



# Review of Current Knowledge on the Benefits of School Milk

Presented at the IDF World Dairy Summit 2008  
Mexico City, 13 November 2008

By Sandra Tuijelaars, IDF Nutrition Officer

E-mail: [stuijelaars@fil-idf.org](mailto:stuijelaars@fil-idf.org)

© International Dairy Federation

## Contents



- Introduction to school milk
- Milk and child nutrition
- The benefits of school milk
- Examples
- Promotion
- Summary





## Introduction to School Milk

### School Milk Programmes



- Lay a strong and healthy foundation for children
- Encourage children to consume healthy dairy products
- Increase school attendance, enrolment and scholastic performance of children
- Stimulate development of agricultural and dairy sector



## Variation in school milk programmes



- **Format of programmes:**
  - Distribution of milk by government
  - Commercial supplies of milk to schools
  - Promotion of milk drinking in schools
- **Financing by:** Government / Private / Parents
- **Categories of milk distribution:**
  - Free
  - Subsidised (sustainability of programme ?)
  - Full cost
- **Different products:**
  - Milk, flavoured milk, organic milk, fortified milk, cheese
  - Challenge fresh milk:  
Microbiological food safety: Keeping the milk chilled  
Possible solutions: Cooling bags, refrigerators, UHT milk



5

## School milk – importance of programmes



- **Reasons to implement programmes**  
differ depending on health status of the target group:
  - Hunger, malnutrition, optimized nutrition
- **Valid for all programmes:**
  - Children are adults (and consumers) of the future
  - Dietary habits are instilled in childhood
  - Environment home and schools:  
learning healthy eating habits



6

## Main contributing factors to malnutrition



- Poverty
- Lack of food
- Irregular consumption patterns
- Insufficient nutrients
- Dependency on a staple food  
(lack of dietary diversification)

7

## Magnitude of malnutrition in the world\*



	Million/year
Intra-uterine growth retardation	30 (23.8% of all births)
Protein-energy malnutrition	159 (under-5 children)
Iodine deficiency disorders	740
Vitamin A deficiency	120 (under-5 children)
Anaemia, incl. iron deficiency anaemia	2.000
Overweight and obesity	1.200 (of which 340 obese) adults 16 (children)

\* Source: FAO/WHO Technical Consultation on National Food-based Dietary Guidelines, Cairo, Egypt, 2004 8

## Cost of malnutrition\*



- Malnutrition has a cost both for individuals and for nations
  - E.g. in Bangladesh it is estimated that 0.9% of GDP is lost to all forms of Vitamin and Mineral deficiency



\* Source: Micronutrient Initiative [www.micronutrient.org/VMD/](http://www.micronutrient.org/VMD/)

9

## Food Based Dietary Guidelines (FBDG)



- FBDG:
  - Important education and communication tool
  - Part of integrated strategy to improve nutrition and health
  - Create demand for healthy diets and desirable eating patterns
  - Lead to nutritional well-being and prevention of diet related diseases
- Challenge of promoting FBDG in developing countries is that foods may not be available or affordable to everyone
- Many national Food Based Dietary Guidelines include **milk and dairy products as part of a healthy diet**

Source: FAO/WHO Technical Consultation on National Food-based Dietary Guidelines, Cairo, Egypt, 2004

10



## Role of milk in child nutrition

### Dairy nutrients



- Milk is the first food for newborns
- Milk contains many of the **essential nutrients** children need
- Milk is needed for **optimum growth and health** since it provides
  - essential nutrients including bone building nutrients
    - minerals, e.g. calcium, phosphorus
    - vitamins, e.g. riboflavin, vitamin A, vitamin D
    - proteins
  - essential energy



## Milk against malnutrition



### Childhood diseases related to malnutrition....

- Growth stunting
  - inadequate nutrition
- Wasting
  - not enough energy intake, body will use protein from muscle mass
- Rickets
  - softening of the bones in children potentially leading to fractures and deformity
  - vitamin D deficiency
  - lack of adequate calcium in the diet

13

## Milk for optimized nutrition



- Milk is a healthy choice
  - Nutrient rich food
- Competition against obesity



*« Higher milk consumption likely accounts for much of the lower sugar consumption by participants because it substitutes for juice drinks and soda. »*

Source: The National School Lunch Program: Background, Trends and Issues, USDA, Economic Research report 61, 2008

14



## The benefits of school milk

### School milk intervention trial in Chinese girls



#### Milk supplementation trial

#### **'Promotion of bone health of Chinese School children'**

- 2 school years (1999-2001)
- 3 sets of 250 pre-pubertal girls (10-12 years) at randomly selected Beijing schools received every school day
  - 330 ml UHT milk fortified with calcium
  - 330 ml UHT milk fortified with calcium and vitamin D
  - Controls (no supplementary milk, habitual diets)

Source: School-milk intervention trial enhances growth and bone mineral accretion in Chinese girls aged 10-12 years in Beijing, Du et al., 2004, BJN,92,159-168

16

## School milk intervention trial in Chinese girls



- **Results:** Increases (% change with control group)
  - In height >0.6%
  - Sitting height >0.8%
  - Body weight >2.9%
  - (Size adjusted) total body bone mineral content 2.4% (milk+Ca+Vit D)  
1.2% (milk+Ca)
  - Bone mineral density 5.5% (milk+Ca+Vit D)  
3.2 % (milk+Ca)

Source: School-milk intervention trial enhances growth and bone mineral accretion in Chinese girls aged 10-12 years in Beijing, Du et al., 2004, BJN, 92, 159-168

17

## School Nutrition Program in Pakistan



- Fortified 200 ml UHT dairy drink + 4 fortified wheat biscuits
- 102,000 students for 5 days a week during 38 weeks (Nov 2004-October 2005)
- Nutrition and health messages were printed on packs
- Baseline and follow-up survey were carried out to assess:
  - Nutritional status
  - Effects on anthropometric measurements
  - Hygiene and health messages' effects

Source: Land O'Lakes School Nutrition Program in Pakistan, 2005 survey report

18

## School Nutrition Program in Pakistan



Children in intervention schools compared to controls\*

- Higher gain in height: 6.0 cm vs 5.1 cm
- Increased weight: 2.8 kg vs 1.9 kg
  
- Reductions in prevalence of underweight: 16% -> 9%
- Reductions in prevalence of wasting: 10% -> 7%
- Body mass index underweight: 31% -> 20%
  
- Adoption of good hygiene and health practices:
  - Satisfactory condition of teeth: 56% -> 72%
  - Washing hands before eating a meal often: 30% -> 51%
  
- 183% increase in enrollment for girls (Sept 2008)

\*Source: Land O'Lakes School Nutrition Program in Pakistan, 2005 survey report

19

## Study links dairy to better bones in kids



- Data: Framingham Children's Study analyzed over 12 year period
- Subjects: 106 adolescents initially aged between 3 and 5 years of age
- Intake: Food diaries and USDA information
- Measured: Bone strength based on bone mineral content, bone area and bone density

At the end of the 12 year period...

- Adolescents that consumed two or more servings of dairy on a daily basis were found to have higher bone mineral content and density
- >175 g for children consuming 2 servings of dairy a day

Conclusions...

- **Eating dairy as child builds teen bones**

Source: *The Journal of Pediatrics*  
"Effects of Average Childhood Dairy Intake on Adolescent Bone Health"  
Authors: Lynn Moore, Loring Bradlee, Di Gao, Martha R. Singer, et al.

20

## Benefits for the dairy sector



### School milk programs

- Create a milk drinking habit that benefits both children and society as a whole
- Children consume more milk than adults (which is an important market)  
... but the most important reason:



Children are the consumers of the future

21

## Benefits for the dairy sector



### School milk programs...

- **Increase demand** for local milk production and processing
  - E.g. Japan 1960's: 5 ltr/person, today: >70 ltr/person
- Aid development of **agriculture and dairy industry**
- **Benefit dairy development**
  - Particularly in countries with relatively underdeveloped dairy industries
  - Create demand of locally produced milk and increased milk production and processing
  - Absorbs milk surpluses
- **Create jobs** in the rural areas and in the dairy industry

22



## Examples of SMP

### Islamic Republic of Iran



- One of largest school milk programmes in the world
- 2008: program covers appx 12 million (elementary and secondary) students of the country
- Students benefit from 70 portions of 200ml milk packages during the academic year (Sept 08-April 09)
- **Benefits – why the government is a strong supporter...**
  - Shifting subsidies from other products to milk with focus on school milk
  - Reducing poverty/malnutrition
  - Increasing children's physical and mental well being
  - Reducing health care cost
  - Increasing milk consumption/production
    - Consumption: 28 kg/person (1970) to 80 kg/person (2008)
  - Government plans to add private kindergartens to the program

24  
Source: Tetra Pak Iran, 2008

## Vietnam School Nutrition Assistance programme



- Implemented by Land O'Lakes during 2001-2005
- Wheat, soybean meal and **non-fat dry milk** donated
- Targeted: 330,000 students; 100,000 school staff
- Impact
  - Nutritional status of children (children who received milk and biscuits gained 8.1% more in weight, 3.4% more in height)
  - Improving learning performance
  - Enrollment and attendance
  - Created job opportunities
    - suppliers, development of distribution channels, new schools were built

Source: K M Eriksson, Tetra Pak Food for Development Office (2006)

25

## European Union



- July 2008 - European Commission adopted a **new version of the EU School Milk Scheme**
  - simple and clear implementation rules
  - provides a larger range of healthy dairy products to more children.
- **The European School Milk Scheme**
  - nutritional character
  - educational character
  - contributes to the fight against obesity among children
- **2007**
  - Distribution of the equivalence of 305 000 tonnes of milk
  - 22 Member States
  - Community expenditures of more than 50 million euro
- **Future ...** More schools will participate in the distribution of dairy products, **allowing and encouraging children to replace low-quality food and drinks with convenient, high-quality dairy products**

26



## Promotion of milk and SMP - International initiatives

### Promotion



- Farmers, processors, distributors should work together to promote milk in schools
- Best way to promote sustainable, social and economic development is partnership with governments, development agencies, NGOs and the private sector

#### **Benefit: Milk is considered a necessary component in children's diets**



- Milk presented in attractive way (refrigeration, flavouring and packaging)
- Milk in schools is being tailored to meet the demands of the children rather than simply being presented as a bulk commodity

## Promotion



- Promote to consumers: children and ultimately society as a whole
- Promote to decision makers: governments, school boards, teachers, canteen managers and parents
- Increase visibility in schools and media (competition with other drinks)
- Benefit: milk is considered necessary component in children's diets
  - However, even where milk is available free to children, evidence from Scandinavia showed that it must still be promoted in order to maintain its position against tap water



29

## International initiatives - FAO School milk



In 1997 discussions on importance of exchanging information on school milk...



- FAO Commodities and Trade Division:  
World centre for the collection of information on school milk systems
- FAO offers advice and assistance to countries wishing to develop such programmes
- Conferences
  - Serve as catalysts for launch of new school milk programmes
  - Next conference in Kiel, Germany, 24-26 September 2009
- Future activities
  - Seeking establishment of FAO School Milk Information Centre

30

## FAO School milk forum



FAO provides forum to exchange information

- Dedicated internet site

[http://www.fao.org/es/ESC/en/15/162/highlight\\_169.html](http://www.fao.org/es/ESC/en/15/162/highlight_169.html)

- \* **School Milk List - free subscription!**

Covers >125 countries



- Forum for dairy industries in FAO member countries to
  - exchange information on school milk
  - to facilitate discussion

31

## World School Milk Day



- How did it start?
- The 1st World School milk day in 2000
- World School Milk day (last Wednesday in September)
- Goal of world school milk day...
  - To provide a particular day when attention is focused on school milk and in so doing promote the distribution of milk in schools
- FAO is supporting the activity



32

## World School Milk Day 24 September 2008



- Examples of how it was celebrated...



33

## Summary conclusions



- Milk is healthy option
- Successful school milk programmes exist around the world
- Continued good marketing is needed
- Benefits:
  - Nutritional status of children
  - Children get the habit of drinking milk
  - Stimulates development of agricultural and dairy sector
    - Increase demand of milk
    - Creation of jobs
  - Educational benefits: increases school attendance, enrollment and performance of children



- **Promotion of School Milk Programs should continue !!**

34

## Acknowledgements



This presentation has been developed with valuable input from:

- Michael Griffin (FAO)
- Barbara Sentfer (FAO School milk e-list)
- Katarina Eriksson (Tetrapak)
- Everyone contributing to the FAO School milk e-list



- Pictures with courtesy of
  - Tetra Pak
  - FAO
  - Ontario Elementary World School Milk Day Celebrations

35



¡Muchas gracias!  
Thank you!