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ANALYSIS OF THE RELATIONSHIP BETWEEN DEPRESSION AND FRAILTY SYNDROME IN THE ELDERLY

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ABSTRACT

The frailty syndrome presents high prevalence in the advanced ages and causes risks of fall and disability. Objective: To evaluate the association of frailty syndrome with depression in the elderly. Method: 197 elderly people living in the municipality of Ivoti /Brazil participated. The instruments evaluated the frailty syndrome, depression, social support, cognition, stressors and coping strategies. Descriptive statistical analysis and multiple linear regression were performed. Results: The analysis showed that 43.7% of the sample was classified as non-frail, 47.7% as pre-frail and 8.6% as frail. In non-frail subjects there is association of depression with social support, cognition and coping strategies; in pre-frail individuals, association with social support, stressful welfare events, and coping strategies; in frail ones, there is association with stressors of offspring and coping strategies. Conclusion: The frailty syndrome is not only associated with physical characteristics, but also presents a significant association with emotional and social variables.

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INTRODUCTION

The greater life expectancy of the population can be positive or negative for society, depending on the nature of the aging of individuals (Carstensen and Hartel, 2006). The interaction of several variables will result in different potentials for good health in old age and a good physical and mental functioning, and will represent important factors regarding autonomy and control over the environment in old age (Neri, 2013). Nowadays, in the studies of successful aging, according to the lifespan theory, the same will be achieved with resources derived from the sensorimotor, cognitive and personality components, along with the social environment in which the individual is inserted (Baltes, 1997). There is, however, a group of elderly people, especially the older ones, who present some peculiarities regarding the accomplishment of the daily tasks, with a decrease in their general functional capacity. This group of elderly people is generally known by gerontologists as frail. The loss of functional capacity is due to a complex syndrome, which depends on a wide variety of causes that affects the quality of life of the elderly and is known as frailty syndrome (Fried et al., 2001).

The difference between successful aging and frail aging is the story of the entire life course of the individual. And this trajectory, in turn, will be affected by biological, psychological and cultural factors (Bergman, Wolfson, Hogan, Béland, and Karunananthan, 2004). The prevalence of frailty increases with age in older adults. However, the same association is little reported in relation to younger adults, where the associated risk is not so clear. Little is known about how frailty changes over time in younger adults. Frailty is estimated according to the accumulation of deficits throughout life. The National Population Health Survey found that more frequent use of health services, changes in health status and death are good predictors of frailty. At all ages, a higher index of frailty was associated with mortality and greater use of health services. In younger adults, recovery from health status was relatively more common, but the chance of complete recovery decreased with age (Rockwood, Song, and Mitnitski, 2011). From these settings the research objective of the present study was formulated: To evaluate the association of the variables of frailty and depression syndrome in elderly living in the municipality of Ivoti/Brazil.

METHOD

The present research is quantitative, with a cross - sectional design. The total sample of this study in Ivoti was 197 elderly, aged 65 years and over, of both sexes. In this paper, we present the details of the variables used for this study, relating the instruments and equipment used (Neri et al., 2011; Neri et al., 2013): 1. Frailty - a) Unintentional weight loss according to self report. B) Fatigue evaluated by self-report. C) Manual gripping force measured with dynamometer. D) Self-report measures on the weekly frequency and daily duration of physical exercises and domestic activities and on the maintenance of these activities. E) Speed of the march evaluated by the time covered in the distance of 4.6 meters; 2. Cognitive Deficit - Mini-Mental State Examination (MMSE); 3. Depressive symptoms - Geriatric Depression Scale-GDS-15; 4. Experiences of stressful events - Composed of 5 categories evaluated in terms of intensity: finitude, offspring, care, well-being and transition (Aldwin, 1990; Fortes-Burgos, Neri, and Cupertino, 2008). 5.California Coping Inventory, that has 5 factors: Factor 1. Focus on the expression of negative emotions, behavioral excesses, and risk behaviors; Factor 2. Focus on attempts to control the environment; Factor 3. Focus on religiosity; Factor 4. Focus on attenuation of the potential stressor of the event, through avoidance behaviors; Factor 5. Focus on inhibition of emotions (Fortes-Burgos, Neri, and Cupertino, 2008; Aldwin, 1997) 6. Perceived social support - Interpersonal Support Evaluation List - ISEL (Cohen, Mermelstein, Kamarck, and Hoberman, 1985; Martire, Schulz, Mittelmark, and Newsom, 1999). In this study descriptive and linear regression analysis were performed using the SPSS (v. 23.0), with significance level ≤ 0.05.

RESULTS PRESENTATION

The majority age group of the sample is 70-74 years (35.5%). The age range of 65 to 69 years represents 33% of the sample, 75 to 79 represents 20.3% and that of 80 years or more 11.2%. As for sex, women predominate (70.1%). In Table 1 the data on the frailty distribution are presented: 43.7% of the sample was classified as non-frail, the pre-frail represented 47.7% and the frail 8.6%.

Table 1. Distribution of absolute frequency and percentage of frailty

Variable	Category	Age group			Frequency	Percentage
		60	70	≥80		
Frailty in Weight Loss	Not frail	62	99	19	180	91,3
	Frail	5	10	2	17	8,7
	Total	67	109	21	197	100
Frailty in Fatigue	Not frail	57	78	16	151	76,2
	Frail	12	29	5	46	23,8
	Total	69	107	21	197	100
Frailty in Grip Strength	Not frail	60	86	11	157	79,4
	Frail	7	22	11	40	20,6
	Total	67	108	22	197	100
Frailty in Physical Activity	Not frail	56	90	11	157	79,7
	Frail	9	20	11	40	20,3
	Total	65	110	22	197	100
Frailty in March	Not frail	60	87	10	157	79,7
	Frail	5	23	12	40	20,3
	Total	65	110	22	197	100
Classified Frailty	Not frail	36	47	3	86	43,7
	Pre Frail	28	53	13	94	47,7
	Frail	1	10	6	17	8,6
	Total	65	110	22	197	100

Table 2. Analysis of Linear Regression of Depression in Non-Frail People (R2 -0,560)

Model	Non-standardized coefficients		Standard coeficient	T	Sig.
	B	Standard error			
Social support	-,209	,073	-1,647	-2,857	,006
Cognitive deficit	,156	,057	1,718	2,744	,008
Strategy of Coping (factor1)	1,027	,489	,635	2,099	,039

Table 3. Analysis of Linear Regression of Depression in Pre-Frail People (R2 - 0,713)

Model	Non-standardized coefficients		Standard coeficient	T	Sig.
	B	Standard error			
Social support	-,296	,075	-1,919	-3,932	,000
Stressful wellness events	,341	,107	,313	3,174	,002
Coping strategy (fator 1)	,984	,489	,554	2,013	,048
Age of interviewee	,075	,022	1,877	3,325	,001

Table 4. Analysis of linear regression of Depression in frail elderly (R^2 - 0,865)

Model	Non-standardized coefficients		Standard coeficient	t	Sig.
	B	Standard error			
Stressful events of descent	1,015	,407	,483	2,496	,047
Strategy of Confrontation (fator 2)	,770	,273	,546	2,823	,030

In the regression analysis presented in table 2, we verified the relationship between depression assessed through the Geriatric Depression Scale (GDS-15) and the other variables within the group of elderly that had their classification as non-frail. The model identified a direct relationship with the variables cognitive deficit and use of the coping strategy (factor 1) with focus on the expression of negative emotions, behavioral excesses and risk behaviors. An indirect relationship with social support was also identified. The decrease or control of depression in the phase of absence of frailty are related to the increase of social support, the reduction of the use of the coping strategy to focus on the expression of negative emotions and to cognitive performance. Table 3 shows the relationship between Depression and the other variables in the group of pre-frail elderly. There was a direct relationship with the variables stressors of well being and use of the coping strategy (factor 1) and the age of the interviewees. An indirect relationship with social support was also identified. This analysis suggests that the reduction of depression in the pre-frailty phase is related to the increase of social support, the reduction of exposure to stressful events related to well-being, that is, situations that involve health care and also to the decrease of the use of the Coping strategy focused on expressing negative emotions. Depression would be better controlled at less advanced ages because of its cumulative emotional exhaustion factor. Table 4 shows the relationship between depression and the other variables in the frail elderly. The model pointed out a direct relationship with the variables stressors of offspring, that is, situations related to children, and / or grandchildren and / or close relative, and which the elderly have difficulty to deal with, including also situations in which some relative of the elderly needed medical and / or medication and did not obtain and the use of the coping strategy (factor 2) focused on attempts to control the environment. The decrease or control of depression in the frailty phase is related to the decrease of the stressor events related to the offspring and the use of coping strategies (factor 2).

RESULTS AND DISCUSSION

The classification of frailty in the present study resembles that of related national and international research. A study showed prevalence of non-frail elderly in 25.7%, pre-frail as 54.3% and frail ones as 18.3%, with 1.7% being classified as not applicable (Amaral et al., 2013). In another Canadian study 55.2% of the elderly population was classified as pre-frail, 25.6% as non-frail and 19.2% as frail (Freiheit et al., 2011). In an American study the prevalence of pre-frail, frail and frail elderly was 53.1%, 37.1% and 9.8%, respectively (Espinoza, Jung, and Hazuda, 2010). In European elderly, the highest proportion of pre-frail (42.3%) and non-frail (40.7%) elderly individuals were also found, with the lowest percentage of elderly individuals classified as frail (17.0%) (Santos-Eggimann, Cuénoud, Spag Noli, and Junod, 2009). The Cardiovascular Health Study demonstrated the prevalence of frailty in 6.9% of the sample and was associated with the variables female gender, African-American ethnicity, low socioeconomic status, low level of education, precarious health status, comorbidities, and disabilities (Fried et al., 2001). In another study similar data were also verified, with the prevalence of pre-frailty in 46.3% and of weakness in 8.7%. The pre-frail and frail elderly presented: greater chances of dependence on instrumental activities of daily life; Restriction on advanced activities of daily living; Use of gaiters; Comorbidities; Falls; Depressive symptoms; Less self-efficacy to prevent falls; Hospitalization and old age. It was also identified a high percentage of frailty states associated to higher odds for adverse health conditions, especially those related to disability (Vieira et al., 2013). Several studies point to the increasing trend of depressive symptoms and levels of frailty, indicating that this association may be related to the overlap of characteristics of both health conditions, such as inactivity, weight loss, exhaustion and reduced level of activity (Fried et al. 2001; Rantanen et al., 2000, Woods et al., 2005, Weiss, 2011, Lakey, 2012). In a study of depressive symptomatology, a strong and growing association with pre-frailty and frailty was identified, and the frail ones were 2.6 times more likely to present depressive symptoms. These probabilities were similar between men and women and remained present after controlling for disabilities in activities of daily living, comorbidities, life satisfaction and health self-assessment (Vieira, 2013). In our study, cognitive deficit showed a positive relationship with depression in the elderly classified as non-frail. Cognitive deficit can be indicated as one of the main symptoms manifested in the frailty syndrome, but in the phase classified as non-frail the presence of depression is related to the absence of cognitive deficit. In addition to these cognitive elements, older people classified as non-frail need greater social support. Research shows a possible association between frailty, age and cognitive changes. When assessing the frailty in Spanish elderly living in the community, it was found that 9.6% was frail and 47% pre-frail. In addition, the presence of age above 85, depressive symptoms, comorbidities and impairment in cognition, is associated with frailty (Jurschick, 2012). The evaluation of cognitive status and frailty in a sample of 50 elderly people aged 80 years, from Ribeirão Preto (Brazil) showed a 64% prevalence of frailty. Of these, 38% had mild frailty, 14% moderate and 12% severe. It also found an association between MMSE, gender, age, years of study and frailty classification, and a strong correlation between frailty level and cognitive deficits was observed (Leonardo et al., 2014).

Studies that have evaluated cognition in mood disorders, characterized as major depression, indicate that there is executive dysfunction, working memory and memory deficit both in the clinical phase and in the asymptomatic period. These data indicate that cognitive disorders would be factors of vulnerability to depression (Laks, Marinho, Rozenthal, and Engelhardt, 1999). The presence of dementia represents the strongest association with the development of depression (Huang et al., 2011; Kwag, Martin, Russell, Franke, and Kohut, 2011; Sampson, Bulpitt, and Fletcher, 2009). Depressive symptoms in the elderly may be related to other vulnerabilities and clinical health conditions, along with the possible presence of cognitive deficits and functional disability (Shin et al, 2012). Depression is generally associated with disability, comorbidities, dementia, increased use of medication, increased number of stressful events, reduced social support and ideas of mortality (Del Porto, 1999). There is a high incidence of depression in old age, especially in the institutionalized elderly, which may be related to the threat or rupture of affective and support ties. In a study with institutionalized Portuguese elderly people, there was a negative correlation between depressive symptoms and levels of satisfaction with social support. The results of this study suggest that social support can attenuate depressive symptoms in the elderly (Pimentel, Afonso, and Pereira, 2012). In this study, coping strategies demonstrated a relationship with

depression in the three frailty classifications, differing only in the coping factor. The elderly classified as non-frail and frail focused their strategies on the expression of negative emotions, behavioral excesses and risk behaviors, while the elderly individuals who presented the syndrome focused their strategies on attempts to control the environment. One relevant variable in the coping study is depression, which may influence the interpretation of a situation (Zeidner and Saklofske, 1996). In a study on depression and coping, it was seen that elderly people who presented more depressive symptoms used more strategies of acceptance, rumination and catastrophization, while subjects with fewer depressive symptoms manifested more positive reassessment . Following the study, in the longitudinal evaluation, depressive symptoms were controlled to the extent that the strategies observed were positive acceptance and reassessment strategies (Kraaij, Pruymboom, and Garnefski, 2002). In our study, age was associated with depression in the group of elderly individuals classified as pre-frail. In the elderly population, depressive symptoms have peculiar clinical characteristics. In this age group there is a decrease in emotional response, characterized as affective erosion, leading to a predominance of symptoms such as decreased sleep, loss of pleasure in usual activities, ruminations about the past and loss of energy. The older the age, the greater the average number of depressive symptoms found. The global studies on depression indicate a low relation with age, but these studies use inadequate instruments for gauging in the elderly population (Gazalle, Lima, Tavares, and Hallal, 2004). In the study of 299 institutionalized individuals aged over 60 years, there were associations between depression symptoms and age increase, female sex, limitation / dependence and dissatisfaction with the institution. There was also a significant association between depression and insomnia, tachycardia, paresthesia, dizziness and excessive sweating (Silva, Sousa, Ferreira, and Peixoto, 2012). This relationship can be explained indirectly, since human aging leads to a progressive decrease in the functional reserve of individuals as a function of the increase in age and, consequently, the quality of life of the elderly person. This sequence would lead the elderly to become more susceptible to depressive symptoms (Brasil, 2007).Os stressful events were also associated with the group of frail and frail elderly individuals in order to increase depression. In relation to frail elderly, depression is more related to the number of stressors of descent.

The focus of the frail elderly is stress related to children and / or grandchildren and / or close relatives. In these moments the elderly person presents difficulties in dealing with the situations in which some family member needed medical help and / or medication and did not obtain it. And the use of the coping strategy focused on attempts to control the environment. The elderly classified as pre-frail present the depression most related to stressful events related to well-being. Stressful events can be evaluated in different ways according to the cognitive perception of each individual. Thus, such events will not necessarily determine negative consequences for the individual (Fortes-Burgos et al., 2008). Stressful life events can become a risk factor for wellness during aging, and individuals who do not have the resources to cope may become more vulnerable to developing or worsening depressive states, chronic or more predisposed illnesses To face problems in their interpersonal relationships, since crisis or challenging situations are commonly generated by stressful life events (Fortes - Burgos, 2005). Many events that occur with aging can be considered stressful because they require changes in behavior and adaptations. These events have a strong relationship with depression in elderly individuals. The types of stressors may differ according to the events faced and the moment of life. Some events such as home maintenance, contingencies, daily life management and health care can be considered as stressors. And they can be potentialized by chronic diseases, generating states of tension and disgust, often being misinterpreted as depression. Stress is an important factor for the overall health of the elderly (Fontes, 2008; Ferreira, 2007). Social support among the elderly is an instrument of great importance for coping with the transformations that come with the aging process, since individuals undergo profound social and psychological changes with losses and gains. The perception of instrumental social support, which refers to the feeling and security of having someone to count on in case of illness or help to perform daily life activities, is related to the well-being of the elderly, and can predict the presence of Depressive symptoms (Ramos, 2002). Finally, the research data corroborate the studies of authors who oppose the only physical conception for frailty, considering that the definitions should include social and environmental relations, as well as the psychological and cognitive aspects (Morley, Perry, and Miller, 2002, Strawbridge, Wallhagen, and Cohen, 2002; Rockwood, Hogan, and Macknight, 2000). For the Canadian Initiative on Frailty and Aging, the frailty phenotype model proposed by Fried et al. (2001), although it is an important definition, can leave gaps in the understanding of cases in which there is health related vulnerability and can not be so easily separated from cognition, humor and social support, since the proposed phenotype is linked to the physical conception . For this group, frailty should be considered multidimensional, heterogeneous and unstable, not being linked to the concept of disability (Rolfson, Majumdar, Tsuyuki, Tahir, and Rockwood, 2006). Even though it is known that, on the one hand, frailty is related to age, on the other hand it does not present in a uniform way in all individuals, because it is due to biological, psychological, cognitive and social factors arising from physiological aging, as well as Adverse conditions such as functional dependence, falls and institutionalization (Fabrício and Rodriguez, 2008).

Conclusion

In older people with no symptoms of frailty there is an association between depression and social support variables, cognition and coping strategies. In people classified as pre-frail, there was an association between depression and social support, stressful wellness events and coping strategies. And finally, in older people classified as frail, we identified the association of depression with the stressor events of offspring and coping strategies. It is concluded that the frailty syndrome presents not only associated physical characteristics, but also a significant association with the emotional and social variables, highlighting in this study the variable of depression. This study also demonstrates the importance of analyzing the elderly in different frailty classification contexts. This information makes possible a differentiated biopsychosocial intervention work for each stage, which can cover diverse primary and secondary prevention strategies.

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