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Frailty and geriatric syndromes in elderly assisted in primary health care

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ABSTRACT. The aim of this study was to describe the association between frailty and geriatric syndromes (GS) [cognitive impairment (CI); postural instability (PI); urinary/fecal incontinence (UFI); polypharmacy (PP); and immobility (IM)] and the frequency of these conditions in elderly people assisted in primary health care. Five hundred twenty-one elderly participants of The Multidimensional Study of the Elderly in the Family Health Strategy (EMI-SUS) were evaluated. Sociodemographic data, identification of frailty (Fried phenotype) and GS were collected. Multinomial logistic regression analysis was performed. The frequency of frailty was 21.5%, prefrailty 51.1% and robustness 27.4%. The frequency of CI was 54.7%, PP 41.2%, PI 36.5%, UFI 14% and IM 5.8%. The odds of frailty when compared to robustness and adjusted for gender, age, depression, self-perception of health, nutritional status, falls, vision and hearing, was significantly higher in elderly with CI, PI and PP. The adjusted odds of prefrail when compared to robustness was significantly higher only in elderly with CI. The most frequently presented number of GS (0-5) was two geriatric syndromes (26.87%). The frequency of frailty was high among elderly in primary health care and was associated with three of five GS (CI - PI - PP).

Keywords: frail elderly. geriatric syndrome. gerontology. primary health care.

Fragilidade e síndromes geriátricas em idosos assistidos na atenção primária à saúde

RESUMO. O objetivo deste estudo foi descrever a associação entre fragilidade e síndromes geriátricas (SG) [declínio cognitivo (DC); instabilidade postural (IP); incontinência urinária/fecal (IUF); polifarmácia (PF); e imobilidade (IM)] e a frequência destas condições em idosos assistidos na atenção básica. Foram avaliados 521 idosos, participantes do Estudo Multidimensional dos Idosos da Estratégia Saúde da Família (EMI-SUS). Foram coletados dados sociodemográficos, de identificação da fragilidade (fenótipo de Fried) e das SG. Realizou-se análise de regressão logística multinomial. A frequencia de fragilidade foi 21,5%, de pré-fragilidade 51,1% e de robustez 27,4%. A frequência de DC foi 54,7%, de PF 41,2%, de IP 36,5%, de IUF 14% e de IM 5,8%. A chance de fragilidade quando comparada à robustez, ajustada para sexo, idade, depressão, autopercepção de saúde, estado nutricional, quedas, visão e audição, foi significativamente maior em idosos com DC, IP e PF. A chance ajustada de pré-fragilidade, quando comparada à robustez foi significativamente maior somente nos idosos com DC. O número mais frequente de SG (0-5) presentes foram duas SG (26,8%). A frequência de fragilidade foi alta entre idosos da atenção básica e mostrou-se associada a três das cinco SG (DC-IP-PF).

Palavras-chave: idoso fragilizado. síndrome geriátrica. gerontologia. atenção primária à saúde.

Introduction

Population aging is an inevitable and predictable global phenomenon that is changing society in an accelerated and complex manner, especially in less developed countries. Brazil has been experiencing this demographic shift for a little more than 20 years and this movement requires public health responses to ensure successful aging, because in this process, many elderly people will face health-related problems and challenges in maintaining their independence (Shetty, 2012; World Health Organization [WHO], 2012).

In attempts to understand the causes of aging, limited by the complexity of the problem, we are faced with 'usual' aging, that includes aging-related diseases, and 'normal' aging, involving inexorable and universal physiological changes, even in the absence of disease (Troen, 2003). This natural process submits the body to progressive anatomical

changes, bringing with it frailty (Kuzuya, 2012) and geriatric syndromes (Isaacs, 1969).

A consensus published in 2013 described frailty as a state in which there is an increase in an individual's vulnerability for developing dependency and/or mortality when exposed to a stressor and among the most widely used diagnostic approaches, the phenotype developed by Fried et al. (2001) continues to be the choice in prevalence studies.

Frailty has been classified as a new geriatric syndrome due to its high prevalence in the elderly population and the substantial impact it exerts on quality of life (Alexa, Ilie, Morosanu, & Voica, 2013).

The term geriatric syndromes (GS) has been used to describe common conditions in the elderly, although not characterized as diseases, but even so, they can predispose these individuals to disability and death (Inouye, Studenski, Tinetti, & Kuchel, 2007). GS were originally announced by Bernard Isaacs (1969), who called them 'Giants of Geriatric Medicine' and included cognitive incapacity, postural instability, immobility, urinary incontinence and iatrogenesis.

Although, today, there is a diversity of conditions that are cited as GS, there is a consensus that they are multifactorial and share risk factors, such as advanced age, CI, functional disability and impaired mobility.

In this context, the knowledge of this data becomes important as it can help in the management of elderly people treated in primary care, seeking to reduce frailty, prevent and reverse cognitive decline and the interconnected phenomena, so that older people can maintain their independence and autonomy for as long as possible (Lima, 2006; Robertson, Savva, & Kenny, 2013). Unfortunately, however, GS and the threats they represent to the successful aging process have not received the needed attention in the primary care system.

This study aims to investigate the association between frailty and GS, and the frequency of these conditions in the elderly assisted in the Family Health Strategy (FHS) program.

Material and methods

Study design and participants

This is a cross-sectional study, a part of The Multidimensional Study of the Elderly in the Family Health Strategy (EMI-SUS), whose methodology is described in Gomes et al. (2013). The sample was composed of 521 community-dwelling elderly, 60 years or more, assisted by the primary health care system, which is provided by the public health system by means of the FHS. This is the primary level of the Brazilian health system. The inclusion criteria were: individuals aged 60 years or older, registered in the FHS and from whom data had been collected for determination of the Fried Phenotype (Fried et al., 2001).

Data collection

Between March 2011 and December 2012, community health workers (*Agentes Comunitários de Saúde*) implemented a general questionnaire in subjects' homes to obtain sociodemographic and health data. A multidisciplinary team (geriatricians, neurologists, psychiatrists, nutritionists, occupational therapists, physiotherapists and psychologists) collected data at the outpatient unit of the Hospital São Lucas, Pontifical Catholic University of Rio Grande do Sul (PUCRS) related to the required measures for determination of the frailty phenotype, GS diagnosis and associated factors (Gomes et al., 2013). Some information was obtained from family members/caregivers or community health workers when the elderly participant was not able to answer the question (cognitive impairment).

Table 1 presents the methods, instruments and criteria used for the diagnosis of frailty and GS, and the possible associated factors that were considered in this study

Table 1. Diagnostic criteria used in the study for frailty, geriatric syndrome and associated factors.

Variables	Method/Instruments	Criteria
Frailty	Fried Phenotype (Fried et al., 2001)	Positive for frailty phenotype: ≥ 3 criteria present Prefrail: 1 or 2 criteria present.
Shrinking	Self-reported unintentional weight loss in past 12 months	> 4.55 kg (Fried et al., 2001)
Weakness	Handgrip strength (kg): Average of three measures with the dominant hand and cutting point stratified by gender and body mass index (BMI)	Men BMI ≤ 24 Grip strength ≤ 29 BMI 24.1-26 Grip strength ≤ 30 BMI 26.1-28 Grip strength ≤ 30 BMI > 28 Grip strength ≤ 32 Women BMI ≤ 23 Grip strength ≤ 17 BMI 23.1-26 Grip strength ≤ 17,3 BMI 26.1-29 Grip strength ≤ 18 BMI > 29 Grip strength ≤ 21 (Fess, 1992; Fried et al., 2001)

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Variables	Method/Instruments	Criteria
Exhaustion	Self-reported exhaustion, identified by two questions from the depression scale of the Center for Epidemiologic Studies (CES-D) (Batistoni, Neri, & Cupertino, 2007)	Response of '2' or '3' to any of the questions (Fried et al., 2001)
Slowness	Walking a standard distance course of 4.6m	≥ 7 seconds for Men - Height ≤ 1.73m Women - Height ≤ 1.59m ≥ 6 seconds for Men - Height > 1.73m Women - Height > 1.59m (Fried et al., 2001)
Low activity	Minnesota Leisure Time Activity Questionnaire (Taylor et al., 1978)	< 383 kcal for men < 270 kcal for women (Fried et al., 2001; Taylor et al., 1978)
Geriatric syndromes		
Cognitive impairment	Altered score in at least one Neuropsychological test	-2SD (Gomes et al., 2013)
Postural instability	Self-report	Positive response to the question: 'Do you have a lack of balance when standing or walking?'
Immobility	Clinical examination	Inability to remain standing
Urinary/fecal incontinence	Self-report (question about urinary or fecal continence from the Katz index (Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963)	Positive response to the question:'Is partially or totally incontinent of bowel or bladder?' (Duarte, Andrade, & Lebrão, 2007)
Polypharmacy (PP)	Number of medications	≥ 5 medications (Gnjidic, et al., 2012a)
Associated factors		
Depression	Geriatric Depression Scale -15 question form (GDS-15) (Almeida & Almeida, 1999)	Score: 0-5: normal 6-10: mild depression 11-15: severe depression. (Almeida & Almeida, 1999)
Falls	Self-report	Positive response to the question: 'Do you have a history of falling to the floor when standing, sitting or lying down?'
Vision	Jaeger chart (Brasil, 2009)	< 20/40.
Hearing	Whisper test (Brasil, 2009)	No response to the test.
Self-perception of health	Self-report	Response to the question: 'In general, would you say your health is excellent or good, regular, poor or very poor?'
Nutritional evaluation	Mini Nutritional Assessment (MNA) (Guigoz,Vellas, & Garry, 1999)	Adequate: ≥24 points. At risk of malnutrition: 17-23.5 points Malnourished: <17 points) (Guigoz , Vellas, & Garry, 1999).

SD: standard deviation.

Statistical analysis

Data were analyzed using SPSS version 17.0. The sample was described using frequencies for qualitative variables and mean (±SD) for quantitative variables. Multinomial logistic regression analysis was performed to estimate crude and adjusted odds ratios with 95% confidence intervals for each GS. The variables selected for adjustment were those that presented a significant association ($p < 0.20$) in the univariate analysis.

Ethical considerations

The EMI-SUS study was approved by the Research Ethics Committee of PUCRS and the Municipal Health Secretary of Porto Alegre (CEP-10/04967; 001.021434.10.7, respectively) and informed consent was obtained from all participants.

Results

The sociodemographic characteristics, GS and associated factors according to the frailty diagnosis are presented in Table 2. The sample comprised of 521 elderly with a mean age of 68.5 ± 6.8 years (ranging from 60 to 103 years). The mean age of frail, prefrail and robust elderly were 71.7 ± 8.5 years, 68.1 ± 6.5 years, and 66.6 ± 4.8 years, respectively. The frequency of frailty among the elderly was 21.5% (CI 95%: 17.97 - 25.03), with 51.1% (CI 95%: 46.81 - 55.39) being prefrail and 27.4% (CI 95%: 23.57 - 31.23) considered robust. The most frequent of the GS was cognitive impairment (CI) (54.7%; CI 95%:50.41 - 59), followed by polypharmacy (PP) (41.2%; CI95%: 36.95 - 45.46), postural instability (PI) (36.5%; CI 95%: 32.32 - 40.68), and urinary/fecal incontinence (UFI) (14%; CI 95%:10.82 - 17.18). The least prevalent GS was immobility (IM) (5.8%; CI 95%: 3.79 - 7.81).

The majority of the sample were as follows: 335 (64.3%) women, 339 (66.2%) white, 196 (38.1%) married, 434 (84.7%) with an educational level up to elementary school grade and 456 (93.8%) with a personal income up to two minimum salaries. In addition, 309 (72.9%) presented no depression, 276 (53.6%) considered their health to be regular, 374 (75.9%) were eutrophic by the MNA, 316 (62.1%) had no history of falls, 386 (76.1%) had no hearing

dysfunction, and 332 (72.2%) had visual impairment.

Table 2. Description of sociodemographic characteristics, geriatric syndromes and associated factors.

Variables	Diagnosis of Frailty			
	Total N (%)	Frail %	Prefrail %	Robust %
Total	521 (100)	21.5	51.1	27.4
Gender (female)	335 (64.3)	75	68.8	47.6
Geriatric syndromes				
Cognitive impairment	282 (54.7)	73.6	56.7	36.4
Postural instability	186 (36.5)	73.4	31.5	17.1
Immobility	30 (5.8)	25.9	0.4	0
Urinary/fecal incontinence	64 (14)	23.7	12.8	9.2
Polypharmacy	212 (41.2)	57.1	41.4	28.4
Race				
White	339 (66.2)	60.6	63	76.6
Parda*	70 (13.7)	18.3	14.9	7.8
Black	87 (17)	14.7	19.1	14.9
Native Indian	15 (2.9)	6.4	2.7	0.7
Oriental	1 (0.2)	0	0.4	0
Marital status				
Married	196 (38.1)	36	36.5	42.9
Separated	84 (16.3)	9.9	17.9	18.6
Single	86 (16.7)	19.8	15.6	16.4
Widowed	148 (28.8)	34.2	30	22.1
Educational level				
Illiterate	79 (15.4)	20	18.1	7
Elementary incomplete	143 (27.9)	35.5	27.3	23.2
Elementary complete	212 (41.4)	34.5	39.2	50.7
Middle school complete	49 (9.6)	7.3	9.2	12
High school complete	26 (5.1)	2.7	5.8	5.6
Higher education	3 (0.6)	0	0.4	1.4
Income				
Up to 2 MS†	456 (93.8)	95.4	93.1	93.9
> 2 MS to 4 MS	21 (4.3)	3.7	4.9	3.8
> 4 MS to 6 MS	8 (1.6)	0.9	2	1.5
> 6 MS	1 (0.2)	0	0	0.8
Depression				
Severe	26 (6.1)	12.8	5.3	2.7
Mild	89 (21)	38.4	20.7	8.1
No depression	309 (72.9)	48.8	74	89.2
Self-perception of health				
Poor or very poor	56 (10.9)	24.5	8.4	4.9
Regular	276 (53.6)	62.7	55.5	43
Excellent or good	183 (35.5)	12.7	36.1	52.1
MNA‡				
Malnourished	11 (2.2)	6.9	1.6	0
Risk of malnutrition	108 (21.9)	44.1	20.7	7.9
Eutrophic	374 (75.9)	49	77.7	92.1
History of falls	193 (37.9)	57.8	37.2	23.7
Vision impairment	332 (72.2)	83.3	71.6	64.3
Hearing impairment	121 (23.9)	38	21.6	17.1

*Multi-racial Brazilian of brown skin color and mixed-race features, considering themselves to be *Parda*; †MS: Minimum salary = R$ 540 (= US$270); ‡MNA: Mini Nutritional Assessment. Note that some variables presented missing values.

Figure 1 presents the frequency of Fried phenotype (Fried et al., 2001) criteria observed in the elderly classified as frail and prefrail. It can be noted that slow walking speed is the most frequent of the criteria in the two groups [frail: 107 (95.5%); prefrail: 171 (64.3%)]. The second most common component differed between the two groups, being exhaustion for the frail [99 (88.4%)] and reduced handgrip strength for the prefrail [87 (32.7%)]. Disagreement between the groups for the least frequent criterion was also noted, being unintentional weight loss for the frail elderly [30 (31.9%)] and a low level of physical activity for the prefrail elderly [13 (5.3%)].

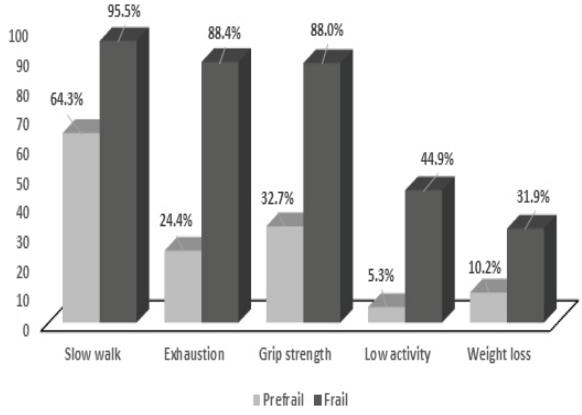

Figure 1. Frequency of frailty diagnostic criteria between frail and prefrail elderly assisted in Primary health care.

The results of the multinomial logistic regression analysis comparing frail with robust elderly (Table 3) showed that all the GS were positively associated with frailty. After adjusting for gender, age, depression, self-perception of health, MNA, history of falls, vision and hearing, the association remained for CI ($p = 0.017$), PI ($p = 0.004$) and PP ($p = 0.031$). The adjusted odds for being frail was significantly higher in elderly with CI (OR: 3.41; 95% CI 1.24-9.36), PI (OR: 4.80; 95% CI: 1.63-14.14) and for those taking five or more medications (OR: 2.94; 95% CI: 1.11-7.83). It was observed, however, that the association found with UFI was influenced by the adjustments ($p = 0.728$).

The results of the multinomial logistic regression analysis comparing prefrail with robust elderly (Table 4) also showed a positive association between each GS (CI, PI and PP) and prefrailty. After adjusting for the variables of gender, age, depression, self-perception of health, MNA, history of falls, vision and hearing, only the positive association between CI and prefrailty remained significant ($p = 0.025$), indicating a greater chance of prefrailty among older adults with CI (OR: 1.90; 95% CI: 1.08 - 3.35).

A significant association ($p < 0.001$) is observed between the number of syndromes and classes of frailty diagnosis (Table 5). The combination of two GS was the most frequent situation found among the 521 evaluated individuals, counting 140 (26.9%).

Table 3. Association between geriatric syndromes and frailty (frail vs. robust) in elderly assisted in primary care.

Geriatric syndromes	Frail N (%)	Robust N (%)	Frail vs Robust			
			OR (CI 95%) Unadjusted	p	OR (CI 95%) Adjusted*	p
Cognitiveimpairment						
Yes	81(60.9)	52 (39.1)	4.89 (2.84 - 8.42)	< 0.001	3.41(1.24 - 9.36)	0.017
No	29 (24.2)	91 (75.8)	1.00		1.00	
Postural instability						
Yes	80 (76.9)	24 (23.1)	13.33 (7.24 - 24.57)	< 0.001	4.80 (1.63 - 14.14)	0.004
No	29 (20)	116 (80)	1.00		1.00	
Immobility						
Yes	29 (100)	0 (0)	†	< 0.001	†	†
No	83 (36.7)	143 (63.3)				
Urinary/fecal incontinence						
Yes	22 (64.7)	12 (35.3)	3.05 (1.42 - 6.53)	0.004	0.76 (0.16 - 3.57)	0.728
No	71 (37.6)	118 (62.4)	1.00		1.00	
Polypharmacy						
Yes	64 (61.5)	40 (38.5)	3.37 (1.99 - 5.68)	< 0.001	2.94 (1.11 - 7.83)	0.031
No	48 (32.2)	101 (67.8)	1.00		1.00	

*Adjusted for gender, age, depression, self-perception of health, MNA, history of falls, vision and hearing. † No robust elderly presented immobility, preventing an analysis.

Table 4. Association between geriatric syndromes and frailty (prefrail vs robust) in elderly assisted in primary care.

Geriatric syndromes	Prefrail N (%)	Robust N (%)	Prefrail vs Robust			
			OR (CI 95%) Unadjusted	p	OR (CI 95%) Adjusted*	p
Cognitive impairment						
Yes	149 (74.1)	52 (25.9)	2.29 (1.50 - 3.48)	< 0.001	1.90 (1.08 - 3.35)	0.025
No	114 (55.6)	91 (44.4)	1.00		1.00	
Postural instability						
Yes	82 (77.4)	24 (22.6)	2.23 (1.34 - 3.71)	0.002	1.35 (0.65 - 2.83)	0.424
No	178 (60.5)	116 (39.5)	1.0		1.0	
Immobility						
Yes	1 (100)	0 (0)	†	0.650	†	†
No	265 (65)	143 (35)				
Urinary/fecal incontinence						
Yes	30 (71.4)	12 (28.6)	0.69 (0.34 - 1.40)	0.306	0.96 (0.35 - 2.60)	0.934
No	204 (63.4)	118 (36.6)	1.00		1.0	
Polypharmacy						
Yes	108 (73)	40 (27)	1.78 (1.15 - 2.77)	0.010	1.71 (0.94 - 3.12)	0.080
No	153 (60.2)	101 (39.8)	1.00		1.00	

*Adjusted for gender, age, depression, self-perception of health, MNA, history of falls, vision and hearing. † No robust elderly presented immobility, preventing an analysis.

Residual analysis shows that the elderly without GS are associated with the robust classification, those with 1 or 2 GS are associated with the prefrail classification, and those having 3 or more GS with the frail.

Table 5. Distribution of the number of geriatric syndromes present in the subjects, according to frailty classification.

Number of geriatric syndromes present	Frailty				p
	Total Sample N (%)	Frail %	Prefrail %	Robust %	
0	103 (19.8)	1.9	44.7	53.4	< 0.001*
1	182 (34.9)	11.0	57.1	31.9	
2	140 (26.9)	25.7	59.3	15.0	
3	76 (14.6)	47.4	42.1	10.5	
4	16 (3.0)	87.4	6.3	6.3	
5	4 (0.8)	100.0	0.0	0.0	

*Pearson's Chi-square test.

Discussion

To the best of our knowledge, this is the first study that investigated the frequency of frailty and its association with the GS referred to by Bernard Isaacs (1969) as the *Giants of Geriatric Medicine*, in the Brazilian elderly assisted in the FHS (primary health care).

The demographic profile of the elderly sample resembles that of the elderly population of the FSH. The feminization of aging, current demographic reality (Oliveira, Medeiros, Meirelles, & Santos, 2014), marriage or stable union as most frequent marital status (Nunes, Nakatani, Silveira, Bachion, & Souza, 2010; Sousa, Oliveira, Ramos, & Gonçalves, 2015) and low income and low education, are reflections of the social inequality in Brazil (Clares, Freitas, Almeida, Galiza, & Queiroz, 2011; Marin & Cecílio, 2009).

Methodological variations between previous studies in relation to the prevalence of frailty may have led to disparities in outcomes. Our findings approach the results of some American, European, Australian, and Canadian studies (Collard, Boter, Schoevers, & Oude Voshaar, 2012). However, they are lower than those registered among Latin American and Caribbean elderly populations (Alvarado, Zunzunegui, Béland, & Bamvita, 2008), and above those based on the Fried phenotype (Collard et al., 2012; Fried et al., 2001). In relation to Brazilian studies, our results were higher (Neri

et al., 2013; Sousa, Dias, Maciel, & Guerra, 2012; Vieira et al., 2013).

Among the frailty phenotype components (Fried et al., 2001), slow walking speed, was the most frequent diagnostic criterion. This result is corroborated by previous studies (Heuberger, 2011; Vieira et al., 2013). It is known that gait changes increase the risk of falling, which is recognized as one of the greatest impairments affecting elderly health and can lead to injuries (Coimbra, Ricci, Coimbra, & Costallat, 2010) with consequences to health and quality of life (Garcia, 2009).

GS are highly prevalent in older adults, especially the frail elderly (Inouye et al., 2007). Frailty and GS represent serious conditions for the elderly and may have a negative impact on health and functional capacity, and their effects on disability and quality of life are substantial (Fried et al., 2001; Inouye et al., 2007; Isaacs, 1969).

Cognitive impairment was the most prevalent of the GS among the investigated elderly, increasing the risk of frailty by around three and a half times. Results from the majority of previous researches, however, are conflicting (Marin et al., 2008; Robertson et al., 2013) but these variations may relate to differences in the diagnostic methods adopted to identify CI. Recently, the International Academy on Nutrition and Aging (IANA) and International Association of Gerontology and Geriatrics (IAGG) have created an International Consensus Group on 'Cognitive Frailty'. This group has highlighted the need for further research to elucidate the links between physical frailty and cognitive performance. Physical frailty can lead to sedentary behavior and social isolation. These situations (physical inactivity and social isolation), in turn, can further jeopardize the physical wellbeing of the elderly, creating a vicious cycle that might explain cognitive decline due to factors independent of a neurodegenerative condition (Kelaiditi et al., 2013;.Robertson et al., 2013)

Health and quality of life in the elderly is closely related to their overall functionality, their ability to continue performing daily life activities and managing their own life, and being able to care for themselves with autonomy and independence. The ability to make decisions and retain control over one's own actions depends on the integrated movement of cognitive functions, that suffer a gradual decline as a geriatric syndrome, even in the normal ageing process (Moraes, Marino, & Santos, 2010).

Professionals of the FHS play a decisive role in the early detection of CI, such as the first manifestation of dementia, as complaints or concerns about changes in cognition are common in primary health care patients. (Albert et al., 2011; Van den Kommer et al., 2009).

The second most prevalent syndrome noted was polypharmacy. A comparison of the frequency of PP in this study with results from the national and international literature exposed a very wide range of prevalence, due to differences in the criteria used to define PP and in the samples studied (Flores & Mengue, 2005; Fulton & Allen, 2005;).

Although faced with these variations, it is known that there is a high prevalence of use of multiple medications or non-clinically indicated or unnecessary medications in the elderly population, who are extremely susceptible to possible adverse consequences caused by their use (Passarelli & Gorzoni, 2006; Marin et al., 2008; Santos et al., 2013).

Among these consequences, PP can be related to increased prevalence of frailty (Gnjidic, et al., 2012a; Heuberger, 2011), a fact observed in the present study where the chance of being frail was approximately 3 times greater among those elderly individuals using 5 or more medications. The administration of medications can be considered a stressor capable of destabilizing a frail person (Huisman-Baron et al., 2011). Frailty itself can increase by 10% the total medications used, both prescription and over-the-counter (Crentsil, Ricks, Xue, & Fried, 2010). The frail elderly are more likely to be treated with multiple medications with an associated increase in the number of comorbidities (Gnjidic, et al., 2012b).

In addition, there may be many other consequences associated with PP, i.e. the occurrence of adverse reactions to medicine, impacting on treatment adherence, drug interactions, increased risk of morbidity, other GS and mortality (Hajjar, Cafiero, & Hanlon, 2007). Understanding these mechanisms may help to optimize medication prescribing for older people (Hubbard, O'Mahony, & Woodhouse, 2013).

Postural instability was the third most frequent syndrome among the elderly and alterations in balance were more frequent among the frail elderly, who present approximately 5 times more chance of being unbalanced. Mobility and balance impairment contribute to frailty, (Davis, Rockwood, Mitnitski, & Rockwood, 2011) and frailty is cited as one of the causes of falls (Coimbra et al., 2010). This may be related to the decrease in power generation capacity of muscles that occurs in frailty, which can somehow affect required postural adjustments (Martinez-Ramirez et al., 2011). Approximately 65% of individuals older than 60 years present daily episodes of dizziness or imbalance (Garcia, 2009).

PI also leads to changes in gait (a frailty criteria) and increases the risk of falls (Coimbra et al., 2010). Fall episodes were mentioned by 37% of the elderly, which is in agreement with other studies conducted with elders assisted in primary care (Siqueira et al., 2007). Falls constitute the largest single cause of fractures, injury and mortality in elderly individuals and are an independent determinant of functional decline, leading to nursing home admissions and substantial societal costs (Coimbra et al., 2010).

Urinary and fecal incontinence was reported by 14% of the elderly, being among the least frequent syndromes in this study. UFI represents a public health problem and is one of the main syndromes of aging, although often not well investigated by health professionals as it is incorrectly treated as a part of aging (Terra et al., 2013). Although generally not occurring, the most appropriate time and place to carry out the initial diagnosis of UFI would be in the primary health care setting (Maestre et al., 2010).

Urinary incontinence affects approximately 15 to 30% of healthy community-dwelling older adults (Carlson, Merel, & Yukawa, 2015; Irwin et al., 2006; Menezes, Hashimoto, & Santos, 2009) and the prevalence of fecal incontinence can reach 7% (Oliveira, 2006; Pretlove et al., 2006). However, elderly individuals will often limit their complaints on this subject as it is seen as a threat to their dignity and a source of embarrassment, making its prevalence underestimated and hindering actions aimed at prevention (Maciel, 2006).

Despite the high prevalence of UFI among the frail and prefrail elderly in this study, it was not associated with the presence of frailty, unlike in research with a methodology similar to ours, in which the occurrence of urinary incontinence was superior in frail older people (Silva, Souza, & D'Elboux, 2011).

UFI adversely affects the health condition and functionality, in addition to bringing a dramatic reduction in the quality of life of older people, being associated with social isolation, falls, inability to accomplish desired activities and impairment to sexual life. Contrary to how it may appear, this condition can be treated and the causes should be investigated (Resnick, Tadic, & Yalla, 2012).

Data related to immobility, which was the least frequent of the GS in the study sample, did not allow complete analysis as the number of elderly without mobility was small. This is connected to the fact that the elderly were required to go to the data collection location, therefore preventing the inclusion of the bed-ridden elderly.

Finally, 26.9% of the subjects presented two associated syndromes most frequently, and there is a greater chance of the elderly becoming frail as the number of GS accumulate. Frail elders also have an increased risk of developing other geriatric syndromes. Knowing this dynamic can assist in interventions to prevent the development of GS that may lead elderly persons to an increased risk of frailty. Geriatric syndromes have a devastating effect on the individual's quality of life as they progress, may lead to significant disability, and are part of the 'cascade to dependency' that can often result in institutionalization (Inouye et al., 2007).

The results of this study can make a relevant contribution, especially as it indicates the importance of the early identification of these syndromes and support measures that can be adopted by health professionals involved in elderly primary care.

The cross-sectional design of this study is among its limitations. Access to the study by immobile or bedridden elderly people was limited as the frailty and GS evaluations were performed in an outpatient setting and not in their own homes. This fact is most likely to have impacted on assessment of IM syndrome.

Additional studies of prevalence in a representative national sample and longitudinal research of the population assisted in the FHS are needed to confirm the findings obtained. This will also permit evaluation of intervention outcomes that can prevent the progression of GS and the frailty syndrome in the elderly, giving the guarantee of aging with a better quality of life.

Conclusion

The results demonstrate a high frequency of frailty in the elderly assisted in the FHS, with it being associated with three of five GS. Cognitive impairment was the most frequent of the GS, followed by polypharmacy, postural instability, and urinary/fecal incontinence, while immobility was the least prevalent. It was observed that cognitive impairment was the syndrome that presented the greatest chance of being associated with both frailty and prefrailty. Likewise, the chances of being frail were shown to be increased among elderly people using five or more medications simultaneously and with postural instability.

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