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**PREVALÊNCIA DE TONTURA NA TERCEIRA IDADE**  
Revista CEFAC, vol. 16, núm. 3, mayo-junio, 2014, pp. 739-746  
Instituto Cefac  
São Paulo, Brasil

Available in: <http://www.redalyc.org/articulo.oa?id=169331564007>



*Revista CEFAC*,  
ISSN (Printed Version): 1516-1846  
[revistacefac@cefac.br](mailto:revistacefac@cefac.br)  
Instituto Cefac  
Brasil

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# PREVALENCE OF DIZZINESS IN OLDER PEOPLE

## *Prevalência de tontura na terceira idade*

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### ABSTRACT

**Purpose:** to measure the prevalence of dizziness in elderly participants of a living group of a Brazilian Unified Health System (SUS) referral center located in the city of Natal-RN. **Methods:** prospective study. Fifty individuals were interviewed, aged between 60 and 88 years. Data were studied through descriptive analysis. **Results:** the prevalence of dizziness in this population was 74%, from which 35.1% had only vertigo, 13.5% had vertigo associated to other types of dizziness, 24.3% had imbalance, 8.1% sensation of floating, 16.2% had presyncope, and 2.7% had sensation of floating and presyncope. About duration of dizziness, for 48.6%, it lasted in seconds. About otoneurologic symptoms, 48.64% had neurovegetative symptoms, 56.8% had tinnitus, 56.8% had hearing loss, 43.2% had ear fullness. Regarding other problems, 10.8% did not wear glasses; 2.7% wore hearing aids, 8.1% used canes, 48% had two or more associated diseases and 40% was using three or more medications daily. Comparing dizzy and not dizzy patients, it was found a prevalence ratio (PR) of 0.947 for number of comorbidities and 0.971 for number of medications. When elderly with vertigo and other types of dizziness were compared, it was found a RP 1.197 for tinnitus, 1.050 for ear fullness, 2.111 for neurovegetative symptoms, 0.480 for duration of dizziness, 0.528 for number of comorbidities and 0.758 for number of medications. **Conclusion:** we conclude that dizziness is a very prevalent symptom in the elderly, coexisting with co-morbidities and use of multiple medications.

**KEYWORDS:** Aged; Prevalence; Dizziness

### ■ INTRODUCTION

In recent decades, the population of Brazil has shown an increasing tendency towards aging, with a substantial increase in the number of older people and a disproportionate reduction in the birth rate. The IBGE (Brazilian Institute of Geography and Statistics) estimates that by 2050 the population of people aged over 60 years will represent approximately 30% of the general population<sup>1</sup>.

As the population ages, so the prevalence of chronic diseases and the consequences of this for public health increase. Complications, sequelae, polypharmacy, and long-term hospital stays are some of these consequences. Older people generally suffer from a greater number of associated diseases, resulting in fragility and inactivity, which often culminates in falls.

An alteration in balance represents 85% of the causes of falls in older people. As a result, the study of systems responsible for the posture control of these individuals is required. The main symptom of such imbalance is dizziness<sup>2</sup>.

Dizziness is the sensation of a loss of body balance, defined as erroneous perception, an illusion or hallucination of movement, imbalance, visual distortion and sense of spatial disorientation of rotating or non-rotating type<sup>3</sup>. It may be due to vestibular alterations (such as visual and ambulation).

According to Drachman and Hart<sup>4</sup>, dizziness can be classified into four subtypes: pre-syncope,

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Conflict of interest: non existent

imbalance, vertigo and psychogenic (or non-defined). In 76% of cases, only a careful analysis of the patient's clinical history is able to differentiate between types of dizziness. These various types of dizziness reinforce the multifactorial nature of the genesis of the condition.

Dizziness is a very common symptom among the elderly. Prevalence among older people, as described in international literature, is highly variable, with a mean of approximately 30% in population-based studies. Stated values of between 13% to 38%<sup>5</sup> 19.6%<sup>6</sup> 24%<sup>7</sup> and 30%<sup>8</sup> have been found. A Brazilian epidemiological study found a slightly higher prevalence of dizziness among older people (45%)<sup>9</sup>.

The aim of the present study was to measure the prevalence of dizziness among older people from a support group in a Brazilian National Health Service (SUS) specialized healthcare center for older people in Natal (RN).

## METHODS

The study was approved by the Ethics in Research Committee under CEP/UFRN number 309/2012, and all patients signed a declaration of free and informed consent prior to data collection.

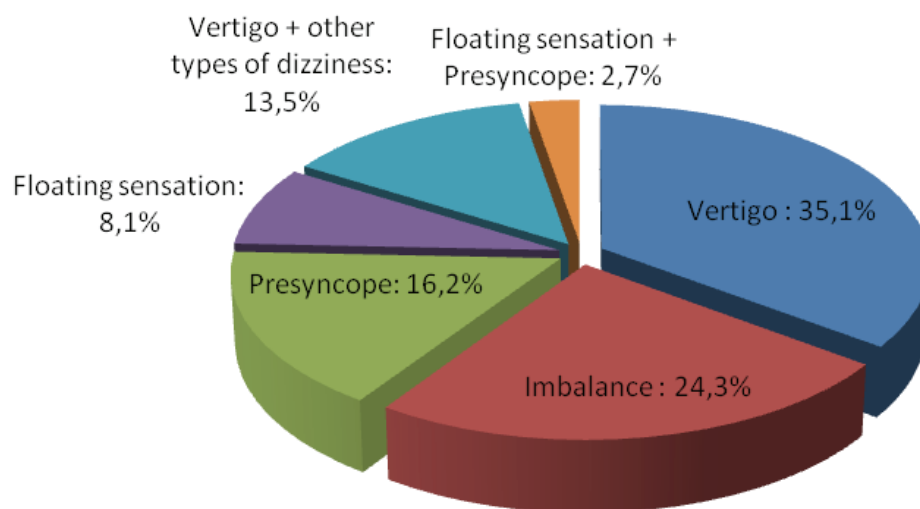
A sectional study was undertaken to measure the prevalence of dizziness in elderly participants from a SUS support group located in a specialized healthcare center for older people in Natal (RN). Research was conducted over two months, and all the older people who attended meetings during

this period were included in the study. According to information from the coordinators, 60 seniors are enrolled in the group, but not all attend regularly. A total of 50 individuals were evaluated in the study. A questionnaire with questions relating to otoneurologic data, such as: presence, type and duration of dizziness (seconds, minutes, hours and days); otoneurological symptoms such as tinnitus, hearing loss and neurovegetative symptoms (presence or absence of), use of hearing aid (HA), glasses or device to aid walking. Information of other alterations was ascertained through a question relating to the presence of comorbidities and number of medications taken. The Drachman and Hart classification was used for dizziness<sup>4</sup>. The number of medications used and number of comorbidities were categorized by the median. Descriptive statistics were used for data analysis. Bivariate analysis was performed using the Chi-squared test with a significance level of 5%, with subsequent calculation of prevalence ratio (PR) and standard deviation (SD).

## RESULTS

A total of 50 older people were evaluated. The older people were aged between 60 and 88 years, and the majority (92%) were female.

The prevalence of dizziness in this population was 74%. The most common type of dizziness was vertigo, in isolation or in combination with other types, according to the classification of Drachman and Hart<sup>4</sup> (Figure 1).

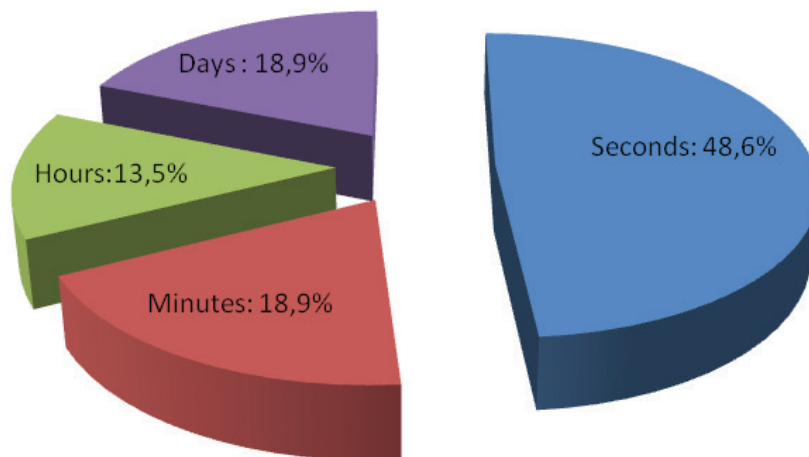


**Figure 1 – Classification of types of dizziness among older people, Natal – RN, 2013**

With respect to duration of dizziness, the majority of participants reported a duration of seconds (Figure 2).

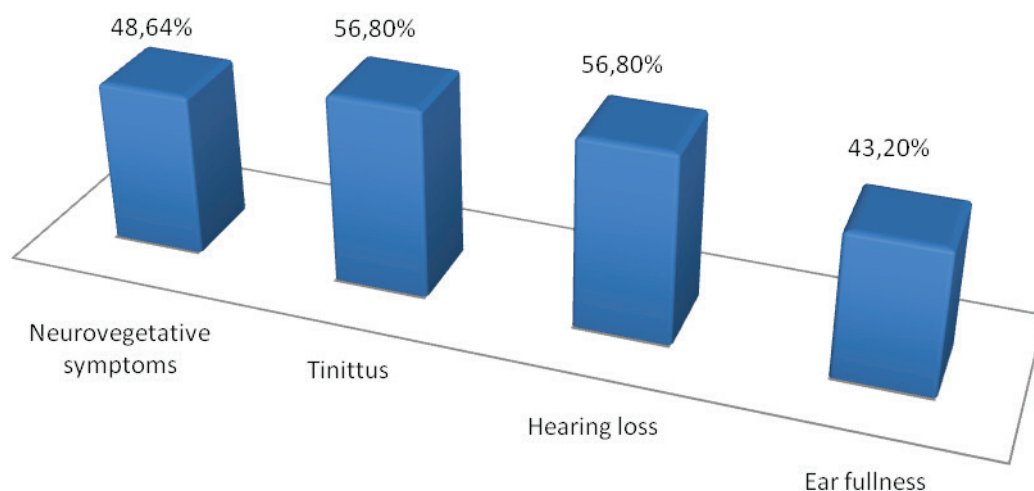
In relation to other otoneurological symptoms, 48.64% of those with dizziness also had

neurovegetative symptoms, 56.8% had tinnitus (35.1% unilateral and 21.6% bilateral), 56.8% had hearing loss (10.8% unilateral and 45.9% bilateral) and 43.2% had ear fullness (21.6% unilateral and 21.6% bilateral) (Figure 3).



**Figure 2 – Duration of dizziness among older people, Natal - RN, 2013**

### Otoneurological symptoms associated



**Figure 3 – Classification of otoneurological symptoms associated with older people, Natal - RN, 2013**

Only 10.8% of the older people did not wear glasses or contact lenses, 2.7% used hearing aids, and 8.1% used walking aids.

Of the 50 subjects interviewed, 48% had two or more associated diseases and 40% took three or more medications daily (Table 1).

**Table 1 – Distribution of number of comorbidities and medication of older people in living group, Natal - RN 2013**

	Minimum	Maximum	Median
Comorbidities	0	7	2
Medication	0	9	3

The Chi-squared test was used to evaluate association between older people with vertigo and use of medication and number of co-morbidities, compared with older people without dizziness.

However, no statistically significant association was found. This lack of association was due to the small number of cases. The prevalence ratio was 0.947 for comorbidities and 0.971 for medication (Table 2).

**Table 2 – Statistical significance and Prevalence Ratio (PR) with standard deviation (SD) for variables related to dizziness. Natal-RN, 2013**

	Presence of dizziness	Absence of dizziness	<i>p</i>	PR (SD)
Comorbidities				
3 or more	18	7	1.000	0.947
0 to 2	19	6		(0.682-1.317)
Medication				
3 or more	19	6	1.000	0.971
0 to 2	18	5		(0.714-1.322)

The type of dizziness was categorized as vertigo and other types (including presyncope, dizziness and non-defined imbalance) to seek associations with otoneurological and neurovegetative symptoms, use of medications and presence of comorbidities (Table 3). There was no statistically significance association between these factors, however for the presence of neurovegetative

symptoms and duration of dizziness of seconds or minutes, there was a trend toward significance, with *p* values very close to 0.05, which reflects a possible positive association if a greater number of number of patients were to be evaluated. The prevalence ratios for otoneurological symptoms were greater than one.

**Table 3 – Statistical Significance and Prevalence Ratio (PR) with standard deviation (SD) for variables related to type of dizziness. Natal-RN, 2013**

	Vertigo	Other types of dizziness	<i>p</i>	PR (SD)
Tinnitus				
Yes	11	10	0.851	1.197
No	7	9		(0.601-2.385)
Ear fullness				
Yes	8	8	1.000	1.050
No	10	11		(0.540-2.040)
Neurovegetative Symptoms				
Yes	12	6	0.071	2.111
No	6	13		(1.009-4.416)
Duration of dizziness				
Seconds to minutes	9	16	0.061	0.480
Hours to days	9	3		(0.259-0.889)
Comorbidities				
3 or more	6	12	0.138	0.528
0 to 2	12	7		(0.252-1.104)
Medication				
3 or more	8	11	0.625	0.758
0 to 2	10	8		(0.388-1.481)

## ■ DISCUSSION

Literature diverges regarding the prevalence of dizziness among older people. The present study found a prevalence of 74%, including all types of dizziness, according to the classification of Drachman and Hart<sup>4</sup>. This result is very close to the values found by Ganança and Caovilla<sup>10</sup>, where it was reported that 65% of older people living in the community suffered from dizziness, with this prevalence increasing to 81-91% for older people attending geriatric outpatient units. As the population of this study refers to a group of older people from a healthcare unit, meaning that most of them receive some kind of treatment, it may be considered as an outpatient population.

The majority of the population of the present study was female. These findings are similar to those found by Ramos et al.<sup>11</sup>, in a population of older people in the community (60.0%) and also in outpatient studies of elderly people with vestibular disorders by Ebel<sup>12</sup> (68.3%), Gushikem<sup>13</sup> (67.6%) and Medeiros<sup>14</sup> (64.5%), probably due to the majority of women among the elderly population in general.

Among older people, the physiological changes that result from aging cannot be disassociated from diseases that arise over the years, and this union of

factors can lead to symptoms. Dizziness can be the result of various diseases acting on a body already weakened by normal wear and tear, causing injuries that affect the maintenance of body balance. The greater the number of associated diseases, the greater the risk of dizziness, especially if this number is greater than three<sup>15,16</sup>. The majority of the study population had two or more associated diseases, a result close to those found in Brazilian literature, in which the mean number of diseases per individual ranged between 3.83<sup>17</sup> and 3.98<sup>18</sup>.

The high number of drugs used by elderly patients is also important, as these can be vestibulotoxic or have side effects related to balance disorders. They can interact with each other and, depending on the concentration of the drug, duration of treatment and the conditions of the body of the patient, such as poor liver or kidney functioning, can cause drowsiness, postural hypotension, arrhythmias or other situations that lead to the emergence of dizziness<sup>19</sup>. Maarsingh et al<sup>20</sup> found that the side effects of medication contributed to 23% of the causes of dizziness, and Lin and Bhattacharyya<sup>21</sup> reported that drugs can trigger dizziness in 18.7% of cases. The greater the number of drugs used, the greater the chance of a deleterious effect being caused by their use. The use of more than four associated medications is related to the onset of dizziness among

older people<sup>15,16</sup>, and it was found that the use of 5 or more associated drugs resulted in a 1.31 times higher risk of dizziness<sup>22</sup>. The majority of the group of older people in the present study used three or more medications daily, corroborating the results of Brazilian literature, which found that patients used between 3.86 and 4.08 medications daily<sup>17,18</sup>.

Prevalence ratios for medication use and comorbidities when comparing older people with and without dizziness were higher among the group without dizziness. However, the prevalence ratio was very close to one. This reflects the homogeneity of the sample in these two respects, meaning that there was no association between these factors and dizziness.

Otoneurological symptoms are not always present in dizzy spells, as they depend on the direct or indirect involvement of the vestibulocochlear system. A number of studies have described the association of these symptoms with dizziness, but the results demonstrate little concordance (nausea: 27 to 40%, tinnitus: 10 to 73%, hearing loss: 6 to 35%)<sup>9,20</sup>. In this study, about half of the elderly had tinnitus, hearing loss and ear fullness. Regarding dizziness itself, 48.6% of this group reported a duration of seconds (the largest group) while 31.7% of patients interviewed by Gazzola et al.<sup>17</sup> reported dizziness that lasted seconds.

When the older people with vertigo were separated from those with other types of dizziness, there was association between the symptoms and the disease. For the presence of neurovegetative symptoms and short duration of dizziness, statistical analysis revealed values that were very close

to being significant ( $p = 0.071$  and  $0.061$  respectively), probably reflecting the small sample size. The prevalence ratio for neurovegetative symptoms of 2.111 demonstrates that these symptoms are strongly related to vertigo. Also ear fullness, tinnitus and hearing loss had prevalence ratios greater than one, confirming their close association to vertigo, at the expense of other types of dizziness. This is due to the intrinsic characteristics of vertigo itself, which by definition lasts seconds and is usually accompanied by ear fullness, tinnitus and hearing loss, as well as the frequent presence of neurovegetative symptoms<sup>3</sup>.

## ■ CONCLUSION

It can be concluded that dizziness is highly prevalent among older people, as well as the presence of comorbidities and the expressive use of medication among such a population. This high prevalence requires the creation of public health policies for the care of older people, who may suffer falls and other complications arising from dizziness and underlying illnesses.

## ■ ACKNOWLEDGEMENTS

The authors would like to thank Fátima and Antônia, coordinators of the group of older people, who allowed the present study to be undertaken, and all the older people that agreed to take part in the study.



**RESUMO**

**Objetivo:** aferir a prevalência de tontura em idosos participantes de um grupo de convivência do Sistema Único de Saúde localizado em centro de especialidades e assistência à saúde do idoso no município de Natal-RN. **Métodos:** estudo prospectivo. Para estatística, utilizou-se análise descritiva dos dados. **Resultados:** foram entrevistados 50 idosos, com idades entre 60 e 88 anos. A prevalência de tontura nesta população foi de 74%. Destes, 35,1% apresentavam apenas vertigem; 13,5% apresentavam vertigem associada a outro tipo de tontura; 24,3% apresentavam desequilíbrio; 8,1% flutuação; 16,2% pré-síncope; e 2,7% flutuação e pré-síncope. Em relação à duração da tontura, 48,6% tinham duração de segundos. Quanto à presença de sintomas otoneurológicos associados, 48,64% referiram sintomas neurovegetativos, 56,8% tinham zumbido, 56,8% apresentavam hipoacusia e 43,2% apresentavam plenitude aural. Referente a outras alterações, 10,8% não usava óculos; 2,7% usavam aparelho auditivo e 8,1% usavam bengalas, 48% tinham 2 ou mais doenças associadas e 40% faziam uso de 3 ou mais medicamentos ao dia. Comparando-se os pacientes com tontura e os sem tontura, achou-se RP de 0,947 para número de comorbidades e 0,971 para número de medicamentos. Na comparação entre idosos com vertigem e outros tipos de tontura, achou-se RP de 1,197 para zumbido, 1,050 para plenitude aural, 2,111 para sintomas neurovegetativos, 0,480 para duração da tontura, 0,528 para número de comorbidades e 0,758 para número de medicamentos. **Conclusão:** conclui-se que a tontura é um sintoma bastante prevalente no idoso da comunidade assim como a presença de co-morbidades e uso de vários medicamentos.

**DESCRIPTORIOS:** Idoso; Prevalência; Tontura

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Received on: February 04, 2013

Accepted on: June 20, 2013

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