



A Comparative Perspective Between Calorie Restriction with Behavioral Determinants and Other Models Such as Intermittent Dieting, Nutrient Timing, Chronotypes and Macronutrient Adjustment in the Weight Loss Process

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Introduction

The main determinants involved in weight loss that are currently cited in the scientific literature are caloric restriction, behavioral determinants, intermittent diet, nutrient time, chronotypes and macronutrient adjustment. All of them will be discussed in this work, but only two of them seem to have a greater influence on weight loss in obese people. Initially, the behavioral determinants. Has been demonstrated by a synthesized recent literature on weight loss determinants for individuals with overweight and obesity, that searched in PubMed and PsycINFO from 2006 to 2016 founding 124 important determinants to help these individuals lose weight, which 5 were demographic, 59 were behavioral, 51 were psychological/cognitive and 9 were social and physical environmental determinants [1].

Besides that, another recent study with fourteen healthy adults can brings this subject about another way [2]. The authors randomly assigned to two groups—one experimental and one control, where all subjects exercised three times a week in prescribed workouts and followed an isocaloric diet, but the experimental group subjects were told that your food plan was low calorie. In the study results in average values, the experimental group lost 9.25 kg against 2.25 kg of the control group, this may be an idea of a possible placebo effect on the behavioral side of weight loss, since the individuals followed similar calories and did the same amounts of physical exercise.

This way, the experimental group, in which it was told was in low

calorie diet was more dedicated to dieting and training correctly, resulting in better results. Thus, may there is a perspective that calories, along with behavioral determinants, become the important markers during the decision-making process of individuals' weight loss. About the calories, a study compared the time until twenty-seven overweight/obese participants lost 5 % of their body weight using more of 20 % caloric deficit in intermittent energy restriction (IER) or continuous energy restriction (CER) [3]. This paper authors not found any statistically significant difference in the time to attain this loss between groups, i.e., they took the same amount of time to lose 5 % of their weight even with different caloric distribution between these two diets. Still approaching the issue of caloric amounts, old study from 1997 treated two groups of obese individuals for six weeks with hypocaloric diets (~ 1100 kcal. day⁻¹) [4]. However, the diets contained an average of 70 % carbohydrates in two ways, one with 57 g of sugar (n=22) and another with 165 g of sugar (n=20). At the end of the six weeks of study, both groups lost weight significantly with no statistical differences between groups. Something that perhaps demonstrates that the total caloric amount is going to be decisive for the influences on the weight loss of obese individuals.

And about the nutrient time, if the distribution of calorie restriction doesn't seem to matter in the subjects' weight loss, what about the amounts of carbohydrates during the day? Something like the term "nutrient time". Thinking about it, a study of response

analyzes to a model of eating high carb was accomplished [5]. The researchers used a randomized, double-blind crossover model, with a 4-week wash-out, to test on the first half of the day (8 a.m. until 1:30 p.m.) a high carb diet versus a high fat in the late afternoon to evening (4 p.m. until 10 p.m.) using equal calories (~ 1800 kcal. day⁻¹). At the conclusion of the study, they did not find significant differences in energy expenditure, carbohydrate, and fat oxidation of participants. Another study that evaluated carbohydrates difference at the weight loss was a systematic review and meta-analysis [7]. In it, the authors used the scientific research databases MEDLINE, EMBASE, and CENTRAL to search for studies on low carbohydrate diets and cardiovascular health. Was found 750 records in MEDLINE, 155 in CENTRAL and 1537 in EMBASE. Just 19 trials were included for reviews where the systematic review conclude a short-term weight loss regardless of low or balanced carbohydrate with little or no difference in weight loss and changes in cardiovascular risk factors for up to two years when randomized to low or balanced carbohydrates diets for weight loss. That is, according to these studies, the distribution of a macronutrient did not influence the participants' clinical evaluation averages in regarding weight loss process.

Another subject commented on by scientists that would confuse the caloric issues on the weight loss would be the chronotypes. This

way, a study compared the outcomes of a 3-week with the same 30% reduction in daily caloric intake undertaken by 131 individuals with obesity divided between 3-groups: morning ("lark"), evening ("owl"), and mixed chronotypes [6]. On the study conclusion, the authors declared after these weeks of calorie restriction, both groups experienced a similar loss of weight, may proving that the chronotype of individuals with obesity does not have a significant effect on the magnitude of the body weight loss when there is caloric restriction. Finally, another article, a model study from 1975, treated 106 "massive obese" (this is the term used by the study itself) with an "unmodified rice/reduction diet" that contained 400 to 800 kcal. day⁻¹ and 90 to 95 % carbohydrates [8]. At the conclusion, the authors declared that average weight loss was 65 kg (0.24 kg. day⁻¹) during 335 days for the men and 262 days for women and they commented that success in the weight loss process depended on keeping the participant in the process, redundantly. Therefore, the longer he kept executing the plan, the more success he could have within the weight loss process. In this way, the present work tries to explain that weight loss in general starts directly from caloric restriction in aid of behavioral determinants, and those other nutritional strategies such as intermittent diet, nutrient time, chronotypes and macronutrient adjustment, are indirect agents in this process as shown in the graphic summary in [Figure 1].

weight loss process



Figure 1: Level of importance in weight loss from the current study.

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Conflict of Interest

No Conflict of interest.

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