



## Chronic noncommunicable diseases and motivation for a healthy lifestyle in adult women

### *Doenças crônicas não transmissíveis e motivação para estilo de vida saudável em mulheres adultas*

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#### ABSTRACT

To analyze the association between the presence of Chronic Noncommunicable Diseases (CNCDs) and the motivation for a Healthy Lifestyle (HL) in adult women. Cross-sectional and analytical study carried out in 12 Primary Health Care Units, with 691 adult women. A Questionnaire for the sociodemographic and clinical characterization of the sample and a Questionnaire on the Motivation for the Practice of a Healthy Lifestyle (QMEVS) were used. There was a higher percentage of arterial hypertension among the CNCDs studied (12.9%); there was no association between amotivation and the presence of CNCDs ( $p = 0.270$ ); CNCDs were significantly associated with extrinsic and intrinsic motivation ( $p = 0.008$ ;  $p = 0.020$ ). Women with CNCDs are more likely to have extrinsic motivation and less chance of intrinsic motivation (1.98 and 0.5 times, respectively). There was no association between amotivation and CNCDs. Women with CNCDs are more likely to develop extrinsic motivation and less chance of intrinsic motivation.

**Keywords:** Lifestyle. Motivation. Chronic Disease. Women's Health.

#### RESUMO

Analisar a associação entre a presença de Doenças Crônicas Não Transmissíveis (DCNT) e a Motivação para o Estilo de Vida Saudável (MEVS) em mulheres adultas. Estudo transversal e analítico realizado em 12 Unidades de Atenção Primária à Saúde, com 691 mulheres adultas. Utilizaram-se um questionário para a caracterização sociodemográfica e clínica da amostra e Questionário sobre a Motivação para a Prática de Estilo de Vida Saudável (QMEVS). Maior porcentagem de hipertensão arterial dentre as DCNT estudadas (12,9%); não houve associação entre amotivação e presença de DCNT ( $p = 0,270$ ); DCNT associaram-se significativamente à motivação extrínseca e intrínseca ( $p = 0,008$ ;  $p = 0,020$ ). Mulheres com DCNT têm mais chances de motivação extrínseca e menos chances de motivação intrínseca (1,98 e 0,5 vezes, respectivamente). Não houve associação entre amotivação e DCNT. Mulheres com DCNT têm mais chances de desenvolverem motivação extrínseca e menos chances de motivação intrínseca.

**Palavras-chave:** Estilo de vida. Doença crônica. Motivação. Saúde da mulher.



## **INTRODUCTION**

The occurrence of Chronic Noncommunicable Diseases (CNCDs) is directly related to the subject's living conditions, which include access to public goods and services, the guarantee of rights, information, employment, and income, and the possibility to make choices favorable to health<sup>1</sup>. Changes resulting from the urbanization process, decrease in mortality and fertility rates, and technological advances, made women assume risk behaviors for CNCDs, influenced by the capitalist routine: immediatist lifestyle, increased consumption of processed and ultra-processed products, and sedentary way of life regarding health. Also, a positive lifestyle is more present in men than in women, which makes it difficult to promote health and prevent and control these diseases in the female population<sup>2</sup>.

Lifestyle (LS) is defined as individual decisions, behavior patterns, values, and attitudes, susceptible to some sense of control, which influence the health of the population<sup>3</sup>. Lifestyle is part of the modifiable factors, therefore, studying government strategies that promote a healthy lifestyle (HLS) in women is essential to prevent deaths from CNCDs<sup>2</sup>. Women, as they usually take charge of eating and taking care of the house, are more concerned with family members and neglect their health, which further encourages risky behavior and generates negative impacts on quality of life, with worsening of daily activities<sup>4</sup>.

Few studies have addressed the magnitude of CNCDs among women of reproductive age and research aimed at this target audience generally addresses reproductive issues such as family planning, prenatal care, prevention, and screening of gynecological cancers<sup>5,6,7</sup>. Research dealing with CNCDs highlights how these diseases have increasingly affected the female population and even generated negative repercussions on reproductive issues<sup>8</sup>.

Long-term HLS promotion depends on educational measures that have internal repercussions on the individual so that they are aware and autonomous to make their own health decisions. This depends on how much they are motivated to do so<sup>9</sup>. The study of Motivation for a Healthy Lifestyle (MEVS) in women, with adherence to a healthy diet pattern, moderate alcohol consumption, non-smoking, maintenance of normal weight, and regular physical activity will be associated with a decrease in the risk of premature mortality due to chronic diseases and a decrease in expenses with hospitalizations due to future complications<sup>10</sup>.

In this study, the investigation of women's behavior was based on the theory of self-determination, which states that behavior is influenced by three increasing levels of motivation: amotivation, extrinsic motivation, and intrinsic motivation. Amotivation occurs when the

subject does not perform the action and has no intention of doing so. Extrinsic motivation is when an external agent interferes with the subject's behavior, either to avoid punishment, gain some benefit, or the awareness that it is important. Intrinsic motivation, on the other hand, is not encouraged by pressures or rewards; in it, the individual performs the behavior for pleasure and satisfaction<sup>11</sup>.

Studying the behavior towards female chronic illness favors care planning, and understanding the type of motivation that directs knowledge and experiences, which encourages empowerment and autonomous decision-making and generates long-term changes and positive consequences in the health-disease process, aiming not only at mitigating health problems but at promoting quality of life<sup>12</sup>. Thus, the study aimed to analyze the association between CNCDS and MEVS in adult women.

## **METHOD**

This was a quantitative, analytical, observational, and cross-sectional study, developed in 12 Primary Health Care Units (UAPS), in Fortaleza, state of Ceará, from January 2020 to July 2022. Two units per region were chosen for the study. For this, the draw method was used in the Microsoft Excel 2019 software.

The units chosen by randomization were: regional 1 - Carlos Ribeiro and Casemiro Filho; regional 2 - Irmã Hercília and Paulo Marcelo; regional 3 - Meton de Alencar and César Cals de Oliveira; regional 4 - Dom Aloisio Lorscheider and Tubay Barreira; regional 5 - José Paracampos and José Walter; regional 6 - Messejana and Edmar Fujita.

For convenience, adult women ( $\geq 18$  years old) with a minimum follow-up of six months in primary care were included. Those without the possibility of verbal communication or who had a contagious disease that would impair interaction with the researchers were excluded.

The research instrument was a structured questionnaire, containing information on sociodemographic (age, race, marital status, education level, occupation, and family income) and clinical (CNCDS) data and the Questionnaire on the Motivation for the Practice of a Healthy Lifestyle (QMEVS)<sup>13</sup>. QMEVS is an instrument with 29 items that allows the evaluation of the level of motivation for HLS in amotivation, extrinsic and intrinsic motivation.

The questionnaire items obey the Likert scale: 0- I don't need it/I don't have the motivation for it; 1 - To have the recognition from other people; 2 - By fault/obligation; 3 - For

the benefits provided; 4 - Because I am aware that it is important to me; 5 - Because I feel satisfied doing this. Validation was performed based on the Item Response Theory (IRT)<sup>14,15</sup>.

For the application of the questionnaire, a previous meeting was held with the research collection team, to explain the theoretical aspects of the questionnaire and clarify possible doubts during the practical application. The team consisted of 10 undergraduate scholarship holders and two graduate students. Each team member was responsible for a health unit.

With the approval of the ethics committee, the person in charge of the research contacted the coordination of each unit, presented the necessary documentation, and, later, started to apply the questionnaire. The participants' confidentiality was respected and they were invited to sign the Informed Consent, the data were used only for the research. Before starting the collection, they were informed about the voluntariness of the research and were free to withdraw whenever they wanted. To identify the questionnaires, the letter M was assigned followed by Arabic numbers (M1, M2, M3, and so on).

After collection, data were organized in an Excel spreadsheet. Descriptive and inferential analyses were performed using the Statistical Package for the Social Sciences (SPSS) software, version 23.0. The study variables were categorized and presented in absolute (n) and relative (percentage) frequency tables.

In the original questionnaire, the initial question was: "Do you have any disease/history/CNCD?". Next, eight response options were presented: 1- ASTHMA/ COPD; 2 – SAH; 3- DM; 4 – Heart disease; 5- Hyper/Hypothyroidism; 6- Chronic Kidney Failure; 7 – Neoplasia; 8 - None. To facilitate the analysis, these were categorized and dichotomized in the CNCD variable, in which it was considered: 1 – yes; 2 – no.

To test the significance of the association, Pearson's chi-square test was applied, in which those with a value of  $p \leq 0.05$  were considered significant. The strength of the association was tested by calculating the odds ratio (OR). Afterward, logistic regression and the backward method were used to fit the model. Variables with  $p < 0.20$  were included in the regression and those with  $p < 0.05$  were retained; a 95% confidence interval was considered. At the end of the process, data were described and grouped in tables to facilitate understanding.

The research is part of the methodological study entitled "Development and validation of questionnaires for the assessment of factors related to cardiovascular health (lifestyle, stress, and adherence to treatment) by nurses", with opinion 3.345.431, and respected the ethical principles of Resolution 466/2012 of the National Health Council<sup>16</sup>.

## RESULTS

The participants were 691 women. The majority were aged between 25 and 59 years old, with a minimum of 18 and a maximum of 82, self-reported as non-white (72.6%), religious (82.9%), level of education  $\geq 8$  years of study (73.7%), and family income up to four incomplete minimum wages (94.2%). Only 178 (25.8%) did not work; mostly lived without a partner (50.8%), and belonged to regionals I (111; 16.1%), II (125; 18.1%), III (124; 17.9%), IV (120; 17.4%); V (115; 16.6%); VI (96; 13.9%).

Concerning clinical data, 198 (28.7%) had CNCDs such as asthma/chronic obstructive pulmonary disease (27; 3.9%); arterial hypertension (89; 12.9%); diabetes mellitus (19; 2.7%); heart diseases (06; 0.9%); hyperthyroidism/hypothyroidism (13; 1.9%); chronic renal failure (01; 0.1%), and neoplasms (02; 0.3%). It is noteworthy that 41 (20.7%) participants reported having more than one CNCD (Table 1).

**Table 1.** Frequency and distribution of Chronic Noncommunicable Diseases in adult women. Fortaleza, state of Ceará, Brazil, 2023

CNCD	n	%
Asthma/COPD	27	3.9%
Arterial hypertension	89	12.9%
Diabetes mellitus	19	2.7%
Cardiopathies	6	0.9%
Hyperthyroidism/hypothyroidism	13	1.9%
Chronic Kidney Failure	1	0.1%
Neoplasms	2	0.3%
More than one morbidity	41	20.7%

n = absolute frequency; % = relative frequency; CNCD = Chronic Noncommunicable Disease; COPD = Chronic Obstructive Pulmonary Disease  
Source: Prepared by the authors.

Tables 2, 3, and 4 show the association between the presence of CNCD and the outcomes of amotivation, extrinsic motivation, and intrinsic motivation. There was no significant association between amotivation and the presence of CNCDs ( $p=0.27$ ). There was a significant association between the presence of CNCDs and extrinsic motivation and NCDs and intrinsic motivation ( $p = 0.008$ ;  $p = 0.020$ ).

**Table 2.** Association between Chronic Noncommunicable Diseases and amotivation in adult women. Fortaleza, state of Ceará, Brazil, 2023

Variables	Amotivation		p-value	OR* (95%CI) *
	Yes f (%)	No f (%)		
<b>CNCD</b>			0.270	
Yes	04 (2.0)	194 (98.0)		0.54 (0.18-1.62)
No	18 (3.7)	475 (96.3)		1

\*OR = Odds Ratio; f = relative frequency; \*95% CI = 95% Confidence Interval; CNCD = Chronic Noncommunicable Disease.

Source: Prepared by the authors.

**Table 3.** Association between Noncommunicable Chronic Diseases and extrinsic motivation in adult women. Fortaleza, state of Ceará, Brazil, 2023

Variables	Extrinsic motivation		p-value	OR* (95% CI) *
	Yes f (%)	No f (%)		
<b>CNCD</b>			0.008	
Yes	178 (89.9)	20 (10.1)		1.98 (1.19-3.33)
No	403 (81.7)	90 (18.3)		1

\*OR = Odds Ratio; f = relative frequency; \*95% CI = 95% Confidence Interval; CNCD = Chronic Noncommunicable Disease.

Source: Prepared by the authors.

**Table 4.** Association between Noncommunicable Chronic Diseases and intrinsic motivation in adult women. Fortaleza, state of Ceará, Brazil, 2023

Variables	Intrinsic motivation		p-value	OR* (95% CI) *
	Yes f (%)	No f (%)		
<b>CNCD</b>			0.020	
Yes	16 (8.1)	182 (91.9)		0.51 (0.29-0.90)
No	72 (14.6)	421 (85.4)		1

\*OR = Odds Ratio; f = relative frequency; \*95% CI = 95% Confidence Interval; CNCD = Chronic Noncommunicable Disease.

Source: Prepared by the authors.

Tables 5 and 6 list the logistic regression models for extrinsic and intrinsic motivation, considering the presence of CNCD.

**Table 5.** Logistic regression model steps for extrinsic motivation in adult women. Fortaleza, state of Ceará, Brazil, 2023

Steps	B (standard error)	ORa*	95% Confidence interval		p-value
			Lower	Upper	

Constant	-2.186 (0.236)	0.112			0.000
CNCD	0.687 (0.263)	1.988	1.187	3.329	0.009

\*ORa = adjusted *Odds ratio*;  $R^2 = 0.011$  (Cox and Snell);  $R^2 = 0.019$  (Nagelkerke); model  $\chi^2 = 598.203$ ;  $p < 0.001$ ; CNCD = Chronic Noncommunicable Disease.

Source: Prepared by the authors.

As shown in Table 5, the CNCD variable remained in the final regression model ( $p = 0.009$ ), showing that women with CNCD are 1.98 times more likely to engage in beneficial behaviors or avoid negative consequences.

**Table 6.** Logistic regression model steps for intrinsic motivation in adult women. Fortaleza, state of Ceará, Brazil, 2023

Step	B (standard error)	ORa*	95% Confidence interval		p-value
			Lower	Upper	
Constant	2.431 (0.261)	11.367			0.001
CNCD	-0.665 (0.290)	0.514	0.291	0.908	0.022

\*ORa = adjusted *Odds ratio*;  $R^2 = 0.008$  (Cox and Snell);  $R^2 = 0.016$  (Nagelkerke); model  $\chi^2 = 52.138$ ;  $p < 0.001$ ; CNCD = Chronic Noncommunicable Disease.

Source: Prepared by the authors.

In Table 6, the CNCD variable also remained in the final regression model ( $p = 0.022$ ), however, it revealed that women with CNCD are 0.5 times less likely to perform activities for pleasure or satisfaction.

## DISCUSSION

There is a higher frequency of arterial hypertension among the CNCDs studied; a lack of association between the presence of CNCDs and amotivation; a significant association between the presence of CNCD and extrinsic motivation and CNCD and intrinsic motivation. Women with CNCDs were more likely to engage in beneficial behaviors or avoid negative consequences. However, they are less likely to perform activities for pleasure or satisfaction.

The CNCD with the highest percentage in the women studied was arterial hypertension, which represents an increased risk of metabolic complications. These are more likely to develop diseases of the cardiocirculatory and renal systems, such as dyslipidemia, abdominal obesity, glucose intolerance, and diabetes mellitus<sup>17,6</sup>. A study carried out in Salvador, with 138 women, compared normotensive and hypertensive women, and identified a higher prevalence of

diabetes mellitus and metabolic syndrome in hypertensive women, which corroborates our findings<sup>18</sup>.

A population-based study carried out in the city of São Paulo also found a higher prevalence of hypertensive women. And about lifestyle, the prevalence of hypertensives was higher in individuals who did not practice enough physical activity, were obese, and ex-smokers<sup>19</sup>. Hypertension in women progresses with age. In younger age groups, blood pressure is higher among men, but the pressure increase per decade is higher in women<sup>17</sup>.

There was no association between amotivation and the presence of CNCND in women. This may occur because women are more likely to attend health services and, when they are treated, they are constantly clarified about the risks of CNCNDs by health professionals. Patients assisted by the local health team have minimal knowledge about control measures and care for chronic diseases<sup>20</sup>. Qualitative research, carried out in the Recôncavo Bahiano, identified that to understand the benefits of a healthy lifestyle, effective communication by health professionals is necessary<sup>21</sup>.

CNCNDs were significantly associated with extrinsic and intrinsic motivation, which means that the occurrence of these diseases has produced behavioral impacts on these women's lives, and health professionals should take advantage of spaces in primary care as an opportunity to instruct them about the relevance of adopting an HLS for the control of CNCNDs. Even though there are pre-existing biological vulnerabilities, fewer risk behaviors and a higher level of adherence significantly reduce the incidence of CNCNDs in the future<sup>20</sup>.

Women with CNCNDs are more likely to have beneficial behaviors or avoid negative consequences. A study carried out with hypertensive and diabetic patients using information from the National Health Survey, 2019, highlighted the influence of CNCNDs on the adoption of healthy behaviors among hypertensive and diabetic patients, which corroborates the present research<sup>22</sup>. Given the problems caused by chronic conditions, they fear negative results, such as undergoing more drug treatments or the possibility of hospitalization.

Changing behaviors and practices of new habits is a key step toward a healthy and non-sedentary life<sup>23</sup>. Consequently, by assuming this attitude towards health, they improve the body's performance and prevent future health problems. The relevance of healthy habits in the prevention of CNCNDs is highlighted since factors related to poor diet, smoking, consumption of alcohol, drugs, and sedentary lifestyle are associated with the development of obesity, type 2 diabetes mellitus, cardiovascular disease, osteoporosis, and cancer<sup>24</sup>.



Women with CNCND are less likely to perform activities for pleasure or satisfaction. Thus, it is up to health professionals, through qualified listening, to pay attention to their singularities, desires, and possibilities, to avoid blame and help build autonomy and health promotion<sup>25</sup>. Knowledge contributes to self-determination and internal motivation, which results in a strong sense of control over health<sup>26</sup>. In this way, the development of intrinsic motivation becomes essential, as it results in pleasurable habits, which last for a longer period compared to extrinsic motivation.

The role of psychological support for these patients, together with other health professionals, is important for making individual and collective decisions, and the family's commitment to motivational support, so that women accept the disease, carry out drug treatment, take an HLS, and significantly improve their quality of life<sup>27</sup>. Faced with the various forms of treatment for patients with chronic diseases, it is up to the professional, together with the patients, to evaluate and decide together on the best therapeutic approach to achieve disease control and promotion of quality of life<sup>28,29</sup>.

The set of phenomena inherent to the disease situation, especially chronic diseases present in the family context, represents a complex network of psychological, emotional, and practical aspects, marked by social representations constructed in society and in the family system. This relational dynamic established by the family members is the material that builds the representational content about the disease and the family role of each member involved<sup>30</sup>. This means that the attitude of family members and people close to this woman has a direct influence on the motivation for a healthy lifestyle, contributing positively or negatively.

The study favors the complementarity of public policies supported by the expanded clinical guideline of the Unified Health System, which seeks not only the absence of disease but also an understanding of the complexity of factors involved in health decisions.

Because it is a cross-sectional study, causal relationships between the variables could not be established, and the diagnosis of the chronic conditions was self-reported. An in-depth study with longitudinal analysis and emphasis on motivation for an HLS among women is suggested.

## **CONCLUSION**

A higher percentage of hypertensive women was found among the CNCNDs studied. There was no statistical significance between amotivation and the presence of CNCND, and

CNCDs were significantly associated with extrinsic and intrinsic motivation. Women with CNCD are more likely to engage in beneficial behaviors or avoid negative consequences. Women with CNCD are less likely to perform activities for pleasure or satisfaction. The advancement in levels of motivation for HLS depends on joint actions: performance of the multidisciplinary team, with emphasis on psychological assistance; qualified listening; expanded clinic and motivational family support in making health decisions.

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