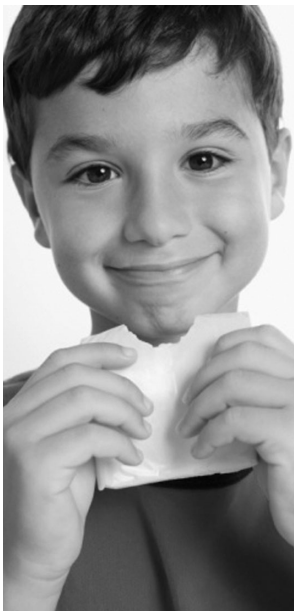
Dairy Council DIGEST®

March | April 2009

Volume 80
Number 2

CHILD NUTRITION: A FOCUS ON DAIRY FOODS



SUMMARY

Safeguarding the health of the nation's children is a public health priority. Almost one-third of U.S. children aged 2 to 19 are either overweight or obese, yet many of these children are also undernourished. Most children do not consume recommended servings of low-fat and fat-free dairy foods, fruits, vegetables, and whole grains – identified as "Food Groups to Encourage" by the 2005 Dietary Guidelines for Americans. As a result, many children have low intakes of calcium, potassium, fiber, magnesium, and vitamin E (i.e., "nutrients of concern"), which are critical to their growth and development.

Dairy foods together are a good or excellent source of nine essential nutrients: calcium, potassium, phosphorus, protein, vitamins A, D, and B_{12}, riboflavin, and niacin (niacin equivalents) and provide three of the five "nutrients of concern:" calcium, magnesium, and potassium. Numerous studies have shown that increasing intake of nutrient-rich dairy foods (milk, cheese, yogurt) improves the nutrient quality of children's diets.

Scientific evidence indicates that consuming an adequate intake of dairy foods during childhood and adolescence helps to optimize bone health and achieve a healthy blood pressure and body fat level. According to a recent study, consuming two or more daily servings of dairy foods beginning in childhood improves bone health in adolescence. Calcium/dairy products plus vitamin D have been shown to favorably affect bone health in children. Government agencies and health professional organizations recognize the importance of milk, cheese, and yogurt for children's bone health. For children with lactose intolerance, dairy foods such as lactose-free milk, yogurts with live, active cultures, and aged cheeses are recommended to obtain enough calcium and other dairy nutrients essential for bone and overall health. Studies also demonstrate that consuming a dietary pattern high in dairy foods, fruits, and vegetables beneficially affects blood pressure in children and adolescents.

Scientific findings indicate that recommended intakes of dairy foods do not adversely affect children's body fat levels and may protect against adding excess body fat. Children who consume white or flavored milk have been shown to have higher nutrient intakes but not higher body mass indexes compared to non-milk consumers.

Child nutrition programs, by emphasizing nutrient-rich foods, including low-fat and fat-free dairy foods (white, flavored, or lactose-free milk, cheese, yogurt), can help children meet their nutrient needs, reduce their risk of chronic diseases, and may help establish life-long healthful eating patterns. According to the Third School Nutrition Dietary Assessment Study 2004-2005, children participating in the National School Lunch Program and School Breakfast Program consumed more milk (white and flavored) and milk nutrients than nonparticipants. Furthermore, recent findings indicate a shift in the type of milk consumed from whole and reduced-fat milk in the early 1990s to mostly low-fat or fat-free milk, particularly flavored milk.

Recognizing the nutritional and health benefits of dairy foods and encouraging their intake both inside and outside of school can help safeguard the health of the nation's youth.

The *Dairy Council Digest*® is available on-line.
www.nationaldairycouncil.org

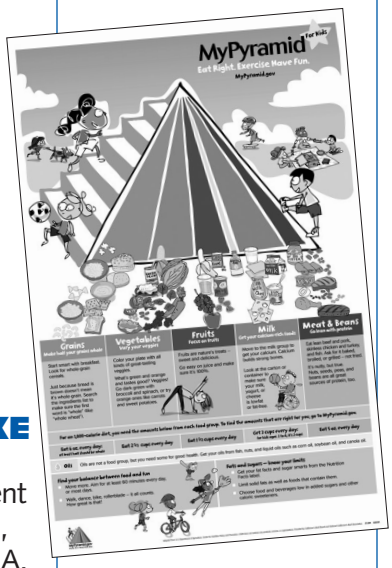
March | April 2009

INTRODUCTION

Overweight among U.S. children and adolescents has reached an epidemic proportion, placing them at risk for obesity-related health problems and stigma during childhood and later in life (1,2). Also, because of poor food choices, many children are undernourished (3-5). The failure of children and adolescents to consume recommended servings from the major foods groups, particularly low-fat and fat-free dairy foods, fruits, vegetables, and whole grains (i.e., "Food Groups to Encourage"), contributes to nutrient shortages such as calcium, potassium, fiber, magnesium, and vitamin E (6). Vitamin D is also limited in many children's diets (7). Participating in federally sponsored child nutrition programs provides an opportunity for children and adolescents to increase their intake of dairy foods and dairy food nutrients (8-10). As indicated in the 2005 Dietary Guidelines for Americans (6) and USDA's *MyPyramid* for Kids (11), the long-term health of children and adolescents can best be achieved by moderate consumption of a variety of nutrient-rich foods among and within the major food groups, including low-fat and fat-free dairy foods.

This *Digest* reviews the positive impact of consuming recommended servings of dairy foods on children's nutrient intake and health and the importance of federally sponsored child nutrition programs in helping children meet their nutrient needs and recommended daily servings of dairy foods.

Encouraging children to consume recommended servings of nutrient-rich foods, including low-fat and fat-free dairy foods, is more important than ever considering children's high prevalence of overweight and low intakes of several nutrients critical for their growth, development, and overall health.



DAIRY FOODS' IMPACT ON CHILDREN'S NUTRIENT INTAKE

Dairy foods together are a good or excellent source of nine essential nutrients: calcium, potassium, phosphorus, protein, vitamins A, D, and B_{12}, riboflavin, and niacin (niacin equivalents (12). These foods also provide three of the five "nutrients of concern" limiting in children's diets: calcium, magnesium, and potassium (6). As reviewed by Rafferty and Heaney (13), data from national surveys reveal that milk is the number one source of calcium, vitamin D, phosphorus, and potassium in the diets of children aged 2 to 18 and the number one source of protein in the diets of children aged 2 to 11. Studies in children and adolescents demonstrate that consumption of dairy foods (i.e., unflavored and flavored milk, cheese, yogurt) increases calcium intake and improves the overall diet quality (14-16). Moreover, children's intake of white or flavored milk has been shown to improve the nutritional quality of their diets without adverse effects on body weight/adiposity (17).

The 2005 Dietary Guidelines for Americans recommends that children aged 2 to 8 years consume two cups of low-fat or fat-free milk or equivalent milk products (i.e., cheese, yogurt) a day and that children aged nine years and older consume three cups of low-fat or fat-free milk or milk equivalents a day (6). Similarly, the American Academy of Pediatrics (AAP) recommends that children consume three servings of dairy foods a day and that adolescents consume four servings of dairy foods a day (18).

Unfortunately, studies have consistently shown that the diets of children and adolescents do not meet current national dietary recommendations to maintain health and support optimal growth and development (4,19). Dietary intakes of calcium, potassium, fiber, magnesium, and vitamins E and D are sufficiently low to warrant concern (6,7). Teenage girls and children from low-income families are especially at risk for nutrient inadequacies (20). Many children and adolescents fail to consume recommended intakes of dairy foods (19,21,22). More than half of children aged 2 to 8 and three-quarters of children aged 9 to 19 do not consume recommended daily servings of low-fat or fat-free milk or milk products (21). Findings from national surveys indicate that African American children in all age groups consume fewer servings a day of total dairy foods, milk, cheese, and yogurt than non-African Americans and have lower intakes of calcium, magnesium, and phosphorus (22). As children age, they tend to decrease their milk consumption and increase their intake of less nutritious beverages (e.g., carbonated soda, fruit drinks) (22-24). Because of dairy foods' large contribution to calcium and potassium intakes (13,25), children and adolescents who avoid dairy products are unlikely to

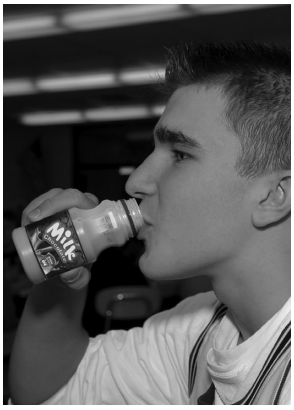
meet their dietary intake recommendations for these nutrients (26,27).

HOW DAIRY FOOD CONSUMPTION CAN IMPROVE CHILDREN'S HEALTH

Bone Health. Consuming an adequate intake of nutrient-rich dairy foods during childhood and adolescence is important for optimizing bone health, which may help reduce the risk of fractures in childhood and adolescence and osteoporosis in later adulthood (18,28,29). Achieving genetically determined peak bone mass, 90% of which is reached sometime during late adolescence and the early 20s, helps to reduce the risk of fractures and osteoporosis (28,29). Because 99% of the body's calcium is stored in bones and vitamin D enhances calcium absorption, it is not surprising that these nutrients are critical to bone health. Dairy foods are a major dietary source of calcium and provide other nutrients such as vitamin D (if fortified), phosphorus, protein, potassium, magnesium, and vitamin A that support bone health (12,28,29).

According to a recent study, an adequate intake of dairy foods beginning in childhood improves bone health in adolescence (30). This study examined data from 106 children initially aged 3 to 5 years who participated in the Framingham Children's study. At the end of 12 years, adolescents (15 to 17 years) who consumed two or more servings of dairy foods a day as children had significantly higher bone mineral content, bone area, and bone mineral density than those who consumed less than two servings a day (30).

A recent meta-analysis of data from randomized controlled trials and observational studies in children found a non-significant increase in total body bone mineral content with increased calcium/dairy intake (31). However, when the analysis was limited to three clinical trials of children with low baseline intakes of calcium, increasing calcium/dairy food intake increased total body bone mineral content by an amount approximately 25 times greater than in children whose baseline calcium intake was adequate (31). Pooled data from two randomized controlled studies showed that calcium/dairy foods plus vitamin D increased bone mineral content of the spine (31).



Scientific evidence indicates that consuming recommended servings of dairy foods during childhood and adolescence helps to reduce the risk of several diet-related chronic diseases that take root in childhood and are carried over into adulthood.

Recognizing widespread vitamin D insufficiency in children and adolescents, and the importance of vitamin D in bone and overall health, the AAP doubled the recommended intake of vitamin D to 400 IU/day for infants, children, and adolescents (7). Consuming three or four servings of vitamin D-fortified milk not only provides 300 IU or 400 IU of vitamin D, respectively, but also other "nutrients of concern" for children and adolescents (i.e., calcium, potassium, magnesium) (6,12). Some yogurts and cheeses are also fortified with vitamin D.

Government agencies and health professional organizations recognize the importance of calcium and calcium-rich foods such as milk, cheese, and yogurt for children's and adolescents' bone health (18,28,32,33). The 2005 Dietary Guidelines for Americans states that "the consumption of milk products is especially important for children and adolescents who are building their peak bone mass and developing lifelong habits" (6).

For children and adolescents with lactose intolerance, the Dietary Guidelines (6) and the AAP (18,34), along with several other government and health professional organizations, recommend dairy foods (e.g., lactose-free milk, yogurt with live, active cultures, aged cheeses) as the first option. The AAP, in its report on lactose intolerance, encourages children and adolescents with lactose intolerance to consume dairy foods to obtain enough calcium, vitamin D, protein, and other nutrients essential for bone and overall health (34). The report also indicates that, while rice and soy beverages are generally free of lactose, the nutrient content of these beverages is not equivalent to cow's milk (34). Also, Caucasian, African American, and Hispanic children have been shown to prefer the taste of flavored (chocolate) lactose-free 1% milk compared to milk substitute beverages such as flavored (chocolate) low-fat soy beverages (35).

A Healthy Blood Pressure. Hypertension (high blood pressure) and pre-hypertension is a significant public health issue for children and adolescents (36). Overweight children and adolescents

are among population groups most at risk for high blood pressure (37). Prevention, starting early in life, is of utmost importance because high blood pressure in the early years increases the risk of hypertension in adulthood (38) and hypertension is a risk factor for heart disease, stroke, and kidney disease (37). The Dietary Approaches to Stop Hypertension (DASH) clinical trial demonstrated that consuming a low-fat diet containing two to three servings of low-fat dairy foods and eight to ten servings of fruits and vegetables a day significantly lowered blood pressure in adults (39). Similarly, consuming a DASH-like dietary pattern characterized by high intakes of dairy foods, fruits, and vegetables has been shown to beneficially affect blood pressure in children and adolescents (40,41).

Healthy Body Weight. Almost one-third (23 million) of children aged 2-19 years are either overweight or obese (1,20). Because overweight children are at increased risk of becoming overweight or obese adults, and obesity is associated with immediate and/or long-term health risks such as high blood pressure, type 2 diabetes, and metabolic syndrome, prevention of pediatric overweight is a public health priority (2,37,42,43).

Despite the belief that dairy foods are "fattening," accumulating scientific evidence indicates that recommended intakes of dairy foods do not adversely affect children's body fat level and may protect against adding excess body fat or body weight (17,44-46). Data from the Framingham Children's study found that higher intakes of dairy foods in early childhood (3 to 6 years) were associated with decreased gain of body fat in early adolescence (10 to 13 years) (44). According to a recent investigation using data from two of the National Health and Nutrition Examination Surveys (NHANES), 1988-1994 and 1999-2002, adolescent girls (12-16 years) who consumed three or more servings of dairy foods a day had a lower body mass index (BMI) and lower body fat level than did girls who consumed 1-<3 servings of dairy foods a day (45). Similarly, adolescent boys who consumed four or more servings of dairy foods a day had lower BMI levels and body fat than did those who consumed fewer than two dairy servings a day (45).

Access to low-fat and fat-free dairy foods – milk (including white, flavored, lactose-free), cheese, and yogurt – in federal child nutrition programs can help children meet their nutrient needs and may help reduce their risk for several chronic diseases.

Research demonstrates that children and adolescents who drink either flavored or white milk consume more nutrients and have a lower or comparable BMI than non-milk consumers (17). A randomized controlled trial in 98 overweight and obese Chilean children (aged 8-10) found that replacing sugar-sweetened beverages with approximately three servings of flavored milk a day had no effect on percent body fat, but significantly increased lean body mass, and for boys, increased height (46). According to the Dietary Guidelines, adding small amounts of sugar to nutrient-rich foods such as reduced-fat milk helps enhance their palatability and improves nutrient intake without adding excessive calories (6).

A recent review of more than 90 human studies, including randomized controlled trials and observational studies among a range of ages, found a strong link between high calcium and dairy food intakes and improved body composition (47). Although further study is needed to clarify the relationship between dairy food/calcium intake and body composition in children and adolescents (48), the Dietary Guidelines states that children (and adults) should not avoid milk and milk products because of concerns that these foods lead to weight gain (6). To prevent overweight and obesity in children and adolescents, a recent Expert Committee convened by the American Medical Association and consisting of 15 health professional organizations recommended a nutritionally balanced diet containing two to three servings of low-fat or fat-free dairy foods, consistent with USDA's *MyPyramid* (www.mypyramid.gov) (2).

THE IMPORTANCE OF CHILD NUTRITION PROGRAMS

Dairy foods such as milk, cheese, and yogurt are a key component of meals and snacks offered in federally sponsored child nutrition programs such as the

National School Lunch Program (NSLP), the School Breakfast Program (SBP), the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Special Milk Program, Summer Food Service Program, and the Child and Adult Care Food Program (49,50). Together, these programs provide nutritional assistance to more than 54 million children and adults, and are particularly advantageous for low-income Americans (50,51). By emphasizing "Food Groups to Encourage" – low-fat and fat-free dairy foods, fruits, vegetables, and whole grains – these programs help children meet their nutrient needs, thereby supporting growth and development and helping them to focus on learning. These programs also set an example of healthful dietary patterns that children can follow throughout their lives (43,52,53).

Recent studies demonstrate that child nutrition programs such as the NSLP and SBP, as well as the WIC program, are making progress in meeting their goals (8-10). According to the Third School Nutrition Dietary Assessment Study (SNDA-III), a national study of the NSLP and SBP in the school year 2004-2005, NSLP participants consumed more nutrients at lunch than matched nonparticipants, even after adjusting for confounding factors (8,20,54). Compared to nonparticipants, NSLP participants consumed more protein, vitamin A, vitamin B_{12}, riboflavin, calcium, phosphorus, potassium, and zinc (8). These differences can be partly attributed to the fact that NSLP participants were four times more likely to consume milk at lunch than nonparticipants (8,53,55).

Not only did students consume more milk at lunch, but the type of milk consumed changed over the years (53,55,56). According to 2005 data from SNDA, nearly 80% of students in the NSLP chose low-fat or fat-free milk, compared to less than 30% in SNDA I in 1992 (56). Also, the proportion of NSLP milk consumers who chose flavored milk increased from 60% in 1992 to 66% in 2005, indicative of students' preference for flavored milk (56). Low-fat or fat-free flavored milk was the most common type of flavored milk consumed in 2005, whereas in 1992, 2% flavored milk was most common (56). In 2007, more than 90% of the milk served in schools throughout the school day was low-fat or fat-free, according to data collected by the School Nutrition Association (56). Based on the fact that flavored milk is the most popular option and most flavored milk is low-fat or fat-free, flavored milk may be contributing to the trend of increased low-fat and fat-free milk intake.

To safeguard children's health, the 2005 Dietary Guidelines, numerous health professional organizations, and the latest science support the inclusion of dairy foods in child nutrition programs, and encourage children to consume recommended daily servings of these nutrient-rich foods.

Children participating in the SBP are more likely to consume milk at breakfast, increasing their intake of milk's nutrients (e.g., vitamin A, phosphorus, magnesium, potassium, calcium) compared to nonparticipants (8,54). Also, more schools are offering low-fat or fat-free milk (including more flavored milk) at breakfast (8,55). Consuming breakfast may improve children's cognitive function related to memory, test scores, and school attendance (57), and protect children against overweight (58).

The overall diets of children participating in the WIC program are more nutrient-rich than the diets of low-income nonparticipating children and similar to those of higher-income children (10). This program provides food assistance and nutrition counseling to more than 8.7 million pregnant and lactating women and their children under the age of five each month (50). WIC food packages provide two daily servings of dairy foods (i.e., milk, cheese) for children, which is consistent with the Dietary Guidelines' recommended dairy servings for this age group (50).

CONCLUSION

Child nutrition programs such as the NSLP and SBP can help improve the overall quality of children's diets, potentially reducing their near-term and future risk of diet-related chronic diseases. However, schools alone cannot safeguard children's health (2,5). Parents and caregivers can also play a key role by modeling healthful eating behaviors and by increasing the availability and accessibility of "Food Groups to

Encourage" such as low-fat and fat-free dairy foods, fruits, vegetables, and whole grains (2,54,59-61). D

REFERENCES

1. Ogden, C.L., M.D. Carroll, and K.M. Flegal. JAMA *299*: 2401, 2008.
2. Barlow, S.E., and the Expert Committee. Pediatrics *120(suppl. 4)*: 164s, 2007.
3. Kant, A. Arch. Pediatr. Adolesc. Med. *157*: 789, 2003.
4. Moshfegh, A., J. Goldman, and L. Cleveland. *What We Eat in America, NHANES 2001-2002: Usual Nutrient Intakes from Food Compared to Dietary Reference Intakes.* U.S. Department of Agriculture, Agricultural Research Service, September 2005. www.ars.usda.gov/foodsurvey
5. Action for Healthy Kids. *Progress or Promises? What's Working For and Against Healthy Schools.* An Action for Healthy Kids Report. Fall 2008. www.actionforhealthykids.org
6. U.S. Department of Health and Human Services and U.S. Department of Agriculture. *Dietary Guidelines for Americans, 2005.* 6th Edition. Washington, D.C.: U.S. Government Printing Office, January 2005. www.healthierus.gov/dietaryguidelines
7. Wagner, C.L., F.R. Greer, and the Section on Breastfeeding and Committee on Nutrition. Pediatrics *122*: 1142, 2008.
8. U.S. Department of Agriculture, Food and Nutrition Service. *School Nutrition Dietary Assessment Study – III.* Alexandria, VA: Food and Nutrition Service, USDA, November 2007. www.fns.usda.gov (under Research, Child Nutrition Studies)
9. U.S. Department of Agriculture, Food and Nutrition Service, Office of Research and Analysis. *Diet Quality of American School-Age Children by School Lunch Participation Status: Data from the National Health and Nutrition Examination Survey (Summary).* July 2008. www.fns.usda.gov/fns (under Research)
10. U.S. Department of Agriculture, Food and Nutrition Service, Office of Research and Analysis. *Diet Quality of American Young Children by WIC Participation Status: Data from the National Health and Nutrition Examination Survey (Summary).* July 2008. www.fns.usda.gov/fns (under Research)
11. U.S. Department of Agriculture. *MyPyramid*: For Kids. www.mypyramid.gov/kids/index.html
12. U.S. Department of Agriculture, Agricultural Research Service. 2008. *USDA National Nutrient Database for Standard Reference, Release 21.* Nutrient Data Laboratory Home Page www.ars.usda.gov/ba/bhnrc/ndl
13. Rafferty, K., and R.P. Heaney. J. Nutr. *138*: 166s, 2008.
14. Ballew, C., S. Kuester, and C. Gillespie. Arch. Pediatr. Adolesc. Med. *154*: 1148, 2000.
15. Frary, C.D., R.K. Johnson, and M.Q. Wang. J. Adol. Health *34*: 56, 2004.
16. Marshall, T.A., J.M. Eichenberger Gilmore, B. Broffitt, et al. J. Am. Coll. Nutr. *24*: 65, 2005.
17. Murphy, M.M., J.S. Douglass, R.K. Johnson, et al. J. Am. Diet. Assoc. *108*: 631, 2008.
18. Greer, F.R., and N.R. Krebs for the American Academy of Pediatrics Committee on Nutrition. Pediatrics *117*: 578, 2006.
19. Cook, A.J., and J.E. Friday. *Pyramid Servings Intakes in the United States 1999-2002, 1 Day.* CNRG Table Set 3.0. March 2005. www.ba.ars.usda.gov/cnrg (under Food Surveys)
20. Story, M. J. Am Diet Assoc. *109(suppl. 1)*: 7s, 2009.
21. National Dairy Council. Unpublished data based on the National Health and Nutrition Survey (NHANES), 1999-2002.
22. Fulgoni, V. III, J. Nicholls, A. Reed, et al. J. Am. Diet. Assoc. *107*: 256, 2007.

23. Rampersaud, G.C., L.B. Bailey, and G.P. Kauwell. J. Am. Diet. Assoc. *103*: 97, 2003.
24. Nicklas, T.A. J. Am. Coll. Nutr. *22*: 340, 2003.
25. McGill, C.R., V. Fulgoni, D. DiRienzo, et al. J. Am. Coll. Nutr. *27*: 44, 2008.
26. Gao, X., P.E. Wilde, A.H. Lichtenstein, et al. J. Am. Diet. Assoc. *106*: 1759, 2006.
27. Huth, P.J., V.L. Fulgoni, III, D.B. DiRienzo, et al. Nutr. Today *43*: 226, 2008.
28. U.S. Department of Health and Human Services. *Bone Health and Osteoporosis. A Report of the Surgeon General.* Rockville, MD: U.S. Department of Health and Human Services, Office of the Surgeon General, 2004. www.surgeongeneral.gov/library
29. Institute of Medicine. *Dietary Reference Intakes for Calcium, Phosphorus, Magnesium, Vitamin D, and Fluoride.* Washington, D.C.: National Academy Press, 1997.
30. Moore, L.L., M.L. Bradlee, D. Gao, et al. J. Pediatr. *153*: 667, 2008.
31. Huncharek, M., J. Muscat, and B. Kupelnick. Bone *43*: 312, 2008.
32. American Academy of Pediatrics, Committee on School Health. Pediatrics *113*: 152, 2004.
33. The American Dietetic Association. J. Am. Diet. Assoc. *108*: 1038, 2008.
34. Heyman, M.B. for the Committee on Nutrition. Pediatrics *118*: 1279, 2006.
35. Kids lactose-free milks product study. Prepared for Dairy Management, Inc. by Moskowitz Jacobs, Inc. July, 2008.
36. National High Blood Pressure Education Program, Working Group on High Blood Pressure in Children and Adolescents. Pediatrics *114*: 555, 2004.
37. Lloyd-Jones, D., R. Adams, M. Carnethon, et al. for the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Circulation *119*: 480, 2009.
38. Sun, S.S., G.D. Grave, R.M. Siervogel, et al. Pediatrics *119*: 237, 2007.
39. Appel, L.J., T.J. Moore, E. Obarzanek, et al. N. Engl. J. Med. *336*: 1117, 1997.
40. Moore, L., M.R. Singer, M.L. Bradlee, et al. Epidemiol. *16*: 4, 2005.
41. Coach, S.C., B.E. Saelens, L. Levin, et al. J. Pediatr. *152*: 494, 2008.
42. Washington, R.L. J. Pediatr. *152*: A1, 2008.
43. Institute of Medicine, Committee on Prevention of Obesity in Children and Youth. *Preventing Childhood Obesity: Health in the Balance.* Washington, D.C.: National Academy Press, 2005.
44. Moore, L.L., M.L. Bradlee, D. Gao, et al. Obes. Res. *14*: 1010, 2006.
45. Moore, L.L., M.R. Singer, M.M. Qureshi, et al. J. Am. Coll. Nutr. *27*: 702, 2008.
46. Albala, C., C.B. Ebbeling, M. Cifuentes, et al. Am. J. Clin. Nutr. *88*: 605, 2008.
47. Heaney, R.P., and K. Rafferty. Nutr. Rev. *67*: 32, 2009.
48. Huang, T., and M. McRory. Nutr. Rev. *63*: 71, 2005.
49. U.S. Department of Agriculture, Food and Nutrition Service. Child Nutrition Home Page. www.fns.usda.gov/cnd
50. U.S. Department of Agriculture, Food and Nutrition Service. Women Infants and Children. www.fns.usda.gov/wic
51. U.S. Department of Agriculture, Food and Nutrition Service. FNS Program Data. www.fns.usda.gov/pd/cnpmain.htm
52. Institute of Medicine. *Nutrition Standards for Foods in Schools: Leading the Way Toward Healthier Youth.* Washington D.C.: The National Academy Press, 2007.
53. Condon, E.M., M.K. Crepinsek, and M.K. Fox. J. Am. Diet. Assoc. *109(suppl. 1)*: 67s, 2009.
54. Clark, M.A., and M.K. Fox. J. Am. Diet. Assoc. *109(suppl. 1)*: 44s, 2009.
55. Gordon, A.R., M.K. Crepinsek, R.R. Briefel, et al. J. Am. Diet. Assoc. *109(suppl. 1)*: 129s, 2009.
56. ENVIRON International Corporation. *School Milk: Fat Content Has Declined Dramatically Since the Early 1990s.* 2008. www.nationaldairycouncil.org
57. Rampersaud, G.C., M.A. Pereira, B.L. Girard. J. Am. Diet. Assoc. *105*: 743, 2005.
58. Gleason, P.M., and A.H. Dodd. J. Am. Diet. Assoc. *109(suppl. 1)*: 118s, 2009.
59. Fisher, J.O., D.C. Mitchell, H. Smiciklas-Wright, et al. J. Nutr. *131*: 246, 2001.
60. Fisher, J.O., D.C. Mitchell, H. Smiciklas-Wright, et al. Am. J. Clin. Nutr. *79*: 698, 2004.
61. Briefel, R.R., A. Wilson, and P.M. Gleason. J. Am. Diet. Assoc. *109(suppl. 1)*: 79s, 2009. D

RELATED RESOURCES

www.nationaldairycouncil.org
- National Dairy Council. *Safeguarding The Health of America's Children: The Importance of Dairy Foods in Child Nutrition Programs.* January 2009.
- Child Nutrition (under Nutrition & Product Information). Information on general nutrition and health, nutrition in schools, and *MyPyramid* for Kids.
- Spotlight on Dairy Foods, Dairy Food Nutrients & Blood Pressure. Dairy Council Digest 80(1), 2009.
- Flavored Milk: Questions & Answers. Dairy Council Digest 79(6), 2008.
- School Breakfast: Improving Students' Minds & Bodies. Dairy Council Digest 79(2), 2008.

www.nutritionexplorations.org
- New Look of School Milk (under School Foodservice)

www.actionforhealthykids.org

www.nutrientrichfoods.org
- The Naturally Nutrient Rich Foods Coalition. *Live Well! Enjoy Nutrient-Rich Foods* Tool Kit.

Coming Next Issue:

METABOLIC SYNDROME & TYPE 2 DIABETES: DAIRY'S POTENTIAL PROTECTIVE ROLE

ACKNOWLEDGMENTS

National Dairy Council® assumes the responsibility for this publication. However, we would like to acknowledge the help and suggestions of the following reviewers in its preparation:
- Robert Murray, MD
  Director, Center for Healthy Weight & Nutrition
  Nationwide Children's Hospital
  Columbus, OH
- Theresa A. Nicklas, DrPH
  Professor of Pediatrics
  USDA/ARS Children's Nutrition Research Center
  Baylor College of Medicine
  Houston, TX

The *Dairy Council Digest*® is written and edited by Lois D. McBean, MS, RD.

COPYRIGHT NOTICE

ISSN 0011-5568