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## Some ethical reflections on weight-loss diets

Hakan ERTİN, Bülent ÖZALTAY

**Aim:** To assess how weight-loss diets tend to move away from the authority of conventional medicine and become a field of abuse. Endocrinologists and specialists on metabolic diseases are rarely called upon to speak about obesity, whereas physicians from unrelated fields or nonphysicians frequently appear in the media.

**Materials and methods:** The literature related with the field was reviewed and interpreted from an ethical perspective.

**Results:** It is presented medically doubtful solutions via television and the internet. Several weight-loss drugs are introduced to the market without adequate controls and then have to be withdrawn after having caused serious damage to the health of a significant number of users – and after producing large profits for the providers.

**Conclusion:** The main purpose is actually gaining money or popularity rather than curing people's weight problems. Attitudes, which are far from conforming to human responsibility and the ethical principle of not causing harm, are tainting the reputation of pharmacology. In order to overcome such sort of abuses, the authority of conventional medicine should be emphasized, drug production should be carefully controlled, and misinformation dealt out by non-specialists' advices and the unqualified promotion of herbal recipes through media communication should be prevented.

**Key words:** Commercial medicine, medical ethics and diet, weight-loss diets and medical ethics, endocrinology metabolism and medical ethics, weight-loss industry, weight-loss drugs

### Kilo verme diyetleri hakkında bazı etik düşünceler

**Amaç:** Endokrinoloji ve metabolizma hastalıkları uzmanlarına obezite konusunda nadiren söz verilirken, ilgisiz branşlardan hekimler ya da hekim dahi olmayan kimseler sık sık medyada yer almaktadır. Bu çalışmanın amacı, kilo verme diyetlerinin klasik tıbbın hakimiyetinden çıkıp bir suistimal alanı haline gelişini irdelemektir.

**Yöntem ve gereç:** Konu ile ilgili literatür taranarak, elde edilen bilgiler etik perspektiften yorumlanmıştır.

**Bulgular:** Kilo verme diyetleri ile ilgili olarak, televizyon ve internet aracılığı ile tıbbi dayanağı şüpheli çözümler sunulmaktadır. Çeşitli zayıflama ilaçları yeterince tetkik edilmeden kolayca piyasaya sürülmekte; ciddi sayıda insanı sıhhen olumsuz etkiledikten – ve kar edildikten – sonra geri çekilmektedir.

**Sonuç:** Kilo verme diyetlerinde genel olarak para ya da popülerite hedeflenmektedir. İnsani sorumluluktan uzak, zarar vermeye ilkesine kayıtsız bu gibi tutumlar farmakolojiyi lekelemektedir. Söz konusu suistimallerin üstesinden gelmek için, geleneksel tıbbın otoritesi vurgulanmalı, ilaç üretimi daha hassas bir kontrole tabi tutulmalı; özel ihtisası olmayan kişilerin, bitkisel reçete ve tavsiyelerinin, iletişim organları kanalıyla yarattığı bilgi kirliliği önlenmelidir.

**Anahtar sözcükler:** Ticari tıp, tıp etiği ve diyet, kilo verme diyetleri ve tıp etiği, endokrinoloji-metabolizma ve tıp etiği, kilo verme endüstrisi, kilo verme ilaçları

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## Introduction

When the World Health Organization published a declaration on obesity in 1977, considering it a serious condition affecting human health, those foreseeing its importance in the not-so-distant future were surely a minority (1). The topic, which is covered under different labels, including overweight-dieting-obesity, and which could be called 'weight problems' in general, is a concern of the greatest prevalence at the present day.

However, there is a difference that distinguishes the story of these weight problems from other concerns. When addressing this issue, is it possible for us to speak of a process free from nonmedical interference, in which diagnosis and treatment are defined by accurate and objective experience and medical expertise, adhered to as in other health conditions?

Dieting, which used to be a medical matter, seems to have become a part of daily life as an unquestioned and ordinary rule, especially among women, posted on almost every refrigerator today. Formerly, specific diets as a part of the regular treatment of a main disease, with which patients hence had to comply, were prevalent mostly among the middle-aged and elderly. However, a necessity has recently emerged to classify diets as either medical or popular, for the issue has long since gotten out of the control of the medical world. While special diets related to such disorders as hypertension, diabetes, and high blood cholesterol or slimming programs aimed at reducing detrimental weight burdens used to constitute a majority of all dieting, popular diets undertaken by people from all age groups out of aesthetic concerns present a greater percentage now. The main reason behind this trend is that, since overweight was first declared a disease, it has gone beyond this initial status: it is now perceived as a visual disaster, an unacceptable case regardless of what causes it or how much extra weight is really in question.

### Reflections on commercial medicine: how and why to lose weight

The concern caused by excess weight has increased in parallel with a change in certain concepts. While in the 1950s women with a regular weight, neither too fat nor too slim, were appreciated in many

Western countries, a teenage girl in London, Twiggy, was 'discovered' as a fashion model in the 1960s; the powers behind the discovery quickly agreed about the innocent appearance and extraordinary beauty of this girl, who could never have achieved such fame even a few years earlier. The first reaction of the fashion world upon seeing Twiggy was not admiration, but rather surprise. However, as they realized that this girl, who was about three-fourths the weight of the usual models of the time, promised a new trend and a new production-consumption wave, or, in other words, revenues, she was accepted and made acceptable. She was introduced to the world in magazines as the new fashion. Her body, much thinner than the prevailing norm, displayed clothes especially designed for it, while her large eyes promoted a number of cosmetic products; movies of the period also reflected this trend. Shortly after the death of American Marilyn Monroe, who left her mark on the century with a normal weight and idealized the blonde and attractive woman through the 1950s, the standard was taken over by the British Twiggy. Regular sizes were now outmoded, whereas the very thin – and somewhat sad – woman was beautiful. In time, this became the new appearance expected from women.

Of course, 16-year-old Twiggy, who weighed 40 kg at a height of 1.70 m, could not make it on her own; the media, whose great power was then widely utilized, served in the same direction. There was a message pushed by all media channels, from television to newspaper supplements: the thin woman is beautiful. Furthermore, according to the idealization imposed, the thinner this woman gets, the more beautiful she becomes. Every image and each product on display invited women to lose weight, and they were not indifferent to it.

As one actual marker, the current high incidence of bulimia nervosa, formally described only in 1979, is noticeable, particularly in female high school or college students (2). The media has played a large role in the rise of bulimia nervosa, previously thought to be related only to white women and characterized by periods of binge eating followed by defensive vomiting and engagement in long-term fasting, laxative use, and/or overexercise (3-5). A survey conducted shortly after the introduction of television

to Nadroga, Fiji, demonstrated that the incidence of bulimic vomiting among high school girls around 17 years old was 0% in 1995; after 3 years of exposure to television, it reached 11.3% in 1998 (6). Likewise, another analysis indicated that both European-Australian girls and Fijian girls aged between 13 and 18 years, despite the latter group's sociocultural values promoting a larger body, are both inclined to stay thin and are worried about weight gain because of concerns about their physical appearance (7). When we look at Asia, we see that body-image disorders and physical dissatisfaction are on the rise there, too; a study performed with 517 adolescents in China stated that, beside females reporting a greater physical dissatisfaction than males, females feel pressure from the media to lose weight, while males are held by various sociocultural sources to increase their muscle mass (8). A study among 336 female college students in Taiwan reported that unhealthy dietary behaviors have become prevalent; 67.6% of the students had lost weight, 51% had dieted at least once to lose weight, and 17.9% applied for weight-loss medication (9). Such significant findings are not limited to those who might be regarded as young girls lacking in medical awareness; the increase in eating disorders and psychological problems related to the unrealistic perception of the body can be found in all environments. We more often mention the condition of anorexia nervosa, characterized by a perpetual complaint of overweight despite the actual presence of extreme underweight, leading sufferers to restrict nutrition and producing the highest mortality among all psychiatric illnesses (10,11). A female adolescent not influenced by the thin ideal represents a remarkable rarity in our time.

However, besides the fact that such disorders do not receive enough attention, many members of the medical profession are accomplices in the obesity-dieting dilemma. Some of them routinely go public with various forms of advice and dietary suggestions despite the fact that their specialty is not in endocrinology or metabolism. Nonspecialist and nonpersonalized advice from outside or generalized treatments disregarding patients' personal backgrounds are all threats to health. At this point, we should pose the crucial question: What kind of solution is offered for women trying to lose weight? The answer may point to the mechanism and

circumstances of the 'thin' fashion since the 1960s.

As obesity turned into a most worrying disease, when even a few extra pounds were perceived as a serious disadvantage, the backstage players of the health care sector – some pharmaceutical companies – went into action. As almost no products had been available in this field until the 1930s, dinitrophenol (2,4-DNP), which had been used as an herbicide and fungicide and was known to induce weight loss by increasing metabolism, was introduced to the market in this period (12,13). The use of DNP, which stood on a thin line between disputable therapeutic benefit and definite toxicity, was terminated in 1938 due to its numerous side effects, ranging from cataracts and hyperemia to hyperthermia and hyperpyrexia (13,14). However, by that time, during the first 15 months following the introduction of the drug, 100,000 people had taken this potentially lethal medicine in order to lose weight, which was sold with no further directions other than “3 times daily after meals” (15).

In the 1950s, the decade after the ban of DNP, the production of weight-loss drugs accelerated. Amphetamine used to keep soldiers awake and alert during World War II and was subsequently used in medicine, sometimes as an antidepressant, sometimes as a means for weight reduction, and even as a decongestant. It became a main weight-loss drug during the 1950s and its use continued until the late 1960s (16,17). It may seem a strange coincidence that some drug producers were searching for new weight-loss medicines right before the onset of the slimming wave triggered by Twiggy only a few years later.

Although amphetamine, too, was gradually abandoned due to its side effects and addiction due to improper use, the introduction of new drugs never ceased. Phentermine was approved by FDA as a new remedy in 1959, and fenfluramine (Pondimin) was introduced in 1973 (18). Fenfluramine was withdrawn from the market in the USA in 1997 for its serious danger of producing problems such as heart valvular damage, but it should be noted that 18 million prescriptions had been written for fenfluramine and phentermine (19,20). Another slimming drug was dexfenfluramine (Redux), approved in 1996 and also withdrawn in 1997 along with fenfluramine because of its negative effects on health (18,21).

In the very same year, 1997, the FDA approved sibutramine (Meridia) as the successor of Redux and Pondimin; 2 years later, in 1999, orlistat (Xenical) was licensed (22,23). While in the US orlistat now stands accused of provoking severe liver damage, the latest drug investigated in Turkey has been Lida, imported from China. The sale of Lida, claimed to induce death by liver and renal failure, was terminated by the Ministry of Health (24). On the other hand, many drug users think they are safe; a study showed that 64% of weight-loss drug users believe that the government requires warnings about potential side effects, 54% believe that products are approved by the FDA for safety, and 46% think they are approved for efficacy – and, actually, these beliefs are all wrong (25).

The uncontrolled trials of firms designing weight-loss drugs unsuccessfully continue, creating further health damage, including death. But why are these companies so persistent despite so much failure?

Aside from these drugs, the ‘weight-loss industry’ has reached an enormous volume with its subdivisions such as diet programs, diet products, and exercise. The American slimming market, which had a turnover of \$35 billion in 2000, had \$55 billion spent on it in 2006; the 2009 GDP of the European country of Luxembourg was \$52 billion (26-28). The ‘customers’ spent almost \$1 billion each year on products that are at best safe enough not to damage health, but unproven (25).

In contrast to the generous opportunities offered to investors, there hardly seems to be a similar benefit for the customer. Globally, from the developed countries, and particularly in the US where weight-loss products are most in demand, to the developing world, the number of overweight people is on the rise (29). The American obesity incidence of 13% among adults in the 1960s is expected to reach 41% in 2015; among children, the prevalence of overweight has already increased from 1999 to 2004, and since healthy nourishment is replaced by affordable energy-dense but nutrient-poor foods, the rate increases as income level drops (30-32). While the producers back up their claims with healthy and slim smiles telling success stories, many studies indicate that weight-loss drugs and ‘wonder diets’ are useless. It is known that almost 80% of the product

users’ efforts fail, which is to say that the mediocre weight loss of 5% to 10% obtained on average with these drugs is not maintained and eventually the previous weight is regained (33-37). In other words, before prescribing a weight-loss drug that promises a weight loss of 10% at best with a 20% chance of a lasting result, a responsible physician must make a serious risk-benefit analysis: *primum nil nocere*, the main medical ethics principle of “first, do no harm.”

On the other hand, similar to the standardization of the human body and that of women in particular, many concepts referring to health have been commercialized. The consequences of the free and fast lifestyle of the 1980s, with careless consumption of refined sugar, fat, and fast food as another freedom, are considered to be among the major reasons of the present obesity rate, but those were all popular at that time, in contrast with the ‘thin beauty’ simultaneously prevailing in the media. Fast food, which is now a saturated sector after profiting at levels of billions of dollars, has recently been supplanted by the idea of ‘back to nature,’ sold under the name ‘organic farming’ with a growing demand. Organic farming, which was the only farming our ancestors knew, and natural nutrition have regained currency after the experience of the downside of industrial and modern trends, but their products have returned to the shelves at much higher prices. In addition, various food fashions keep arising. Sushi from Japanese cuisine, far from being the perfect food with the raw fish that it contains and a risk of high levels of mercury intake or parasitic infection, has become a worldwide health symbol (38,39). After a long time on the blacklist, butter and eggs have newly been announced as safe. Coffee, which has always been an ordinary beverage with a controversial balance of pros and cons, has been bestowed with an eminent status.

Although obesity is a health condition, medical experts have lost their leading role in decisions about who should lose how much weight by what means. In accordance with the changing eating trends, people are constantly informed about what kind of food can be deemed healthy and help them to stay slim, but the qualifications of those guides are often dubious. A number of private dietitians under no medical control, sports trainers, and herbalists with previous experience of prescribing in this direction seem to

be the new protagonists of the overweight problem. While these unauthorized actors easily reach the stage, scientific authorities in the field are rarely offered the same opportunity. The numerous teas, herbal recipes, and mixtures alleged to ensure weight loss that have lately become so prominent on Turkish televisions could be nothing but quackery. It is clear that people appearing in audiovisual and printed media are not endocrinology and metabolism specialists, but either just general practitioners or physicians from unrelated branches; in most cases, they are not even physicians. As a result, the increasing prevalence of obesity benefits many groups financially. A positive effect of the disinformation may at least be the increased public awareness of obesity and health; on the other hand, we might wonder how the generations of 30 years ago, without so much guidance, could lead healthier and 'lighter' lives than do people of our day.

As for the medical mindset today, it may not generally object to the exploitation of certain disorders. The seriousness and priority of health problems in modern medicine are uncertain and disease definitions are more ambiguous than ever before; diseases have been commercialized. While the notion of 'patient' is replaced with that of 'customer,' the relevance of some diseases is exaggerated, new ones are invented, and more and more people are categorized as patients – or as customers, for that matter (40). Advertising and drug companies work hand-in-hand to medicalize new conditions such as 'adult attention deficit syndrome,' 'erectile dysfunction,' and 'premenstrual dysphoric disorder.' This strategy is called 'the art of disease branding' (41). Shyness is presented as social anxiety and menopause as a hormonal deficiency, so they also turn into conditions to be treated by medication; new markets can thus be created. Unjustified concerns about high cholesterol levels are generated. The upper cholesterol level, which was accepted to be 260 mg/dL as of 20 years ago, has now been revised down to 200 mg/dL. Another similar situation is seen with arterial tension levels. Are these modifications really based on pure medical reasons, or should we have doubts?

The answer may be hidden in sales figures. The acceptability ranges of such medical parameters are determined by the National Institute of Health (NIH)

in the US. When the normal cholesterol levels were lowered by the NIH in 2001, the number of people to use cholesterol-lowering drugs immediately tripled (41). Sales consequently soared; particularly Mevacor, which was introduced in 1987, and Lipitor are among the most prescribed medicines ever (41). In 2004, the NIH, having first advocated direct relationships of its employees with drug companies, which it then regarded as innocuous, issued a circular to its scientific staff following serious criticism, requiring that the connections with the pharmaceuticals sector be severed (41). Nevertheless, it has been a long time since bone density or cholesterol figures became an obsession for some.

The most striking example of an invented disease is probably the Sisi syndrome; it emerged in 1998 with a single-page announcement from a drug firm. The disease, allegedly a special kind of depression, was first meant to be named after Princess Diana; however, the melodious nickname 'Sisi,' from the name of the Austrian Empress Elisabeth, was later found to be more convenient. Thus, people were granted the privilege of having a noble disease (42). The fact that the Sisi syndrome was neither known nor observed in non-German-speaking countries must indicate that it was reserved for Germanic nobility only. After a while, it was revealed that the disease was made up.

Indeed, all of these new strategies highlight a change in goals; medicine is heading toward the healthy rich instead of poor patients and treatments have been commercialized. The diet and slimming formulas mentioned above are a part of those tactics. It has become so usual to pronounce the word 'money' in the treatment process that some new schemes are suggested to reward patients with money instead of charging them bills, thus going beyond what is 'traditional.' In this context, the results of a study published in the *Journal of the American Medical Association* demonstrated that obese people who were offered financial incentives for losing weight were approximately 5 times more successful than those expecting no prize. While 10.5% of the control group with no incentive achieved the weight-loss goal of 7.20 kg, the rate was 52.6% and 47.4%, respectively, for the other 2 groups that did receive money (43). The research states that weight loss

increases depending on the incentives offered, and that the observed weight loss was, however, not fully sustained; further work is needed to validate this approach (43).

As their weight continues to increase in contrast with the incessant insistence that it be lowered, modern humans in a materialistic popular culture seem to have adopted financial prerequisites to invest in their own health, as well.

## Conclusion

It is uncontroversial to say that overweight causes disease, and the global dimension that the issue of obesity has reached is visible to the eye. In this article, several forms of exploitation and merchandising in the wake of this epidemic were discussed. Such intentions violate the medical ethical principle of doing no harm and deprive people of true treatment.

Today, we have no objections if a dozen different drugs are developed for treating any newly described disease. The profit strategies of some entities in the health sector are negligent of human responsibility

and the media is shaping public perception through the models it imposes. In addition to unhealthy eating habits, these mechanisms infuse society with deleterious requirements of manufactured fads; irrespective of the potentially harmful effects, they choose to drive the masses to seek remedies in new markets.

An essential step toward the solution of this dilemma is to constitute a self-control mechanism in medicine to render approaches to healthcare more rational and humane; the most effective way to obviate the exploitation is to reemphasize the authority of conventional medicine. The disinformation generated through mass media by people with no particular qualification, providing herbal prescriptions and giving general advice, should be prevented.

The overweight problem, an issue that belongs to medicine, is diverted into external and irrelevant fields. Like every health problem, this matter, too, should be restored to the seriousness it deserves and be treated from a perspective with the human at the center.

## References

1. WHO. The Milan Declaration: Positioning Technology to Serve Global Heart Health; 2004. Available from: URL: [http://www.who.int/cardiovascular\\_diseases/media/en/cvd\\_milan\\_declaration.pdf](http://www.who.int/cardiovascular_diseases/media/en/cvd_milan_declaration.pdf). Accessed on 10 September 2010.
2. Hill AJ, Kirk SFL. Bulimia nervosa. In: Caballero B, Allen L, Prentice A, editors. *Encyclopedia of human nutrition*. 2nd ed. Elsevier Academic Press; 2005. p.74-80.
3. WHO. The ICD-10 classification of mental and behavioural disorders: diagnostic criteria for research. Geneva: World Health Organization; 1993.
4. Roerig JL, Steffen KJ, Mitchell JE, Zunker C. Laxative abuse: epidemiology, diagnosis and management. *Drugs* 2010; 70: 1487-503.
5. Franko DL, Becker AE, Thomas JJ, Herzog DB. Cross-ethnic differences in eating disorder symptoms and related distress. *Int J Eat Disord* 2007; 40: 156-64.
6. Becker AE, Burwell RA, Herzog DB, Hamburg P, Gilman SE. Eating behaviours and attitudes following prolonged exposure to television among ethnic Fijian adolescent girls. *Br J Psychiatry* 2002; 180: 509-14.
7. Williams LK, Ricciardelli LA, McCabe MP, Waqa GG, Bavadra K. Body image attitudes and concerns among indigenous Fijian and European Australian adolescent girls. *Body Image* 2006; 3: 275-87.
8. Xu X, Mellor D, Kiehne M, Ricciardelli LA, McCabe MP, Xu Y. Body dissatisfaction, engagement in body change behaviors and sociocultural influences on body image among Chinese adolescents. *Body Image* 2010; 7: 156-64.
9. Yeh HW, Tzeng NS, Chu H, Chou YH, Lu RB, O'Brien AP et al. The risk of eating disorders among female undergraduates in Taiwan. *Arch Psychiatr Nurs* 2009; 23: 430-40.
10. Torpy JM, Burke AE, Glass RM. Anorexia nervosa. *JAMA* 2006; 295: 2684.
11. Duvvuri V, Kaye WH. Anorexia nervosa. *Focus: The Journal of Lifelong Learning in Psychiatry* 2009; 7: 455-62.
12. Miranda EJ, McIntyre IM, Parker DR, Gary RD, Logan BK. Two deaths attributed to the use of 2,4-dinitrophenol. *J Anal Toxicol* 2006; 30: 219-22.
13. US Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR). Toxicological profile for dinitrophenols. Atlanta (GA): ATSDR; 1995. Available from: URL: <http://www.atsdr.cdc.gov/toxprofiles/tp64.pdf>. Accessed on 10 September 2010.

14. Colman E. Dinitrophenol and obesity: an early twentieth-century regulatory dilemma. *Regul Toxicol Pharmacol* 2007; 48: 115-7.
15. Horner WD. A study of dinitrophenol and its relation to cataract formation. *Trans Am Ophthalmol Soc* 1941; 39: 405-37.
16. Rasmussen N. On speed: the many lives of amphetamine. 1st ed. New York: New York University Press; 2008.
17. Rasmussen N. Making the first anti-depressant: amphetamine in American medicine, 1929-1950. *J Hist Med Allied Sci* 2006; 61: 288-323.
18. US Food and Drug Administration. Questions and answers about withdrawal of fenfluramine (Pondimin) and dexfenfluramine (Redux). Washington (DC): USDA; 2005. Available from: URL: <http://www.fda.gov/Drugs/DrugSafety/PostmarketDrugSafetyInformationforPatientsandProviders/ucm180078.htm>. Accessed on 10 September 2010.
19. Dahl CF, Allen MR, Urie PM, Hopkins PN. Valvular regurgitation and surgery associated with fenfluramine use: an analysis of 5743 individuals. *BMC Med* 2008; 6: 34.
20. Connolly HM, Cray JL, McGoon MD, Hensrud DD, Edwards BS, Edwards WD et al. Valvular heart disease associated with fenfluramine-phentermine. *N Engl J Med* 1997; 337: 581-88.
21. Gardin JM, Schumacher D, Constantine G, Davis KD, Leung C, Reid CL. Valvular abnormalities and cardiovascular status following exposure to dexfenfluramine or phentermine/fenfluramine. *JAMA* 2000; 283: 1703-9.
22. US Food and Drug Administration. Drug approval package, Meridia capsules. Washington (DC): USDA; 2003. Available from: URL: [http://www.accessdata.fda.gov/drugsatfda\\_docs/nda/97/20632\\_meridia.cfm](http://www.accessdata.fda.gov/drugsatfda_docs/nda/97/20632_meridia.cfm). Accessed on 10 September 2010.
23. US Food and Drug Administration. Drug approval package, Xenical capsules. Washington (DC): USDA; 2005. Available from: URL: [http://www.accessdata.fda.gov/drugsatfda\\_docs/nda/99/020766a.cfm](http://www.accessdata.fda.gov/drugsatfda_docs/nda/99/020766a.cfm). Accessed on 10 September 2010.
24. US Food and Drug Administration. FDA drug safety communication: completed safety review of Xenical/Alli (orlistat) and severe liver injury. Washington (DC): USDA; 2010. Available from: URL: <http://www.fda.gov/Drugs/DrugSafety/PostmarketDrugSafetyInformationforPatientsandProviders/ucm213038.htm>. Accessed on 20 October 2010.
25. Stern JS, Kazaks A. Obesity: a reference handbook. 1st ed. USA: ABC-CLIO; 2009.
26. Cleland RL, Gross WC, Koss LD, Daynard M, Muoio KM. Weight-loss advertising: an analysis of current trends. Washington (DC): US Department of Health and Human Services, Federal Trade Commission; 2002. Available from: URL: <http://www.ftc.gov/bcp/reports/weightloss.pdf>. Accessed on 20 October 2010.
27. Dara L, Hewett J, Lim JK. Hydroxycut hepatotoxicity: a case series and review of liver toxicity from herbal weight loss supplements. *World J Gastroenterol* 2008; 14: 6999-7004.
28. Central Intelligence Agency. Luxembourg. In: The world factbook. Washington (DC): CIA. Available from: URL: <https://www.cia.gov/library/publications/the-world-factbook/geos/lu.html>.
29. Prentice AM. The emerging epidemic of obesity in developing countries. *Int J Epidemiol* 2006; 35: 93-9.
30. Wang Y, Beydoun MA. The obesity epidemic in the United States – gender, age, socioeconomic, racial/ethnic, and geographic characteristics: a systematic review and meta-regression analysis. *Epidemiol Rev* 2007; 29: 6-28.
31. Ogden C, Carroll M, Curtin L, McDowell M, Tabak C, Flegal K. Prevalence of overweight and obesity in the United States, 1999-2004. *JAMA* 2006; 295: 1549-55.
32. Drewnowski A. Obesity, diets, and social inequalities. *Nutr Rev* 2009; 67: 36-9.
33. Christensen R, Kristensen PK, Bartels EM, Bliddal H, Astrup A. Efficacy and safety of the weight-loss drug rimonabant: a meta-analysis of randomised trials. *Lancet* 2007; 370: 1706-13.
34. Glazer G. Long-term pharmacology of obesity 2000: a review of efficacy and safety. *Arch Intern Med* 2001; 161: 1814-24.
35. Davidson MH, Hauptman J, DiGirolamo M, Foreyt JP, Halsted CH, Heber D et al. Weight control and risk factor reduction in obese subjects treated for 2 years with orlistat. *JAMA* 1999; 281: 235-42.
36. Padwal R, Li SK, Lau DCW. Long-term pharmacotherapy for overweight and obesity: a systematic review and meta-analysis of randomized controlled trials. *Int J Obes* 2003; 27: 1437-46.
37. Wing RR, Hill JO. Successful weight loss maintenance. *Annu Rev Nutr* 2001; 21: 323-41.
38. Nakagawa R, Yumita Y, Hiromoto M. Total mercury intake from fish and shellfish by Japanese people. *Chemosphere* 1997; 35: 2909-13.
39. Weir E. Sushi, nemotodes and allergies. *CMAJ* 2005; 172: 329.
40. Illich I. Sağlıkın gaspı. 1st ed. İstanbul: Ayrıntı Yayınları; 1995.
41. Cassels A, Moynihan R. Satılık hastalıklar. 1st ed. İstanbul: Hayykitap; 2006.
42. Küçükusta AR. Biri bizi hasta ediyor. 1st ed. İstanbul: Hayykitap; 2008.
43. Volpp KG, John LK, Troxel AB, Norton L, Fassbender J, Loewenstein G. Financial incentive-based approaches for weight loss. *JAMA* 2008; 300: 2631-7.