 years	3	23.1	7	33.3	4	18.2	
9 years or more	6	46.2	3	14.3	7	31.8	
Total family income							0.433
Up to 1 minimum wage	4	30.8	11	52.4	10	45.5	
More than 1 to 3 minimum wages	9	69.2	8	38.1	11	50	
More than 3 minimum wages	0	0	2	9.5	1	4.5	
Current occupation							0.518
Retired	2	15.4	6	28.6	6	27.3	
Home activities	7	53.8	12	57.1	14	63.6	
Active	4	30.8	3	14.3	2	9.1	
Family network							0.877
Lives alone	3	23.1	7	33.3	7	31.8	
With spouse	4	30.8	8	38.1	8	36.4	
Lives with family	6	46.2	6	28.6	7	31.8	
Smoking							0.005
Yes	1	7.7	6	26.8	0	0	
Ex-smoker	7	53.8	11	52.4	7	31.8	
Never smoked	5	38.5	4	19	15	68.2	
Alcohol use							0.081
Yes	1	7.7	8	38.1	4	18.2	
Ex-user	4	30.8	9	42.9	7	31.8	
Never used	8	61.5	4	19	11	50	
Physical activities							**<0.001**
Yes	7	53.8	2	9.5	0	0	
No	6	46.2	19	90.5	22	100	
History of falls							**0.015**
Yes	3	23.1	7	33.3	15	68.2	
No	10	76.9	14	66.7	7	31.8	

To be continued

Table 2. Continuation

Variables	Non frail		Pre-frail		Frail		*p*
Chronic pain							**0.017**
Yes	4	30.8	6	28.6	15	68.2	
No	9	69.2	15	71.4	7	31.8	
History of hospitalizations							0.225
Yes	2	15.4	5	23.8	9	40.9	
No	11	86.4	16	76.2	13	59.1	
Comorbidities							0.225
SAH	6	46.2	7	33.3	7	31.8	
DM	0	0	2	9.5	2	9.1	
SAH and DM	1	7.7	4	19	9	40.9	
None	6	46.2	8	38.1	4	18.2	
Impairment							0.365
Yes	0	0	3	14.3	2	9.1	
No	13	100	18	85.7	20	90.9	
Health self-perception							0.106
Negative	4	30.8	8	38.1	14	63.6	
Positive	9	69.2	13	61.9	8	36.4	
Body mass index							0.602
Low weight	3	23.1	2	9.5	2	9.1	
Eutrophic	6	46.2	9	42.9	8	36.4	
Overweight	4	30.8	10	47.6	12	54.5	
Polypharmacy							0.37
5 or more medications	2	15.4	3	14.3	1	4.5	
1 to 4 medications	9	69.2	15	71.4	13	59.1	
No medications	2	15.4	3	14.3	8	36.4	
Handgrip strength							**0.002**
Reduced	0	0	7	33.3	13	59.1	
No changes	13	100	14	66.7	9	40.9	
Depression symptoms (GDS-15)							**0.013**
Yes	0	0	5	23.8	10	45.5	
No	13	100	16	76.2	12	54.5	
Cognitive Impairment (MMSE)							0.249
Yes	2	15.4	9	42.9	7	31.8	
No	11	84.6	12	57.1	15	68.2	
Calf circumference							0.075
Muscle mass loss	0	0	6	28.6	7	31.8	
No changes	13	100	15	71.4	15	68.2	
Total	13	23.2	21	37.5	22	39.3	---

Captions: GDS-15: 15-item Geriatric Depression Scale; MMSE: Mini Mental State Examination; SAH: Systemic Arterial Hypertension; DM: Diabetes *Mellitus*.
Note: Statistically significant p values are in bold.

national study involving 254,388 patients with advanced cancer, the prevalence of current smokers reached 22.0% for lung cancer and 34.8% for lip and oral cavity cancer[33].

Physical activity is an important factor to prevent health harms. The result found is aligned with other studies, for example, of Tribess et al.[34] with 622 older adults that concluded that regular physical activity is predictive of non-frailty in older adults, since, unarguably, it contributes for its prevention. The lack of physical activity in the present casuistic holds a strong association with FSOA ($p < 0.001$), which reinforces the recommendations of geriatric and gerontology experts in regard to the beneficial impact of physical activity for health and longevity[34-36].

Falls are quite relevant because its consequences can be devastating for older adults, their families and high costs for the health system[37]. For the study population investigated, the history of falls was associated with frailty. Of the older adults considered frail, 68.2% fell in the last 12 months, a clear evidence of the rising possibility of falling as the frailty process unfolds. Duarte et al.[38] affirmed that fall can be either an outcome of frailty or a causal factor. In a literature systematic review by Fhon et al.[39], the prevalence of fall in frail older adults ranged from 6.7% to 44% and demonstrated that there was association among falls and frailty in older adults. Therefore, the data presented herein reinforce the importance of evaluating falls to prevent and identify frailty, indicating that the history of falls should not be neglected for health evaluation and follow-up of older adults.

Older adults are more susceptible to chronic pain usually associated with some comorbidities, quite often the main complaint of this population. Chronic pain was associated with frailty in the present investigation. Of the frail adults, 68.2% reported persistent pain for at least three months, and only 30% for non-frail and pre-frail, a remarkable difference, corroborated by a prospective European study involving 2,736 community-dwelling men aged 40-79 years where persistent pain was associated with development and aggravation of frailty[40].

Strength decline is an aging-related intrinsic process. It has been observed association between HGS and frailty. According to Zanin et al.[41], aging causes many changes in the organism, among them, the skeletal musculature, especially when associated with illness, leading to muscle strength decline. This can be related to increased morbidity and mortality in middle-age and older adults, in addition of being a predisposition to geriatric syndromes as sarcopenia and frailty. The study of Berlezi et al.[42] with 555 non-institutionalized older adults assisted at a basic health attention unit revealed association between HGS and FSOA. In the study of Lopes et al.[27] with oncologic older patients, the authors emphasize that HGS in older adults with cancer was lower than in the findings of Fried et al.[11] with older adults with cardiovascular diseases. HGS is an important tool to evaluate older patients and muscle frailty is frequently associated with functional decline in the scientific literature[43].

Symptoms of depression were associated with FSOA. Among frail adults, there was prevalence of 45.5% and 23.8% for pre-frail, consistent with the literature. Nascimento et al.[44] indicated that prevalence of frailty is higher among depressed older adults. Collard et al.[45] identified in their study that the prevalence of frailty among depressed older adults is 25% higher compared with non-depressed. In the present study, 100% of non-frail older adults did not present symptoms of depression, which corroborates the association of frailty with mental health in older adults with cancer.

The study limitations may have influenced the results. The number of older adults interviewed was lower than planned because of scheduling problems for home visits. Another limitation was the low coverage of the register of patients with cancer at SisReg-RJ, since the Health Primary Attention of the municipality covers only 36% of the residents, in addition to those living in areas where active search is inexistent. Furthermore, it has been decided to not calculate the power of the association among independent variables and frailty (measure of risk) considering the cross-sectional design (does not allow causal inference) and the small number of cases (in an adjusted analysis it could generate overfitting and unstable results). On the other hand, it is important to highlight that this is the first Brazilian study to screen FSOA in patients with cancer in one municipality.

CONCLUSION

High prevalence of FSOA and related factors indicate the necessity of interventions to improve the quality of life and autonomy of non-institutionalized older patients with cancer. Focused attention should be provided to older adults with cancer who do not practice physical activities, with chronic pain, history of falls, reduced handgrip strength and signs of depression.

CONTRIBUTIONS

Danielle Aparecida de Carvalho, Renata Brum Martucci and Luiz Claudio Santos Thuler contributed to the study design. Danielle Aparecida de Carvalho, Marcos Vinícius de Carvalho Magalhães and Tatiana Zoio Evangelista contributed to the acquisition of the data. All the authors contributed to the analysis and interpretation of the data and approved the final version for publication.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.

DATA AVAILABILITY STATEMENT

Given ethical and confidentiality issues, data can be requested to the corresponding author with reasonable justification.

FUNDING SOURCES

None.

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Recebido em 10/3/2025
Aprovado em 2/6/2025

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