

# Body Mass Index, Menarche, and Perception of Dieting Among Peripubertal Adolescent Females

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Accepted 26 March 2000

**Abstract:** **Objective:** To examine perceptions of dieting among pre and postmenarchial female school students. **Method:** All 51 female students of mean (SD) age 12.6 (0.6) years from a state school volunteered to complete a questionnaire about general health, eating and weight control behaviors, and menstrual status. Height and weight were measured. Focus groups using structured questions and discussion were used to elicit responses about the meaning of dieting and its association with menarche. **Results:** Postmenarchial females were significantly more likely than the same age premenarchial students to have increased their body mass index (BMI), to clearly articulate the meaning of dieting, to report trying to lose weight, and to use diet and exercise to lose weight. Premenarchial females did not have a clear perception of dieting. Premenarchial females who reported trying to lose weight equated dieting with healthy eating and did not include losing weight or the behaviors and feeling associated with the concept of dieting unless their BMI had increased and menarche was imminent. **Discussion:** The concept of dieting that may result in weight loss and the behaviors and feelings associated with dieting did not develop until menarche and is likely to be associated with the rapid increase in height, weight, and body fat that precedes menarche. Educational interventions aimed at preventing eating disorders among premenarchial adolescents may therefore be inappropriate, ineffective, and potentially dangerous. © 2000 by John Wiley & Sons, Inc. *Int J Eat Disord* 29: 23–28, 2001.

**Key words:** adolescents; body mass index (BMI); menarche; dieting; weight loss behavior; perception of dieting; eating disorders; prevention

## INTRODUCTION

The onset of dieting, disordered eating, and eating disorders is believed to occur at an earlier age (Hill, Oliver, & Rogers, 1992; Shapiro, Newcomb, & Loeb, 1997; Thompson,

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Corwin, & Sargent, 1997). Educational interventions to prevent eating disorders have been recommended for children in elementary schools (Smolak & Levine, 1994; Porter, Morrell, & Moriarty, 1986). Previous studies have shown that dieting is more accurately described by older adolescent girls (Neumark-Sztainer & Story, 1998) and that postmenarchial females are more likely to report dieting and experience eating disorder attitudes and behaviors (Killen et al., 1992; Alsaker, 1992; O'Dea & Abraham, 1995, 1999). However, no study has specifically examined the meaning of the word "dieting" among pre and postmenarchial females. Before recommending early intervention in preadolescent children, their perceptions of and interest in eating and weight control behaviors should be thoroughly examined in order to determine whether preventive activities are likely to be relevant, effective, and safe. The aim of this study is to determine if the perception and meaning of dieting are different for young premenarchial and postmenarchial females school students.

## METHOD

### Participants

All 51 female school students in two classes at a working class, coeducational, state high school volunteered to take part in the study. All completed a questionnaire about their general health including their eating and weight behavior and menstrual status (O'Dea, Abraham, & Heard, 1996). Weight and height were measured and body mass index (BMI) was calculated. Nineteen students (37%) had reached menarche; their average age at first menstruation was 11.8 (0.5) years. Three students had menarche in the last month, one commencing on the day of the study. There was no significant difference in age between the pre and postmenarchial students (mean ages 12.6 [ $>0.30$ ] and 12.7 [ $>0.6$ ] years, respectively). There was a significant difference in BMI between the pre and postmenarchial students (19.1 [3.8] and 21.3 [4.0], respectively),  $F = 4.64$ ,  $p < .036$ .

### Procedure

One week after completing the health questionnaire, the students who reported that they were "trying to lose body weight during the previous month" were invited to join a discussion (focus) group about eating and exercise. These students were divided into two groups, one consisted of the 8 premenarchial students and the other of 9 postmenarchial students (1 eligible student was absent on the second day of the study). The students were unaware of any connection between reporting "trying to lose weight in the previous month" on the general health questionnaire and the focus groups or that the two focus groups were selected for menstrual status. The two authors conducted and were present at both focus groups.

At the beginning of each focus group, students were asked to complete a questionnaire to explore the students concept of dieting to provide a basis for discussion. The questionnaire commenced with: "When or if you say you are dieting does this mean. . ." The following questions were based on questions from the Eating and Exercise Examination (Fairburn & Cooper, 1993), the Eating Disorder Inventory (Garner & Garfinkel, 1983), and questionnaires used for other studies (Abraham & Beumont, 1982; O'Dea & Abraham, 1995; Abraham & Lovell, 1999). After completing the questions, the students were asked what they thought dieting meant. Students in the premenarchial group were asked if they

thought having their periods would make a difference to how they would think about dieting. Students in the postmenarchial group were asked if having periods had made a difference to how they thought about dieting.

One author recorded written student statements during the group discussion and the two authors separately recorded their observations of the participants immediately following each group session.

## RESULTS

Responses of the students in the pre and postmenarchial groups to the dieting and exercise questions are shown in Table 1. The BMI was significantly higher for the premenarchial students who reported dieting compared with the premenarchial students who did not report dieting (21.3 [4.0] vs. 19.1 [3.1]),  $F = 4.57$ ,  $p < .041$ . There was no significant difference between the BMI of the premenarchial students who reported dieting and the postmenarchial students who reported dieting and/or not dieting.

The following results relate to the 8 pre and 9 postmenarchial students who reported trying to lose body weight in the month before the first study day. The postmenarchial students selected the best descriptions of dieting to be "consciously trying to restrict or control what you eat" ( $N = 4$ ), "being careful about what you eat" ( $N = 2$ ), "following a sensible eating plan" ( $N = 2$ ), and "doing something that stops you feeling fat" ( $N = 1$ ). The premenarchial students chose "following a sensible eating plan" ( $N = 6$ ), "not over-eating" ( $N = 1$ ) and "to feel in control of ones body" ( $N = 1$ ).

The students' behaviors, beliefs, and feelings about dieting are shown in Table 1.

The responses of the postmenarchial and premenarchial students to the question, "Is

Table 1. Weight-losing behavior and perception of dieting among pre and postmenarchial female school students

	Premenarchial		Postmenarchial		Chi square
	N	%	N	%	
In last month did you? <sup>a</sup>					
Try to lose weight	8	24	10	56	5.00*
Diet to lose weight	5	15	8	44	5.26*
Exercise to lose weight	16	49	14	78	4.13*
What do you mean when you say you are dieting? <sup>b</sup>					
"Having definite rules about eating"	2		9		
"Doing something to stop feeling fat"	4		9		
"Avoiding weight gain"	6		9		
"Not eating food containing fat"	3		7		
"Trying to avoid eating foods you enjoy eating" (>14 days each month)	3		7		
"Having a very strong desire to lose weight"	3		7		
"Feeling very guilty if you ate something you felt was not right"	3		5		
"Going more than 8 walking hours without eating"	0		4		
"To feel empty inside"	0		3		
"Feeling unhappy if not dieting"	0		3		

<sup>a</sup>Thirty-three premenarchial and 18 postmenarchial students.

<sup>b</sup>Eight premenarchial and 9 postmenarchial students who were trying to lose weight.

\* $p < .05$ .

diETING different after your first period?" are shown in Table 2. The most outstanding feature of the focus groups was the difference in confidence, openness, and spontaneous discussion between the two groups on the topics of dieting and periods. The postmenarchial group was quick to fill in the questionnaire and asked very few questions about what the words or questions meant. These students had a clear idea of what they believed dieting consisted of. While they were filling in the forms they chattered spontaneously about what mother, sisters, and friends said and did to control their weight, what female body image boys prefer, and they asked the authors questions about food and dieting, usually seeking information to find out if what they had heard was correct.

Students in the premenarchial group of the same age were smaller in stature and 5 of the 8 students (63%) had difficulty answering the questions. They appeared to have little idea of dieting behavior and the concepts of food restriction for weight loss or weight maintenance. These 5 students would not be classified as having experienced dieting by health professionals. The most common responses to most dieting questions was "don't know" and "not sure." The other 3 students in this group had experience with behavior associated with dieting, particularly the person who dieted with her sister. The premenarchial student's spontaneity appeared to be no different from the other group when topics not relating to dieting and periods were discussed. There was a marked difference between the pre and postmenarchial students' interest in the topic of food.

## DISCUSSION

Premenarchial school students do not have a clear perception of what the word "dieting" means. Most premenarchial students that claim to be trying to lose weight cannot articulate what they mean by this, the most common response relating to healthy eating. The concept that dieting would result in weight loss and the behaviors and feelings associated with dieting were not apparent in premenarchial females but were clearly articulated in those who had experienced menarche. More precisely, the meaning of dieting was clear among females who had experienced the rapid increase in height, weight, and BMI that precedes menarche. The behaviors associated with dieting, such as making rules about when and what to eat, not eating food containing fat, and not eating for more than 8 hr, were more frequent in those who had experienced menarche.

Table 2. Students' responses to the question, "Is dieting different after your first period?"

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Postmenarchial students trying to lose body weight
"Dieting becomes more serious and you think about it more"
"You start to get more interested (in yourself) in year 6"
"I put on stacks of weight"
"You feel you're getting fat, I don't want to turn out like my stepmum"
"After your period you worry about your appearance"
"Worry what people think—mostly boys"
"Don't know I've only had one period"
"I try to lose weight for my boyfriend"
"My sister's friend was anorexic, she didn't get periods, she stopped eating to stop her periods"
Premenarchial students trying to lose body weight
"Don't know"
"You just start to change all over"
"You worry people will think you're too fat"
"I diet with my sister—I don't want to be like mum's side of the family"

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Many of the students in the study were very close to their first episode of menstrual bleeding. Three of the postmenarchial students had reached menarche in the previous month and another 7 students would be expected to attain menarche in the next 4 months (mean age of menarche for Australian girls is less than 13 years). The premenarchial students who reported dieting had already experienced the height, weight, body fat, and BMI changes associated with first menstruation and 3 of these students reported a postmenarchial concept of dieting. The changes in height and body weight and hence BMI occur over a short period of time and are accompanied by an awareness of body image, a desire to lose weight, and a clear adult perception of dieting and the behaviors that assist weight loss.

Introducing school-based eating disorder interventions among premenarchial students should be considered very carefully. Educators must be sure that premenarchial students who are likely to have no real experience of dieting or weight loss behaviors are not inadvertently introduced to the concept of weight control by the very people who are trying to prevent eating problems. Their concept of dieting being “sensible eating” is safe. Several authors have warned that educational interventions aimed at preventing eating disorders may inadvertently do more harm than good (Carter, Stewart, Dunn, & Fairburn, 1997; Mann et al., 1997; Garner, 1985). The current study suggests that targeting premenarchial females in such educational programs may be inappropriate and potentially harmful. Programs aimed at improving self-esteem improve body image and do no harm among young adolescents (O’Dea & Abraham, 2000). Focusing preventive efforts to assist in the transition through puberty using the new self-esteem approach is likely to benefit both pre and postmenarchial young people whilst assuring that such educational activities do no harm.

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