

A disease ***Obesity***
caused by maladjustment
Cibomania

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Studio Lorrain

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Dr. Virgilio Lorrain e Dr. Silvio Lorrain

web <http://www.studiolorrain.it>

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1. Premise

1.1. In given conditions, all those with normal powers of assimilation may put on weight

Overweight represents a true condition of illness, not so much because of the prevalence of adipose tissue over other body components (skeleton, muscle) but because it leads to the onset of the nutritional maladjustment that accompanies it and which remains even after the excess weight has been eliminated, not to mention the metabolic, physical and psychological complications it brings in its wake. This maladjustment, conditioned and maintained by the progressive weakening of physiological and nutritional self-control, permanently forces those afflicted by it to concentrate constantly and consciously on the choice of the types and amounts of food necessary to maintain health and fitness.

We have called this incessant psychological and physical effort required to maintain proper and responsible nutritional behaviour CIBOMANIA (foodwatching, literally 'foodmania'), which calls for sacrifices, moderation and constant vigilance over the choice of foods. Depending on circumstances, it is a disturbance that can be more or less serious, but one that must be accepted as indispensable in properly counteracting the process of gaining weight. Without the presence of the cibomania, the loss of weight caused by a low-calorie diet is quickly regained and weight easily increases to beyond the starting point (the 'yo-yo' syndrome) with an inevitable degeneration of the metabolic maladjustment. Thus dieting, without a good knowledge of the true nature of the illness and the strategies to follow in making the cibomania more tolerable, is not only useless but even damaging. This explains the failure of treatments of obesity based on dieting that has been reported at all levels.

It is tantamount to trusting exclusively to the bailing scoop to keep a boat with a hole in the hull afloat. Together with the scoop we must also try to plug up the leak, or at least patch it somehow. The consequences are even worse if the low-calorie diet does not take into account the requisites of personalization, gratification, completeness, tolerability and nutritional, physical and cognitive re-education.

It is known to all that in any given pathological condition it is possible to arrive at a truly effective therapy only with a good knowledge of its origins. In our case, the term obesity is frankly to be considered reductive for a state characterized by two quite distinct conditions: the increase in fatty tissue and nutritional maladjustment, with the latter clearly prevailing over the former since the correction of excess weight and the maintaining of the results with the passing of time is possible only through control of the nutritional maladjustment which is destined to continue over the long term. The boat can be hauled ashore and repaired to make it completely seaworthy

once again, but physiological control over nutrition cannot be repaired, so we have to make do with a patch (cibomania) that must be held in place for a long period of time.

In conclusion, we can continue to call it obesity, but at the same time we must keep in mind that this condition originates and is maintained by nutritional maladjustment, which is neither a vice nor a sign of poor character, as those who do not know about the problem say, but a true illness and certainly not a minor one. Just as in the case of smoking and drinking, where it is certainly not enough to treat the consequences to the lungs, heart or liver, but essential to stop smoking and drinking, in the case of obesity or other illnesses connected with the loss of metabolic equilibrium, the main efforts must address the control over and improvement of the cibomania. Since obesity is the result of a maladjustment, it must be treated as such.

Conditions of maladjustment are typically characterized by permanence and the lack of effectiveness of all kinds of pharmacological treatments. Smokers and drinkers stop their smoking and drinking only if and when they decide to take this step, knowingly and autonomously; the use of drugs is neither here nor there (most give up without taking medicines) or, at the most, may provide a mechanism that strengthens the will if taken with conviction (for example the cost of a medicine represents a favourable factor). There is no drug that works without the convinced and suffered participation of the person involved.

The permanence of the maladjustment, as we shall see later on, explains the large number of relapses.

Compared to smoking and, to a lesser extent, drinking, the control of food is far more difficult since in the case of the former two it is possible to completely avoid smoking and drinking; with food this obviously cannot be done (it would lead to anorexia nervosa), nor is it possible to eat the same foods every day of the year: for humans, unlike animals, food has not only metabolic significance!

2. Causes and pathogenesis of obesity: cibomania - bulimia - anorexia

A complete QUANTITATIVE AND QUALITATIVE AVAILABILITY OF FOOD AND SEDENTARY LIFESTYLE represent *important conditions favouring obesity*. These conditions are the cause of the geographic distribution of the problem. In the more economically developed countries where, especially in the last century, such conditions were preponderant, overweight is widespread, while where manual labour and scarcity of food prevail we find malnutrition caused by a lack of food.

The predisposing role of a genetic factor invoked by many is in our opinion not supported by convincing arguments; on the contrary, the common observation that with the coming of economic wellbeing and a sedentary lifestyle the problem has spread to all social classes, islands and continents, north and south, urban and rural areas and clearly indicates their fallacy. In reality, as we have seen during national and international congresses, the hereditary factor is easy to confuse with familial background. Are your parents obese? Then your obesity is of genetic origin. That is a simplification. Indeed, familial background is an environmental issue and one of the triggering factors that lead to an increase in the intake of calories and thus set off the process of putting on weight, as we shall see later on. Eating habits, like language and moral conduct, are learnt in the family: if mother and father speak with a lisp, the children will have the same pronunciation and there is no reason to bring genetics into the picture.

This issue is not indifferent as concerns the treatment of obese patients: in the case of unsuccessful treatment, physicians are easily induced to justify the condition by bringing the genetic factor into play and the patient finds in this an excellent excuse for discontinuing the cure.

Reduced nutritional thermogenesis, to which importance in causing obesity has recently been attributed, is not shared by all authors (D'Amicis et al., *Alim. Nutr. Metabol.* 13,;83-89, 1982; Maffeis C. et al., *Nutr. Clin.* 1, 1993) and, if at all, may represent the consequence of overweight and in turn play a further role in maintaining obesity. The same can be said for the reduction in resting energy expenditure (REE) found (and still to be confirmed) in obese patients who maintain their normal weight despite low-calorie diets (Adami G.F. et al., *Min. Gastroenterol. e Dietol.* 39,3, 1993).

For the onset of the process of putting on weight and the concomitant nutritional maladjustment, besides the availability of food and a sedentary lifestyle, a TRIGGERING FACTOR is also necessary, *one that acts with sufficient intensity and duration and is not counterbalanced or neutralized by conditions unfavourable to its action*. There are many triggering factors, but they all act with the same mechanism:

under their effect, subjects are induced to introduce into the body more nutrients than their metabolisms require in ways that vary from case to case and for a sufficiently long period of time.

The persistence of this bad nutritional behaviour in turn causes a gradual and progressive adaptation of the digestive functions and this favours the continuation of the metabolic unbalance through a gradual and permanent compromising of the physical, neuro-endocrine and humoral mechanisms which normally control the correct physiological assumption of food on the central and peripheral planes (Maestri P., Clin. Dietol. 17,273-280, 1990; Marin et al., Clin. Dietol.,17, 53-63, 1990; Giovannini C., Clin. Dietol.,13,457-466, 1986; Blundel J.E., Alim. Nutriz. Metab. 3, 7-19, 1982).

We believe it is sufficient to advance the hypothesis that the metabolic self-control mechanisms, whatever they may be, when forced to deal with abnormal stimuli (triggering factors) for a long period of time, become ineffective and undergo functional and/or structural alterations and thus finally lose the capacity to recognize or react properly to peripheral signals to a greater or lesser degree. At this point, together with the accumulation of excess energetic substrates, the nutritional maladjustment (or metabolic unbalance) has already occurred and from that time on will condition the assumption of food. The pleasure that normally accompanies eating (appearance, fragrance and flavour of food), which is normally assuaged with the satisfaction of metabolic exigencies, becomes an end in itself and continues well beyond the actual need for calories, even though the gratification offered by food becomes less and less as the cibomania progresses.

As we can see, the onset of the disturbance does not differ substantially from what takes place in the case of smoking and drinking. Any sufficiently repetitive experience paves the way to proper learning or adaptation (riding a bicycle, swimming) or improper learning (maladjustments) that later become permanent. Even when we stop smoking we never return to the initial state of the non-smoker; when the occasion presents itself (to our great joy, but most of all to our great sadness) a few cigarettes are enough to make us smokers once again since the initial adaptation, which took several months or even years of arduous experience, is still present.

With the beginning of the nutritional maladjustment, the appetite increases, bringing with it a desire for snacks and, most of all, the feeling of satiety disappears: the end of the meal, which before was facilitated by the timely intervention of this physiological signal, becomes over a more or less long period of time, depending on the sensitivity and cultural training of the subject, a conscious, responsible act that requires, as we have said, an arduous psychological and energetic commitment. The precocious onset of a conflicting relationship with food (the desire to eat against the fear of getting fat) will further aggravate the maladjustment.

The cibomania sets in when patients, realizing that they are putting on weight and prodded by any reason whatsoever (health, appearance, work, sports and so

on) try to react by deciding or accepting the need to eat less. Those who are not willing to put up with the more or less painful lack of satisfaction in putting an end to a meal without feeling satiated, or who refuse to accept the necessary sacrifices, will surely put on weight progressively, with the well-known consequences as concerns health, appearance and psychological wellbeing and their fallout on the quality of life. For the moment they will not be afflicted by the torment of the cibomania, but uncontrolled eating and the consequent progressive putting on of weight cannot go on indefinitely: the onset of illnesses such as diabetes, arthritis, heart attacks, strokes and so on, will once again bring to the fore, this time in a dramatic and urgent form, the need for a more responsible relationship with food.

It must also be kept in mind that the seriousness of a cibomania is not the same in all cases. Usually it is proportional to the extent and duration of the overweight, up to becoming uncontrollable in the most serious cases of obesity. For this reason, the quicker the proper therapy is applied the easier it will be not only to lose weight, but also to maintain the results in the long run. Moreover, the many stressful situations that capture the attention of the patient to the detriment of control over food intake represent a frequent cause of the aggravation of the cibomania; such situations require appropriate, competent and painstaking psychotherapeutic treatment by the responsible medical professional. Without this, dieting will be to little avail. Control over a cibomania requires a great deal of serenity, self-control and the time necessary to organize and put into practice the planned diet. When it provides frequent convivial occasions, the social environment may also represent a serious obstacle to proper eating behaviour. Finally, control over a cibomania becomes all the more difficult when numerous and inadequate treatments have been followed in the past, especially when accompanied by the administration of anorectic drugs of the central kind; when they are discontinued the maladjustment returns stronger than ever, accompanied by the rapid recovery of the lost pounds owing to the total lack of re-education they provide.

As we said before, cibomania is the name we give to the fatigue required to maintain proper nutritional behaviour. But to ensure that the effort is not completely in vain, when not even self-defeating, it is essential to know exactly what, and how much, to eat. It is quite frustrating to hear everyone say "eat properly"! In reality, establishing with precision the nutritional requirement of a given individual is an extremely arduous task. Not even the most experienced dietician can establish precisely what a patient's energy consumption is without first studying the results of a careful clinical and anthropometric examination and a detailed motor investigation and then taking into account the many factors that determine an individual's metabolism (age, sex, height, constitution, hormonal situation, physical activity). Almost in all cases the patient's self-imposed restrictions, or those suggested by persons who are not experts, turn out to be too strict and thus are doomed to fail. The greatest risk comes through repetition of these unsuccessful attempts; in such cases the problem of food becomes preponderant in the mind of the patient, with further negative influences on eating behaviour. In most cases the consequence is a

worsening of hyperorexia; on the contrary, in other cases a restrictive mechanism sets in, regardless of whether or not there is a condition of excess weight.

Special environmental circumstances or endogenous psychological conditions may lead in this stage to extreme eating behaviours, such as bulimia or anorexia nervosa of nutritional origin. Even the food-crazed can undergo sporadic episodes of compulsive overeating, but their behaviour remains clearly distinct from that of those suffering from bulimia. What is lacking is the sense of shame, secrecy, self-denigration, emphasis of physical appearance and, most of all, there are none of the extreme compensatory reactions of those suffering from bulimia, such as self-induced vomiting, administration of laxatives and diuretics and episodes of anorexia or excessive increases in physical activity (see also C. Fairburn - *Overcoming Binge Eating* - Guilford Publications, March 1995). In those affected by bulimia, the early onset of a vicious circle of transgression and reaction quickly leads to devastating effects on body and mind, with the inevitable involvement of family and work environments. On the contrary, the disturbance of the food-crazed remains on the individual level with no important repercussions on family and work environments, on personal relations or, in most cases, on the psyche. After a binge, they react by simply vowing not to eat so much at the next meal. On the contrary, in those affected by bulimia, with a rapid alternation between transgression and reaction, the time free from the fixation of food is progressively reduced, while those with a cibomania suffer from this only for limited periods of time (especially after meals) and do not think about food during their daily occupations.

We are of the opinion that most of those suffering from bulimia and anorexia nervosa of dietary origin would have avoided falling into these dramatic situations if only they had known what to eat to avoid putting on weight. When the diseases are in an advanced state, treatment is certainly far more difficult than the simple cibomania that accompanies overweight. However, even in these cases, besides psychological support and the prescription of a diet, it is advantageous to inform patients of the true nature of these disturbances in a frank, calm and understandable way. The main difficulty usually derives from the fact that people come late for treatment after they have established a distorted acceptance of their bodies; they are not at all worried: the problem is with the members of their families who sent them to the doctor!

In the initial stages, both anorexia and bulimia present an evident relationship with a cibomania and can easily be remedied by limiting the condition to that of a cibomania. In some cases it is sufficient to provide patients with an appropriate diet to reach or maintain the proper weight. But together with the required psychological support it is necessary to explain frankly and get patients to accept the concept that a cibomania can be made more tolerable, but never completely eliminated.

The conviction that it is possible to gain weight even when eating little is quite widespread among patients, and also among some physicians (Fricano - *Clin. Dietol.* 16: 49-54 - 1989). This induces them to search for an explanation in factors other than

diet, such as stress ("worry makes me put on weight"), heredity ("everybody in my family is fat"), constitutional tendency ("I tend to put on weight"), assimilation ("lately I assimilate everything"), endocrine dysfunctions ("my organism doesn't burn fat properly") and so on. The statement "I don't eat much" is wholly subjective and meaningless, and usually patients themselves realize this during the investigation into their eating habits. What one person considers "not much" may be too much for another person, and most likely the judgement is expressed in comparison to what people would be capable of eating without limiting themselves. What is certain is that in accordance with the law of the conservation of energy, which is perfectly valid for the human body (Quagliariello - 'Scienza dell'alimentazione' - Idelson 1-5 1966), *an increase in fatty tissue is justified only by the ingestion of more calories than are consumed*, even when there is no direct evidence of this fact (Magnati G. et al. - Atti Congr. Naz. Obesità - 1992).

In conclusion, the emerging of an effective triggering factor in the presence of causes favouring obesity sets off a process of overeating and therefore overweight which, if lasting over a period of time, determines a stable alteration of complex homeostatic mechanisms and, perhaps, of thermogenesis itself. We are thus of the opinion that in the same way as psychotropic substances, alcohol and nicotine, food is also capable of creating phenomena of adjustment (maladjustment), abuse, tolerance and addiction. **Thus obesity is the metabolic manifestation of an illness caused by a maladjustment.**

3. Triggering factors

1 - Stopping of physical activity

Those who stop or greatly reduce their physical activities usually do not reduce their intake of calories proportionately. Those who prepare their food continue to provide the usual portions and those to whom it is served have no difficulty in consuming them; in reality they would be surprised if they were unable to use up the same amount of food they had eaten every day for many years. In reality, without being aware of it, for the first time they are introducing a larger amount of food than they need for their present metabolic needs. When after a few months or years they realize they have put on weight, their nutritional equilibrium has been compromised forever.

This triggering factor is undoubtedly the most frequent one and for the most part involves males owing to the more intense physical activity they normally perform. It does not come into play when physical activity is reduced gradually to allow proper dietary adaptation. Prevention consists of avoiding the abrupt interruption of activity and in immediately reducing intake to adapt to the new energy requirements. The beginning of a new gratifying activity may be helpful. Thus the services of a health practitioner are necessary not only at the beginning and during physical activity, but also when this is stopped.

2 - Maternity

This is the most frequent triggering factor among adult women. Inappropriate nutrition can be applied during pregnancy and/or breast-feeding. If we exclude the feeding techniques applied in livestock raising, it is exclusively reserved to women who are often the target of attention and bad advice from relatives, friends, husbands and so on. What is a very common physiological event in nature very often for women becomes an occasion for worry and anxiety, with inevitable repercussions on the nutritional plane (see Emotional Stress below). Sometimes it becomes a good excuse for cutting down on physical activity: even labour laws concerning maternity can become incentives for a sedentary life.

Some damaging prejudices still persist, both concerning pregnancy (craving, eating for two and so on) and breast-feeding (drink beer, eat a lot to keep up the flow of milk and so on): not wanting to appear irresponsible to members of the family, women are easily led to follow this advice.

Continuing to work even in the final stages of pregnancy (when the job is not very tiring and there are no particular contraindications), taking longer walks in time off (when the job is sedentary), following the advice of the obstetrician, keeping to a varied and balanced diet and paying attention exclusively to the natural need for food, considering maternity not as a precious gift to loved ones but simply a special

physiological condition needed and essential for procreation can help women to spend this period serenely, without feeling the need for the unjustified and self-defeating gratification of those around them.

It may be useful instead to explain that in the first months of pregnancy (after eliminating smoking, alcohol, salty foods, raw meats and sausages) that it is not a good idea to change previous eating habits when they are good ones, since normally, at the end of the second month the increase in weight should be very slight (about 0.5 kg (1 lb) and at the end of the third month must be no more than 1.5 kg (3.3 lbs). From that point on, following the body's natural increased need for calories, it will not be difficult to keep to the 9 to 12 kg (20 to 26 lbs) required at the end of the pregnancy through a moderate increase in the assumption of fruit, milk and vegetables, especially in the form of snacks. In the presence of overweight, metabolic disorders or other nutritional problems, periodic checkups by a dietician are a good idea both during pregnancy and breast-feeding.

3 - Treatments

Overweight often represents a side-effect of medical or surgical treatments. Among the former we frequently find neuro-psychiatric drugs (antidepressants, sedatives), sanatorium treatments (isoniazid), hormonal treatments (cortisone, anabolic steroids, contraceptives and so on), tonics (vitamins, aminoacids, anti-anaemic drugs, antihistamines and so on). Any kind of surgical treatment may be a triggering factor in gaining weight. But this is most frequent following hysterectomies, tonsillectomies, cholecystectomies (Giovannini C. et al. - *Alim. Nutr. Metabol.* 1: 97-100, 1980) and thyroidectomies; most likely this is not directly linked to the operation itself, but to the period of convalescence that follows. The pleasant sensation of having recovered, the disappearance of the preoperative symptoms and the progressive overcoming of the postoperative disturbances, the gradual recovery of the appetite following the obligatory pre- and postoperative fasting and finally the gratifying attention of health providers, family and friends all come together to favour normal food consumption and facilitate the application of a rich diet necessary to make up for the loss of weight. When this increased food intake continues over a sufficiently long period of time, the triggering mechanism come into play.

Proper control over food intake and body weight, accompanied by proper dietary information, can prevent the onset of obesity.

4 - Too much parental worrying

During a visit a mother reports: "He never had any appetite... you can't imagine how hard it was to get him to eat."

This cause involves most patients who believe they have always been fat. Children of normal weight, as is true for all living beings (except for animals raised for human consumption) instinctively eat as much as is required by their metabolisms. If

what they consume is insufficient, they will call for more; if it is too much they will leave the excess on the plate. In the latter case, the child is strongly prodded to eat the entire portion (‘‘eat up and you’ll grow up!’’ it’s good for you!’’ it’ll make you strong!’’ here comes the airplane full of!’’). Although very reluctantly, the child will often make the effort to please his parents (uncles, aunts, grandparents) and so with the passing of time, consuming more than he needs, he gains weight and becomes permanently maladjusted as far as food is concerned.

Normally speaking, if a child is healthy (no fever, no cough, plays regularly and so on) and does not eat snacks or sweets or drink soft drinks before meals, there is no discrepancy between appetite and metabolic requirements. Unfortunately, in many cases the child’s slender constitution is easily mistaken for skinniness and this causes parental apprehension. In reality, adipose tissue is well represented and a paediatrician or the family doctor has no trouble in checking this: there should be a thickness of 7 to 11 mm, as is normal in children, of the posterior brachial cutaneous plica (Pett L.B. and Olgivie G.F., cited by Travia - *Manuale di Scienza dell’Alimentazione* – 1st edition, page 80). Even school lunchrooms may be a risk factor if the family administers unneeded food integrators.

On 8 April 2005 we wrote to Professor Sirchia, then the Italian Minister of Health, to express our appreciation of the measures he had adopted to fight smoking, but we also warned him of the risks involved in using the same methods in the field of nutrition. The letter began: ‘‘Hon. Professor Sirchia, Minister of Health, don’t cut in half the portions in restaurants – cut in half the prices!’’. After briefly describing the differences between smoking and nutritional problems, we suggested what in our opinion would be a truly useful solution: to activate primary prevention by informing people concerning the triggering factors leading to obesity. After sealing the letter and putting a stamp on it, while browsing through the local newspaper, *l’Unione Sarda*, we came across a letter written by a mother to the newspaper’s paediatrician. She wrote: ‘‘I am really worried: my six-year-old daughter refuses to eat, at least the way I want her to. She eats when she likes and what she likes (very little) and doesn’t listen to my advice. Naturally I took her to two general practitioners of the public health service and then to two private paediatricians. They all found her healthy, but I don’t think this lack of appetite is normal. I’ve tried everything: flattery, threats, promises, screams, crying, scenes. For years now I’ve been fighting a war with few moments of truce. I’m nearing a nervous breakdown. But if I give up I’m afraid I would be behaving irresponsibly.’’ The emblematic newspaper heading was ‘‘The food war is won with a smile.’’ We opened the envelope and put in a copy of the mother’s letter and the response of the paediatrician, with the following post script. ‘‘.....the child has stood up to the threats and promises, but will certainly surrender to the smile and the game of the ‘airplane that arrives full of...’’. We sent the letter registered on 11 April. Naturally we received no reply.

5 - Changes in lifestyle

In this group of triggering factors we find marriage, employment, retirement, a long holiday, moving, the end of a period of dieting and any other event that causes an abrupt change in eating habits which is capable of inducing an increase in calorie intake unjustified by metabolic needs.

Marriage, in which both husband and wife may assume new eating habits borrowed from the partner, may cause a change in the former calorie intake. The case of women who report having begun drinking wine during meals to keep their husbands company or that of men who report a greater consumption of fatty and elaborate dishes compared to those prepared by their mothers are frequent. Moreover, in both, life in common may limit the freedom of movement (sports, walks) or dietary autonomy (when one is not hungry and the other is, it is more difficult to skip a meal). Finally, between husband and wife there is often a certain emulation that may facilitate food consumption beyond real metabolic needs, such as when one eats only to keep the other company; this normally goes to the disadvantage of the wife, since her energy expenditure (resting and total) is less than that of the husband. An understanding of these concepts helps to eliminate or keep to a minimum the risks involved in married life.

Employment in sedentary activities leads to a decrease in energy expenditure in those who previously did manual labour or practiced sports (see no. 1). Furthermore, especially after beginning one's first job, which means having more money than before, with brief breaks during the working day may create new occasions for snacks (cappuccinos and pastries) which more often than not do not replace normal meals but are in addition to them.

Retirement, when not accompanied by other productive work or adequate recreation, may cause decreases in energy consumption (more time in front of the TV or in bed) and make eating more gratifying.

Holidays, when sufficiently long or, in the case of children a period of time spent in a camp in the mountains or at the sea with grandparents or close relatives, are other occasions that may be the beginning of the fattening process. The new taste experiences, the separation from daily occupations, the pleasant attention given by those around (relatives, friends, waiters) may go together to increase food consumption (local dishes, sweets, ice cream, drinks) and, unfortunately, these new habits are not always left in the holiday resort on returning home.

Moving from one place to another can trigger obesity, both owing to the possible reduction in energy consumption caused by less exercise than usual (sports, walks) and to compensatory gratifications favoured by the discomfort deriving from longing for the previous familiar environment (places, relatives, friends, social gatherings) and from the difficulty of settling down in a new place. We recall the case of a foreign girl who moved to Sardinia in the 1960s following her marriage to a fellow countryman who was stationed at a NATO base on the island. The difficulty of adjusting, also caused by not speaking the language, homesickness and loneliness

(her husband came home only in the evening) led to her gaining about 20 kg (44 lbs) in less than a year. She, who up to that time had never had weight problems, blamed her condition on the climate!

Dietary restrictions, when lasting over a more or less long period, followed by a return to a normal diet, which also means an increase in food quality, can easily pull the trigger: some trace the beginning of their obesity to the end of the war and rationing, others to the overcoming of a state of need caused by special personal or family conditions.

Unfortunately, today we still find research performed on persons of normal weight, mostly students, who are put on strict low-calorie diets for periods of even up to several weeks and who at the end of the study were found to have begun to put on weight! (Obesità 1992 - Congress in Verona 12-15 April 1992: Keys A. et al., cited by Bosello O. "Fluttuazione del peso corporeo e rischio cardiovascolare" - Quon, 1 January, 1994)

This triggering mechanism, together with the ceasing of physical activity, the change in lifestyle and economic gratifications perfectly justify the obesity of the Pima Indians (the prime argument of geneticists) without the need to cite far-fetched genetic theories. In fact, in such conditions any person, community or population necessarily puts on weight!

6 - Emotional stress

Anxiety, worrying and disappointments represent, as said before, a factor that aggravates nutritional maladjustment and therefore constitute a serious obstacle to following a diet. In reality, stress activates a defensive mechanism of the conscious ego which, in substitutive and compensatory ways, leads to an increase in food intake, which takes people's minds off the source of the anxiety, which is exactly what occurs in smokers who in moments of tension double their consumption of cigarettes.

In any case, psychic disturbances, when particularly intense and long-lasting, besides worsening the cibomania already present, may become a primary triggering factor. Initially, there may be a loss of appetite and even total refusal of food but then, after a few days or weeks, the instinct of survival once again prevails over the tendency towards self-destruction; in some cases there is a gradual return to normal eating behaviour while in others the defensive hyperorexic mechanism is triggered; although while it deviates attention from the painful event by lessening the suffering, it also favours the onset of the weight problem. The death of a loved one, the breaking off of an engagement, misunderstandings between husband and wife, financial emergencies and existential problems are among the most frequent causes of emotional stress. In exceptional cases, when the refusal of food persists, we have the onset of anorexia nervosa.

A precise understanding of how this triggering mechanism works, together with adequate psychological support, can help in reacting in a more positive way by

facilitating the reawakening of other compensatory and diverting interests that are not bad for the health, such as joining a club, doing volunteer work, working at a hobby, physical activity, reading, conversing, doing art work and other alternatives that keep people from wallowing in their problems.

7 - Bottle-feeding

Among the patients who in our case histories reported always being fat, in reality only 15% of them weighed more than the average (see no. 8, Macrosomia), 28% had been bottle-fed, and for them the beginning of overweight took place in the first years of life; the others had been the victims of exaggerated care by parents (unpublished research in 1997). Evidently, bottle-feeding is to be added to the list of triggering factors. It is certainly logical to assume that breast-feeding, since it is regulated both by the mother and the child through physiological self-control mechanisms, offers a better guarantee of proper nutrition compared to bottle-feeding, which differs in the composition of the milk, the different and easier way of sucking and finally in the need to judge the amount of milk, which does not always correspond to the real needs of the child. It is easier to take from the bottle and even easier to give from it! Close observation of the child's increase in weight and height facilitate the proper judgement of the right amount of milk to give.

8 - Macrosomia

This triggering factor comes into play during pregnancy under the effect of a metabolic alteration. The production of too much insulin with the consequent hypoglycaemic effect and the subsequent increase in metabolic demand is the best-known example of this. In our experience, more than 70% of those having this cause have a family history of diabetes. A careful examination of the clinical and laboratory conditions of pregnant women, especially where diabetes or other metabolic dysfunctions run in the family, may show up the need for a diet which provides the proper amounts and balances of foods and at the same time assures the proper increase in weight during pregnancy.

9 - Giving up smoking

This represents one of the triggering factors that comes into play latest in life and only when the habit is deeply rooted and there is a certain degree of addiction. It does not come into play when the person is still in the first stages, keeping in mind that they may last some months but also some years when smoking is limited to a cigarette now and then. It must be emphasized immediately that smoking does not help a person stay slender: smokers can be fat or thin, just like non-smokers. Many obese adults who go to dieticians are smokers and often they were smokers before they began putting on weight (unpublished study). However, when one stops smoking, this may set off the

process of gaining weight or aggravate an existing overweight condition. It may also be that the greater amount of food introduced is due to an improvement in digestion (smoker's gastritis) but for the most part it is certainly linked to the psychological substitutive mechanism described for emotive stress (no. 6 above). The former smoker, who ended each meal by lighting the ritual cigarette, now unconsciously remains seated at the table, worried about not giving in to the craving for the most important cigarette of the day, the one following a meal. It is as if the meal were missing. The substitutive function of chocolate and candies consumed in place of the cigarette is even more easily understandable. A precise knowledge of these concepts can help the patient to keep to his/her usual eating habits, thus eluding the iniquitous substitutive mechanism. If necessary, constant control over weight and, possibly, the timely intervention of the dietician can remove these causes, thus sidestepping the fear of getting fat as an alibi for continuing to smoke.

10 - Menopause

In women this is the most frequent late cause. While we do not exclude a possible alteration in the appetite and even a possible reduction in metabolism linked to the change in the hormonal situation, we believe that the explanation is to be found above all in problems of a psychological nature, often with an origin in depression, which accompany menopause and act by triggering the substitutive mechanism of food. The coincidence in time of menopause and the average life expectancy of women, which was present up to a few decades ago, could in some way justify the appearance of alterations of humour in this particular physiological phase: menopause then meant not only the end of the genital function, but also the beginning of the end of life. Today, with the increase of about thirty years in the average life expectancy of women, the end of ovulation and menstrual manifestations, now superfluous, can easily be accepted since all the other functions, including sex, remain unchanged for many years to come. Thus menopause should not be the cause of despair nor decrease the joys of life. This idea, which often represents a novelty, is easy to accept and appreciate. The development of new interests of a recreational, cultural, social and charitable nature can eliminate this triggering factor.

11 - Familial background

When the mother and father are obese it is easy to conclude, even without recourse to genetics, that their children will be overweight from the very first years of their lives. In reality, the parents' poor eating habits will necessarily represent a model for them, in the same way that language and moral behaviour are learnt. As said previously, if the mother and father speak with a lisp, all the children raised in the house will have the same pronunciation anomaly. Many cases included in triggering

factor number 4 (too much worrying by parents) can be classified in this group as well.

12 - Eating and weight problems

In the last few years we have seen an increasing number of persons (usually young women) who report having begun to put on weight following spontaneous dieting both for the purpose of losing weight, whether they considered themselves too heavy rightly or wrongly, or owing to pseudoscientific or pseudo-religious convictions (vegetarianism, raw-food dieting). As is known, persons gifted with physiological self-control over food (in Western countries perhaps no more than 30% of adults and 75% of children) have no trouble, just like animals in their natural environments, in maintaining their normal weight since they are properly guided by the signals of hunger and satiety. Considering that the availability of food is no problem, all they have to do is pay attention to the quality of what they eat to avoid a deficiency of required substances or an unbalanced diet (we not only have to eat, we must also nourish ourselves). We are of the opinion that in their cases, following a strict diet can only be damaging, even when the diet is properly calculated. And what can we say of spontaneous diets, the ones copied from newspapers or suggested by friends and others lacking the necessary expertise? In most cases they are qualitatively unbalanced and quantitatively inadequate diets; fortunately they are usually quickly abandoned with the appearance of health problems or the pangs of hunger. But when the diet is continued it is easy to acquire new eating habits and an excess or insufficiency of weight (Bosello O. "Il paradosso della dieta" - Atti II Congr. Naz. ANSISA 1993, page 13). After repeated phases of weight loss, immediately followed by more than the recovery of the weight lost (the weight cycling syndrome), there are two options: unconditional surrender to the craving for food or, more rarely, self-induced anorexia. The defensive barriers erected against bulimia do not always guarantee the maintaining of normal weight, or do so only for short periods.

13 - An unknown triggering factor

In a fair number of cases it is impossible to establish the triggering factor with any certainty. Many people report being overweight all their lives and probably, at least in some cases, they were the victims of mistaken attention in infancy (too much parental worrying), a circumstance that usually comes out only after carefully questioning the parents. In other cases it may be found more appropriately in the familial background. But even when it is impossible to identify the mechanism that led to overweight, it is important for the patient to know that the triggering factor, even when it remains mysterious, is still at the origin of the condition and played a determining role in the gaining of weight and the consequent loss of instinctive control over food consumption.

Among the triggering factors, we purposely did not include organic afflictions

(endocrine dysfunctions, tumours and so on) since in these conditions the excess of adipose tissue (and not simply of weight, which may be the result of other causes) represents only a symptom (secondary obesity), although it is in all cases the result of an increase in calorie intake over and above the required amount. Fortunately, these are fairly rare cases in which excess weight assumes a marginal role with respect to the disease that causes it.

In conclusion, we propose the following summary:

1. cibomania + increase in adipose weight = obesity
2. Pathological dieting + thinness = anorexia nervosa
3. Pathological hyperorexic behaviour, accompanied by extreme defensive measures, with or without changes in body weight = bulimia
4. A well-controlled cibomania with no important changes in body weight = clinical cure of obesity or its stabilization.

4. Body weight - ideal weight - maximum physiological weight

In healthy adults, the skeleton, viscera, skin and adnexa represent the relatively stable component of total BODY WEIGHT, while adipose tissue and muscle are the variables. Some physiological conditions (growth, pregnancy) and many others of a pathological nature (dehydrating affections, oedema, hepatosplenomegaly, tumours, myxedema, amputations, etc.), act in different ways on body weight and they must be taken into account in evaluating this and theoretical metabolism. Modest and transitory weight increases caused by water retention may also be found in menstruating women.

On the average, muscle weight corresponds to 40% of total body weight (Wohl and Goodhart - Trattato di Dietetica - Il Pensiero Scientifico: 1st Italian edition, September 1970, p. 24) but it varies greatly from one person to another on the basis of genetic factors, gender (38% in women, 42-44% in men) and in the same person depending on physical activity. The increase or decrease in the muscle component may greatly influence body weight and obviously this must not be mistaken for overweight (excess of adipose tissue) or skinniness. If anything, it should be kept in mind that excessive development of the muscle mass, favoured by certain sports (weight-lifting, body-building) is certainly of no help to the health owing to the increased performance required of the cardiovascular and excretory systems (abnormal development of the vascular bed, increase in protein catabolites and so on); on the contrary, a sedentary life, with muscular hypotrophy and the replacement of muscle with adipose tissue, represents an important predisposing factor leading to metabolic and cardiovascular dysfunctions such as diabetes, dyslipidemia, obesity, hypertension and so on. The lack of physical activity may also lead to a slight loss of skeletal weight owing to the demineralization of bone tissue (osteoporosis).

The adipose weight of a normal male body is considered to be 12-16% of total body weight and 20-25% in the female body (Wohl and Goodhart - Trattato di dietetica - Il Pensiero Scientifico: 1st Italian edition, 1970 p. 17). However, we can still consider excellent a total body weight with adipose tissue representing up to 18% in males and 28% in females (Laurence E. et al.- Fisiologia dell'esercizio - Il Pensiero Scientifico: Italian edition, 1970, p. 367). A further increase of 10%, that is, up to 28% of the total weight of males and 38% of females, represents the MAXIMUM PHYSIOLOGICAL WEIGHT, beyond which true obesity begins.

At this point a certain dyspnoea following physical efforts that were previously well-tolerated is present in all cases and very often patients report this spontaneously: their movements are more awkward, practical problems arise

(getting dressed, sweating, suffering in hot weather and so on) and, in some cases, there are also problems of a psychological nature, especially in women (irritability, self-depreciation, anxiety, depression): we are in the presence of a true illness, whether or not other concomitant pathological conditions have appeared. The expedient and more or less conscious acceptance of a different lifestyle compatible with the new physical condition makes it possible to avoid, or at least keep to a minimum, the unfavourable psychological repercussions (obesity without complexes), but the appearance of an appetite out of all proportion to proper metabolic requirements will from that time on represent a new, serious problem to address.

And here we see the importance of a correct definition of the condition and from this to the exact finding in each case of the proper body weight and the maximum physiological weight.

We can consider IDEAL or proper a WEIGHT that allows the best functional performance of the organism and the most satisfactory state of physical and psychological wellbeing, as well as longer life expectancy all other conditions being equal. THIS WEIGHT NORMALLY CORRESPONDS TO THE PROPER PROPORTIONS OF BONE, MUSCLE AND FAT.

There are no shortcuts to determining this important parameter. It, just like the diet itself, is an individual, not a collective, fact. This parameter, from which we can immediately establish the maximum physiological weight, is essential not only in planning the weight loss, which must be agreed to by the patient, but also in calculating the metabolism (basal, total and overweight) which makes it possible to draw up a customized, complete and acceptable. Thus it is not enough to find weight and height, as required in calculating BMI, and even less the abdominal circumference, which lately appears to be replacing BMI. These parameters, in our opinion, are the sign of mental inertia which leads to uncritical acceptance of everything, and only that, which is reported in the English language.

Just as in examinations of sight, hearing and any other biophysical function or parameter that require precise and sometimes sophisticated tests, in finding a person's proper body weight, besides weight, height, gender and distribution of fat, we must also determine instrumentally the skeletal and muscle constitution, thus ensuring that a person of slender build, in a state of medium or advanced obesity, is not considered as needing a diet since the BMI is not above 24, 25 or 29, or the abdominal circumference, regardless of height, is less than (hear, hear!) 88 cm in women and 102 in men? This point is of the greatest importance in diagnosis and treatment. We skip abdominal circumference, which deserves no comment. Even today (February 2006, see for example *Emozioni e Cibo* the newsletter of AIDAP, no. 17, year 2006, p. 7) we read scientific reports, probably with the contribution of public funds and thus

paid for by taxpayers, in which we find that many persons believe they are overweight or thin and instead, going by the BMI they are to be considered normal and, on the contrary, many believe they are the right weight while according to BMI they are considered thin or overweight. The conclusions are that many people have the wrong idea about their bodies. We instead come to the well-grounded conclusion that the imprecise perception is not that of the persons interviewed but of the imprecise method of judgement (BMI), which takes into account only height and weight and neglects the other elements necessary in establishing the proper proportion of fat, bone and muscle, from which the proper body weight can be calculated. If we were to follow the indications given by the BMI, we would have to send away about one third of those who come to us for help; practically all those who are tall and who have a low bone and muscle weight but an excess of fat showing medium obesity are always in the normal weight category according to the BMI. Cognitive and behavioural strategies are not enough to convince these patients that their poor appearance and, in some cases, their health problems (cholesterol) are the result of an erroneous perception of their bodies. To avoid increasing the number of do-it-yourself diets, obesity and nutritional maladjustments, each patient must receive the proper response from the viewpoint of diagnosis and treatment.

Considering the importance of a person's proper or ideal weight, we believe that its evaluation is worth the time and trouble it takes to collect the necessary data through an careful objective examination, the use of scales with height rods, a tape measure showing millimetres, a fat calliper or an impedance meter; the data thus collected must be processed with the aid of a computer program. All problems must be investigated with the necessary times and means, with no banal and harmful simplifications.

As concerns the commonly used FAT CALLIPER, we believe that a pressure of 10 g/mm² is excessive and such as to underestimate the folds in subjects with subcutaneous laxness. Indeed, the amount of fat squeezed on the sides of the pressing surface is less at the time of the first increase in weight when sometimes it is even difficult to raise the fold while it is more with the decrease in the consistency of the subcutis, which occurs after alternating phases of gaining and losing weight. In our opinion, it would be better to have an instrument that gives the value of the fold without any pressure on it by means of an electronic microcircuit with a display.

In our studio, the sum of the four folds (triceps and biceps at the third median of the left arm, left subscapular and left suprailliac regions) measured with a fat calliper supplies on the average the following measurements for persons of normal weight:

Males > 18 yrs, 36-40 mm

Females + males <19 yrs 50-54 mm

We measure five circumferences with the millimetre tape measure: the left wrist (skeletal measurement), left arm and leg (muscle, skeletal and adipose tissue measurement), the abdomen and the greater and lesser trochanters (the waist-to-hip ratio - WHR).

In our studio, all anthropometric, metabolic and dietetic measurements, case histories and clinical records, as well as printouts of diets, have been computerized for over twenty-five years and are processed by means of in-house software not to be found on the market. Considering the difficulty of such calculations, the complex composition of foods, the need to evaluate correctly a decrease in calories such as to guarantee a sufficient degree of gratification together with weight loss and, at the same time, the proper amount of nutrients, the COMPUTER is an indispensable instrument in the work of a dietician. Slipshod attitudes and improvisation cause damage to the patient since, as we have said, improper diets lead to an aggravation of the food fixation and, if repeated, may trigger serious nutritional maladjustments. No treatment is better than the wrong treatment! Greater vigilance in this field is certainly to be desired, but who are the persons competent to invigilate here? The usual experts who today on television and in conference rooms in the different regions are explaining (at the expense of the public health service and the regional administrations) that the circumference of the abdomen (without meteorism?) must not exceed 88 cm in women and 102 (neither 101 nor 103) in men?

The formulas for calculating a person's ideal weight are many, but there is still no universally accepted criterion that takes into consideration all the elements necessary to arrive at the solution. Nor can we accept the suggestion advanced by some authors (Lupi G., Battistini N.: *Alim, Nutr. Met.* 10: 45-52, 1989) to consider ideal the weight resulting from the average of the values given by the different formulas proposed.

At the beginning of his professional experience, the elder of the two authors of this report used the simple Broca formula (males: height in cm minus 100; females: height minus 104) adding or subtracting a kilo here and there, depending on whether or not the Grant index (height/wrist circumference) was more or less than average. It was still better than the BMI or the abdominal circumference alone! In the case of adolescents, he applied the tables in *Tables Scientifiques*, drawn up on the basis of measurements performed on a large number of individuals and found in Travia (*"Scienza dell'Alimentazione"* 1st ed.- pp. 70-75). But from the very beginning we began collecting many anthropometric measurements from our observations of patients of all ages (above the age of 6), the large majority of whom were overweight and the rest too thin. We have thus had the good fortune of determining in the field the right weight for subjects who were gaining or losing weight, and from this we collected a large number of data which later made it possible for us, with the aid of a computer, to arrive at a method for calculating a person's ideal weight, one that is quite accurate but which is constantly updated on the basis of daily clinical experience.

The elements taken into consideration are sex (S), age (A), height (H), real weight (RW), left wrist circumference (WC), left arm circumference at the 3rd median (AC), maximum left leg circumference (LC), the left arm triceps fold at the 3rd median (TF), the biceps fold (BF), the left subscapular fold (SF) and suprailliac fold immediately above the left anterosuperior iliac spines (SPF). As concerns wrist circumference (WC), which is quite important in evaluating the skeletal structure, it must be kept in mind that it varies with the variation in the fat component, increasing with increases in weight and decreasing with the loss of weight: in fact the subcutis participates in the process of gaining or losing weight, not only at the site of preference, but in all parts of the body, thus also at the wrist. From a study of 250 subjects who were losing weight or who had completed their weight loss (70 males, 180 females over 18 years of age), for each decrease of one millimetre in WC we found in males a decrease of 8.02 ± 2.48 mm in the sum of the four folds (TF+BF+SF+SPF) and in females a decrease of 10.12 ± 2.6 mm. Later, we found that the decrease in WC correlated better with the sum of the arm folds (TF+ BF) only. Supposing that in persons of normal weight this sum corresponds to 25 cm in women and 18 in males, the new thin wrist circumference (WC1), in a study performed on 2200 cases (1450 females) of persons over the age of 18, we found:

$$\text{Males: } WC1 = WC - (TF+BF-18)/2.02$$

$$\text{Females: } WC1 = WC - (TF+BF-25)/3.28$$

Based on our calculations, the net ideal weight on fasting, with reference to the bone structure (ISW) corresponds to the product $\sqrt{(WC1)}$ (in cm) x H (in cm) x N, where N is a constant for sex, age category and height. Thus:

$$ISW = \sqrt{WC1} * H * N$$

In calculations of the metabolism we use the ideal weight thus calculated, but we are careful to inform the patient that since it cannot be calculated to less than one kilogram, in most cases the weight is to be considered ideal up to + 6% of the figure found. In women with a very light bone structure, however, to avoid the appearance of unsightly conditions at the trochanters, the range cannot be above + 2-3% of ISW.

By performing the calculation with a computer, the result is obviously immediate. Below is the table

AGE	MALES		FEMALES	
E	H	N	H	N
>25	>179	10 9.9	>169	8.9
	170-179	9.75	160-169	8.72 + .02*(H-165)
	160-169		150-159	8.4 + .02*(H-155)
	<160	9.5	140-149	8.28 + .02*(H-145)
			<140	7.95
19-25	>179	9.9	>169	8.7
	170-179	9.8	160-169	8.61 + .02*(H-165)
	160-169	9.74	150-159	8.3 + .02*(H-155)
	<160	9.7	140-149	8.14 + .02*(H-145)
			<140	7.9
16-18	>169	9.67	>169	8.64
	160-169	9.2	160-169	8.36 + .02*(H-165)
			150-159	7.96 + .02*(H-155)
	<160	9	140-149	7.85 + .02*(H-145)
			<140	7.8
13-15	>169	9.4	>159	8.52
	160-169	8.85 + .02*(H-165)	150-159	7.78 + .02*(H-155)
	150-159	8.2 + .02*(H-155)	<150	7.5 + .02*(H-145)
	<150	7.5 + .02*(H-145)		

<13	>159	9.1	>159	8.04
	150-159	8.24 + .02*(H-155)	150-159	7.83 + .02*(H-155)
	140-149	7.34 + .02*(H-145)	140-149	7.06 + .02*(H-145)
	130-139	6.26 + .02*(H-135)	130-139	6.78 + .02*(H-135)

MALES E FEMALS <13 aa H <130 N = 5.68

Table1 - A = age - H = height in cm - N = constant number. (1 inch=2,54 cm -- 1 lb = 0,4536 kg.)

As is known, the normal skeletal structure is accompanied by a corresponding development of muscle mass and therefore, when this is the case, the ideal skeletal weight (ISW) can be superimposed on the ideal skeletal-muscle weight (ISMW); in other cases the ISMW will be greater or lesser compared to the ISW, depending on whether or not the muscles are developed more or less than average. Thus evaluation of the ISMW is essential in attributing the deviation from normal weight to fat or muscle. In our calculations, we assume mean muscle weight at 43% of normal body weight in males and 38% in females. With reference to this mean, and by finding an average muscle index differentiated by gender and degree of overweight, we assess the individual's muscle component obtained by measuring the circumference of the arm (3rd median) and the leg (maximum circumference at the calf) corrected by the bone and fat components..

Whoever has any experience at all in dietetics knows the importance of these parameters. As an example, here is the case of one of our 17-year-old female patients: height 168 cm, net weight 58.4 kg and therefore a BMI of 20.69 (!). When dressed, she appeared to be in perfect physical shape, but the objective examination revealed a considerable increase in the fatty component, with 70 mm as the sum of the four folds (compared to the theoretical 52) and a clear prevalence of the hypogastrium and the two trochanters, which made an unpleasant contrast with the other parts of the body. Her ideal weight (ISW) was 52.1 kg, ISMW was 51.9 kg, maximum physiological weight 62.5 kg, the abdominal circumference 74 cm, the relative body weight (RBW) 112. As can be seen, the only parameters of no use in understanding the case were the BMI and abdominal circumference, which on the contrary give the wrong impression concerning the reality of the case. In the case described, if we do not take into account what we have said up to now, it may appear to be exclusively a question of aesthetics since the patient, apart from the slight unsightliness of her appearance, presented no physical element pointing to a pathology of any kind. Unfortunately, that was not the case. Suffice it to say that at that point there was, and still is, a nutritional maladjustment; to counter the progressive increase in weight the patient is forced to follow a aware, risky piloting of her food intake (food fixation) which does not always have a happy ending. In most cases, when inhibitory mechanisms fail, obesity sets in (in our case four kilos from the maximum physiological weight); unfortunately, in other cases the

repeated attempts to follow dietary restrictions that are doomed to failure, the inevitable repercussions on the health deriving from the continuation of the nutritional maladjustment as well as specific psychological conditions and some environmental circumstances, may lead to the onset of a serious disturbance in eating behaviour. We are thus dealing with a true health problem and this is the best time to intervene in a suitable way with information, psychological support and diet (secondary prevention) so as not to have to intervene in the future on cases of advanced obesity or, what is even worse, on cases of pathological disturbances in eating behaviour.

An unsightly appearance itself is a true illness when it leads to psychological distress: only physicians who do not know how to deal with such cases can settle for trying to persuade patients to accept their physical imperfections.

5. Therapy

5.1. Primary prevention

As with all conditions of illness, the best treatment is primary prevention, and this is especially true in cases of maladjustment. In our case prevention is based on the extensive knowledge at all levels of the mechanisms that lead to the onset of the illness and, in particular, of the triggering factors mentioned in the chapter devoted to these.

Subsequent treatments can bring patients back to their proper weight, but in no case can they restore metabolic equilibrium, which has been lost forever: the weight reached during the treatment can be maintained only through constant and painstaking control over food intake (cibomania, or foodwatching). In our experience the only exception is to be found in children who follow a diet at a preadolescent age.

5.2. Secondary prevention

ALL PATIENTS WHO ARE SUITABLY MOTIVATED AND IN POSSESSION OF NORMAL INTELLIGENCE AND WILLPOWER CAN RETURN TO A DESIRED OR ACCEPTABLE WEIGHT AND CAN KEEP IT IN THE LONG RUN BY FOLLOWING A GOOD DIET TOGETHER WITH ADEQUATE EDUCATIONAL AND BEHAVIOURAL SUPPORT.

Since even the most carefully planned diet will fail if patients lack the proper mind-set in following it. To ensure the success of the therapy the highest priority must be given to finding the MOTIVATIONS that led them to seek help. APPEARANCE as a motivation is often given spontaneously by women, but it is present in all cases, even when patients feign complete indifference to this aspect of the problem: at the end of treatment all patients express their satisfaction at having returned to their right weight. Males put on weight prevalently in the trunk, especially in the upper middle part of the abdomen; in females the regions affected are prevalently the trochanters and the lower central region of the abdomen. This distribution of fat in females may be particularly accentuated both owing to hereditary and familial, constitutional and neuroendocrine tendencies, as well as by the effect of tight clothing which hinders venous and lymphatic circulation. In such conditions, a slight overweight of just a few kilos is sufficient to create an unsightly effect. As we said previously, even in such cases of fairly limited overweight they are to be treated as a health problem and physicians, if competent, must apply their skills. The aesthetic defect in fact limits freedom of movement, the choice of clothes, the unruffled participation in social events (at the seaside, in sports activities, beauty contests and so on). Only when it cannot be corrected (lack of fatty tissue in other parts of the body) is it necessary to

limit treatment to correcting the 'non-acceptance of one's body. The fact that this is the reason why some patients decide to consult a physician represents in reality a good sign; without this, we would have to treat complicated cases of obesity. The best time to step in with secondary prevention is when the problem is to deal with a modest overweight condition which at the beginning is simply a question of appearance but which, if not properly treated, may lead to a case of true obesity or, even worse, of pathological maladjustment in eating habits.

HEALTH is another frequently mentioned motivation, sometimes by itself, but more often together with that of appearance. Dyslipidemia, diabetes, high blood pressure, heart diseases, bone and joint disturbances, stomach upset and chronic bronchitis represent, in decreasing order, the conditions that most frequently accompany the need for dieting. Directly originated by overweight, or aggravated by it, after their onset they too will have to be kept under control at all times, just as the problem of being overweight itself. This once again confirms the importance of primary prevention or secondary prevention as early as possible. Since the result of treatment depends for the most part on the motivations supporting it, the dietician must strengthen those already in place as well as introducing new ones. Even when the health motivation appears to be sufficiently strong to ensure keeping to the diet (those who have had heart attacks, those awaiting surgery and so on), it is still important to remind the patient of the favourable effects of treatment on physical efficiency, clothing and movement, in other words, on the quality of life.

Our experience has demonstrated that in all patients a new, original motivation is stimulating and of great psychological help:

LOSING WEIGHT MEANS FEWER HUNGER PANGS IN THE FUTURE

This motivation, more than that of health and appearance, represents the strongest incentive in changing eating habits and introducing a new lifestyle. It stimulates patients to participate with greater conviction during the losing of weight and makes maintaining the result easier. Whoever has, or has had, problems of overweight has no difficulty in accepting the truth and importance of this new motivation. With the progressive increase in weight, people not only realize that their health and appearance are affected, but also find it increasingly difficult to stop the fattening process. The continuous adaptation of the digestive tract and adaptation to the increasing volume of the body, the increase in sweating, having to move in a different way, the progressive exclusion of other interests not connected with food as well as the negative repercussions of a psychological nature all combine to aggravate the state of cibomania: it is the dog chasing its tail. On the contrary, a gradual improvement in eating behaviour brought on by the diet and the new knowledge concerning the true nature of the illness and the reawakening of other interests in cultural and sports events and work favoured by the return to normal weight will make the attitude towards food easier and more gratifying.

5.3. Setting up the diet

The CUSTOMIZING of dietary rules represents a special and essential part of proper treatment. They can be decided only after a scrupulous investigation into patients' health records, their eating and exercise habits and a careful objective examination which, besides revealing past conditions of health and clinical examinations, also determines the state of blood formation and pressure, any signs of nutritional deficiencies (skin, mucous membranes) or other circumstances in any way connected with eating and, finally, supplies all the anthropometric data necessary in calculating metabolism (weight, height, evaluation of the panniculus adiposus and circumference). The weak point of the dietary investigation is certainly represented by evaluation of real energy expenditure since this datum, in itself fairly complex, is not based on verifiable objective data but on what patients report, often with no great accuracy.

Customizing the diet means first and foremost respecting patients' eating habits when they are correct and provide the proper and balanced assumption of the main elements, and avoiding the prescription of foods with which the patient is not acquainted or which are difficult to find. Even in the presence of specific dietary prescriptions, it is necessary to avoid drastically revolutionizing patients' eating habits so that the diet is not seen as an imposition, even a temporary one, while awaiting the return to freedom in the shortest possible time: otherwise it is better not even to begin the treatment.

The distribution of meals during the day is another totally individual habit and one that is not easy to change. Of course we must not consider a serious obstacle in the way of the treatment the fact that in not a few cases it is impossible to persuade patients to accept a rational distribution of meals into four (for example, breakfast 20%, lunch 35%, mid-afternoon snack 15% and supper 30%). But the distribution of meals varies from country to country depending on local traditions, working hours, climatic differences and other factors. Generally speaking, in Anglo Saxon countries the important meals are breakfast and supper, with lunch being little more than a snack. Sometimes it is even difficult to introduce breakfast when the person has not eaten breakfast for many years or it is no more than one or two coffees with or without sugar. Here again, there are cultural differences: it's difficult to imagine an Anglo Saxon skipping breakfast!

As concerns this, it is to be pointed out that the obese are not particularly afflicted by cibomania in the morning since the disturbance comes into play at the end of meals owing to lateness in the arrival of the sense of satiety. Even after a fairly abundant supper, patients often leave the table still hungry and only after the long and laborious processes of digestion and assimilation, with the consequent biochemical modifications at the blood and cerebral levels during the night do they find themselves on awakening free from the sensation of cibomania. However, keeping in mind during the diet that the risk of a fall in blood sugar or low blood

pressure is far greater in the long period of fasting between the evening meal (which is no longer what it used to be) and lunch on the day after, it is fairly often possible to get patients to eat a light breakfast.

The total or partial lack of fruit and vegetables represents a fairly widespread bad eating habit. Sometimes when putting on weight people eat so much bread with first and main servings that they no longer have room for fruit and vegetables: but there is usually enough for the dessert!

The aversion to cooked or raw vegetables is particularly present in the very young. It must be explained to them that these foods, since they require a certain effort to digest, favour the sense of satiety; they are also rich in fibre and thus help to avoid constipation, which is a frequent side effect in low calorie diets (on eating less, the intestine becomes lazy). Finally, they provide large amounts of vitamins, mineral salts and oligoelements (antioxidants) and thus represent a powerful preventive weapon against the most serious diseases and keep the organism healthy and the appearance pleasant.

This message is usually favourably accepted by the youngest who, however, are more easily attracted by a variety of vegetables with two or three different colours obtained by chopping up and mixing different vegetables. The organism benefits from these changes in diet and thus easily adapts to them.

The erroneous ideas about eating that must be corrected are:

- avoid bread and pasta "which are fattening"
- avoid drinking water at mealtimes "so as not to assimilate";
- eat as much fruit as you like "since it's not fattening";
- follow dissociated diets (primitive people ate what they found and only that);
- be a strict vegetarianism, eat a raw-food diet and so on.

To make it easier to stick to the diet, here are some useful suggestions:

- the morning, weigh and put aside the bread, fruit and vegetables to eat during the day;
- eat meals slowly, enjoying the food without being afraid of putting on weight: the feeling of cibomania will greatly benefit from this;
- at the end of the meal, leave the table immediately, brush the teeth and do some work or a recreational activity that you have planned before the meal.

The setting up of the diet, even with personal software available, is time-consuming and must be done as soon as possible after examining patients so that all details and impressions not written down at the time concerning their participation, their expectations about the duration of the treatment, the reasons for any past failures in dieting, the prevalence of fat in certain areas and not others, the psychological conditions, any other treatments being followed, favourite foods and so on are not overlooked. All these elements are of great importance in evaluating cases at the time of deciding on how many calories to reduce and the choice and division of the foodstuffs.

CUTTING DOWN ON CALORIES is surely the most important and difficult stage in planning a diet, keeping in mind that one hundred calories more or less are not to be overlooked in making the treatment successful. Any low-calorie diet, if followed scrupulously, will lead to a loss of weight, but only those that are suitable from the standpoint of calories, well-balanced as concerns nutrients, sufficiently free in the choice of foods and how they are divided into meals and, within proper limits, respectful of patients' eating habits, will be followed with a spirit of tolerance and with the greatest educational effect, up to the reaching of the goal set at the beginning, even when many months or years are necessary, depending on how much weight is to be lost.

What is most important is not the number of pounds lost in a given period of time, but the final result of the treatment. To lose weight and then put it back on again in a short time is certainly worse than not having followed a diet. Such an experience is a boomerang psychologically (disillusionment, loss of faith in oneself, behavioural disturbances become chronic) and physically (loss of consistency of the subcutis, the seriousness of the metabolic overload which is particularly important in the fattening stage).

The proper number of calories and the composition of the diet as well as the active and, to a certain extent, vexatious participation of patients surely represent the most important elements in reaching the goal set and the long-term maintenance of the results.

Only a careful and painstaking computerized processing of all the data collected will produce the proper calorie intake and composition of the diet. It is thus surprising to see the nonchalance with which researchers or leading specialists in internal diseases sometimes decide to reduce calories, for example simply by prescribing 1200 Kcal for women and 1500 for men without taking into account the individual's energy consumption, height, weight, constitution, age or specific individual needs. Perhaps this explains why in national and international congresses the yo-yo effect and the progressive increase in dietary maladjustments are constantly mentioned and the hypothesis is advanced that dieting as a cure for obesity is not only useless but even dangerous.

Just any diet cannot but be risky; the only useful one is the proper one: one thing is to prescribe, something else again is to prescribe the right thing! In our experience the number of calories in a diet may vary from 1100 to 2300 Kcal; in exceptional cases it may be less than 1100 and rarely above 2300. In other regions, where on the average people are taller than Sardinians, an even higher number of calories may be required.

In our over forty years of experience, since we have never felt the need to apply other methods, we have always calculated BASAL METABOLISM by means of the following formula:

$BM = 71.84 * ISW^{.425} * H^{.725} / 10000 * 24$ (Kcal/m²/h)
By adding 12 Kcal per kilo of excess weight, we have the theoretical basal metabolism compared to real weight.

Apart from BM, among the elements that make up TOTAL METABOLISM (TM), the specific dynamic action (SDA) of foods or food thermogenesis and physical activity, as well as MOTOR BEHAVIOUR, which explains differences in energy expenditure in individuals who are similar in other parameters, must be taken into consideration: it consists of the different physical or motor attitudes assumed when seated or standing with no other physical activity. There are those who remain seated without moving, with the arms at the sides or with elbows on the table supporting the head, the hands under the chin, and there are those who have difficulty in remaining seated for a long time or who cross the legs with the foot in constant movement or who rock from side to side on the chair. During the examination this aspect of energy consumption must be estimated and then included in the calculations. The motor investigation must be performed scrupulously, considering a typical working day starting from the time patients wake up to when they go to bed, establishing exactly how many hours are spent standing and sitting, with or without other physical activity, and how many hours are spent in bed (including afternoon naps). The complexity of the investigation derives mostly from the fact that each time it is necessary to consider different activities, such as housework, exercising, walks and so on, activities that usually vary from day to day or are performed only from time to time. Nor can we neglect the intensity and the way in which the activities are performed. As can be seen, the calculation of energy expenditure is objectively the weak point in a dietary survey but, considering its importance, it deserves the greatest attention and is worth all the time it takes to arrive at the most reliable solution possible.

To calculate TM:

- from BM we subtract: hours of sleep (HSI) * K * .07 (in the hours of sleep the metabolism slows down by approximately 7%);
- we add hours seated: (Hse) * K * SI, where SI is an index that varies from .30 to .45, depending on motor behaviour;

- we add hours standing: $(HSt) * K * StI$, where StI varies from .45 to .60 depending on motor behaviour;

- we add hours of activity: $(HA) * K * AI$, where AI represents the metabolic index of the activity performed or the weighted average of different indices if, as is often the case, more than one activity is performed.

Thus we have the following formula for TM:

$$TM = BM - HSI * K * .07 + HSe * K * SI + HSt * K * StI + HA * K * AI$$

The number of calories to be eliminated must be based on the many different aspects of the re-educational treatment and, most important of all, on the acceptability of the diet. It is important not to calculate calories only in an absolute sense, but also, and most of all, in terms of a percentage of overall calorie intake. In fact, the acceptability of the diet does not depend on the calories subtracted, but on the percentage they represent in comparison to total metabolism (not to basal metabolism, as is found in some commercial programs!). For example, if a decrease of 800 Kcal can be considered modest, or at least acceptable, in the case of a total metabolism of 3200 Kcal (25%), it would be quite drastic and hardly acceptable in the long run if applied to the case of a metabolism of 1600 Kcal (50%). Theoretically, and with all other things being equal, such a decrease could be tolerated if in the latter case the decrease were only 400 Kcal.

In our professional experience the number of calories subtracted varies from 10-15% to 25-35%, but in the great majority of cases it is between 25 and 32%. This is indeed the best solution in planning an acceptable diet, one that combines health and appearance, the re-educational effect and finally sufficient gratification deriving from the slimming process.

In children and the elderly for obvious reasons it is preferable never to go exceed a calorie reduction of 25% and, in preadolescence and at puberty a decrease of even less (8-20%) is preferable since the mere arrest of the weight-gaining process is to be considered positive while awaiting the increase in height to re-create the proper body equilibrium.

In cases of psychological disturbances, especially depression, it is a good idea to persuade patients to accept the results of a not overly strict diet (15-20%) so as not to risk adding other reasons for stress. However, if patients express a desire to undergo a faster weight loss and are willing to accept a more rigorous diet, it is possible to plan a reduction of even 30%, with periodic controls every 15 to 20 days instead of

monthly. Most patients of this kind respond quite well to treatment and receive immediate benefits from the physical and psychological standpoints. In some cases there is actually an actual remission of symptoms, to such an extent that the psychiatrist may reduce or sometimes even suspend pharmacological treatment. In many cases such patients put on weight owing to the administration of sedatives and antidepressants (triggering factor no. 3), while in other cases the psychiatric disturbances were the causes of the weight problem and the subsequent failure of attempts to return to normal weight.

However, there are some particularly difficult situations in which the desire to return to normal weight is not accompanied by even the slightest effort of the will. Generally speaking, these are patients treated at different times with anorexic drugs that act on the central nervous system, especially those of the amphetamine type which, more than other drugs, have a totally negative effect on eating behaviour, besides the inevitable cardiovascular and psychological repercussions. At the end of each cycle there is necessarily a further aggravation of the cibomania condition and a progressive weakening of the will, to the point of its complete disappearance. The correction of bad eating habits, which is essential in maintaining the results of dieting, is ensured, as we have said, only with the arduous participation of the patient. There are no alternatives.

In these cases, the philosophy of *carpe diem* ('well, now I'm just going to enjoy a snack? maybe on Monday I'll go back to the diet?') will always get the upper hand over planning for the future (a better quality of life, better health, having fewer pangs of hunger). The physician must be content with providing, together with the necessary information on the question of eating, strong psychological support in getting patients to accept their bodies and helping them through a difficult moment. His/her work will be truly praiseworthy if it is successful only in stopping the fattening process.

Another condition in which a modest decrease in calorie intake (10-20%) is required is represented by the tendency for fat to accumulate in certain areas of the body, in women typically at the top of the thigh and at the trochanters. On the other hand, a very strict diet, one that forces the metabolism to require an excessive amount of body fat, will make it less selective as concerns the part of the body from which to take it, and it may even come more from the parts that are better permeated and already contain less fat. The greater the disproportion in the distribution of fat, the less severe the diet must be, and it must also be accompanied by hygienic measures such as a suitable increase in physical activity and elimination of elastic and tight clothing: the results will come and they will often be far better than expected. However, when the folds of fat in the other parts of the body are below normal, it is difficult to obtain appreciable results without running risks to health and appearance. In these cases, besides the hygienic measures the patient can be advised to go to a massotherapist to activate the circulation.

Surgery for the removal of fat from certain areas (lipectomy, liposuction) in our

experience can lead to a worsening of these imperfections. In television programmes, plastic surgeons show us photos taken before and after the operation and, in reality, the effect is quite convincing, but very rarely do they show the results after a few years from the operation. In fact, in procedures of this kind, together with the fat, the fat cells that contain it are also removed and therefore the unhindered process of gaining weight (nobody has explained to the patient how to stop this from happening) will soon emphasize the unpleasantly sharp difference between the area treated, which no longer has fat cells, and the adjoining areas. The panniculus adiposus, having to substitute for the surgically removed fat cells, will quickly flourish. The number of patients who present such imperfections (the cauliflower effect or boot at the trochanters, the turtle effect of the abdomen), which probably can no longer be treated, is continually on the increase. The favourable results of surgical treatment will last as long as patients maintain their proper weight, and this can to some extent be made possible only by following a diet and understanding the reasons why it is necessary.

There are conditions in which it is possible and necessary to prescribe a more severe cutback on calories, but never beyond 35-40% of total energy expenditure. Cases of patients whose loss of weight was prescribed by physicians (orthopedic surgeons and heart surgeons) in the pre-operative period are not infrequent. Other situations that require a rapid loss of weight are when awaiting a selective medical examination or before interviews for the hiring of personnel for particular jobs, marriage in the near future and so on. Here the persons involved are perfectly willing to follow the treatment; despite this, however, it is advisable in these cases to plan the periodic checkups at intervals of no more than twenty days. Generally speaking, a sharp reduction in calorie intake is better tolerated in the very obese compared to those who are only slightly overweight, since the latter may suffer from sharp weight decreases, not only from the viewpoint of health (low blood pressure, anaemia, asthenia, insomnia), but also from that of appearance, with unpleasant effects on the face, breast and sometimes even on the body profile, most likely owing to a greater involvement of muscle tissue in the loss of weight. In all cases it is best to keep in mind that the re-educational effect of the treatment is all the greater the lesser is the restriction in the number of calories; in fact, dietary re-education cannot neglect the completeness of the diet, both quantitatively and qualitatively. For this reason, the theoretical basal metabolism can be taken as the limit not to be overcome except in cases of particular urgency or in those that present a very slight difference between total metabolism and basal metabolism (hospitalized patients, serious motor deficiencies and so on).

THE WAY FOODS ARE EATEN is another characterizing aspect of cibomania. With few exceptions, those affected by cibomania eat their meals quickly and in a disorderly way, as if eating slowly and enjoying the food increased the risk of getting fat (an antagonistic relationship with food). The pleasure of eating decreases and slowly but surely the mouth becomes nothing more than the stomach's hopper! Waiting at least thirty seconds before beginning to eat the food on the table may facilitate a return to the physiological times of chewing, tasting, digesting and

absorbing which are those of normal persons. Participating in the conversation, enjoying the food and the company and no longer worrying about filling the stomach, putting down knife and fork every so often, keeping in mind and following the diet prescribed for each meal will help to better observe how much is eaten and thus to prepare the nervous centres to send a faster signal of the sense of satiety.

THE DAILY DIVISION OF CALORIES in the three main food classes - proteins, glucides and fats - is also an important part of nutritional re-education. The unlimited availability of foods does not in fact eliminate the risk of malnutrition caused by too much (sugars, proteins, alcoholic beverages, sodium etc.) or not enough (vitamin A, calcium, iron and so on). This is even more important when one is following a diet. As is known, the following division of calories: 12-15% proteins, 25-30% lipids and 55-60% glucides is universally accepted. This rule is often neglected in diets prescribed by persons who are not competent and who sometimes even totally eliminate one of these in favour of the others. This imbalance, together with a too drastic reduction in calorie intake, besides overlooking the re-educational function necessary in maintaining the results in the long term, also represents the most frequent cause of unpleasant and sometimes quite serious consequences to the health and appearance, depending on the duration and severity of the metabolic imbalance.. However, in our opinion, if there are no particular contraindications, the treatment may benefit from a higher proportion of proteins, even up to 18-20% of overall calorie intake. And in no case is it advisable to go below one gram per kilo of body weight: this avoids the involvement of muscle tissue in catabolic processes. A greater protein intake is also suggested by two more considerations: protein calories are widely spread by food thermogenesis (about 25% against 3-5% of lipids and 5-10% of carbohydrates); proteins in general, and those of meat in particular, favour the onset of the sense of satiety, thus making the diet more acceptable.

Finally, patients must learn to differentiate foods also by their caloric density, distinguishing for example fennel or zucchini from potatoes and peas, watermelons from bananas or figs, a lean minute steak from sausages. The diet must therefore provide the widest possible choice of foods in the different homogeneous groups according to their composition, without eliminating those that patients normally eat so long as they are compatible with healthy eating habits.

(See also CIBOMANIA - Ettore Gasperini Editore - Cagliari 1997)

For comments, textual criticism, suggestions and inquiries send an email to virgiliolorrain@tiscalinet.it.