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# The Experiences of Nutrition Fulfillment in Mothers with a History of Anemia During Pregnancy: A Qualitative Study

## *Pengalaman Pemenuhan Zat Gizi pada Ibu dengan Riwayat Anemia Kehamilan: Studi Kualitatif*

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**ABSTRACT**

**Background:** Anemia during pregnancy is one of the most common disorders, especially in middle and poor economic countries, including Indonesia. Anemia is closely related to nutrition consumed during pregnancy.
**Objectives:** This research aimed to explore the experience of nutritional fulfillment in pregnant women with a history of anemia during pregnancy.
**Methods:** The research used a qualitative design with a phenomenological approach. The sampling technique used was purposive sampling with inclusion criteria, so a sample of 20 pregnant women with a history of anemia was obtained. Data collection was carried out through semi-structured in-depth interviews. Data analysis used the Colaizzi method.
**Results:** The results showed five themes: lack of intake and diversification of food types during pregnancy; food processing with hot temperatures and dry intensity reduces the nutritional value of food; choosing the type of food without knowing its benefits can affect health; several types of vegetables, fruit, and protein are dietary restrictions during pregnancy; and non-compliance in consuming Fe tablets regularly. Fulfillment of nutritional status is essential for pregnant women and must be fulfilled thoroughly so that anemia does not occur during pregnancy.
**Conclusions:** Mothers' lack of knowledge and inability to care for themselves during pregnancy. Lack of information, starting from the selection, processing, and consumption of food during pregnancy, can increase the mother's health risks, including anemia. Pregnant women must improve prenatal care to get education about fulfilling nutrition during pregnancy.

## INTRODUCTION

In 2015, the maternal mortality rate in Indonesia was 305 per 100,000 live births[1]. The incidence of maternal death is inseparable from various factors, namely hypertension in pregnancy, infection, circulatory system disorders, metabolic disorders, and bleeding. Bleeding has the potential to occur in pregnant women with anemia[2]. Anemia during pregnancy can also cause various adverse effects on the mother and fetus, namely increased premature birth, low birth weight (LBW), maternal and neonatal mortality, the risk of fetal asphyxia, maternal bleeding, prolonged labor, and organogenesis[3–6]. In 2018, the prevalence of anemia in pregnancy in Indonesia was 48.9%[7]. The second highest pregnancy anemia at the provincial level in 2020 is East Java at 49.9%[8]. The prevalence of anemia in pregnancy in Jember Regency in 2020 was 10% (3,872 pregnant women with anemia), and at the same time, the highest contributor to Maternal Mortality Rate (MMR) due to bleeding, which is one of the impacts of anemia in pregnancy is 18%[9].

Jember Regency Houses has 50 Public Health Centers, and one Public Health Centre had the highest pregnancy anemia in 2020, namely the Banjarsengon Health Center, with an incidence rate of 85.98% (466 anemic pregnant women). The prevalence of anemia in pregnancy is still relatively high. This must be handled quickly and requires various efforts to overcome anemia in pregnancy. The government has tried to overcome anemia in pregnant women by giving blood-added tablets (TTD) as many as 90 tablets consumed during the pregnancy period[8]. Increasing health workers' efforts to fulfill nutrition during pregnancy is also necessary. The various factors that affect pregnancy anemia are classified into six components, namely demographic status, including age, education, income, and parity; culture, including food taboos or dietary restrictions; husband or family support; antenatal care; fulfillment of balanced nutritional status; including micronutrient intake and nutritional intake. Macronutrients, infectious diseases include malaria, HIV (Human Immunodeficiency Virus), helminth infections, tuberculosis (TB), and Covid-19[10–17].



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Various studies have claimed that pregnant women lacking nutrition during pregnancy will cause various health problems; pregnant women are encouraged to choose healthy and fresh foods. Lack of fulfillment of nutrients, such as intake of micronutrients and macronutrients, dramatically affects the health of pregnant women and fetuses. Intake of micronutrients is commonly called consuming vitamins and minerals during pregnancy. Vitamins and minerals during pregnancy must be adequately fulfilled, namely the consumption of Fe tablets, folic acid, vitamin A, B vitamins (B1, B2, B3, B6, B12), vitamins C and E, vitamin D, calcium, and zinc[18]. While the intake of macronutrients can be obtained by consuming various types of food, food intake during pregnancy has increased. The importance of balanced nutrition for mothers during pregnancy is to avoid various risks to the mother and fetus. So, researchers are interested in digging deeper into the experience of fulfilling nutrition in mothers with a history of anemia during pregnancy. Researchers are interested in digging deeper into the experience of fulfilling nutrition in women with a history of anemia during pregnancy.

## METHODS

Qualitative phenomenological research would explore the meaning that occurs in women who have been pregnant with a history of anemia. The purposive sampling technique was selected with inclusion criteria, namely mothers with a history of anemia in pregnancy with hemoglobin <11 g/dL and mothers who did not have chronic diseases. A total of 20 participants participated in the research. Participants were obtained from data from the community health center and regional midwives. The interview guide developed from previous research, such as choosing and processing types of food, non-adherence in consuming fe tablets, disorders and barriers to accessing health, and psychological disorders in pregnant women. In total, there are 19 questions. The interview duration was 20-60 minutes.

The research was conducted from 7 April 2021-20 July 2022, accompanied by village cadres. Researchers did not know each other's participants or cadres before the interview began. Interviews were conducted face-to-face at the participants' houses according to their wishes and recorded using Android audio. Researchers have confirmed that the recorder was audible and the battery was full. Researchers took participants according to data from the community health center and found 20 participants according to data saturation. Respondent characteristic data includes age, education level, occupation, family income/month, parity, and Hb (Hemoglobin) in trimesters 1 and 3. During COVID-19, the research implemented health protocols by maintaining a one-meter distance, wearing masks, using hand rubs, and opening windows and doors during the research. This research used a Colaizzi scheme with the following stages: The researchers listened to the recording and composed a transcript of the interview. After compiling the interview transcript, the researchers read it repeatedly to find essential words and marked them with a highlighter. Then, the researchers made a significant statement, determined the code, made sub-themes and themes according to the research results, and consulted the supervisor to consider the contents of the transcript to maintain its quality; after that, the researchers validated the participants and united all the data and began to compile the results chapter in descriptive form. This research has been carried out as an ethical test by the ethics permits commission for the Faculty of Dentistry, Airlangga University, with certificate number 604/HRECC.FODM/XI/2021.

## RESULT AND DISCUSSION

The study results were divided into two parts, namely participant characteristics and the theme of the analysis results. Participant characteristics, including participant data information and hemoglobin in the first and third trimesters during pregnancy, while the study's results found five analysis themes.

**Table 1.** Frequency distribution of characteristics of mothers with a history of anemia during pregnancy in the working area of the Banjarsengon Health Center, Jember Regency

| Participants | Age (Years) | Education Level | Occupation | Family Income/month | Parity | Hb Trimester 1 | Hb Trimester 3 |
|---|---|---|---|---|---|---|---|
| P1 | 32 | High School | Housewife | <IDR 1,800,000 | 2 | 9.0 | 10.3 |
| P2 | 20 | High School | Housewife | <IDR 1,800,000 | 2 | 9.0 | 10.8 |
| P3 | 23 | Bachelor | Employer | IDR 1,800,000 | 1 | 9.8 | 10.0 |
| P4 | 20 | High School | Housewife | <IDR 1,800,000 | 1 | 9.8 | 10.2 |
| P5 | 24 | High School | Housewife | <IDR 1,800,000 | 2 | 9.8 | 10.5 |
| P6 | 29 | High School | Housewife | >IDR 1,800,000 | 1 | 10.0 | 10.8 |
| P7 | 37 | High School | Housewife | <IDR 1,800,000 | 3 | 9.0 | 10.3 |
| P8 | 37 | High School | Freelance | >IDR 1,800,000 | 3 | 9.0 | 10.5 |
| P9 | 27 | Primary School | Farmer | <IDR 1,800,000 | 1 | 9.3 | 10.0 |
| P10 | 20 | Primary School | Housewife | <IDR 1,800,000 | 1 | 9.7 | 10.3 |
| P11 | 29 | Junior High School | Housewife | IDR 1,800,000 | 2 | 10.0 | 10.3 |



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| Participants | Age (Years) | Education Level | Occupation | Family Income/month | Parity | Hb Trimester 1 | Hb Trimester 3 |
|---|---|---|---|---|---|---|---|
| P12 | 27 | High School | Housewife | <IDR 1,800,000 | 1 | 9.0 | 10.6 |
| P13 | 36 | None | Farmer | <IDR 1,800,000 | 2 | 9.0 | 9.6 |
| P14 | 32 | Bachelor | Teacher in Kindergarten | >IDR 1,800,000 | 2 | 9.0 | 10.6 |
| P15 | 20 | Primary School | Housewife | <IDR 1,800,000 | 1 | 10.0 | 10.8 |
| P16 | 28 | High School | Freelance | <IDR 1,800,000 | 2 | 13.1 | 10.3 |
| P17 | 25 | Primary School | Housewife | <IDR 1,800,000 | 2 | 9.3 | 10.8 |
| P18 | 29 | Junior High School | Housewife | >IDR 1,800,000 | 2 | 8.6 | 9.3 |
| P19 | 27 | High School | Housewife | >IDR 1,800,000 | 2 | 7.4 | 10.5 |
| P20 | 27 | High School | Housewife | >IDR 1,800,000 | 1 | 9.8 | 10.5 |

Hb (Hemoglobin)

The age of the participants varied from 20 years to 37 years. The education level of the majority was high school. Most participants were married with 1-3 children and worked as IRT (housewives). The number of participants was 20 people. The majority, as much as 60% of monthly family income, was below the minimum wage ((IDR 300,000 until IDR 1,500,000) of standard wages per month or UMR (Regional Minimum Wage) IDR 1,800,000). History of maternal anemia during pregnancy with Hb 7.4 g/dl-10.8 g/dl.

**Theme 1: Insufficient Intake and Diversification of Food and Beverage Types Pregnant Women with Anemia**

The majority, as much as 80% of participants, consumed more sources of carbohydrates, such as white rice, corn rice, steamed/boiled cassava, fried cassava, cassava chips, sweet potato, boiled corn, dates, crackers, toast, and sweet drinks such as coffee and sweet tea, *Pocari Sweat*, sweetened condensed milk, mango, banana, roasted soybeans, corn omelet, *Bakpia, Lontong,* instant noodles, meatballs, *Malkist, Roma kelapa*. According to participants P1, P2, P3, P4, P5, P6, P7, P8, P10, P11, P12, P14, P15, P16, P18, P19 as follows:

*"Every day I run out of kilos of dates, Miss. Once I eat 10 dates, I do not know how many in one day, Miss. Then I like mung bean Bakpia, and I often buy it, Miss, I can finish five a day, sweet cassava chips too, Miss, hehe I also eat rice three times a day, yes, two spoonsful, Miss. (P3.Q6.S46)."*

All participants also consumed foods and drinks high in calcium, such as cassava leaves, papaya leaves, cassava chips, fried tempeh, fried tofu, fried chicken, fried gizzard, fried meat, chicken liver, catfish, Peda fish, skipjack tuna, anchovies, cabbage, spinach, red spinach, moringa leaves, green beans, bean sprouts, *Kenikir*, boiled long beans, milk for pregnant women, tea, fresh coffee, according to participants P1-P20.

*"Drinking Prenagen milk, every month I always buy 400 g. I drink one small glass in the morning and evening, as big as a cup of coffee. I also often eat boiled cassava leaves and papaya leaves, Miss. I also like drinking tea in the morning (P8.Q6.S19)."*

In addition to consuming more food and drinks with high carbohydrates and calcium, the participants consumed other foods such as animal protein, vegetable protein, and fruit in small portions.

**Theme 2: Food Processing is too Cooked with the Hot Temperature Consumed by the Mother Pregnant with Anemia**

All dominant participants processed their food by frying, several processed it by boiling, and three processed it by steaming and grilling, as stated by participants P1-P20.

*"Almost all of my food is fried, Miss, except vegetables. I like it, it is fried and salty, Miss, but sometimes it is also steamed when I eat it with chili sauce. (P4.Q4.S26)"*

All participants processed their fried food with dry intensity (crispy), except participant 14, as stated by participants as follows:

*"If I am making sambal, then I just dry it (tempeh processing), but often I dry the crunchy one (P5.Q4.S16)*

Processing various foods processed by frying, participants prefer the dry or crispy food intensity.

**Theme 3: Likes and Ease of Getting are the Main Reasons for Pregnant Women with Anemia Choose the Food They Eat**

All participants (P1-P20) chose the food types they consumed since it was easy to find, as the participant's statement is as follows.

*"Because the cobs are always available in the market, Miss., It is easy to find them, and I like it. I drain boiled vegetables, and I always like vegetables (P19.Q5.S8)*



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Some participants revealed that the reason for consuming food with the principle of being able to fill it up was as stated by participants P4, P5, and P9.

*"If you eat Cilok, you do not know whether it is good or not for my health; I need to eat and be full, not hungry (P.9.Q1.S3)."*

The method of selecting food types consumed by participants during pregnancy was easy to find, and they liked it, where participants also consumed food based on filling without knowing the benefits of the food.

**Theme 4: Pregnant Women Believe in the Taboo to Consume Certain Types of Food**

Almost all participants, except participants P3 and P11 in the research, did dietary restrictions, such as the following participants.

*"I am not allowed to eat Cecek, ferns, cobs, banana bud, bamboo shoots. If the bamboo shoots are cooked with the banana buds, the child will become hairy, Miss. If I eat shrimp, it's said that the child does not want to come out. If I eat Cecek, the amniotic fluid membranes are thick, Miss. If I eat eggs, it will cause the membranes to burst (P17.Q6.S11)."*

Food types that were taboo to consume during pregnancy were pineapple, squid, shrimp, durian, banana bud, eggs, offal, *Cecek*, ferns, cobs, and bamboo shoots in pregnant women with a history of anemia.

**Theme 5: Pregnant Women with Anemia do not Take Fe Tablets Regularly**

All participants, except participants P3 and P12, did not regularly comply with taking Fe tablets, such as the following participants.

*"I think that there is a baby inside, why I have to take medicine all the time, Miss, so when I get the medicine, I will throw it away (P2.Q11.S47)."*

In addition to the side effects of blood-added tablets that caused discomfort, some participants also did not understand how to take them correctly, which could reduce the benefits of the tablets, as stated by Participant 7.

*"Once, the Luwak coffee. Once I drank blood-added tablets and I wanted to vomit, so my husband gave me Luwak coffee; it immediately tasted relieved, so I drank blood tablets with the Luwak coffee (P7.Q6.S21)."*

The majority, as much as 70% of the participants in this research, did not comply with taking blood-added tablets regularly since their husbands forbade it, were too worried about the baby, forgetting, being lazy, causing nausea and vomiting caused by the smell of blood-added tablets, and dizziness, and how to consume Fe tablets that are not quite right can result in iron being absorbed by the body not optimally.

**Lack of Intake and Diversity of Food and Drink for Pregnant Women with Anemia**

Based on the data analysis, women with a history of dominant anemia consumed high content of carbohydrates and calcium obtained from various types of food and beverages and lacked intake of vegetable protein, animal protein, and fruit. Meanwhile, the fulfillment of balanced nutrition is vital for the needs of the mother and fetus during the pregnancy period, considering that the nutritional needs during pregnancy are increasing. Maternal nutritional needs during pregnancy have increased, including carbohydrates +180-300 g/day, protein +1-30 g/day, fat +2.3 g/day, fiber +3-4 g/day, water +300 ml /day, vitamin A + 300 RE/day, vitamin C +10 mg/day, calcium +200 mg/day, iron +0-9 mg/day[19]. Fulfilling balanced nutrition such as carbohydrates, animal protein, vegetable protein, vegetables, fruit, water, vitamins, and minerals in sufficient quantities is needed [18,20]. Some studies explain that pregnant women who consume fewer types of food and are less exposed to information about nutritious foods will be more at risk of anemia. The research results showed that participants consumed more carbohydrate foods or were not interspersed with animal or vegetable protein (not varied), while pregnant women need a variety of foods because they have to meet the mother's nutritional needs and the fetus's growth and development. A variety of foods can minimize the mother experiencing anemia during pregnancy. Researchers also stated that pregnant women in Ethiopia consume more wheat (96.5%) but consume less seafood and meat[13]. Another research explains that a lack of knowledge about the importance of consuming nutritious food causes anemia in pregnant women[19]. Lack of dietary diversity can be a risk for anemia in pregnancy.

Consuming calcium during pregnancy is vital to form the fetus's teeth and bone [21]. However, it is different from the calcium contained in food. Calcium in food is a nutrient that inhibits iron absorption in other types of food[22]. Calcium will bind iron before the intestinal mucosa absorbs it into an insoluble substance, reducing its absorption. With reduced absorption of iron due to these inhibitory factors, the amount of ferritin will also decrease, which impacts decreasing the amount of iron used to replace damaged hemoglobin[22,23]. This condition causes the hemoglobin level in the blood to be low[22,23]. Research explains that during pregnancy, consuming between 40 and 300 mg of calcium per day, there will be an interaction between calcium and iron. Calcium can reduce iron absorption by up to 40%[23–25]. In contrast to calcium in supplement form, as much as 300 or 600 mg had no effect in reducing iron supplementation containing 37 mg or 18 without food[23]. So, pregnant women must understand and know every content or food substance consumed daily so the mother and fetus remain healthy until delivery.

**Process of Food Processing for Pregnant Women with Anemia**

Based on the data analysis, most mothers with a history of anemia cook by frying, and some of the participants cook with a wood-burning stove, where the timing temperature cannot be controlled when heating.



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This condition is in line study which states that the cooking process by frying is most often done at the household level. The hot temperature of frying households reaches 160 degrees Celsius. Therefore, some nutrients, including vitamins and protein, are estimated to be damaged. Mineral depletion ranged from 5% to 40%, especially calcium, iodine, zinc, selenium, and iron[26,27].

Frying is the processing of food by heating it with oil[28]. Food by frying can reduce protein levels because, during the cooking process, some of the cooking oil will occupy the cavities of the food ingredients to replace the position of the evaporated water so it can reduce the protein content in the food and increase the fat content caused by the oil that evaporates and seeps into the food ingredients[29]. Other researchers also explained that cooking by frying causes water leaching. Evaporation of the water will open pores on the surface of the food filled with cooking oil, causing the fat content in the food to increase[28].

**Likes and Easy to Get, Which is Dominant in the Choice of Food During Pregnancy**

Based on data analysis, mothers with a history of anemia prefer foods that are easy to consume and without knowing the benefits of these foods for the health of the mother and fetus during pregnancy. Pregnant women who are less informed in food choices are seen from several factors, namely the type of food, cooking methods, likes, dislikes, beliefs, and dietary restrictions related to producing, preparing, and consuming food. Pregnant women who lack information about healthy and balanced foods choose foods according to the mood of the day, religious beliefs, and prioritizing satiety, without any benefits for pregnant women and babies[30]. This is in line with a study that explains that rice, eggs, fish, and vegetables are chosen mainly by the community in the village to meet their daily food needs. Since rice is a staple food menu, eggs, and fish are the most easily accessible and affordable food menu served, and more vegetables consumed are obtained without buying[31]. Research explains that sensory attraction or feeling like is more important than health, where liking implies that food's taste, texture, and appearance satisfy their selection[32].

Meanwhile, besides liking, the availability of food products in shops and vegetable sellers near the house can motivate someone to buy these foodstuffs[33]. The health quality of pregnant women is strongly influenced by behavior during pregnancy. Health behavior is a form of socialization of a person with her environment, which can affect a person's knowledge and actions about health. One of them is done by pregnant women in choosing food. The food choice for pregnant women must meet nutritional needs from early pregnancy to delivery[34]. Pregnant women need good quality food according to the condition of the mother's body, not excessive and not lacking[35]. The food consumed by pregnant women should follow the feeling of liking and be easy to obtain and the nutritional needs of the food needed for health during pregnancy. Various explanations regarding the food choices for pregnant women and health workers are essential in providing information and knowledge about demonstrations of nutritious food during pregnancy that can meet all nutritional needs.

**Food Taboo in Pregnant Women with Anemia**

Based on the data analysis, mothers with a history of anemia perform dietary restrictions during pregnancy by not consuming various types of fruits (pineapple, durian), animal protein (squid, shrimp, eggs, offal, *Cecek*, tuna), and vegetables (banana bud, fern, eggplant, and bamboo shoot). Doing these food taboos is believed to make the uterus feel hot and lead to miscarriage when consuming pineapple and durian, makes the amniotic fluid thick when consuming *Cecek*, makes it difficult for the baby to come out during delivery, and makes the baby's eyes squint, and experiences premature rupture of the membranes if consuming shrimp. Eggs, squid, offal, and cobs make babies' skin wrinkled if they eat eggplant, and I believe it makes babies have lots of hair all over their bodies if they eat bamboo shoots. This finding is in line with the study, which explains that pregnant women in Ethiopia and Kenya should not consume vegetables such as spinach, lettuce, kale, and broccoli, which are believed to cause infection of the fetus, giant baby, and difficulty during delivery[17,36]. Pregnant women are also not allowed to consume organ meats (offal) believed to harm the fetus or the fetus dies in the womb. Pregnant women are not allowed to eat bananas; it is believed that the food consumed by the mother will stick to the head of the fetus. It is not allowed to consume the tongue of cows and sheep since it is believed that the baby cannot talk. Several studies state that dietary restrictions can lead to nutritional deficiencies, including anemia and chronic energy deficiency (KEK)[37–39]. Pregnant women should consume various types of food, considering that there are several increases in nutritional intake during pregnancy to avoid adverse effects on pregnant women, including anemia[20].

**Knowledge of Pregnant Women about Consuming Fe Tablets during Pregnancy**

Based on the data analysis, mothers with a history of anemia during pregnancy were not routine. They did not consume Fe tablets regularly due to various obstacles, such as not liking the smell of Fe tablets, nausea, vomiting, dizziness, laziness to consume, forgetting, being forbidden by their husband, and being too worried about the fetus's condition. Maternal barriers to consuming Fe tablets will continue to increase the occurrence of anemia during pregnancy, which will affect maternal health. One of them is bleeding during childbirth[40,41]. The perceived side effects and the lack of support from the closest family and health workers caused non-adherence to consuming Fe tablets. Research explains that pregnant women who do not regularly consume Fe tablets have a higher risk of anemia than those who adhere to Fe, with a significant value of 0.001[42,43]. The importance of consuming iron during pregnancy is to protect maternal health and maintain perfect fetal development[42]. Iron can be obtained from various types of food such as chicken liver, beef liver, red meat, beans, and green vegetables[44]. However, maternal



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iron daily requirements for pregnancy have increased by 800 grams[44]. The World Health Organization (WHO) explains that pregnant women should consume 30-60 mg Fe tablets per day[45]. The increase in iron during pregnancy is not enough only from food but is supported by consuming Fe tablets regularly for 90 days following government regulations to avoid various problems in pregnancy[44].

They need to be increased in antenatal care to get education about improper care related to nutritional fulfillment during pregnancy. Meanwhile, for health services, especially nurses, it is necessary to improve the anamnesis efforts in general; nurses can dig up information about the types of food consumed every day, observe ecological factors such as the participants' physical and biological factors, physical examination, biology, environment (sanitation) and culture (food taboos according to beliefs). Individual). If there are signs of deficiency in fulfilling nutrition, the nurse continues with examinations such as blood tests to determine a substance, one of which is iron deficiency. With a quality history, nurses can conclude these findings as adequate or insufficient nutrition. Afterward, the nurse can analyze and estimate the lack of food ingredients and how to solve the findings. So, we need to collaborate with other health workers, such as doctors and nutritionists, to make a structured plan related to nutrition fulfillment, especially for pregnant women with anemia. Suggestions for further researchers can develop the latest innovations to raise awareness of anemic pregnant women in taking care of themselves, such as creating interactive educational media, emo demos, applications about nutritious food during pregnancy, Fe-supporting foods, the importance of consuming Fe tablets and other vitamins, and care for anemic pregnant women).

## CONCLUSIONS

In conclusion, this study reveals that there was a lack of knowledge and the inability of pregnant women to take themselves in accordance with healthy pregnancy.

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## REFERENCES

1. Central Bureau of Statistics of Indonesia. Angka Kematian Ibu Menurut Pulau. *Badan Pusat Statistik* https://www.bps.go.id/indikator/indikator/view_data/0000/data/1349/sdgs_3/1 (2020).
2. Ministry of Health of Indonesia. *Profil Kesehatan Indonesia Tahun 2019*. (2020).
3. Ministry of Health of Indonesia. *Infodatin (Pusat Data dan Informasi) Situasi Gizi*. (2016).
4. Lin, L. *et al.* Prevalence, Risk Factors and Associated Adverse Pregnancy Outcomes of Anaemia in Chinese Pregnant Women: A Multicentre Retrospective Study. *BMC Pregnancy Childbirth* **18**, 1–8 (2018).
5. Novianti, S. & Aisyah, I. S. Hubungan Anemia pada Ibu Hamil dan BBLR. *Jurnal Siliwangi* **4**, (2018).
6. Swamilaksita, P. D. Efikasi Suplementasi Zat Gizi pada Ibu Hamil terhadap Hasil Kehamilan. *Media Gizi Mikro Indonesia* **8**, 27–42 (2016).
7. Badan Pusat Statistik. Prevalensi Anemia pada Ibu Hamil. *Badan Pusat Statistik* https://www.bps.go.id/indikator/indikator/view_data/0000/data/1333/sdgs_2/1 (2020).
8. Ministry of Health of Indonesia. *Profil Kesehatan Indonesia Tahun 2019*. (Kementerian Kesehatan RI, 2020).
9. East Java Health Office. Buku Data Menurut Provinsi dan Kabupaten. *Profil Kesehatan Provinsi Jawa Timur* (2020).
10. Ali, S. A. *et al.* Predictors of Iron Consumption for at Least 90 Days During Pregnancy: Findings from National Demographic Health Survey, Pakistan (2017–2018). *BMC Pregnancy Childbirth* **21**, 1–12 (2021).
11. Bahizire, E. *et al.* Malaria is More Prevalent Than Iron Deficiency Among Anemic Pregnant Women at the First Antenatal Visit in Rural South Kivu. *American Journal of Tropical Medicine and Hygiene* **97**, 1551–1560 (2017).
12. Begum, K. *et al.* Prevalence of and Factors Associated with Antenatal Care Seeking and Adherence to Recommended Iron-Folic Acid Supplementation among Pregnant Women in Zinder, Niger. *Matern Child Nutr* **14**, 1–11 (2018).
13. Delil, R., Tamiru, D. & Zinab, B. Dietary Diversity and Its Association with Anemia among Pregnant Women Attending Public Health Facilities in South Ethiopia. *Ethiop J Health Sci* **28**, 625–634 (2018).
14. Gibore, N. S., Ngowi, A. F., Munyogwa, M. J. & Ali, M. M. Dietary Habits Associated with Anemia in Pregnant Women Attending Antenatal Care Services. *Curr Dev Nutr* **5**, 1–8 (2021).
15. Kumera, G., Haile, K., Abebe, N., Marie, T. & Eshete, T. Anemia and Its Association with Coffee Consumption and Hookworm Infection among Pregnant Women Attending Antenatal Care at Debre Markos Referral Hospital, Northwest Ethiopia. *PLoS One* **13**, 1–14 (2018).
16. Mohammed, S. H., Taye, H., Larijani, B. & Esmaillzadeh, A. Food Taboo Among Pregnant Ethiopian Women: Magnitude, Drivers, and Association With Anemia. *Nutr J* **18**, 19 (2019).
17. Nasir, B. B., Fentie, A. M. & Adisu, M. K. Adherence to Iron and Folic Acid Supplementation and Prevalence of Anemia



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among Pregnant Women Attending Antenatal Care Clinic at Tikur Anbessa Specialized Hospital, Ethiopia. *PLoS One* **15**, 1–11 (2020).
18. Mousa, A., Naqash, A. & Lim, S. Macronutrient and Micronutrient Intake During Pregnancy: An Overview of Recent Evidence. *Nutrients* **11**, 1–20 (2019).
19. Harahap, D. A., Afrinis, N. & Hamidi, M. N. S. Perbedaan Konsumsi Pangan Ibu Hamil Anemia dan Nonanemia di Public Health Centre Tapung Hilir 1. *Jurnal Kesehatan Komunitas* **7**, 387–391 (2021).
20. Rahmawati, W. & Anggraeny, O. Balanced Nutrition Pregnancy. *1 September 2016* http://gizi.fk.ub.ac.id/en/gizi-seimbang-ibu-hamil/ (2016).
21. Mate, A., Reyes-Goya, C., Santana-Garrido, Á. & Vázquez, C. M. Lifestyle, Maternal Nutrition and Healthy Pregnancy. *Curr Vasc Pharmacol* **19**, 132–140 (2020).
22. Rieny, E. G., Nugraheni, S. A. & Kartini, A. Peran Kalsium dan Vitamin C dalam Absorpsi Zat Besi dan Kaitannya dengan Kadar Hemoglobin Ibu Hamil: Sebuah Tinjauan Sistematis. *Media Kesehatan Masyarakat Indonesia* **20**, 423–432 (2021).
23. Waldvogel-Abramowski, S. *et al.* Physiology of Iron Metabolism. *Transfusion Medicine and Hemotherapy* **41**, 213–221 (2014).
24. Candia, V. *et al.* Effect of Various Calcium Salts on Non-Heme Iron Bioavailability in Fasted Women Of Childbearing Age. *Journal of Trace Elements in Medicine and Biology* **49**, 8–12 (2018).
25. Ríos-Castillo, I., Olivares, M., Brito, A., Romaña, D. L. de & Pizarro, F. One-month of Calcium Supplementation does not Affect Iron Bioavailability: A Randomized Controlled Trial. *Nutrition* **30**, 44–48 (2017).
26. Sun, Y. *et al.* Domestic Cooking Methods Affect Nutrient, Phytochemicals, and Flavor Content in Mushroom Soup. *Food Sci Nutr* **7**, 1969–1975 (2019).
27. Nguju, A. L., Kale, P. R. & Sabtu, B. Pengaruh Cara Memasak yang Berbeda terhadap Kadar Protein, Lemak, Kolesterol dan Rasa Daging Sapi Bali. *Jurnal Nukleus Peternakan* **5**, 17–23 (2018).
28. Lee, S., Choi, Y., Jeong, H. S., Lee, J. & Sung, J. Effect of Different Cooking Methods on the Content of Vitamins and True Retention in Selected Vegetables. *Food Sci Biotechnol* **27**, 333–342 (2018).
29. Sundari, D., Almasyhuri & Lamid, A. Effect of Cooking Process of Composition Nutritional Substances Some Food Ingredients Protein Source. *Media Litbangkes* **25**, 235–242 (2015).
30. Ministry of Health of Indonesia. Perilaku Kesehatan Ibu Hamil dalam Pemilihan Makanan untuk Menjaga Kehamilan. (2022).
31. Abdul Rahman, S., Muzaffar Ali Khan Khattak, M. & Rusyda Mansor, N. Determinants of Food Choice Among Adults in an Urban Community. *Nutr Food Sci* **43**, 413–421 (2013).
32. Santoso, S. O., Janeta, A. & Kristanti, M. Faktor-faktor yang Mempengaruhi Pemilihan Makanan pada Remaja di Surabaya. (Universitas Kristen Petra, 2017).
33. Reskiyanti. Perilaku ibu Hamil dalam Memilih Makanan Sehat. (Universitas Islam Negeri Alauddin Makassar, 2021).
34. Muhamad, Z., Hamalding, H. & Ahmad, H. Analysis of Dietary Patterns on Pregnant Mother with Chronic Energy Deficiency (CED) in Health Centre of Pulubala Gorontalo District. *Jurnal Komunitas Kesehatan Masyarakat* **1**, 48–57 (2019).
35. Riang'a, R. M., Broerse, J. & Nangulu, A. K. Food Beliefs and Practices Among the Kalenjin Pregnant Women in Rural Uasin Gishu County, Kenya. *J Ethnobiol Ethnomed* **13**, 29 (2017).
36. Onyeneho, N. G. *et al.* Factors Associated with Compliance to Recommended Micronutrients Uptake for Prevention of Anemia During Pregnancy in Urban, Peri-Urban, and Rural Communities in Southeast Nigeria. *J Health Popul Nutr* **35**, 1–17 (2016).
37. Placek, C. D., Madhivanan, P. & Hagen, E. H. Innate Food Aversions and Culturally Transmitted Food Taboos in Pregnant Women in Rural Southwest India: Separate Systems to Protect the Fetus? *Evolution and Human Behavior* **38**, 714–728 (2017).
38. Tobing, V. Y., Afiyanti, Y. & Rachmawati, I. N. Following the Cultural Norms as an Effort to Protect the Mother and the Baby During the Perinatal Period: An Ethnographic Study of Women's Food Choices. *Enferm Clin* **29**, 831–836 (2019).
39. Allard, S. Anaemia in Pregnancy: A Renewed Focus Needed. *BJOG* **122**, 169–169 (2015).
40. Smith, C., Teng, F., Branch, E., Chu, S. & Joseph, K. S. Maternal and Perinatal Morbidity and Mortality Associated with Anemia in Pregnancy. *Obstetrics and Gynecology* **134**, 1234–1244 (2019).
41. Pratiwi, R. & Widari, D. Hubungan Konsumsi Sumber Pangan Enhancer dan Inhibitor Zat Besi dengan Kejadian Anemia pada Ibu Hamil. *Amerta Nutrition* **283–291** (2018).
42. Georgieff, M. K. Iron Deficiency in Pregnancy. *Am J Obstet Gynecol* **223**, 516–524 (2020).



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43. Sarah, S. & Irianto. The Influence between the Obedience Level in Consuming Fe Tablet and Anemia Incidentat the Third Trimester Pregnancy at Pejeruk Health Center 2017. *Jurnal Kedokteran Yarsi* **26**, 75–82 (2018).
44. Ministry of Health of Indonesia. *Pentingnya Konsumsi Tablet Fe Bagi Ibu Hamil*. (2018).
45. World Health Organization. *Nutritional Anaemias: Tools for Effective Prevention and Control*. (2017).



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