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ORIGINAL

Regular consumption of fruit and vegetables by the Judiciary's public servers of the *Minas Gerais* State, Brazil

Consumo regular de frutas e hortaliças por servidores públicos do Poder Judiciário de Minas Gerais, Brasil

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ABSTRACT

Objective

To estimate the prevalence and factors associated with the regular consumption of fruits and vegetables by the civil servants of the *Minas Gerais* State Judicial System.

Methods

This is a cross-sectional analytical study, with a representative sample (n=1.005) of the *Minas Gerais* State Judicial System's civil servants. The outcome variable "regular fruit and vegetable consumption" refers to fruit and vegetable consumption on five or more days per week. The explanatory variables were divided into three blocks: (1) sociodemographic (gender,

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age, education, race/skin color; income); (2) health conditions and life habits (chronic diseases, absenteeism due to illness, consumption of alcoholic beverages, smoking, physical activity and nutritional status); and (3) work characteristics and psychosocial factors (weekly workload, position, overtime, use of the electronic Judicial Process, county, psychological demand and control). Hierarchical Poisson regression by blocks was used to analyze potential factors associated with the outcome.

Results

The prevalence of regular consumption of fruits and vegetables was 55.3%. Associations were found with female gender, income above 12 minimum wages, sufficient physical activity, use of Electronic Judicial Process, while there was a negative association with alcohol abuse.

Conclusion

Regular consumption of fruit and vegetable among civil servants in the Judiciary was positively associated with female gender, higher incomes and physical activity. The consumption of alcoholic beverages was negatively associated with the outcome. Educational actions and programs aimed at encouraging healthy lifestyle habits are recommended, in order to raise awareness and involve public servants at all stages of the process.

Keywords: Food consumption. Fruits. Judiciary. Vegetables. Working conditions.

RESUMO

Objetivo

Estimar a prevalência e os fatores associados ao consumo regular de frutas e de hortaliças dos servidores do Judiciário mineiro.

Métodos

Trata-se de um estudo transversal analítico, com amostra representativa (n=1.005) de servidores do Judiciário mineiro. A variável desfecho "consumo regular de Frutas e Hortaliças" se refere ao consumo de frutas e de hortaliças em cinco ou mais dias da semana. As variáveis explicativas foram divididas em três blocos: (1) sociodemográficos (sexo, idade, escolaridade, raça/cor; renda); (2) condições de saúde e hábitos de vida (doenças crônicas, absenteísmo-doença, consumo de bebidas alcoólicas, tabagismo, prática de atividade física e estado nutricional); e (3) características do trabalho e fatores psicossociais (carga horária semanal, cargo, hora extra, utilização do Processo Judicial Eletrônico, comarca, demanda psicológica e controle). Foi utilizada a regressão de Poisson hierárquica por blocos para analisar possíveis fatores associados ao desfecho.

Resultados

A prevalência do consumo regular de frutas e de hortaliças foi de 55,3%. Foram verificadas associações positivas com sexo feminino, renda acima de 12 salários-mínimos, atividade física suficiente e utilização do Processo Judicial Eletrônico; em contrapartida, foi encontrada associação negativa com o consumo abusivo de bebidas alcoólicas.

Conclusão

O consumo regular de frutas e de hortaliças entre os servidores do Judiciário foi associado positivamente com sexo feminino, maiores rendas e prática de atividade física. O consumo de bebidas alcoólicas foi negativamente associado ao desfecho. Recomenda-se ações e programas educativos voltados para o estímulo de hábitos de vida saudáveis, de maneira a sensibilizar e envolver os servidores públicos em todas as etapas do processo.

Palavras-chaves: *Consumo de alimentos. Frutas. Poder Judiciário. Verduras. Condições de trabalho.*

INTRODUCTION

Inappropriate behaviors and lifestyle habits are determining factors of non-communicable chronic diseases, which in turn are responsible for the impoverishment in people's quality of life, in addition to a high degree of limitation for work and leisure [1-3].

It is known that the effects of occupational stressors are associated with less healthy behaviors, including hypercaloric eating habits and reduced consumption of Fruits and Vegetables (FV) [4,5].

Despite the well-documented awareness about the relevance of FV for human health, given the nutrient content and low caloric density, the consumption of this type of food is considered insufficient worldwide, considering the recommendation of five daily servings [6].

In the occupational scenario, evidence from the Working on Wellness study in New England identified adequate FV consumption in only 4.9% of the sample of American workers in the administrative sector, 5.4% in the operational sector and 5.2% in service workers distributed in twenty-four workplaces [7]. The prevalence of the recommended consumption of FV was 15% and 53% among bank employees in Uruguay and in airline employees in European countries, respectively. In the case of Brazilian civil servants, a prevalence of less than 50% was observed, according to the parameter of regular consumption of FV per five or more days of the week [8-10].

Forms of management and organization, social relationships and patterns of employment contracts generate situations that are associated with the workers' behavior and life habits [4,5]. Length of working hours, stress, excess demand, time pressure and poor social support are predictors of insufficient consumption of VF [4,11-14]. However, some studies did not find an association of work stress with FV consumption [15,16]. Given the different work characteristics and environmental conditions, it is not unlikely that these sectors' professionals experience this relationship differently.

In 2004, in view of Brazilian society's dissatisfaction with the slowness of judicial services, as well as the pressing need to improve the efficiency of this sector, the so-called reform of the Judiciary system was implemented. Several innovations, including the establishment of results targets and virtualization in the forensic work setting were implemented [17]. Pressures and demands on civil servants in the aforementioned restructuring context probably generated stressors with effects on health habits, including those of a dietary nature [18]. Actions to promote healthy eating and research on the subject have been implemented frequently, including measures geared to encourage greater consumption of FV in workers samples [6,19]. No results were found in samples of the Judiciary civil servants. The identification of factors associated with eating habits can provide support for the development of actions and programs aimed at improving the civil servants' quality of life, with positive effects on the well-being at work and, consequently, improving the performance of services provided to the citizens.

The aim of the present study was to estimate the prevalence of regular consumption of FV in a sample of employees of the Minas Gerais State Judiciary system and to review the association of this result with sociodemographic characteristics, lifestyle and health conditions, occupational characteristics and psychosocial working conditions.

METHODS

This is a cross-sectional telephone interview study, using data from the survey "Health situations and conditions of professional practice of workers in the Court of Justice of first instance in Minas Gerais" (Justicel-2016) [20]. The survey was approved by the Research Ethics Committee (CAAE-52653316.5.0000.5149) and through verbal consent of the participants (recorded in audio file).

Considering the total population in the sector in *Minas Gerais* (n=12,251), a random and simple sample of 1,537 civil servants distributed in 296 jurisdictional subsectors was selected, according to the strata (gender, age, type of sector and position), obtaining 85% statistical power and an alpha of 0.05. To calculate the sample size, the following parameters were taken into account: (1) 95% confidence level; (2) maximum rejection rate of 45%; (3) main parameter of interest in the study with the prevalence of 55% regular consumption of VF [20]; (4) margin of error in the estimated prevalence of 3%; and (5) correction for finite populations. Active staff was considered eligible; civil servants away from work for more than one month, transferred to another location or without telephone number information were not considered

eligible. To validate the representativeness of the groups selected in the sample (gender, age, type of region and position) weights were assigned in the statistical analyses. In other words, all estimates were adjusted (weighted) to represent the total civil servants population working N the Courts of first instance of the State of *Minas Gerais* Judiciary, using weighting factors through the survey command. This strategy allowed us to match the sample to the universe [21].

Data collection was carried out in May 2016. The survey team was previously trained and was supervised during the interview. The electronic questionnaire (Q-JUS), developed specifically for the Justicel-2016 Study, incorporated scales used and validated in population surveys [22]. Four professors and researchers experts in occupational health evaluated the questions of the instrument and issued a final opinion on the dimensionality of the items. The semantic analysis of the content was then tested (sample of 15 employees working in court) and, finally, the instrument and the collection procedure were tested (n=60). The reliability of the answers was measured by the reapplication of the questions to 80% of the pilot study participants with an interval between 10 and 15 days.

The variable of interest in the study was the regular consumption of FV meaning the consumption of both fruits and vegetables on five or more days a week. This regular consumption is considered a healthy eating marker and has been used in Brazilian population surveys [23]. For the construction of the variable, the regular consumption of fruits (characterized by the consumption of fresh fruits or natural juice on at least 5 days a week) and the regular consumption of vegetables (defined by the consumption of raw or cooked greens and vegetables five or more days a week) were considered [23]. The variable was estimated using as references the questions of the national study "Surveillance System for Risk Factors and Protective Factors for Chronic Diseases by Telephone Survey (Vigitel)", as follows: "On how many days in the week do you usually eat fruit? On how many days in a week do you usually drink fresh fruit juice? On how many days in a week do you usually eat lettuce and tomato salad or any other raw green or vegetable salad? On how many days in the week do you usually eat greens or vegetables (example: kale, carrots, chayote, eggplant, zucchini, not counting potatoes, cassava or yams) cooked with other food or in a soup?" The explanatory variables, organized into three blocks, were also investigated: sociodemographic characteristics; health conditions and lifestyle habits; work characteristics and psychosocial factors.

As for sociodemographic characteristics, gender, age (tertiles: <40 years, 40 to 49 years and >49 years), education (elementary/1st grade school to complete high school, college and postgraduate), race/skin color (white and non-white) and income (tertiles: below 6 minimum wages (BRL 2,640.00 to BRL 5,280.00), from 6 to 12 minimum wages (BRL 5,281.00 to BRL 10,560.00) and above 12 minimum wages (>BRL 10,560.00). The value of the minimum wage in force in 2016 (BRL 880.00) was considered.

In the block of health conditions and lifestyle habits, the following were considered: occurrence of non-communicable chronic diseases (diabetes mellitus, hypertension, high cholesterol and triglycerides), absenteeism-illness (absence for health reasons in the last 12 months, regardless of the number of sick-leave days) abusive use of alcoholic beverages (intake of four or more drinks for women and five or more drinks for men, on the same occasion, in the last 30 days, smoking, practice of sufficient physical activity (150 minutes weekly moderate intensity physical activity or 75 minutes per week of vigorous intensity activity) and nutritional status (defined by self-reported weight and height variables that allowed the calculation of the body mass index) [23].

Regarding work characteristics and psychosocial factors, weekly workload (median: ≤30 hours and 31 to 44 hours), position held (Level I, Technical Level II, Administrative Level II and Level III), overtime (yes, no), use of the Electronic Judicial Process (eJP) (use of eJP and non-use of eJP), type of district (first level, second level and special level), psychological demand (high and low demand) and work control (high and low control). The last two variables make up the demand-control model [24] that addresses occupational stress [22]. The demand dimension concerns both pressures of a psychological nature arising from deadlines on work delivery, and conflicts resulting from contradictory requests in the course of the activity. The control

dimension explains the ability to mobilize intellectual functions and the autonomy to decide how to operate. These dimensions are studied through the calculation of average scores allocated in quadrants that express the relationships between them. Harmful situations are classified into two types: (i) high psychological demand under high control = active work or (ii) low demand under low control = passive work.

For research purposes, the positions of the civil servants were classified into levels, according to the type of activity performed and the education level required: Level I refers to administrative activity and elementary education; Level II, administrative activity and elementary education; Level II, technical activity and high school; and Level III, technical activity and higher education.

A descriptive analysis of the results was performed. To investigate the association between regular consumption of VF (outcome variable) and the factors of interest, the Poisson Regression was used. The Poisson regression model was considered the most appropriate analysis for the study as it is suitable because of its cross-sectional design, in addition to being consistent with the dichotomous type of the outcome variable, whose expected prevalence is greater than 10% [24]. Variables with a significance level equal to or less than 25% ($p<0.25$) were selected for intermediate multivariate analysis, which consisted of Poisson Regression (with robust variance) multivariate block analysis with manual backward. Block 1 included the sociodemographic variables, block 2 the work characteristics and psychosocial factors, and block 3 health conditions and lifestyle habits. At the end of this stage, only the variables associated with the consumption of VF remained at the level of 5% ($p<0.05$), which were automatically selected to compose the final model, sorted according to the hierarchical relevance in which they would bear on regular consumption of VF, classifying them into three levels: distal, intermediate and proximal. In the final model, the block hierarchical analysis technique was used to estimate the Prevalence Ratio (PR), with their relevant confidence intervals (95%CI), considering a significant association when $p<0.05$ (Figure 1).

Data were tabulated in the Access program (2010) and analyzed using Stata software (Stata Corporation College Station, Texas, United States of America) version 14.0.

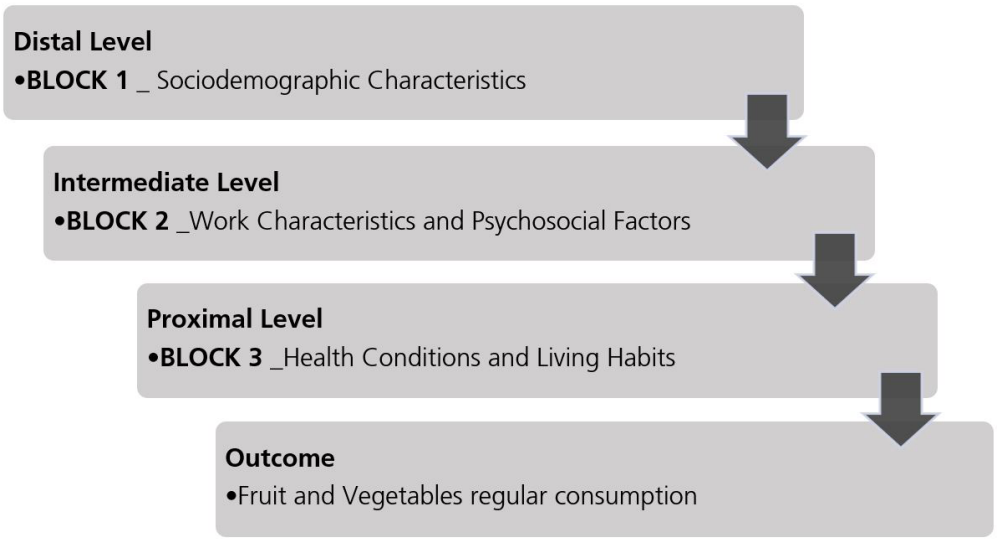

Figure 1 – Data entry diagram in the investigation analysis of the effects of independent variables on the regular consumption of fruits and vegetables, structured in hierarchical blocks.

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RESULTS

A total of 215 civil servants of the sample (n=1,537) were not found (because they no longer worked in the district or the telephone number provided was incorrect), 227 did not respond to five interview attempts after scheduling, 65 refused to participate, 23 were temporarily absent (on vacation or on sick leave) and 2 did not complete the interview. In the end, a total of 1,005 participants were interviewed, distributed in 266 sectors of the state (response rate=76%).

Of these, 62.8% were women, with complete higher education or postgraduate studies (90.5%), and self-declared Caucasians (69.6%). Most civil servants were paid a monthly salary greater than 6 minimum wages (55.3%) (Table 1).

As for the characteristics of the work, eight out of ten civil servants (80.6%) worked up to 30 hours a week. However, two out of three individuals (64.5%) reported working overtime. In relation to the positions held, 81.2% occupied a level II position. Most civil servants did not use the eJP (75.4%) and worked in a special district (53.1%). As for the psychosocial work factors, the results showed that 33.8% of the servants had low strain activities, while 22.6% worked in high strain conditions (Table 1).

Considering health conditions and lifestyle habits, 40.2% reported having some Chronic noncommunicable diseases, 42.2% were overweight or obese, 43.1% did not practice enough physical activity, 24.6% were alcoholics. Absenteeism due to illness was detected in 37.2% of respondents (Table 1).

Most civil servants of the State of Minas Gerais Judiciary (55.3%) reported regular consumption of VF, that is, both fruits and vegetables on five or more days a week (Table 1).

In the bivariate analysis, female over 49 years old, with income above 6 minimum wages, practicing physical activity, with level III positions, allocated in districts of special level, using the eJP, showed a higher prevalence of regular consumption of VF. In contrast, obese workers, those who missed work in the last 12 months, those who abused alcoholic beverages and others whose tasks were of high psychological stress had lower regular VF consumption (Table 2).

Table 1 – Distribution of civil servants in *Minas Gerais* according to sociodemographic characteristics, health conditions and lifestyle habits, work characteristics and psychosocial factors.

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Population description	Absolute frequency (n)	Relative frequency (%)	CI95%
Sociodemographic characteristics			
Gender			
Male	474	37.2	37.19-37.28
Female	531	62.8	62.72-62.81
Age group			
<40 years	311	38.0	37.29-38.70
40 to 49 years	305	32.8	30.62-35.06
>49 years	389	29.2	27.06-31.27
Education			
Up to high school	118	9.5	7.07-11.97
University	389	41.9	36.80-46.91
Postgraduate studies	498	48.6	43.55-53.69
Race/skin color			
White	673	69.6	65.11-74.00
Non white	332	30.4	25.99-34.88
Income			
<6 minimum wage	359	44.7	40.48-48.83
De 6 to 12 minimum wage	427	35.8	31.37-40.29
>12 minimum wage	219	19.5	16.27-22.76

Table 1 – Distribution of civil servants in *Minas Gerais* according to sociodemographic characteristics, health conditions and lifestyle habits, work characteristics and psychosocial factors.

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Population description	Absolute frequency (n)	Relative frequency (%)	CI95%
Chronic Noncommunicable Diseases			
No	554	59.8	55.08-64.43
Yes	451	40.2	35.57-44.92
Nutritional status			
Eutrophic	489	57.8	54.15-61.33
Overweight	403	33.1	29.50-36.72
Obese	113	9.1	7.16-11.13
Absenteeism illness			
No	631	62.8	58.08-67.58
Yes	374	37.2	32.42-41.92
Abusive consumption of alcoholic beverages			
No	755	75.4	71.09-79.68
Yes	250	24.6	20.32-28.91
Smoking			
No	940	94.1	91.94-96.31
Yes	65	5.9	3.68-8.05
Enough physical activity			
No	448	43.1	38.08-48.19
Yes	557	56.9	51.81-61.92
Work characteristics and psychosocial factors			
Contractual workload hours			
≤30 hours	744	80.6	76.95-84.29
31 to 44 hours	261	19.4	15.71-23.05
Position			
Level 1	125	2.9	2.41-3.49
Level 2 Administrative	272	28.7	26.49-30.86
Level 2 Technical	289	52.5	49.68-55.12
Level 3	319	15.9	13.79-18.17
Overtime			
No	297	35.5	30.62-40.42
Yes	708	64.5	59.58-69.38
Use of the Electronic Court Process			
No	857	75.4	70.79-79.99
Yes	148	24.6	20.01-29.21
Type of district			
First instance	335	20.0	19.64-20.42
Second instance	368	26.9	26.87-26.96
Special instance	302	53.1	52.66-53.45
Psychological demand			
Low demand	633	57.3	52.22-62.33
High demand	372	42.7	37.67-47.78
Work control			
Low control	591	46.1	40.98-51.04
High control	414	53.9	48.96-59.02
Demand Control Model			
Low wear	391	33.8	29.10-38.57
Active work	200	20.2	15.99-24.32
Passive work	242	23.4	19.41-27.47
High wear	172	22.6	18.08-27.05
No	459	44.7	39.69-49.70
Yes	546	55.3	50.30-60.31

Note: CI: Confidence Interval.

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Table 2 – Regular consumption of fruits and vegetables and gross prevalence ratios, according to sociodemographic characteristics, health conditions and lifestyle habits, work characteristics and psychosocial factors of the employees of the Judiciary of *Minas Gerais*.

1 of 2

Characteristics	Regular consumption of fruits and vegetables		
	%**	PR	CI95%
Sociodemographic characteristics			
Gender			
Male	47.5	-	
Female	59.9	1.262	1.062-1.502*
Age			
<40 years	51.9	-	
40 to 49 years	54.6	1.053	0.821-1.349
>49 years	60.6	1.168	0.956-1.428*
Education			
Up to high school	51.2	-	
University	58.3	1.138	0.843-1.536
Postgraduate studies	53.5	1.044	0.775-1.405
Income**			
<6 minimum wage	49.9	-	
From 6 to 12 minimum wage	57.7	1.155	0.937-1.425*
>12 minimum wage	63.3	1.269	1.008-1.596*
Race/skin color			
White	54.7	-	
Not white	56.8	1.057	0.876-1.275
Health conditions and life habits			
Chronic noncommunicable diseases			
No	56.2	-	
Yes	53.9	0.959	0.798-1.154
Nutritional status			
Eutrophic	57.3	-	
Overweight	56.1	0.98	0.822-1.167
Obese	44	0.769	0.575-1.028*
Absenteeism-illness			
No	59.1	-	
Yes	48.8	0.825	0.686-0.993*
Abusive consumption of alcoholic beverages			
No	58.7	-	
Yes	45	0.768	0.609-0.968*
Smoking			
No	54.8	-	
Yes	62.9	1.148	0.871-1.512
Enough physical activity			
No	45.4	-	
Yes	62.8	1.385	1.134-1.692*
Work characteristics and psychosocial factors			
Weekly workload			
<=30 hours	55.0	-	
31 to 44 hours	56.4	1.025	0.823-1.278
Positions			
Level I	44.6	-	
Level II administrative	53.4	1.197	0.907-1.580
Level II technical	53.2	1.193	0.899-1.584
Level III	67.7	1.518	1.164-1.980*
Overtime			
No	54.9	-	
Yes	55.5	1.01	0.822-1.241

Table 2 – Regular consumption of fruits and vegetables and gross prevalence ratios, according to sociodemographic characteristics, health conditions and lifestyle habits, work characteristics and psychosocial factors of the employees of the Judiciary of *Minas Gerais*.

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Characteristics	Regular consumption of fruits and vegetables		
	%**	PR	CI95%
eJP use			
No	51.6	-	
Yes	66.6	1.289	1.057-1.573
Type of district			
First instance	48.5	-	
Second instance	52.6	1.085	0.900-1.307
Special court grade	59.2	1.222	1.008-1.482*
Psychological demand			
Low demand	57.6	-	
High demand	52.2	0.907	0.750-1.097
Work control			
High control	58.2	-	
Low control	51.9	0.893	0.742-1.075
Demand Control-Model			
Low wear	59.7	-	
Active work	55.5	0.93	0.728-1.187
Passive work	54.5	0.913	0.730-1.142
High wear	49.3	0.825	0.630-1.080

Note: *p<0.25; **Weighted percentage to adjust the sociodemographic distribution of the sample to the distribution of the population of workers in the First Instance of the TJMG.

In the multivariate analysis, intermediate model, significant positive associations (p<0.05) were found with regard to female gender, income above 12 minimum wages, sufficient physical activity, alcohol abuse, level III position, use of the eJP and special court grade. Significant negative associations were also found with regard to absenteeism due to illness and alcohol abuse (Table 3).

In the final multivariate model, after adjustments, considering the hierarchical block regression from the most distal level (sociodemographic characteristics) to the most proximal one (health conditions and lifestyle habits) the following remained associated to regular FV consumption: female gender, income above 12 minimum wages, sufficient physical activity, abusive consumption of alcoholic beverages and use of eJP. Health conditions and psychosocial factors at work were not significantly associated (Table 4).

DISCUSSION

The study carried out with a representative sample of employees of the Minas Gerais Judiciary system identified a regular consumption of FV 1.5 times greater than that found in Brazil in the same year of the study [25]. Specific characteristics of this sector's employees assessed in the perspective of socioeconomic determinants (employment, income and education) and work characteristics (weekly workload, job stability and protection in terms of social rights), probably explain the trend towards adherence to healthy practices. The greater chances of accessing economic and social resources place the judiciary power workers in different conditions of opportunity regarding health [26]. Income, power, social prestige that depend on the individual's occupation, which has to do with the type of work setting and under what conditions this individual operates [27].

Table 3 – Intermediate model: Gross and adjusted Prevalence ratios of regular consumption of fruits and vegetables by civil servants of the *Minas Gerais* Judiciary system, according to sociodemographic characteristics, health conditions and lifestyle habits, work characteristics and psychosocial factors.

Characteristics	Regular consumption of fruits and vegetables		
	Gross PR	Adjusted PR	CI95%
Sociodemographic Characteristics Block			
Gender			
Male			
Female	1.319	1.306	1.102-1.547**
Age			
<40 years			
40 to 49 years	0.931	0.961	0.742-1.244
> 49 years	1.108	1.056	0.840-1.329
Income**			
<6 minimum wages			
From 6 to 12 minimum wages	1.583	1.175	0.948-1.457
>12 minimum wages	1.302	1.295	0.998-1.681*
Block health conditions and living habits			
Nutritional status			
Eutrophic			
Overweight	1.013	1.024	0.866-1.211
Obese	0.875	0.853	0.642-1.132
Absenteeism-illness			
No			
Yes	0.835	0.844	0.708-1.006*
Abusive consumption of alcoholic beverages			
No			
Yes	0.794	0.757	0.610-0.939*
Enough physical activity			
No			
Yes	1.393	1.467	1.215-1.772**
Work Characteristics and Psychosocial Factors Block			
Positions			
Level I			
Level II Administrative	1.264	1.228	0.910-1.656
Level II Technical	1.172	1.207	0.894-1.631
Level III	1.377	1.450	1.079-1.948*
eJP use			
No			
Yes	1.255	1.268	1.992-1.621*
Type of district			
First instance			
Second instance	1.106	1.092	0.905-1.319
Special court degree	1.071	1.094	0.866-1.384*
Work control			
High control			
Low control	0.805	0.827	0.632-1.082
Demand control-model			
Low wear			
Active work	0.942	0.929	0.739-1.168
Passive work	0.178	0.171	0.881-1.556
High wear	1.000	1.000	omitted

Note: *p<0.05; **p<0.01.

Table 4 – Final model: Gross and adjusted Prevalence ratios of regular consumption of fruits and vegetables by civil servants of the Minas Gerais Judiciary system, according to sociodemographic characteristics, health conditions and lifestyle habits, work characteristics and psychosocial factors.

Characteristics	Gross PR	Adjusted PR	CI95%
Gender			
Male			
Female	1.246	1.255	1.065-1.480**
Income			
<6 minimum wages			
>12 minimum wages	1.357	1.336	1.080-1.652**
Enough physical activity			
No			
Yes	1.377	1.417	1.171-1.715**
Abusive consumption of alcoholic beverages			
No		–	
Yes	0.729	0.744	0.594-0.932**
eJP use			
No		–	
Yes	1.251	1.215	1.010-1.464*

Note: *p<0.05; **p<0.01.

Evidence indicates a direct relationship between income and consumption of VF, which is a protective factor and a manifestation of the adoption of healthy lifestyle habits [6,13,23,28]. Differences in eating habits have to do with education level [19,13,29]. If we take into account the fraction of the Brazilian population with an education level similar to that of the sample of the Judiciary civil servants, the difference in prevalence drops to 1.2 times, partially confirming the hypotheses raised [25].

The prevalence of regular consumption of VF in the sample converged with the results described in other groups of public servants: 48.5% in municipal servants in *Belo Horizonte* [30]. Specific characteristics of civil servants, with regard to socioeconomic determinants (employment, income and education), probably explain the trend towards adherence to the consumption of healthy foods. In the study in question, more than 90% of the sample had a college degree or a postgraduate degree and 55% had remuneration above six minimum wages, much higher than the income of Brazilian workers (average of two minimum wages) [31]. Scientific evidence indicates a direct relationship between the level of income and education and the consumption of VF, constituting a protective factor and the cause for adoption of healthy lifestyles [6,13,23,28].

Consistently, a higher prevalence was found in the group of women, converging with results from studies that examined the general population and other occupational groups [10,23,29-34]. This association is justified by the greater concern of women with healthy eating and weight control, as well as a better perception of the benefits of VF consumption for health or for disease prevention [12,35].

Regular consumption of VF was associated with higher income (above 12 minimum wages). Research with other occupational groups also observed this association after verifying that individuals with higher income tended to consume more VF [36]. Generally, priority given to cheaper foods, with higher energy density, higher amounts of sugar and fat, lower fiber density and micronutrient content (characteristics of ultra-processed products) explains the reduced consumption of VF in lower-income individuals [37]. It is noteworthy that reducing the price of FV is a promising public health tool capable of increasing the consumption of those foods [36,38].

There was no association between education and regular consumption of VF, probably due to the homogeneity of the sample regarding education. Once again, it is worth noting that higher education increases the chance of employment, with better income and information opportunities [10,19].

Regarding aspects related to lifestyle habits, reporting sufficient physical activity was positively associated with greater regular consumption of VF. The same rationale of healthy eating practices justifies adopting other habits, including the practice of physical activity [19]. Harmful health behaviors, such as alcohol abuse, were associated with lower regular VF consumption, confirming the evidence found in the literature. This result enhances the hypothesis of the expanded range of adherence to healthy habits and the opposite, that is, alcohol use, inadequate diet, physical inactivity [19].

The use of eJP was positively associated with regular consumption of VF. How to understand this result, if adherence to the computerized tool would imply, according to reports from union members in this category, enduring challenges and tensions in the work context? [20]. These are situations that, on the one hand, cause insecurity, which, in turn, can lead to greater anxiety, sleep problems and compulsive eating behavior [17,39]. However, the incorporation of new technologies can, on the other hand, favor cognitive experiences, speed up activities to be performed and improve self-fulfillment at work. If this is the case, groups with more cultural and cognitive resources would not face technological barriers [40]. In either case, there is a positive coincidence, as those more prepared for the technological challenges would be the same individuals to adopt healthier eating habits. In fact, more than 60% of the judiciary staff do not consider eJP as a difficulty generator. However, it is not possible to deepen these or other hypotheses within the scope of Justicel-2016. The literature dealing with the impact of new technologies on workers is still inconclusive, as the processes of technological and management transformations take on their own characteristics in each organization, being in part intermediated by macroeconomic and political aspects [40].

Surprisingly, the Justicel-2016 results did not support the hypothesis about the relationship between psychosocial factors at work and regular consumption of VF. It is worth remembering, however, the association in the unadjusted analysis, that is, civil servants reporting stressful work were less likely to report regular consumption of VF compared to those who had a less stressful work, a conclusion which converges with other studies [13,41]. However, after adjusting for the other variables, the effect of the association discussed disappeared. It is not beyond reason to consider the possibility of this result having been produced due, once again, to the homogenous character of the sample in this regard. There are controversies, however, in the specialized literature, which sometimes suggests an inverse association between VF consumption and work stress, claiming a weak or null association between the variables [42].

In a study in Finland, work stress was associated with a lower consumption of VF [43]. In another study carried out in Brazil, with a sample of industrial workers, a higher proportion of workers who did not consume VF composed the group that reported higher stress level [44]. Less control over tasks was associated with lower consumption of VF among women [45]. And no association was observed in the civil construction sector in a study in the United States and Canada, and in another study conducted with civil servants in *Minas Gerais* in Brazil [42,46].

Despite the fact that regular consumption of VF is prevalent in more than half of the Judiciary workers, 44.7% have reported different habits. It should be noted that regular consumption, as measured in the study, refers to VF consumption on five or more days a week, and the consumption recommended by the World Health Organization is equivalent to 5 daily servings of VF. Thus, it becomes pertinent to verify occupational barriers for this type of consumption. In addition, encouraging the consumption of VF should occupy an important place in the current health promotion agenda, since its insufficient intake is associated with obesity. Each year, 2.8 million people die from obesity-related illnesses including cardiovascular disease, diabetes mellitus and cancer [47]. In Brazil, this condition affects 20.3% of the population, and chronic diseases associated with obesity represent 72.0% of the causes of death [48,49].

The reasons why workers do not consume the recommended amount of VF are multifaceted and result from the interaction and influence of a number of factors, which must be considered to support analyses at different levels and in a comprehensive framework [50]. Therefore, it cannot be strictly defined in the individual dimension, but it suggests the examination of the relationships with the environment,

in order to explain the disparities in the consumption of these foods [51]. The literature demonstrates a complex range of VF consumption determinants, such as elements related to the connections between the individual, the setting, the organizational structures and the social context; they all should be well-known in order to guide research efforts and interventions for the consumption of these foods [52].

VF consumption is influenced by the food setting, which is the interface that stands in between food acquisition and the population in a broader food system. Food environment consist of the physical, economic, sociocultural and political environment; and in the opportunities and conditions that generate the daily stimuli, conditioning the population's food preferences and choices, including food availability, accessibility, attractiveness and convenience, as well as food affordable prices [53,54].

Thus, market regulation strategies that provide opportunities for the production and distribution of FV such as food price policies, tax incentives, zoning policies to attract food retailers to neighborhoods with little FV supply, support to farmers' markets and insertion of street fairs can be a good strategy to solve issues such as physical and financial access to these foods [29,55].

Organizations would also benefit from investing in the implementation of actions that encourage behavioral change on a large scale, since the promotion of nutritional habits, in addition to the benefits for workers' health, has positive consequences on performance and safety and reduces absenteeism [56]. Educational actions and programs aimed at encouraging healthier lifestyle habits in the Judiciary civil servant population are suggested [57,58].

The workplace has been recognized as a strategic space for promoting health and healthy eating. The literature suggests that intervention programs in the workplace setting are associated with the improvement of dietary practices, especially the consumption of VF [59]. Experiences in the workplace were successful in establishing nutritional intervention programs, which displayed a 38.0% increase in FV consumption in the workers' lunch, and up to 16.0% in the daily consumption of these foods [59,60]. These locations also provide a natural social context that allows reaching a greater number of people, including many individuals who would not otherwise engage in preventive health behaviors [61,62].

The *Programa de Alimentação do Trabalhador* (PAT, Worker's Food Program) can be considered an important tool in the promotion of healthy eating practices in occupational groups. The instrument aims to offer healthy food for preventing diseases and the consequent reduction of work accidents and increased productivity [63].

There is evidence that workplace food services contribute to healthy eating habits in occupational groups and may be associated with increased consumption of VF in these settings [64]. In a Finnish study it was found that workers who eat lunch at the workplace restaurants tended to make food choices closer to the nutritional recommendations compared to those who do not use this service [65]. Furthermore, the food offered during lunch can serve as a model of an ideal meal for the workers and could influence their choices and practices on other eating occasions [66]. Conversely, workers who eat in commercial restaurants tend to have less healthy eating habits [67].

Organizations must understand the workplace as a setting to implement actions that promote large-scale behavioral changes, since improvement of nutritional habits goes beyond improving workers' health, but bear consequences on their performance, safety and absenteeism, thus reflecting in greater companies' competitiveness and sustainability [41,68]. Caring about better working conditions and health of the judiciary system's workers translates into thinking about improvements in the services offered to society; it is, therefore, a task of great relevance [20].

Limits for interpreting the results obtained must be mentioned. Measurement bias is expected in cross-sectional studies, for example, memory deficits on the type and amount of food eaten [58,69]. Another limit concerns the structure and content of the Q-JUS that asked about the regular consumption of VF without addressing issues related to recommended consumption. This limitation makes the necessary comparisons with the results obtained in other samples difficult. The variable "regular consumption of fruits

and vegetables", however, is a validated marker to assess healthy eating habits, which has been used in the Brazilian population surveys, since 2006, by the Ministry of Health [23,29]. Finally, civil servants on leave due to health problems or those in unhealthy conditions who quit the profession were not interviewed. This type of selection bias, that is, the healthy worker's effect, is expected in occupational studies [70].

The telephone interview, a common strategy used in national surveys in countries with a large territorial dimension, contributed to facilitate access to a representative sample of the target population distributed across different points in the territory [23]. In addition, it has lower operating cost as well as agility in obtaining and disseminating information [71]. The careful development of the data collection instrument, preceded by direct observations of the workers' activity, made it possible to identify both the characteristics of the service structure and the tensions faced in daily work activities, in order to broaden the understanding of the interviewees' experiences.

CONCLUSION

Five out of ten judiciary system civil servants reported regular consumption of VF. This consumption was positively associated with female gender, higher income, physical activity and eJP use, being negatively associated with excessive consumption of alcoholic beverages.

Despite the high percentage of VF regular consumption in the sample assessed, when compared to the Brazilian population, the inadequacy of 44.7.0% is quite expressive and represents a situation of concern, which indicates important challenges for government agencies and managers responsible for the judiciary system of Minas Gerais. Providing proper space for meals with equipment to store and warm up food at the workplace is a measure that favors the consumption of food prepared at home, instead of eating at commercial restaurants. Educational actions and programs aimed at encouraging healthy lifestyle habits are recommended, in order to raise awareness and involve public servants at all stages of the process.

CONTRIBUTORS

A.P.M.A Costa participated in the conception and design of the article, tabulation, analysis and interpretation of data. A.Á. Assunção and B.V.L. Costa participated in the orientation, review and approval of the final version of the article.

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