FRUIT AND VEGETABLES INTAKE AMONG USERS OF A HEALTHCARE CENTER

Consumo de frutas e hortaliças entre usuárias de uma unidade de saúde

Consumo de frutas y hortalizas em usuárias de uma unidad de salud

Original Article

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ABSTRACT

Objective: To determine the fruits and vegetables intake, besides sociodemographic features, lifestyle and health status among users of a healthcare unit. **Methods**: Cross-sectional study comprising female users of a Primary Healthcare Unit of Joinville-SC, in July 2008. For data collection, anthropometric measurements were obtained and a questionnaire assessed sociodemographic questions and the fruit and vegetable intake the day before the interview. Ingestion in grams and the frequency were compared to the World Health Organization's recommendation. By Poisson's regression, prevalence ratios (PR) were calculated, with 95% confidence intervals. **Results**: The study evaluated 299 women, with ages from 26 to 84 years. The majority (n=226, 75.6%) were overweight. The fruit intake ranged from twice a month to daily. More than half (n=167, 55.9%) of the women reported daily consumption and 41.1% (n=123) ate more than 400 grams of fruits and vegetables per day. The prevalence of inadequate intake was 57.9% (n=173), however, among those in older age groups, the consumption of fruits and vegetables was more appropriate. **Conclusion**: The study highlights the high prevalence of insufficient intake of fruits and vegetables in this population, especially among younger women. The other variables investigated did not show statistical correlations.

Descriptors: Fruit; Vegetables; Food Habits.

RESUMO

Objetivo*: Identificar o consumo de frutas e hortaliças, além de fatores sociodemográficos, estilo de vida e situação de saúde das usuárias de uma Unidade de Saúde.* **Métodos***: Estudo transversal, realizado com mulheres usuárias de uma Unidade de Atenção Básica de Saúde de Joinville-SC, no mês de julho de 2008. Para a coleta de dados, utilizaram-se medidas antropométricas e a aplicação de um questionário composto por questões sociodemográficas e sobre o consumo de frutas e hortaliças no dia anterior à entrevista. A ingestão em gramas e a frequência foram comparadas à recomendação da Organização Mundial da Saúde. Por meio da Regressão de Poisson, calcularam-se as razões de prevalência (RP), com intervalos de confiança de 95%.* **Resultados***: Avaliaram-se 299 mulheres, com idade entre 26 e 84 anos. A maioria (n=226; 75,6%) apresentou excesso de peso. O consumo de frutas variou entre duas vezes ao mês e todos os dias. Mais da metade (167, 55,9%) das avaliadas relatou frequência de consumo diária e 41,1% (n=123) consumiam mais de 400g de frutas e hortaliças ao dia. A prevalência de consumo inadequado foi de 57,9% (n=173), no entanto, entre as de faixa etária mais avançada, o consumo foi mais adequado.* **Conclusão***: Observou-se prevalência elevada de consumo insuficiente de frutas e hortaliças entre as mulheres avaliadas, sendo mais adequado nas mulheres de idade avançada. As demais variáveis investigadas não estiveram estatisticamente associadas.*

Descritores: *Frutas; Verduras; Hábitos Alimentares.*

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RESUMEN

Objetivo: *Identificar la prevalencia del consumo de frutas y hortalizas, además de los factores sociodemográficos, estilo de vida y situación de salud de las usuarias de una Unidad de Salud.* **Métodos:** *Estudio trasversal realizado con mujeres usuarias de una Unidad de Atención Básica de Salud de Joinville-SC en el mes de julio de 2008. Para la recogida de datos se utilizó medidas antropométricas y la aplicación de una encuesta constituida de cuestiones sociodemográficas y el consumo de frutas y hortalizas el día antes de la entrevista. La ingesta en gramos y la frecuencia fueron comparadas con la recomendación de la Organización Mundial de la Salud. A través de la Regresión de Poisson, se calculó las razones de prevalencia (RP) con intervalos de confianza del 95%.* **Resultados:** *Se evaluó 299 mujeres con edad entre los 26 y 84 años. La mayoría (226; 75,6%) presentó exceso de peso. El consumo de frutas varió de dos veces al mes y todos los días. Más de la mitad (167, 55,9%) de las mujeres evaluadas relató la frecuencia de consumo a diario y el 41,1% (n=123) consumían más de 400 gramos de frutas y hortalizas cada día. La prevalencia de consumo inadecuado fue de 57,9% (n=173), sin embargo, en la franja etaria más avanzada el consumo fue el más adecuado.* **Conclusión:** *Se observó una prevalencia elevada de consumo insuficiente de frutas y hortalizas en las mujeres evaluadas, siendo más adecuado en las mujeres de edad avanzada. Las demás variables investigadas no estuvieron estadísticamente asociadas.*

Descriptores: *Frutas; Verduras; Hábitos Alimenticios.*

INTRODUCTION

The changes that have been taking place in developing countries like Brazil include important modifications in morbidity and mortality profile. The non-communicable diseases represent a major public health problem in those countries[1].

Evidences from epidemiological studies with different designs continuously support recommendations for the increase in fruits and vegetables intake by people as a measure to reduce the risk of diseases like diabetes mellitus, cancer, and other[2,3].

Fruits and vegetables are rich in vitamins, minerals and other bioactive composts as carotenoids, vitamin C and countless bioflavonoids that own antioxidant activity. Since antioxidant systems and the needs of each body organ differ, a mix of those substances can provide a better protection against the damage caused by free radicals[4-6].

The interest in the role of different foods rich in antioxidants, such as fruits and vegetables, has been increasing. The evidences pointed out by studies support public policy-making that include these foods[7,8]. In 2002, the Word Health Organization (WHO) proposed a global strategy for promotion of healthy eating habits. One of the main recommendations was to increase fruit and vegetables intake, establishing a daily intake of 400g (five portions) of such foods[9].

The changes in eating habits observed in Brazil – especially the increase in energy density, higher consumption of meat, milk, derivatives rich in fat, in addition to the decrease in the intake of cereals, fruits and vegetables[10] – are important risk factors for the development of non-communicable diseases, regardless of the body mass index (BMI)[11].

The female population of Southern Brazil presents the highest prevalence of overweight and obesity among the country women (19.6% and 51.6%, respectively) Overweight and income have presented a curvilinear relationship, with the highest prevalence observed among intermediate groups[12]. In general, in wealthier regions of the country, in urban areas and among families with higher income, there is an excessive intake of sugar and fat, mainly saturated fat, associated with insufficient intake of fruits and vegetables. Estimates indicate that the intake of fruit and vegetables of most part of Brazilians reach less than a half of nutritional recommendations, being poorer among low income families[13].

Little is known about the prevalence and factors associated with inadequate fruit and vegetables intake by the general population. Therefore, female users of Primary Healthcare Units are the target for this kind of study, considering their key role in familiar health, spreading information and actions that can lead to a familiar group wellbeing and hence better quality of life[14].

Thus, the aim of this study was to identify the prevalence of fruit and vegetable intake and its association with sociodemographic factors, lifestyle and health status among users of a Healthcare Unit.

METHODS

This is an observational cross-sectional study with a quantitative approach. Data were collected in July 2008, in Joinville, SC, Brazil.

Joinville is located in the North of the State of Santa Catarina and it is the richest and most populated city in the state and the third most populated of the South region of Brazil, with a population over 500 hundred thousand inhabitants[15]. Joinville owns one of the highest Human Development Index (HDI) rates among Brazilian municipalities (0.857), ranking thirteenth. The city has an industry-based economy, highlighting technology (software), commerce and events tourism companies[15] . In Boa Vista neighborhood, it is located the Healthcare Unit *Posto de Atendimento Médico Boa Vista* (*PAM Boa Vista*)

that provides various specialty consultations, with around 8,000 consultations performed monthly.

Sample size was calculated considering the prevalence of insufficient intake of fruit and vegetables by 87.5%[16] of the Brazilian population, a 95% confidence level, and a margin of error of 4%, totalizing 254 users. In all, 20% was added to the total number, considering losses and refusals (n=305).

The women were selected at the Healthcare Unit while waiting for care. They received information about the research and its objectives, with guaranteed data confidentiality through the free informed consent term signed by the participants.

The inclusion criteria included living in Joinville, being over 20 years of age able to answer the questionnaire. The sample selection was performed according to the healthcare system of the unit, which followed consultations and procedures scheduled in advance. The goal was to asses all women who were at the Healthcare Unit in the morning and in the afternoon; not only those scheduled for their own consultation, but also those accompanying scheduled relatives.

The data collection occurred in July and September 2008, comprising a questionnaire application and measurement of anthropometric data.

The questionnaire was composed of sociodemographic questions, covering the variables: age group (26-50; 51-59; and 60-84 years old); self-reported skin color (white, black, parda, yellow, or indigenous); education time, divided into four groups (1-4; 5-8; 9-11; and 11 or more years of education); occupation and income (low, middle or high, according to the tertiles of the variable); health-related behaviors: currently smoking (yes, no, or ex-smoker); alcohol consumption (yes or no); leisure-time physical activity (yes or no); self-reported health (very good/good – good; fair/poor – poor); health status (self-reported chronic disease, use of medicines, life satisfaction); eating habits (intake of fruit and vegetables on the day before, intake of natural fruit juice).

The women who reported practicing physical exercise at least three times per week and longer than 40 minutes were considered physically active. Furthermore, the reason for seeking medical care at the Healthcare Unit was asked in an open question an categorized afterwards.

The interviewees were asked about the intake of fruit and vegetables on the day before. The portions of intake reported by women were quantified using a home measures table[17] and the Brazilian Adapted Food Pyramid[18]. The intake in grams, the number of portions, and the frequency of intake were compared with the WHO recommendations[19].

After answering the questionnaire, the interviewee was invited to go to the screening room of the Healthcare Unit for the anthropometric measurement (weight, height and waist circumference). Weight and height were measured using a Filizola™ mechanical scale (Filizola, São Paulo), with maximum capacity of 150kg and divisions of 100grams, with an anthropometer to measure height. The patient stood still over the center of the scale with arms hanging loosely at the sides, minimum of clothes and on barefoot. After weight measurement, women stood back against the wall with their feet together and without any hair ornaments to measure height. The nutritional status was classified according to the WHO[20] recommendation. The waist circumference was measured in the midpoint between the iliac crest and the last rib[21], with the participant standing upright with relaxed abdomen and using a flexible measuring tape of up to 150cm.

After that, the questionnaire data were double typed, reviewed, coded and checked by means of the software Epi Info 6.04 (Center for Disease Control and Prevention, Atlanta, EUA).

The outcome variable – intake of fruit and vegetables – was obtained by combining two variables: intake frequency and quantity of grams ingested on the day before[19]. The analysis of the association between the outcome variable and other variables was performed using Pearson's chi-squared test for dichotomous variables, and linear trend test for ordinal variables. The crude prevalence rates (PR) were calculated using Poisson Regression with robust standard errors estimates and 95% confidence intervals (95%CI).

This study was approved by the Research Ethics Committee of the University of Vale of Itajaí (UNIVALI), registered under the number 371/08.

RESULTS

The response rate obtained in this study was 97.7% (n=299). The most reported reason for seeking care at the Healthcare Unit was the gynecologist visit (n=49. 16.1%), followed by endocrinologist (n=47; 15.7%). The nutritionist was sought only in 2.7% (n=8) of cases.

The age of the population assessed ranged from 26 to 84 years with a mean of 54.5 years (standard deviation of 11.7 years). The family income ranged from 0.38 to 14.5 minimum wages, with a mean of 2.4 wages. Most women self-reported being white (n=279, 93.3%); married (n=207, 69.2%), housekeepers and involved in non-paid jobs (n=244, 81.6%). More than half of women had studied for one to four years (n=172, 57.5%).

Regarding overweight and obesity, there was a prevalence of 75.6% (n=226) of overweight among the interviewees and 61.5% (n=239) presented abdominal obesity. Most interviewees reported having a poor health (n=161, 53.9%) and being satisfied with life (n=228, 76.8%) (Table I).

Table I - Distribution of socioeconomic and health status variables among women assisted at a Healthcare Unit in Joinville, Santa Catarina, Brazil, 2008 (n=229)

Variables	Categories	n	%
Age	26 to 50 years	102	34.1
	51 to 59 years	99	33.1
	60 to 84 years	98	32.8
Marital status	Married	207	69.2
	Other	92	30.8
Education	1 to 4 years	172	57.5
	5 to 8 years	65	21.7
	9 years or more	62	20.7
Income	Low	121	40.5
	Middle	96	32.1
	High	82	27.4
Current BMI	Eutrophy	73	24.4
	Overweight	108	36.1
	Obesity	118	39.5
Waist circumference	Normal	59	19.8
	High	45	15.1
Menopause	Yes	84	38.7
	No	133	61.3
Currently smoking	No	269	90
	Yes	30	10
Alcoholic consumption	Yes	14	4.7
	No	285	95.3
Physical activity	Yes	45	15.1
	No	254	84.9
Chronic disease	Yes	161	53.8
	No	138	46.2
Medicine	Yes	78	26.1
	No	221	73.9
Intake of natural fruit juice	Yes	98	32.8
	No	201	67.2
Fruit intake frequency	Adequate	111	37.1
	Inadequate	188	62.9
Fruit amount intake (grams)	More than 400g	123	41.1
	Less than 400g	176	58.9

BMI = Body Mass Index

There was a prevalence of poor intake of fruit and vegetables among the interviewees, reaching 57.9% (n=173) (95% CI 50.8% to 65.0%). The intake of fruits ranged from twice a month to daily. More than half (n=167, 55.9%) of women reported a daily intake, 41.1% (n=123) reported eating more than 400 g of fruit and vegetables per day and 32.8% (n=98) reported the intake of natural fruit juice.

Tables II shows the prevalence of insufficient intake of fruit and vegetables according socioeconomic and health-related variables. Younger women presented a lower intake of fruit and vegetables. The skin color and education were not associated with the intake of fruit and vegetables. The intermediate tertile of education (5 to 8 years) presented higher prevalence of insufficient intake of fruit and vegetables when compared to the other categories; however, it presented no statistical difference. Women who had a paid job reported a lower intake of fruit and vegetables.

Among obese women and those with abdominal obesity, it could be observed a trend to lower prevalence of insufficient intake of fruit and vegetables. Smoking, alcohol consumption and physical activity were not associated. Among those women who were dissatisfied with life, the prevalence of insufficient intake was 1.22 times higher. After the adjusted analysis, only age remained as an important predictor of adequate intake of fruit and vegetables among the investigated women (Table II).

Table II – Prevalence (%) and crude prevalence ratio (PR) of the association between insufficient intake of fruit and vegetables and the exposure variables among women assisted at a Healthcare Unit in Joinville, SC, Brazil, 2008.

Variable	Categories	%	PR	(95%CI)	p*
Age	26-50	69.2	1.00		0.05**
	51-59	55.9	0.81	(0.61-1.07)	
	60-84	51.4	0.74	(0.55-0.99)	
Skin color	White	57.6	1.00		0.77
	Other	61.1	1.06	(0.72-1.57)	
Marital status	Married	57.3	1.00		0.79
	Other	59.3	1.04	(0.8-1.34)	
Education	1 to 4 years	58.6	1.00		0.62**
	5 to 8 years	60.5	1.03	(0.7-1.39)	
	9 years or more	52.8	0.90	(0.64-1.27)	
Paid job	Yes	70.0	1.00		0.14
	No	55.6	0.79	(0.61-1.04)	
Income	Low	60.6	1.00		0.26
	Middle	61.5	1.02	(0.78-1.33)	
	High	50.0	0.83	(0.59-1.14)	
Current BMI	Eutrophy	62.2	1.00		0.173
	Overweight	61.5	0.99	(0.74-1.33)	
	Obesity	50.7	0.82	(0.59-1.13)	
Waist circumference	Normal	65.9	1.00		0.29
	High	55.4	0.84	(0.64-1.10)	
Menopause	Yes	49.1	1.00		0.31
	No	57.8	1.18	(0.85-1.63)	
Currently smoking	No	57.7	1.00		0.86
	Yes	60.0	1.04	(0.67-1.60)	
Alcohol consumption	Yes	58.8	1.00		0.23
	No	37.5	0.64	(0.26-1.58)	
Physical activity	Yes	46.7	1.00		0.18
	No	60.0	1.29	(0.86-1.93)	
Chronic disease	No	54.9	1.00		0.43
	Yes	60.6	1.10	(0.86-1.41)	
Use of medicines	No	60.0	1.00		0.76
	Yes	57.8	0.96	(0.72-1.28)	
Self-rated health	Good	55.4	1.00		0.54
	Poor	59.8	1.08	(0.84-1.38)	
Life satisfaction	Yes	54.7	1.00		0.14
	No	66.7	1.22	(0.95-1.56)	

* Pearson's Qui-Squared Test; ** Linear Trend Test;

DISCUSSION

The insufficient intake of fruit and vegetables was recognized by the WHO as one of the 20 factors most associated with the morbidity and mortality risk in the world population[19]. This study aimed to investigate the prevalence of insufficient intake of fruit and vegetables and its associated factors among women assisted at a Primary Healthcare Unit in Southern Brazil. The prevalence of insufficient intake of fruit and vegetables was 57.9%.

A study[22] conducted with adults of both sexes observed a prevalence of 52.9% of insufficient intake of fruit and vegetables. When the analysis was stratified by sex, the same study[22] observed that the women intake was lower (47.8%) than that of the women assessed by this study. However, in that study[22], the intake of fruit and vegetables for at least five days a week was considered appropriate, and the data were obtained by telephone calls[22]. Among the women assessed by this study, only a daily intake of fruits and vegetables (over 400g per day) was considered adequate. The differences among the methods to assess nutrition, define and categorize the frequency of the intake of fruit and vegetables hinder the comparison with other studies on population intake[23].

A study[16] conducted in Brazil using data from the Global Health Research observed that less than half (41.0%) of the assessed adults reported a daily intake of fruits, and less than one third (30.0%) reported a daily intake of vegetables. The intake of fruit and vegetables was higher in urban areas, if compared with rural areas, increasing according to age, education, and number of household assets for both sexes. Furthermore, they concluded that initiatives to promote the intake of fruit and vegetables must include the whole population, with a special attention on male youngsters living in rural areas and people with a low income and education level[16].

Another study[24], conducted in 1970, found interesting results that show a very low intake of fruit and vegetables in the Brazilian population (13.3%). It also showed that fruit and vegetables were mainly used as seasonings[24]. Nationwide researches conducted with six thousand families by the Brazilian Institute of Public Opinion and Statistics (IBOPE) verified that 58% of Brazilians reported the intake of vegetables[25].

Brazil is one of main producers of fruit worldwide, and despite the variety of colors and flavors available in markets and fairs, the main fruits consumed by the population for over 20 years are banana, apples, orange and papaya. The inclusion of greater variety occurs as the purchasing power of Brazilians increase, pointed out a study demanded by the Brazilian Confederation of Agriculture and Livestock (CNA) about the habit of intake of fruit in Brazil, conducted in 2011 in the five Brazilian regions[26]. The intake of fruit and vegetables in some regions of the country is reduced due to a cultural issue. The Brazilian Indigenous people did not give importance to such foods and their introduction into the country cuisine was influenced by the slaves[27].

A research[28] analyzed the reasons that led adults from Brasília, DF, Brazil, to consume fruit and vegetables. The main reasons included: being healthy food, having a pleasant taste and helping in maintaining or losing weight. The reported barriers were: unpleasant taste, lack of habit, eating few and considering the intake as sufficient, available time and high perishability. Furthermore, the barriers and motivators have a different prioritization for fruits and vegetables[28], which represented the most reported categories within the concept of healthy food[28].

In the present study, there was a higher insufficiency of intake of fruit and vegetables among younger adults (26-50 years). A cross-sectional study carried out in South Yorkshire[29], United Kingdom, with adult people of both sexes verified a slight increase in the intake of fruit and vegetables with the increase of age.

A study on the characterization of food patterns of elders of different socioeconomic status in Southeastern Brazil[30] highlighted an expressive intake of fruit, raising the hypothesis that individuals at this age tend to value the body regulating foods. The role of age in the diet quality can reflect changes in the conscience about health, interfering directly in food choice by the older aged group, or in maintaining habits due to lower environment exposition[31].

The income is one of the determinant factors for eating habits, i.e., a higher purchasing power is related to a higher purchasing of some kinds of food[32]. The diet quality varies significantly according to demographic characteristics as sex and age, and it improves with the increase in the education level[31].

Regarding paid job in the current study, women who did not work presented a higher intake of fruit and vegetables than those who had a job. A multicentric study conducted in the United States of America[33] concluded that eating out can lead to a higher intake of fruit and vegetables among men. This may be related to a higher variety of food available in restaurants[33].

Similarly, a qualitative study[34] conducted with users of different food courts in Sao Paulo verified that the variety of food offered by restaurants provided consumers with a higher diversity of food compared with the meals eaten at homes[34] . However, another study[26] conducted in the five Brazilian regions observed that among those who ate out regularly, only 4% included in their meals, while among those who ate at home accounted for 37%[26].

The overweight prevalence among the investigated women (75.6%) was similar to the one identified by the 2008-9 Household Budget Survey (*Pesquisa de Orçamento*

Familiar - *POF*) for women from Southern Brazil (71.2%) [12]. Among the women assessed by the present study, those with obesity tended to present higher intake of fruit and vegetables; however, the difference was not significant to reach the confidence level of 5%.

The association between health-related variables and food intake in cross-sectional studies is limited, once people who are overweight or affected by diseases can change their food intake as an attempt to improve health. Other observed associations, close the threshold of significance adopted, could be significant if the sample size was larger.

The association with health-related variables such as alcohol consumption is also limited, once a small part of the assessed population reported consuming this substance. Besides that, this study may be subjected to traditional limitations for eating habits analyses, such as memory bias, imprecision of portion intake, or even overestimation of intake due to the knowledge of the importance of the intake of fruit and vegetables for health[35].

The food pattern of the urban Brazilian population is progressively absorbing the novelties created by the industry, becoming more and more homogenous. In a globalized world this seems unavoidable, causing severe consequences to public health, increasing rates of chronic diseases and decreasing the intake of fruit and vegetables[25].

CONCLUSION

There was a high prevalence of insufficient intake of fruit and vegetables among the assessed women, corroborating the results of other studies. The intake was better among those with older age. The other variables assessed were not statistically associated with the outcome.

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