

**Factors Favoring Successful Weight reduction program
Among adolescents attending some schools of
Misr El-Kadema , Cairo ,Egypt 2004 – 2005**

Thesis

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يقول الله تعالى في سورة البقرة على لسان الملائكة
الكرام:

بسم الله الرحمن الرحيم

{ قالوا سبحانك لا علم لنا إلا ما علمتنا إنك أنت
العليم الحكيم }

صدق الله العظيم

آية رقم (٣٢) سورة البقرة

**To My Family;
Those Who
Suffered A Lot**

Abstract

The study was conducted on adolescent students in 4 schools of Misr El-Kadema educational directorate. It passed through three stages; the 1st was case finding survey (1551 students). The 2nd stage was case control study (151 excess weight cases & 151 normal weight controls). Third stage was intervention study where cases were randomized into 2 groups, an intervention group assigned to weight reduction program (WRP) with monthly follow up and a non intervention group assessed initially and at the end of 6 months. Overall prevalence of obesity was 11.6%, that for overweight was 18.6%. Cases had significant higher mean weight, waist, BMI, fat %, BMR, duration of TV watching and using computer than controls. They had significant higher monthly percapita income and consumed significant more fat and fast foods than controls. About three fourths of the intervention group had successful weight reduction while non of the nonintervention group had successful weight reduction by the end of 6 months.

(Key words: excess weight, obesity, overweight, adolescents, case finding survey, case control, risk factors, intervention, weight reduction program, barriers to change)

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List of Contents

	Page No.
▪ List of Tables.....	I
▪ List of Figures.....	IV
▪ List of Annex.....	IV
▪ List of Abbreviations.....	V
▪ Abstract.....	VIII
▪ Introduction.....	1
▪ Aim of the study.....	5
▪ Review of literature.....	6
- Definitions & Assessment.....	7
- Prevalence & trends.....	13
- Etiology & risk factors.....	16
- Comorbidities /Consequences.....	36
- Prevention.....	49
- Management.....	58
- The situation in Egypt.....	86
▪ Subjects and methods.....	91
▪ Results.....	104
- Phase (I) Case finding survey.....	104
- Phase (II) Case control Study.....	113
- Phase (III) Intervention study.....	142
▪ Discussion.....	161
▪ Conclusion.....	207
▪ Recommendations.....	208
▪ Summary.....	214
▪ References.....	223
▪ Annex.	
▪ Arabic summary.	

List of Tables

Page No.

Phase (I) Case finding survey

Table (1) Distribution of surveyed students by school and sex.....	104
Table (2) Distribution of the surveyed students by age group and sex.....	105
Table (3) Mean & standard deviation of anthropometric measurements of surveyed male adolescent students according to age.....	106
Table (4) Mean & standard deviation of anthropometric measurements of surveyed female adolescent students according to age group.....	107
Table (5) Percentage distribution of the surveyed adolescent students according to weight status and sex.....	109
Table (6) Percentage distribution of the surveyed adolescent students according to weight status, stage (preparatory & secondary), and sex.....	110
Table (7) Percentage distribution of the surveyed adolescent students according to weight status, school, and sex.....	112

Phase (II) Case control Study

Table (8) Distribution of adolescents of both sexes according to their schools and study groups(cases & controls).....	113
Table (9) Socioeconomic indicators scores and overall score (modified social score for family social leveling) of cases & controls.....	114
Table (10) Modified social score (MSS) for family social leveling of cases & controls.....	115
Table (11) Correct knowledge about the importance of physical activity in cases & controls.....	115
Table (12) Regular practice of physical activity, method of reaching school daily, practicing physical activity during physical education classes, and playing hard during the recess in cases & controls.....	116
Table(13) Type of physical activity in cases & controls.....	117
Table (14) Weekly Frequency & daily period (hour/day) of physical activity, Weekly period of practicing physical activity during physical education classes in cases & controls.....	118
Table(15) Causes of physical inactivity in cases & controls.....	119
Table (16) Television watching and Computer usage in cases & controls.....	120
Table (17) Daily periods of watching television, using computer, and sleeping in cases and controls.....	120
Table (18) Positive family history of obesity and related diseases in cases & controls.....	121
Table (19) Nutritional knowledge, correct dietary beliefs, and barriers to change scores in cases & controls.....	122
Table(20) Bad dietary habits in cases & controls.....	122
Table (21) Comparison between cases & controls regarding their daily intake of equal and more than 100% of RDA of protein and total energy, equal and more than 300 mg cholesterol, equal and more than 15% of protein energy ratio (PER), and equal and more than 30% of fat energy ratio (FER).....	123
Table (22) Weekly semi-quantitative food frequency of energy groups in cases & controls.....	124
Table(23) Weekly semi-quantitative food frequency of protein group among adolescent cases &controls.....	125

Table(24)Weekly semi-quantitative food frequency of vegetable, fruit, beverages and water groups in cases & controls.....	126
Table (25)Weekly semi-quantitative food frequency of fast food, bakery & bakery based products, nuts & Seeds, and sweets & confectionary products in cases & controls.....	127
Table (26) Scores of total difficulties (TDS) (TDS= sum of scores of: emotional symptoms, conduct problems, hyperactivity, and peer problems), prosocial behaviour, and impact problems in cases & controls.....	128
Table (27) Cutoffs of total difficulties score(TDS) in cases & controls.....	129
Table (28) Body image in cases & controls.....	129
Table (29) Body image in overweight and obese adolescents.....	130
Table (30) Concern regarding weight in cases & controls.....	130
Table (31) Total score of self efficacy score, and school performance score among adolescent cases & controls.....	131
Table(32)Specific knowledge about smoking effect on weight in cases & controls.....	131
Table (33) Correct knowledge about obesity causes in cases & controls.....	132
Table (34) Odds Ratios associated with some significant risk factors.....	133
Table (35) The most significant predictors of excess weight selected by logistic regression model, forward conditional selection.....	134
Table(36) Body mass index, waist circumference, body composition, basal metabolic rate, arterial blood pressure, and some laboratory investigations among adolescent cases & controls.....	135
Table (37) The age of onset of excess weight & the accompanying circumstances.....	136
Table (38) Emotional sequelae of excess weight.....	136
Table (39) Distribution of cases according to recent & previous attempts to reduce weight and regimens.....	137
Table (40) Recent & previous of duration in weeks, amount in (Kg) and number of trials of weight reduction among excess weight students.....	138
Table (41) Symptoms, diseases & drug intake among excess weight students.....	139
Table (42) Assessment of school food service & physical education services among schools.....	140

Phase (III) Intervention / Follow up study

Table(43) Percentage distribution of adolescents according to their schools, sex, weight status & study groups (IG & NIG) in the baseline visit.....	142
Table(44) Baseline comparison of some weight status parameters and BMR in the 2 groups (IG & NIG).....	143
Table (45) Percentage distribution of the intervention group according to their baseline weight status and diet regimen.....	144
Table(46) Percentage distribution of the intervention group according to the diet regimen recommended through follow up visits.....	145
Table(47) Percentage distribution of the intervention group according to their modification of some diet intake practices through follow up.....	147
Table(48) Percentage distribution of the intervention group according to their regular practice of activity (walking, sport and frequency).....	148
Table(49) Percentage distribution of the intervention group according to their modification of some dietary habits through follow up.....	149
Table(50) Mean & standard deviation of the anthropometric measurements, fat %, and basal metabolic rate (BMR) in the intervention group through the follow up visits.....	150

Table(51)Cutoffs of modified social score (MSS) for family social leveling among successful and unsuccessful weight reduction groups in the baseline visit.....	153
Table(52) Scores of total difficulties (TDS) (TDS= sum of scores of: emotional symptoms, conduct problems, hyperactivity, and peer problems), prosocial behaviour, and impact problems in successful and unsuccessful weight reduction groups in the baseline visit.....	154
Table(53) Cutoffs of total difficulties score (TDS) in successful and unsuccessful weight reduction groups in the baseline visit.....	155
Table(54) Comparison of successful weight reducers and non-successful ones in some of the determinants of weight loss.....	156
Table(55) Barriers against following the prescribed dietary regimen, among successful and unsuccessful weight reduction groups in the first visit.....	157
Table(56) Practicing regular physical activity among successful and unsuccessful weight reduction groups in the first visit.....	158
Table(57) Positive effects reported in the first visit by successful and unsuccessful weight reduction groups.....	158
Table(58) Bad dietary habits among successful and unsuccessful weight reduction groups in the first visit.....	159
Table (59) The effect of all significant variables on the occurrence of successful weight reduction by logistic regression; method: enter.....	160
Table (60) The most significant predictor of successful weight reduction selected by logistic regression, forward stepwise conditional selection.....	160

List of figures

	Page No.
Fig. (1) Distribution of students by weight status.....	108
Fig. (2) Distribution of the surveyed students according to weight status and stage (preparatory & secondary).....	111
Fig. (3) Consanguinity in cases & controls.....	121
Fig. (4) Percentage distribution of the intervention group according to the diet regimen recommended through follow up visits.....	146
Fig. (5) Means of weight, waist circumference, BMI, fat percent, and BMR of intervention group through the follow up visits.....	151
Fig. (6) Final outcome (successful and unsuccessful weight reduction) of the intervention (IG) and non intervention (NIG) groups.....	152

List of Annex

Annex (I) Questionnaire of Case Control Study

Annex (II): Modified Social Score

Annex (III) Questionnaire of Schools' Potential

Annex (IV) Behaviour Modification Sheet

Annex (V)a: Follow-up Sheet-a

Annex (V)b: Follow-up Sheet-b

List of Abbreviations

AGAHLS	The Amsterdam Growth and Health Longitudinal Study
AgRP	Agouti-related peptide
AMDR	Acceptable Macronutrient Distribution Ranges
ANOVA	Analysis of variance
BCM	Body cell mass
BED	Binge-eating disorder
BIA	Bio-electrical impedance analysis
BMC	Bone mineral content
BMI	Body mass index
BMR	Basal metabolic rate
BP	Blood pressure
BRFSS	Behavioral Risk Factor Surveillance System
CDC	Centers for Disease Control and Prevention
CHD	Coronary heart disease
CT	Computerized tomography
CVD	Cardiovascular diseases
DBP	Diastolic blood pressure
DEXA	Dual energy X-ray absorptiometry
DXA	Dual Energy X-ray Absorptiometry
ECG	Electrocardiographic
ECW	Extracellular water
FAO	Food and Agriculture Organization
FBG	Fasting blood glucose
FER	Fat Energy Ratio
FFM	Fat free mass
FM	Fat mass
GDP	The Gross domestic product
GNP	Gross national product
GOD	Glucose oxidase
HCPs	Health care professionals
HDL-C	High-density lipoprotein cholesterol
ICW	Intracellular water
IGF	Insulin like growth factor
IGFBP	Insulin like growth factor binding protein
IUGR	Intrauterine growth retardation
K	Potassium
Kcal	Kilo calorie
LBM	Lean body mass
LCD	Low calorie diet
LDLs	Low density lipoproteins

MC4R	Melanocortin-4 receptor
Mrem	Milli rem
MRI	Magnetic resonance imaging
MSH	Melanocyte-stimulating hormone
NAFL	Non alcoholic fatty liver disease
Na-K-ATPase	Sodium potassium adenosine triphosphatase
NASH	Non alcoholic steatohepatitis
NCD	Noncommunicable diseases
NHANES IV	4 th National Health and Nutrition Examination Survey
NIDDM	Non insulin dependent diabetes mellitus
NLSY	The National Longitudinal Survey of Youth
NPY	Neuropeptide Y
Ob gene	Obesity gene
OPPrA	Obesity Prevention for Pre-Adolescents program
OR	Odds ratio
PCOS	Polycystic ovary syndrome
PE	Physical education
PER	Protein energy ratio
PRL	Prolactin
PTH	Parathormone
PVN	Paraventricular nucleus
RCT	Randomized Clinical Trials
RDAs	Recommended Daily Allowances.
REE	Resting energy expenditure
SBP	Systolic blood pressure
SCFE	Slipped capital femoral epiphysis
SCT	Social cognitive theory
SD	Standard deviation
SES	Socioeconomic status
SFS	School food services
SPSS	Statistical package for social sciences
t _{1/2}	Half life
TBK	The measurement of whole body ⁴⁰ K
TBW	Total body water
TC	Total cholesterol
TEE	Total energy expenditure
TRH	Thyrotropin-releasing hormone
TSH	Thyroid stimulating hormone
USDA	The United State Department of Agriculture
VCRs	Video cassette recorders
VLCDs	Very low calorie diets
VLDL	Very low density lipoproteins

WHR	The waist-to-hip ratio
WSQFF	weekly semi-quantitative food frequency
YRBS	Youth Risk Behavior Survey

Introduction

Introduction

Overweight and Obesity are the oldest metabolic disturbance since Stone Age, it was found in Egyptian mummies and Greek sculpture (**Blumenrantz, 1999**). *The prevalence of the two conditions have been steadily increasing*. WHO's latest projections indicate that globally in 2005, approximately 1.6 billion adults (age 15+) were overweight; and that at least 400 million adults were obese. By 2015, approximately 2.3 billion adults will be overweight and more than 700 million will be obese. At least 20 million children under the age of 5 years are overweight globally in 2005 (**WHO, 2006**).

Obesity has reached an epidemic proportion in several countries worldwide (**Hebebrand, 2000**). **Flegal & Troiano, 2000** estimated that 26% of the population of the United States (U.S.) are obese and that 61% are overweight. The health care budget in U.S. is about \$190 billion and 6.7% of this budget is obesity related, which could result a cost of \$ 12.7 billion (**Lovern & Gardner, 2002**). Obesity arises as the outcome of an adverse environment working on a susceptible genotype and it can only occur when energy intake remains higher than energy expenditure for an extended period of time (**Treuth et al., 2000**). The most important causes are:

Positive energy balance: The fundamental aetiology of the obese state is excessive caloric ingestion relative to caloric expenditure (**Blundell & Cooling, 2000**). The main components of energy expenditure and their approximate proportions in sedentary people are basal metabolic rate ($\approx 65\%$), thermogenesis ($\approx 10\%$) and physical activity ($\approx 25\%$) (**Kopelman & Stock, 1998**). Positive energy balance is the result of:

a- Dietary factors: Since World War-II, there has been a marked shift in the macronutrient composition of the diet favoring fat at the expense of carbohydrate, while the proportion of energy derived from protein has remained essentially unchanged (**Prentice & Jebb, 1995**). There has been a change in the type of fat consumed, with a decrease in saturated fatty acids and increase in polyunsaturated fatty acids (**Paulus et al., 2001**). The under-reporting of food intake especially among obese subjects hinders studies of the links between dietary habits and obesity (**Harrison et al., 2000**).