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ORIGINAL ARTICLE

CLUSTERS OF RISK FACTORS FOR CHRONIC NON-COMMUNICABLE DISEASES IN COMMUNITY HEALTH WORKERS

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Highlights:
(1) High prevalence of clusters of risk factors for NCDs among CHWs.
(2) Sociodemographic and clinical factors are associated with the investigated outcome.
(3) Health services should implement differentiated care policies for CHWs.

ABSTRACT

This study aimed to estimate the prevalence ofclustersof behavioral risk factors for Chronic Diseases Do NotCommunicable Diseases (NCDs), as well as associated factors in Community Health Agents (CHAs). This is a census, cross-sectional, analytical study, derived from a research project entitled Working and health conditions of CHAs in northern Minas Gerais: a longitudinal study, carried out in the city of Montes Claros, MG. The dependent variable wassimultaneous presence, orclusters of three or more behavioral risk factors for NCDs. The definition of associated variables was performed after Poisson multiple regression analysis with robust variance. A total of 675 CHWs participated in the study. Of these, 57.6% (n=389) presented at least three simultaneous risk factors for NCDs, the most prevalent being low fruit consumption, physical inactivity and excessive consumption of soft drinks. The variables that were associated with the cluster of behavioral factors were age greater than or equal to 37 years (PR=0.87; 95%CI=0.81-0.94; p=0.001), perception of poor health status (PR=1.08; 95%CI=1.00-1.16; p=0.037) and presence of hypertension (PR=1.17; 95%CI=1.06-1.30; p=0.001). It is concluded that the prevalence of three or more risk factors for NCDs in CHAs was high, and that sociodemographic and clinical factors are associated with the outcome investigated. Considering the results recorded, health services should provide differentiated care policies for CHAs, seeking to prevent behavioral factors that can increase morbidity and mortality due to NCDs.

Keywords: community health agents; non-communicable diseases; risk factors; health-related behaviors.

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INTRODUCTION

Chronic Diseases Do NotCommunicable Diseases (NCDs) are characterized by asetdiseases of non-infectious origin, multifactorial, with a long latency period and prolonged course, and can result in functional disabilities, loss of quality of life and premature mortality, in addition to increasing economic costs for society and health systems[1.]

Estimates from the World Health Organization (WHO) indicate that NCDs were responsible for 73.6% of deaths that occurred globally in 2019. In the same year, in Brazil, NCDs were responsible for approximately 54.7% of deaths. Of these, 41.8% occurred prematurely, that is, between 30 and 69 years of age, totaling a standardized mortality rate of 275.5 premature deaths per 100,000 inhabitants. Among the affected populations, attention is drawn to thehealth professionals, namely Community Health Agents (CHAs)[2], due to the lack of effective public assistance policies aimed at these professionals in order to prevent risk factors for NCDs, and consequently, morbidity and mortality from preventable causes[3].

The ACS is part of the Family Health Strategy team andresides in the area of registration of the UBS thatacts, performing activities to prevent diseases and promote health through educational actions during home visits and in the community. It is understood that the ACS plays a key role in the prevention of NCDs, as he acts as a professional who is part of the team and at the same time a resident of the community, which allows him to share the same social determinants of health, habits and living conditions of the population in the area he serves[4].

The literature presents studies on isolated risk factors for NCDs in CHAs, such as: physical activity[5], smoking[6], nutritional status and food consumption[7]. However, no studies were found in the literature analyzed that aimed to evaluate clusters of behavioral risk factors for NCDs in this specific population. Iidentify the simultaneous presence of risk factors that may predispose toThe occurrence of NCDs in CHAs is an important point of investigation, as it influences the quality of life and work of these professionals. In this context, the objective of this studywas to investigate the prevalence ofclusterof behavioral risk factors for NCDs in Community Health Agents in northern Minas Gerais.

METHODS

This is a studycensus, analytical cross-sectional, derived from a research project entitled Working conditions and health of Community Health Agents in the north of Minas Gerais: longitudinal study, carried out in the city of Montes Claros, MG.

At the time of the study, 797 CHAs were working in the 135 Family Health Strategy (ESF) teams in the municipality of Montes Claros, and were considered the target population. All CHAs were invited to participate in the study through an invitation letter sent by the researchers through the municipality's primary care coordination. However, a significant number of professionals were observed to be on job deviation and on medical leave, and were excluded from the study. A total of 675 CHAs were included.

Prior to data collection, interviewers were trained and a pilot study was conducted with 15 CHWs in order to standardize the research procedures. The pilot study allowed the questionnaires and the interviewers' performance to be tested in practice. After this phase, the field research began.

Health professionals, together with Scientific Initiation students, carried out data collection individually, in a reserved room, at the Regional Reference Center for Workers' Health (Cerest), on weekdays, in the morning shift, in the period corresponding to August and October 2018. The instrument consisted of questionnaires that addressed behavioral[1,8], sociodemographic[9], work[9,10] and clinical[1,11] factors.

The dependent variable in the present study was the presence of clusters of behavioral risk factors for NCDs, defined as the concomitance of three or more of the following factors: habitual consumption of fatty meat, habitual consumption of chicken with skin, fruit consumption, smoking, abusive consumption of alcoholic beverages, regular consumption of soft drinks, researched based on the surveillance of risk and protective factors for chronic diseases by telephone survey (Vigitel) and physical inactivity[1,8].

The question about the consumption of meat with fat and chicken with skin had five possible answers: 1-always removes the visible excess; 2-sometimes removes the visible excess; 3-eats with fat or skin; 4-does not eat red meat with a lot of fat or chicken with skin; 5-does not eat red meat or chicken with skin. For the present study, these data were dichotomized, with answers two and three being considered consumption of meat with fat.

Regarding fruit consumption, low consumption was considered for those who reported consuming less than three servings of fruit per day. Smoking was considered as regular or non-regular use of cigarettes. Alcohol abuse was considered for CHAs who reported having consumed four or more doses of alcoholic beverages on a single occasion in the last 30 days. A single dose of alcohol was defined as the equivalent of a can of beer, a glass of wine or even a measure-dose of distilled beverage[1]. The assessment of habitual soft drink consumption was taken with the consumption of soft drinks three or more times per week. The variable physical inactivity was assessed using the short version of the International Physical Activity Questionnaire (IPAQ), proposed by the World Health Organization (WHO) and validated in Brazil[8].

Sociodemographic factors: sex (female; male), age (up to 36 years; over 37 years), skin color (non-white; white), marital status (with partner; without partner), education (higher education; up to high school), family income (more than 1 minimum wage; up to 1 minimum wage)[9].

The work variables: time working in primary care was investigated through the question: How long have you been working in primary care? The time working as a CHW was investigated through the question: How long have you been working as a CHW? Subsequently, the two variables were dichotomized considering the value found in the median (up to 5 years; more than 5 years)[9]. The Work Ability Index was assessed through the Work Ability Index (WAI) instrument, in its version translated and adapted to Brazilian Portuguese, which determines a predictive measure of the physical and mental demands of work, health status and the ability of workers to perform their work activities. The WAI score is composed of seven dimensions and was calculated by adding the scores of the questions in each dimension, ranging from 7 (worst index) to 49 (best index), classified as: low (7-27), moderate (28-36), good (37-43) and excellent (44-49), as described in the study. Subsequently, the variable was dichotomized into adequate ICT (for the good/excellent options) and inadequate ICT (for the low/moderate options)[10].

The clinical conditions investigated through self-report were: self-perception of health obtained through the questionta: “Compared to people your age, how do you rate your health status?” The four response categories were dichotomized into positive/negative (for the options “very good” and “good”) and negative (for the options “regular” and “poor”)[11]. The presence of Diabetes and Hypertension were investigated through questions extracted separately from VIGITEL: Has a doctor ever told you that you have diabetes? Or hypertension?[1]. They were later dichotomized into do not have; have.

Anthropometric data collection was measured using a portable mechanical bioimpedance scale from Omron® (HBF – 514 Tokyo, Japan), with a capacity of up to 150 kg, and a portable stadiometer from SECA® 206 with an accuracy of 0.1 cm, fixed to a flat wall. In this test, the electrodes remained in contact with the palms of the hands and thumbs, as well as the front and back of the participants’ feet, through which an electric current passed through the biological tissues of thebody as described byLeite et al.[12].THEUsing this method, the Body Mass Index (BMI) variable was measured individually and subsequently dichotomized into unchanged (eutrophic) and altered (overweight/obese).

The sedentary behavior variable was assessed by total sitting time (TST), using the International Physical Activity Questionnaire (IPAQ) short version, proposed by the World Health Organization (WHO) and validated in Brazil[8]. The variable was addressed by two questions that addressed the time spent sitting during a weekday and a weekend day. These responses were then dichotomized into up to four hours and more than four hours, taking into account the study by Dustan et al.[13].

The data were tabulated using the Statistical Package for the Social Sciences (SPSS) software, version 22.0. To analyze the association between clusters of risk factors for NCDs (dependent variable) with the independent variables, bivariate analysis was performed using the χ2 test.Pearson's coefficient. Those that were associated up to the 20.0% level ($p \leq 0.20$) were selected for Poisson multiple regression analysis with robust variance. To estimate the magnitude of the associations, it was estimated by calculating the adjusted prevalence ratio (PR) and respective 95% confidence intervals (95%CI). A significance level of 5.0% ($p<0.05$) was considered for the final model.

The project for this study was approved by the Research Ethics Committee of the State University of Montes Claros, on December 8, 2017, under opinion number 2,425,756. All participants signed the Free and Informed Consent Form as a prerequisite for data collection.

RESULTS

A total of 675 Community Health Agents participated in the study. Of these, 57.6% (n=389) presented at least three simultaneous risk factors. Table 1 presents the individual prevalence of the risk factors assessed and which comprise the dependent variable. The most frequent factor in the study population was low fruit consumption, followed by physical inactivity, while smoking was the least frequent among the variables analyzed.

Table 1 – Distribution of behavioral risk factors for chronic non-communicable diseases among Community Health Agents. Minas Gerais, Brazil, 2022

Behavioral factors	n	%
Fat consumption		
No	472	69.9
Yes	203	30.1
Consumption of chicken skin		
No	532	78.8
Yes	143	21.2
Fruit consumption		
Greater than 3	118	17.5
Up to 2	557	82.5
Smoking		
No	629	93.2
Yes	46	6.8
Alcohol consumption		
No	502	74.4
Yes	173	25.6
Excessive consumption of soft drinks		
No	336	49.8
Yes	339	50.2
Physical inactivity		
No	187	27.7
Yes	488	72.3

Source: Authors' data (2024).

The characterization of the group evaluated is presented in Table 2. There was a predominance of women (83.7%). The majority of the CHAs were up to 36 years old (51%), had a partner (59.7%), were non-white (87.1%), had education up to high school (56.7%) and had a family income greater than one minimum wage (93.2%).

Table 2 – Sociodemographic, work and clinical characteristics of Community Health Agents. Minas Gerais, Brazil, 2022

Variables	n	%
Sociodemographic characteristics		
Sex		
Masculine	110	16.3
Feminine	565	83.7
Age		
Up to 36 years old	338	51.0
≥37 years old	337	49.0
Marital status		
With partner	403	59.7
No partner	272	40.3
Skin color		
Not white	588	87.1
White	87	12.9
Education		
Superior	292	43.3
Until High School	383	56.7
***Family Income**		
More than a minimum wage	629	93.2
Up to a minimum wage	46	6.8
Work characteristics		
Time of operation		
Up to 5 years	364	53.9
More than 5 years	311	46.1
ACS Time		
Up to 5 years	382	56.6
More than 5 years	293	43.4
Work Ability Index		
Suitable	501	74.2
Inadequate	174	25.8
Clinical features		
Perception of health status		
Positive	398	59.0
Negative	277	41.0
Diabetes		
It does not have	652	96.6
He has	23	3.4
Hypertension		
It does not have	604	89.5
He has	71	10.5
Behavioral Habits		

BMI		
Not changed	264	39.1
Changed	411	60.9
Sedentary behavior		
Up to 4 hours	390	57.8
More than 4 hours	285	42.2

*The current minimum wage in 2018 was R$954.00.

Source: Authors' data (2024).

Table 3 presents the results of the bivariate analyses between the characteristics of the group evaluated and the clustering of behavioral risk factors for NCDs. The variables that were associated with combinations of three or more behavioral risk factors for NCDs were age, sex, marital status, skin color, perception of health status and hypertension.

Table 3 – Bivariate analysis between factors associated with combinations of behavioral risk factors for Chronic Noncommunicable Diseases among Community Health Agents. Minas Gerais, Brazil, 2022

Variables	Clustering of risk factors		RPBruta (IC95%)	p-value
	≤2 factors n (%)	≥3 factors n (%)		
Sociodemographic characteristics				
Sex				
Masculine	40 (36.4)	70 (63.6)	1.00	.154
Feminine	246 (43.5)	319 (56.5)	0.93 (0.84-1.02)	
Age				
Up to 36 years old	135 (37.4)	226 (62.6)	1.00	.002
> 37 years old	151 (48.1)	163 (51.9)	0.88 (0.82-0.95)	
Marital status				
With partner	181 (44.9)	222 (55.1)	1.00	.102
No partner	105 (38.6)	167 (61.4)	1.06 (0.98-1.14)	
Skin color				
Not white	243 (41.3)	345 (58.7)	1.00	.158
White	43 (49.4)	44 (50.6)	0.92 (0.82-1.03)	
Education				
Superior	129 (44.2)	163 (55.8)	1.00	.407
Until High School	157 (41.0)	226 (59.0)	1.03 (0.95-1.11)	
Family Income				
More than a minimum wage	266 (42.3)	363 (57.7)	1.00	.875
Up to a minimum wage	20 (43.5)	26 (56.5)	0.98 (0.85-1.14)	
Work characteristics				
Time of operation				
Up to 5 years	146 (40.1)	218 (59.9)	1.00	.198
More than 5 years	140 (45.0)	171 (55.0)	0.95 (0.88-1.02)	
ACS Time				
Up to 5 years	151 (39.5)	231 (60.5)	1.00	.092
More than 5 years	135 (46.1)	18 (53.9)	0.89 (0.78-1.01)	
Work Ability Index				
Moderate/good	209 (41.7)	292 (58.3)	1.00	.561
Bad	77 (44.3)	97 (55.7)	0.97 (0.89-1.06)	
Clinical features				
Perception of health status				

Good	183 (46.0)	215 (54.0)	1.00	.022
Bad	103 (37.2)	174 (62.8)	1.09 (1.01-1.17)	
Diabetes				
It does not have	273 (41.9)	379 (58.1)	1.00	.226
He has	13 (56.5)	10 (43.5)	0.74 (0.46-1.19)	
Hypertension				
It does not have	261 (44.6)	324 (55.4)	1.00	.000
He has	25 (27.8)	65 (72.2)	1.30 (1.12-1.51)	
Behavioral habits				
BMI				
Normal	117 (44.3)	147 (55.7)	1.00	
Overweight/obesity	169 (41.1)	242 (58.9)	1.03 (0.95-1.11)	.413
Sedentary behavior				
Up to 4 hours	170 (43.6)	220 (56.4)	1.00	.452
More than 4 hours	116 (40.7)	169 (59.3)	1.02 (0.95-1.11)	

* $\chi 2$ test; ** current minimum wage value in 2014: R$724.00.

Source: Authors' data (2024).

The adjusted prevalence ratios with their respective confidence intervals are presented in Table 4. The variables that were shown to be associated with combinations of three or more behavioral risk factors for NCDs were age greater than or equal to 37 years, perception of poor health status and presence of hypertension.

Table 4 – Variables associated with combinations of behavioral risk factors for Chronic Noncommunicable Diseases among Community Health Agents. Minas Gerais, Brazil, 2022

Variables	Adjusted PR* 95%CI**	p-value
Age		
Up to 36 years old	1.00	.001
≥37 years old	0.87 (0.81-0.94)	
Perception of health status		
Good	1.00	.037
Bad	1.08 (1.00-1.16)	
Hypertension		
It does not have	1.00	.002
He has	1.17 (1.06-1.30)	

* PR: adjusted prevalence ratio; ** 95%CI: 95% confidence interval.

Source: Authors' data (2024).

DISCUSSION

The present study verifiedthe simultaneous groupingof risk factors with sociodemographic and clinical factors and showed that a significant portion ofyou ACS surveyed presentedthree or more risk factors for the development of NCDs. At an international level, a study carried out in the United States observed a prevalence of 24.3% and 35.4% for the presence of two and three risk factors, respectively, in the adult population14, similar to the rates of disease simultaneity in adults in Australia (32.6%) and Canada (28.2%)[15].

In national territory, a study carried out in Vitória (ES) with 262 CHAs, the findings are higher than the result found, in which 40% presented three or more risk factors[2]. Furthermore, in a study carried out in Poços de Caldas (MG) with 139 CHAs, it was found that the risk for developing NCDs was different between the sexes, being 21.27% for males and 57.81% for females[16].

In the adult population, an epidemiological study identified the presence of two to four conditions present in 44% of men and 56% of women15. In 2,732 adults from Pelotas, in Rio Grande do Sul, 66.6% had two or more risk factors[17].

Among the cluster factors in our study, low fruit consumption stands out among the most prevalent risk practices in the sample. This reduction in fruit consumption may be linked to the high cost of these foods, or even to a preference for other types of food such as fast food or even processed foods[18]. Furthermore, another study demonstrated that the intake of unhealthy foods was associated with low fruit consumption[19].

It is observed that in the investigated CHAs there is a considerable percentage of individuals with predisposing factors for developing NCDs. Chronic diseases have the potential to compromise the health of individuals, and can lead to severe disabilities[20], reduced quality of life, avoidable hospitalizations and death, especially when there is a simultaneity of risk factors[21].

After multivariate analysis, we found that advanced age was a protective factor for the presence of clusters of risk factors in CHAs, similar to what was found in a study conducted in Recife, in which the simultaneity of risk behaviors was greater in adult men[22]. However, there is no evidence in the literature about the relationship between these two variables, but it is suggested that older CHAs may have adopted a healthy lifestyle, due to their professional experience and better understanding of the health-disease process, which may influence the reduction of exposure to risk factors for NCDs. However, a study conducted with CHAs from Espírito Santo observed a higher prevalence of clusters of risk factors in professionals over 45 years of age[2].

Poor self-perception of health was associated with clusters of risk factors in CHWs. Although the literature still lacks studies on this association, self-perception of health has been an indicator increasingly used in epidemiological studies due to its validity and reliability, strongly associating with the real state of health, incorporating physical, cognitive and emotional aspects[23].knowledge and reflection on theperception of the health of ACS allows individualization of health education strategies impacting quality of life.

In the present study, hypertensive CHWs showed higher prevalences of clustering of risk factors related to inadequate lifestyle habits, such as consumption of animal fat from meat and chicken, smoking, sedentary lifestyle and use of soft drinks, in addition to low fruit consumption. Freire et al.[24] when investigating the interaction between sociodemographic, behavioral and clinical factors associated withelevation of blood pressure in adults observed a positive correlation between smoking, sedentary lifestyle and hypertension, which corroborates our findings.

The correlation between fat consumptionanimal and hypertension, can be explained by increasing the fat content in the diet, especially saturated fat, contributing to the occurrence of vascular disorders[25]. In general, inadequate eating habits increase the risk of developing hypertension. In addition, poor diet associated with a sedentary lifestyle, overweight and obesity increases the risk of developing NCDs[26,27].

When considering information as one of the main means of achieving disease prevention, the health team must strive to carry out awareness-raising actions among the population.Therefore, it is up to professionals to be informed about the characteristics of the disease as well as the forms of treatment[14]. The ACS emphasizesas the backbone of primary health care servicesbecause it is closer to individuals and their families, contributing significantly to the prevention and control of diseases[28].

The present study presents as a limitation the use of a self-administered questionnaire by the CHWs, which may suffer impacts related to memory and response bias.Another limitation of the study concerns the items of the questions that constituted the data collection instrument, which, even if they were valid, may have been misunderstood or answered distortedly, since the data collection was based on self-report, which was also not sufficient to confirm the diagnosis.

The importance of health care for CHWs is highlighted, since in many cases they have a low socioeconomic level, considering that this is a social determinant of health, in addition to being a risk factor for the occurrence of diseases and health problems. Thus, the incorporation of disease prevention measures becomes essential, since these professionals are responsible for raising awareness in the community about health and its implications[2].

CONCLUSION

This study found a high prevalence of clusters of risk factors for NCDs among CHAs in the city of Montes Claros, Minas Gerais, with emphasis on low fruit consumption, physical inactivity, and excessive consumption of soft drinks. Age greater than or equal to 37 years, perception of poor health status, and presence of hypertension were associated with the outcome investigated. These findings point to the need for a closer look at CHAs, especially with regard to adopting a healthy lifestyle. Therefore, it is expected that these results can support managers working in primary care and occupational health, for the development of actions to value and care for CHAs, who have an important role in consolidating the reorientation of the health care model.

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