

DIETARY MANAGEMENT OF OVERWEIGHT AND OBESITY

Frances van Schalkwyk
Registered dietitian (SA)
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INTRODUCTION

- \$33 Billion/year
- \pm 90% dieters who lost 11kg or more regain within 2 years
- Obesity doubled in USA from 1900 - 1980 and increased by 75% since 1980
- In RSA 31.2% males and 56.8% females are overweight or obese (SA National Demographic & Health survey 1998)

INTRODUCTION



- Incidence of obesity in children and adolescents has more than doubled since 1976

INTRODUCTION

- Obesity related disorders is the 2nd leading cause of death in USA → major public health problem
- Economic burden: \$100 billion, including \$52 billion direct medical cost in 1995

INTRODUCTION



- Psychological costs
 - *Lowered self-esteem
 - *Fat and happy?
 - *Binge-eating disorder
 - *Clinical depression

INTRODUCTION

- Despite claims of pills and capsules that burn, block, flush or eliminate fat, there is no magic bullet yet!
- FDA banned 111 ingredients once found in diet products
- Prevention better than cure

Increase in Prevalence (%) of Overweight (BMI ≥ 25), Obesity (BMI ≥ 30) and Severe Obesity (BMI ≥ 40) Among U.S. Adults.

	Overweight (BMI ≥ 25)	Obesity (BMI ≥ 30)	Severe Obesity (BMI ≥ 40)
1999 to 2000	64.5	30.5	4.7
1988 to 1994	56.0	23.0	2.9
1976 to 1980	46.0	14.4	No Data

Source: CDC, National Center for Health Statistics, National Health and Nutrition Examination Survey, Health, United States, 2002. Flegal et. al. JAMA. 2002;288:1723-7. NIH, National Heart, Lung, and Blood Institute. Clinical Guidelines on the Identification, Evaluation and Treatment of Overweight and Obesity in Adults, 1998.

Screening results: Polyclinic at Kalafong Hospital (November 2004)

Classification	Number of patients	% of Total	Average BMI
Underweight	4	2.5	16.8
Normal	47	29	21.5
Overweight	40	24.7	27.1
Obese Class 1	37	22.8	32.1
Obese Class 2	21	13	37.2
Obese Class 3	13	8	44.6
Total	162	100	

Total of 68.5% was overweight or obese

MEASURES OF OBESITY

BODY MASS INDEX (BMI)

$$\text{BMI} = \text{weight(kg)} / \text{height}^2(\text{m})$$

- 18.5 - 24.9 : Healthy weight
- 25 - 29.9 : Overweight
- 30 - 34.9 : Obesity Class 1
- 35 - 39.9 : Obesity Class 2
- >40 : Obesity Class 3

Apple or pear?



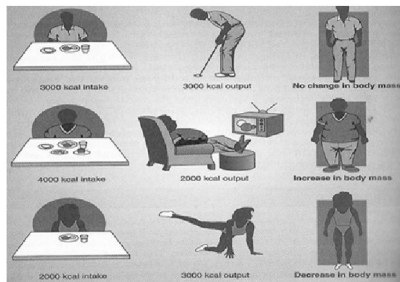
- **Android (central) vs Gynoid**
- **Android obesity is strongly correlated with insulin resistance, glucose intolerance, hyperlipidemia and hypertension**

Waist circumference and chronic lifestyle disease risk

	IDEAL	INCREASED RISK	SUBSTANTIAL RISK
MEN	<94cm	94 – 101.9cm	≥102cm
WOMEN	<80cm	80 – 87.9 cm	≥88cm

ETIOLOGY OF OBESITY

ENERGY BALANCE EQUATION



From: Katch, FI & McArdle, WD. Introduction to Nutrition, Exercise and Health. 4th ed, 1993

ENERGY BALANCE EQUATION

- Daily excess intake of 420kJ (1 slice bread with margarine) results in annual excess of $420\text{kJ} \times 365 \text{ days} = 153\,300\text{kJ}$
- 1kg of body fat contains $\pm 32\,700\text{kJ}$
- With a constant excess intake this will equate to a yearly weight gain of $\pm 4.7\text{kg}$
- In 5 years it will add 23.5kg
- Thus a person of 1.65m weighing 61kg (BMI = 22.5) will then weigh 84.5kg (BMI = 31) grading as Obesity Class 1!

FACTORS INVOLVED IN CONTROL OF ENERGY EQUATION

- Genetic (Hormonal & neural factors). BUT although genes appear to increase vulnerability to obesity, other determinants must be present for obesity to occur
- Dietary factors (portion sizes & energy-dense diets)
- Neuropeptides of satiety (Peptide YY₃₋₃₆). Secreted by endocrine cells in small bowel and colon in response to food and leads to a decrease in energy intake
- Factors controlling lipogenesis and lipolytic rate (lipoprotein lipase)

IDEAL WEIGHT GOAL

- Realistic!
- Personal weight history
- Cultural preferences
- Aim: Healthy weight
- Decrease of BMI with 1 or 2 units (4.5-7.5kg), decrease health risk
- 10% weight loss resulted in significant improvement in serum lipids, despite still remaining more than 20kg overweight

IDEAL WEIGHT GOAL (cont.)

- Steady losses over longer period → reduction of fat stores → limit muscle loss → avoid decrease in RMR
- 0.25 - 0.6kg/week for persons with a BMI of 27 to 35 and 0.6 - 1kg/week with BMI >35
- Further weight loss can be considered after maintenance of 1st goal weight for 6 months

WHICH DIET?

- Abundance of programs in RSA, old & new
- Most emphasise fast results with minimum effort
- Potential health risks seldom manifest, due to early abandonment of program

FAD DIETS ENCOURAGE UNREALISTIC EXPECTATIONS, SETTING PATIENT UP FOR FAILURE, SUBSEQUENT GUILT AND FEELINGS OF HELPLESSNESS!

WEIGHT MANAGEMENT

Weight loss

Focus: Symptom

Aim: Appearance

Weight management

Focus: Cause

Aim: Good health

Weight management = adoption of healthful and sustainable eating and exercise behaviours to reduce disease risk and improve feelings of well-being.

FOOD GUIDE PYRAMID



ADJUST EATING HABITS

- Variety of foods
- Fruit & vegetables: Minimum 5-a-day!!
- Whole grain starches (3-a-day minimum)
- Decrease fat intake
 - fat free dairy products
 - small portions lean meat/chicken/fish
 - Boil/grill/bake/steam vs frying
 - Avoid processed high fat meat products
 - Avoid high fat pastries
 - Limit intake of oil/margarine/butter



ADJUST EATING HABITS

- Legumes e.g. dried beans, lentils, split peas, soya
- Eat 5 to 6 small meals per day. Never skip a meal!!!
Eating breakfast protective against obesity for adolescents with an obese parent (NHANES III)
- Reduce intake of sugar and foods with a high sugar content, especially sugary drinks
- Use alcohol in moderation
- Smaller portion sizes

Exercise is an essential part of weight management



A combination of aerobic and resistance training is optimal

LIFE STYLE MODIFICATION

- Elimination of eating cues e.g. buy groceries from a list, never buy groceries when hungry, etc.
- Behaviour to prolong eating and reduce the amount of food eaten e.g. put knife and fork down between bites
- Identify, challenge and correct negative thoughts
- Self monitoring e.g. food intake diary
- Do not keep high fat, high sugar foods in the house (You cannot eat it, if you do not have it!)

ENERGY RESTRICTED DIETS

- Most widely used
- Nutritionally adequate, except for energy
- High CHO and fibre, low fat
- Healthy eating habits emphasized
- Energy content depends on individual's size and activity
- Not < 3360kJ (requires medical supervision)
- 5040 - 5460kJ
- Vitamin-mineral supplements if diet provides <5040kJ for females and < 7560kJ for males

VERY LOW KILOJOULE DIETS

- Provides 840kJ - 3360kJ and 1.5g/kg protein
- Weight loss: 12kg in 12 weeks
- Indicated only: BMI>32 or 30% overweight
- Contra-indications: pregnancy, lactation, hepatic disease, renal failure, active cardiac disease & active cancer
- Longterm effectiveness increases when combined with exercise, but difficult to maintain active life-style at such low energy intakes

Potential side-effects of severe energy restriction:

- * Hypokalaemia
- * Loss of muscle mass with resulting reduced RMR (as much as 45%)
- * Increased urinary ketone excretion interfering with uric acid excretion ↑ gout
- * Increased cholesterol ↑ gallstones
- * Fatigue, light-headedness, constipation, diarrhoea, dry skin, anaemia and menstrual irregularities

WEIGH LESS

- Mission statement: "For every member to attain and maintain ideal weight the healthy way."
- Healthy lifestyle is emphasized
- Balanced diet plans based on healthy eating guidelines
- Group support; weekly weighing and discussions
- Group leader = member who achieved goal weight
- **Maintenance plan and free life long membership**
- Disadvantage : Weighing of food and limited flexibility

Physician's referral required:

- Heart disease, angina
- Hypertension, hypotension
- Dyslipidaemia
- GI-disease e.g. peptic ulcers, hiatus hernia, IBS, Crohn's disease, ulcerative colitis, diverticular disease
- NIDDM, IDDM, hypoglycaemia
- Allergies, glutenenteropathy
- Anemia
- Gout, arthritis, osteoporosis
- Pregnant and lactating
- Children < 16 years

WEIGHT WATCHERS

- "Maintain the philosophy that healthful weight management involves a comprehensive program that includes a food plan, activity plan and behaviour modification in an environment of group support"
- Point system; points allocated to foods based on fibre, energy and saturated fat content
- Daily point range given based on client's current body weight
- Types of food not limited
- Disadvantage: Can lead to unbalanced diet especially in those who are unable to make daily healthy food choices

WEIGHT WATCHERS

- Advantages: As no foods are banned, it gives more freedom of choice. A person with good self-control can thus learn to incorporate all types of foods in their diet

Herbalife



Herbalife's QuickStart Thermojetics Weight Management Program takes the guesswork out of losing weight. It's targeted for people who want to lose unwanted pounds safely, effectively and quickly.

Simply replace two meals with our deliciously satisfying Formula 1 and eat one balanced meal a day. With our state-of-the-art formulations, you won't feel hungry or deprived.

Why make weight loss so difficult? Get back to basics with our QuickStart Thermojetics

Weight-Management Program

Each QuickStart Program Contains:

FORMULA 1 is a meal replacement formulated with an exclusive blend of selected proteins, vitamins, minerals and herbs, includes amino acids, a new patented protein enzyme technology. Low in calories. Low in fat. Low sodium and a good source of calcium. Provides 15 amino acids to help the body function at its optimum level. Available in four palatable flavors. Protein source: Quality Caseinates, Vitamins B1 and B12.

FORMULA 2 Multivitamin-Mineral Blend Tablets: choice full of 25 vitamins, minerals, health-building nutrients and other nutritional factors important for good health. Nine phytochemical formula.

FORMULA 3 - Cell Activator: Loaded with vitamins and 12 health-building botanicals to enhance your vitality. Aids in the absorption of vitamins and minerals from your food intake.

THERMOJETICS GREEN This formula is a multi-component energy balance in the body so increases body fat may be reduced.

THERMOJETICS BEIGE Works synergistically with Thermojetics Green. A unique combination of flavonoids, antioxidants and other natural ingredients. Aids in the absorption of vitamins and minerals from your food intake.

HERBALIFE

- Mission: "To make the best herbal nutritional products available to people so that they may live longer and healthier lives, with 100% natural herb products, which are doctor recommended"
- Disadvantages:
 - healthy eating pattern not adopted
 - Boredom may compromise long-term compliance
 - Dependency (if it worked once, it will work again)
 - Cost (Recommendations made to sell own supplements)
- Primary goal of producers is to make money!

DR ATKINS DIET

- Low CHO, high fat ↑ ketogenic
- Rationale: body must use fat stores that cause increased urinary loss of ketones
- Initial weight loss due to water loss
- Potential risks: same as with very low energy intake
- Absolutely contra-indicated during pregnancy, since adequate glucose availability is essential for foetal development
- Nutritionally inadequate and difficult for long-term compliance

SureSlim Claims

- Individualized meal plan claimed to be based on blood analysis & medical info
- Meal plan claimed to be based on reliable scientific information
- Claims that types of food and portion sizes are selected to "stimulate production of GH which breaks off loose fat, increase skin elasticity & promote serotonin release to reduce hunger & give remarkable feeling of well-being"
- Claims patient will lose fat only, no muscle

SureSlim Analysis of meal plan

- 3129 - 3984kj (745-949kcal) Thus low to very low calories
- 26% protein (high protein)
- 52% fat from animal sources - high in fat (mainly saturated)
- = KETOGENIC DIET
- 2x SureSlim multivitamin tablets/day

SureSlim: disadvantages

- Costly
- Small variety of food, thus nutritionally incomplete & difficult to maintain
- High in fat, especially saturated fat
- Ketogenic
- Quick loss program (? Ability to maintain weight loss achieved)
- Unproven statements while claiming reliable scientific basis

DIETARY SUPPLEMENTS

- Plenty of dietary supplements available over the counter which promise to stimulate weight loss .
- Some claim to reduce appetite and others are claimed to increase the metabolic rate
- Adequate scientific evidence to support efficacy of these supplements in weight management is sparse
- Dietary supplements are regulated as foods and thus the law assume it is safe, unless proven otherwise. No need for manufacturers to register with the FDA nor to get FDA approval before producing or selling supplements

DIETARY SUPPLEMENTS: CONCERNS

- May interact with prescription drugs
- May interact with foods and other supplements
- Unknown or uncharacterised active ingredients that was not tested adequately. Many products are a combination of different active ingredients with no real data on interactions between these substances
- Given the present lack of knowledge on safety, avoid during pregnancy, lactation and before surgery
- Costly and not proven to be efficient

DIETARY SUPPLEMENTS: CONCERNS

- Serious adverse events (seizures, stroke, death) have been associated with some dietary supplements
- Example: Ephedra or Ma huang. Sale of products containing ephedra prohibited in the USA since April 2004. Adverse events in young adults includes death, myocardial infarctions, CVA, seizures and serious psychiatric illness.

THUS: WHICH DIET?

- There is no miracle diet!
- Best diet is the diet that the patient can follow in the long term.
- The main reason why a diet is not working, is non-compliance
- Necessary to adapt dietary advice to the individual and to include physical activity and behavioural therapy
- Rule out diets that are too restrictive or too strict as to avoid eating disorders and weight regain .

WEIGHT LOSS MAINTENANCE

- Although weight regain prevention remains a challenge, there is room for optimism; a survey (*Int J Obes Relat Metab Disord* 23:1314–1319, 1999) estimates that 20% of individuals attempting weight loss are able to achieve and maintain 5% weight reductions for at least 1 year.
- Among successful weight losers, various studies indicate that more than 60, 35, and 19% of individuals are able to maintain 10% weight reductions for 1, 3, and 5 years, respectively.

FACTORS UNDERLYING WEIGHT REGAIN AFTER WEIGHT LOSS

Pre-treatment Factors

- Older age
- Higher number of previous diets
- High baseline weight
- Frequent binge eating
- "All or nothing" thinking
- Dietary disinhibition
- Low exercise and diet-self efficacy
- Low motivation
- Unrealistic weight loss goals
- Negative body image

Post Treatment Factors

- Weight reduction > 15–30%
- Early regain
- Not responding to early regain
- Continuation of weight loss efforts
- High levels of perceived hunger
- Dissatisfaction with weight loss
- Dietary disinhibition
- Frequent emotional eating
- Frequent binge eating
- Diet high in calories, fats, sugars
- Decreased frequency and level of exercise
- TV viewing > 2–4 hours/day

STRATEGIES USED BY SUCCESSFUL MAINTAINERS

- High levels of physical activity
- Diet low in calories, fats, and sugars
- Frequent self-monitoring
- Consistent eating habits throughout the week and year
- Regular consumption of breakfast
- Catching of slips before they turn into large gains
- Limited TV viewing
- Regulated emotional eating
- Help-seeking behaviour
- Direct coping with stress and behavioural lapses

EVALUATING FAD DIETS AND PRACTICES

- Does the diet emphasize any major food group to detriment of another?
- Does the program propose the use of supplements, pills or drugs to the exclusion of normal foods?
- Does the diet suggest including certain foods because it can "cure" certain diseases? No singular food cures diseases e.g. the grape diet claimed to cure cancer.

- Beware of sweeping statements e.g. bread is poison and makes you fat

- Does the diet only allow a small variety of foods? Such diets may be nutritionally inadequate and impossible to comply with for an extended time period.

- Does the diet program teach the patient to change life long eating habits or does it focus on immediate weight loss? This will most possibly result in regain of the weight lost.

- Does the diet program promise a "quick fix" e.g. weight loss of more than 2kg per week? If it sounds too good to be true, it probably is!

- Is the diet program based on proven scientific principles e.g. are claims that protein and starches can not be digested simultaneously scientifically valid? Evidence based medicine!

Realities to consider when delivering health messages

- Clients want assistance and support
- They need to be given tools
- Do not be judgemental
- Everyone's life is different
- Not all clients will do everything we want them to do

CONCLUSION

- Successful weight management for adults requires a lifelong commitment to healthful lifestyle behaviours emphasising eating practices and daily physical activity that are sustainable and enjoyable
- Treatment and prevention strategies should not worsen the preoccupation with weight and dieting, overvaluation of thinness and social prejudice against the obese or overweight individual

CONCLUSION

- Responsible and ethical treatment of obesity important.
- Patients should be assisted to choose a sensible weight management program (Is it based on real evidence?)
- Maintain therapeutic contact with recent weight losers (continual support)

DO NO HARM!