



Lean Habits Study

Strategies for successful maintenance of reduced body weight

Objectives and design of the Lean Habits Study

In what is considered the world-wide largest prospective study on the association between behaviour and the development of body weight, nearly 7000 patients have been investigated with regard to behaviour, body weight and body composition and are now followed up for three years. The study aims at identifying behavioural strategies to enhance long-term success in the treatment and prevention of overweight and obesity, which may be easily put into practice.

The problem of obesity: increasing prevalence and poor long-term success of treatment

The prevalence of overweight and obesity has been dramatically increasing during the last decades both in the developed and the developing countries, a trend that has been described as "global epidemic" by the World Health Organisation [1]. This clearly demonstrates that an efficient prevention of obesity has not been possible up to date. However, once people have become obese, treatment of obesity proves to be even more difficult. A review of the literature on dietary and behavioural treatment concluded that only 20 to 30 % of the patients have been able to maintain their reduced body weights over a period of three years or more [2]. Thus, a better understanding of how people may successfully stabilise their reduced weight over a longer period of time is urgently needed. The primary question is, however, not which behavioural strategies would be successful in theory, but which behavioural strategies may be easily adopted and maintained by the overweight patients in practice.

How do successful weight maintainers differ from weight regainers?

By comparing participants who successfully maintain their reduced body weight with participants who regained their weight we aim to identify those behavioural strategies which are used by the successful weight maintainers. These behaviours are considered to be the "lean habits" which may enhance the long-term success of obesity treatment and prevention if they are put into the focus of intervention programmes.

Study design

A cohort of 7000 participants of the BCM diet programme has been recruited and is now being followed up for three years. The BCM diet programme by the Deutsche Gesellschaft für Gesundes Leben mbH & Co. KG and Precon International is an treatment programme for overweight and obesity, which is offered by more than 1800 independent counselling practices in Germany and other European Countries. The BCM diet programme aims at reducing body fat by a balanced diet rich in carbohydrates, which is supplemented by a formula diet for the first two days of the programme. Counselling of the patients takes place in an open group format led primarily by physicians. Counselling includes behaviour modification techniques to induce a lasting change of diet and eating behaviour. Participants for the Lean Habits Study have been recruited at 400 counselling centres primarily in Germany and more recently also in Switzerland and Austria. Participation in the Lean Habits Study is strictly voluntary and participants give a written informed consent. The study protocol has been approved by the ethical committee of the Department of Nutrition at the University of Applied Sciences Hamburg.

The study design includes five measurements (Figure 1). Shortly after the start of the BCM diet programme baseline data are assessed by a questionnaire and by measurement of body weight and body composition (t0). Approx. 8 to 10 weeks after the start, a second assessment takes place, in order to evaluate the short-term effects of the treatment (t1). Follow-up assessments are then repeated one year, two years and three years after the start of treatment (t2 to t4).

Start BCM diet programme	t0	8-10 weeks	t1	9-10 months	t2	1 year	t3	1 year	t4
	Baseline		8-10 weeks after start of programme		year 1		year 2		year 3
	consent, body weight, body height, body composition, questionnaire		body weight, body composition, questionnaire		body weight, body composition, questionnaire		body weight, body composition, questionnaire		body weight, body composition, questionnaire

Figure 1: Study design of the Lean Habits Study

Assessment of behavioural strategies

A specifically designed questionnaire was developed to assess the different behavioural areas which were considered of possible relevance. These were in particular:

- | cognitive control of eating behaviour, restrained eating with the components of rigid and flexible control of eating behaviour [3]
- | meal frequency and meal rhythm, snacking and nibbling
- | food choice
- | meal situations and circumstances
- | physical activity and exercise
- | coping with stress and relaxation
- | problems in eating behaviour, disordered eating behaviour
- | motivations for weight reduction
- | life satisfaction

Preliminary results from the one year follow-up

Project status in March 2000

The recruitment of study participants commenced in spring 1998 and is about to be completed. Until March 2000 a total of 6032 subjects, 5344 women (89 %) and 688 men (11 %) have been included in the Lean Habits Study (baseline measurement t0). Data on short-term changes of behaviour (t1) are available for 4328 subjects and for 1359 subjects (87 % women, 13 % men) from the one-year follow-up.

Sample characteristics

Women participating in the Lean Habits Study started with an average weight of 86.2 kg and men with an average of 105.1 kg. This corresponds to a Body Mass Index of 31 in women and 33 in men. More than 90 % of the participants were overweight with a BMI of 25 or above, more than half were obese with a BMI of 30 or above. The mean age was 43 years.

One year weight reduction

According to the criteria proposed by the American Institute of Medicine, we defined a weight loss of 5 percent or more after one year as successful weight reduction [4]. Weight loss was evaluated according to an %

quot;intention to treat"-approach, i.e. the percentage of participants with successful weight reduction was computed on the basis of all participants who had been originally included in the study before January 1999 and who could have therefore provided one-year data. Figure 2 shows that 38.2 % of the participants can be classified as successful on this basis, from some 49.3 % one-year data are not available yet, i.e. this will increase the percentage of both successful and unsuccessful weight reduction. If only those 1359 participants are considered for whom one-year data are available, they have reduced their body mass index by 2.9 (SD = 3.0) which corresponds to an average of 8.2 kg (SD = 8.5) (see Figure 3).

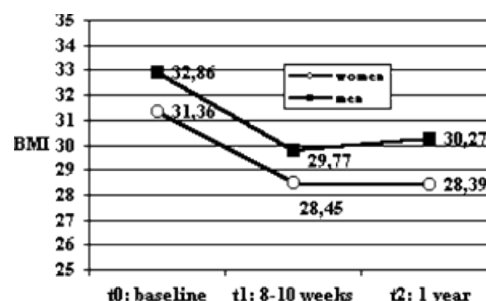
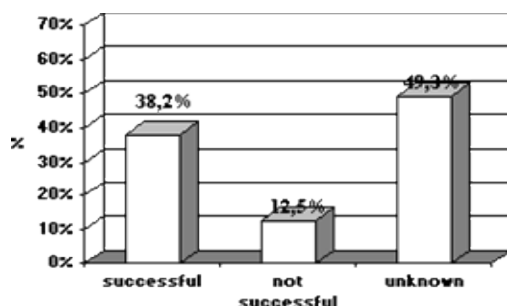


Figure 2: Percentage of subjects with successful weight reduction (5 % or more). (Intention to treat-Analysis: Basis all subjects who started before January 1999 with the Lean Habits Study; n = 2426)

Figure 3: Development of body weight over 1 year (Basis: all subjects with t2-data; n=1359)

Behavioural factors associated with one year weight reduction

We were able to identify a number of behavioural dimensions that were associated with short-term improvements during treatment. However, subjects with more successful one-year weight reduction were able to maintain these improvements over the one year while subjects with less success relapsed into their previous behaviours. These dimensions were flexible control of eating behaviour, regular meal rhythm and frequency (incl. avoidance of snacking), quality of food (low fat, fresh fruit and vegetables), meal situations (taking time, sitting down etc.), restriction of quantity of food and coping with stress.

Preliminary conclusions

The Lean Habits Study has been successfully implemented during the last two years as the worlds' largest prospective study on behaviour and body weight development. The first results from the longitudinal analysis of one-year follow-up data yielded some promising findings. It is expected that as more and longer follow-up data become available the relationship between behavioural factors and development of body weight will be better understood. In particular, by comparing participants with successful long-term weight maintenance with less successful participants we will be able to identify the most relevant lean habits, i.e. successful behavioural strategies for long-term maintenance of reduced body weight

References

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