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HOW THE FIRST 1,000 DAYS OF LIFE CAN SHAPE A CHILD'S FUTURE HEALTH?

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YOUNG REVIEWERS:

DAWID
AGE: 11

DOMINIK
AGE: 13

EUGENE
AGE: 14

The first 1,000 days of life are an important period for children's growth and development. From the moment babies begin growing in their mothers' wombs until they are 2 years old, children are the most sensitive to interactions with the environment. During this time, babies grow quickly, and their organs and essential body structures are forming. Therefore, this is a very important time for mothers to keep their babies healthy, by taking care of their own health, watching what they eat and making sure they are not exposed to excessive stress or toxic substances. Doing the right things for a baby's health during this early period can set the child on the path to a healthy life.

WHAT ARE THE FIRST 1,000 DAYS OF LIFE?

Did you know that, when babies are in their mothers' wombs, they are already being exposed to factors that can contribute to diseases they may have as adults? That is why a child's first 1,000 days of life, including the 270 days of pregnancy and the following 730 days after birth, are so important. This period represents an extremely active time in a child's development (Figure 1).

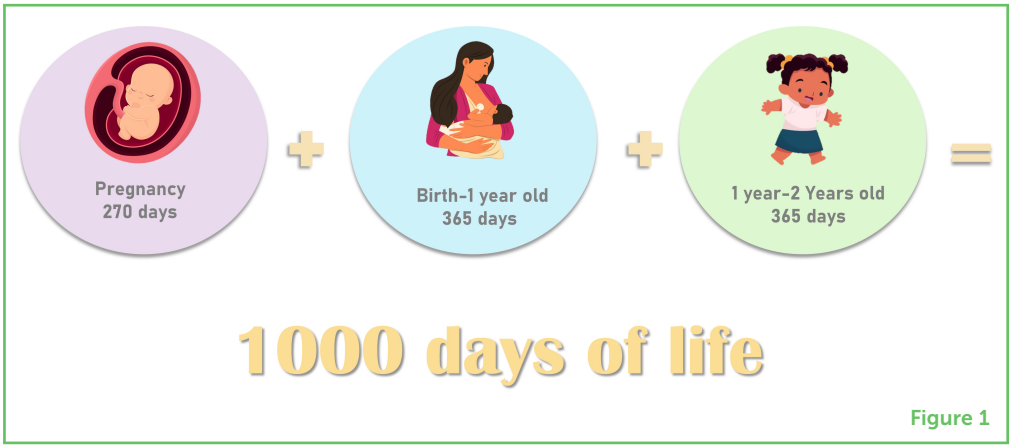

Figure 1

Figure 1

The first 1,000 days of life are a critical period for children's development, often referred to as the "golden interval". This period consists of 270 days of pregnancy, followed by the period from birth to 1 year old, during which children are fed with breast milk or formula as the main source of nutrition until solid foods are introduced. From 1–2 years old, children continue going through an intense growth process (image credit: freepik.com).

ENVIRONMENTAL FACTORS

Conditions in the environment that can affect people by interacting with their cells and even their DNA.

GENES

Tiny parts of our DNA that carry the instructions for how our bodies work. They determine things like our eye color, hair type, and even if we might get certain diseases.

DENTAL CARIES

Commonly known as tooth decay or cavities, is a dental condition that results from the damage to the teeth due to acids produced by bacteria.

During the first 1,000 days, children experience rapid growth and they are more sensitive to interactions with the environment they live in [1, 2]. **Environmental factors,** such as diet, substances in the air like cigarette smoke, and stress, can change the activity of **genes**—stretches of DNA that are responsible for creating most of a person's characteristics. When environmental factors interact with the DNA, they can cause changes in the way certain characteristics show up. For example, early exposure to toxic substances and stress can increase the risk of diseases later in childhood or in adulthood—particularly diseases that are not spread from one person to another, like **dental caries**, **obesity**, and **diabetes**. The first 1,000 days of life are so important for human development that the World Health Organization named this period the "golden interval". In addition to being a vulnerable period for children, it is also a phase in which parents have the opportunity to adopt healthy behaviors and habits that can directly influence their children's health [1].

A HEALTHY MOTHER MEANS A HEALTHY CHILD

Pregnancy is a special time in a woman's life. During this period, the mother should seek guidance from a medical team consisting of a doctor, dentist, and **nutritionist** who can assist her in making healthy choices. The choices the mother makes while pregnant can directly impact the physical, mental, and emotional health of the baby [1].

Throughout pregnancy, the baby undergoes an intense process of growth, during which important structures and organs develop, such

as the brain. During this period, the baby's cells are both dividing rapidly and becoming more specialized, and any interference with this process can influence the baby's development [3]. For example, the mother's overall health can have a direct influence on her baby's development [1]. Eating certain foods, using substances like cigarettes and alcohol, exposure to air pollutants, and the health of the mother's mouth and teeth (called **oral health**) are among these factors (Figure 2).

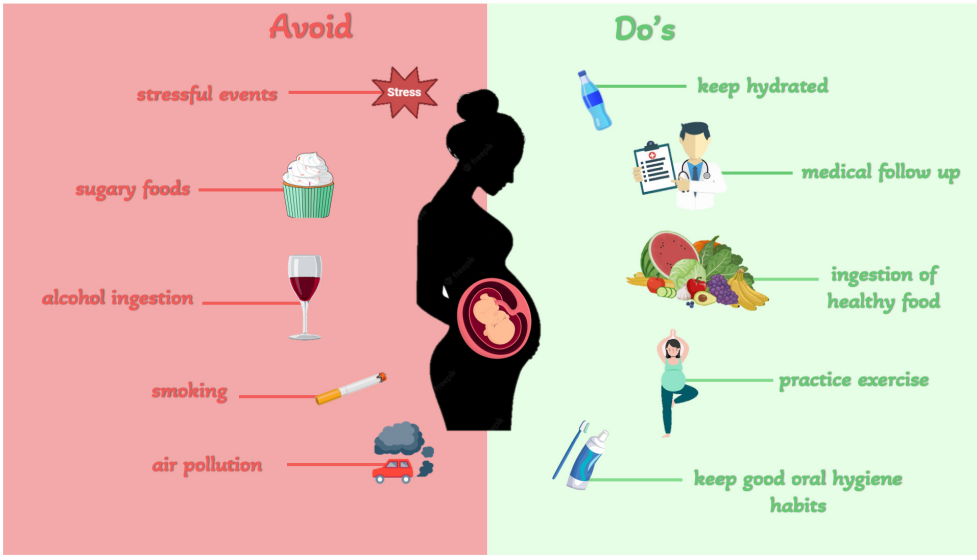

Figure 2

Eating healthy foods during pregnancy is essential for the baby's proper development, as healthy foods provide the nutrients that support the baby's growth [2, 3]. A lack of nutrients during pregnancy can damage the child's mental development, and is associated with low birth weight and with physical characteristics such as reduced height in adulthood [3]. Furthermore, eating **ultra-processed foods** and foods high in sugars can influence the unborn child's palate, potentially leading them to prefer such unhealthy foods. This means that a nutritionally poor diet can contribute to future diseases such as dental caries in early childhood and obesity [2].

The culture of a community can directly impact a mother's health in several ways. For instance, culture can influence mothers' eating habits, whether they are exposed to toxic substances such as tobacco and alcohol, whether they get the right medical care during pregnancy, and whether they have good oral health. For example, there are some Indigenous people whose values directly affect woman and children. Pregnant women in these communities experience frequent stressful events and are commonly exposed to toxic substances. They also often lack sufficient medical assistance. These cultural conditions can result in a population of children with poor health [1].

OBESITY

A condition where a person has too much body fat. It is usually measured using a number called Body Mass Index (BMI), which takes into account a person's weight and height.

DIABETES

A disease that happens when the body has trouble using sugar (glucose) properly. Sugar is an important source of energy, but too much sugar in the blood can be harmful.

NUTRITIONIST

A person who studies food and how it affects our health. They help people understand what to eat to stay healthy and feel their best.

ORAL HEALTH

The term refers to the health of our mouth, including teeth and gums, and is important for overall wellbeing and involves keeping your mouth clean and free from problems.

WHY IS EARLY CHILDHOOD SO IMPORTANT?

The first 2 years of life are known as early childhood, and during this time significant events occur that can shape children's future health [1]. During the early stages of life, a baby's nutrition is crucial, as nutritional deficiencies can negatively affect a child's brain development. The World Health Organization recommends exclusive breastfeeding for the first 6 months of life and continued breastfeeding, alongside solid foods, until at least 2 years of age. Breast milk contains all the necessary nutrients for children's growth and development during infancy (Figure 3) [4].

ULTRA-PROCESSED FOODS

Food that has been heavily processed and often contain many added ingredients, such as sugars, fats, preservatives, and artificial flavors. These foods usually have very few natural ingredients.

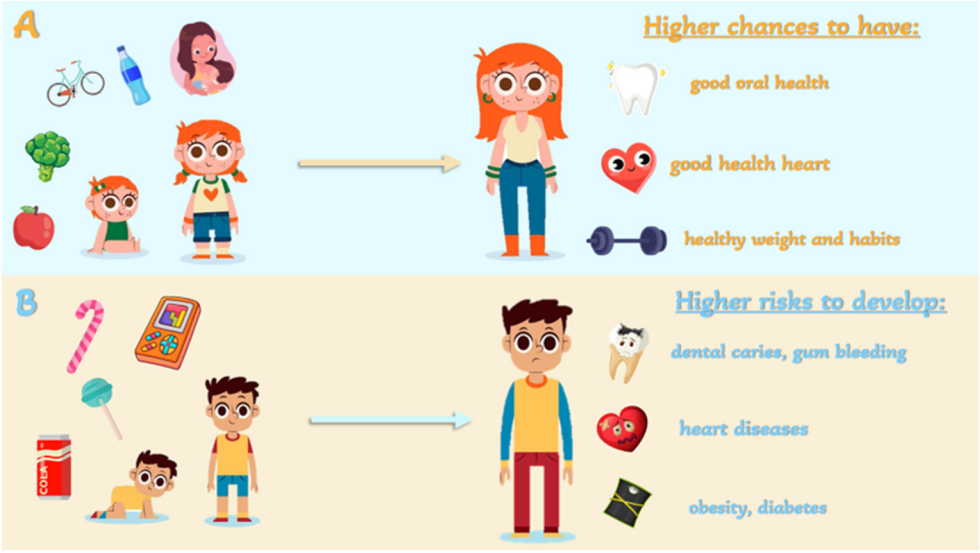

Figure 3

(A) A girl was exposed to healthy habits from early infancy. She had access to nutritious foods such as fruits and vegetables, and she did not consume sugary foods. As result, her chances of developing diseases like obesity, diabetes, and dental caries were low when she became an adult. **(B)** The boy ate poor-quality food and experienced stressful situations during infancy, which led to greater chances of health problems in adulthood (image credit: freepik.com).

When children eat too much sugary food when they are young, they may be more likely to become overweight, develop heart problems and diabetes as they get older. Sugary foods can make people gain weight, which causes inflammation, affect the types of fats present in the blood, and result in production of harmful compounds that can further hurt a child's health. Limiting the amount of sugary foods that children eat is important, to keep them healthy and help them to avoid these problems later in life [1–3].

EARLY CHILDHOOD AND ORAL HEALTH

A mother's oral health can impact her baby's oral health because behaviors like brushing teeth, flossing, and going to the dentist regularly are learned in early childhood. Children who begin these habits early in life have higher chances of continuing them during adult life. Maintaining a good oral health habits from childhood on can decrease the chances that children will develop oral diseases such as dental caries [4]. Eating lots of sugary foods in early childhood is associated with an increased risk of developing dental caries because

sugar is the main factor contributing to the development of caries [3, 5].

TAKE HOME MESSAGE

Various factors present in the environment can influence a child's growth and development and have long-lasting effects into adulthood. Diseases such as obesity, respiratory problems, and anxiety may have their origins as early as a baby's time in the womb. Therefore, it is important for parents to provide the best possible care for their babies from the moment of conception and throughout the first 2 years of life. Making the healthiest possible choices during this period can put children on the best path to being healthy as they grow up!

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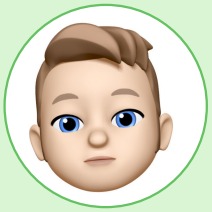
YOUNG REVIEWERS



DAWID, AGE: 11

Hi, I am Dawid, and I am in 6th grade. My hobbies include soccer, hockey, and fishing. My favorite subjects in school are science, math, and P.E. I enjoy playing FIFA and being outdoors. In the future, I want to become an Air Force pilot.

DOMINIK, AGE: 13

My name is Dominik, and I am currently in 8th grade. I am curious and passionate about science. In my free time, I enjoy figure skating, skiing, and fishing.

EUGENE, AGE: 14

Our young reviewer is a vibrant 14-year-old with a passion for music and games. At nearly 3 years old, he was already exploring toy stores and gravitating toward musical instruments. Today, he plays nicely the violin, somehow of flute, zampoña, and piano. He is also an avid video gamer, especially enjoying Blox Fruits on Roblox. His curiosity and energy extend to sports as well; he plays volleyball at school and swims in the afternoons when his homework load allows.

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