Childhood Obesity: A Pandemic Health Crisis

Annette Besnilian, EdD, MPH, RDN, FAND

California State University, Northridge

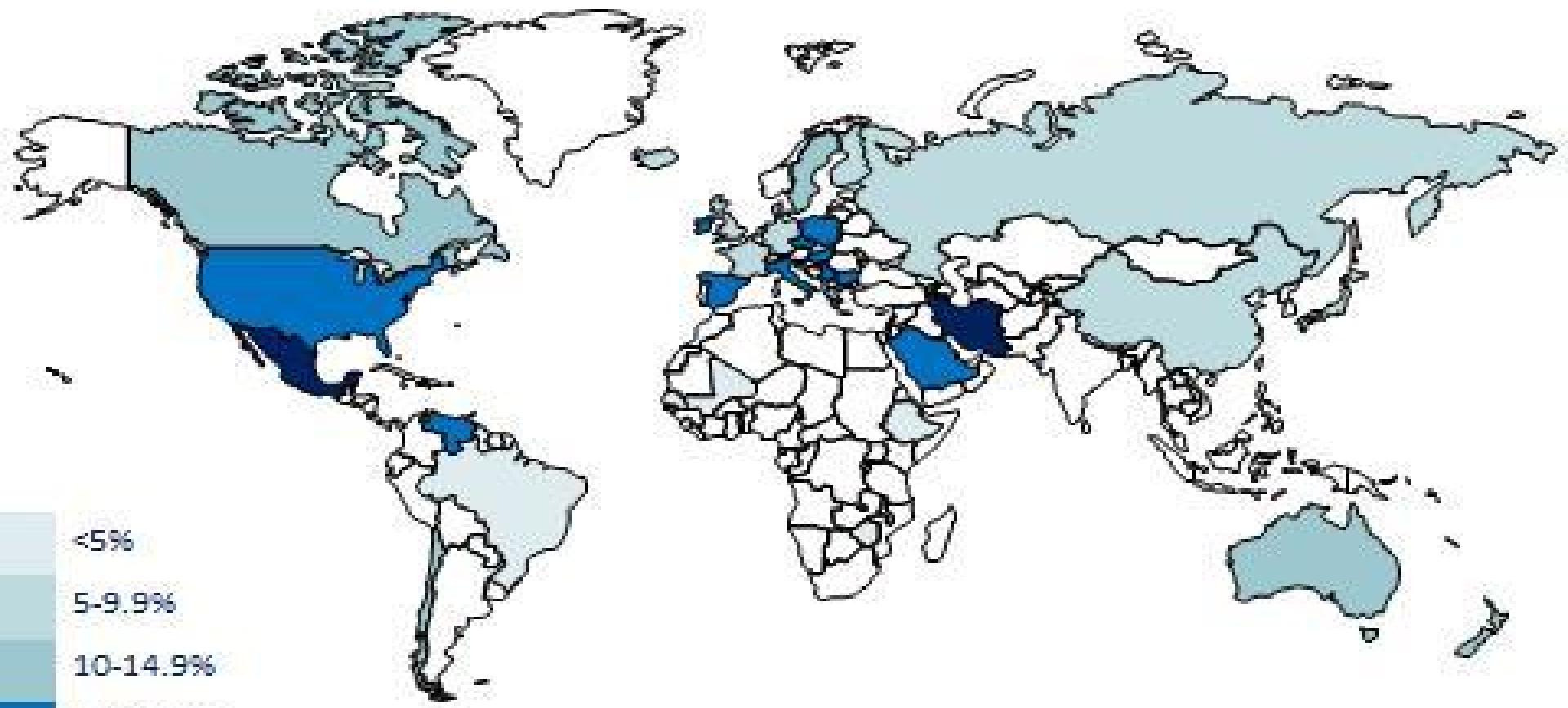
June 28, 2018

Objectives

- Childhood Obesity Incidence & Prevalence
  - International
  - National (US & Armenia)
- Complications associated with Childhood Obesity
- Causes of Childhood Obesity
- WHO & USDA Recommendations and Guidelines
- Prevention and Interventions
- The Marilyn Magaram Center Overview
- Collaboration and Partnerships
- Theoretical framework
- National Initiatives and Solutions
  - Overview of currently implemented solutions

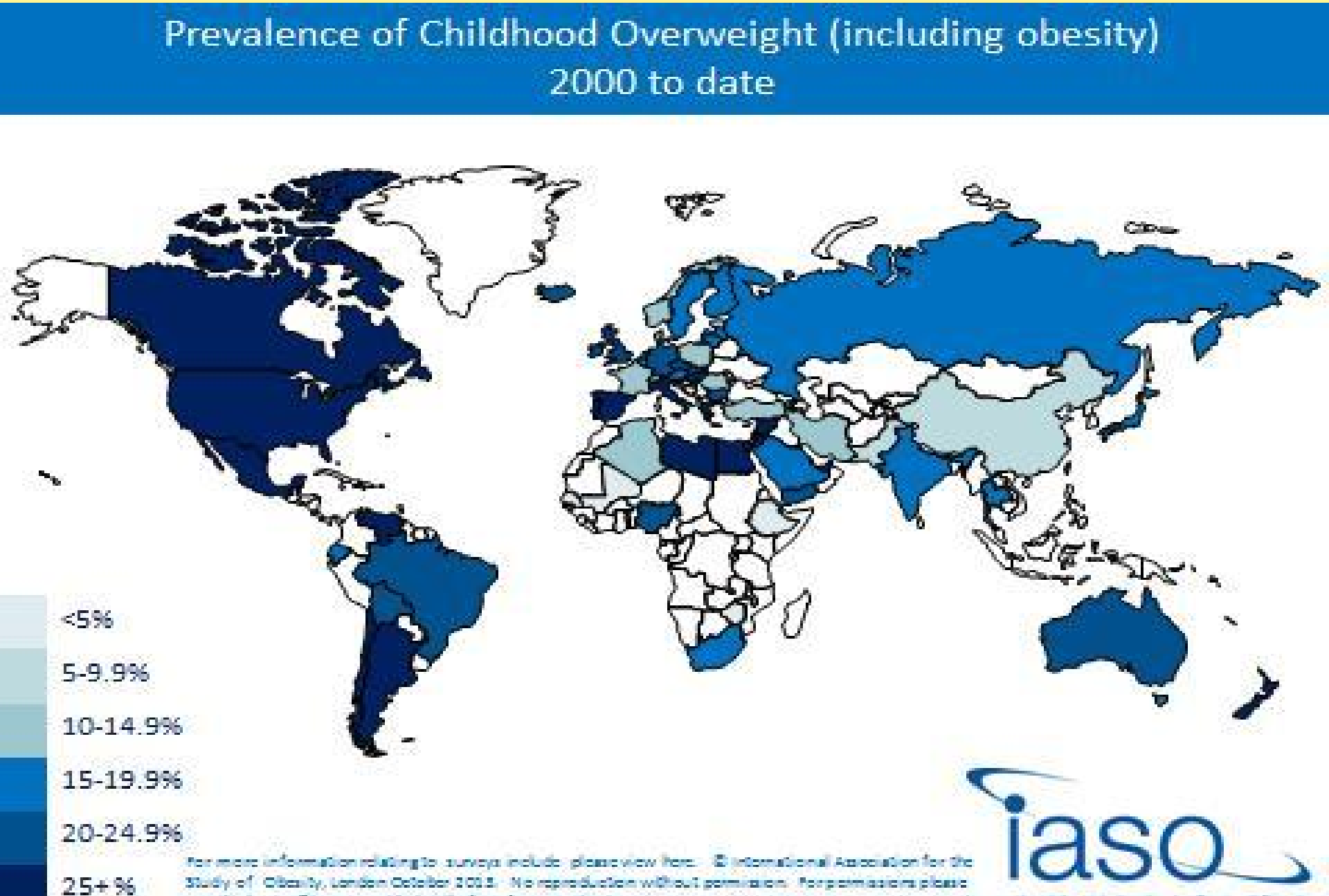
Global Health Crisis: Childhood Obesity

Prevalence of Childhood Overweight (including Obesity)
1960's – 90's



iaso
International Association for the Study of Obesity

International Data



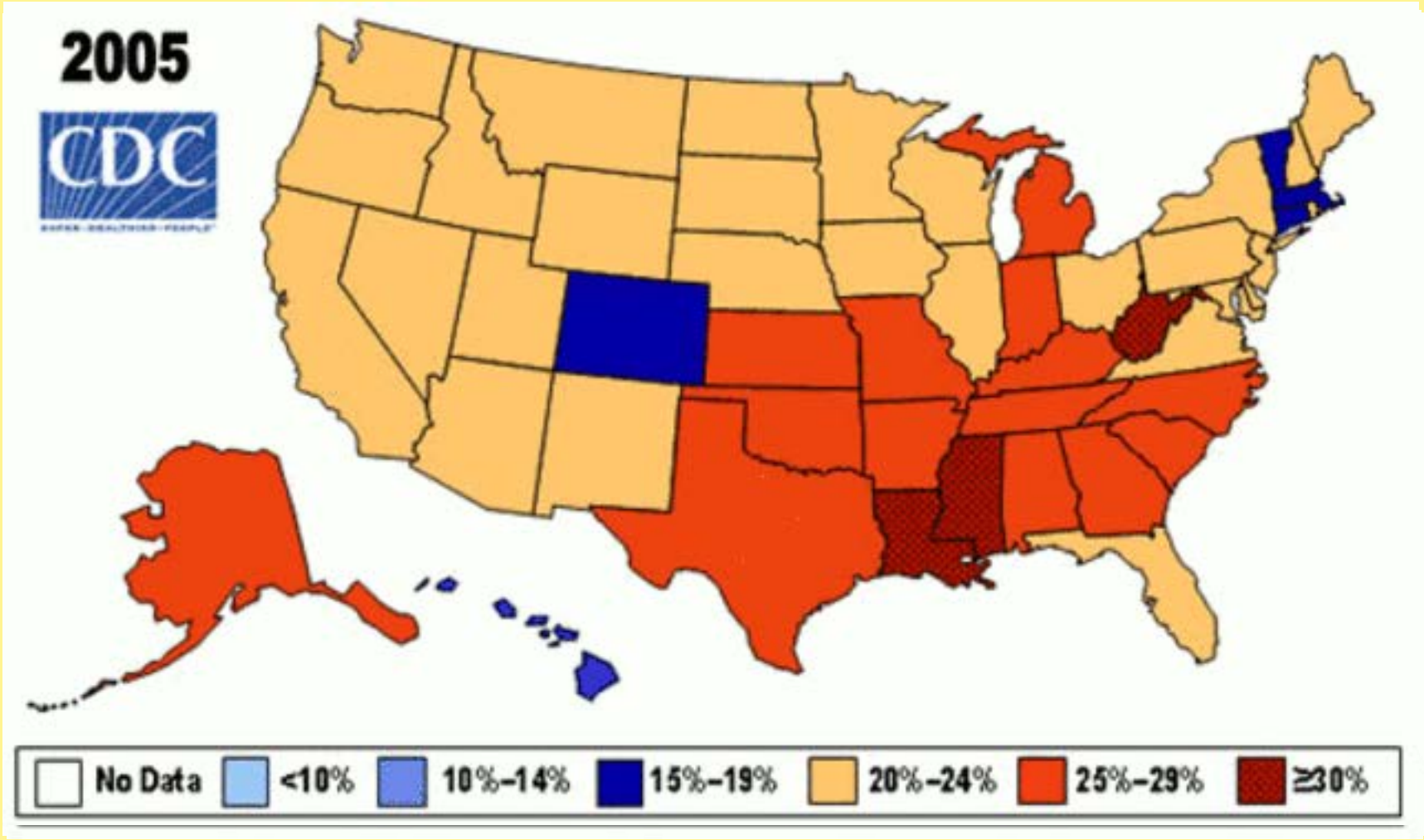
Reaching Pandemic Proportions

Childhood obesity is one of the most serious public health challenges of the 21st century. The problem is global and is steadily affecting many low- and middle-income countries, particularly in urban settings. (WHO, 2017)

- Worldwide obesity has nearly tripled since 1975.

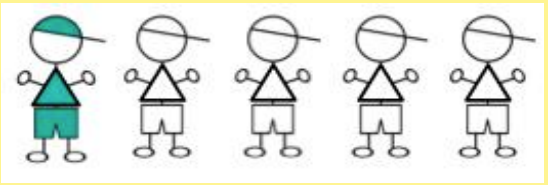
- Globally, **41 million children under the age of 5 are overweight or obese**
- Over **340 million children and adolescents aged 5-19 are overweight or obese.** (WHO, 2016)

Childhood Obesity in the USA

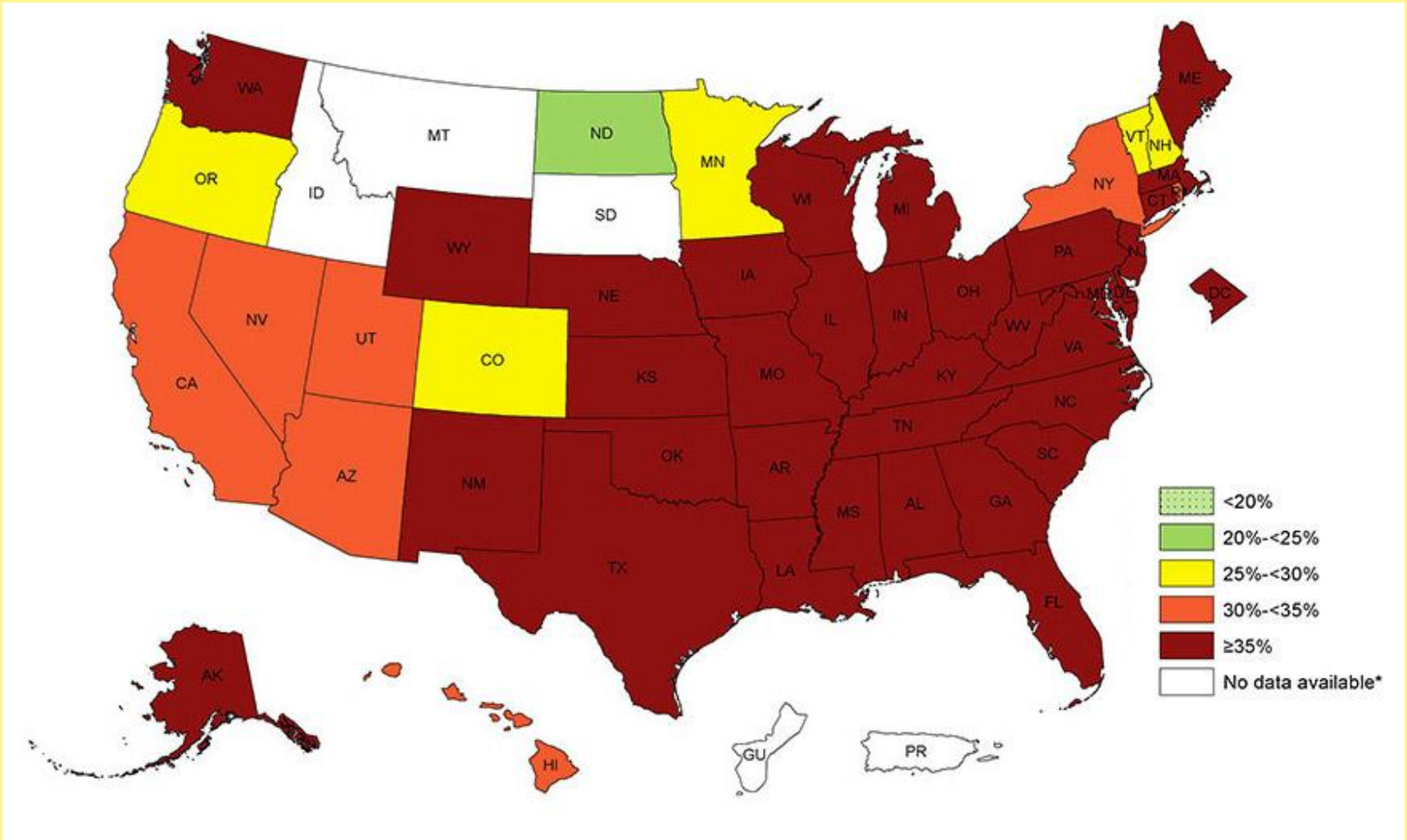


Reaching Epidemic Proportions in the US

Obesity Prevalence: 2014

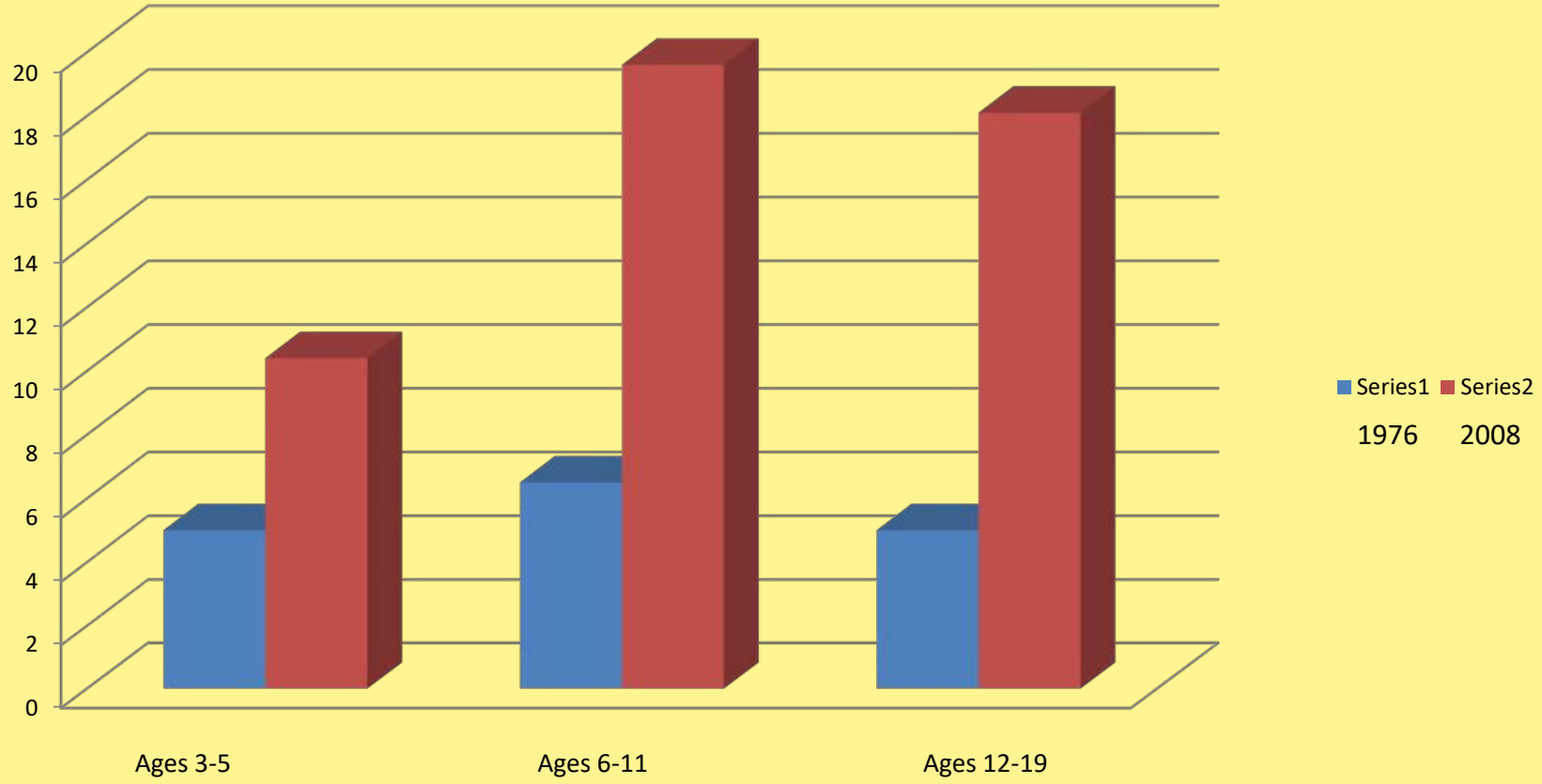


1 in 5 Children in US are overweight or obese



Increase in Obesity between 1976-2008

"The percentage of children and adolescents affected by obesity has more than **TRIPLED** since the 1970s."



Ogden and Carroll, (2010); Results from the 2007–2008 National Health and Nutrition Examination Survey (NHANES)

Childhood Obesity In Armenia

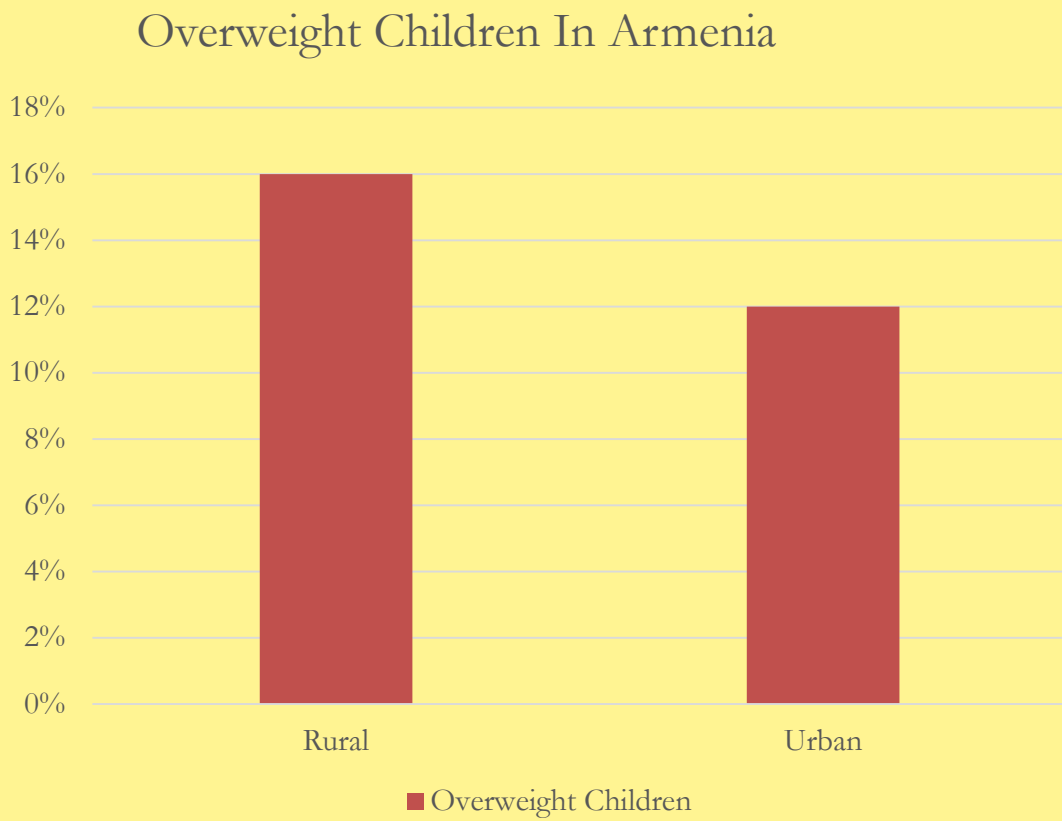
- Out of 128 countries for rates of overweight children under 5, Armenia is the 8th highest (International Food Policy Research Institute, 2016)
    - 16.8% of children under 5 are overweight

Childhood Obesity in Armenia

- Education level
  - In Armenia, prevalence of overweight children (National Statistical Service, Ministry of Health, and ICF, 2017)
    - 24% basic educated mothers
    - 11-14% higher education mothers

- Rural vs. urban
  - In Armenia, rates are higher in rural areas

(National Statistical Service, Ministry of Health, and ICF, 2017)



Childhood Obesity data in Armenia

- Food choices and Drinks
  - 55% of adolescents consumed sweets more than once a day, and 32% consumed at least one soft drink everyday
  (Sargsyan, Movsesyan, Melkumova, & Babloyan, 2016)

- Physical activity
  - Low rates of physical activity
  (Sargsyan, Movsesyan, Melkumova, & Babloyan, 2016).
    - even despite the implemented school curriculums of at least 3 physical education classes per week.

- Breastfeeding
  - In Armenia, breastfeeding is increasing
  (International Food Policy Research Institute, 2016; meta-analysis 12 countries; Yan, Liu, Zhu, Huang, & Wang, 2014)

Stunting

- Prevalence of nutritional stunting is 20.8% in Armenia (International Food Policy Research Institute, 2016)

DOUBLE BURDEN OF MALNUTRITION

- The double burden of malnutrition is characterised by the coexistence undernutrition along with overweight and obesity, or diet-related noncommunicable diseases, within individuals, households and populations, and across the lifecourse.
- http://www.who.int/nutrition/double-burden-

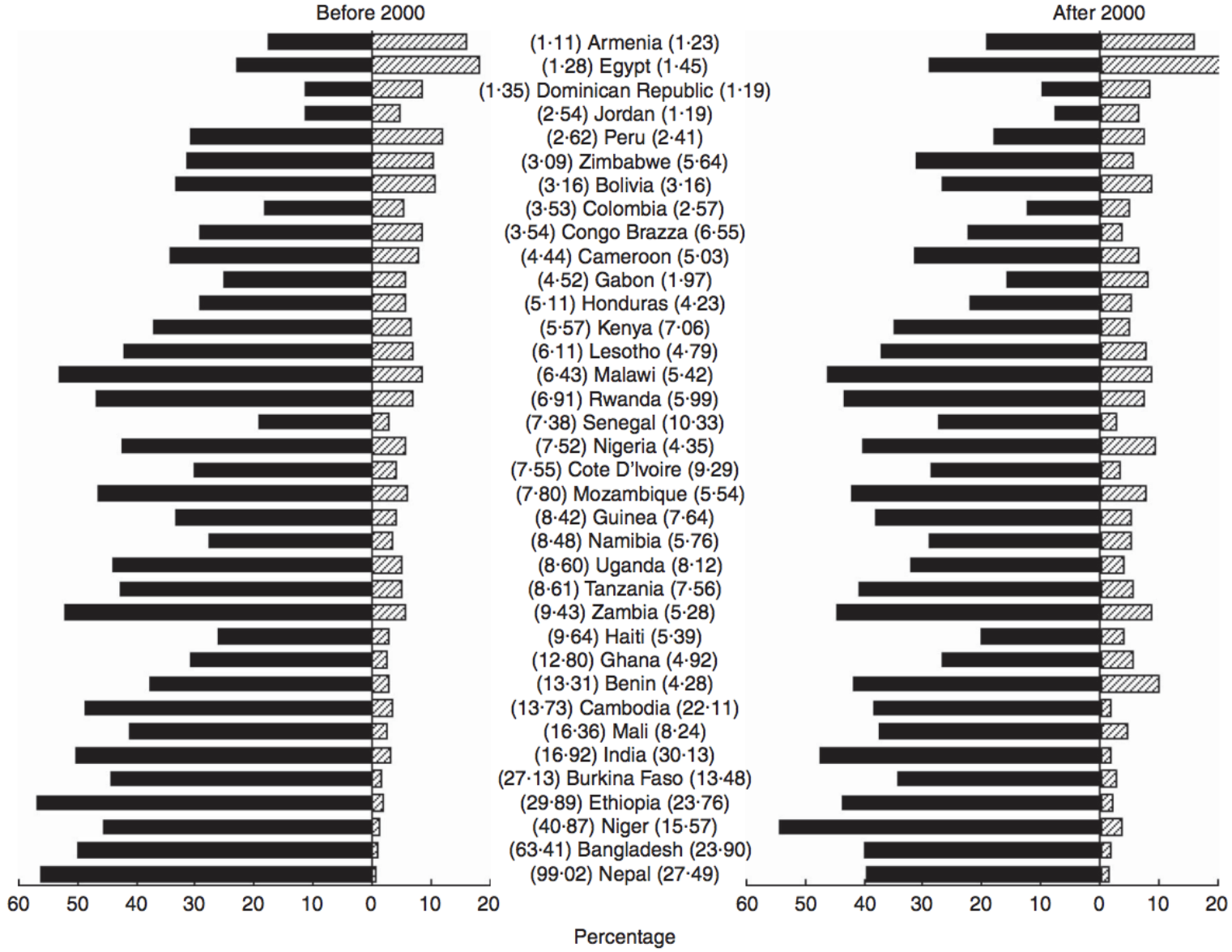


Fig. 4 Comparison of estimations of the country-level dual burden (ratio of stunting prevalence to overweight prevalence) in the year closest to 2000 and the most recent year after 2000 among children <5 years from thirty-six low- and middle-income countries, 1990–2012. Countries are ranked according to the dual burden ratio in the year closest to 2000 (■, stunting prevalence; ▨, overweight prevalence)

WHERE

MALNUTRITION AFFECTS ALL REGIONS WORLDWIDE

ACROSS THE GLOBE

1.9 BILLION
ADULTS, 18 years and older, are overweight

>600 MILLION
of these are OBESE

264 MILLION
WOMEN of reproductive age are affected by iron-amenable anaemia

462 MILLION
ADULTS are underweight

42 MILLION
children under the age of 5 years are **overweight or obese**

156 MILLION
children are **stunted** (too short for age)

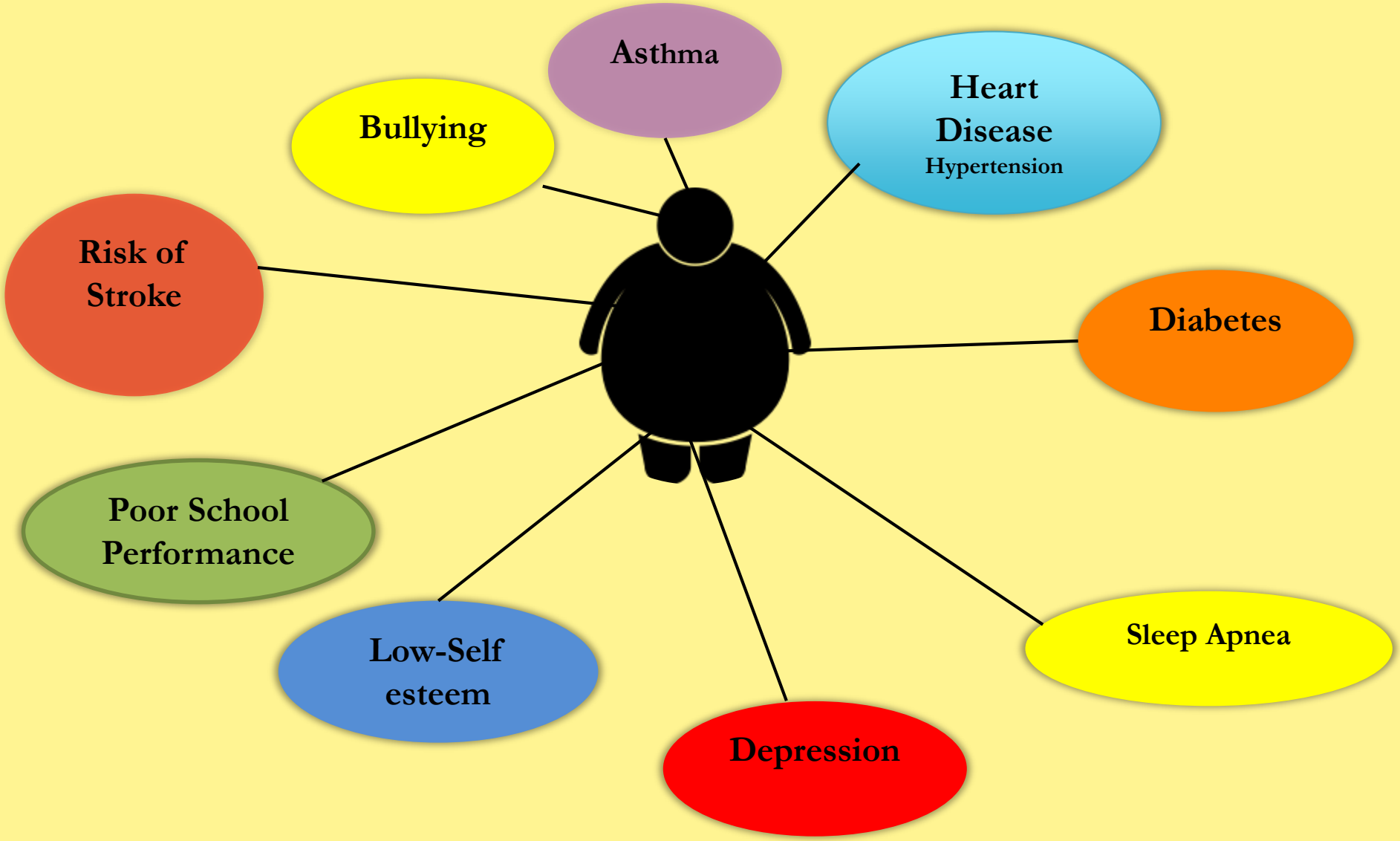
50 MILLION
children are **wasted** (too thin for height)

Consequences of Obesity

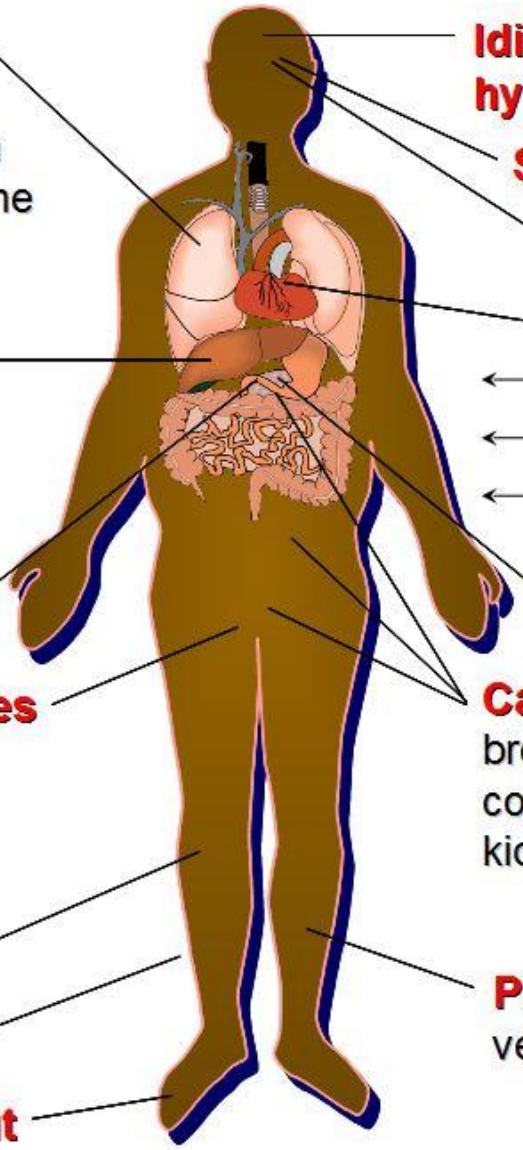
- **Medical**: (ALAS, 2011; CDC, 2009; Deckelbaum & Williams, 2001; LCHC, 2006)
- **Psychological:** (Bacardi-Gascon, Leon-Reyes, and Jimenez-Cruz, 2007; Puhl & Latner, 2007; Schwartz & Puhl, 2003).
- **School Performance:** (Hunt, 2008; Ball et al., 2004; Datar & Sturm, 2006; Datar et al., 2004; Schwartz & Puhi, 2003).

Childhood Obesity Effects

Major Complications



Medical Complications of Obesity



Pulmonary disease
abnormal function
obstructive sleep apnea
hypoventilation syndrome

Nonalcoholic fatty liver disease
steatosis
steatohepatitis
cirrhosis

Gall bladder disease

Gynecologic abnormalities
abnormal menses
infertility
polycystic ovarian syndrome

Osteoarthritis

Skin

Gout

Idiopathic intracranial hypertension

Stroke

Cataracts

Coronary heart disease

Diabetes

Dyslipidemia

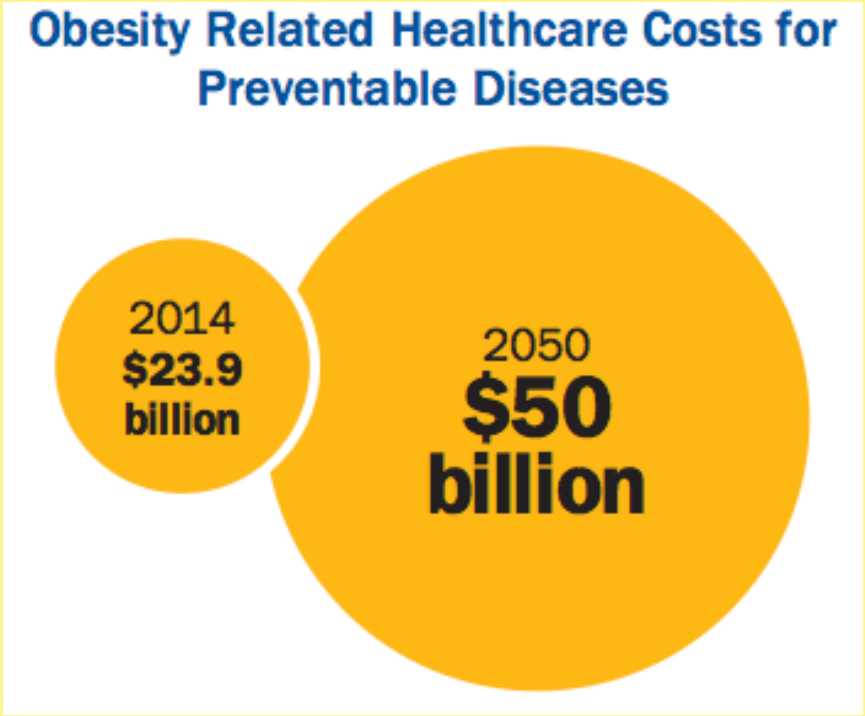
Hypertension

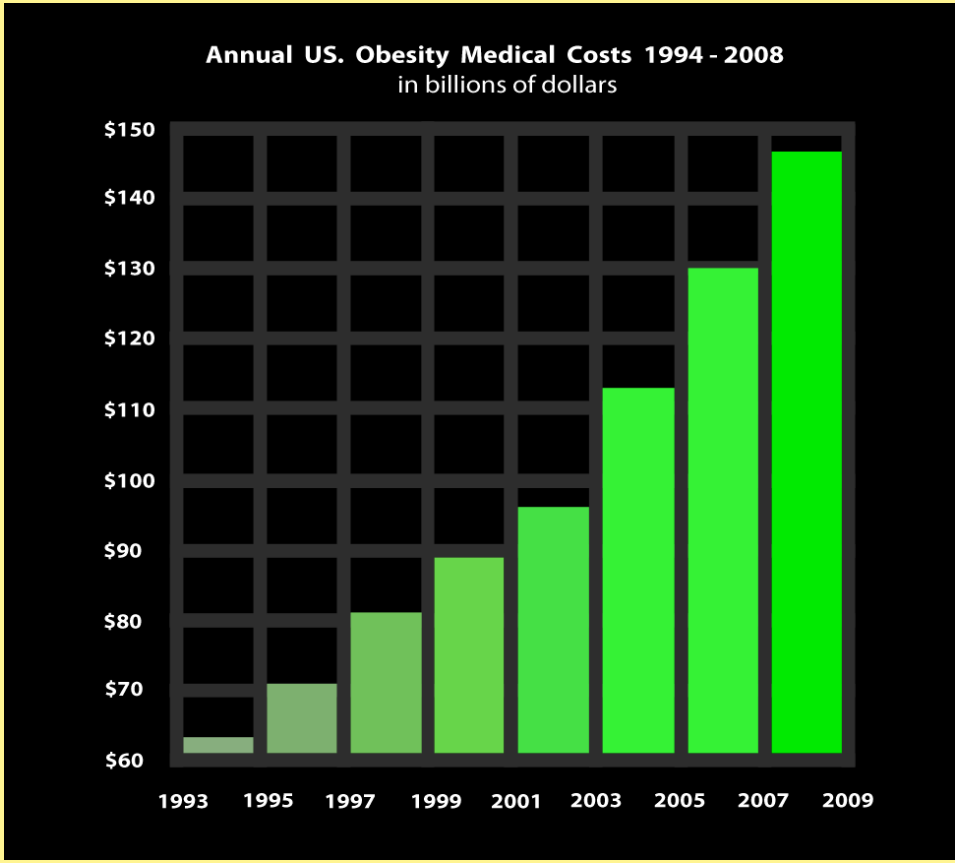
Severe pancreatitis

Cancer
breast, uterus, cervix
colon, esophagus, pancreas
kidney, prostate

Phlebitis
venous stasis

Obesity Effects: Medical Costs





Global Cost: $2 trillion annually

Obesity is one of the top three social burdens generated by human beings.

Impact on global GDP[1]

[1]In 2014 dollars at purchasing-power parity.

Source: Literature review; World Health Organization global burden of disease (GBD) database; McKinsey

Causes and Contributors of Obesity

- Diet and Poor Eating Habits
- Lack of Physical Activity
- Lack of knowledge

- (Alexander, Sherman, & Clark 2007; California Behavioral Risk Factor Survey, 2001 Giammattei, 2003; Neumark-Sztainer, 1996; Troiano, Briefel, Carroll, & Bialostosky, 2000; Woodward-Lopez, 2006).

Public Policy and Regulation

CHANGES in SOCIETY

Global, Urban, Industrial, Culture and Wealth

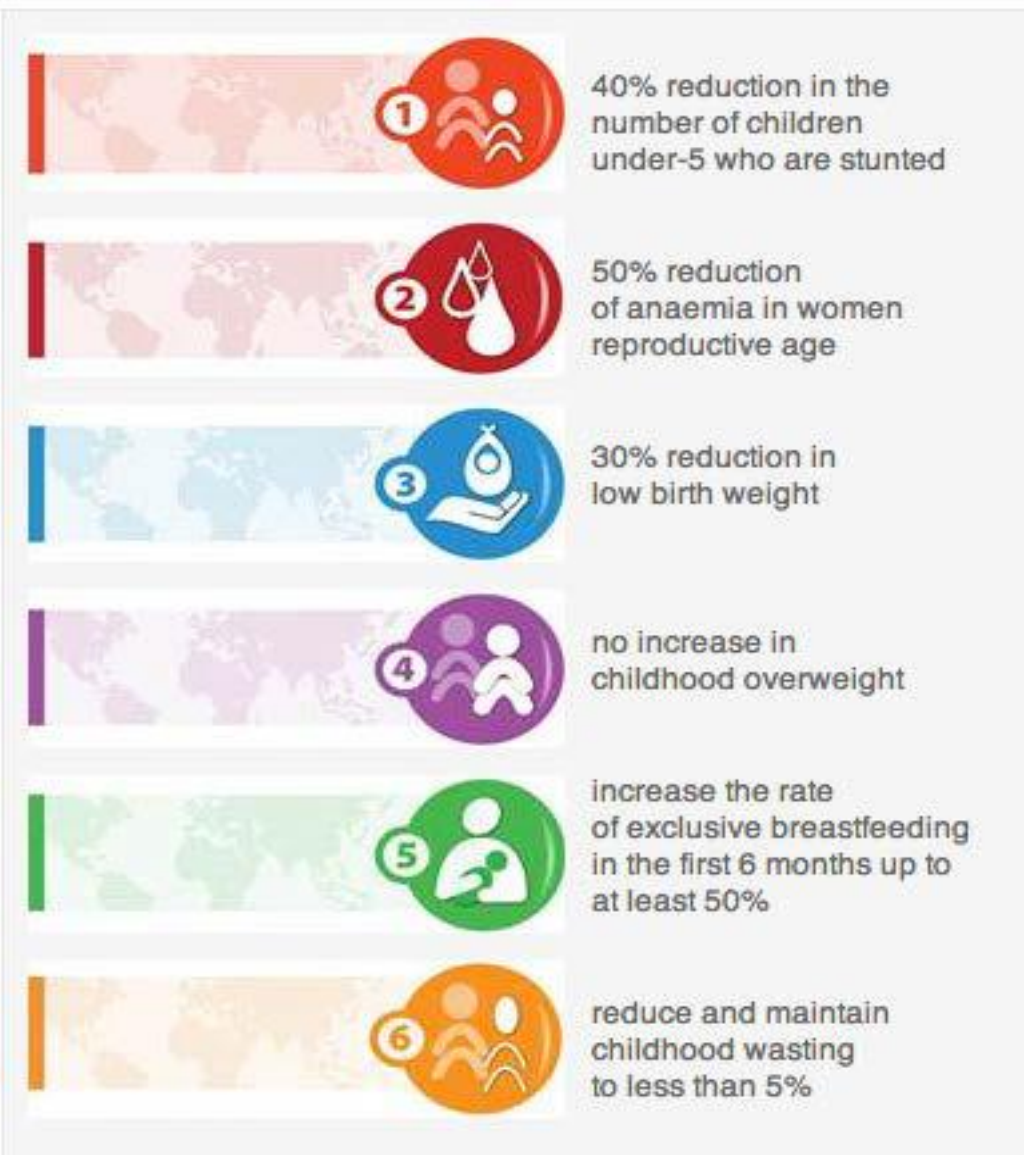
- FOOD QUALITY AND CHOICE
- AGRICULTURE
- ENVIRONMENT
- ENERGY AND EXERCISE COMPUTERS and MEDIA
- FAMILY STRUCTURE

Maternal, Infant and Young Child (MIYC) nutrition targets 2025

- Progress in tackling childhood obesity has been slow and inconsistent.
- The Commission on Ending Childhood Obesity was established in 2014 to review, build upon and address gaps in existing mandates and strategies.

Global Targets 2025: WHO

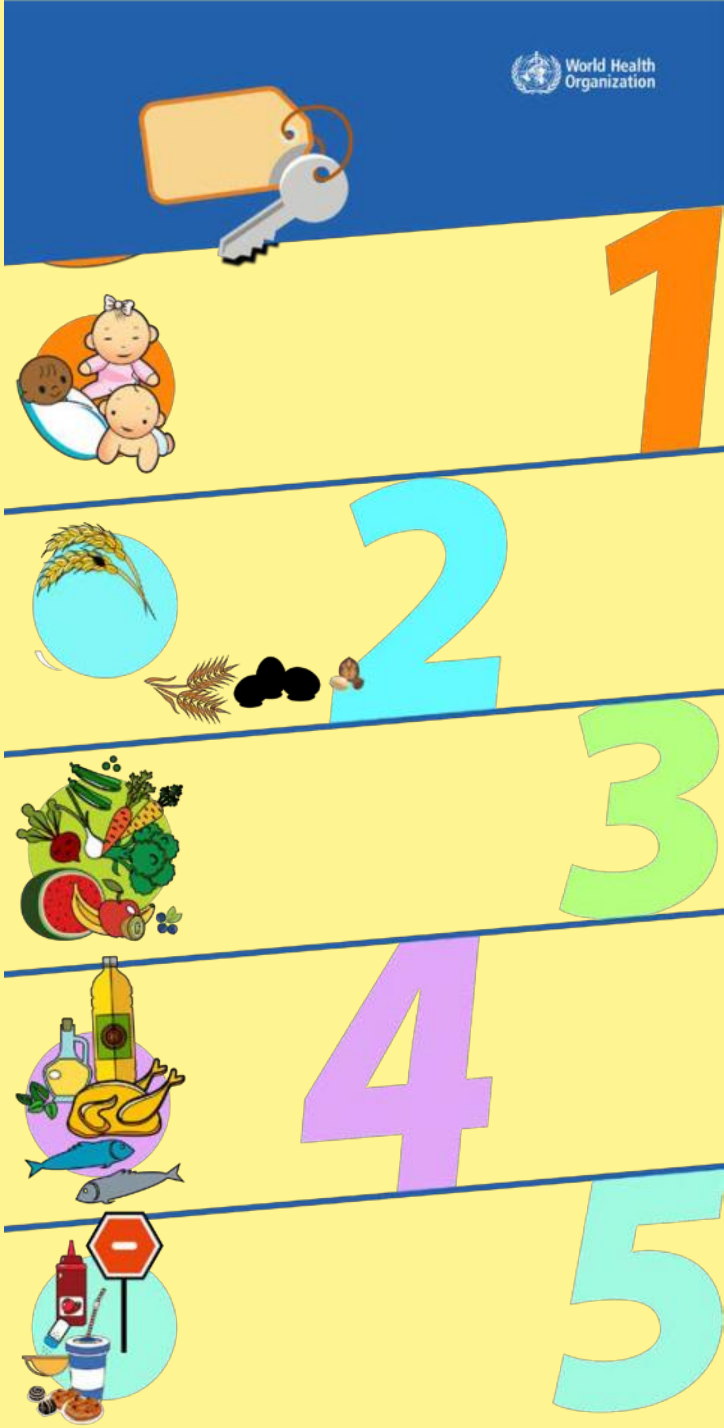
- Stunting
- Anemia
- Low birth weight
- Childhood overweight
- Breastfeeding
- Wasting




2015-2020
DIETARY GUIDELINES FOR AMERICANS
Guidelines
1
Follow a healthy eating pattern across the lifespan
2
Focus on variety, nutrient density, and amount
3
Limit calories from added sugars and saturated fats and reduce sodium intake
4
Shift to healthier food and beverage choices
5
Support healthy eating patterns for all

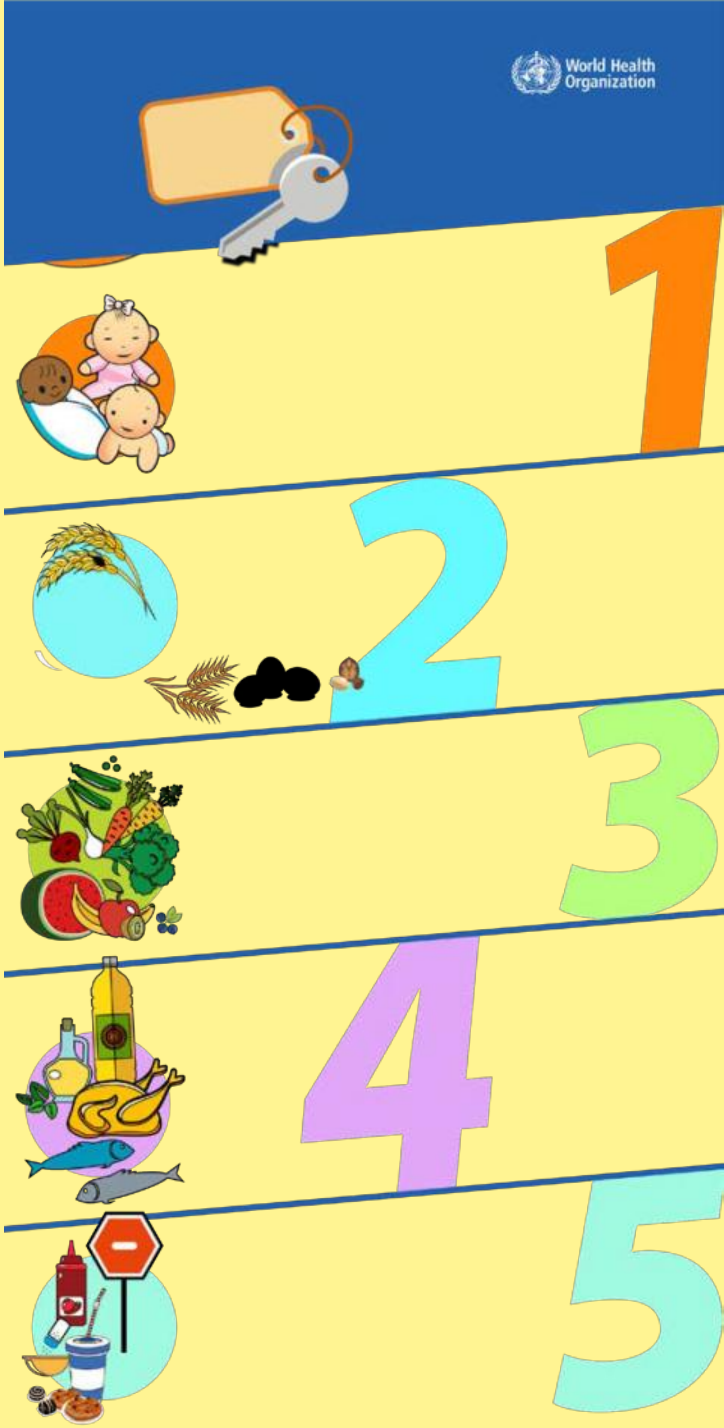
1 BREASTFEED BABIES AND YOUNG CHILDREN

- From birth to 6 months of age, feed babies exclusively with breast milk (i.e. give them no other food or drink), and feed them “on demand” (i.e. as often as they want, day and night)
- **Why?** On its own, breast milk provides all the nutrients and fluids that babies need for their first 6 months of healthy growth and development. Exclusively breastfed babies have better resistance against common childhood illnesses such as diarrhea, respiratory infections and ear infections. In later life, those who were breastfed as infants are less likely to become overweight or obese, or to suffer from noncommunicable diseases, such as diabetes, heart disease and stroke.
- At 6 months of age, introduce a variety of safe and nutritious foods to complement breastfeeding, and continue to breastfeed until babies are 2 years of age or beyond
- Do not add salt or sugars to foods for babies and young children



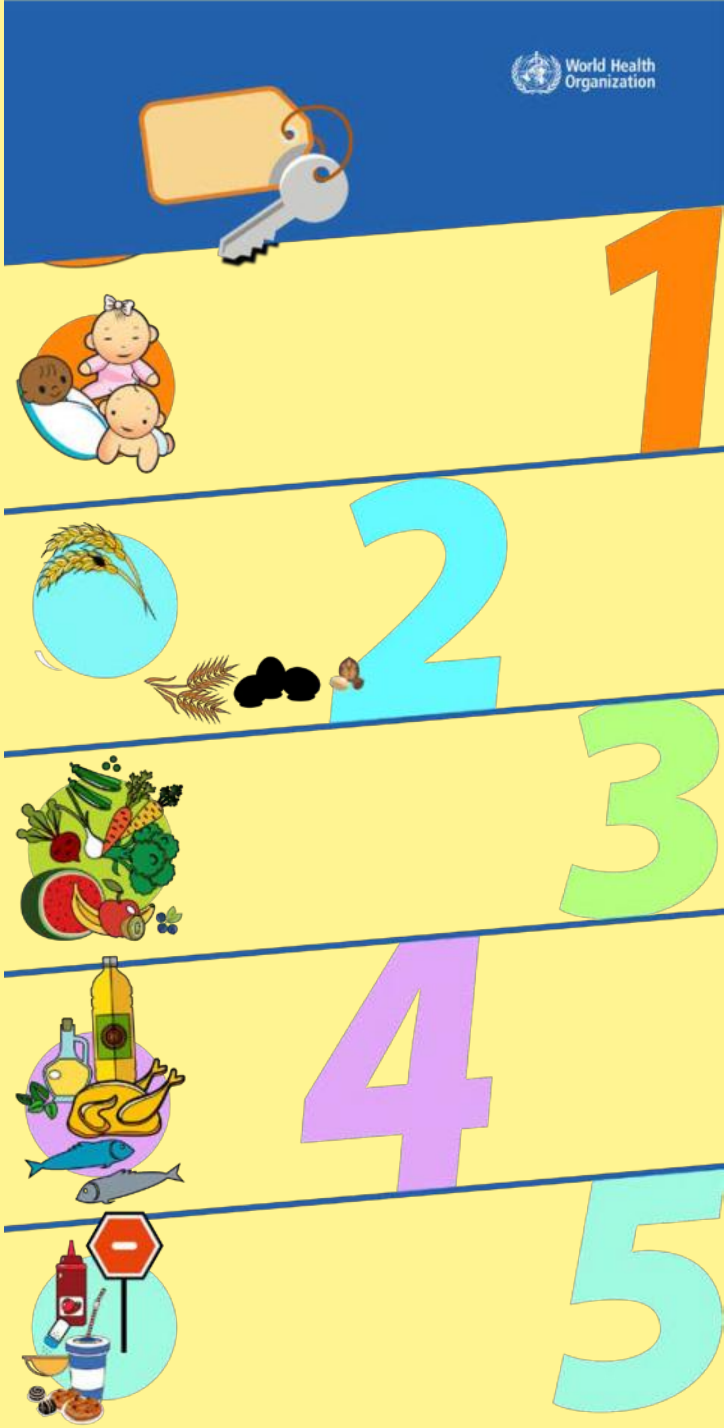
2 EAT A VARIETY OF FOODS

- Eat a combination of different foods, including staple foods (e.g. cereals such as wheat, barley, rye, maize and rice; or starchy tubers or roots such as potato, yam, taro and cassava), legumes (e.g. lentils and beans), vegetables, fruit and foods from animal sources (e.g. meat, fish, eggs and milk)
- **Why?** Eating a variety of whole (i.e. unprocessed) and fresh foods every day helps children and adults to obtain the right amounts of essential nutrients. It also helps them to avoid a diet that is high in sugars, fats and salt, which can lead to unhealthy weight gain (i.e. overweight and obesity) and noncommunicable diseases. Eating a healthy, balanced diet is especially important for young children's growth and development; it also helps older people to have healthier and more active lives.



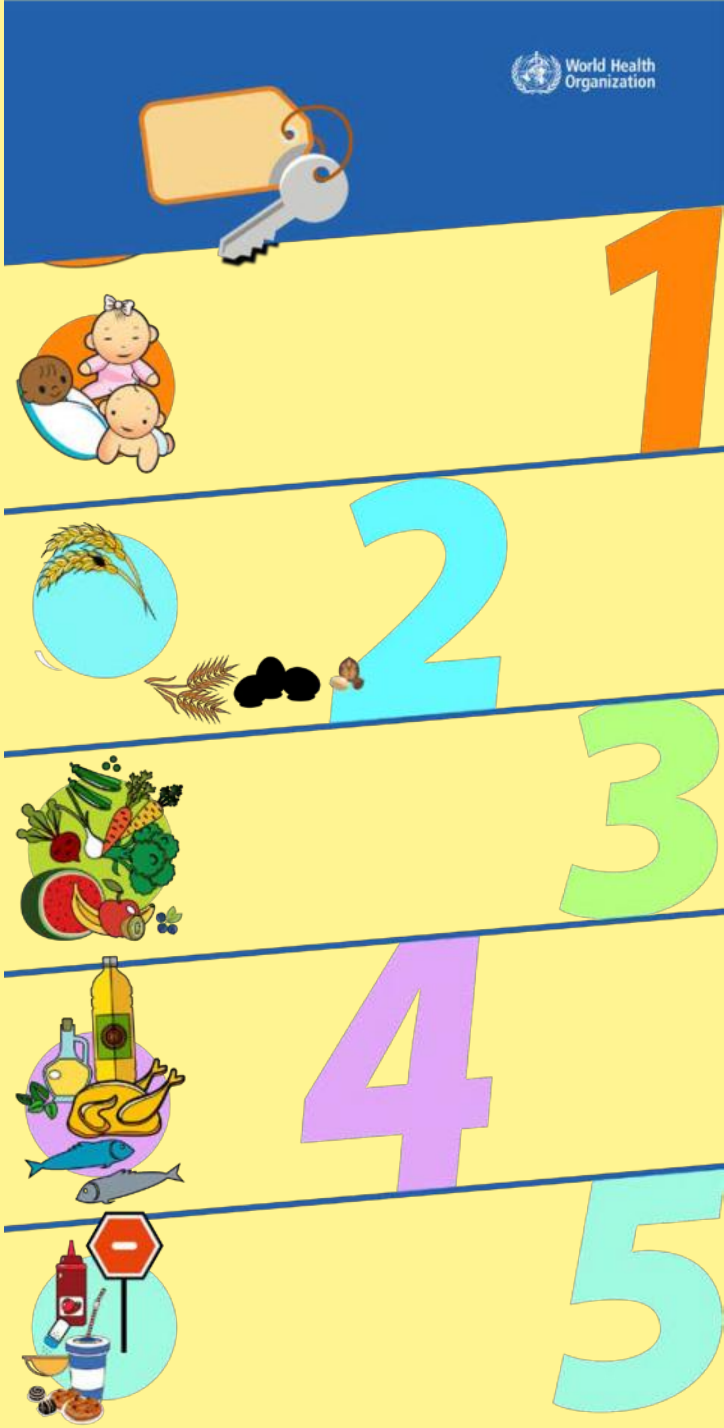
3 EAT PLENTY OF VEGETABLES AND FRUIT

- Eat a wide variety of vegetables and fruit
- For snacks, choose raw vegetables and fresh fruit
- **Why?** Vegetables and fruit are important sources of vitamins, minerals, dietary bre, plant protein and antioxidants. People whose diets are rich in vegetables and fruit have a significantly lower risk of obesity, heart disease, stroke, diabetes and certain types of cancer.
- Rather than foods that are high in sugars, fats or salt
  - Avoid overcooking vegetables and fruit because this can lead to the loss of important vitamins
  - When using canned or dried vegetables and fruit, choose varieties without added salt and sugars



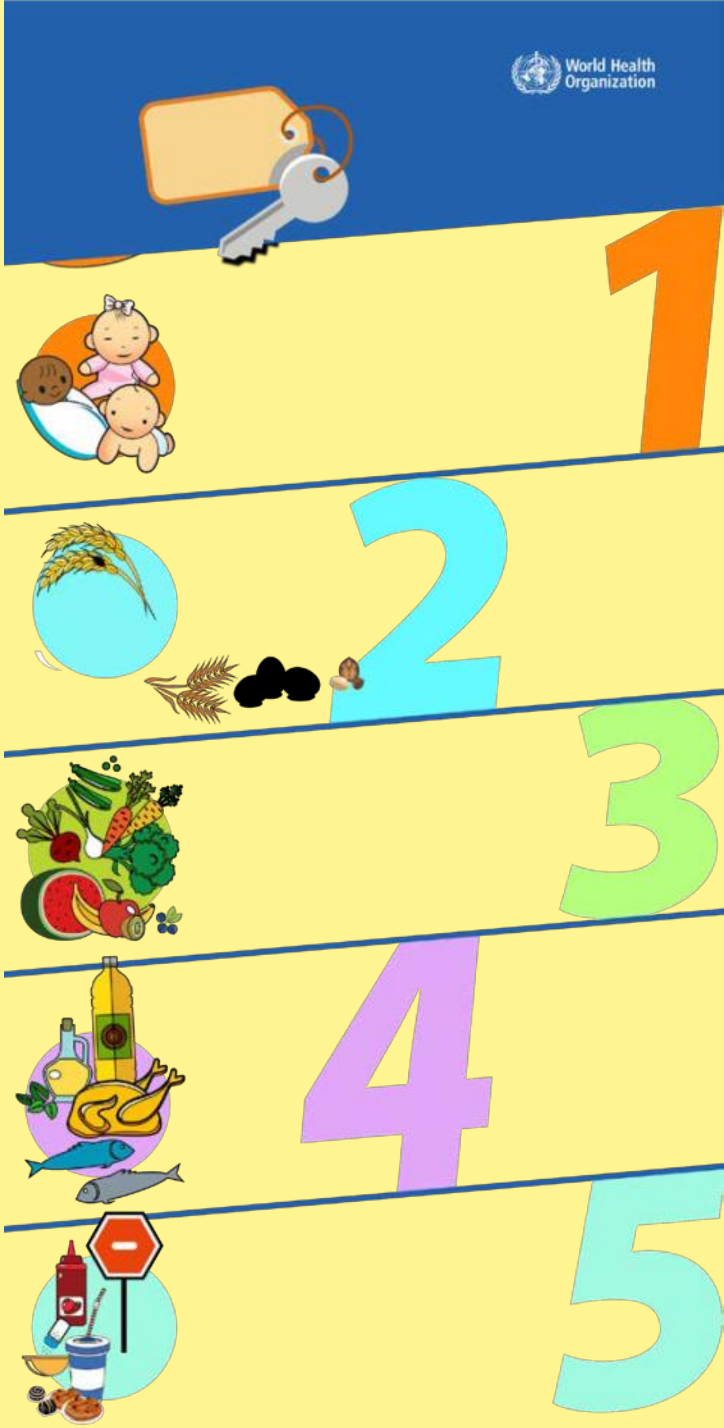
4 EAT MODERATE AMOUNTS OF FATS AND OILS

- Use unsaturated vegetable oils (e.g. olive, soy, sunflower or corn oil) rather than animal fats or oils high in saturated fats (e.g. butter, ghee, lard, coconut and palm oil)
- **Why?** Fats and oils are concentrated sources of energy, and eating too much fat, particularly the wrong kinds of fat, can be harmful to health. For example, people who eat too much saturated fat and trans-fat are at higher risk of heart disease and stroke. Trans-fat may occur naturally in certain meat and milk products, but the industrially produced trans-fat (e.g. partially hydrogenated oils) present in various processed foods is the main source.
- Choose white meat (e.g. poultry) and fish, which are generally low in fats, in preference to red meat
- Eat only limited amounts of processed meats because these are high in fat and salt
- Where possible, opt for low-fat or reduced-fat versions of milk and dairy products
- Avoid processed, baked and fried foods that contain industrially produced trans-fat



5 EAT LESS SALT AND SUGARS

- When cooking and preparing foods, limit the amount of salt and high-sodium condiments (e.g. soy sauce and sh sauce)
- **Why?** People whose diets are high in sodium (including salt) have a greater risk of high blood pressure, which can increase their risk of heart disease and stroke. Similarly, those whose diets are high in sugars have a greater risk of becoming overweight or obese, and an increased risk of tooth decay. People who reduce the amount of sugars in their diet may also reduce their risk of noncommunicable diseases such as heart disease and stroke.
- Avoid foods (e.g. snacks), that are high in salt and sugars
- Limit intake of soft drinks or soda and other drinks that are high in sugars (e.g. fruit juices, cordials and syrups, flavored milks and yogurt drinks)
- Choose fresh fruits instead of sweet snacks such as cookies, cakes and chocolate



Prevention of childhood obesity therefore needs high priority.

Recommendations to fight this rising epidemic include:

FOOD choices

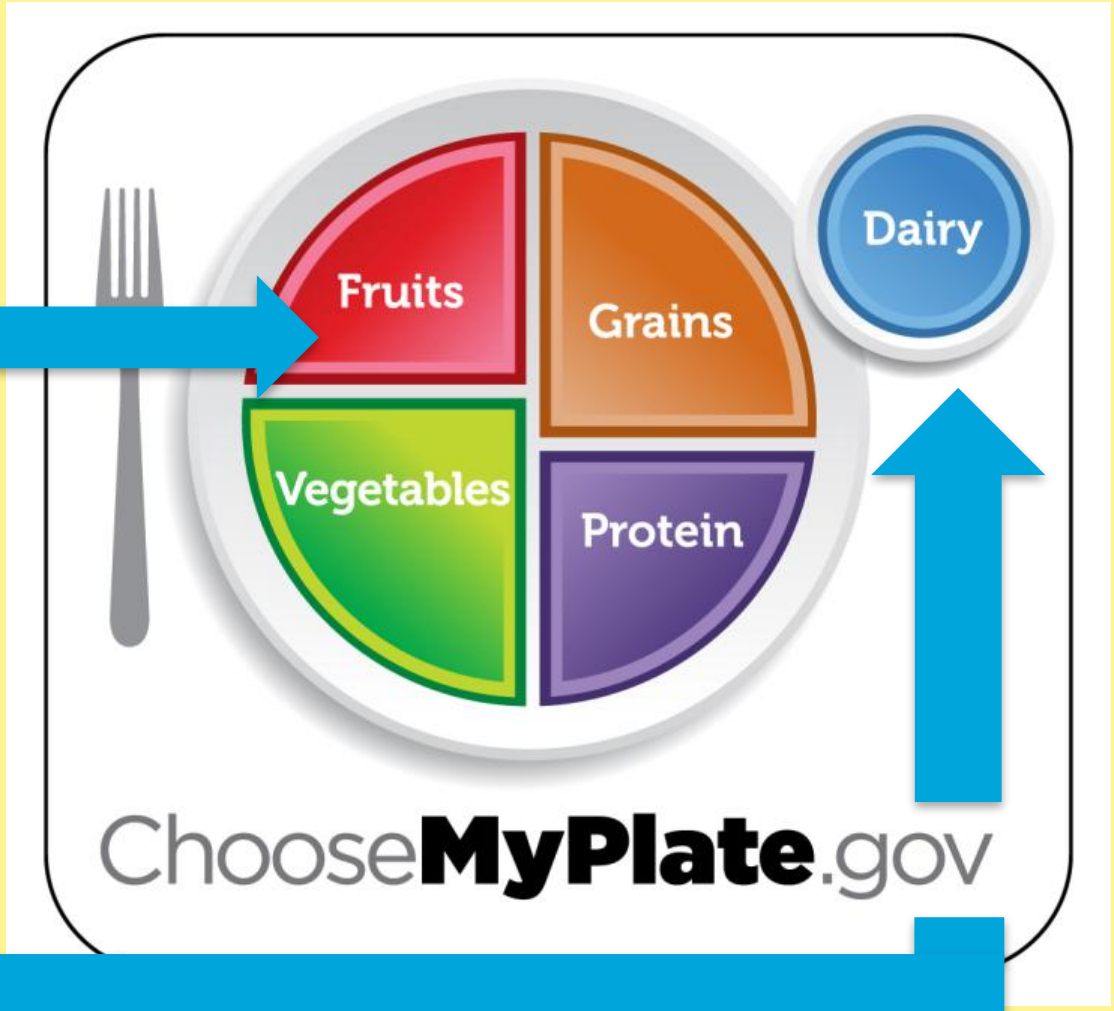
- **Whole Food Plant Based Diet**
  - Whole Grains
  - Fruits and vegetables
  - Fiber and Antioxidants
  - High Nutrient Value
  - Lower Calories

- **PORTION SIZE**

- **TASTE-"Bliss Point"**
  - Salt, Sugar, and Fat.
  - Taste Engineered for Addiction.

MyPlate Overview

Make Half Your Plate Fruits & Vegetables



rethink YOUR DRINK

EXERCISE
>60 min/day

- School Play
- Sports Skills
- Family Living and Recreation
- Urban Design

HEALTH and LEARNING
Exercise in Class

PILATES BALL- SPINE

READ and RIDE

Classroom Exercises

Prevent Med. 2011 Jun;52 Suppl 1:S43-54

Breastfeeding

1. Best nutrition
2. Promotes bonding
3. Lowers infections.
4. Lowers allergy and disease.
5. Lowers Obesity and Metabolic Syndrome.

www.childrensnyp.org

MARILYN MAGARAM CENTER

Food Science • Nutrition • Dietetics

Nutrition Experts

CSUN | MARILYN MAGARAM CENTER

Who We Are

Auxiliary center College of Health & Human Development

Providing Resources for Students, Faculty, Staff & the Community

- **Student internship** program and volunteer opportunities
- **Leadership** and project management opportunities
- **Research & Education**
- **Services & Products**
- **Collaboration and Partnerships**
- **Nutrition Experts Website,** Social Media, Blogs, Videos

MMC History

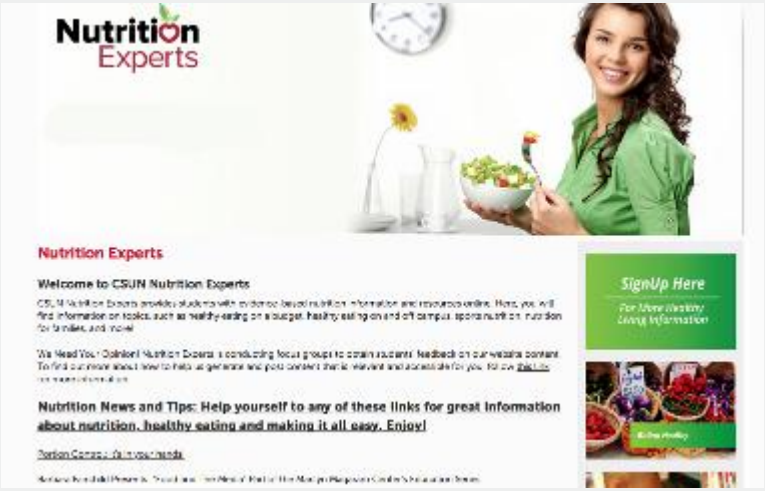
The Center was brought into reality by Philip Magaram and his family as a tribute and memorial to their wife and mother, Marilyn. Marilyn Magaram received her M.S. from CSUN and was an instructor of Food Science, Nutrition and Dietetics. The efforts of family and other donors who treasured her memory resulted in a resource that is not only important to CSUN students but supports the professional dietetics and food science community and serves the community at large.

CSUN & AUA


CSUN
CALIFORNIA
STATE UNIVERSITY
NORTHRIDGE


CSUN
American
University
of Armenia
CSUN
CALIFORNIA
STATE UNIVERSITY
NORTHRIDGE

Nutrition Experts Website & Blogs



TRUSTED RESOURCE FOR THE COMMUNITY!

Nutrition education, lactation education, referrals to community resources, and nutritious recipes to our community to ensure they are receiving proper nutrition for themselves and their families.

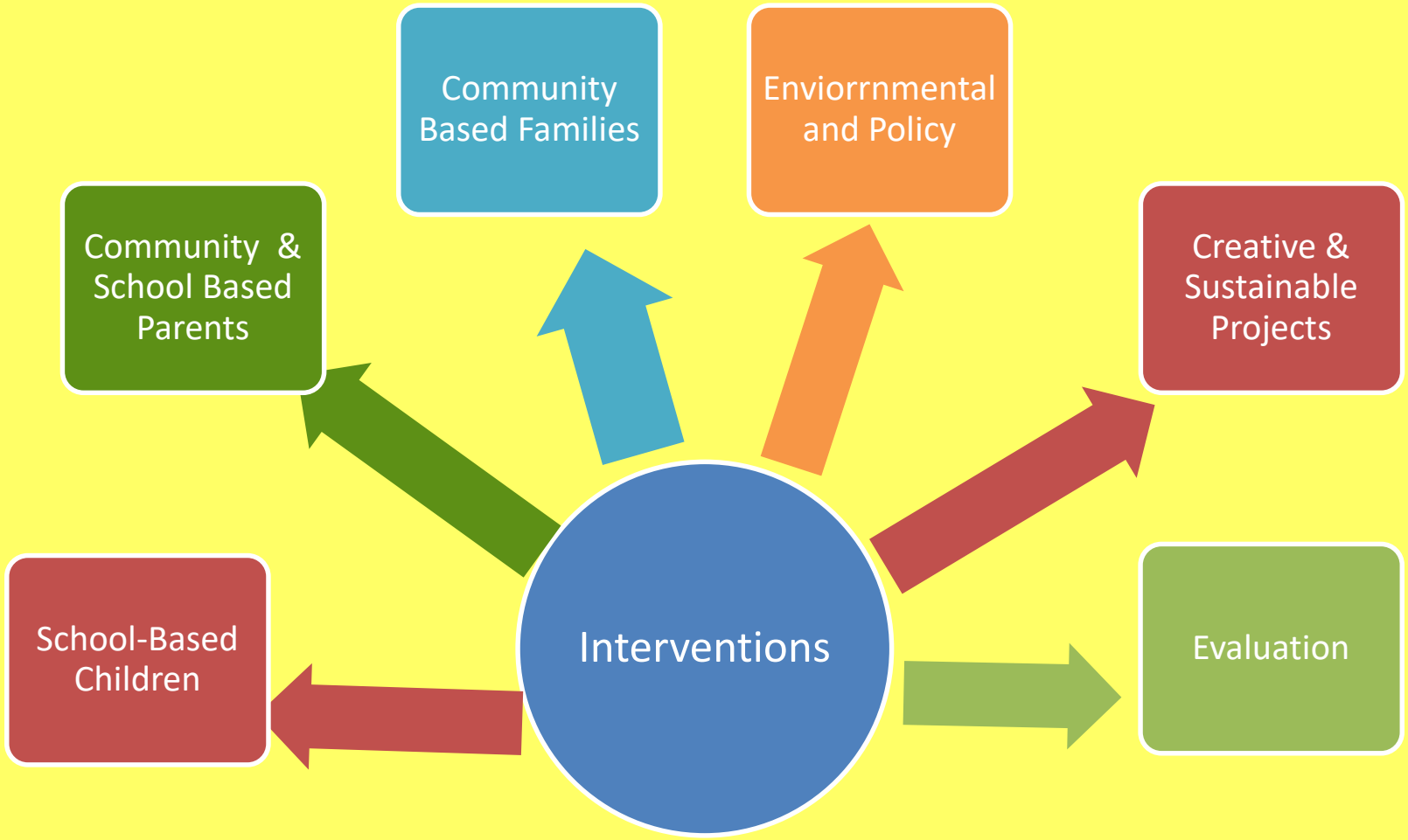
http://www.csun.edu/marilyn-magaram-center/nutrition-experts

Working Within Our Community

- Working with local schools and communities to incorporate various nutrition & lifestyle intervention techniques
- Collaborating with various community partners
- Projects and research funded by federal, state, and private grants & donations

Strategic Partnerships & Collaboration

SOLUTIONS


Community Based Families
Enviorrnmental and Policy
Community & School Based Parents
Creative & Sustainable Projects
School-Based Children
Interventions
Evaluation

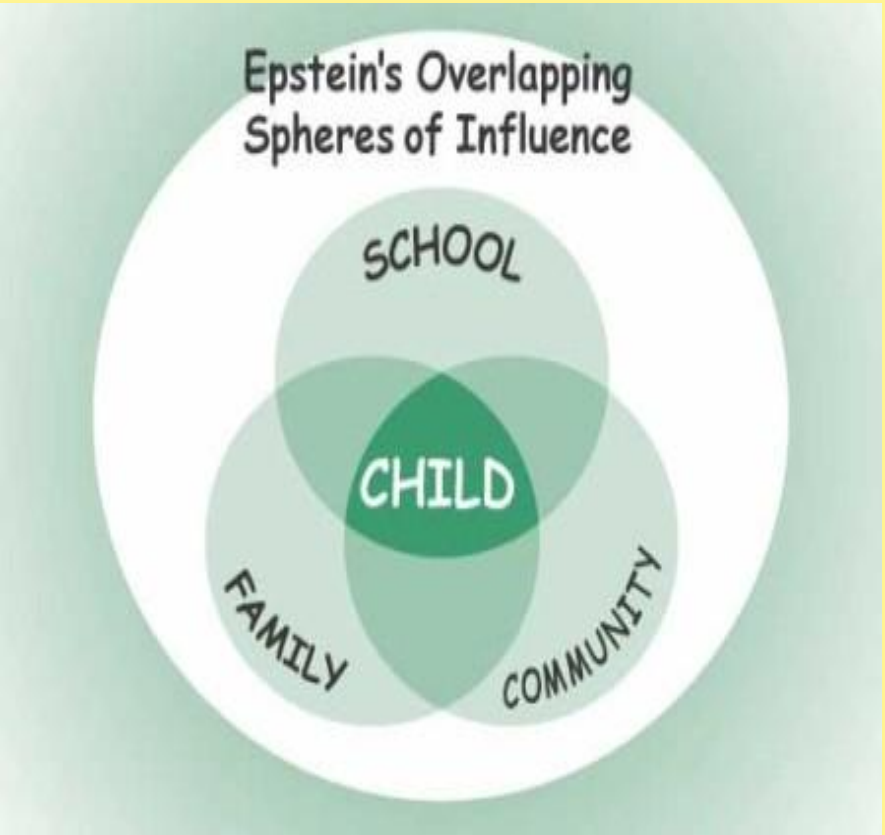
A Taste of Good Health

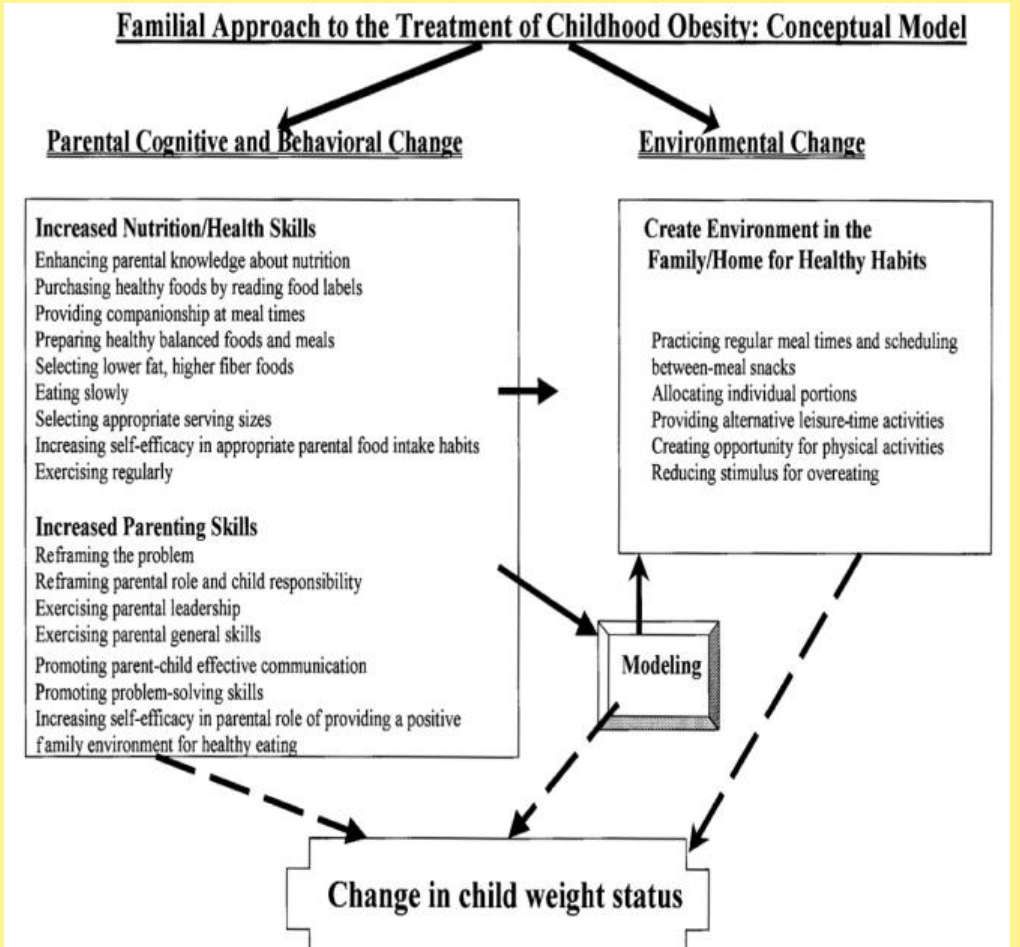
http://vimeo.com/65241068

School-based Parent & Family Healthy Lifestyle Classes to Reduce Childhood Obesity

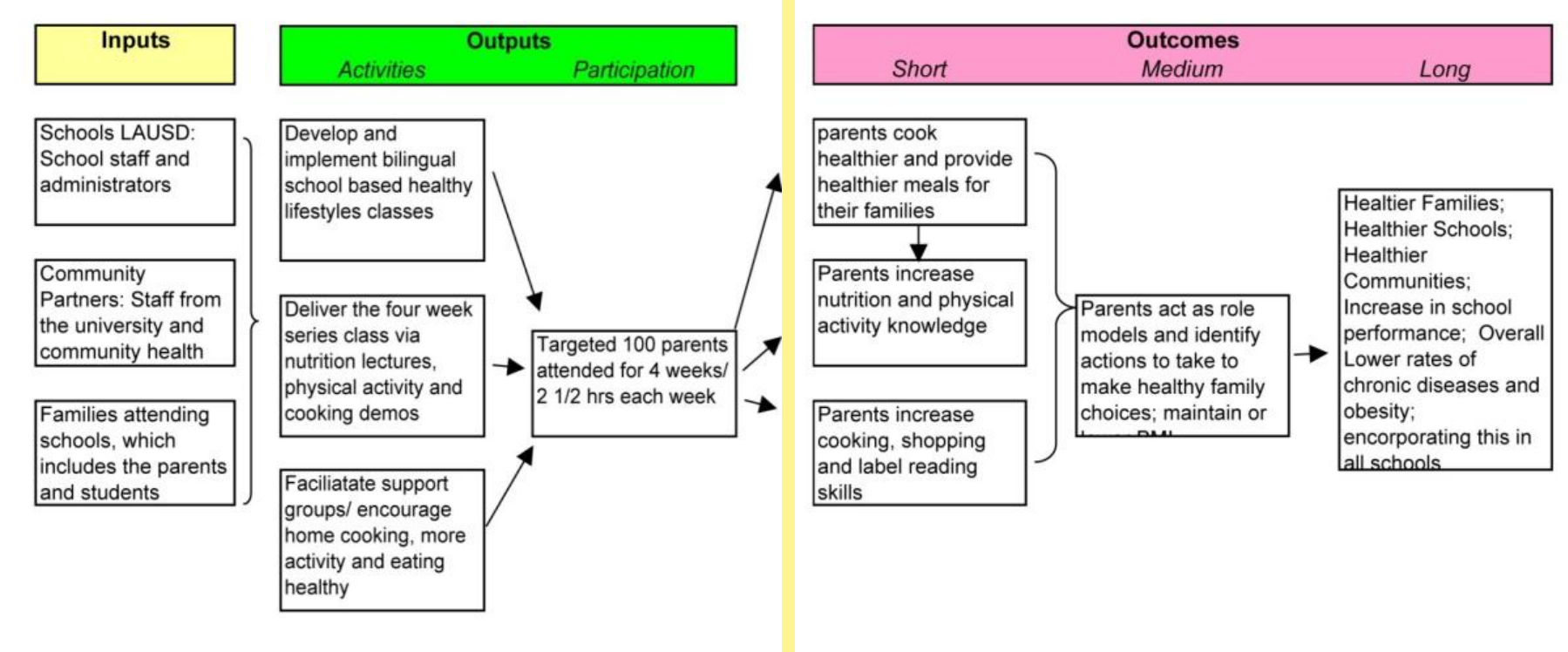
Conceptual Framework

The conceptual framework that guided this study incorporates components of Epstein's School, Family, and Community Partnership Model (Epstein, 2011), and Golan and Weizman's (2001) conceptual model of the familial approach to the treatment of childhood obesity.





Taste of Good Health Logic Model



The goal was to accomplish the short and intermediate term outcomes so that they will be used in an effort to accomplish the long term outcomes in the future

We have seen Changes in Knowledge
continued to increase at follow-up
(ADAF, n.d.; Golan & Weizman, 2001; Hopper et al., 1996)

Changes in Behavior
led to changes in BMI, cooking techniques, nutrition & physical activity.

Changes in Environment
creating a healthy environment for children and their families
)

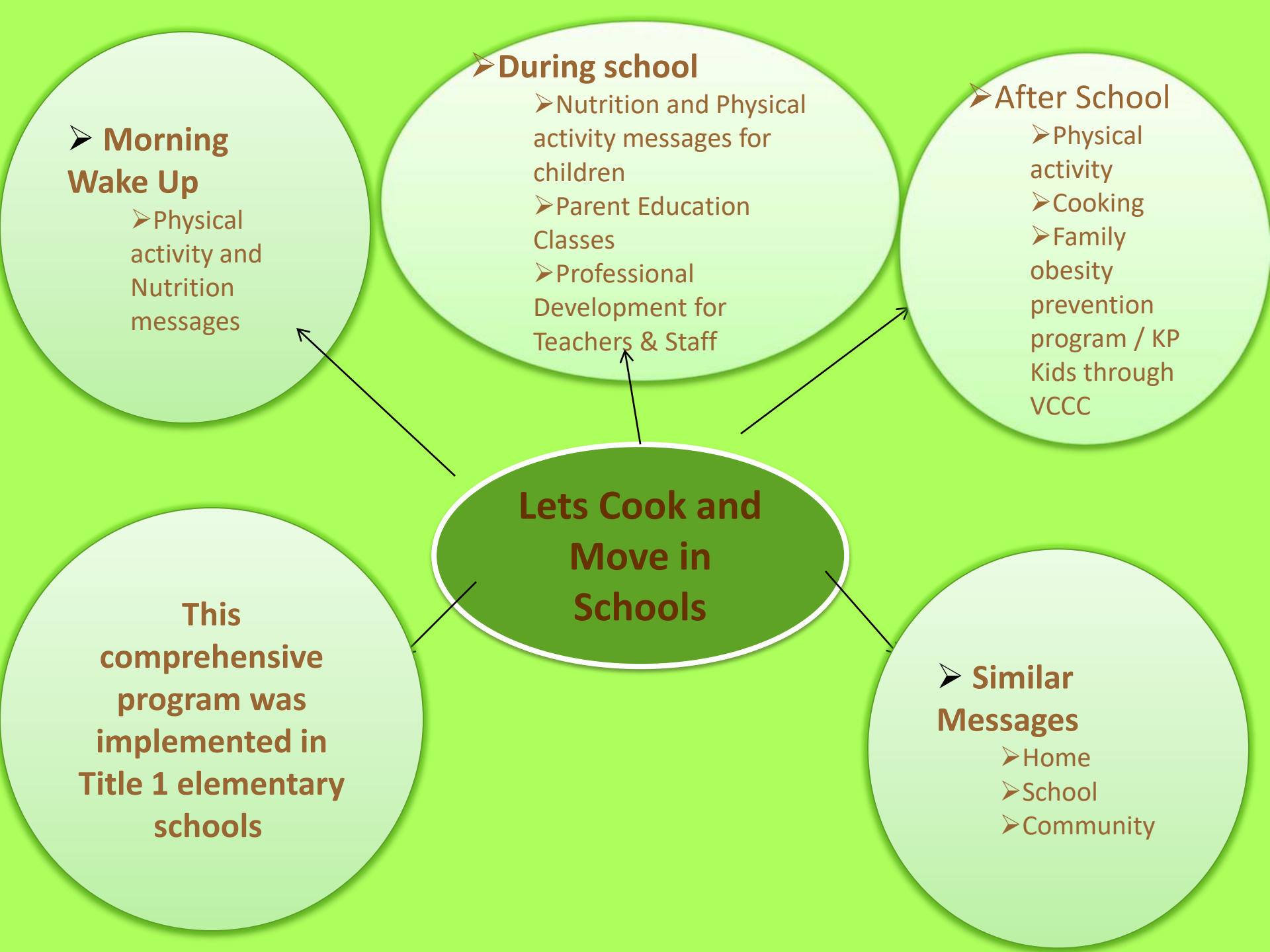
Summary & Conclusion

This leads to the conclusion that children & families need long-term support, resources, and follow-up to ensure they are successful in making healthy behavior changes.

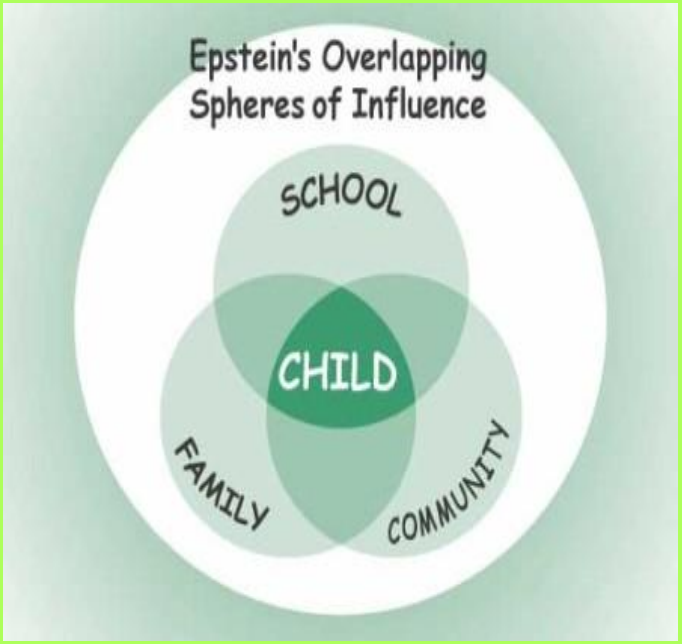
Overall findings suggest that participants used the knowledge gained in the interventions to create healthier home environments for their children and families.

https://extranet.who.int/nutrition/gina/en/map

Let's Cook and Move in Schools


Lets Cook and Move in Schools
During school
Nutrition and Physical activity messages for children
Parent Education Classes
Professional Development for Teachers & Staff
Morning Wake Up
Physical activity and Nutrition messages
After School
Physical activity
Cooking
Family obesity prevention program / KP Kids through VCCC
This comprehensive program was implemented in Title 1 elementary schools
Similar Messages
Home
School
Community

Our program helps:



- **Foster relationships and creates partnerships:** Engaging the family, community, and schools is key for successful programs.
- Collaboratively designed intervention program which is **focusing on healthy lifestyles**
- Systematically involve parents, children, teachers, and the community to **facilitate sustainability**.
- Engage in systematic **formative and summative evaluation**

Collaboration between many Organizations

Comprehensive & Integrate Disciplines

Formative and Summative Evaluations; Follow up; Sustainability

Unique about our program

Workshop Models: focus is on actively engaging & practicing skills

Development of Support Groups & **Linking Home to School**

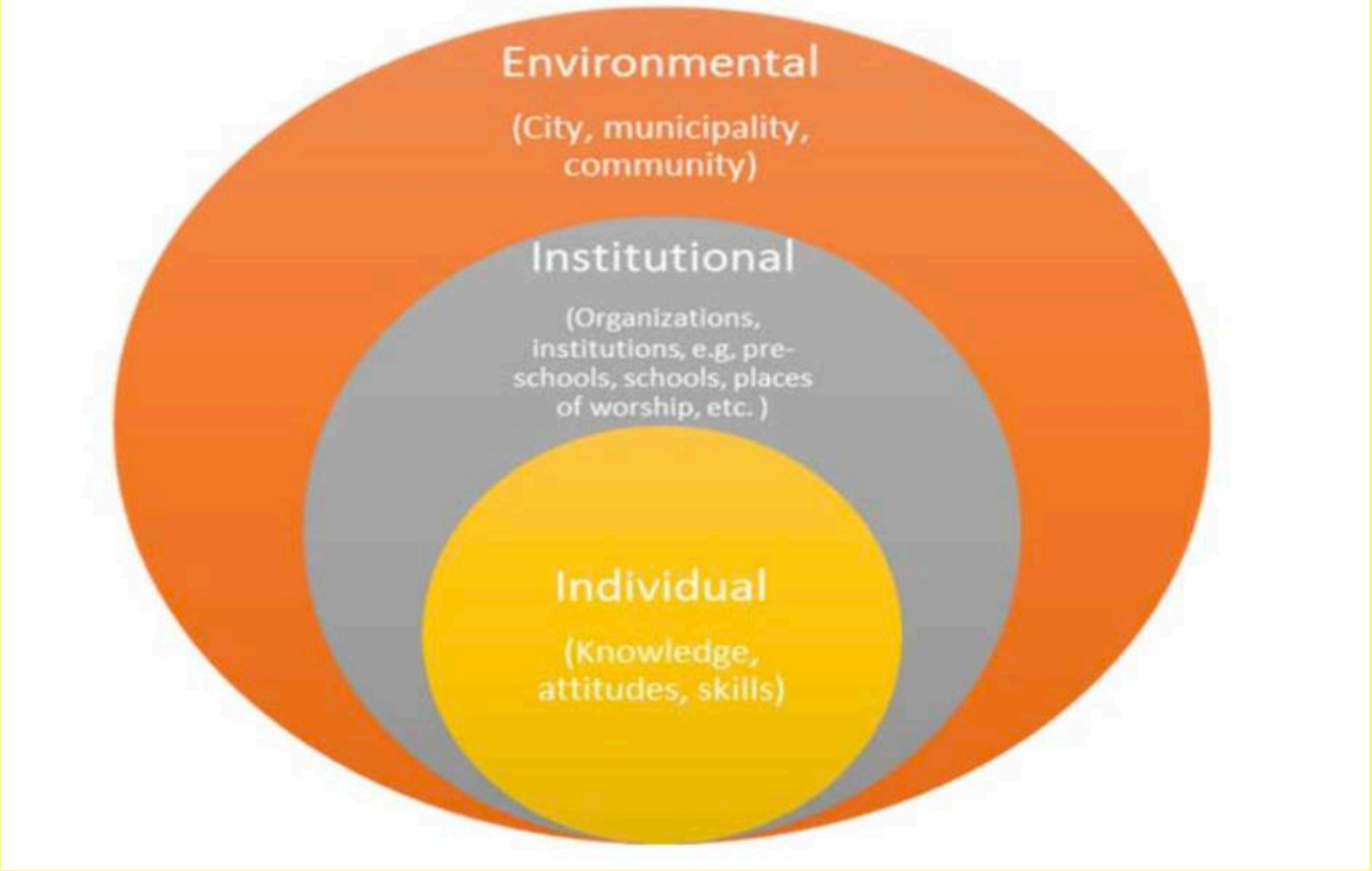
CSUN's Champions for Change

CSUN Champions for Change targets a community garden and nutrition education impact within the community. LACDPH granted a 3-year contract

NPA
NEIGHBORHOOD PARTNERS IN ACTION
CANOGA PARK INITIATIVE

CSUN
MARILYN MAGARAM CENTER

the INSTITUTE for COMMUNITY HEALTH & WELLBEING



This program takes a holistic approach using the Social Ecological Model as a framework targeting three levels of a person's life (i.e., individual, institutional, and environmental).

- Individual level → Nutrition and Gardening Education
- Institutional level → building and revitalizing the garden
- Environmental level → Integrate Healthy Food Pantry

Program components: Gardens

- Engaged in building edible gardens at school sites and community centers:
  - Students
  - Parents
  - Teachers
  - cafeteria staff
- Master Gardner
- 21,297 people impacted (directly and indirectly)
- 24,170 impressions through social media (Facebook)

Education programs involving gardens and fresh produce have the potential to support healthy eating practices and to mitigate the burden of obesity and chronic disease (Chaufan, Yeh, Sigal, 2015).

Program components: Classes

Individual and group interventions (AHA Kick off)

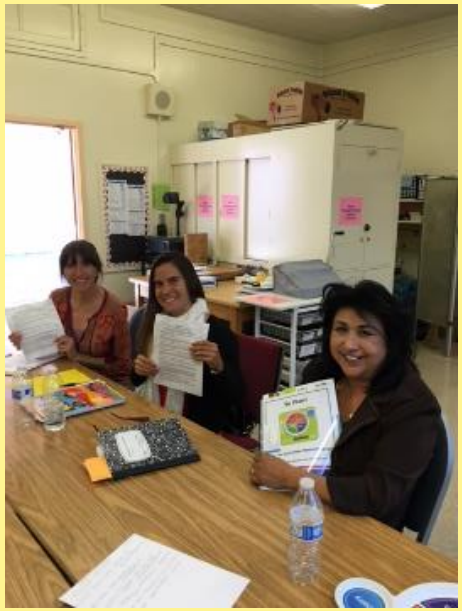
Garden Enhanced Nutrition Education

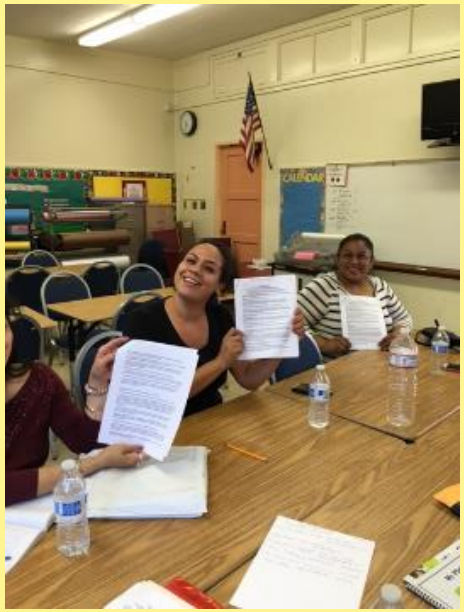
Gardening Project at the University

Cooking Camp with Kids

Let's Cook, Move and Grow in Schools

"Train the Trainer"





Choosing Healthy Beverages

Rethink Your Drink
Campaigne

rethink YOUR DRINK

www.RethinkYourDrinkCa.com

Rethink Your Drink Campaign

- Educates about healthy drinks:
  - Water
  - Fat free or lowfat 1% milk
  - and 100% juice **in limited amounts**
- Helps people identify the amount of added sugar and calories in sugary drinks
- Communicates the link to health risks.

Health Consequences

Strong evidence shows that children and adolescents who consume more sugary drinks have higher body weight compared to those who drink less.[5]

Drinking sugary drinks nearly doubles the risk of dental cavities in children.[4]

Sugary Drinks Overview

Each year, the average adolescent consumes the equivalent of 39 pounds (17.7 kg) of sugar from sugary drinks.[6]

(Recommendation:Limit daily sugar to 6 tsps (**25 g**) for women, 9 tsps (38 g) for men. Yet, the average American consumes 19.5 teaspoons (82 grams) every day.)

- 32% of 15 years old adolescents in Armenia consume soft drinks on a daily basis. (WHO)
- The prevalence of sugar sweetened beverage consumption in the study population was 72.58%, 81.88% for boys and 68.24% for girls. (Ghazarian, 2017)

6. Babey SH, Jones M, Yu H, Goldstein H. *Bubbling over: Soda consumption and its link to obesity in California*. Los Angeles, CA: UCLA Center for Public Health Advocacy; 2009.

How many teaspoons of sugar do you think is in a typical 20 ounce (591 ml) bottle of soda?

Answer: 17 teaspoons of sugar – or more.

68 grams of sugar

Note that this is per serving.

Creative Solution: An Original Musical

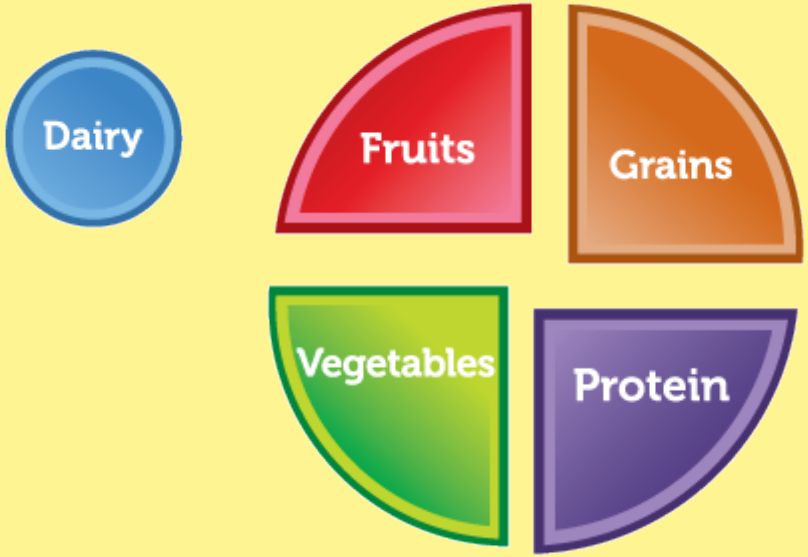
MYPLATE

The New Food Guide Musical

A program to increase nutrition and physical activity knowledge and behavior in elementary schools to combat childhood obesity

Solution

Nutritional Guidelines Covered In MYPLATE Program



Creativity

Solution

MYPLATE The New Food Guide Musical Program

Nutrition Education

Physical Activity

Rehearsals for the show

Performance with Broadway Actors &

Students

Recognitions

LET'S MOVE!

My Plate
The New Food Guide Musical Program
CSUN | Marilyn Magaram Center

LOS ANGELES UNIFIED SCHOOL DISTRICT • BOARD OF EDUCATION •

NEW YORK STATE | Department of Health

The New York Times

ASSEMBLY STATE OF NEW YORK
EXCELSIOR

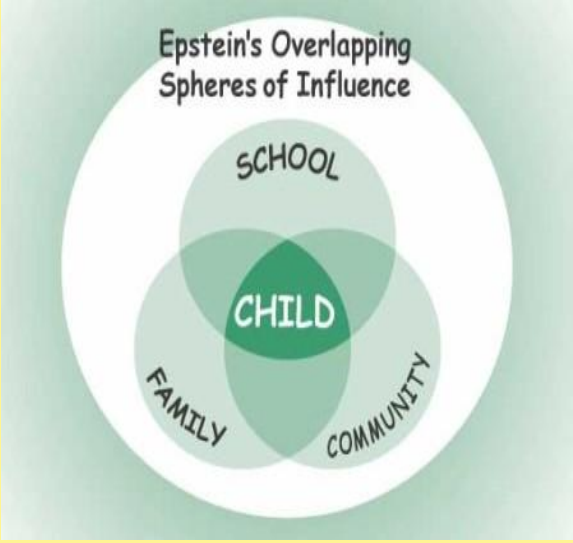
Impact

In Schools Nationwide!
New York, California
Connecticut, Massachusetts, US VI

Implemented 101 times

28,500 student viewers
9,400 student actors
10,000 Parents & School Staff

Strategic Partnerships
Collaboration & Leadership



LOS ANGELES UNIFIED SCHOOL DISTRICT
CRISIS COUNSELING & INTERVENTION SERVICES

Children & Their Families

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE 1958

Community Organizations Nutrition & Fitness Initiative

COMMON CORE
STATE STANDARDS INITIATIVE

My Plate
The New Food Guide Musical Program
CSUN MARILYN MAGARAM CENTER

MyPlate Musical Logic Model

The New Food Guide Musical Program
CSUN | Marilyn Magaram Center

Inputs

Elementary Schools & School Districts

Community Partners

Families & Children

Local Talent

Broadway Actors

Leaders

Outputs

Activities

- Nutrition Education Workshops
- Rehearsals & Preparation
- Pre- & Post-test, Follow-up, Evaluation, & Research
- Recruit/ train Faculty & new talent/PD Identify Leaders

Participants

- 500-1000 Families per school
- Grades K-5
- Teachers/ Staff
- Families
- Parents

Outcomes

Short-Term Goal

- ↑ Nutrition Activity Knowledge in Children, Parents, Staff
- Identify Faculty, Parent, Student leaders
- Implement **Train the Trainer,** MyPlate curriculum to each school

Medium-Term Goal

- Parents and Staff act as role models to make healthy choices
- Continue to Implement MyPlate Musical

Long-Term Goal

- ↓ Childhood Obesity! Healthier Families, Schools, Communities.
- My Plate in ALL elementary schools

Evaluation of Student Actors & Viewers

Actors: Control Group

Pretest ⟶ Posttest


Pretest ⟶ Posttest

Actors: Treatment Group

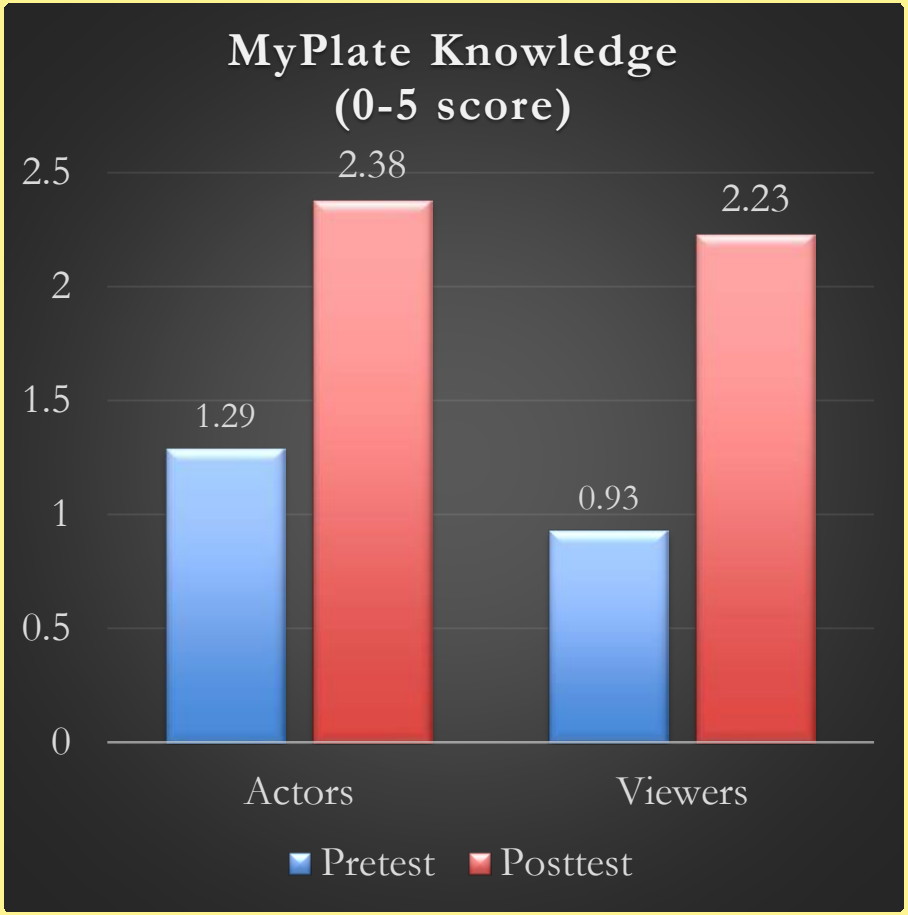
Viewers: Control Group

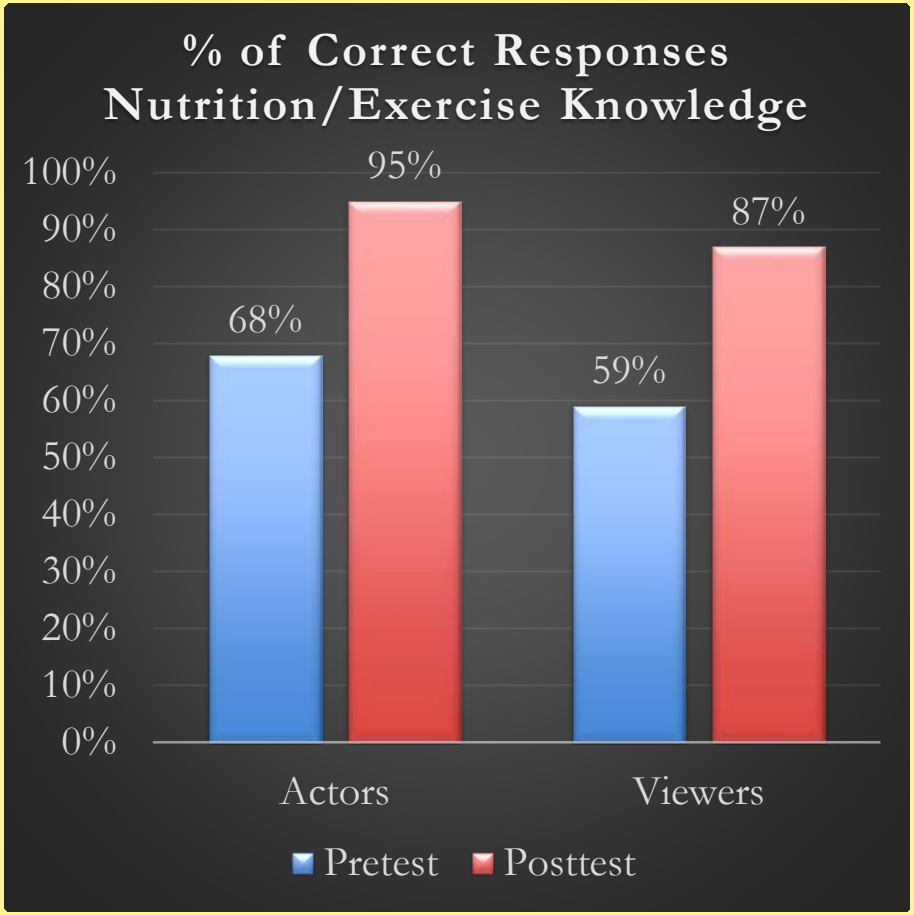
Pretest ⟶ Posttest


Pretest ⟶ Posttest

Viewers: Treatment Group

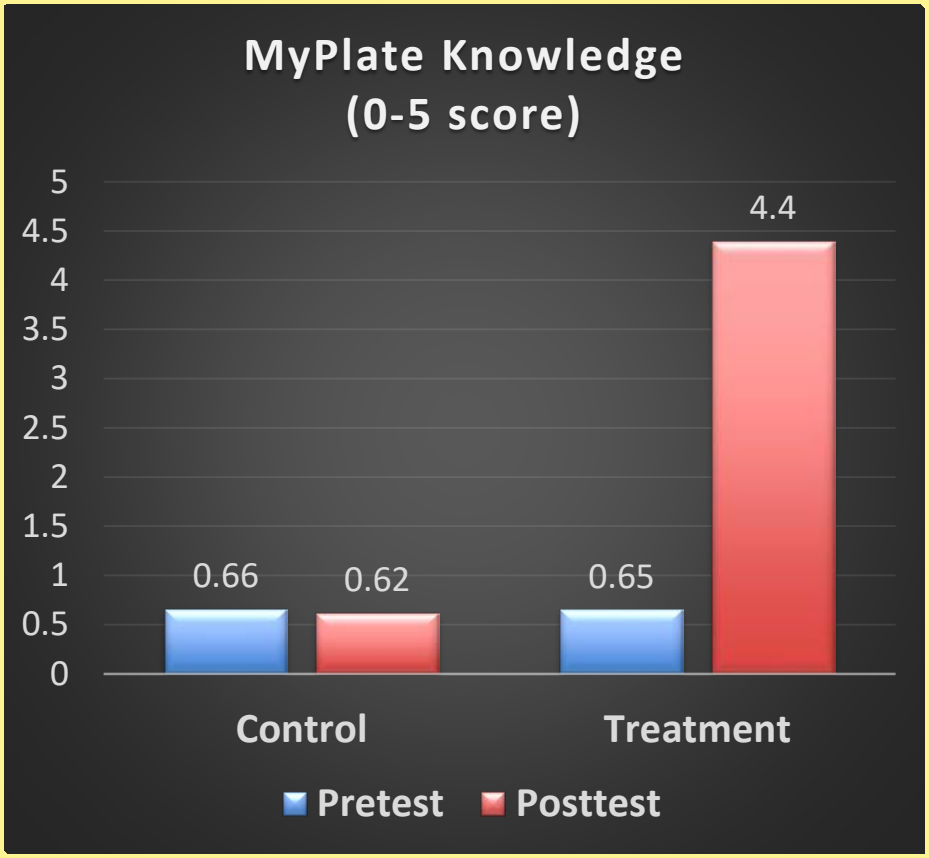
Impact: Actors (n = 229) vs. Viewers (n = 539)

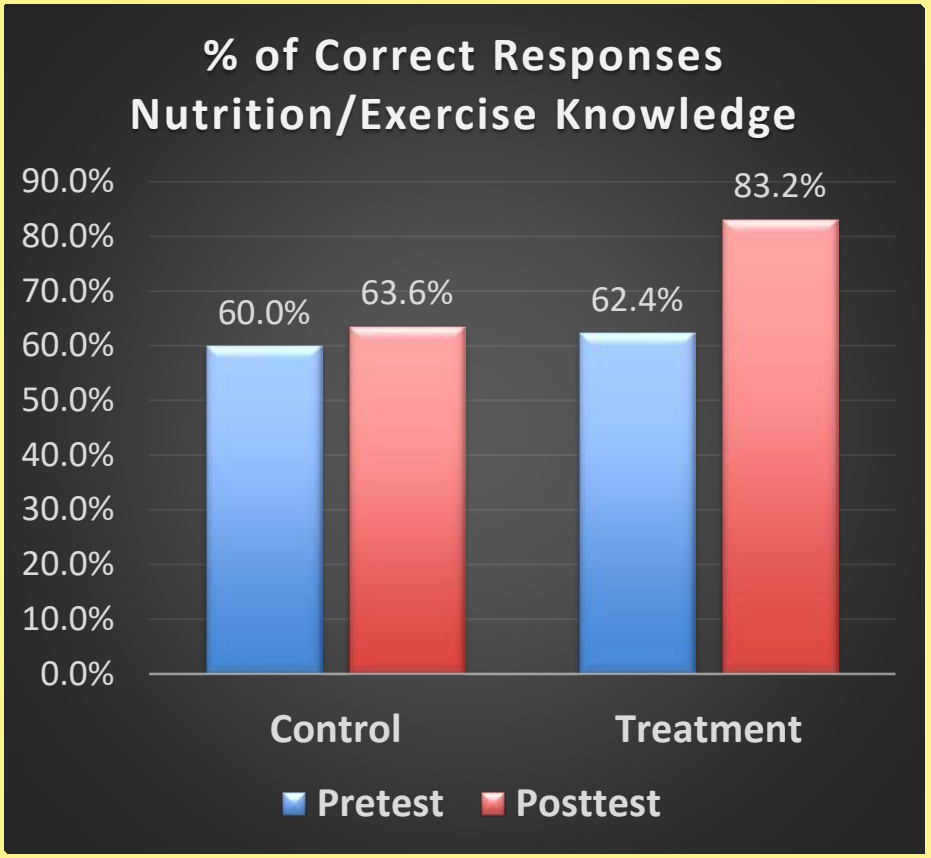




- For actors and viewers, posttest scores were significantly higher than pretest scores on MyPlate knowledge and nutrition/exercise knowledge ($p < .001$)

Impact: Control vs. Treatment

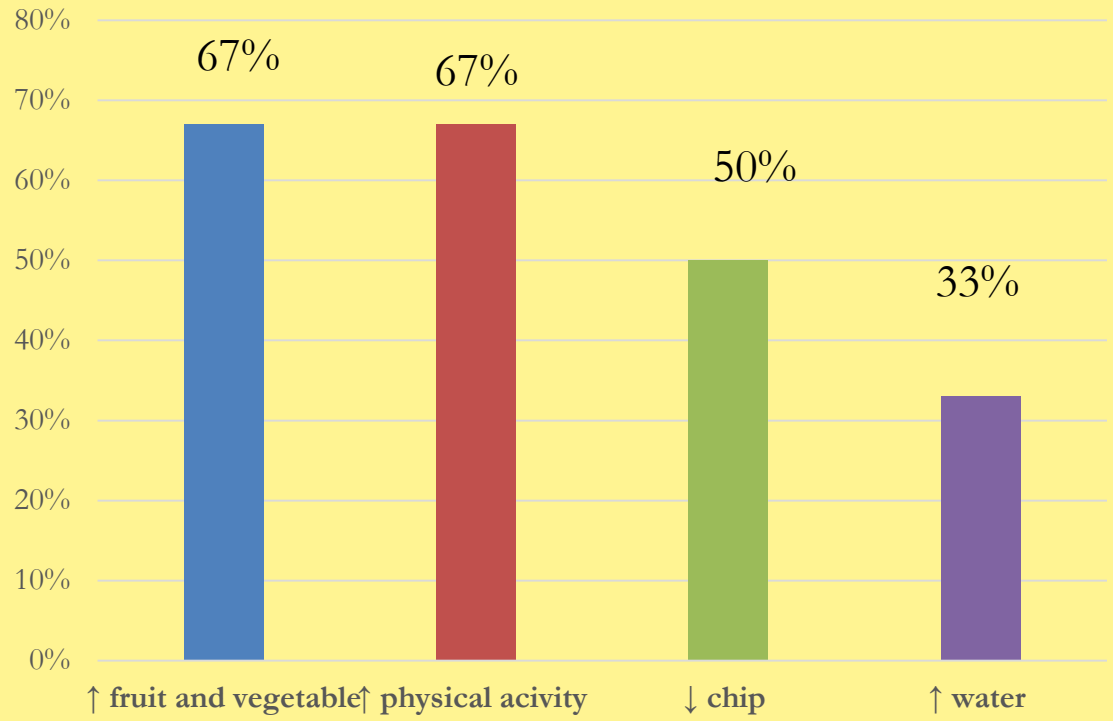




ANCOVAs comparing groups' posttest scores with pretest scores as covariate

- Posttest knowledge scores and MyPlate scores were significantly ($p < .001$) higher for the treatment (musical) group than control group (no musical) after controlling for pretest.
- Knowledge scores and MyPlate scores significantly ($p < .001$) increased from pretest to posttest for the treatment (musical) group, but not the control group.

Impact: Changes in Children's Behavior



My Plate the Musical : Replicability, Scalability, & Sustainability

It can be replicated in every elementary school in the US

Summary

Reaching **pandemic proportions** (Carmona, WHO, 2016)

Results in **significant health issues for children** such as diabetes, heart disease, apnea, & asthma, (ADA, 2010; CDC, 2009)

May lead to **poor school performance & other complications** (Ball et al., 2004; Datar& Sturm, 2006; Datar et al., 2004; Hunt, 2008; Schwartz & Puhi, 2003)

"Systemic, sustained portfolio of initiatives!" (McKinsey Global Institute, 2014)

Variety of interventions designed **to curb this pandemic**

Focus on Action!

NO SINGLE SOLUTION WOULD REVERSE THE PROBLEM

NEED "SYSTEMIC, SUSTAINED PORTFOLIO OF INITIATIVES" TO TACKLE THE CRISIS, SUCH AS

BETTER NUTRITIONAL LABEL,

HEALTHIER FOOD AT SCHOOLS,

ADVERTISING RESTRICTIONS ON FATTY FOODS AND BEVERAGES, AND

PUBLIC HEALTH CAMPAIGNS,

OTHER

(McKinsey Global Institute Report, November 2014)

EDUCATE and EMPOWER

TO FORM LIFELONG NUTRITION AND EXERCISE HABITS !


© Alamy

0:06
Loaded: 0%

Questions?

KEEP CALM AND FIGHT CHILDHOOD OBESITY

The New Food Guide Musical Program

CSUN | MARILYN MAGARAM CENTER

KEEP CALM AND FIGHT CHILDHOOD OBESITY

Questions?