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FACTORS ASSOCIATED WITH SYSTEMIC ARTERIAL HYPERTENSION AND DIABETES MELLITUS IN RURAL ELDERLY[1]

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ABSTRACT
The objectives of this study were to describe socioeconomic, health and dietary habits of elderly with hypertension and diabetes mellitus, and to identify factors associated with the presence of these morbidities among the elderly in rural areas the Uberaba-MG. This is an analytical and cross between 84 older adults with hypertension and diabetes mellitus. We carried out interviews with questionnaires. We used descriptive analysis and logistic regression ($p<0.05$), using the SPSS 17.0 software. Predominated elderly female, with 60 ├-70 years, married, 4 ├-8 years of education and income of a minimum wage. The prevalent morbidities were vision problems, circulation, heart disease and obesity. Most said: remove fat from meat, rarely consume processed foods and / or fried foods, not adding salt after the food is ready, rarely or never consume sweet, use vegetable oil for cooking; sedentary lifestyle, not a smoker nor drinker. Female gender and overweight remained significant predictors of hypertension and diabetes mellitus, alcohol consumption and smoking found to be protective factors. We highlight the need for action on health in rural areas, aimed at health promotion and disease prevention among these seniors.

Keywords: Aged. Hypertension. Diabetes Mellitus. Rural Population.

INTRODUCTION

The aging process is a world reality, being that in Brazil the number of elderly is approximately 21 million and represents approximately 11.3% of the population[(1)]. Changes in the age composition of the population have accompanied by changes in the causes of morbidity and mortality, with emphasis on the presence of chronic diseases among the elderly. Among the morbidities prevalent, hypertension (SAH) affects about 50% of people with 60 years or more and the diabetes mellitus (DM), 16%[(1)].

The resident population in the countryside experiences the aging process as in the urban area; However, with greater evidence of poverty, social isolation, low schooling, residencies in precarious conditions, limited access to transport and greater distance from social resources and health institutions[(2)]. Uberaba-MG, where took place the present research, the 296,000 inhabitants, approximately, 98% live in the urban zone and 2% in the countryside. However, with regard to the elderly, there is a higher percentage residing in rural area (20%) than in urban (11.6%) [(1)]. Thus, it is evidenced the need for studies that address about SAH and the DM, through the context of rural ageing.

In relation to the prevalence of SAH in the countryside, survey found approximately 50% among seniors [(2)]. For the DM, adults and seniors study in Brazil found that the prevalence of the disease is gross of 5%, reaching 10% among men and 15% among women between 60 to 69 years and reaching even higher prevalence as age increases[(3)]. However, research carried out in the interior of Minas Gerais has observed that the seniors living in rural areas were less likely

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to have DM [4].

It should note that the possibility of association between SAH and the DM is in the order of 50%, which requires the management of both in a single person [5].

Research conducted in Brazil with data from the national survey by household Sample (PNAD) found that the Southeast region presented the greatest gross coefficient HAS prevalence and associated DM (3.9%), followed by the southern region (3.6%). The presence of HAS associated with the DM was more frequent with advancing age [3].

Other studies conducted in Brazil found that among those with HAS associated to DM female predominates, with low education and income, sedentary[6-,8], obese[7-8] and with a history of heart or cardiovascular problems[8].

As for the eating habits, study in Teresina-PI, with elderly people with SAH and DM, obtained the bulk of respondents showed inadequate feeding habits, with low consumption of fruits, vegetables, dairy products; In addition, high intake of oils and fat[7].

Front of the exposed, this research aims to contribute to broaden the knowledge about this subject, so subsidizing the formulation of actions and public policies for the elderly with HAS and DM, strengthening the management, services, and improving the health and living conditions of the population.

Thus, this research had as its objectives: to describe the socioeconomic characteristics, health and nutritional habits of elderly with hypertension and diabetes mellitus and identify the factors associated with the presence of these morbidities among rural elderly of Uberaba-MG.

METHODS

This research is part of a larger study, domiciliary inquiry type, analytical, transversal and observational study in which the population was composed of elderly people who lived in rural municipality of Uberaba-MG, registered by family health teams (FHTS) in July 2010. Fhts distributed in three sanitary districts and offer 100% coverage in the countryside. Totaled 1,297 elderly according to the lists offered by every TFH in that period. Of these, were excluded, of which 447 older, 117 had changed address, 105 showed cognitive decline, 75 declined to participate, 57 were not found after three attempts by the interviewer, 11 had gone to death, three were hospitalized and 79 due to other reasons, such as reside in the city or do not have physical or psychological conditions to respond. Totaled 850 elderly.

For the present study were included only the elderly with 60 years or older, residing in rural municipality of Uberaba-MG, which did not present cognitive decline and that the presence of autorreferiram HAS and DM. Therefore, were included in this study 84 seniors who HAS autorreferiram and DM.

The interviews were conducted by interviewers, 14 in the period between June 2010 and March 2011, taking as a reference the lists offered by the family health Strategies (Fhts), containing the name and address of the elderly, being the instruments applied preferentially at the residence for the elderly.

To perform the cognitive evaluation of the elderly using the Mini Mental State examination (MMSE), translated and validated in Brazil [9]. The MMSE score ranges from 0 to 30 points and the cutoff point was considered in accordance with the education of the elderly: 13 points to illiterates, 18 to 1 to 11 years of study and 26 for over 11 years[9].

For the collection of data of the socio-economic and health profile applied the Brazilian Multidimensional functional assessment Questionnaire (BOMFAQ) [10]. The choice of morbidities investigated due to the high prevalence of these among the population and by the negative impact that can cause on the quality of life of affected [11].

Used, the Frequency of food consumption survey (QFCA) developed by the general coordination of the food and nutrition policy (CGPAN) of the Ministry of health [12].

Anthropometric data were verified for the elderly, related to abdominal circumference (CA), having as reference standard 88 cm for women and 102 cm for men[12], but the weight (in kilograms) and height (in meters), it was calculated the body mass index (BMI)[12]. After the calculation of BMI the elderly classified according to the presence of overweight (BMI $\geq$ 27 Kg/m²) [13].

It built in the spreadsheet program Excel ® and the collected data processed in double entry. Later, proceeded to the validation of the data and when there were inconsistent issues resumed the original interview for correction. The database transported to the software *Statiscal Package for the Social Sciences* (SPSS) version 17.0, to carry out the analysis.

Descriptive analysis performed by means of simple frequency distribution for categorical variables, and measures of centrality (mean) and dispersion (standard deviation) for numeric variables. To check the factors associated with the presence of HAS and DM held from the bivariate analysis Chi-square test. In this step were included, for comparison, 370 elderly, because it refers to the total number of individuals who do not possess any of these two morbidities among the 850. Being included in the logistic regression model only the variables that attended the criterion $p< 0.10$. In the logistic regression model, the associations were considered significant when $p< 0.05$.

The Committee of ethics in research with Humans approved the project from Universidade Federal do Triângulo Mineiro, opinion No. 1477. The objectives of the research presented to the elderly and provided the information requested, after signing the consent form proceeded to the interview.

RESULTS

The table 1 presents socioeconomic characteristics and nutritional habits of the elderly with HAS and DM residents in the countryside.

Table 1- Socioeconomic Characteristics of the elderly with HAS and DM, residents in the countryside. Uberaba-MG, 2011. (N = 84)

Variables		**N**	**%**
Sex	Male	25	29.8
	Female	59	70.2
Age group	60 ├70	52	61.9
(in years)	70 ├80	23	27.4
	80 and more	9	10.7
Marital State	Never married or lived with companion	6	7.1
	Married	54	64.3
	A Widower	23	27.4
	Separated/IM/divorced	1	1.2
Schooling	Without schooling	20	23.8
(in years)	1 ├ 4	23	27.4
	4 ├8	36	42.9
	8 or more	5	6.0
Individual income	No income	11	13.1
(minimum wages)	< 1	4	4.8
	1	35	41.7
	1┤ 3	27	32.1
	3┤ 5	6	7.1
	> 5	1	1.2

Table 1 demonstrates that among the elderly with HAS and DM, there was a predominance of females (70.2%). This corroborates with survey among adults and seniors with HAS associated with the DM, residents in rural area of the Estado de São Paulo (62.5%) [14]; this result is in line with the world trend of feminization of aging [15]. Highlights that the fact that women seek more often than men by health services, can facilitate the diagnosis of these morbidities [8].

Prevailed those aged between 60 and 69 years (61.9%). Survey of elderly of Santa Rosa-RS, with HAS and DM, rural-area residents, obtained a result similar to that age group (61.2%) [15]. In relation to chronic diseases, scientific literature has demonstrated a high percentage important with advancing age [3].

Most of them were married or lived with companion (64.3%), table one. The percentage of elderly married or lived with a companion, obtained in a study conducted with adults and seniors with HAS and DM, residents in the urban area of Uberaba-MG (53.3%) [8] Was less than this research. The spouse may represent important role in relation to the establishment of a support network for the elderly, which features DM and, in conjunction with health care professionals can be a source of stimulus for maintaining self-care and adherence to therapeutic plan.

The highest percentage reported 4 to 8 years of study (42.9%). Schooling is a relevant factor in that match the access and appropriateness of care. It evidenced that in the countryside, generally, the elderly have less schooling [2]. However, the biggest education can facilitate access to information and communication resources, reflecting the demand for health services.

Individual monthly income prevailed from a minimum wage (41.7%) - table one. Consistent to the 2010 census data, in which the majority of the elderly, the urban and rural areas, said owning low-income, typically from retirement [1]. It is possible that individual income has repercussions on the demand for health services, affecting thus the self-report of disease and consequently in misdiagnosis. These difficulties can minimized with the support of the ESFs that operate in rural municipality, where the contact with the community becomes closer.

Regarding health habits, most elderly people with DM I do not practice physical activity (70.2%). This fact may related to territorial difficulties and few options you have in the countryside. Highlights that physical exercise decreases the rate of sugar in the blood and is important in the prevention and treatment of decreasing blood pressure levels HAS, and preventing the development of other cardiovascular risk factors [11]. In the countryside, since the physical spaces for exercise are different from urban area, must encourage the practice of routine activities such as planting, walk, take care of animals, thereby encouraging the realization of physical exercises in this environment.

What stands out in this research only 3.6% autorreferiram 16.7% reported smoking and drinking alcohol. Research conducted with adults and the elderly in the urban area of Uberaba-MG has obtained that 19.4% had the habit of smoking [8], superior to that found in this study. The low prevalence of smokers can indicate a positive performance of health services operating at this location. The greater monitoring of health professionals and the increased demand of the elderly for the service, due to the need to control chronic diseases, can have an impact on increasing the exposure of the elderly health education activities that encourage the abandonment of smoking [16]. However, health workers often tend not to engage in stimulus of smoking cessation among seniors, because they consider that they are in an advanced age and not wanting to deprive them of a source of pleasure. However, it should be noted the importance that must be given to elderly patients with chronic diseases and smoking, since this situation can contribute to further complications and even propitiate the appearance of other comorbidities [16].

As for the habit of drinking alcohol, there is evidence that the consumption of alcohol can raise the levels of PA. For seniors with diabetes and HAS recommended that where there is alcohol intake that is moderate, not exceeding 10-20 g of alcohol per day [11].

Regarding BMI, among the elderly male average was 28.4 Kg/m^2 (DP = 4.75), which indicates overweight; and the average CA was 105.23 cm, considered a risk factor for SAH and

DM (DP = 12.04). For the females, the average BMI was 28.17 Kg/m^2, also indicating overweight (DP = 4.69) and CA was 101.39 cm (DP = 13.15). It is important to note that BMI in overweight and obesity has great magnitude characterized for being a risk factor for both DM and HAS[11].

One of the investigated Comorbidities, highlight how prevalent the vision problems (72.6%), followed by circulation problems (40.4%), heart problems (39.3%) and obesity (32.1%). Regarding the vision problems, it becomes important that the nurse is aware of the complaints related to vision problems among seniors with HAS and DM, since they may be factors that hamper the correct use of medicines. In addition, you can generate greater reliance on other people, affecting self-esteem of elderly and reverberating in less therapeutic membership.

Referring to heart and circulation problems are relevant because they related to coronary arterial diseases, cerebrovascular disease and peripheral vessels, interfering with quality of life and productivity of affected [11]. Thus, the health team should be attentive to the development of changes to the cardiovascular system and circulatory, in order to prevent complications from these morbidities.

As for obesity, which related to increased risk for the development of DM, and Dyslipidemia [11]. The multidisciplinary team should encourage the practice of physical activities, leveraging the existing spaces in the rural area and raise awareness of the changes of eating habits. The fat intake should reduced in order to avoid complications such as coronary heart; and obesity, since this can cause elevation of BP values [17].

A most elderly (70.2%) mentioned removing the fat from meat, rarely if ever consume processed foods or fried foods (61.9%), do not add more salt in food, after being served on a plate (96.4%), do not consume sweet or consume seldom (70.2%) and only use vegetable oil to cook the food (71.4%). However, it found that among the elderly 13.1% used animal fat or butter and 15.5% animal fat and vegetable oil. Eating habits in research developed with adults and elderly people with SAH and/or DM, in Teixeiras-MG, were similar to this study, in which 97.3% of those with 96.7% and with DM, reported not add more salt in food[6]. However, in another study conducted with adults and elderly hypertensive patients found that in changing living habits reduce salt consumption was one of the ways in which users reported greater difficulty to abandon (25.9%)[18]. The nurse can perform actions of health education raising them to use other types of natural spices instead of salt, and may even be cultivated, in their own gardens and yards, whereas the rural surroundings.

Study of elderly with HAS and DM in the urban area of Teresina-PI found that respondents consume on average 1.8 servings daily candy, divergent to the result of this research[7]. In this perspective, the health team should sensitize the elderly to changes in life habits and offer support during this phase of adaptation.

In relation to the predominance of the use of vegetable oil, a similar result was observed in a study with adults and elderly people with SAH and/or DM, in the urban area of Teixeiras-MG and 72.5% in elderly people with SAH and 86% with DM[6]. It should note, however, the percentage of elderly of this study that consume animal fat or butter. It is salutary that the health team who plays in the countryside raises awareness the elderly to changing habits of life, encouraging them to abandon or reduce the use of these fats and reduce the consumption of vegetable oil in food preparation.

Older women presented two times more likely than men did ($\beta = 2.55$) have HAS and associated DM, Table 2. The greatest risk of elderly women has presented DM associated may be related to hormonal changes that accompany aging women. On the other hand, the fact that the men did not seek the health service can often derail the diagnosis [11], limiting health actions geared to this clientele.

It was observed that smoking ($\beta = 0.16$) and alcohol consumption ($\beta = 0.45$) were considered protective factors for the presence of HAS and DM, Table 2, possibly the reverse relationship of causality, namely, the abandonment of these habits because of health problems. Whereas in the present study the population was covered by the ESFs, it is believed that this fact is referenced the guidelines received during medical examinations and for monitoring the health team. Therefore, infers that, due to the

presence of HAS and DM, concomitantly, the elderly may have modified the default behavior by abandoning the habit of smoking and drinking alcohol, by influence of health services, recognizing as factors that can contribute to the advent of chronic complications. Survey conducted in João Pessoa-PA verified that the reduction in the consumption of alcohol and smoking cessation were among the guidelines that have achieved the best membership fee among the elderly hypertensive. It evidenced that they were aware of the importance of abandonment of these habits for blood pressure control [19].

Table 2. Factors associated with the presence of HAS and DM in elderly residents in the countryside. Uberaba, 2011. (N = 454)

Variables	Initial Model			Final Model		
	β *	IC (95%)	*p*	β *	IC (95%)	*p*
Sex						
Female	2.59	-4.470 -1.417	0.002	2.55	1.456 -4.491	0.001
Age Group						
80 or more	2.47	1.190 -8.486	0.065	-	-	-
Smoking						
Yes	0.16	0.047 -0.524	0.003	0.16	-0.548 0.050	0.003
Use of alcohol						
Yes	0.46	0.201 -0.804	0.027	0.45	0.228 -0.892	0.022
Overweight						
Yes	3.27	2.376 -7.769	< 0.001	3.11	-5.306 1.833	< 0.001

The overweight was the Predictor that most contributed to the presence of Comorbidities, once the elderly overweight were three times more likely than others to develop HAS and DM (β = 3.11), table 2. Overweight people have higher chances of developing type 2 DM and HAS, in addition to being considered a risk factor for other chronic conditions [11]. In this context, it is relevant that they encouraged food practices and healthy lifestyle, aimed at weight reduction. In a study conducted with elderly people in São Paulo found that those with DM can introduce improvement in metabolic control, reduce the PA and improve the anthropometric indexes from the practice of aerobic exercise for at least three times a week. The researchers point out that the practice of physical activity should be encouraged since childhood [20].

As limitation of the present study evidenced the self-report of HAS and DM and health habits. However, that still has not been aim of this study, identified during the data collection that the seniors who reported HAS and DM have monitoring by the ESF, which could mean that there is the diagnosis of these diseases.

FINAL CONSIDERATIONS

The data obtained in this investigation made it possible to extend the knowledge about the socio-economic characteristics and health conditions of the elderly with HAS and DM residents in the countryside. Among the elderly women and investigated those overweight showed increased risk of SAH and DM; those who reported smoking and drinking alcohol showed decreased risk. It is evidenced the need for strategies that aim to develop educational activities targeted to this population group, in order to minimize the risk of complications among the elderly with chronic diseases.

The ESFs that act in the countryside can develop specific actions to this clientele by stimulating the fitness for healthy lifestyle habits, such as those related to food issues, physical activities, taking advantage of the spaces in the community itself, in addition to

encouraging the cessation or reduction of smoking and alcohol use.

It should noted that these results could serve as a source of support for the formulation of public policies and actions, geared mainly to the risk factors for SAH and DM, strengthening the management and health services, with a view to improving the health and living conditions of the population.

FATORES ASSOCIADOS À HIPERTENSÃO ARTERIAL SISTÊMICA E AO DIABETES MELLITUS EM IDOSOS RURAIS

RESUMO

Os objetivos deste estudo foram descrever as características socioeconômicas, de saúde e hábitos nutricionais de idosos com hipertensão arterial sistêmica e diabetes mellitus e identificar os fatores associados à presença destas morbidades, entre idosos da zona rural de Uberaba-MG. Trata-se de um estudo analítico e transversal entre 84 idosos com hipertensão arterial sistêmica e diabetes mellitus. Realizou-se entrevistas com questionários. Utilizou-se análise descritiva e regressão logística (p<0,05), por meio do software SPSS 17.0. Predominaram idosos do sexo feminino, com 60 ├70 anos, casados, 4 ├8 anos de estudos e renda de um salário mínimo. As morbidades prevalentes foram: problemas de visão, de circulação, cardíacos e obesidade. A maioria referiu retirar a gordura da carne, raramente consumir alimentos industrializados e/ou frituras, não acrescentar sal após o alimento estar pronto, consumir doce raramente ou nunca, utilizar óleo vegetal para cozinhar, sedentarismo, não ser tabagista, nem etilista. O sexo feminino e o excesso de peso permaneceram como preditores da hipertensão arterial sistêmica e do diabetes mellitus; o consumo de álcool e o tabagismo apresentaram-se como fatores protetores. Ressalta-se a necessidade de ações em saúde no espaço rural, visando à promoção da saúde e a prevenção de agravos entre esses idosos.

Palavras-chave: Idoso. Hipertensão. Diabetes Mellitus. População Rural.

FACTORES ASOCIADOS CON HIPERTENSIÓN ARTERIAL SISTÉMICA Y DIABETES MELLITUS EN ANCIANOS RURALES

RESUMEN

Los objetivos de este estudio fueron describir las características socio-económicas, de salud y hábitos nutricionales de ancianos con hipertensión arterial sistémica y diabetes mellitus, e identificar los factores asociados a la presencia de estas morbilidades entre los ancianos de la zona rural de Uberaba-MG. Se trata de un estudio analítico y transversal entre 84 ancianos con hipertensión arterial sistémica y diabetes mellitus. Fueron realizadas entrevistas con cuestionarios. Se utilizó el análisis descriptivo y de regresión logística (p<0,05), a través del software SPSS 17.0. Predominaron los ancianos del sexo femenino, con 60 ├ 70 años, casados, 4 ├ 8 años de educación y renta de un salario mínimo. Las morbilidades prevalentes fueron: problemas de vista, circulación, cardiacos y obesidad. La mayoría relató quitar la grasa de la carne, raramente consumir alimentos procesados y/o alimentos fritos, no añadir sal después de la comida ya lista, raramente o nunca consumir dulce, utilizar aceite vegetal para cocinar, estilo de vida sedentario, no ser fumador ni bebedor. El sexo femenino y el sobrepeso se mantuvieron como pronósticos de la hipertensión arterial sistémica y diabetes mellitus; el consumo de alcohol y el tabaquismo resultaron ser factores protectores. Se destaca la necesidad de acciones en salud en las zonas rurales, pretendiendo la promoción de la salud y la prevención de agravios entre las personas mayores.

Palabras clave: Anciano. Hipertensión. Diabetes Mellitus. Población Rural.

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