Nutrition FOR CHILDREN

BY ELAINE FLEMING

Teacher, I can't think," Hope told me. Although it was early in the school day, she was listless and drooping. Two rows over, Katie was breezing through her assignments. This lighthearted child didn't walk anywhere she could skip, fly, or flit. But by 11 a.m., Katie's brightness faded. She would stare at one page of reading for the next hour. A quick assessment revealed that both of these first-graders suffered from chronic, mild undernutrition. The specter of undernutrition/malnutrition stalks our children and teens, robbing them of future potential.

Getting Enough Food

A child's growing body uses food energy for basic organ functions first, then for growth, and finally for mental and social development.[1] Although less severe than malnutrition, the consequences of undernutrition can be devastating. Often its only visible sign is lethargy, although when prolonged, the child's growth may be affected.

When a child's growth is plotted on a chart[2] it usually follows a set percentile. It may drop a little before the adolescent growth spurt, rise during it, and then restabilize. Whenever a child's height begins to lag behind or drops below the fifth percentile of others the same age, the possibility of malnutrition must be considered and corrective measures taken.[3]

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Stunting

Who is at risk for malnutrition and stunted growth? We usually think of poor children. However, "any of the following would make a child at risk for malnutrition: poverty, lack of social support, signs of child abuse or neglect, parent-child problems, lack of parental education or illiteracy, drug or alcohol abuse, teen pregnancy, chronic illness (or its treatment), and food cult behavior in the family."[4] UNICEF reports that "many households in poor neighborhoods run short of food between harvests, or amid drought and war. Yet most malnourished children live in homes with adequate food supplies."[5]

Undernutrition takes a serious toll on mental development. Iron deficiency anemia causes fatigue, decreases a child's attention span, and makes concentration

more difficult.[6] There is a strong connection between short stature and lowered IQ, particularly in poor children.[7] Undernutrition causes a decreased physical work capacity in stunted adolescents and young adults.[8] Such young people will never have the endurance they could have had.

The effects of stunting frequently persist throughout life. However, there are records of children 4 to 10 years old catching up in height, and previously malnourished children achieving a level of mental competence equal with their peers.[9] Reduction or elimination of the long-term cognitive, physical, and social effects of undernutrition can occur if there is adequate food intake and support for the child from home and school.[10]

Obesity

Nutrition problems change over time. Since World War II, childhood obesity has become a more serious issue in the U.S. than growth retardation.[11]

There is a trend toward obesity among children and adolescents in many areas of the world, according to researchers at the University of North Carolina at Chapel Hill.[12] In the U.S., about 22 percent of adolescents 12 to 17 and 27 percent of children 6 to 11 years old are overweight.[13] There is an increasing trend toward excess weight among Mexican-American children. Obesity continues to grow among urban adolescents in Latin America, as well as some South African ethnic groups and certain Pacific islanders.[14] Approximately 40 percent of obese 7-year-olds and 70 to 80 percent of obese adolescents become obese adults.[15]

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Childhood obesity is difficult to define. Screening guidelines state, "If a child's weight for length or height is at the 95th percentile or above, or if weight for length or height has moved upward over time crossing into higher percentiles, the child may be at risk for overweight."[16] Caution should be used in applying this standard to individual children. In some instances, a genetic tendency toward fatness or a constitutional overweight (or underweight) is normal for some children.[17] In the instance of constitutional overweight, obesity would occur as an unstable, excessive weight-gain pattern.[18] Infants and children who are malnourished before age 3 are much more likely, when they obtain adequate food, to become obese than are normally nourished children.[19]

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Causes of Obesity

The causes of obesity are not yet understood. For decades, it was believed to result from excess caloric intake and low activity. More recently, multiple factors are emerging.[20]

The energy and fat intake of American children during the past 10 years has remained constant at about 1,600 calories per day. Physical activity levels have declined, however.[21] This is of enough concern that the Centers for Disease Control in Atlanta has issued Guidelines for Promotion of Physical Activity and Reduction of Sedentary Lifestyles in Youth (see Resources).

Food selection may play a role in obesity. Obese children generally do not consume more calories than normal-weight children. However, the percentage of total fat in their diets may contribute to obesity.[22] This is because fat calories convert to stored fat more efficiently than protein or carbohydrate calories. American children eat more total fat and saturated fat than is recommended.[23] As American fast food chains spread, similar trends will appear elsewhere.

How Much Fat?

Experts do not agree on how much fat young children should eat. Some children eat far too much, while others may get too little. Low-fat diets are recommended for adults and adolescents, but may cause stunted growth in children who eat too little fat. Well-meaning parents who want to prevent obesity, cardiovascular disease, and cancer in their children may be inadvertently providing them with inadequate nutrition.[24]

Eating Disorders

The high prevalence of eating disorders also deserves the teacher's attention. Up to 13 percent of adolescent girls engage in anorectic and bulimic behaviors.[25] More than half of adolescent girls believe they are overweight and have dieted.

Eating disorders can be fatal. Death from suicide, starvation, and cardiac arrest can range up to 10 percent. No one has as yet developed clear guidelines for identifying at-risk adolescents, but the alert teacher will observe weight

changes, eating rituals, excessive exercise, academic performance, social involvement, and the overall appearance of each student. Discussions with the adolescent and his or her peer group or family may also suggest the presence of such behaviors.[26] School-based programs can help adolescents head off behavior patterns that lead to eating disorders.[27] The National Eating Disorders Organization offers resources to assist with this challenge.[28]

Dietary Recommendations

Professionals recognize that dieting can be a destructive way of managing childhood obesity.[29] Children should grow into their weight rather than try to lose weight. This means eating a balanced, healthy diet. The American Academy of Pediatrics recommends that children's intake follow adult guidelines, using a common-sense approach.[30] There is some controversy over the ideal amount of fat to include in children's diets, but evidence supports the current recommendations of 30 percent of calories from fat, with only 10 percent saturated fat.[31]

How should one apply these abstract guidelines to meal planning? A pattern such as the "Food Guide Pyramid" (see Figure 1)[32] offers the framework for a healthy diet. However, food guides have been established for adults, and may need to be adjusted to meet the needs of growing children. Young children may require more servings of foods high in protein and fat, whereas teens may need more carbohydrate-rich foods for energy.

Nutrition Education

Students need nutrition education to help them learn about and choose healthy eating patterns for life. Research has shown that such education does improve the eating behaviors of young people.[33]

Successful nutrition education programs contain most or all of these elements:

"(1) The programs are behaviorally-based and theory driven;

(2) Family involvement is incorporated into programs for elementary-aged children;

(3) Programs for middle school to senior high students include self-assessment of eating patters;

(4) Behavior change programs include intervening on the school environment;

(5) Behavior change programs include intervening on the larger community; and

(6) More instruction time or intervention time resulted in greater program impact."[34]

A behaviorally driven program bases

There is a trend toward obesity among children and adolescents in many areas of the world.

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learning experiences on the needs, perceptions, and desires of the students. One theory that could drive a program is the social learning theory (SLT), which emphasizes self-monitoring, and skills and training behaviors.[35]

Actual interventions can be simple yet effective. I am pleased to report that the nutrition education program at Hope and Katie's school was successful. With the encouragement of classmates, Hope began to prepare her own breakfast. Katie chose to eat more of the ample breakfast her mother supplied daily. Other students and their families joined in making positive changes. The school has upgraded its nutrition education program, and teachers feel optimistic that this will produce long-term benefits.

Elaine Fleming, M.P.H., R.D., is Assistant Professor of Nutrition at Loma Linda University. She has taught in classrooms from kindergarten through graduate level. Her elementary experience was in the U.S. and the Mediterranean. She has also lived in Asia, Latin America, and the Middle East.

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3. William M. Moore, *Pediatric Anthropometry* (Columbus, Ohio: Ross Laboratories, 1983), p. 19; U.S. Department of Health and Human Services, Public Health Service, Health Services Administration, Bureau of Community Health Services, *Nutritional Screening of Children: A Manual for Screening and Follow-up* (1981), p. 11.

4. Darwin Deen, Jr., "Nutritional Assessment of Disadvantaged Children," in Robert J. Karp, ed., *Malnourished Children in the United States: Caught in the Cycle of Poverty* (New York: Springer Publishing Company, 1993), p. 60.

5. James P. Grant, *The State of the World's Children 1994*, a UNICEF production (Oxford: Oxford University Press, 1994), p. 16.

6. American Dietetic Association, "Position of

RESOURCES

The following organizations provide curricula and print, audiovisual, and computer-based nutrition information and educational materials. Additional resources include universities, health ministries and departments, and local and governmental education agencies.[36]

U.S. Department of Health and Human Services
Public Health Services
Centers for Disease Control and Prevention (CDC)
Atlanta, GA 30333
NOTE: "Guidelines for School Health Programs" contains a comprehensive list of agencies providing materials for nutrition education.

Food and Nutrition Information Center
National Agricultural Library
U.S. Department of Agriculture
10301 Baltimore Blvd., Room 304
Beltsville, MD 20705
(301) 504-5719

National Food Service Management Institute
P.O. Box 188
University of Mississippi
University, MS 38677
(800) 321-3054

International Food Information Council
1100 Connecticut Ave. NW, Suite 430
Washington, DC 20036
(202) 296-6540
A source for the Food Guide Pyramid and Hispanic Food Guide Pyramid

Team Nutrition
U.S. Department of Agriculture
3101 Park Center Dr., Room 802
Alexandria, VA 22302
(703) 305-1624

The Health Connection
55 West Oak Ridge Dr.
Hagerstown, MD 21740
(800) 548-8700
This General Conference agency produces a variety of nutrition and health education resources, including the Vegetarian Food Pyramid.

Vegetarian Resource Group
P.O. Box 1463
Baltimore, MD 21203
(410) 366-8343

Caribbean Food and Nutrition Institute
P.O. Box 140 Kingston 7
Jamaica, West Indies

Sanitarium Health Food Company
146 Fox Valley Rd.
Wahroonga, NSW 2076 Australia
(02) 487-1711

Sanitarium Nutrition Education Service
Private Bag 92127
Auckland, New Zealand

Dr. M. Raymer
Department of Public Health and Primary Care
Oxford University
Gibson Building, Radcliffe Infirmary
Oxford OX2 6HE, UK
Source of the National Food Guide for the UK

Oldways Preservation and Exchange Trust
25 First St.
Cambridge, MA 02141
Source of the Traditional Healthy Asian Diet Pyramid

the American Dietetic Association: Domestic Hunger and Inadequate Access to Food," *Journal of the American Dietetic Association* 90:10 (October 1990), p. 1437.

7. J. C. Waterlow, "Reflections on Stunting," *International Child Health: A Digest of Current Information* 2:2 (April 1991), pp. 25, 32.

8. Jere D. Haas, Scott Murdoch, Juan Rivera, and Reynaldo Martorell, "Early Nutrition and Later Physical Work Capacity," *Nutrition Reviews* 54:2 (February 1996), p. S47.

9. Waterlow, pp. 28, 29.

10. Center on Hunger, p. 7.

11. E. Kennedy and J. Goldberg, "Review of What American Children Are Eating," United States Department of Agriculture, Center for Nutrition Policy and Promotion (March 1995), p. 18.

12. From the December 1996 *Journal of Nutrition*, cited in Sally Squires, "Obesity in Children Increasing Globally," *Washington Post* (December 17, 1996), Health, p. 5.

13. Jeannie M. Gazzaniga, and Trudy L. Burns, "Relationship Between Diet Composition and Body Fatness, With Adjustment for Resting Energy Expenditure and Physical Activity, in Preadolescent Children," *American Journal of Clinical Nutrition* 58:21 (1993), p. 21.

14. Phyllis B. Eveleth and James M. Tanner, *Worldwide Variation in Human Growth*, 2nd ed. (New York, Cambridge University Press, 1990), pp. 213, 214.

15. Gazzaniga and Burns, p. 21.

16. U.S. Department of Health and Human Services, p. 11.

17. Fima Lifshitz, "Nutrition and Growth," *Clinical Nutrition* 4:2 (April 1985), p. 41.

18. Ellyn M. Satter, "Internal Regulation and the Evolution of Normal Growth as the Basis for Prevention of Obesity in Children," *Journal of the American Dietetic Association* 96:9 (September 1996), p. 861.

19. Squires, *Washington Post*.

20. Gazzaniga and Burns, p. 21.

21. R. S. McPherson, D. Montgomery, and M. Nichaman. "Nutrition in Childhood: What Do We Know?" *National Action Conference on Healthy Eating for Children: A Policy Dialogue* (Washington, D.C., March 13, 14, 1995), pp. 6, 7.

22. Gazzaniga and Burns, p. 27.

23. U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention (CDC), "Guidelines for School Health Programs to Promote Lifelong Healthy Eating," *Morbidity and Mortality Weekly Report. Recommendations and Reports*. 45: RR-9 (June 14, 1996), p. 8.

24. Robert E. Olson, "The Folly of Restricting Fat in the Diet of Children," *Nutrition Today* 30:6 (November/December 1995), p. 242.

25. Anorexia nervosa is a pathological disorder characterized by a fear of weight gain, faulty eating patterns, and usually excessive weight loss. Bulimia is an abnormal and constant craving for and ingestion of large amounts of food, usually followed by induced vomiting.

26. Dianne Neumark-Sztainer, "School-Based Programs for Preventing Eating Disturbances," *Journal of School Health* 66:2 (February 1996), pp. 64-69.

27. Dianne Neumark-Sztainer, Ruth Butler, and Hava Palti, "Eating Disturbances Among Adolescent Girls: Evaluation of School-Based Primary Prevention Program," *Journal of Nutrition Education* 27:1 (January/February 1995), pp. 24-31.

28. National Eating Disorders Organization, 6655 South Yale Avenue, Tulsa, Oklahoma 74136.

29. Satter, p. 860.

30. Fima Lifshitz, Nancy M. Finch, and Jere Z. Lifshitz, "Nutrition Needs of Normal Babies, Children, and Adolescents," *Children's Nutrition* (Boston: Jones and Bartlett Publishers, 1991), p. 87.

31. Kennedy, pp. 12-15.

32. U.S. Department of Agriculture, Human Nutrition Information Service, Food Marketing Institute, *The Food Guide Pyramid . . . Beyond the Basic Four* (1992).

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