

Research Article

Low Hemoglobin among Pregnant Women in Midwives Practice of Primary Health Care, Jatinangor, Indonesia: Iron Deficiency Anemia or β -Thalassemia Trait?

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Low hemoglobin (Hb) or anemia is common among pregnant women in developing countries which may cause adverse pregnancy outcomes and maternal deaths. Our study aimed to assess Hb level measured by midwives in primary health care facility at rural area of Jatinangor, Indonesia, and to explore whether the anemia was due to iron deficiency (IDA) or β -thalassemia trait (β -TT). Pregnant women ($n = 105$) had finger prick test for Hb level during a regular antenatal care examination from October to November 2016. Hb level by finger prick test was compared with venous blood, measured by complete blood count (CBC). Indices including MCV and MCH and indices of Shine & Lal, Mentzer, Srivastava, Engels & Frase, Ehsani, and Sirdah were analyzed to differentiate anemia due to IDA and anemia due to suspect β -TT. HbA2 was measured to confirm β -TT. Anemic pregnant women were found in 86.7% by finger prick test compared to 21.9% ($n = 23$) by CBC. The prevalence of β -TT in our study was 5.7%. Hb measurement among pregnant women in low resource area is highly important; however, finger prick test in this study showed a high frequency of anemia which may lead to iron oversupplementation. A standard CBC is encouraged; MCV and MCH would help midwives to identify β -TT.

1. Introduction

Iron deficiency is the leading nutrient deficiency in the world, resulting in iron deficiency anemia (IDA) that affects infants, young children, and women of child-bearing age [1]. In pregnancy, lower hemoglobin occurs as a physiological phenomenon especially in the second trimester. Iron need is increased as a result of higher iron demand to accommodate the requirement of fetal placental unit [2]. Since anemia in pregnancy may lead to adverse pregnancy outcomes and maternal deaths [3], iron supplementation and proper nutrition are needed to fulfill the iron deficiency in pregnancy [4].

Iron deficiency is not the only etiology of anemia in the developing countries. Other coinfections, for example, helminthes, tuberculosis, and HIV, or other diseases such as diabetes mellitus may exist [5]. Interestingly, iron deficiency has a protective role for malarial infection, and iron supplementation in this malarial endemic area may thus increase the infection susceptibility [6]. Therefore, a good control of anemia in low- and middle-income countries needs to be considered [7]. Furthermore, low Hb can be caused by hemoglobinopathies, especially in area where thalassemia trait prevalence is high [8]. Individuals with thalassemia carrier may