

Conference Paper

## Systematic Review of The PICO Method Regarding The Effectiveness The Effectiveness of Giving Guava Juice (*Psidium guajava*) Women In Increasing Hemoglobin Levels

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### ABSTRACT

Hemodilusi that occurs during pregnancy makes pregnant women tend to experience a decrease in hemoglobin levels of up to 10g/dl. This increases the risk of anemia in pregnant women. Guava juice (*Psidium guajava*) is known to contain iron and other important nutrients that can help increase hemoglobin levels. This systematic review uses the PICO (Population, Intervention, Comparison, Outcome) method to evaluate the effectiveness of giving guava juice (*Psidium guajava*) to pregnant women in increasing hemoglobin levels. Literature searches were carried out using the PubMed and GoogleScholar databases with relevant keywords (Giving Guava Juice (*Psidium guajava*) to Anemic Pregnant Women to Increase Hemoglobin Levels), the systematically and gradually eliminated literature that did not meet the inclusion criteria and presented in the form of a PRISMA Diagram. From 21 pieces of literature that met the inclusion criteria, it was found that the administration of guava juice (*Psidium guajava*) could consistently increase hemoglobin levels in pregnant women. These studies also show that guava (*Psidium guajava*) can increase the iron intake needed during pregnancy. This systematic review concludes that giving guava juice (*Psidium guajava*) can effectively increase hemoglobin levels in pregnant women and this intervention can be used as a preventive, curative, and rehabilitative measure which is believed to have no long-term detrimental pharmacological effects for pregnant women. Recommendation can be used in future research to conduct larger and more controlled studies to validate the positive results that have been found in previous studies.

*Keywords: Systematic review, PICO method, guava juice (Psidium guajava), pregnant women, hemoglobin*

### Introduction

Anemia is a serious health problem, this is a condition when the hemoglobin level in the blood is below normal limits based on age, gender, and physiological status. This results in a lack of blood's ability to transport oxygen through out the body ((Kemenkes RI, 2020; Widayarti, 2021).

Globally, based on the World Health Organization (WHO, 2020), the highest prevalence of anemia is in the group of pregnant women women (37%), then the group of children aged 6-59 months (33%), and finally the group of women aged 15-49 years (30%). Likewise in Indonesia, nationally the highest cases of anemia are also occupied by the group of finally the group of teenagers aged 15-14 years (26,8%) (Kementerian Kesehatan Republik Indonesia, 2021).

In global and national cases of anemia, pregnant women have the highest prevalence. This is largely influenced by the physiological condition of pregnant women who experience hemodilution which tends to reduce hemoglobin levels by up to 10 g/dl. (5) However, anemia in pregnant women is always associated with various serious complications such as the risk of

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bleeding and fetal death. Neonatal risks can include the risk of premature birth, low birth weight, and even long-term impacts on the risk of stunting in children (Bothwell 2020; Sulistyorini, 2020).

So far the Indonesian government has made various efforts to deal with the problem of anemia, such as a program to provide iron tablets to pregnant women, teenage girls, and women of childbearing age. However, the success rate of these programs still needs to be further evaluated. Based on WHO recommendations, anemia can be prevented, treated, and monitored by regulating nutritional patterns, especially by fulfilling food sources rich in iron and Vitamin C (WHO, 2010; Wijayanti, 2020; Kementerian Kesehatan Republik Indonesia, 2022; Nugroho, 2021).

Non-pharmacological efforts in the form of setting appropriate nutritional patterns, it is hoped that interventions will not have long-term effects that can cause new problems. Thus, several studies explain that guava fruit contains non-heme iron, Vitamin C, Folic Acid; and Vitamin B12 which the body needs. Also remember that guava (*Psidium guajava*) is a tropical fruit that is easy to find in various regions in Indonesia (Pratiwi, 2021).

The urgency of this research is to comprehensively evaluate the existing evidence regarding the effectiveness of giving guava (*Psidium guajava*) juice to pregnant women in increasing hemoglobin levels. Through the PICO Method (Population, Intervention, Comparison, Outcome). So this research aims to provide a deeper understanding of the potential intervention of giving guava (*Psidium guajava*) juice in overcoming the problem of anemia in pregnant women (Wijayanti, 2020).

### **Material and Methods**

The PICO (Population, Intervention, Comparison, Outcome) methodology approach in this systematic review research optimizes a systematic and structured evaluation of the effectiveness of giving guava (*Psidium guajava*) juice to pregnant women in increasing hemoglobin levels. A literature search was carried out through the PubMed and GoogleScholar databases using relevant keywords (Guava Juice (*Psidium guajava*) OR Giving Guava Juice (*Psidium guajava*) AND Hemoglobin AND Anemia OR Anemic AND Pregnant Women OR Pregnancy). The search process was carried out systematically and in stages, starting from identifying relevant studies, selecting studies based on criteria, to extracting data and analyzing the results which were presented in the form of a PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analyses) diagram to provide a clear picture, clear and transparent regarding the study selection process and presentation of research results.

### **Results and Discussion**

The results of this systematic review research consistently show that in 21 pieces of literature, the inclusion criteria can consistently increase hemoglobin levels in pregnant women. This means that this intervention is effective in improving iron status and hemoglobin levels in pregnant women. Several studies have even shown and proven that guava (*Psidium guajava*) juice can increase hemoglobin levels because it contains non-heme iron which helps increase hemoglobin production and Vitamin C which can increase iron absorption in the body. The combination of these two factors makes guava (*Psidium guajava*) juice an effective and natural source of iron for increasing hemoglobin levels in pregnant women. However, it should be remembered that this study has several limitations, such as variations in dosing and duration of intervention used. Therefore, further larger and more controlled studies are needed to confirm these results and evaluate the long-term effectiveness of administering guava juice to pregnant women.

### **Conclusion**

This systematic review concludes that giving guava (*Psidium guajava*) juice can be effective in treating anemia in pregnant women. Even under certain conditions, giving guava (*Psidium*

*guajava*) juice is also effective and prevents and stabilizes hemoglobin levels. In other words, guava (*Psidium guajava*) juice intervention for pregnant women can be used as a preventive, curative, and rehabilitative effort to treat anemia, without having to worry about long-term pharmacological effects that are detrimental to pregnant women. This means that this intervention is relatively safe to use over a long period without causing serious side effects.

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