

Influences on Human Growth & Development

Let's look at 3 different things that influence human growth and development...

1. Lifestyle Choices

Our health and development depend on many factors. The lifestyle choices that we make have an important impact on our health, and they are something that we can control. Smoking, drinking alcohol, taking drugs, and eating an unhealthy diet are the most commonly discussed lifestyle choices that can have a negative impact on our health and even the health of those around us. In cases of addiction, the use of substances like drugs and alcohol becomes a compulsion more than a choice, increasing the danger to oneself and others.



Smoking damages the lungs and can ultimately cause cancer and other diseases or complications. This can happen not only to the person smoking but also to others who are exposed to another person's smoking in the form of what is called second-hand smoke. Pregnant women who smoke can harm not just themselves but the development of the **embryo** as well. Not only do cigarettes contain carcinogens (cancer-causing substances), but they are also very addictive. People who start smoking at a young age are likely to become addicted and find it very hard to quit throughout adulthood. This long-term exposure makes it more likely that they will experience adverse effects such as cancer or emphysema at some point in their lives.

Alcohol use also has many negative effects on a person's health. Long-term effects of alcohol use can negatively impact the heart, liver, brain, and many other organs and systems. Like smoking, drinking alcohol while pregnant can damage not just the person who drinks but the development of the embryo as well. Alcohol moves from the pregnant woman's bloodstream to the embryo's bloodstream. Brain and spinal cells have been found to be most negatively impacted by this transmission. The resulting mental or physical damage can be permanent.

Other drugs such as cocaine and heroin impact health and behavior. These drugs affect most of the body's organs and can cause permanent damage. Cocaine and other illicit stimulants (like methamphetamine) can cause heart attacks and brain damage. Because the liver must work harder to clean the chemicals from the blood, drug use can cause liver damage. When pregnant women use cocaine, heroin, or other illicit drugs, it affects embryo growth and increases the risk of stillbirth (the birth of an infant who has died in the mother's womb). Children born to mothers who use cocaine, heroin, or related substances while pregnant are likely to have delays in motor development.

Using heroin (and similar drugs called "opioids") and cocaine also affects mood and behavior. This can cause the user to make dangerous choices. These drugs are highly addictive, making it especially difficult to stop using them. Such long-term overuse increases the possibility of permanent health damage or death. Because these drugs are not prescribed (except for some opioids), it is easy for people who use them to overdose, especially on heroin and related substances.

Obesity is a major health concern around the world and especially in the United States. Proper nutrition, especially during teen years, goes a long way to preventing obesity. At the same time, an unhealthy diet causes more serious problems than weight gain. One such problem is atherosclerosis, which is caused when fatty substances called cholesterol are deposited inside the arteries and become plaque. This narrowing of the arteries makes the heart work harder to pump blood throughout the body. This increases a person's blood pressure, as well as the chance of having a heart attack or a stroke. Type II diabetes is another condition that can be caused by obesity. If people eat too much sugar and carbohydrates, their bodies may become resistant to the insulin that is needed to process that sugar. A person with untreated diabetes risks developing blindness, needing an amputation, and having kidney failure, a heart attack, and a stroke.

Eating unhealthily can have long-term effects on the body and its systems. It can also negatively affect human development. When pregnant women do not eat a healthy diet, they put themselves and the embryo at risk. Pregnant women who are obese are at a higher risk for gestational diabetes (diabetes during pregnancy). Gestational diabetes can lead to increased birth weight. This has been linked to higher rates of obesity later in life. Obesity during pregnancy also causes increased risk for complications for both the mother and the embryo. Pregnant women must take care to eat a balanced diet with sufficient nutrients to support themselves and the embryo. For example, pregnant women must get enough iron to produce enough red blood cells for themselves and the embryo. If pregnant women do not get enough iron, they become anemic. Severe anemia during pregnancy can increase the risk of anemia for the infant.

2. Environmental Factors

There are factors besides lifestyle choices that can impact our health and well-being—we cannot control everything. We call these uncontrollable elements environmental factors. If the environment around you is healthy, clean, and safe, chances are you have not thought about how it may affect your health.

Imagine living in a less developed place. In some of these places, people live in densely populated areas that are not equipped to hold so many people. This dense population causes air-quality issues that may affect health. Children may not have access to routine immunizations, which makes them more likely to acquire illnesses such as measles, tetanus, and polio. Regulations in less developed countries are not as strict as they are in the United States, so work conditions may be unsafe, and factories may pollute the air or water supply. Water may be far away or simply unsafe to drink because of problems with sanitation and waste disposal. This results in pollution or bacteria in the water supply that can cause diseases. Limited access to water may also affect personal hygiene, which can lead to infections and other health issues. Food resources may be hard to come by, which can lead to malnutrition, stunted growth, and weakened immune systems that are unable to fight off disease. These are all environmental factors, and they can impact one's health and the way people grow and develop.

Embryos can also be impacted by these environmental factors. Without access to vaccinations, pregnant mothers are at risk for illnesses such as rubella and chicken pox. These illnesses can impact development of the [embryo](#). If pregnant women are malnourished, the embryo may not develop properly. This can lead to birth defects or low birth weight.

Environmental factors' effect on growth, development, and health are not limited to less developed countries. In the United States, you might live near a factory or landfill that releases pollution into your air or water supply. You might live in an area where local stores do not sell or have access to fresh fruits and vegetables. You might live in an area without safe or proper areas to run and play outside. You might be exposed to radiation from the technology that is used in your community. Unlike lifestyle choices, people often do not have a lot of choice about the environmental factors that are present in their daily lives that can influence their growth and development and the growth and development of an embryo.

3. Inheritance Factors

Have you ever noticed the ways in which people in your family look similar? They might have the same color hair or a similar facial structure. These similarities are the result of inheritance. We **inherit** genes and genetic traits from our parents. Your parents each pass a set of genes down to you. These genes determine certain characteristics like how your earlobes hang, how long your fingers are, or how tall you can become with proper nutrition. However, there are many genes whose influence on your characteristics is much greater than that.

The genes we inherit from our parents' code for particular proteins. These proteins are responsible for all of our life functions. Throughout our lives, genes are switched on and off, affecting whether or not the proteins they code for will be produced. This causes changes in an organism without changing its genetic code. Epigenetics studies how changing **gene** expression changes organisms. Some genes are turned on only during the embryonic stage. For example, there are genes that trigger cell differentiation, causing some embryonic cells to become brain cells, skin cells, or liver cells. Other genes are triggered as you age, causing gray hair and muscle loss. When some genes are switched on or off, they can result in diseases like cancer. Epigenetics can be inherited, but environmental factors like what you eat and where you live can change your DNA in your genes, causing them to turn on or off.

The characteristics and traits that you **inherit** from your parents are not limited to how you look or how tall you are. The genes that your parents pass down to you may also carry genetic disorders. A **genetic disorder** is a disease that is caused by a change in DNA. Genetic disorders can cause anything from fatal disease to a medical condition that does not present any negative effects.

Genetic disorders can occur in a variety of ways. Some genetic disorders are caused by a **mutation** in a single **gene**. The mutation affects the protein for which the gene codes. If the protein has the wrong structure, it will not function correctly. This can affect the structures and functions of the organism and thereby change traits. For example, sickle cell anemia is the result of a single mutation in the gene for hemoglobin, a protein that carries oxygen in the blood. Because of this mutation, the hemoglobin has the wrong shape and cannot carry oxygen as efficiently as it should. Cystic fibrosis and color blindness are other disorders that are caused by a mutation in a single gene. Other disorders are caused by abnormalities within an entire **chromosome**, which contains many genes. These disorders are called chromosomal abnormalities, the most common of which is Down syndrome. Some genetic disorders are caused by multiple factors, including lifestyle and environmental factors. Heart disease is an example of a disorder that can be caused by genetics and brought on by lifestyle choices.

Genetic disorders can be difficult to diagnose. There is such a wide range of them that one test to detect them all is virtually impossible. There are certain genetic disorders, such as Down syndrome, that can be detected before birth. Despite that, most genetic disorders are diagnosed at birth or during early childhood. Some genetic disorders are diagnosed based on blood tests or observed traits in the individual. For example, many newborns are screened for cystic fibrosis, sickle cell anemia and other hemoglobin disorders, and metabolic disorders like galactosemia, which affects the ability to metabolize a particular sugar. Other genetic disorders are diagnosed when characteristic traits are observed. For example, color blindness might be diagnosed when parents or teachers observe children having trouble distinguishing colors. Even still, some genetic disorders can go undetected until the patient is an adult. Huntington's disease is an example of a genetic disorder that can remain hidden for years.

Because genetic disorders affect the individual's DNA, they are difficult to cure. This is because the flaw exists in every cell in the body. All cells will continue to produce the defective protein or lack the necessary gene. New treatments that attempt to replace the missing or defective gene show promise in curing genetic disorders.