

Can helminth and malaria infections affect sex ratio at birth in sub-Saharan Africa? Ideas and hypothesis

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Abstract

The sex ratio (ratio of boys to girls) at birth (SRB) is about 1.05 (about 105 males to 100 females) under normal conditions and could be an indicator for monitoring demographic changes. Generally, in comparison with female fetuses, the male fetus is biologically weaker and more vulnerable to prenatal events. SRB is influenced by various factors, such as maternal malnourishment. Remarkably, maternal malnourishment and less energy intake are pivotal factors for declining SRB in humans. As estimates, the SRB is below the normal range in sub-Saharan Africa (1.03) than the normal range (1.05). On the other hand, both malaria and helminth infections are hyperendemic in sub-Saharan Africa and both diseases are associated with maternal malnourishment. Hence, an important question arises, could declining SRB in sub-Saharan Africa be influenced by malaria and helminth infections? Cumulative evidence suggests that malaria and helminth infections could influence SRB by induction of maternal malnourishment. This hypothesis provides new ideas about the variation of SRB in some regions of the world where helminths and malaria are endemic.

Keywords: Africa, helminth, malaria, malnourishment, maternal events, SRB