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DIETARY INTAKE AMONG USERS OF A HEALTH PROMOTION SERVICE: DIFFERENCES BETWEEN ADULTS AND ELDERLY PEOPLE

A.C. Souza Lopes[1], A. Nunes Lima Reyes[2], C.C. César[3], L.C. dos Santos[4]

Abstract: *Objectives:* To identify the dietary profile according to the age classification of users of a health promotion service. *Design:* Transversal study assessing dietary profile according to age. *Setting:* One health promotion service which provides both opportunities to practice physical activities and receive nutritional follow-ups for free. Individuals, of age 20 years and over, who were assisted by these services from February to September 2007 (n=300). *Measurements:* Anthropometry, food habits, and nutrient intake were evaluated. Results: Out of 300 individuals of mean age 49.7±14.1 years, 26.7% were elderly (> 60 years) and 87.3% were women; 44.0% were overweight and 33.7% were obese. The elderly individual presented greater risk of developing cardiovascular diseases, according to waist/hip ratio (42.5% vs. 30.5% among adults; p=0.050), greater prevalence of arterial hypertension (71.8% vs. 41.4%;p<0.001) and dyslipidemia (46.2% vs. 32.4%;p=0.026). Dietary inadequacy was more prominent among the adults, as the habit of eating while watching television (62.3% vs. 41.3% for elderly people; p<0.001), insufficient iron intake (49.1% vs. 32.5%; p=0.010), excessive zinc intake (42.2% vs. 27.5%; p=0.020) and excessive vitamin A (27.5% vs. 16.3%; p=0.049). *Conclusion:* Elderly individuals presented greater prevalence of chronic diseases, while dietary inadequacy was more prevalent among adults. This emphasizes the importance of healthcare actions between adults with the aim of preventing future complications.

Key words: : Food consumption, elderly person, nutritional status, nutrients.

Introduction

Comparative studies on dietary intake between adults and the elderly are scarce. In a study conducted on a representative sample in a city of Brazil, Lopes et al. (1) found less suitable dietary intake among elderly people (≥ 60 years) than among adults (18-59 years), particularly with regard to insufficient protein intake (64.3% vs. 15.5%), low ratio of polyunsaturated/saturated fatty acids (39.2% vs. 29.2%) and excessive intake of saturated fatty acids (35.7% vs. 22.3%), p<0.05. On the other hand, in a population-based study carried out in the metropolitan region of the country, it was found that elderly people had a better dietary quality index, thus possibly indicating a change in awareness of health with increasing age and directly influencing their food choices (2).

Furthermore, epidemiological studies have emphasized the relationship between dietary patterns, body composition changes due to aging and the development of chronic diseases (3). In this scenario, it becomes fundamentally important to identify the dietary profiles and differences between adults and elderly people, particularly among socially vulnerable individuals. Thus, the aim of this study was to identify the dietary profile according to age group, among users of a health promotion service.

Methods

This study was conducted in the municipality of Belo Horizonte, the capital of the State of Minas Gerais, located in southeastern Brazil. Its estimated population in 2007 was 2,412,937 inhabitants, with an area of 330.95 km² divided into nine regions.

1. Nutritionist. Adjunct Professor in the Department of Mother-Child Nursing and Public Health and in the Postgraduate Nursing Program, Nursing School, Federal University of Minas Gerais; Nutrition Intervention Research Group; 2. Nutritionist. Masterdegree in Health and Nursing from the Postgraduate Program of the Nursing School, Federal University of Minas Gerais; 3. Statistician. PhD in Demographics; Associate Professor in the Institute of Exact Sciences, Federal University of Minas Gerais; 4. Nutritionist. Adjunct Professor in the Department of Mother-Child Nursing and Public Health and in the Postgraduate Nursing Program, Nursing School, Federal University of Minas Gerais; Nutrition Intervention Research Group, Nursing School, Federal University of Minas Gerais.

Corresponding Author: Aline Cristine Souza Lopes, Escola de Enfermagem - Departamento de Enfermagem Materno-Infantil e Saúde Pública, Av. Alfredo Balena, 190 – 4º andar, sala 420, Santa Efigênia CEP: 30.130-100, Belo Horizonte, Minas Gerais, Brazil. Tel/fax: 55 31 3409-9179/3409-9860 – e-mail: aline@enf.ufmg.br.

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This was a cross-sectional study among individuals of age 20 years and over who joined the Academia da Cidade Program (ACP) of the Eastern Region of Belo Horizonte, between February and September 2007. The ACP is a health promotion service that provided users with guided physical activities and nutritional interventions (4). A total of 300 individuals participated in the study. This period was chosen because this was the final phase of program implementation.

The data gathering was performed by trained nutrition and physical education undergraduate students. In the interviews, anamnesis was conducted to obtain sociodemographic data (age and sex) and information on self-reported morbidities, dietary intake and habits (5). A 24-hour food recall (R24) and the Food Frequency Questionnaire (FFQ) were applied to investigate the dietary intake. The macro and micronutrient intake adequacy was evaluated through the R24. Already the individuals' dietary habits relating to the last six months was measured through the FFQ, which contained 16 items. Furthermore, information on the number of meals per day, mastication and food consumption in front of the television, among other matters, was obtained.

Anthropometric data were also obtained and included weight, height, waist (WC) and hip circumferences. The body mass index (BMI=weight/height2) was calculated. It was classified using the cutoff points for adults proposed by WHO (6) and from Lipschitz (7) for the elderly people. The WC and waist-hip ratio (WHR) were classified using the cutoff points proposed by WHO (6).

The results of calories (kcal) in the diet, macronutrients (carbohydrates, fats and proteins) and micronutrients (vitamins A, E and C; iron, calcium and zinc) were compared with the recommendations of the Institute of Medicine (8).

Descriptive analysis was performed on the data, and the chi-square and Fisher exact tests were applied to analyze associations between the categorical variables, while Student's t test was used to compare means. The Statistical Package for the Social Sciences program, version 17.0 (SPSS Inc., Chicago, United States), was used for data analysis.

The study was approved by the Ethics Committees of the Federal University of Minas Gerais and the Municipal Authorities of Belo Horizonte.

Results

Individuals (n=300) of mean age 49.7±14.1 years participated in the study, of whom 26.7% were elderly people (≥60 years) and 87.3% were women. Chronic diseases and the risk of cardiovascular diseases, as measured using the WHR (37%), were highly prevalent, especially among the elderly (Table 1). Although, the overweight and obesity was greater than among the adults (p<0.001); Table 1.

The mean calorie intake was greater amongst the adults (1777.8±797.9kcal vs. 1579.2±569.1kcal; p=0.018). The macronutrients, cholesterol, fiber and, vitamins C and E dietary intake was similar between adults and elderly people. Although, a greater prevalence of inadequate intake was observed among adults: insufficient iron intake in 49.1% (p=0.010), excessive zinc intake in 42.2% (p=0.020) and excessive vitamin A intake in 27.5% (p=0.049); Table 2.

The greater prevalence of inappropriate eating habits was also identified among the adults subjects, such as eating while watching television (62.3% vs. 41.3% elderly; p<0.001) and consuming soft drinks every day (11.4% vs. 3.8% elderly; p<0.001); Table 3.

Regarding food preparation methods, it was observed that the elderly more frequently consumed boiled meat (64.6% vs. 48.6%; p=0.012) and steamed leaf vegetables (44.3% vs. 31.1%; p=0.038), while the adults more frequently consumed fried meat (34.5% vs. 22.8%; p=0.047), Table 3.

Discussion

The present study has revealed important dietary inadequacies, particularly among the adults. In addition, a high prevalence of health complaints has been observed, especially amongst elderly people.

The dietary inadequacies are similar to national data. It has been found that 33.1% of the Brazilian population consumes fruits and vegetables five or more days per week. Consumption has been found to be highest among individuals aged 65 years or over (43.4%), and this prevalence was higher than in the present study. Among adults, the prevalence of habitual consumption of these foods was reported to be 30.4%, and this value was close to what was found in the ACP (9). This inadequate intake of fruits and vegetables, corroborated by low fiber intake, may be associated with greater risk of development of diseases such as cancer of the colon and obesity (10).

In addition, unhealthy habits such as nibbling between meals, low fractioning of meals, less healthy food preparation methods, failure to chew food properly and eating in front of the television were found among the participants in the present study. The habit of eating in front of the television, prevalent mainly among the adults, may favor consumption of high-calorie snacks, as well as impairing observation of what is being eaten, with consequent elevation of calorie intake (11).

This higher prevalence of inappropriate habits among the adults may correlate with improving dietary behavior with increasing age, because of greater concern about health and participation in educational activities over the course of life, along with the presence of diseases (2-10).

In the present study, iron intake was insufficient in almost half of the interviewees, and this inadequacy was greater among adults. Similar findings have been

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Table 1
Distribution of characteristics according to the age classification of the participants.

Variables	Adults		Elderly people		Total		p value
	n	%	n	%	n	%	
Nutritional status	-	-	-	-	-	-	-
Underweight	--	--	6	7.5	6	2.0	<0.001[1]
Eutrophic	41	18.6	20	25.0	61	20.3	0.226[2]
Overweight	78	35.5	54	67.5	132	44.0	<0.001[2]
Obese *	101	45.9	--	--	101	33.7	<0.001[2]
Waist circumference	-	-	-	-	-	-	-
With high risk	61	27.7	20	25.0	81	27.0	0.638[2]
With very high risk	97	44.1	37	46.3	134	44.7	0.739[2]
Waist/hip ratio	-	-	-	-	-	-	-
With risk	67	30.5	34	42.5	101	33.7	0.050[2]
Cardiovascular disease	15	7.1	10	12.8	25	8.7	0.155[2]
Diabetes mellitus	30	14.4	15	19.2	45	15.7	0.376[2]
Systemic arterial hypertension	87	41.4	56	71.8	143	49.7	<0.001[2]
Dyslipidemia	68	32.4	36	46.2	104	36.1	0.026[2]

* Different reference values were used for classifying obesity, between adults and elderly people; 1. Fisher's exact test; 2. Chi-square test

Table 2
Calorie and macronutrient intake according to age classification of the participants

Variables	Adults (n = 220)		Elderly people (n = 80)		Total (n = 300)		p value
	n	%	n	%	n	%	
Calories							
Insufficient	109	50.0	33	41.3	142	47.7	0.179
Adequate	67	30.7	29	36.3	96	32.2	0.381
Excessive	42	19.3	18	22.5	60	20.1	0.513
Iron							
Insufficient	107	49.1	26	32.5	133	44.6	0.010
Excessive	44	20.2	24	30.0	68	22.8	0.067
Zinc							
Insufficient	100	45.9	45	56.3	145	48.7	0.113
Excessive	92	42.2	22	27.5	114	38.3	0.020
Calcium							
Insufficient	208	95.4	78	97.5	286	96.0	0.640
Adequate	10	4.6	2	2.5	12	4.0	--
Vitamin A							
Insufficient	125	57.3	48	60.0	173	58.1	0.672
Excessive	60	27.5	18	16.3	34	11.4	0.049
Toxic	12	5.5	1	1.3	13	4.4	0.207
Nutrients**	Likelihood of adequacy (%)						
-	Adults		Elderly people		Total		p value[2]
	Mean	SD	Mean	SD	Mean	SD	
Iron	54.8	22.1	60.5	18.7	56.3	21.4	0.03
Zinc	55.0	23.5	49.2	23.1	53.2	23.3	0.48
Vitamin A	55.2	17.9	51.6	14.0	54.3	16.9	0.01
Vitamin E	87.8	21.2	84.8	18.8	87.3	20.0	0.98
Vitamin C	52.1	29.2	49.3	28.9	51.3	29.1	0.53

1. Chi-square test. 2.Fisher's exact test

described by Lopes et al. (2005) (1) in a population-based study, in which 36.9% of the elderly and 53.4% of the adults had iron intake below adequate levels. Similarly, there was insufficient zinc and vitamin A intake in approximately 50.0% of the sample, thus corroborating the findings of other authors (1-12).

In addition to dietary factors, the development of chronic diseases may also be favored by the high prevalence of excess weight that was observed. These levels were higher than in other national studies, particularly among elderly people (9-12-13). Probably these results are related to the place where the study was developed. Although the primary objective of the ACP is to promote health, many users come to it because of health conditions.

It was identified in the present study greater risk of

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Table 3
Micronutrient intake according to age classification of the participants

Variables*	Adults		Elderly people		Total (n = 300)		p value[1]
	n	%	n	%	n	%	
Eating while watching TV	137	62.3	33	41.3	170	56.7	<0.001[1]
Failure to chew food properly	99	45.0	28	35.0	127	42.3	0.121[1]
Number of meals/day (≤ 3)	100	45.7	45	56.3	145	48.5	0.113[1]
Frequency of daily consumption							
Fruits, vegetables and greens	52	23.6	16	20.0	68	22.7	0.506[1]
Milk and derivatives	-	57.3	55	68.8	181	60.3	0.723[1]
Frying							
Daily	25	11.4	4	5.0	29	9.7	0.099[2]
Weekly	79	35.9	30	37.5	109	36.3	0.800[1]
Others	116	52.7	46	57.5	162	54.0	0.463[1]
Soft drinks							
Daily	25	11.4	3	3.8	28	9.3	0.044[2]
Weekly	93	42.3	38	47.5	131	43.7	0.419[1]
Others	102	46.3	39	48.8	141	46.9	0.714[1]
Meat preparation							
Boiled	107	48.6	51	64.6	158	52.8	0.012[1]
Fried	76	34.5	18	22.8	94	31.4	0.047[1]
Others	37	16.8	10	12.7	47	15.7	0.363[1]
Preparation of leaf vegetables							
Raw	105	47.9	29	36.7	134	45.0	0.077[1]
Boiled	45	20.5	15	19.0	60	20.1	0.744[1]
Steamed	68	31.1	35	44.3	103	34.6	0.038[1]
Others	1	0.5	-	--	1	0.3	---

1. Chi-square test; 2. Fisher's exact test

cardiovascular diseases, as indicated by the WHR, among elderly people. This distribution of fat in the abdominal region constitutes an important risk factor for systemic arterial hypertension. This is one of the most important diseases in the Brazilian population, with an evident tendency towards an increase with age (14). In addition, hypertension, dyslipidemia and diabetes mellitus also present high prevalences, and may contribute for the development of coronary diseases, with consequent reduction in the quality and quantity of life (13).

Despite inadequate dietary habits were more prevalent among the adults subjects, the elderly people displayed worse health conditions. Thus, the importance of adopting healthy dietary habits while still in the adult phase is highlighted, with the aim of reducing the prevalence of subsequent diseases. Therefore, it is suggested that actions aimed towards the incorporation of healthy habits should be developed and directed towards every phase of life.

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