

A horizontal band across the top of the slide shows a close-up of golden wheat stalks on the left, transitioning into a field of wheat under a warm, golden light on the right.

Changing dietary trends: the impact on flour milling

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The 2010 Dietary Guidelines Advisory Committee (USDA and HHS) released a hard-hitting report that criticizes the 'Western Diet' – high in empty calories, fat, sugar, snack food and convenience foods - coupled with a lazy, inactive lifestyle in contributing to the current epidemic of an overweight and obese population.

It's a lifestyle issue

- The percentage of overweight children in the United States is growing at an alarming rate, with 1 out of 3 children now considered overweight or obese.
- Many kids are spending **less time** exercising or being physically active and **more time** in front of the TV, computer, or video-game console.
- When both parents are working they are busier and have fewer free moments to prepare nutritious, home-cooked meals.
- From fast food to electronics, **quick and easy** is the reality for many people in the new millennium.

Global Strategy on Diet, Physical Activity and Health: Obesity and overweight

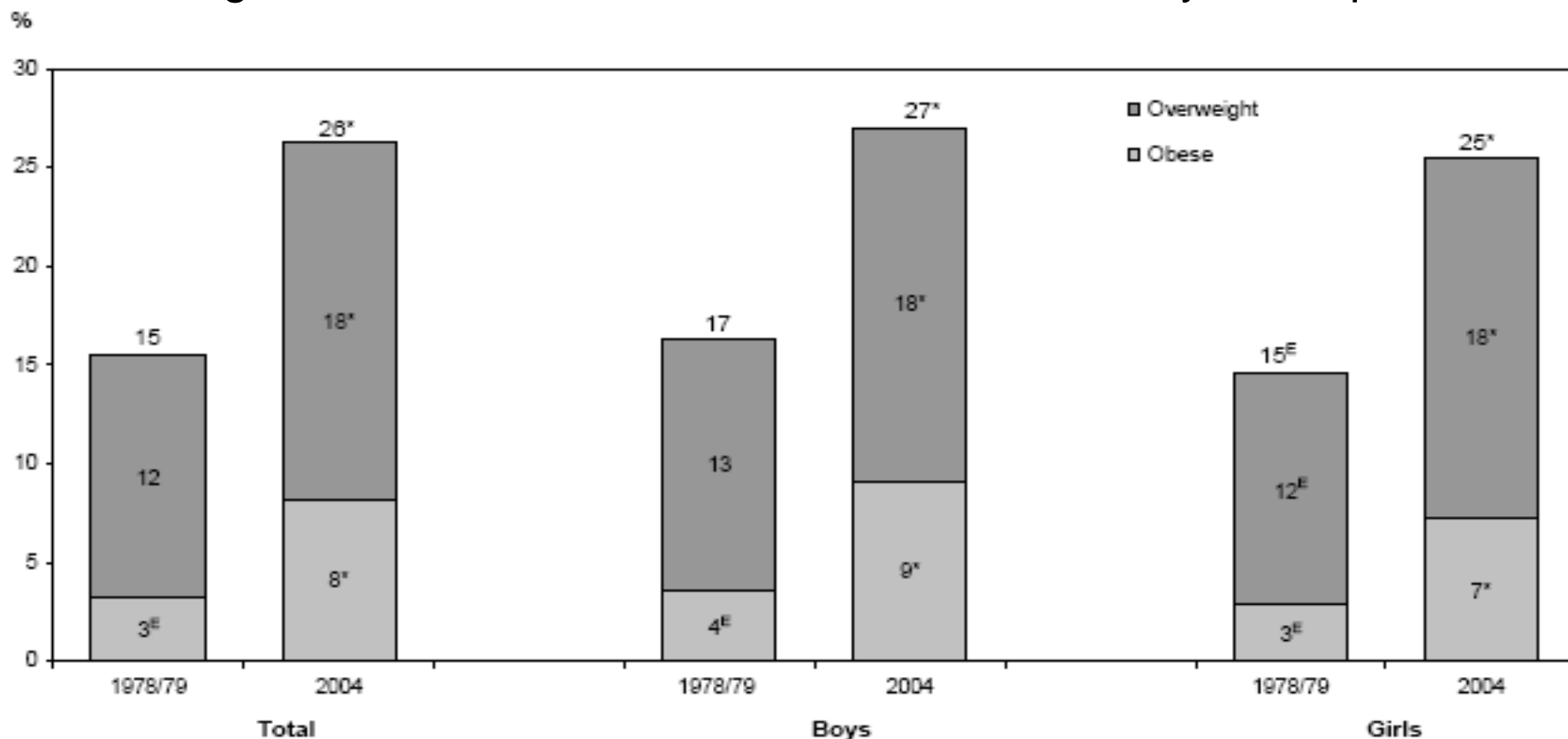
Facts

- “Globally, there are more than 1 billion overweight adults, at least 300 million of them obese.”
- “Obesity and overweight pose a major risk for chronic diseases, including type 2 diabetes, cardiovascular disease, hypertension and stroke, and certain forms of cancer.”
- “The key causes are increased consumption of energy-dense foods high in saturated fats and sugars, and reduced physical activity.”



CANADA - overweight and obesity rates children aged 2 to 17 1979 and 2004

- The past 25 years have seen a considerable increase in the percentage of Canadian children and adolescents who are overweight or obese.
- The increase was particularly notable among 12- to 17-year-olds, whose overweight rate more than doubled, and whose obesity rate tripled.



Overweight and obesity

- Physical health problems that start in children are usually not evident until later in life.
- It is known that overweight or obesity in adolescence often persists into adulthood.
- Once an adult is overweight, further weight gain is likely; very few return to the normal weight range.



Overweight and obesity

- Many factors associated with overweight and obesity among young people are modifiable.
- It is best to reverse the trend before adulthood and the onset of disease and physical decline.
- This can be done by (as recommended by USDA):
 - **Decrease consumption of solid and saturated fats, added sugars, refined grains and sodium**
 - **Increase consumption of fruit, vegetables, whole grains and fibre**
 - **More physical activity with less time devoted to sedentary activities (TV, etc.)**



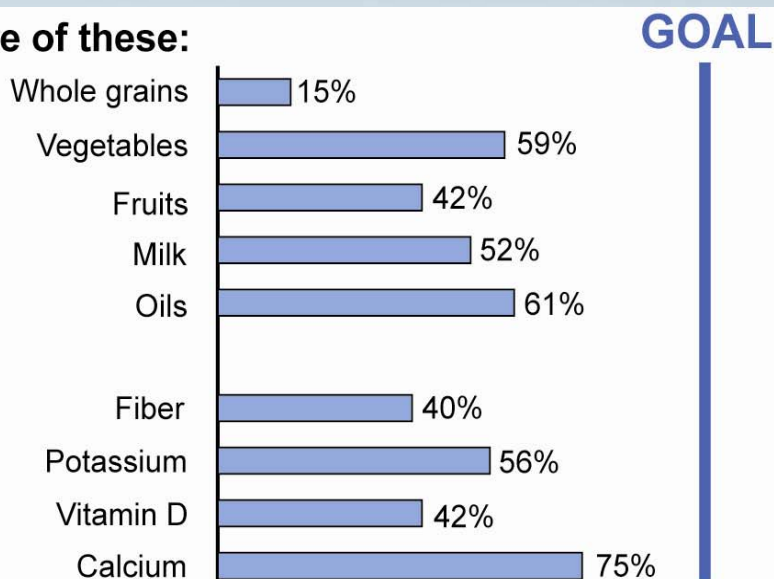
United States Department of Agriculture

U.S. Department of Health & Human Services

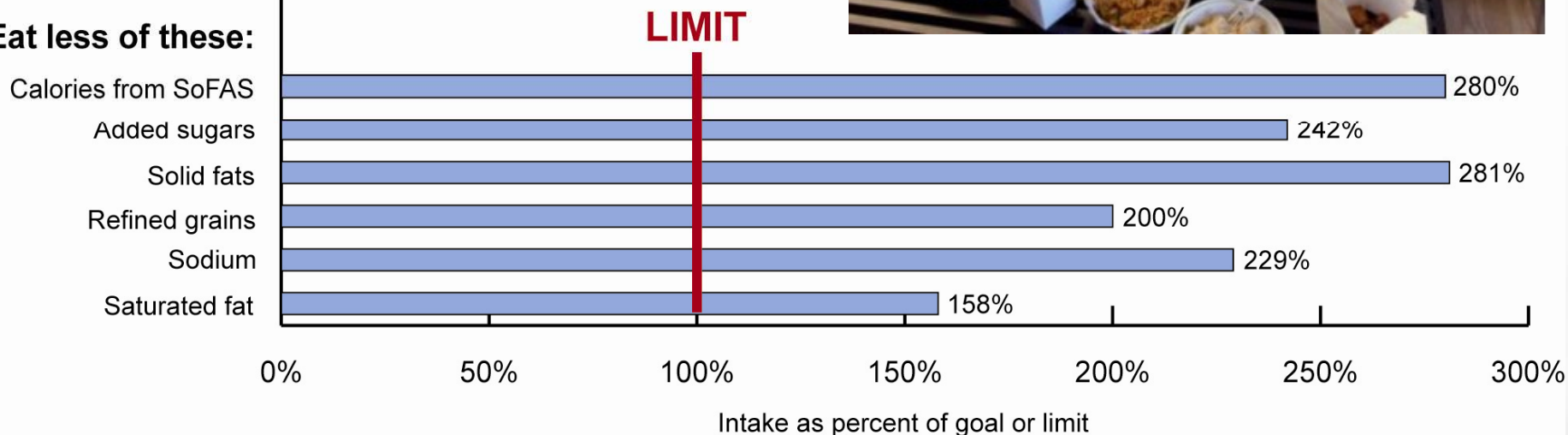
HHS.gov

Dietary intakes in comparison to recommended intake levels or limits

Eat more of these:



Eat less of these:



....and it's not just in developed countries



“Once considered a problem only in high income countries, overweight and obesity now dramatically on the rise in low- and middle-income countries, particularly in urban settings.”

According to the World Health Organization (WHO), obesity-related ailments afflict more than 115 million people in the developing world, up from essentially none two generations ago. By 2030, these diseases as a group are projected to be the No. 1 killer of poor people around the world.



Growing awareness of dietary issues in developing countries



**Food and Agriculture
Organization of the
United Nations**

for a world without hunger

The most significant dietary change caused by the urban migration has been the substitution of staple foods such as roots, tubers and coarse grains by other sources of energy such as highly milled cereals, sugar, soft drinks and other processed foods.

In the urban environment, time constraints, availability of cheap, often subsidized processed foods and convenience of preparation are important considerations in influencing food consumption patterns.

URBANIZATION

In 1900 there were only four cities in the world with over 2 million residents.

Today there are 197 such cities, with 26 having over 10 million inhabitants



Growing awareness of dietary issues in developing countries

- A 1999 United Nations study found obesity in all developing regions, and growing rapidly, even in countries where hunger exists.
- In China, the number of overweight people jumped from less than 10 percent to 15 percent in just three years.
- In Brazil and Colombia, the figure hovers around 40 percent -- a level comparable to a number of European countries.
- Even sub-Saharan Africa, where most of the world's hungry live, is seeing an increase in obesity, especially among urban women.
- In all regions, obesity seems to grow as income increases.

What are the culprits?

- Lethargic lifestyle
 - TV, video games, computers = Spectators, not Participants
- Working parents
 - Less time to devote to food preparation
 - Look to fast foods, convenience foods, processed foods
- Increase in consumption in food – but the wrong choice
 - Food intake – especially sweet and fat – provides a feeling of satisfaction
 - Meat is no longer a treat or a luxury, it's cheap and plentiful
 - Bombarded by aggressive advertising and a huge food selection including snack foods, highly processed foods
 - Decreased consumption of basic foods - whole grains, fruits and vegetables



Too much of this....



INGREDIENTS:

BREADED NUGGET-SHAPED CHICKEN PATTIES WITH RIB MEAT: CHICKEN BREAST WITH RIB MEAT, WATER, BREADER (WHEAT FLOUR, SALT, DEXTROSE, SOYBEAN OIL, WHEY, COLORED WITH OLEORESIN PAPRIKA), TEXTURED SOY PROTEIN (SOY PROTEIN AND SOY CARBOHYDRATE), WHEAT FLOUR, RICE FLOUR, MODIFIED FOOD STARCH, SALT, SPICES, FLAVORING, BLACK PEPPER (DEXTROSE, SPICE EXTRACTIVES), FRIED IN VEGETABLE OIL WITH BHT.

MACARONI AND CHEESE SAUCE: ELBOW MACARONI (DURUM SEMOLINA [ENRICHED WITH NIACIN, FERROUS SULFATE {IRON}, THIAMINE MONONITRATE, RIBOFLAVIN, FOLIC ACID], EGG WHITES), WATER, CHEDDAR CHEESE (PASTEURIZED CULTURED MILK, SALT, ENZYMES, ANNATTO [COLOR]), DRIED SWEET WHEY, SOYBEAN OIL, MODIFIED FOOD STARCH, DRIED SWEET CREAM (SWEET CREAM, NONFAT MILK, SODIUM CASEINATE), WHEAT FLOUR, CHEDDAR CHEESE FLAVOR: DEHYDRATED CHEESES (GRANULAR AND BLUE [PASTEURIZED MILK, CHEESE CULTURE, SALT, ENZYMES], WHEY, SUNFLOWER OIL, WHEY PROTEIN CONCENTRATE, LACTOSE, MALTODEXTRIN, SALT, SODIUM PHOSPHATE, CITRIC ACID, LACTIC ACID, YELLOW #5 AND #6), BUTTER (SWEET CREAM, SALT), WHEY PROTEIN CONCENTRATE, ACETIC ACID ESTERS OF MONO- AND DIGLYCERIDES WITH MALTODEXTRIN, POTASSIUM CHLORIDE, DISODIUM PHOSPHATE, SALT, FLAVOR), CITRIC ACID, BETA CAROTENE (CORN OIL, BETA CAROTENE),

.....with this type of
ingredient listing....

CHOCOLATE PUDDING: WATER, SUGAR, MODIFIED FOOD STARCH, NONFAT DRY MILK, SOYBEAN OIL, DRIED SWEET CREAM (SWEET CREAM, NONFAT MILK, SODIUM CASEINATE), COCOA POWDER (PROCESSED WITH POTASSIUM CARBONATE), MICROCRYSTALLINE AND CARBOXYMETHYL CELLULOSE, ACETIC ACID ESTERS OF MONO- AND DIGLYCERIDES WITH MALTODEXTRIN, SOY LECITHIN (NONFAT MILK, SOY LECITHIN, PARTIALLY HYDROGENATED SOYBEAN OIL), SALT.

CORN IN WATER AND SUGAR

SPRINKLE PACKET: SUGAR, RICE FLOUR, PARTIALLY HYDROGENATED VEGETABLE OIL (COTTONSEED, SOYBEAN), CORN STARCH, CELLULOSE GUM, CARRAGEENAN, SOYA LECITHIN, CONFECTIONER'S GLAZE, FD&C YELLOW #6, FD&C RED #40, GUM TRAGACANTH, FD&C YELLOW #5, GUM ARABIC, FD&C BLUE #1, FD&C BLUE #2 LAKE, ARTIFICIAL FLAVOR.

...and not enough of this.



What are the culprits?

- Lethargic lifestyle
 - TV, video games, computers = Spectators, not Participants
- Working parents
 - Less time to devote to food preparation
 - Look to fast foods, convenience foods, processed foods
- Increase in consumption
 - Food intake – especially sweet and fat – provides a feeling of satisfaction
 - **Meat is no longer a treat or a luxury, it's cheap and plentiful**
 - Bombarded by aggressive advertising and a huge food selection including snack foods, highly processed foods
 - Decreased consumption of basic foods - whole grains, fruits and vegetables

More on the impact of this trend



Increased consumption of meat products

Developed countries (“Western” diet)

- 50 years of increasing meat consumption
 - Recommended daily US dietary guideline for protein:
 - 5.5 oz (155 g) of lean meat, poultry, fish, eggs, beans (pulses)
OR nuts
 - North Americans consume at least twice the meat than is recommended
 - **Average consumption is 350 g. of meat alone per day**

70% of the US grain harvest is used for domestic and export feed for livestock!

....if everybody in the world consumed meat at the same rate as Americans, there would not be enough arable land globally to grow all the feed grains necessary....

Increased consumption of meat products

Developed countries (“Western” diet)

- Overconsumption of red meat is strongly linked to adult health issues
 - Atherosclerosis (heart, stroke and circulatory problems)
 - Increase in unhealthy cholesterol levels
 - Type 2 diabetes
 - Contributes to some types of cancer
 - Related factors from growth hormones and antibiotics used

What is the situation today?

- There is growing global awareness that:
 - Diet is a significant part of the health issue
 - Prevention is a better choice than waiting for a cure
- Government and the food industry are starting to align the importance to consumers, especially children:
 - Revise the messaging in food product labels and advertising
 - Review the current standards on portion size
 - Promote consumption of healthier choices like fruit, vegetables and whole grains

Major food processors are providing nutritional information and adding new “healthy choice” food products



HEALTHY WEIGHT

Maintaining a healthy weight is **important for feeling good** — and feeling good about yourself.



THE IMPORTANCE OF EATING TOGETHER

There are many good reasons for eating together with your family. In this section, you'll learn why eating together is important, how to **involve your kids** in preparing meals, and tips for **scheduling family meals**.



ACTIVE LIVING FOR KIDS

The more children move, the better! Studies show that daily **exercise has a positive effect on student learning** related to memory, problem-solving and decision-making. It also fosters better attitudes, behaviors and creativity.¹

Major food processors are providing nutritional information and adding new “healthy choice” food products

Whole grain



Major food processors are providing nutritional information and adding new “healthy choice” food products



Nestlé Healthy Kids Programme reaches out to school children in China



But there is still a lot of confusion....

- The challenge is getting consumers to understand:
 - what they are eating and drinking - what's better? what's worse?
 - how much they should consume – what is an ideal portion size?
 - what the consequences may be if they consume too much ?
- Consumer “nutrition literacy” may be at an all-time low – many consumers are ignorant about:
 - how many calories they should consume on a daily basis for their age range and lifestyle
 - how much and what types of foods they and their children should consume
 - the meaning of *omega-3, omega-6, saturated fat, trans-fat, vitamin D, probiotics, beta glucans, soluble vs insoluble fibre, resistant starch, zinc*

Potential for future action to introduce lifestyle changes

Government and NGO action on changing lifestyle to reduce healthcare costs

- Stronger, clearer health messaging to consumers
- Allocating the “true” costs of the health and environmental impact onto consumer products
 - Could lead to financial levies, disincentives or taxes on unhealthy or highly processed foods
 - Could lead to support, subsidies and more promotion for healthier food choices

**What could these changes mean to
agriculture and the flour milling
industry?**

What could significant lifestyle and diet changes mean to **agriculture**?

Recommendations and implementation of lowered meat consumption could mean lower demand for feed grains

70% of this land is used for livestock feed for both the domestic and export markets

Major agricultural crops produced in the United States

Crop	Harvested Area (million hectares)
Corn (maize)	29.1
Soybeans	29.1
Hay or forage	24.0
Wheat	21.2
Sorghum (grain)	3.1
Rice	1.2
TOTAL	107.6

What could significant lifestyle and diet changes mean to **agriculture**?

- Increased demand for baked products that include whole grain, multigrain and whole wheat could require higher quality protein (stronger gluten) levels to carry the extra ingredients and maintain desirable product appearance and eating quality
- Increased demand for other grains in our diet – barley, oats, pulses – that have special nutritional value
 - Integrating different whole grains into food products provides new product development opportunities

What could significant lifestyle and diet changes mean to the **milling industry**?

- Shift in flour quality demand
 - lower demand for highly refined flour for white bread and other products, especially sweet goods
 - Increase in demand for whole wheat flour with bran and germ
- Increase in demand for other milled whole grain alternatives (barley, oats, pulses, flax, seeds)
 - Opportunity for flour mixes with different whole grain ingredients

What could significant lifestyle and diet changes mean to the **milling industry**?

Flour Specifications and product development

- Whole wheat flour specifications for bread applications are much different than for refined flour
 - Flour granulation and bran particle size (coarse, fine) will significantly affect the quality of baked products
 - Changes to bread formulation and processing requirements
 - Gluten quality requirements

What could significant lifestyle and diet changes mean to the **milling industry**?

Flour Specifications and product development

- Consumers will probably demand bread appearance, volume and texture not too dissimilar from the white bread they are familiar with
 - Increasing demand for hard white wheat to make whole grain bread that has the appearance and taste of white bread

What should millers be thinking about?

- Changes to mill flow process to allow for increased production of whole grains
- Blending equipment to produce mixes with different whole grains
- Increasing or reallocating bin space both for raw materials and for finished flours and blends
- Mills in hot, humid climates need to think about shelf life and storage issue for whole grain products
 - Rancidity, infestation, wholesomeness
 - Consider cooling in storage area
 - Are there natural treatments available to extend the shelflife of whole wheat flour?



What should millers be thinking about?

- More attention to food safety factors when bran and germ is included in flour:
 - Microbiological
 - Toxins and residues
 - Molds and other diseases
- Attention to grain origin and food safety certification
- May mean changes to the cleaning house to deal with impurities, grain cleaning methods, handling and safe storage

CONCLUSIONS

- **Changes to our diet are being introduced to combat rising concerns for overweight and obesity challenges**
- **Whole grain products will become increasingly important to consumers, our flour customers and our industry**
- **The milling industry should prepare for increased demand for these products**
 - **whole wheat (high extraction) flour**
 - **blends to include other whole grains**

thank you for your attention

