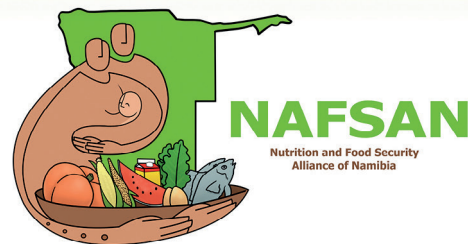


NUTRITION FOR HEALTH

EMBRACING OUR NAMIBIAN FOOD SYSTEMS



Set 1 =
**Forms of
Malnutrition**



Right Start
make a child's first steps
the right steps.

www.RightStart.com.na



Supported by
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für Internationale
Zusammenarbeit (GIZ) GmbH



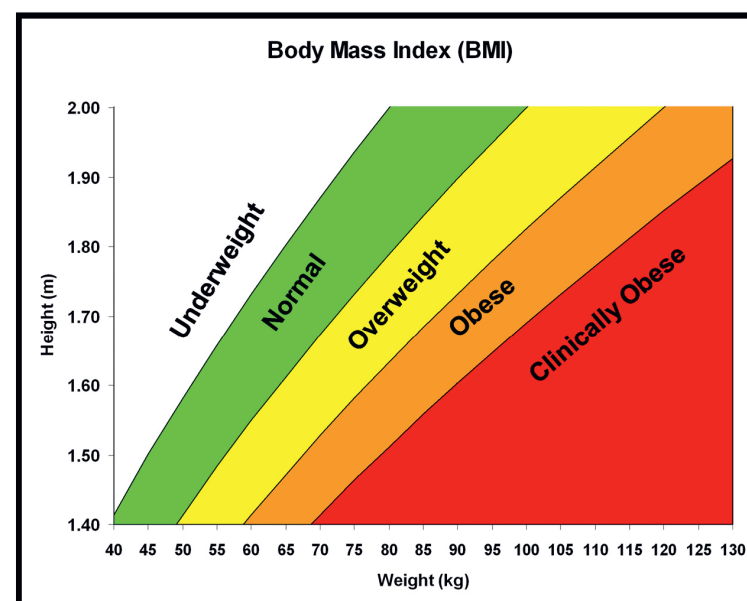
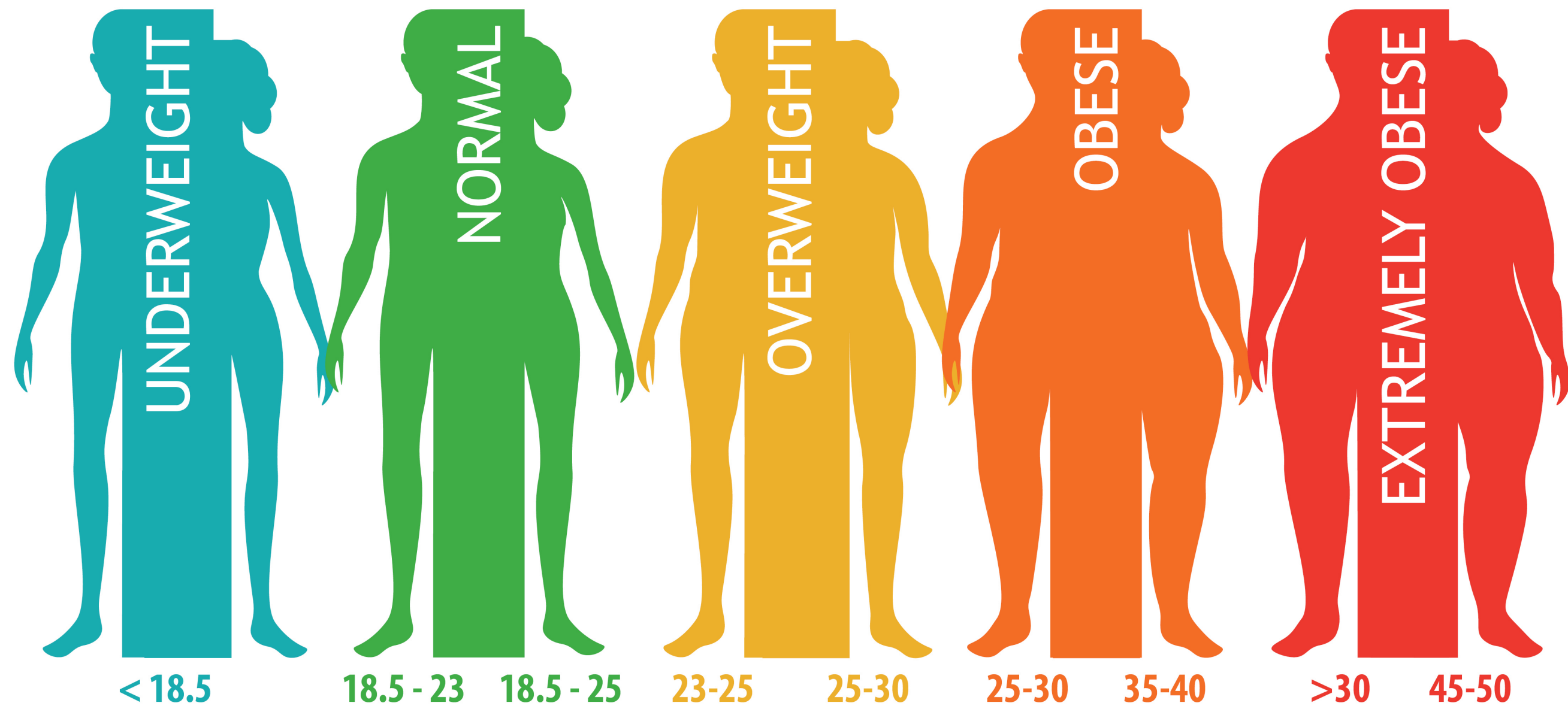
Co-Funded by
the European Union



SLIDE 1.1. - BODY MASS INDEX (BMI) SCALE - FOR ADULTS

- Body Mass index (BMI) is calculated by weight divided by height times height ($= \text{height}^2$) – only for adults!
- Highlight the four categories (= underweight, normal, overweight, obese, extremely obese) using the BMI scale.

SLIDE 1.1. - BODY MASS INDEX (BMI) SCALE - FOR ADULTS



EXAMPLE:

w=55 kg h=1.63 m

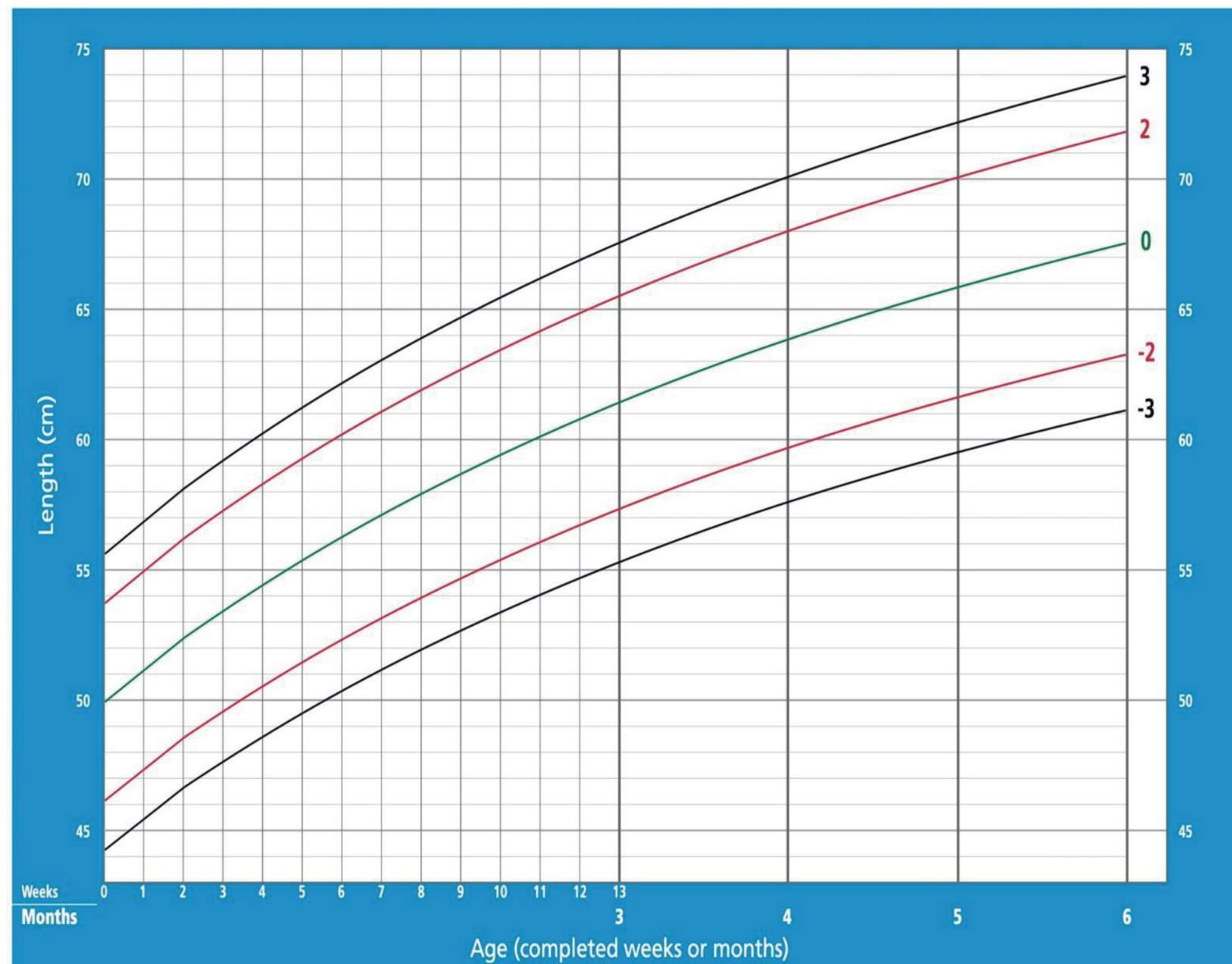
$$\text{BMI} = \frac{55 \text{ (kg)}}{1.63 \text{ (m)} \times 1.63 \text{ (m)}} = 20.7$$

- Growth Charts for boys and for girls help to see if a child's weight and height are 'on track' (= in a normal range) or if there is any reason for concern or need for any type of support or health-related interventions.
- Regular check-ups and visits to clinics are important, especially in the first years of a child's life. As parents/guardians, remind/request the nurses to plot the growth chart to keep track.

GROWTH CHARTS

Length-for-age BOYS

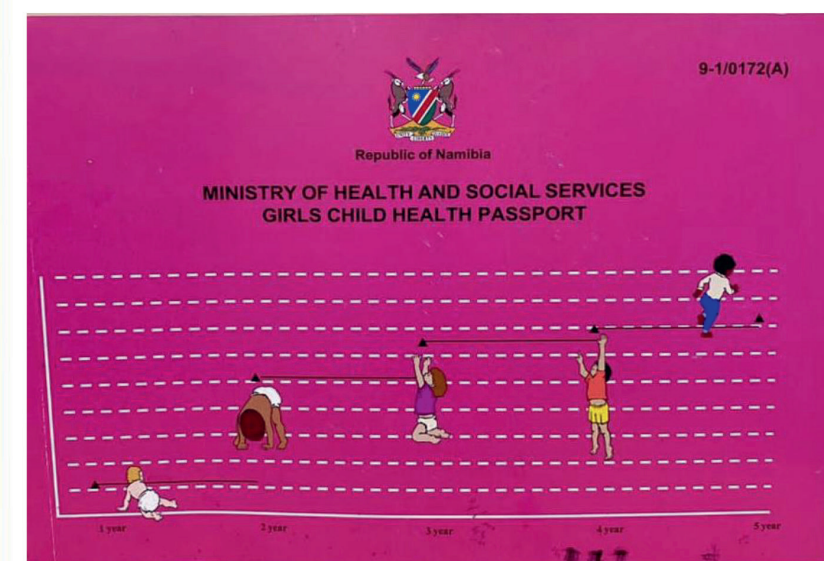
Birth to 6 months (z-scores)



WHO Child Growth Standards



Boys Child Health Passport

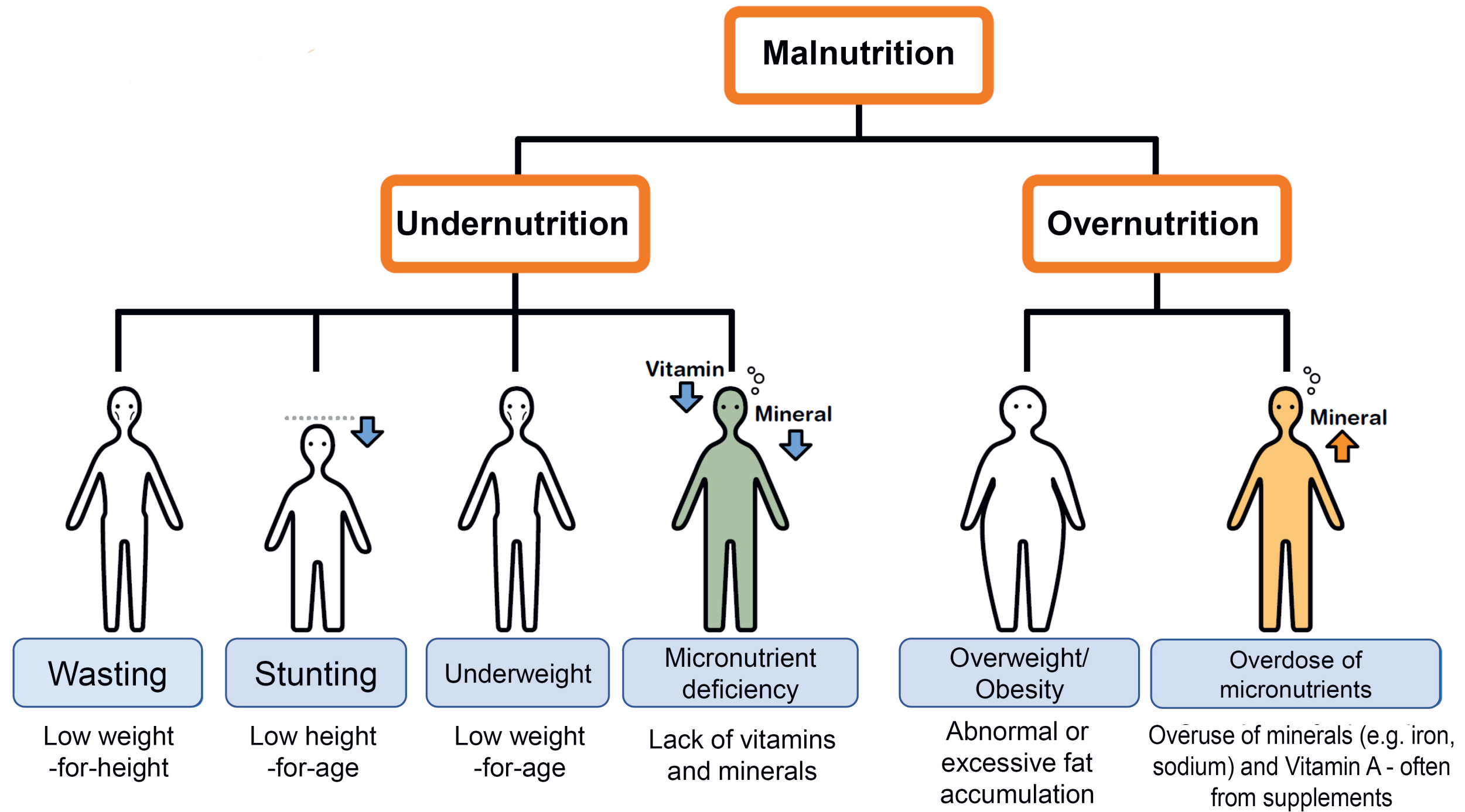


Girls Child Health Passport

SLIDE 1.3. - MALNUTRITION: UNDER-NUTRITION AND OVER-NUTRITION

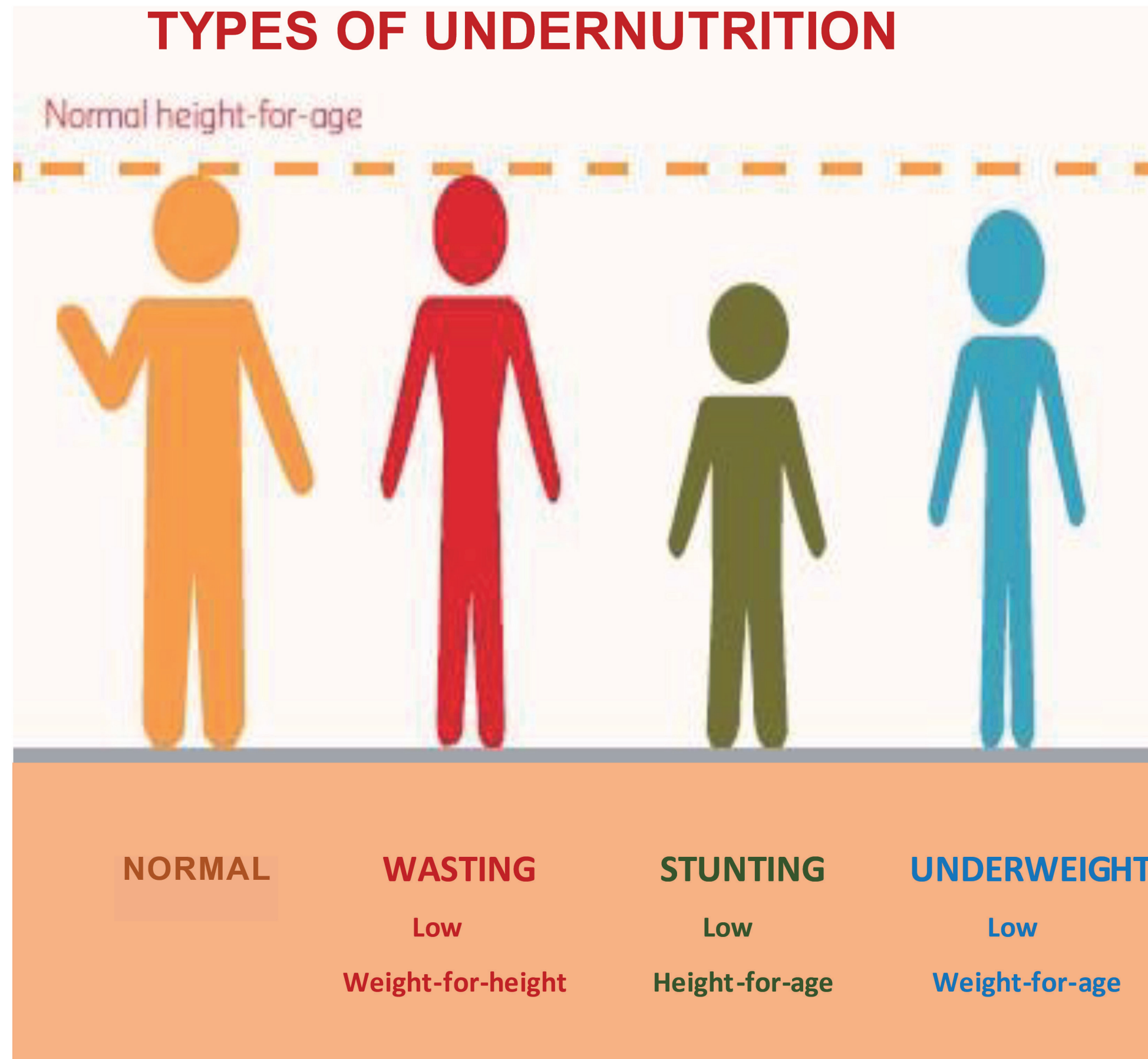
- There are two (2) different types of malnutrition: over- and undernutrition
- We now focus on forms of undernutrition: wasting, stunting, underweight, micronutrient deficiency.

SLIDE 1.3. - MALNUTRITION: UNDER-NUTRITION AND OVER-NUTRITION



SLIDE 1.4. - DANGERS OF UNDER-NUTRITION: WASTING AND STUNTING

- Underweight = Weight is too low for their age
- Wasting = Weight is too low for their height
- Stunting = Height is too short for their age

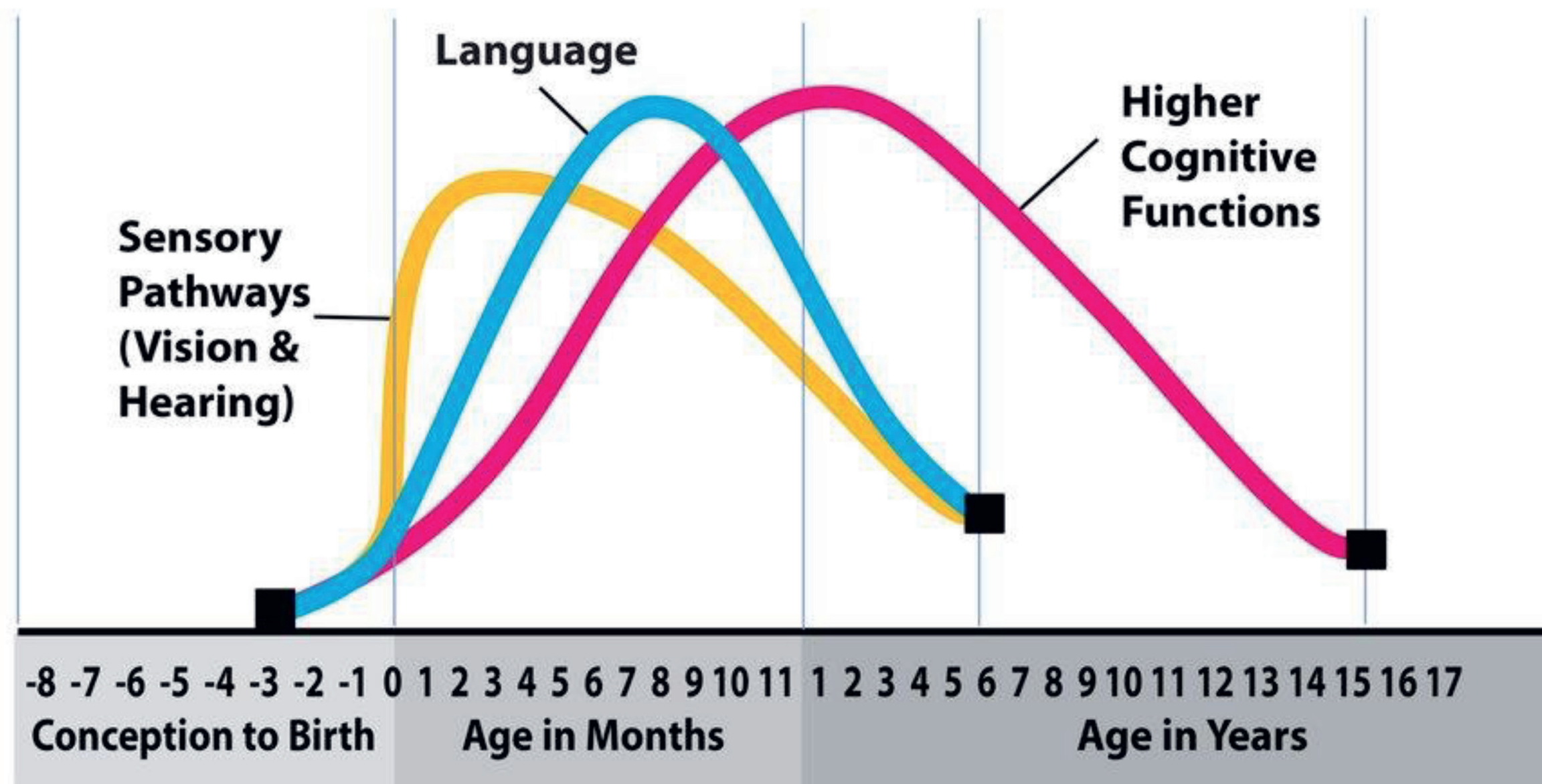


SLIDE 1.5. - THE FIRST 2 YEARS: A KEY WINDOW PERIOD!

- Most neural connections (synapses) in the brain are build/ developed before the age of three (3) years, with up to 700 - 1,000 neural connections being established per second in the first 1-2 years.
- These are responsible for seeing, hearing, language, and 'higher cognitive functions', such as thinking, reasoning, concentrating, remembering, problem solving and our overall understanding of the world.
- 90% of brain development is completed by the age of five (5) years.

Human Brain Development

Synapse formation is dependent on early experiences



Synapse formation begins declining before Age 3

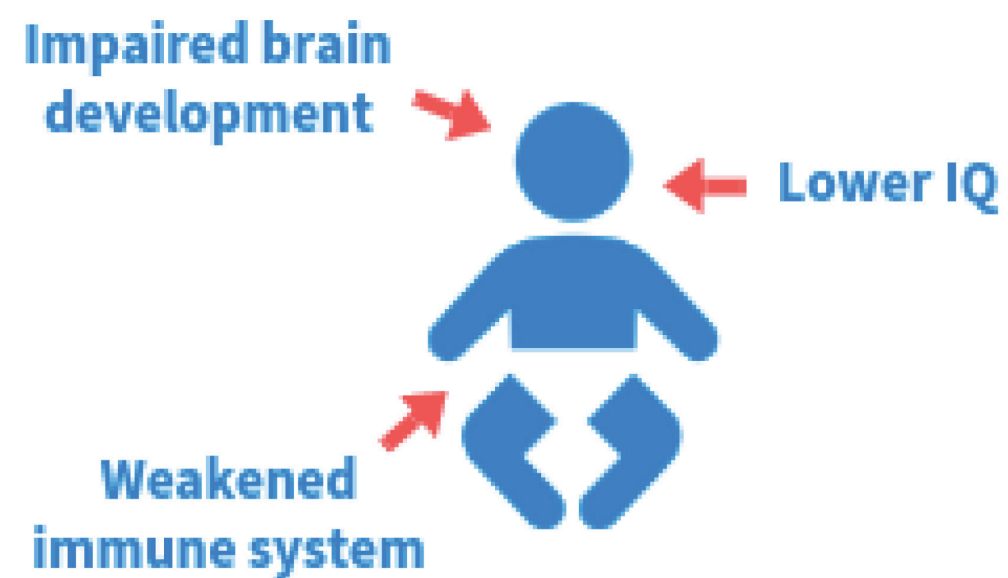
SLIDE 1.6.A. - STUNTING: EFFECTS ON INDIVIDUALS

- Differentiate between a healthy brain of a normal child and the brain of stunted/malnourished child.
- If stunting is not addressed and treated within the first two years, its effects are irreversible!
- Short-term effects of stunting (weak immune system, slow brain development etc.)
- Long-term effects of stunting (stunted growth, low productivity, risk of diabetes and cancer)

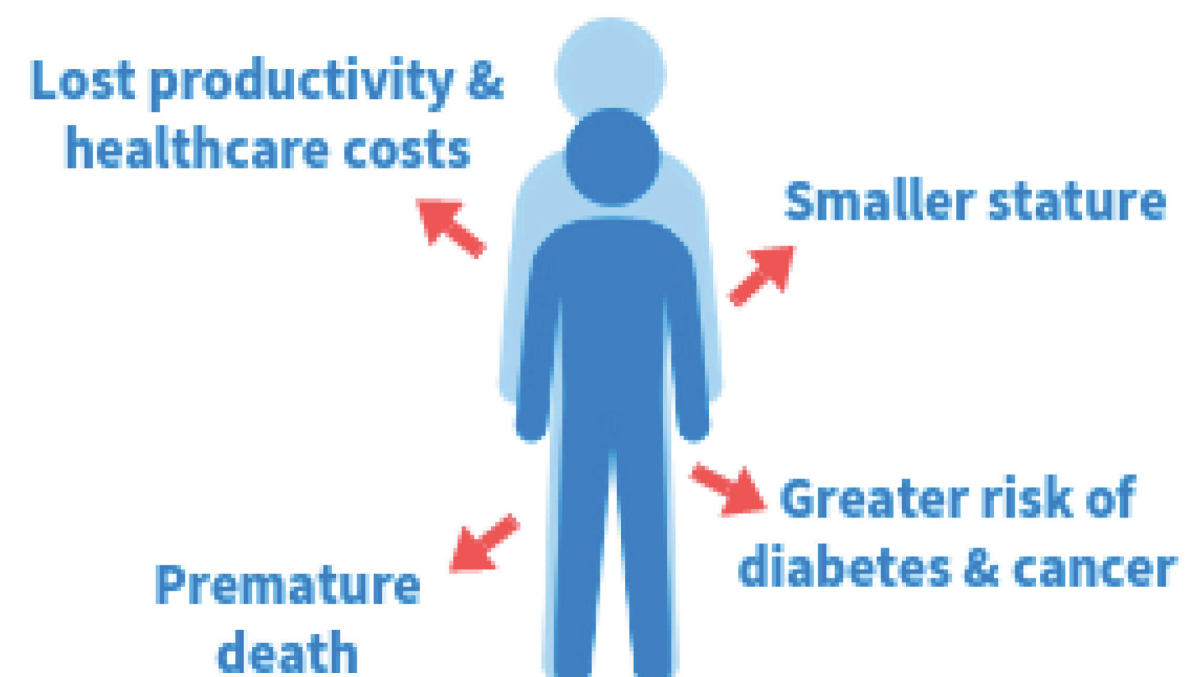


Effects of Stunting

Short-term



Long-term



SLIDE 1.6.B. - STUNTING: COSTS FOR SOCIETY

- Stunting increases child mortality (deaths), and it reduces average IQ scores and income opportunities.
- On a national level, it costs Namibia N\$ 11,1 Billion or over 5,2% of our national GDP, every single year; according to the Namibian Cost of Hunger in Africa (COHA) Study in 2021
- www.nafsan.org/resources

THE **LIFETIME COSTS** OF **STUNTING**

CHILD MORTALITY

STUNTED CHILDREN ARE



THAN
CHILDREN
WHO ARE
NOT

EDUCATION

STUNTING
CAUSES
23.7% OF
REPETITIONS
IN NAMIBIAN
SCHOOLS



INCOME

ADULTS WHO ARE
STUNTED EARN



ECONOMY

STUNTING
CONTRIBUTES TO
GDP LOSSES OF
5,2% =
N\$ 11 BILLION
PER YEAR



SLIDE 1.6.C. - STUNTING: REAL-LIFE EXAMPLE

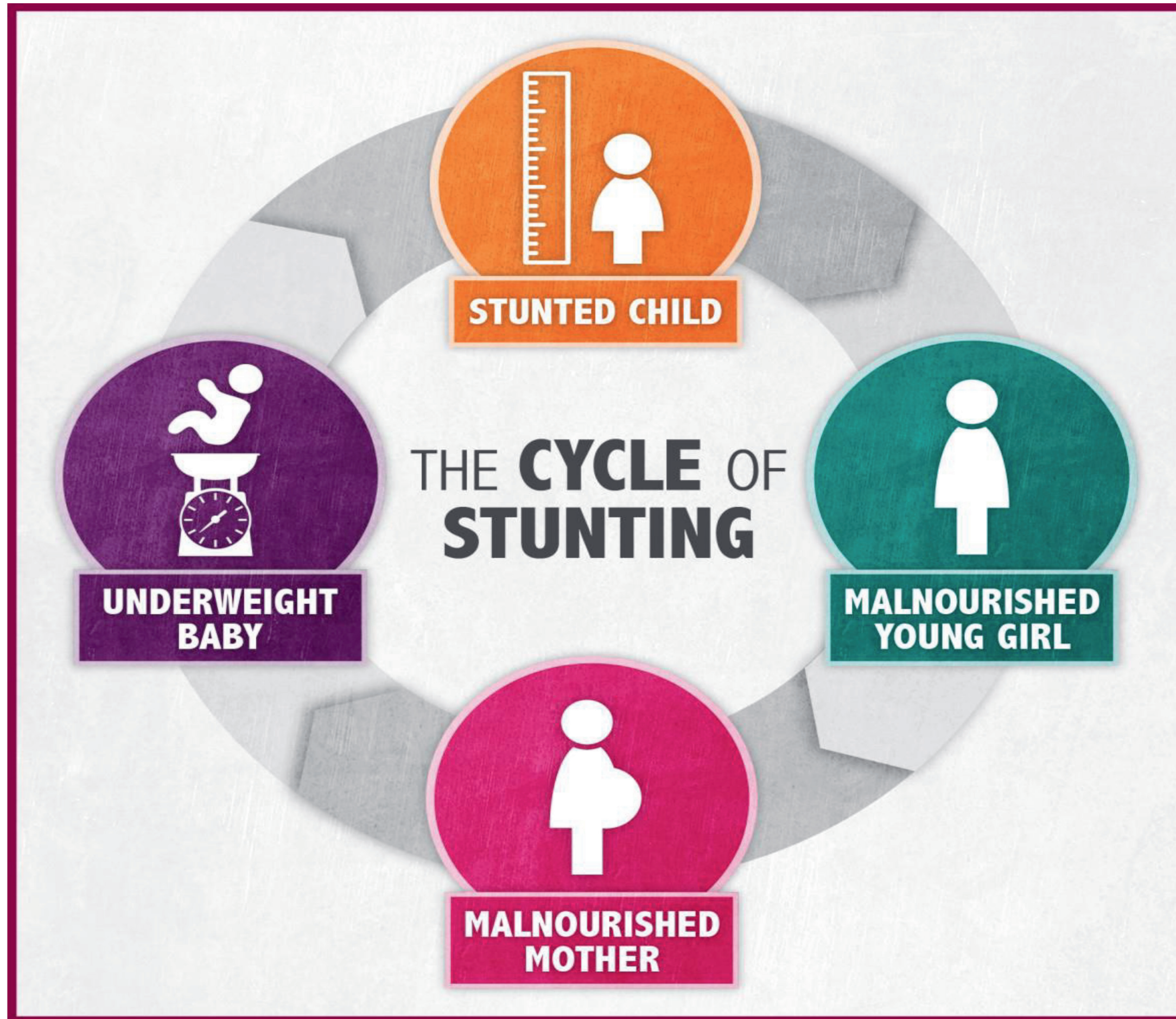
- Let them guess the children's ages and thereafter reveal (1st = 1-2 years, 2nd = 4 years, 3rd = 5 years)
- Physical signs of stunting of the 3rd child: 'stunted growth' (= short in height) and 'pot belly'

SLIDE 1.6.C. - STUNTING: A REAL-LIFE EXAMPLE



Which of these boys is malnourished?

- The vicious cycle of stunting: Infant (small child)
-> young girl -> pregnant woman -> underweight baby
+ stunting does not only effect girls, but also affects boys'/
men's sperm production and the DNA in it.
- Stunting is irreversible, but it can be prevented through early
nutrition interventions in the first 2 years (= first 1,000 days),
or we can break the cycle of stunting/malnutrition over more
than one generation.



SLIDE 1.7.A. - SEVERE MALNUTRITION: LACK OF ENERGY (MARASMUS)

- Define marasmus as a lack of energy intake through drinking and/or eating.
- Causes of marasmus: infectious diseases, lack of food, not breastfeeding enough etc.

MARASMUS



SLIDE 1.7.B. - SEVERE MALNUTRITION: LACK OF PROTEIN (KWASHIORKOR)

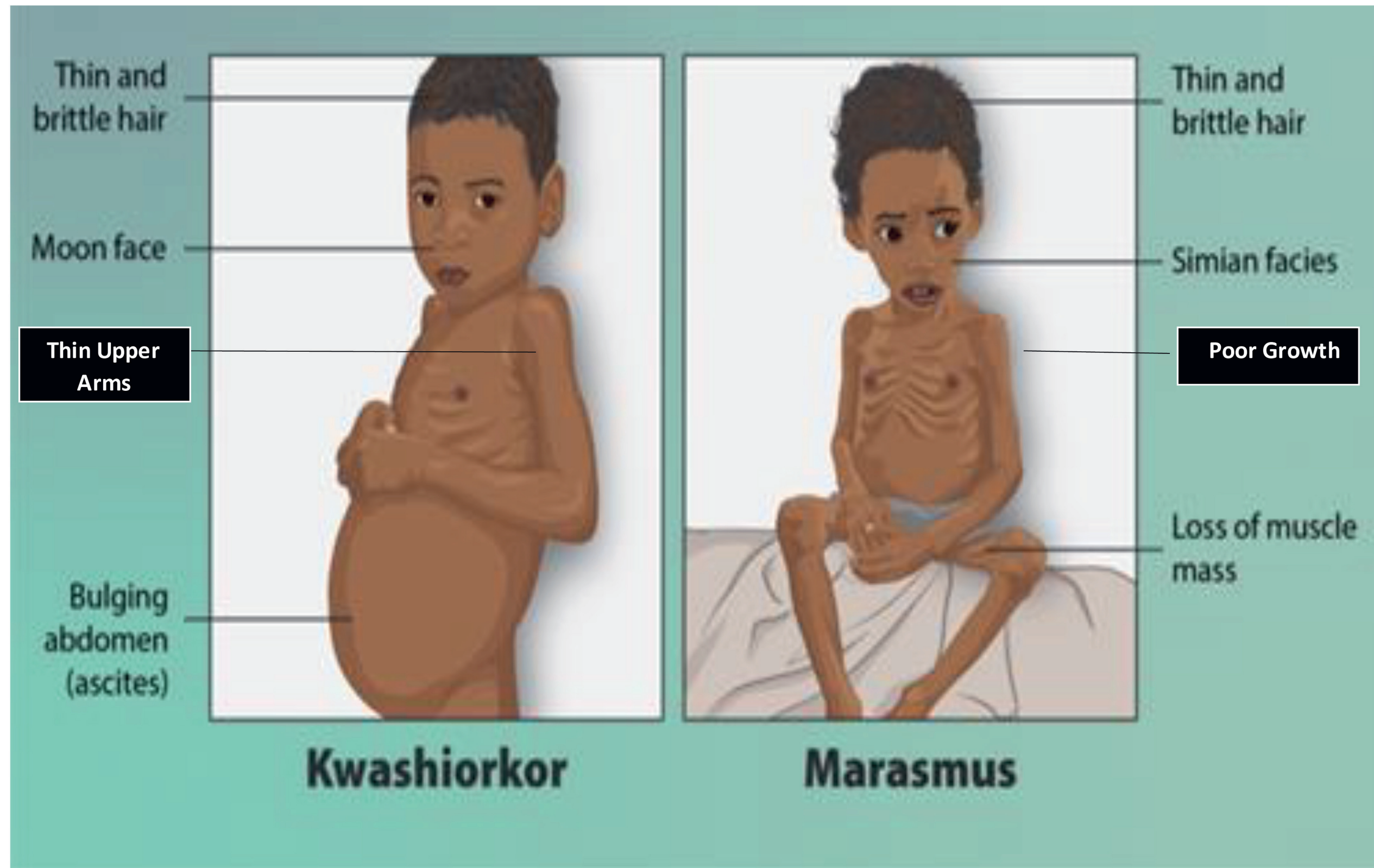
- Define Kwashiorkor as mostly a lack of protein (but also of other nutrients, with research still ongoing), e.g., children having access to carbohydrates (e.g., pap or bread) but lack protein in their diet.
- Causes of Kwashiorkor: not eating enough diverse and protein-rich food from animal or plant sources (more information later, under “No. 2: Food Groups”), as well as poor hygiene, and infectious diseases.

SLIDE 1.7.B. - SEVERE MALNUTRITION: LACK OF PROTEIN (KWASHIORKOR)



- Marasmus - Signs/Symptoms: old man/woman face, thin hair, dry skin, diarrhea, severe weight loss, loss of muscle mass and fat, poor growth, fatigue, reduced body functions and intellectual capacities.
- Kwashiorkor - Signs/Symptoms: enlarged tummy ('pot belly') with ribs visible, moon face, changes in skin color, dry hair, swelling ('edema') of feet and ankles, failing to grow or gain weight, loss of muscles, flaky rash, diarrhea, fatigue, and irritability.

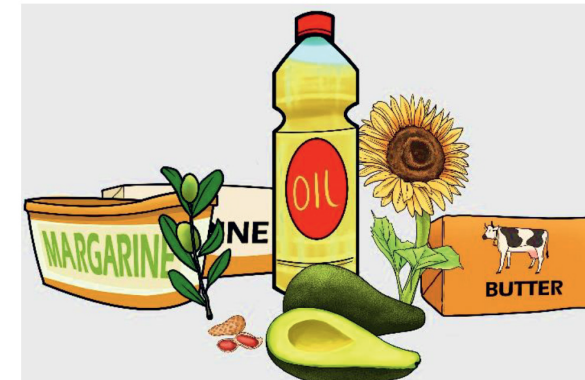
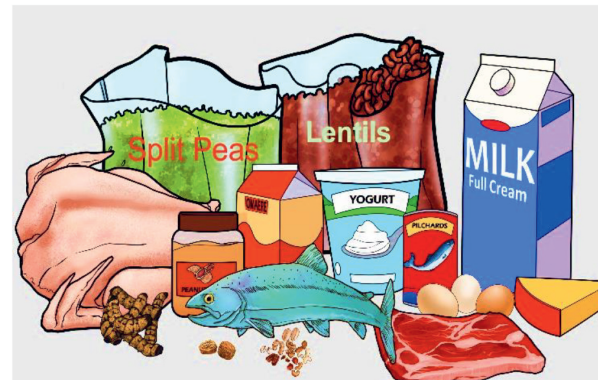
PROTEIN-ENERGY MALNUTRITION



SLIDE 1.8.A. - UNDER-NUTRITION: 'HIDDEN HUNGER' (= MICRO-NUTRIENT DEFICIENCY)

- 'Macro' = nutrients that are needed in large amounts, such as carbohydrates, proteins, and fats
- 'Micro' = nutrients that are needed in small amounts but regularly(!), such vitamins and minerals
- All of these will be explained in more detail under 'food groups', later on.

Macro-Nutrients



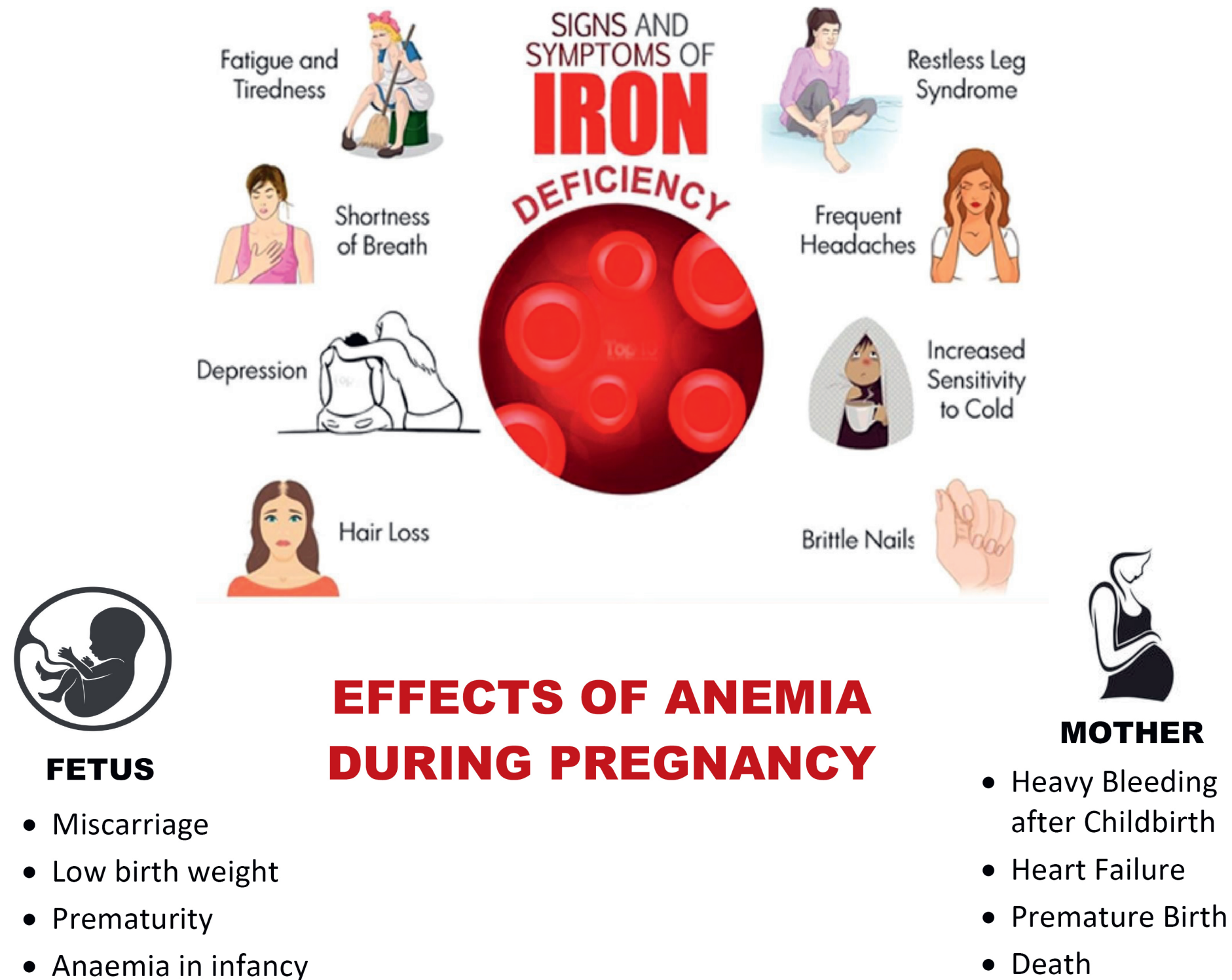
Micro-Nutrients



SLIDE 1.8.B. - MICRO-NUTRIENT DEFICIENCY (EXAMPLE: IRON DEFICIENCY ANEMIA)

- Iron deficiency (anemia) – Signs/Symptoms: tiredness, hair loss, dizziness, shortness of breath
- Anemia can be very dangerous during pregnancy, affecting the fetus: low birth weight, birth defects, etc.
- + effects on the mother: premature birth, heavy bleeding after giving birth, heart failure and even death.

SLIDE 1.8.B. - MICRO-NUTRIENT DEFICIENCY (EXAMPLE: IRON DEFICIENCY ANEMIA)



SLIDE 1.8.C. - MICRO-NUTRIENT DEFICIENCY - SOURCES OF IRON RICH FOODS

- Recommended supplements during pregnancy are important: iron & folic acids
- Food rich in iron (= natural sources of iron): spinach (mutete), legumes (chickpeas, beans etc.), pumpkin seeds, broccoli, liver, red meat, fish, dried fruits and nuts.

SLIDE 1.8.C. - MICRO-NUTRIENT DEFICIENCY - SOURCES OF IRON RICH FOODS



RED MEAT



LIVER



**LEGUMES
(PEAS & BEANS)**



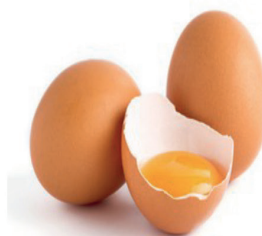
**DARK GREEN
LEAFY
VEGETABLES**



BROCCOLI



CHICKEN



EGG YOLKS



FISH & SHELLFISH



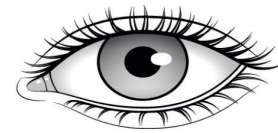
PUMPKIN SEEDS



WHOLE WHEAT BREAD

**IRON RICH
FOODS**

- Common micronutrient deficiencies in Namibia and foods that contains it: iron (already mentioned),
- Vitamin A = carrots, butternut, sweet potato, kale, spinach, mango, watermelon, orange, guava, liver and cheese
- Iodine = iodized salt, seaweed, fish, dairy (milk, yogurt), eggs and prunes
- Folic Acid (or: Folate/Vitamin B9; very important for pregnant women) = legumes (beans, peas, lentils), eggs, asparagus, leafy greens (spinach & kale), citrus fruits (lemons, oranges etc.), sprouts, broccoli, nuts and seeds.



EYES

Poor Night Vision:

Vitamin A



HAIR

Hair Loss: B2, B5, Zinc

Dry Hair: Vitamin A, E & Omega 3



SIGNS OF NUTRITIONAL DEFICIENCIES

= *“Hidden Hunger”*



TEETH & GUMS

Bleeding Gums: Vitamin C
& Folic Acid

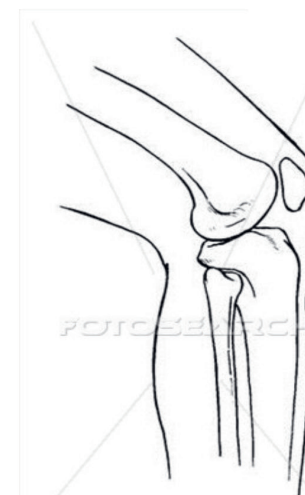
Crowded Teeth: Calcium



MUSCLES & JOINTS

Muscle Cramping:
Magnesium, Vitamin B

Edema/Swelling: B1, B6 &
Potassium



SLIDE 2.1. - OVER-NUTRITION: OVERWEIGHT (BMI: 25-29.9) + OBESE (BMI: 30+)

- In some cultures, weight-gain is seen as a sign of wealth and well-being, yet there are real health risks to it.
- Adults: Overweight = BMI: 25 – 29.9 kg/m² and Obese = BMI: 30 kg/m² + note: BMI is not a health indicator
- Children: See Growth Chart if they are overweight, yet this is often visible for the eye. Changes to eating and behavior habits are to be made as early as possible in life to ensure a healthy future life for them.

SLIDE 2.1. - OVER-NUTRITION: OVERWEIGHT (BMI: 25-29.9) + OBESE (BMI: 30+)



Let's talk **Overnutrition**:

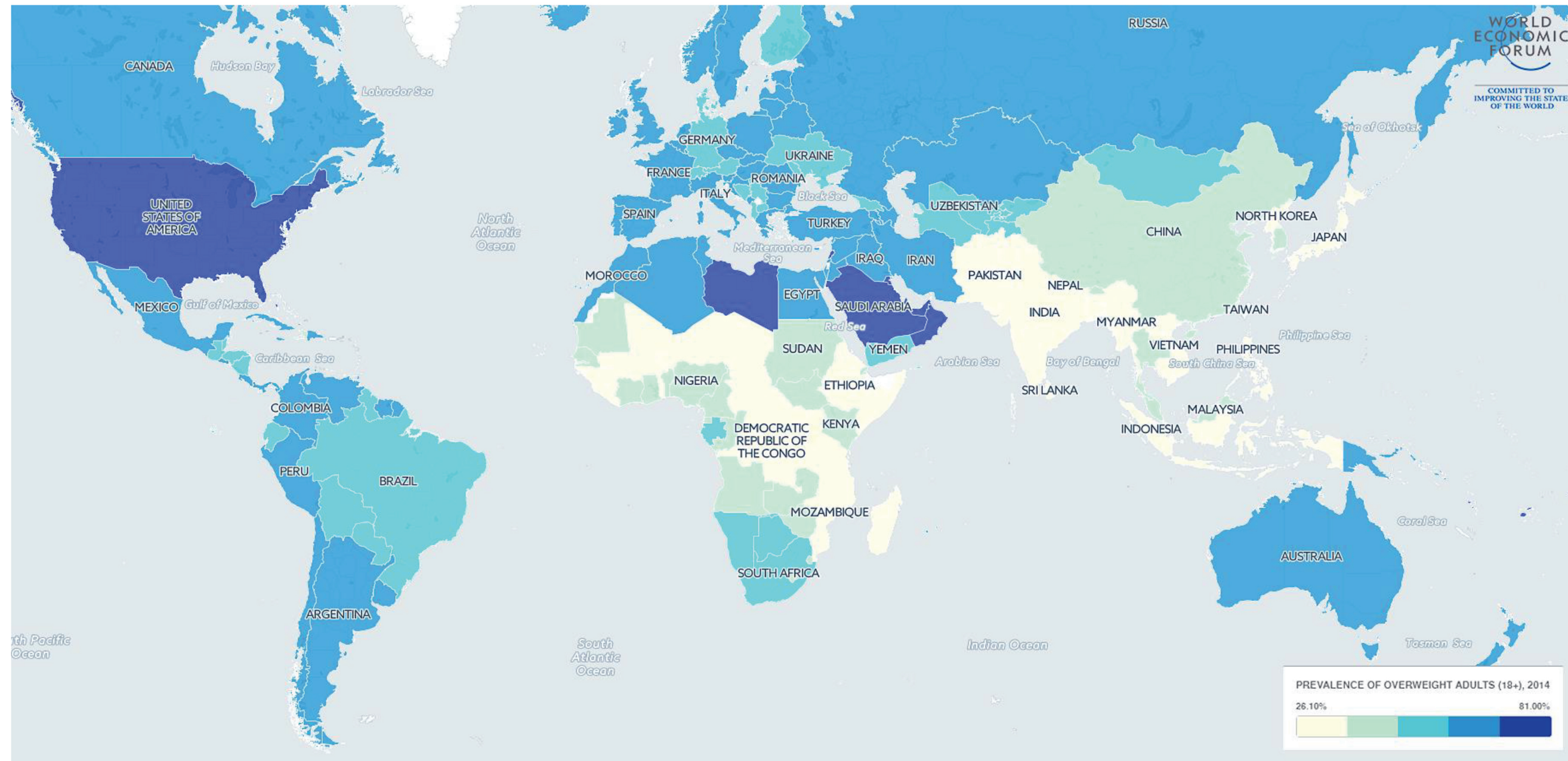
Overweight = BMI: 25-29.9

+ **Obese** = BMI: 30 +

- Globally = leading cause of preventable death (8% of the global population), with more than 2 billion people (40%) being overweight and more than 650 million even obese (13%)
- Namibia = 'Double-Burden of Malnutrition' + over 40% overweight, almost 20% even obese – with more women being overweight/obese than men, and also young people being increasingly overweight.

Note: Namibia has limited up-to-date data, so statistics at this point are merely estimate figures

SLIDE 2.2. - OBESITY: A GLOBAL PANDEMIC



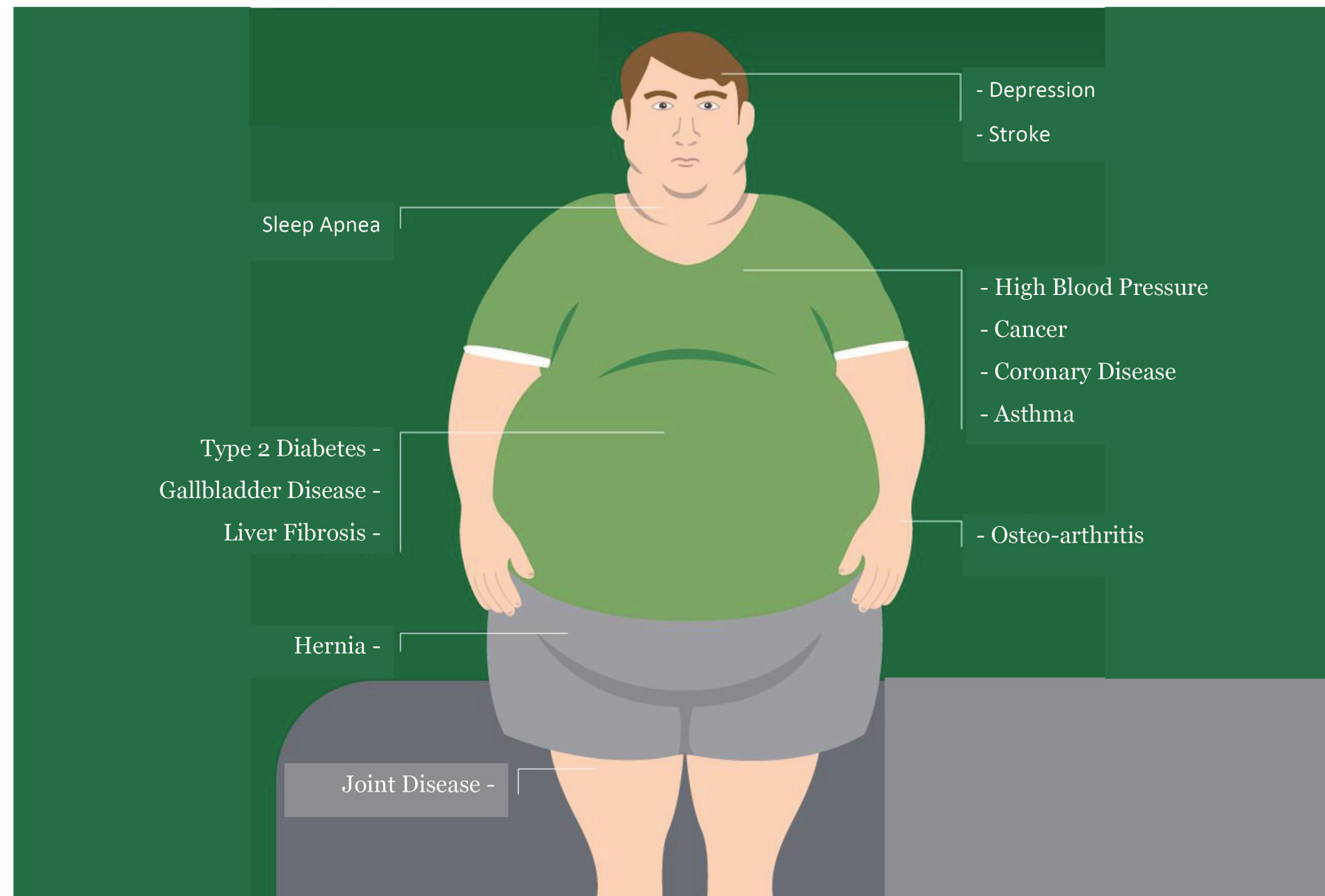
Obesity [2017] = the leading preventable cause of deaths = 4.7 million globally,
8% of global deaths attributed to obesity.

Worldwide: 2 billion+ adults overweight (**40%**), 650 million are obese (**13%**)

Namibia: Obesity rate (18 years and over) =28.9% Women and 9.7% Men. Global
Nutrition Report (2022)

- Risks of Obesity: High blood pressure, type-2 diabetes (= blindness, limb amputation, need for regular dialysis), depression, stroke, cancer, and increased health costs while having a shorter life-span.
- Costs can also be high for family, colleagues, and society at large in terms of health system costs.

Consequences of Overweight & Obesity



SLIDE 2.4. - MAIN CAUSES OF OBESITY

- Main Causes: eating too much junk food, lack of exercise, and not getting enough sleep
- Often Unknown Causes: genetics, stress, trauma, mental health, too much TV/electronics

CAUSES OF OBESITY

Genetics

Lack of
Activities

Marketing

Social Influence by
Family & Community

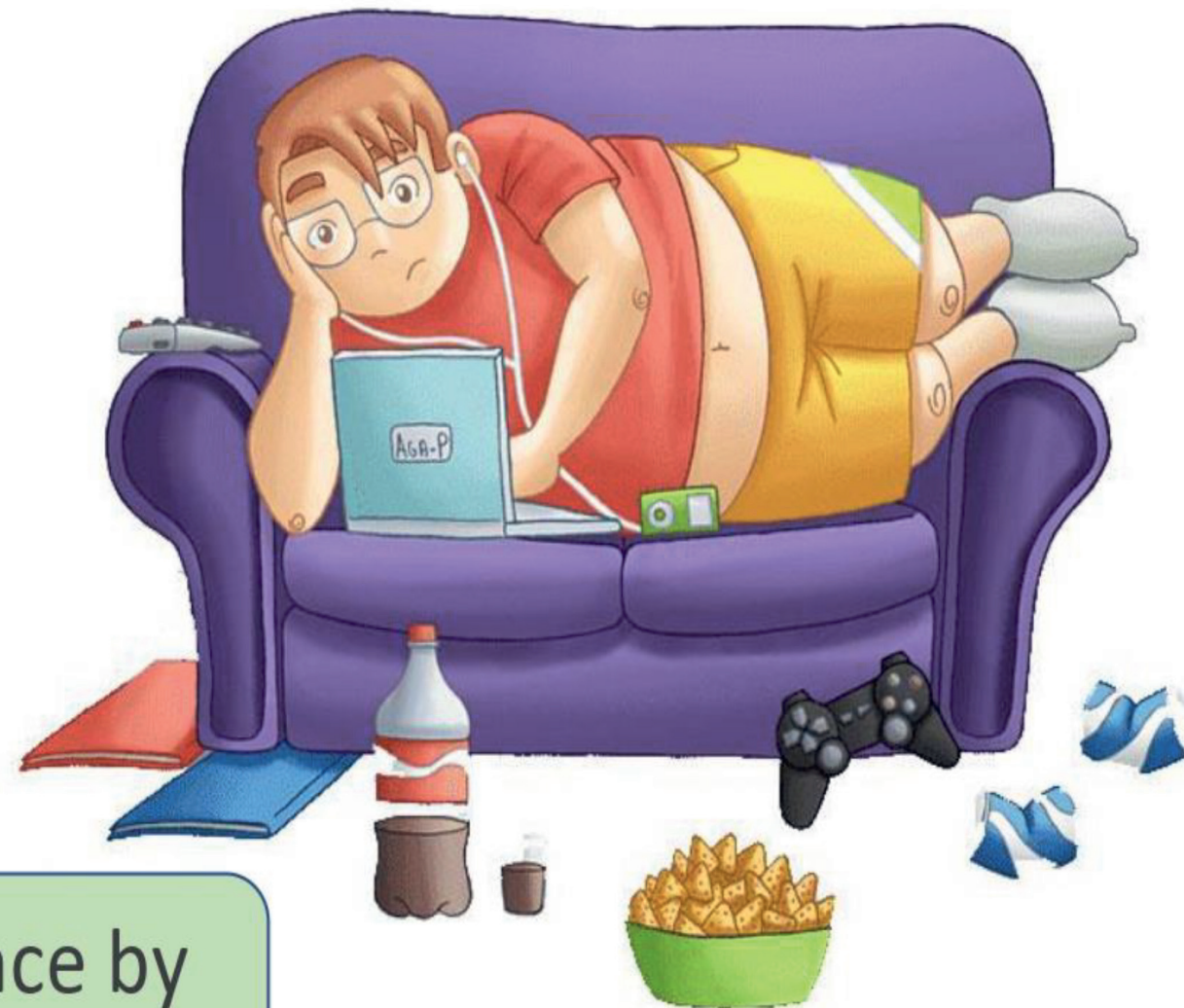
Trauma & Mental Health

Unhealthy
Eating Habits

Not enough
Sleep

Quantity &
Quality of
Food/Drinks

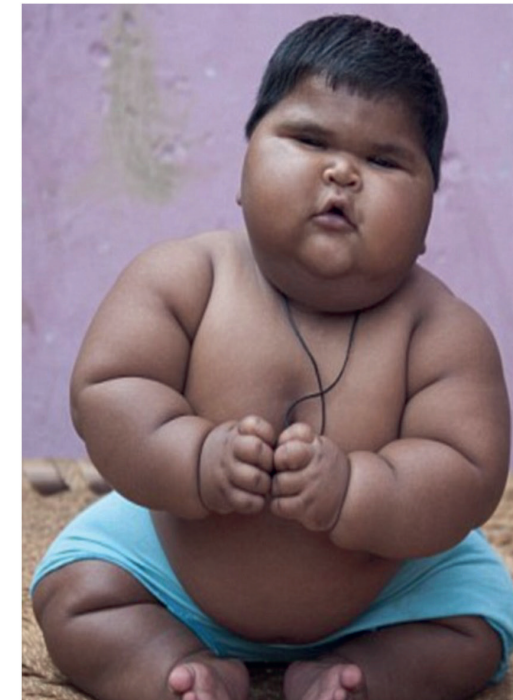
Illness & Medications



SLIDE 2.5. - CHILDHOOD OBESITY: A GROWING CONCERN

- Over 4% of children under 5 are overweight, as well as $\pm 9\%$ teenage boys and $\pm 20\%$ teenage girls.
- Emphasize the importance good eating habits at a young age, as this is when our taste-buds and habits are being formed. Hence, no sugar and no electronics until 2 years, or at least as little as possible!

CHILDHOOD OBESITY: A GROWING CONCERN



In Namibia, 4 % of children under 5 years and $\pm$ 20% of children between 5-19 years are already overweight or even obese.

Global Nutrition Report (2020)

SLIDE 2.6. - OBESITY - TREATMENT AND PREVENTION

- Obesity can be prevented and treated.
- Different ways: regular physical exercise and less screen time, more sleep, healthier eating patterns, portion control and to eat more consciously (e.g., no sweets, alcohol, soft drinks or late-night snacks), while there are also medical interventions (like medication or surgery) for very serious cases.

How Is Obesity Treated?



**Dietary changes—
what and how much**



Exercise



**Behavior modification
addressing willpower
and emotional eating**



**Prescription drugs, like
Xenical and Contrave**



**Bariatric surgery,
like gastric bypass**



**Healthcare
professionals like
dietitians and
obesity specialists**



Obesity can be **PREVENTED** by:

-  Good Nutrition
-  Less screen time
-  Physical Activity
-  More Sleep

verywell

SLIDE 2.7. - ROAD TO HEALTH: OURSELVES AND OUR CHILDREN

- Show the image: 'We are what you eat' and Let the difference between the images sink in.
- Brainstorm on healthier eating habits for firstly 'Ourselves' and secondly 'Our Children'



The road to better health and more balanced nutrition...

What can we do for ourselves and our children?