

El Nino stunts children's growth in Peru

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Extreme weather events, such as El Niño, can have long-lasting effects on health, according to research published in the open access journal *Climate Change Responses*. The study, in coastal Peru, shows that children born during and after the 1997-98 El Niño have a lower height-for-age than others born before the event.

Short stature, otherwise known as stunting, is a measure of chronic malnutrition and this generally persists through to adulthood. The research highlights the need for better understanding of the global health issues that may arise and for the use of evidence to design prevention strategies, as well as supply efficient target aid and relief during future El Niño episodes.

El Niño is an extreme weather phenomenon, triggered by abnormally warm waters in the Equatorial Pacific. It is recurrent and global in nature, occurring every 2-7 years and spells disaster and disease for many. It is commonly linked to epidemics of malaria, dengue fever, cholera and diarrhoea.

El Niño affects more than four times the rate affected by [natural disasters](#). The northern coastline of Peru suffers the greatest effects of El Niño episodes, hit by heavy rainfall and severe flooding. This typically results in damage to crops and livestock.

Studying the relationship between [climate change](#), infectious diseases and poor growth in resource-poor settings in Peru for over a decade, William Checkley and his colleagues at Johns Hopkins University

conducted the first study on the long-term consequences of El Niño on human health. "Weather variability plays an important role in growth and nutrition in resource-limited settings", he explains, "The results are surprising in the sense that we were able to measure an adverse effect on child growth many years after the original 1997-98 El Niño event."

The 1997-98 El Niño episode is the most severe on record. Damaged bridges and roads isolated many rural villages, greatly restricting communities' access to food, clean water and healthcare. The researchers studied a cluster of rural villages in Tumbes, Peru, from which they selected a random sample of 2095 [children](#), born between 1991 and 2001, aged 7-18 years.

Nutritional status is an important measure of the well-being of children, so the researchers used nutritional indicators as the basis of their calculations. The height-for-age (HAZ) was calculated according to World Health Organization (WHO) Reference for children 5 to 19 years of age. "The effects of natural disasters, i.e., severe weather variability from an El Niño, have long-lasting effects on health," the article says. Children born both during and after the 1997-98 El Niño were shorter, with a lower HAZ, than would be expected.

The highest proportions of stunting were in those with the earliest birth dates. Children born in January 1991 were below the WHO reference for HAZ, while children born in later years had an improved stature. The steady linear improvement in overall nutritional status showed that HAZ increased with each subsequent year of birth. Flooding, specifically, stunted children's growth. Even three years after the initial disaster, it still affected children's [nutritional status](#).

Children born during the disaster as well as during its aftermath lacked a diet adequate for optimal growth. Having to forego nutrient or energy dense foods meant that children had a significantly lower lean mass.

"This is not surprising, given that later body composition is strongly influenced by the nutritional environment experienced in early life." Constraints on early growth, whether they occur in foetal life or infancy, can lead to other developmental problems and could increase the risk of chronic degenerative diseases.

The long-term health defects are attributed to increased infection and severe food shortages during El Niño. Damaged crops and livestock limited food reserves, while bouts of diarrhoea spiked both during and after the episode due to the warmer and wetter conditions. Checkley says, "Just as rings act as indicators of natural disasters experienced by a tree, exposure to severe weather events can leave a long-lasting mark in children." Children born post El Niño years failed to recover to pre El Niño levels.

This is a pressing matter because climate change is predicted to increase the frequency of El Niño episodes. Checkley warns that "given El Niño's cyclical nature this phenomenon may continue to negatively impact future generations." If a significant portion of young children of a county are affected, this could affect the future of a community as a whole.

More information: El Nino adversely affected childhood stature and lean mass in northern Peru Heather Danysh, Robert H Gilman, Jonathan Wells, William Pan, Benjamin Zaitchik, Guillermo Gonzalvez, Maria Alvarez and William Checkley Danysh et al. *Climate Change Responses* 2014, 1:7 www.climatechangeresponses.com/content/1/1/7

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