

# Management of overweight in women in primary care

## Manejo do excesso de peso em mulheres na atenção primária

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### Abstract

**Objective:** To compare two strategies for weight loss conducted with overweight women guided by the regular practice of physical exercises and nutritional education in Primary Health Care services. **Methods:** A non-randomized and controlled intervention study was conducted for 10 months with overweight women over 20 years old. The control group included women who participated in the collective nutritional intervention in addition to practicing regular physical exercises, and the intervention group included women who participated in these activities in addition to individual nutritional counseling. **Results:** Fifty-two women were evaluated (intervention group: 26; control group: 26) at the age of 50 years and mean body mass index of 30kg/m<sup>2</sup>. After the nutritional intervention, weight ( $p=0.002$ ), body mass index ( $p=0.002$ ) and waist circumference ( $p=0.005$ ) reductions were observed in the intervention group. There were no significant changes in the control group. **Conclusion:** Associating nutritional individual counseling to collective nutritional intervention and to the practice of physical exercise enabled improvement in the anthropometric profile of women, thus reinforcing the importance of integrating actions from health services for effective overweight management.

**Keywords:** Health Services, Food and Nutrition Education, Obesity, Exercise.

## Resumo

**Objetivo:** Comparar duas estratégias de redução ponderal em mulheres com excesso de peso, pautadas na prática regular de exercícios físicos e educação alimentar e nutricional, em serviços da Atenção Primária à Saúde. **Metodologia:** Realizou-se ensaio comunitário controlado não randomizado durante dez meses com mulheres > 20 anos com excesso de peso. O grupo controle incluiu mulheres que praticavam exercícios físicos e tinham acompanhamento nutricional coletivo; e o grupo intervenção, por aquelas que participaram destas atividades somadas ao aconselhamento nutricional individual. **Resultados:** Foram avaliadas 52 mulheres (grupo intervenção: 26; grupo controle: 26) com cerca de 50 anos e média de índice de massa corporal de 30kg/m<sup>2</sup>. Após a intervenção nutricional, mulheres do grupo intervenção apresentaram redução do peso ( $p=0,002$ ), do índice de massa corporal ( $p=0,002$ ) e da circunferência da cintura ( $p=0,005$ ). Não houve alterações significativas no grupo controle. **Conclusão:** O acompanhamento nutricional individual associado ao coletivo e à prática de exercícios físicos possibilitou a melhoria no perfil antropométrico das mulheres, reforçando a necessidade da integração das ações de serviços de saúde para o efetivo manejo do excesso de peso.

**Palavras-chave:** Serviços de Saúde. Educação Alimentar e Nutricional. Obesidade. Exercício.

## Introduction

Chronic non-communicable diseases (CNCD) are a worldwide problem with increasing prevalence. Over the past 35 years, the total CNCD deaths have increased by 14.1%.<sup>1</sup> Cardiovascular diseases are the world's largest cause of death, accounting for 17.9 million deaths each year, with an estimated 31% of all global mortality.<sup>1,2</sup> Hypertension accounts for approximately 10.4 million deaths,<sup>2</sup> overweight/obesity, for at least 4.0 million,<sup>3</sup> and for diabetes there is an estimate of 1.5 million deaths.<sup>4</sup>

This high prevalence affects the health services with demand for care and procedures, including hospitalizations and early retirements. The social determinants of CNCD include inequalities in access to goods and services and information, in addition to low levels of education. They also have non-modifiable risk factors, such as age, gender and race; and modifiable ones, such as smoking, excessive consumption of alcoholic beverages, overweight, unhealthy eating and physical inactivity.<sup>4</sup>

This range of etiological factors hinders in coping with CNCD, due to the complexity of making changes in multiple levels of determination, denoting the need to innovate in prevention and management strategies, in order to increase their effectiveness.

In this context, government initiatives to promote healthy lifestyles, with a focus on health promotion and care, have been expanded, such as the Health Academy Program.<sup>5</sup> This Program was created under the Unified Health System (SUS) with the objective of contributing to the promotion of the health of the population from the orientation of body practices/physical activity, education and food and nutritional security, leisure, among others. To this end, the Program must manage its actions ensuring access to all citizens, and must be ordered, organized and located near the Basic Health Unit, coordinator of care in the Network of Health Care.<sup>6</sup>

It is believed that the effective integration of points of service, as recommended by the Health Academy Program, is essential in the health care of overweight individuals. However, studies in this sense are still incipient, and there is a need to expand knowledge about viable strategies to health services.<sup>7</sup> Therefore, this article aimed to compare two weight reduction strategies in overweight women, based on the practice of regular physical exercises and nutritional intervention (collective and individual), in Primary Health Care services of Belo Horizonte, Minas Gerais.

## Method

This is a 10-month, non-randomized controlled intervention study involving users of one of the units of the Health Academy Program of Belo Horizonte, Minas Gerais.

In Belo Horizonte, this Program was implemented in 2005 as health promotion services aimed at the regular practice of physical exercises. In some of its units, the collective and individual nutritional intervention integrated to the Basic Health Unit is also carried out.

The inclusion criteria considered in this study were: (i) to have entered the service from November 2007 to May 2010; (ii) to be 20 years of age or older and to be female; (iii) to have performed physical and nutritional evaluation at the time of joining the Program; (iv) to have performed a physical reevaluation within a maximum period of 12 months after joining the Health Academy Program; (V) to be overweight at the time of the initial physical evaluation (body mass index - BMI > 25.0 kg/m<sup>2</sup> for adults and BMI > 27.0 kg/m<sup>2</sup> for the elderly).

As a criterion of exclusion, we used the non-adherence to collective and individual interventions developed in the service in at least 50.0% of the actions, as recommended by the World Health Organization (WHO).<sup>8</sup> This criterion aimed to analyze only the women who effectively participated in the intervention, in order to allow for possible changes in the ways of living. In order to measure the level of adherence of the participants, their presence was registered in the collective and individual meetings.

The women in the control group participated in the regular practice of physical exercises and collective nutritional intervention, while the members of the intervention group participated in these activities in addition to the individual nutritional counseling.

The practice of physical exercises performed in the unit of the Health Academy Program is considered of light intensity, with about 20 to 40 users per class, including individuals with different health demands. Aerobic exercises (mainly walking, step aerobics, dance, among others), including anaerobic exercises (load workout), are performed. The average frequency of the exercises is three times a week and 60 minutes in duration, conducted under the supervision of the physical educator and programmed to meet the physical demands of the users, identified in the evaluations at the time of joining the service.<sup>9</sup>

The collective nutritional intervention also carried out in the Health Academy Program, included monthly eating and nutritional education groups, with duration of 60 minutes, that served on average 20 users. The groups encouraged participants to construct concepts applicable to reality, providing autonomy and reflection for healthy food choices. Some themes worked and their objectives were: portions of the food groups (recognizing the portions of foods recommended for consumption); menu planning (proposing changes in the menu, according to socioeconomic reality aiming to build an adequate and healthy diet); reading labels of processed products (knowing ingredients, with emphasis on sodium, sugar and fat type); and food purchases (discussing the importance of purchase planning to purchase healthier, lower-cost food).

Individual nutritional intervention was performed in the Health Academy Program and in the Basic Health Unit, according to the level of complexity of the cases. In the Health Academy Program, overweight adult women ( $BMI = 25.0\text{-}29.9 \text{ kg/m}^2$ )<sup>10</sup> and with stabilized chronic diseases were monitored. The most serious cases, such as obesity among adults ( $BMI > 30.0 \text{ kg/m}^2$ ),<sup>10</sup> overweight in the elderly ( $BMI > 27.0 \text{ kg/m}^2$ )<sup>11</sup> and destabilized chronic diseases, received individual nutritional intervention at the Basic Health Unit of the area of coverage. This integration between services aimed at promoting integral care, through specific monitoring strategies according to the complexity of the cases.

The individual intervention was based on nutritional counseling, seeking the joint construction of therapeutic projects feasible to the reality of the users.<sup>12,13</sup> Counseling was carried out verbally or in writing, emphasizing healthy ways of life. A maximum of three nutritional guidelines were provided per consultation, which were reinforced at the end of the care and at the later meeting, in order to promote understanding and adherence by the users. The returns for service were scheduled approximately 30 days earlier. In these meetings, the proposed goals were revised and new goals were elaborated, if pertinent. The goals were individualized and constructed by the healthcare professional in conjunction with the user. All users were encouraged to participate in collective nutritional interventions in the Health Academy Program.

In the individual meetings, the guidelines were based on publications of the Ministry of Health and illustrated by educational and recreational materials, carried out by trained nutritionists and academics under the supervision of the researchers.

In order to evaluate the effect of the developed interventions, health conditions, food consumption and anthropometric profile of the women at the moment of entering the service and after participation in the interventions were investigated. All the information was evaluated through a questionnaire pretested in this health service.<sup>14</sup>

The analyzed health conditions included self-perception of health (very good, good, fair and poor) and body satisfaction (satisfied and unsatisfied). For the evaluation of food consumption, the following indicators were considered: daily consumption of fruits and vegetables (yes and no), intake of chicken skin and visible fat of meats (yes and no).<sup>15</sup> The investigation of the anthropometric profile included the collection of measures of weight, height, waist circumference (WC) and hip circumference (HR), as recommended by WHO,<sup>10</sup> allowing calculation and verification of the adequacy of BMI ( $BMI = \text{weight}/\text{height}^2$ ) and waist/hip ratio ( $WHR = WC/HR$ ).<sup>16</sup>

Sociodemographic and economic data [age (years), per capita income (real), occupation (with and without fixed income) and level of education (years of study)] were also obtained at the time of entry of the women in the service. Furthermore, the users were questioned about the attempt to reduce weight in the six months prior to the interview (yes and no) and about the occurrence of CNCD according to medical reports (diabetes mellitus, hypertension, dyslipidemias and cardiovascular diseases).

For the data analysis, the software Statistical Package for the Social Sciences version 17.0 was used.

Descriptive analysis and evaluation of the distribution of the variables were performed by the Kolmogorov-Smirnov normality test. Chi-squared or McNemar tests were applied for comparison of proportions, simple or paired Student's *t*-test were used for comparison of means and the Mann-Whitney test for comparison of medians. The level of significance was set at 5.0% ( $p < 0.05$ ). The rate of change in anthropometric data (weight, BMI, WC and WHR) during the intervention period was calculated according to equation 1:

**Equation 1:**

$$A = [(x1 - x2)/x1] \times 100$$

A=rate of change in anthropometric data

x1=anthropometric variable (weight, BMI, WC and WHR) at the pre-intervention moment

x2=anthropometric variable (weight, BMI, WC and WHR) at the post-intervention moment

BMI: body mass index; WC: waist circumference; WHR: waist-hip ratio.

The results are presented as mean and standard deviation for the variables that presented normal distribution and in the form of median and interquartile range for the others.

The study was approved by the Research Ethics Committees of the Federal University of Minas Gerais (ETIC 103/07) and by the Belo Horizonte Prefecture (Protocol 087/2007).

## Results

Fifty-two women were eligible, 26 in the control group and 26 in the intervention group, with similar sociodemographic, economic, anthropometric and health characteristics at the baseline of the study ( $p>0.05$ ). Both groups had low level of education and income, with higher frequency of participants with no fixed income. A high number of women with self-reported CNCD was observed (table 1).

**Table 1.** Sociodemographic, economic and health profile of participants of the control and intervention groups at the baseline. Belo Horizonte-MG, 2007-2010.

Variables	Control Group (n = 26)	Intervention Group (n = 26)	p-value
Age (years)	49.4 (13.9)	48.9 (9.3)	0.87 <sup>1</sup>
Age range (%)			
Adults	69.2	84.6	0.16 <sup>2</sup>
Elderly	30.8	15.4	
Monthly per capita income (R\$)	425.00 (294.0)	336.5 (187.5)	0.21 <sup>1</sup>
Occupation (%)			
With fixed income	23.1	42.3	0.14 <sup>2</sup>
Without fixed income	76.9	57.7	
Level of education (years)	6.9 (3.7)	7.5 (3.4)	0.59 <sup>1</sup>
Self-reported chronic diseases (%)	68.2	70.8	0.84 <sup>2</sup>
Weight (kg)	70.8 (7.2)	75.6 (14.7)	0.16 <sup>1</sup>
Body mass index (kg/m <sup>2</sup> )	29.1 (2.7)	31.4 (5.4)	0.08 <sup>1</sup>
Waist circumference (cm)	87.6 (7.6)	90.6 (8.9)	0.21 <sup>1</sup>
Waist/hip ratio	0.84 (0.07)	0.84 (0.06)	0.99 <sup>1</sup>
Tried to reduce weight in the last 6 months (%)	53.8	69.2	0.25 <sup>2</sup>

<sup>1</sup>Student's *t*; <sup>2</sup>Chi-squared. Note: Symmetric variables - mean (standard deviation).

After the intervention, significant changes were identified only in the intervention group, with a reduction in mean body weight (75.6 kg for 72.0 kg;  $p=0.002$ ), BMI (31.4 kg/m<sup>2</sup> for 29.8 kg/m<sup>2</sup>;  $p=0.002$ ) and waist circumference (90.6 cm to 87.4 cm;  $p=0.005$ ), according to table 2. The percentage variation of the anthropometric measures corroborated these findings (table 3). No significant changes were detected in health conditions and food consumption indicators in both groups (table 2).

**Table 2.** Evolution in health, food consumption and anthropometric indicators according to the control and intervention groups. Belo Horizonte-MG, 2007-2010.

Variables	Control Group (n = 26)			Intervention Group (n = 26)		
	Pre- Intervention	Post- Intervention	p-value	Pre- Intervention	Post- Intervention	p-value
Self-perception of health (%)						
Very good and good	64.0	88.0	0.0 <sup>7</sup> 1	73.1	80.8	0.6 <sup>8</sup> 1
Fair and poor	36.0	12.0		26.9	19.2	
Body satisfaction (%)						
Satisfied	19.2	15.4	1.0 <sup>0</sup> 1	11.5	19.2	0.6 <sup>3</sup> 1
Unsatisfied	80.8	84.6		88.5	80.8	
Daily fruit consumption (%)	23.1	15.4	0.7 <sup>3</sup> 1	12.0	28.0	0.2 <sup>2</sup> 1
Consumption of chicken without skin (%)	60.0	48.0	0.5 <sup>5</sup> 1	69.2	73.1	1.0 <sup>0</sup> 1
Consumption of meat without visible fat (%)	25.0	25.0	1.0 <sup>0</sup> 1	32.0	36.0	1.0 <sup>0</sup> 1
Weight (kg)	70.8 (7.2)	72.2 (6.5)	0.2 <sup>8</sup> 2	75.6 (14.7)	72.0 (12.6)	<0.0 <sup>1</sup> 2
BMI (kg/m <sup>2</sup> )	29.1 (2.7)	29.5 (2.2)	0.5 <sup>3</sup> 2	31.4 (5.4)	29.8 (4.8)	<0.0 <sup>1</sup> 2
WC (cm)	87.6 (7.6)	88.7 (5.2)	0.2 <sup>7</sup> 2	90.6 (8.9)	87.4 (8.0)	<0.0 <sup>1</sup> 2
WHR	0.84 (0.07)	0.85 (0.08)	0.7 <sup>4</sup> 2	0.84 (0.06)	0.83 (0.06)	0.1 <sup>7</sup> 2

BMI: body mass index; WC: waist circumference; WHR: waist-hip ratio

<sup>1</sup>McNemar. <sup>2</sup>Paired Student's *t*

Note: Symmetric variables - mean (standard deviation)

**Table 3.** Comparison of the evolution of the rate of change of the anthropometric data of the control and intervention groups. Belo Horizonte-MG, 2007-2010.

Variables	Control Group (n = 26)	Intervention Group (n = 26)	p-value
Weight	-0.11 (4.1)	3.12 (6.2)	0.01
Body mass index	-0.11 (4.1)	3.12 (6.2)	0.01
Waist circumference	0.76 (6.2)	3.60 (5.9)	0.16
Waist/Hip Ratio	0.45 (8.8)	1.13 (8.3)	0.75

Median comparison test: Mann-Whitney

Note: Asymmetric variables - median (interquartile range)

## Discussion

It was verified that overweight management through individual nutritional counseling, associated with physical exercise and eating and nutritional education groups, allowed the reduction of body weight, body mass index and waist circumference of the participants.

In Brazil, the costs attributable to obesity in SUS totaled approximately R\$ 487.98 million, representing 1.9% of health care expenses in medium and high complexity.<sup>17</sup> According to the research “Surveillance System for Risk and Protective Factors for Chronic Diseases by Telephone Survey” (VIGITEL), between 2006 and 2016, the average increase in the prevalence of overweight and obesity in adults was 1.21 percentage points and 0.73 percentage points, respectively.<sup>15</sup> Thus, the development of strategies of care in order to promote innovations in the management of overweight is a demand.

The lack of evolution in the control group, verified in this study, suggests the achievement of better results among overweight women when the regular practice of physical exercises is associated with collective and individual nutritional intervention. This evidence is confirmed by other studies,<sup>18,19</sup> however, still little explored in the context of health services, especially considering a long-term intervention articulated among different health services.

Individual monitoring integrated to the collective one allowed a more specific approach to the reality of each user. In addition, it gave greater intensity to the intervention, favoring the reduction of anthropometric measures.<sup>20</sup>



The results also point out the importance of integrating the actions of the Health Academy Program to those of the Basic Health Unit in addressing the most serious cases, as directed by the Ministry of Health in Ordinance 424/2013, which addresses the guidelines for the organization of prevention and treatment of overweight and obesity as a priority care line.<sup>21</sup>

Despite the positive results found for the anthropometric variables (power of the test of 90.8%), the intervention did not alter the used indicators of food consumption, either by not investigating other indicators or by the intrinsic relationship between eating and culture and life history of individuals,<sup>22</sup> because subjects may have changed their eating habits, however, with difficulty to keep all changes over ten months.

Therefore, there is a need for intersectoral actions that go through the nutritional counseling associated with the modification of the obesogenic environment that these women experience, aiming at giving greater evidence to changes in diet. These actions involve strategies such as greater access and reduction of prices of healthy foodstuffs, such as fruits and vegetables; encouraging urban agriculture; stimulating regional food consumption; in addition to restricting marketing campaigns of foods with high levels of sugar and fats.<sup>23</sup>

The development of interventions in health services with universal access is considered an important potential of the study, as recommended by the SUS. Nevertheless, this characteristic may also create important challenges to the development of studies, such as the similar access of the users to the different conducted intervention proposals, e.g., study participants may have experienced distinct groups of collective intervention when considering the study period (2007 to 2010). However, it is considered that all the meetings presented similar methodology based on structured protocols and dealt with themes that permeated the healthy choice of food.

Despite the limitations, studies that propose innovations in the management of overweight in the context of health services are a pressing demand, considering that according to the evaluation of the goals proposed by the National Plan to Combat Chronic Non-communicable Diseases (CNCD) 2011-2022, halting the rise in obesity among adults still seems an ambitious goal.<sup>1</sup>

The results are also relevant due to the scarcity of controlled intervention studies that integrate different services of Primary Health Care, proposing flows that favor the management of overweight. Literature review has shown that national studies conducted in the health services, mainly related to nutritional interventions in Primary Health Care, are still incipient.<sup>7</sup> Much of the research is aimed at nutritional diagnosis, especially in children, and when there is an approach regarding women, it commonly focuses on postpartum and lactation.

## Conclusions

There was an improvement in the anthropometric profile of overweight women in individual nutritional intervention associated to the collective one and to the practice of physical exercises. These results are possibly derived from the integration of different services of Primary Health Care, reaffirming the importance of considering the demands and needs of the subjects, and the integral care to the adequate management of overweight.

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## Contributors

ACSL worked on the design of the study, data analysis, writing and critical review and final version approval; RDM, in the collection, analysis and interpretation of the results, writing of the article and approval of the final version; MCM, in the collection, analysis and interpretation of the data, writing the article, and approval of the final version; PMH, in the analysis and interpretation of data, article writing, and final version approval and LCS contributed in the design of the study, critical review and approval of the final version of the article.

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