

Male adolescents identify their weight gain practices, reasons for desired weight gain, and sources of weight gain information

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Studies of adolescents have noted the importance of psychosocial variables such as body image and self-perceptions in shaping the dietary practices of male and female adolescents (1,2). Many studies have focused on the body image, weight concerns, and body weight issues of female adolescents (3-7). The few studies that have addressed weight concerns of male adolescents (8-12) focused on boys' weight-loss behaviors and their concerns about becoming overweight. Studies of adolescents have reported the desire for weight gain among male adolescents and young men in the order of 17% to 37% (13-17); these males want to gain weight, bulk up and develop muscles. No study has examined specific dietary methods used by male adolescents to gain weight or whether their attempts at weight gain are successful.

Information about the weight-gain practices of male adolescents would be useful in clinical assessment and instrumental in the design of relevant and effective nutrition education recommendations. Such information would also help parents, teachers, sports coaches, dieti-

tians, and other health professionals to better advise adolescents about their diets, their bodies, and the nutrition issues that are of most concern to them. The aims of this study were to investigate the weight-gain practices, beliefs, and attitudes of male adolescents, reasons for wanting to gain weight, sources of weight-gain information, and differences in age groups.

METHODS

Study Sample

A random sample of 397 male adolescent students aged 13 to 18 years (mean \pm standard deviation [SD]=15.9 \pm 1.0 years) was drawn from 4 high schools of mixed socioeconomic status: 3 government schools and 1 parochial boys school. Schools were selected randomly from a list of all state schools in New South Wales. A sample size of approximately 400 was sought to ensure statistical power of about 0.80 for most of the statistical tests performed. Participants were representative of the broader community: Anglo-Saxon/White ethnic background (79.5%), Asian (7.9%), southern European (Greek, Italian) (7.2%), Middle Eastern (2.6%), aboriginal (1.8%), and Pacific Islander (1.0%). The mean (\pm SD) height, weight and body mass index of participants was 175.0 \pm 8.8 cm, 67.2 \pm 13.3 kg, and 21.9 \pm 3.8, respectively.

Questionnaire

Participants provided written parental consent to complete a questionnaire anonymously about their weight-gain practices. The questionnaire, which was developed and pilot-tested among 30 high school boys before the study, asked whether participants had tried to gain weight or bulk up in the past 12 months (yes/no), how much weight they had gained in kilograms, and whether they believed the weight or bulk gain was fluid or body water, fat, muscle, muscle and fat, or other (yes/no) or don't know. Weight-gain beliefs and attitudes were assessed by 9 yes/no questions such as "I feel I should develop my muscles" and "I need to build up my body." Advice from others about weight gain was measured using 7 yes/no questions such as "People tell me to gain weight." Space was provided for participants to identify the source of advice. Desired body weight was measured using a Likert scale (1=a lot heavier and 5=a lot lighter). Body image was measured using a 3-point scale (1=too thin, 2=about right, 3=too fat). Weight- and bulk-gain methods used by participants were identified by a yes/no question with 6 categories: changes to food or drinks, dietary products, dietary supplements, exercise, medications/drugs, and "other." Space was provided to write specific details about each weight-gain method. Reasons for desired weight gain were identified in a yes/no question with 11 categories that included to be stronger, to be fitter, and as a hobby.

Sources of weight- and bulk-gain information were identified using a yes/no question with 14 categories that included parents, friends, health professionals, and books. Space was provided for participants to write the specific source of information.

Procedure

A total of 87% of all male adolescents enrolled in grades 7 through 12 at the 4 schools participated. Students completed the questionnaire during regular class times, and height and weight were measured by the first author (J.A.O.) using calibrated digital scales and a portable stadiometer. The study design and protocol were approved by the University of Sydney Human Ethics Committee.

Data Analysis

Data from questionnaires were entered into the Statistical Package for the Social Sciences for Windows (version 9.0, 1998,

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Table 1
Weight-gain practices and beliefs, advice from others, body image, and desired weight of male adolescents^a

Variable	%	n
Weight-gain practices		
Currently trying to gain weight	27.7	110
Currently trying to build up body	59.4	236
Tried to gain weight in past 12 mo	25.9	103
Beliefs about body		
I feel I should develop my muscles	75.3	299
I need to build up my body	60.7	241
Advice from others		
People tell me to gain weight	23.2	92
People tell me to build up my body	34.3	136
People tell me to do more exercise	31.2	124
People tell me I don't eat enough	14.4	57
Body image		
Too thin	15.4	61
About right	66.5	264
Too fat	17.6	70
Desired weight		
A lot heavier	3.8	15
A little heavier	34.3	136
Present weight	31.7	126
A little lighter	25.9	103
A lot lighter	3.8	15

^aTable presents "yes" responses from 397 male adolescents aged 13 to 19 years.

SPSS, Chicago, Ill) and are presented as percentages and mean scores. The descriptive statements about participants' specific weight-gain practices were transcribed and tallied into common themes using methods described by Krueger (18). Age differences were examined by means of χ^2 cross-tabulations and analysis of variance using age group cutoff points of 13 to 14.9 years, 15 to 16.9 years, and 17 years and older.

RESULTS

Of the 25.9% (n=103) participants who had deliberately tried to gain weight in the past 12 months, 0.7% lost 2 kg, 42.8% reported no weight gain, 31% reported weight gain of 1 to 5 kg, 22% reported weight gain of 6 to 10 kg, 3.5% reported weight gain of 11 to 40 kg. The mean \pm SD weight gain for the past 12 months was 3.6 \pm 4.9 kg. Thirty-two percent of participants believed that their weight gain consisted of muscle; other participants did not know (24%) or considered their weight gain muscle and fat (17%), fat (14%), fluid or water (10%), and 3% reported that their weight gain was due to other factors such as normal growth and increase in height.

Data about the weight-gain practices, beliefs about body, advice from others, body image, and desired weight of male adolescents are presented in Table 1.

The type of weight gain techniques used by male adolescents in the previous 12 months are given in Table 2. Specific weight-gain behaviors reported included, in descending order, eating more food and exercising less; eating more fatty, fried, and junk foods; eating more food in general; eating more and participating in sports or lifting weights; eating more healthful food plus exercising; eating more food plus exercising; consuming protein milk formulas; and eating more protein foods plus lifting weights. Other dietary changes included eating butter, eating more meat, drinking beer or alcohol, eating chocolate, eating 5 or more meals per day, and eating at night.

Dietary products included high-protein milk formulas (eg, Massive Weight Gainer [Ultimate Nutrition, Farmington, Conn], Sustagen [Mead Johnson, Sydney, New South Wales]), "power drinks" (eg, Gatorade [Quaker Oats Company, Chicago, Ill], Power Aide [Coca-Cola, Panamatta, New South Wales]), and raw eggs or egg whites. Dietary supplements included creatine monohydrate; vitamins and minerals, and zinc.

Exercise was used by 28.2% of participants to gain weight (Table 2). The specific types of exercise performed to gain weight were, in descending order, weight lifting or working out at a gym, sports activities and training for sports (football, soccer, rugby, athletics, basketball, swimming, hockey), running, bike riding, walking, and surfing. Other methods reported as a means of weight gain were drinking beer, exercising, lifting weights, eating more, and drinking. Use of medications or drugs to gain weight was reported by a small number (n=20) of participants; the specific type of drug used was identified by only 15 participants: "pills" (n=8); steroids (n=4); fluid pills (n=2), insulin (n=1).

Reasons for desired weight gain included increased physical strength (67% of participants), greater fitness, better body image, improved sports performance and better self-protection (51%) and improved attractiveness, better appearance in front of others, increased toughness, enhanced self-esteem, and as a hobby (35%). The least important reason was to fit in with others who were interested in gaining weight (17.6%). Specific sports identified by participants as being related to their desire to gain weight were predominantly physical contact sports such as football, soccer, rugby, basketball, hockey, and boxing.

Participants received weight-gain information and advice from 6 major sources: parents (26% of participants), friends (24%), other experts (25%, eg, gym instructors, sports coaches, swimming coaches, and the YMCA), teachers (18%), health professionals (15%), and magazines (14%, eg, bodybuilding magazines). Other sources of weight-gain information were television programs (13%), products from gymnasiums (11%), products from health-food stores (10%), advertisements (10%), food labels (7%), products from pharmacies (7%), and books (6%). There were no statistically significant age differences in any of the weight-gain variables studied.

DISCUSSION

One third of the male adolescents in the study were actively trying to gain weight by means of both sensible methods and inappropriate methods (eg, eating more fatty, fried, and junk food, eating more food while exercising less, and eating butter). Some weight-gain methods were based on nutrition misinformation and could be health damaging (eg, consumption of raw eggs or creatine). Use of

Table 2
Weight-gain methods used by male adolescents in the previous 12 months^a

Method	%	n
Dietary method	38.0	150
Food or drinks	15.8	63
Dietary products	12.6	50
Dietary supplements	9.3	37
Exercise	28.2	112
Other methods	7.0	28
Medications/drugs	5.0	20

^aResponses from 397 male adolescents aged 13 to 19 years.

dietary supplements such as creatine monohydrate (19) has not been thoroughly investigated among adolescents. Some studies of creatine use have warned of possible associated health risks in human beings such as renal dysfunction, glomerulosclerosis (20), and gastrointestinal upsets and asthmatic symptoms (21). Hypersecretion of insulin has been reported in rats (22).

Consumption of fatty and high-energy foods to aid weight gain was noted by Middleman et al (23) who reported increased consumption of cookies, doughnuts, pies, and cakes among male adolescents who wished to gain weight. Similarly, Neumark-Sztainer et al (24) found that boys reported trying to eat certain foods to get taller and more muscular and to gain bulk.

Results of our study describe in detail the deliberate weight-gain practices of male adolescents and reasons for desired weight gain. This is valuable information for those who work with young people, such as parents, teachers, health professionals, and sports coaches, and who require sound nutrition information and education about appropriate growth and weight gain for adolescents.

The adolescent boys in our study wanted to gain weight to be stronger and fitter, to have a better body image, and to do better at sports. Although the body image and self-perceptions of male adolescents have been documented previously (8-17,23-24), the reasons for wanting a bigger body have not been studied in detail, and the current study provides this information. A limitation of our study was sample size; therefore, we suggest further research to investigate the phenomena of desired weight gain and strength development in a larger number of male adolescents from various socioeconomic and ethnic backgrounds using quantitative and qualitative meth-

ods. Some of our study participants used steroids, insulin, "pills," and diuretics to aid their weight and strength development programs, a finding reported in other studies (25,26). Factors associated with use of these potentially dangerous substances need to be studied, as do the reasons behind the desire for a bigger, stronger body and the role of sports and sports coaches in the weight-gain attempts of adolescents.



APPLICATIONS

■ Dietitians and other health professionals can apply the findings of this study in clinical settings to better understand the motives and aspirations of male adolescents.

■ In the community, dietitians can use the findings to better educate those who work with male adolescents, including parents, teachers, sports coaches, and gym instructors.

■ Nutrition education needs to include information that is age appropriate and scientifically based and that is of maximum relevance and interest to young people.

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