

CHAPTER 1: INTRODUCTION

1.1. Research Background

Anemia is caused by iron deficiency due to several factors such as less iron intake, poor iron absorption, and parasitic infections. Based on reports, more than 30 million pregnant women have anemia worldwide, with African and Southeast Asian countries accounting for 48.7% and 46.3% of the anemia burden. The Sub-Saharan area is known to have the most anemia during pregnancy cases, more than 17 million cases. Hence, making anemia a severe public health concern especially in children and pregnant women. Pregnant women could get anemia if their hemoglobin level is less than the normal range that is < 11 g/dl lowering the blood's capacity to carry oxygen to the body tissues Okia et al., 2019. Thus, increases the risk of several problems such as breathlessness for the mother and low birth weight, premature birth of the baby, low neonatal iron level, restrictions in the growth of the intrauterine, preeclampsia and also hemorrhage (Garzon et al., 2020). Moreover, unless the disease is treated early, its unfavorable health consequences remain throughout infancy, with long-term poor infant outcomes (Liyew et al., 2021) such as poor mental development, more hesitant and unhappiness in nature, and less interaction socially, based on a study by Lozoff et al., 2006.

Parasitic infections such as helminthiasis are known to give rise to anemia. This is one of the most common infections in developing countries accounting for around 2 billion cases worldwide. Hence, it is a challenge, especially for countries that are still developing (Amin & Wadhwa, 2021). Soil-transmitted helminths (STH) such as Hookworm (*Necator americanus* and *Ancylostoma duodenale*), Roundworm (*Ascaris lumbricoides*) and Whipworm (*Trichuris trichiura*) are intestinal helminths that are known to be the most common helminths to cause anemia in pregnant women (Gyorkos & Gilbert, 2014). These helminths can lead to anemia through less food intake, malabsorption, and loss of nutrients that can propose adverse health impacts on the mother as

anemia could develop and the unborn baby could have growth retardation in the intrauterine. In addition, it affects the baby's physical and mental growth (Apili et al., 2020).

Infection by hookworm is a risk for anemia; as demonstrated by a meta-analysis in 2018, even a low-intensity hookworm infection causes a substantial drop in hemoglobin. As it drops, it can lead to a severe infection. A study that looked at the different levels of *Trichuris* infection intensity showed that despite getting iron supplementation, In the second trimester of pregnancy, pregnant women with slightly elevated *Trichuris* infection had substantially lower hemoglobin levels than those without the infection (Gyorkos & Gilbert, 2014). It is more likely for anemia to occur when infected by *Ascaris* and Hookworms, according to a 2017 study by Mengistu, Zewdie, and Belew. Anemia affects 32 percent of pregnant women in Uganda, with hookworm infection accounting for 20.2 percent of cases (Apili et al., 2020). Thus, this review focuses on the link between helminthiasis and anemia among pregnant women and on the anemic cases caused by helminthiasis by also finding out the prevalence rate by objectively including articles with the desired data. Therefore, if it is found that helminthiasis is an essential key factor responsible for causing anemia, this will justify the need for helminthiasis screening, especially among frail pregnant women, so a reasonable course of treatment can be given to patients to avoid or minimize the adverse effects of anemia on the mother and child.

1.2. Research Objective / Aims

The objective of this systematic review is to find out the association between helminth infection and anemia as well as to figure out how prevalent is anemia during pregnancy that may have developed due to helminthiasis to ensure proper treatment is given to anemic pregnant women.

1.3. Research Question

Can helminthiasis contribute to anemia among pregnant women ? What is the prevalence ?

1.4. Research Hypothesis

High prevalence rate of helminthiasis among anemic pregnant women

1.5. Clinical Significance

A reasonable course of treatment to avoid morbidity and mortality rate among pregnant women suffering from anemia.