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Case Report

Successful Pregnancy and Vaginal Delivery after Oxytocin Massage for Nulliparous Women with Anemia and Undetected Foetal Congenital Anomaly: An Indonesian Case Report

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Abstract: ***Background*:** A factor that contributes to the poor health of both the mother and the fetus is Anemia. Pregnant women must therefore receive prenatal care that includes the identification and management of Anemia properly. ***Case Presentation***: This case report provides an analysis of the pregnancy circumstances of Mrs. R, a 22-year-old housewife from a middle-class socioeconomic background, who is anticipating her first child. From the pregnancy data obtained, Mrs. R experienced anemia, supported by supporting examinations of hemoglobin levels. The management provided included iron supplementation and the consumption of beetroot, which has been proven to be an effective food to increase hemoglobin levels. At 40 weeks of pregnancy with no signs of labor, it was recommended to engage in sexual intercourse to stimulate contractions and undergo oxytocin massage at 40 weeks and 4 days of pregnancy. The parturition process ultimately took place at 40 weeks 5 days of gestation, spontaneously. The total duration of the first stage of labor was 22 hours, the second stage was 2 hours, the third stage was 11 minutes, and the fourth stage was 2 hours. The baby was born spontaneously, cried loudly, weighed 3,600 grams, and showed a cranial deformity, specifically asymmetric head shape. There were no complications during labor and the postpartum period. Although Mrs. R is deeply committed to maintaining a healthy pregnancy, managing the Anemia that was detected in the early stages of the pregnancy presents a formidable challenge. Through her scrupulous observance of monthly prenatal examinations and regular administration of blood supplement tablets and additional multivitamins, Mrs. R effectively controlled her Anemia, thereby facilitating the successful culmination of the delivery procedure. ***Conclusion:*** Accurate evaluation of anemia during pregnancy is crucial for the proper treatment of anemia. In Indonesia, the effective treatment of severe anemia necessitates the implementation of policies, provision of high-quality resources, and establishment of sufficient facilities and infrastructure. Addressing the issue of anemia in Indonesia can serve as a viable approach to mitigating instances of postpartum hemorrhage, hence reducing the maternal and neonatal mortality rates.

Keywords: Anemia; Antenatal; Childbirth; Complication; Pregnancy.

BACKGROUND

Maternal mortality resulting from hemorrhage continues to be prevalent in Indonesia, where Anemia during pregnancy is one of the contributing factors to such incidents (Manikam, 2021; Wiesenack *et al.*, 2023). Based on data provided by the Family Health Programme under the Ministry of Health, Indonesia experienced a total of 7,389 maternal fatalities in 2021. A rise in fatalities of 4,627 was observed in comparison to the preceding year, 2020. Blood loss (1,320 cases), hypertension in pregnancy (1,077 cases), cardiovascular disease (335 cases), infection (207 cases), metabolic disorders (80 cases), circulatory system disorders (65 cases), abortion (14 cases), and other factors accounted for the remaining 1,309 cases of maternal mortality in 2021 (Kemenkes RI, 2022).

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The optimisation of maternal services during pregnancy should be implemented to prevent maternal fatalities that transpire during labour and postpartum (Sari *et al*., 2022), However, previous research found various determinants that caused pregnancy care not to be carried out optimally. Sebayang, Efendi and Astutik (2019) conducted research on women's empowerment and the use of pregnancy care facilities in Southeast Asia, it was found that women's empowerment had a significant correlation with the number of antenatal visits. Denny *et al.,* (2022) stated that several determinants that can influence pregnancy visits include age, marital status, education level, parity and economic status.

The study conducted by Nurdiana and Nurlailasari (2020) examined the standard of pregnancy care delivered by midwives in Karawang Regency. The results indicated that enhancements were necessary in this regard, as midwives exhibited inadequate adherence to protocols regarding blood supplement tablet administration, mother's height and weight measurement, and duration of care. Counselling is completed in under ten minutes.

In a study conducted in Indonesia, Andriani *et al*., (2022) discovered that maternal and child health services are frequently unsustainable due to disparities in access to health service facilities, maternal socioeconomic status, and parity. Consistent with this, Wulandari, Laksono and Rohmah (2021) further assert that the location of mothers' residences in Indonesia, specifically between urban and rural regions, influences the frequency of their antenatal visits. According to the findings of a study by Downe *et al.,* (2019), an individual's inclination to undergo a prenatal examination is additionally impacted by their perception and convictions regarding the healthiness or danger of pregnancy, their responses to pregnancy, and regional sociocultural conventions concerning prenatal care.

Consequently, a comprehensive case study was undertaken on Mrs. R to investigate her entire pregnant journey up until the childbirth. The aim was to investigate the effects of naturally occurring events, impacted by both internal and external variables, on maternal health.

CASE PRESENTATION

This case report details the progression of pregnancy in a 22-year-old lady named Mrs. R, who is a homemaker with a high school degree, up until the point of delivery. This is her inaugural pregnancy and there is no documented history of miscarriage. Mrs. R is a homemaker whose financial situation is currently reliant on her husband's earnings as a private sector job, earning approximately 5-6 million Rupiah per month. Mrs. R and her husband reside in an industrial zone that is highly susceptible to water, soil, and air contamination. They rely on groundwater for cooking and consume refilled mineral water for drinking. Mrs. R confirms that she has no medical history of any conditions that could complicate pregnancy, nor is she currently experiencing any such ailments. Mrs. R actively sought out information on maternal and child health during her desired pregnancy, utilizing multiple media channels such as the internet and direct communication with healthcare professionals.

The pregnancy and childbirth data of Mrs. R was collected from multiple sources, such as medical record data, interview data, and direct observation during the provision of pregnancy and childbirth care.

First Trimester

At 6 weeks of pregnancy, Mrs. R had her first prenatal visit with the midwife. During this time, she reported experiencing common symptoms such as nausea and dizziness. However, these symptoms were considered to be within the normal range, allowing Mrs. R to continue her daily activities without any disruptions to her eating and drinking habits. A blood pressure measurement of 120/80 mmHg was conducted. The current weight was 64 kg, while the weight before pregnancy was 62 kg. The body mass index (BMI) was calculated to be 25.6. The findings of the prenatal examination were found to be within normal range. On the next day, Mrs. R went to the community health center for a prenatal check-up and had a hemoglobin examination in the laboratory there. The physical examination and pregnancy yielded normal results, however, the hemoglobin examination revealed a hemoglobin level of 10.7 gr/dL. Mrs. R has been diagnosed with slight Anemia and is at a moderate risk of pregnancy. The midwife administered 30 pills of iron supplement, each containing 60 mg of iron, and 10 tablets of folic acid, each containing 400 µg.

At 12 weeks of gestation, Mrs. R underwent a prenatal examination with the midwife. Despite experiencing persistent nausea, it does not significantly affect her appetite or ability to perform daily tasks. The mother currently weighs 63 kg. The findings of the prenatal examination are normal. The midwife prescribed 30 tablets of iron supplement, each containing 60 mg of iron, and 10 tablets of folic acid, each containing 400 µg.

Second Trimester

During the second trimester, Mrs. R underwent a total of 4 examination visits, consisting of 3 visits with the midwife and 1 visit with the obstetrician.

Mrs. R, who was 16 weeks pregnant, was visiting the midwife for a prenatal check-up. She suffered from daily bouts of vomiting and was unable to consume some varieties of fish since they had a tendency to trigger vomiting. The present weight measured 68.1 kg., Mrs. R was prescribed a total of 60 iron supplement tablets, to be taken twice daily.

At 22 weeks of pregnancy, Mrs. R had a prenatal visit with the obstetrician. The examination revealed a blood pressure reading of 90/50 mmHg, a weight of 71.9 kg, and a uterine fundus height of 21 cm. A 2-dimensional ultrasound examination was performed, which showed that the pregnancy was progressing normally. The estimated weight of the baby was 470 grammes, the position of the placenta was normal, and there was an adequate amount of amniotic fluid. The doctor refrained from prescribing vitamins as Mrs. R still possessed the vitamins provided by the village midwife. Mrs. R did not undergo a hemoglobin test during the second trimester.

Third Trimester

29 weeks of pregnancy, Mrs. R had an examination with the midwife, she stated that since she was 28 weeks pregnant, she had consumed 1 glass of beetroot juice per day since the she was apprehensive about the findings of her hemoglobin examination in the first trimester. Her vital signs and physical examination yielded no abnormalities. The prenatal examination revealed a uterine fundus height of 25 cm, indicating a favorable condition for both the fetus and the mother. The midwife provided a total of 30 tablets iron supplement, each containing 60 mg, the recommended daily dosage is 2 tablets.

At 32 weeks of pregnancy, Mrs. R had a routine check-up with the midwife at the health center. The findings of the examination showed that her vital signs and physical condition were within normal range. Her weight was recorded as 76 kg, and her height was measured as 28 cm. The fetus was found to be in good health. The hemoglobin test was conducted with a reading of 8.2 g/dL. The midwife recommended increasing the intake of iron supplement tablets to three times a day. Two days later, Mrs. R underwent another hemoglobin test at a different clinic, which yielded a result of 9.9 g/dL. The therapy with iron supplement tablets was continued at a frequency of three times per day.

At 35 weeks pregnant, Mrs. R underwent a prenatal examination with an obstetrician-gynecologist. Mrs. R sought information regarding the baby's cranial descent and the projected fetal weight. After conducting an examination, the doctor determined that the mother's weight was 81 kg. The ultrasound revealed that the fetus had a head presentation, was alive, and weighed 2,987 grammes. The gender of the fetus was male. The estimated due date for delivery is December 5, 2023. The clinical pelvimetry showed that the mother's pelvis is suitable for childbirth. The doctor advised the mother to schedule another appointment in 2 weeks. The doctor did not issue extra iron tablets, because Mrs. R still had additional iron tablets from the community health center.

At 36 weeks of pregnancy, Mrs. R underwent an examination with a midwife. The results showed that her body weight was 77 kg, the measurement of the fundal height was 30 cm, the baby's head had not yet engaged in the pelvis, and the estimated fetal weight was 2,900 g. The findings of the hemoglobin examination were 8.3 g/dL. Mrs. R did not receive further iron supplement tablets as she still had some from the health center. However, she was prescribed 20 tablets of 500 mg calcium to be taken once daily. To facilitate the descent of the baby's head, Mrs. R is recommended to engage in daily mild walks and perform pelvic rocking exercises, taking into account her individual capabilities.

At 37 weeks pregnant, Mrs. R had a prenatal check-up to the community health center. The examination revealed that both the mother and fetus were in good condition. Mrs.'s weight was 82 kg. The baby's head had not started to move down into the pelvis. Currently, Mrs. R did need a hemoglobin test, the test showed a level of 8.5 g/dL. Subsequently, the midwife directed her to the hospital for additional evaluation by an obstetrician-gynecologist. Upon arrival at the hospital, Mrs. R underwent a routine pregnancy examination, except a repeated hemoglobin check. The doctor prescribed Obimin AF supplements for Mrs. R, with a dosage of 7 pills to be taken once daily. Additionally, the doctor advised Mrs. R to schedule a follow-up appointment in 1 week.

Mrs. R, who is currently 38 weeks pregnant, returned to the community health center for a prenatal check-up with the midwife. The physical examination and vital signs showed no abnormalities. The height of the uterine fundus measured 31 cm, indicating normal growth. The condition of the fetus was also found to be healthy. Additionally, Mrs. R underwent a hemoglobin examination at the community health center, which revealed a result of 8.7 g/dL, Mrs. R was referred to the hospital again by the community health center. After 1 day, she underwent an examination at the hospital with funding from Indonesia National Health Insurance (BPJS). The results of the physical examination and vital signs were normal. Mrs. R's weight was 82 kg. The doctor conducted an abdominal examination and ascertained that the baby's head had engaged in the pelvis. An ultrasound examination was conducted, revealing an estimated fetal weight of 2.9 kg. The condition of the fetus was deemed to be good. The examination included an assessment of the patient's hemoglobin levels, which were found to be 10 g/dL. In response, the doctor prescribed a multivitamin supplement containing 20 tablets of Obimin AF, the obstetrician-gynecologist informed Mrs. R that she is in a healthy state and can deliver her baby under the care of a midwife.

The current regimen consists of administering blood supplement tablets twice day, as prescribed by the health center, and taking an Obimin AF from the doctor once daily.

During the 40th week of pregnancy, contact is now taking place through WhatsApp. Mrs. R has mentioned that she has not had any indicators of labour. Therefore, it was suggested that Mrs. R engage in sexual intercourse with her spouse in order to provoke contractions.

Childbirth: The mother is currently at 40 weeks and 4 days of pregnancy. Despite engaging in sexual intercourse, she has not had any signs of labour as of 09:45 in the morning. Consequently, at 17:00, the mother received an oxytocin massage at home from a midwife. At 19:30 on the same day, Mrs. R experienced a sensation of contact occurring twice every 10 minutes, lasting for 15 seconds each time. Mrs. R sought the services of the midwife for a medical evaluation. The vital signs examination yielded normal results. The mother's weight is 84 kg. A portion of the baby's head has descended into the pelvic outlet. Mrs. R's cervics examination revealed a dilation of 2 cm, with the baby's head at Hodge 1 position. The following day at 10.00, the mother enters the active stage of labour, specifically the process of cervical dilation. At 15:00, there were 4 instances of uterine contractions occurring every 10 minutes, lasting for 40 seconds each. The intensity of the contractions increased by 17:00, and the cervix was fully dilated by 18:59. At this time, the baby was born spontaneously and cried vigorously. The baby weighed 3,600 grammes and exhibited a head deformity characterized by asymmetry. While giving birth, Mrs. R the duration of the 1st stage of labour is 22 hours, whereas the 2nd stage lasts for 2 hours.

DISCUSSION AND CONCLUSIONS

Pregnancy-Related Anemia

Anemia is a medical illness characterized by a decrease in the concentration of hemoglobin (Hb) and/or the quantity of red blood cells in the body, resulting in an insufficient delivery of oxygen to the tissues due to the body's physiological demands. This circumstance will impact multiple organs in the human body, exacerbating health concerns in vulnerable populations, including maternal and neonatal health conditions (Chaparro & Suchdev, 2019; Pradhan *et al*., 2021).

Anemia is categorized into three types: Microcytic Anemia, Normocytic Anemia, and Macrocytic Anemia. Microcytic Anemia refers to Anemia characterized by mean corpuscular volume (MCV) levels below 80 dL, typically caused by iron deficiency. Normocytic Anemia, on the other hand, is Anemia resulting from chronic disease. Macrocytic Anemia can be further classified into megaloblastic and non-megaloblastic Anemia. Megaloblastic Anemia is identified by the excessive division of neutrophils and the presence of abnormally large oval-shaped red blood cells in the outer layer of the blood. This condition is caused by abnormalities in the production of RNA and DNA. Non-megaloblastic Anemia does not exhibit these morphological defects. Folate and Vitamin B12 deficiencies are the typical causes of microcytic Anemia (Newhall *et al*., 2020).

Anemia during pregnancy arises from insufficient erythrocyte levels in the maternal body, which can result from inadequate dietary intake of iron, prolonged infections, deficiencies in vitamins A, B12, and folic acid, or underlying health conditions that lead to blood loss, such as abnormalities in blood and kidney function. Anemia during pregnancy can be considered normal as it is a process that adapts to boost blood flow to the placenta by reducing the thickness of the mother's blood and to enhance the delivery of oxygen and nutrients to the fetus by increasing the number of red blood cells. (Wiesenack *et al*., 2023).

Iron is a crucial nutrient for the production of red blood cells. Adequate iron levels are necessary for the proper growth and development of both the pregnancy and the fetus. Consequently, if iron deficiency Anemia occurs during pregnancy, it can serve as an indicator for the progression of the pregnancy and the healthy development of the unborn baby (Chaparro & Suchdev, 2019; Finkelstein *et al*., 2020; Pradhan *et al*., 2021). In addition, pregnant women who have iron deficiency Anemia are at a heightened risk for many complications that can affect both the mother and the baby. These complications include premature labour, separation of the placenta from the uterine wall, high blood pressure throughout pregnancy, increased strain on the heart, below-average birth weight, susceptibility to infections, and other potential hazards. (Arifin & Prasasti, 2017; Pradhan *et al*., 2021; Wiesenack *et al*., 2023)

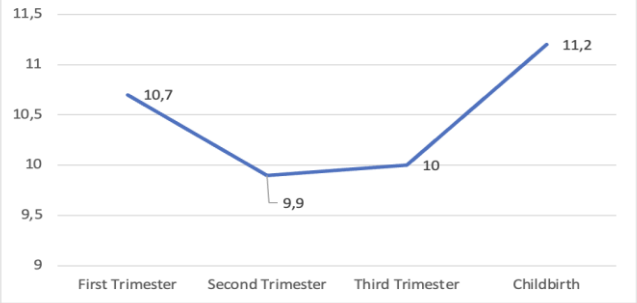

Figure 1: The Value of Hemoglobin for Mrs. R

In addition to iron shortage, Anemia during pregnancy can also come from a deficiency in vitamin A. This conclusion is based on studies that investigated the levels of serum retinol, which is associated with vitamin A, and its relationship with hemoglobin (Hb) levels. This is because retinol plays a role in the production of red blood cells (erythropoiesis). Anemia can also arise from a shortage of B vitamins, specifically riboflavin (B2), pyridoxine (B6), cobalamin (B12), and folate. This prevalence is reduced in comparison to Anemia caused by deficiencies in iron and vitamin A. However, it is still caused by a shortage in Vitamin B. Anemia is thought to be strongly associated with dietary patterns and can affect the body's ability to metabolize iron. Moreover, Anemia can arise as a result of inflammatory processes within the body, which can include the transport of parasitic worms from the soil to the human body via ingestion of contaminated food, water, or poor personal hygiene. In addition, individuals afflicted with acute diseases such as malaria, HIV, and tuberculosis typically exhibit reduced levels of hemoglobin (Hb). Anemia may also arise as a result of genetic disorders, such as the presence of crescent-shaped cells or in individuals with thalassemia. (Arifin & Prasasti, 2017; Pradhan *et al*., 2021; Wiesenack *et al*., 2023).

Mrs. R's extended first stage of labour, lasting 22 hours, was attributed to Anemia throughout pregnancy. Further investigation is required to determine the underlying cause of the physical anomalies observed in Mrs. R.

Prenatal Detection of Anemia

According to the World Health Organization (WHO) recommendations (Chaparro & Suchdev, 2019; Newhall *et al*., 2020), insufficient iron levels in the body account for 50% of Anemia cases in both pregnant and non-pregnant women. These recommendations aim to precisely assess iron levels. It is advisable to assess serum ferritin levels in an individual's body. A serum ferritin count below 30 μg/L during the first trimester indicates iron deficiency Anemia or soluble transferrin receptor (sTfR). Low levels of sTfR suggest iron deficiency in an individual (Chaparro & Suchdev, 2019; Kumar *et al*., 2022). The American College of Obstetricians and Gynecologists advises conducting hemoglobin testing during the first trimester of pregnancy using a comprehensive blood test (Stanley *et al*., 2022). Presently, the diagnosis of Anemia in pregnant women in Indonesia solely relies on the examination of hemoglobin (Hb) levels. Mrs. R was diagnosed with Anemia in the first trimester after undergoing a Hb examination at the Community Health Centre. It is uncertain if the Anemia was caused by a shortage of folic acid, vitamin B, iron, or due to an anomaly. By examining the dietary habits and intake of blood supplement tablets and multivitamins in Mrs. A, the following nutritional components were found: vitamin A (6000 IU), vitamin B1 (10 mg), vitamin B2 (2.5 mg), vitamin B6 (15 mg), vitamin B12 (4 mcg), vitamin C (100 mg), vitamin D (400 IU), Niacinamide (20 mg), Calcium pantothenate (7.5 mg), Folic Acid (1 mg), Iron fumarate (90 mg), Calcium lactate (250 mg), Copper (0.1 mg), Iodine (0.1 mg), and Sodium fluoride (1 mg).

Hemoglobin levels in an individual are subject to variation based on factors such as age, gender, environmental conditions, genetic makeup, racial background, and pregnancy status. Pregnancy hemoglobin levels are categorized into three classifications: non-anemic for values greater than 11, mild Anemia for levels between 10 and 10.9, moderate Anemia for levels between 7 and 9.9, and severe Anemia for levels below 7 (Chaparro & Suchdev, 2019; Stanley *et al*., 2022). Moreover, the classification of Anemia diagnosis varies among trimesters. In the first and third trimesters, Anemia is defined as having an HB level below 11 gr/dL. In the second trimester, Anemia is defined as having an HB level below 10.5 gr/dL (Newhall *et al*., 2020; Stanley *et al*., 2022). In addition to nutritional, environmental, and lifestyle factors, hemoglobin (HB) levels decrease during the first and second trimesters of pregnancy. This decrease is a result of the increase in blood volume and red blood cell mass in pregnant women's bodies, which occurs due to the dilution effect. (Wiesenack *et al*., 2023) Pregnancy induces a phenomenon known as the dilution effect, characterized by an accelerated rise in plasma volume compared to the increase in red blood cell count in the maternal body. Consequently, this leads to physiological Anemia in pregnant women (Stanley *et al*., 2022). Starting with the sixth week of pregnancy, the volume of plasma in the blood increases more than the number of red blood cells, reaching its highest point around the 24th week of pregnancy. Currently, pregnant women have a plasma volume that is approximately 40-50% greater than at the start of pregnancy. However, the erythrocyte mass only increases by 15-25%. This leads to a drop in Hb values owing to the dilution effect (Wiesenack *et al*., 2023). The duration of pregnancy will progressively lengthen throughout the third trimester (Chaparro & Suchdev, 2019; Newhall *et al*., 2020; Stanley *et al*., 2022). During pregnancy, there is a significant increase in blood volume, amounting to around 40-50% of the total blood volume in the body. Additionally, there is a corresponding increase in the number of red blood cells, which rises by approximately 15-20% (Stanley *et al*., 2022). In Mrs. R's pregnancy, there was a drop in her HB levels during the 1st and 2nd trimesters, followed by a progressive change in the 3rd trimester (Figure 1).

Management of Anemia

The management of cases with iron deficiency Anemia can be divided into two steps: first, a thorough identification of the underlying cause of iron deficiency, and second, the administration of iron supplements either orally or intravenously (Figure 2). The suggested oral

supplementation dosage is 100-200 mg per day, aiming for a 2g/L increase in hemoglobin levels within one month. Hemoglobin levels should be re-evaluated 2-4 weeks after starting iron supplementation. If the hemoglobin level is within the normal range, then the administration of iron supplements is continued for a maximum duration of 3 months (Kumar *et al*., 2022; Newhall *et al*., 2020), However, intravenous iron delivery is deemed more effective than oral administration, however it is advised to administer it after the first trimester (Wiesenack *et al*., 2023).

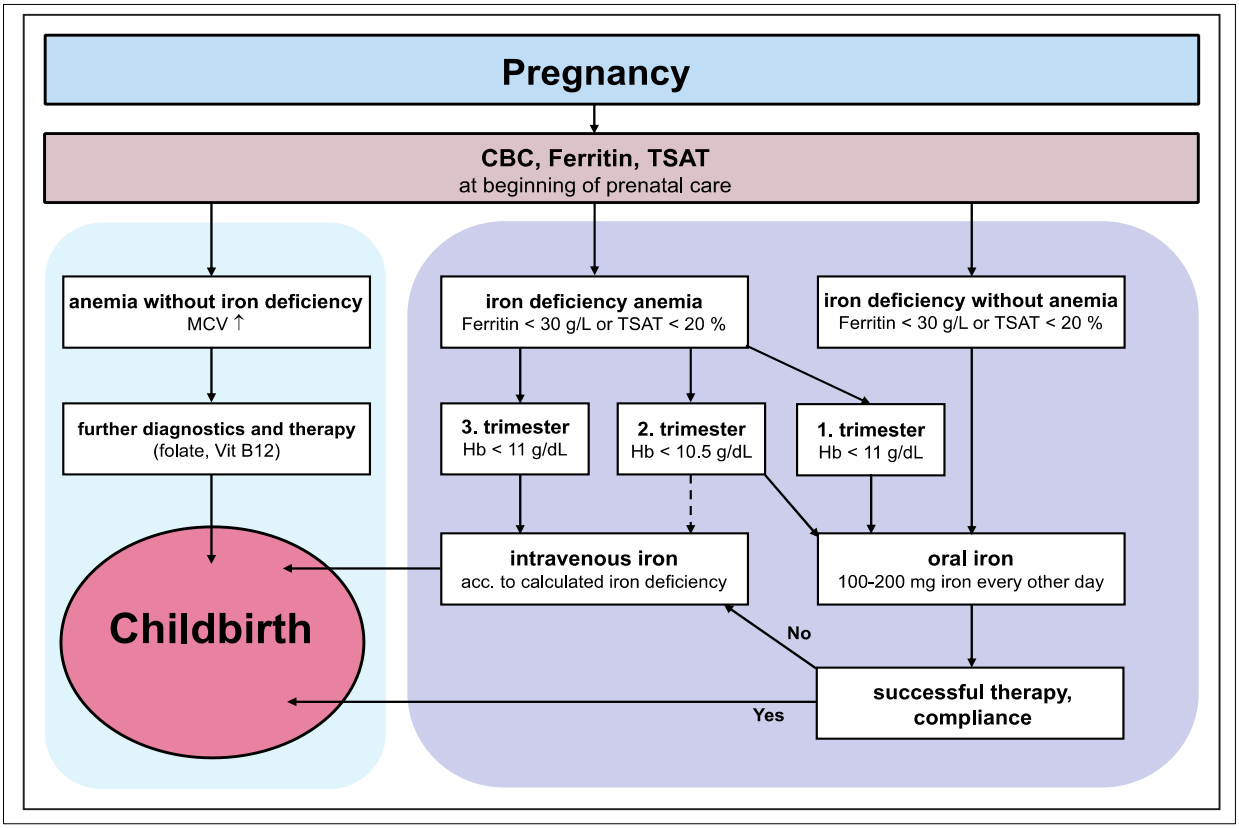

Figure 2: Management of Anemia
Source: (Wiesenack *et al*., 2023).

In Indonesia, the management of Anemia typically involves the use of blood supplementation tablets. The recommended dosage is one to two tablets per day, with a minimum of 90 tablets during pregnancy. Each tablet contains 60 mg of iron and/or 400 µg of folic acid. Additionally, vitamin A may be administered alongside the supplementation (Manikam, 2021). Mrs. R received standardized anemia management from the government. She took 30 tablets of folic acid during the first trimester of her pregnancy, along with 1 tablet of vitamin A (10,000 IU), 30 tablets of calcium (500 mg) taken once daily during the first trimester, and iron supplementation consisting of 2 tablets (60 mg each) per day throughout her pregnancy (increased to 3 tablets in the third trimester). In addition, she consumed a multivitamin complex known as Obimin AF.

Beetroot for Anemia

Beta Vulgari L, often known as beets, is a nutrient-dense fruit that offers numerous health benefits, particularly in the treatment of anemia. Scientific evidence supports the effectiveness of beetroot as a dietary source for boosting hemoglobin levels and offering other advantages for individuals with anemia (Abd-El-Fattah *et al*., 2021; Fadlilah *et al*., 2023).

Beets are rich in iron, a vital ingredient for the synthesis of hemoglobin. Incorporating beets into one's diet on a daily basis might effectively enhance the levels of iron in the body. In addition, beets also possess vitamin C, which enhances the body's ability to absorb iron (Abd-El-Fattah *et al*., 2021; Fadlilah *et al*., 2023). Beets also contain folic acid, a B vitamin that is crucial for the production of red blood cells. Folic acid aids in the process of DNA synthesis and cellular proliferation, hence assisting in mitigating the red blood cell insufficiency commonly observed in individuals with anemia (Abd-El-Fattah *et al*., 2021; Fadlilah *et al*., 2023).

Furthermore, beets possess betacyanin chemicals, which are responsible for the fruit's vibrant red hue. Betacyanin possesses antioxidant capabilities that effectively combat free radicals within the body. Free radicals have the potential to harm red blood cells and inflict damage on blood vessels, hence exacerbating

anemia. Consuming beets can offer supplementary safeguard against cellular and vascular harm (Abd-El-Fattah *et al*., 2021; Fadlilah et al., 2023). Beets also possess additional elements, including manganese, magnesium, and copper, which are crucial for the development and operation of red blood cells. Manganese and copper, for instance, play a role in the synthesis of hemoglobin and assist in regulating iron levels inside the body (Abd-El-Fattah *et al*., 2021; Fadlilah *et al*., 2023).

To combat anemia, beets can be consumed in multiple ways, including direct consumption, juicing, extraction, powdering, or adding them to salads (Abd-El-Fattah *et al*., 2021; Fadlilah *et al*., 2023). Mrs. R, while pregnant, ingested 2 kg of beetroot which was processed into juice.

Prenatal Visit

The primary objective of prenatal care (ANC) is to ensure the optimal health and well-being of both the expectant mother and the developing fetus. The purpose of ANC is to gather comprehensive information regarding a person's pregnancy. This includes conducting a thorough health assessment, assessing the well-being of both the mother and the baby, identifying any potential issues at an early stage, and providing guidance and preparation for parenthood and childbirth. ANC can be conducted through a collaborative effort between physicians and midwives, with midwives assuming responsibility for the management of low-risk pregnancy cases and subsequently referring high-risk pregnant women to hospitals. (Stone & Eddleman, 2015).

Healthcare professionals will gather essential pregnancy-related data, such as the mother's ethnicity, occupation, place of residence, date of the last menstrual period, contraceptive usage history, psychological well-being of the mother and her partner in relation to the pregnancy, current health status, medical history prior to pregnancy, previous pregnancy and childbirth history, daily activities, and maternal dietary patterns (Stone & Eddleman, 2015).

In addition to collecting information pertaining to the mother's condition, healthcare professionals will conduct a range of procedures to ascertain the normalcy of the mother's pregnancy. These examinations will encompass blood pressure assessments, urine analyses, and routine blood tests to determine parameters such as Hemoglobin levels, Hepatitis B presence, HIV status, Syphilis infection, Blood Type, and Resus factor (Stone & Eddleman, 2015).

Mrs. R is eagerly anticipating her pregnancy and is therefore enthusiastic about adhering to the diverse recommendations and guidance provided by healthcare professionals. Consequently, during her pregnancy, Mrs. R consistently monitored her pregnancy with healthcare professionals. According to the findings of Saapiire *et al*., (2022), sufficient antenatal visits can serve as an indicator of anemia in expectant mothers. During these visits, pregnant women can receive educational interventions regarding the significance of consuming a varied diet, which can help prevent anemia.

High Risk Pregnancy

Pregnancy among mothers aged 35 and above carries a higher risk due to its association with gestational diabetes, hypertension, and pre-eclampsia, as indicated by research findings. Therefore, moms in this age group require more frequent checkups (Stone & Eddleman, 2015). In addition, pregnant women with a history of asthma, previous health issues like miscarriages, and previous complicated births, particularly premature births, need to be closely monitored due to their current pregnancy condition (Stone & Eddleman, 2015). In addition to the impact of the mother's age, pregnancy can also pose risks if a male fertilizes after the age of 40, as this can lead to chromosomal abnormalities in the infant. This is subsequently associated with the presence of autism, schizophrenia, and Down syndrome issues (Stone & Eddleman, 2015).

Mrs. R's condition falls under the no-risk category due to her healthy reproductive age and the fact that she is pregnant for the first time. Additionally, Mrs. R confirms that she has no history or present presence of any diseases. Nevertheless, this criterion alone does not ensure that an individual can prevent anemia, as multiple factors beyond dietary habits, such as Mrs. R's adolescent development, exposure to pollution, and environmental health conditions, also impact the nutritional value of the food she consumes.

Nutrition during Pregnancy

Health workers must give complete information about the nutritional requirements of pregnant women based on their gestational age, as nutritional variables are crucial during pregnancy. The total caloric need for pregnant women is 2150 calories, which increases by an additional 200 calories during the third trimester, resulting in a total of 2350 calories (Stone & Eddleman, 2015). Complex carbs can be obtained from sources such as bread, wheat, cereals, pasta, rice, potatoes, and other similar foods. Pregnant women are advised to consume citrus fruits, such as strawberries, kiwi, and guava, as they are abundant in vitamin C. Fruits with a yellow color that contain a high amount of beta-carotene, such as mangoes, peaches, and apricots. Oranges, blackberries, raspberries, and bananas are fruits that are rich in folic acid. Dried fruits are abundant in iron (Stone & Eddleman, 2015).

Pregnant women should prioritize the consumption of green vegetables due to their high content of folic acid, vitamin C, beta-carotene, and iron. In addition, root vegetables such as carrots and radishes

are rich in vitamin B. Pregnant women are advised to consume nuts due to their high content of fiber, protein, B vitamins, and minerals (Stone & Eddleman, 2015).

Food or beverage items that contain milk are rich in calcium. Calcium is essential for dental and skeletal development, particularly in the formation of permanent and deciduous teeth. Additionally, it plays a crucial role in safeguarding the bone health of expectant mothers. Milk-based products can be derived from milk, cheese, and yogurt (Stone & Eddleman, 2015).

Protein-rich foods can be acquired from sources such as meat, fish, eggs, cheese, cereal, poultry, and nuts. Protein is essential for the development of cells, tissues, and organs in the baby's body. Protein is abundant in essential nutrients like B vitamins, iron, and zinc (Stone & Eddleman, 2015).

Food items belonging to the oil, fat, and sugar category are characterized by their high caloric value and low nutritional content. Hence, the items in this category can be ingested at any given moment. Nevertheless, consuming small quantities of foods from this category can enhance energy levels, thereby promoting the maintenance of healthy skin and hair (Stone & Eddleman, 2015).

In addition to the aforementioned five food and beverage categories, it is imperative for pregnant women to ensure enough fluid intake during their pregnancy. Ensuring adequate fluid intake during pregnancy can enhance the blood volume of expectant mothers, facilitating the transportation of nutrients from the mother to the fetus. Pregnant women are recommended to ingest a daily amount of 8 glasses of water, with each glass containing 225ml (Stone & Eddleman, 2015).

In general, managing anemia involves more than just providing extra blood. It is crucial for healthcare professionals to educate pregnant women about the importance of consuming a diverse diet. Research shows that a mother with limited food access is 1.6 times more likely to develop anemia compared to other pregnant women. a mother with ample access to nourishment (Verma *et al*., 2023).

Mrs. R acknowledged that she had never encountered dietary issues due to her broad food preferences. However, during the 5 to 7 months of her pregnancy, she found herself unable to consume certain types of fish. This restriction significantly impacted her intake of essential micronutrients, particularly vitamin B, which is crucial during pregnancy.

Maternal Weight Gain during Pregnancy

The recommended dietary requirements for Indonesian women aged 19-49 years are 2150-2250 kcal and 60 grams of protein per day, based on the recommended nutritional adequacy numbers. Pregnant women often require an extra 180-300 kcal and up to 30 grams of protein each day (Tim Ayo Sehat, 2020), According to these calorie requirements, if divided into 3 main meals and snacks, the calorie requirement for 1 meal and snack is 776-836 kcal. Throughout her pregnancy, Mrs. R experienced a significant increase in weight. She did not frequently encounter issues that would lead to a decrease in her daily food intake. Consequently, her weight gain during pregnancy was excessively high, amounting to 22 kg. Additionally, Mrs. R's nutritional status has been categorized as overweight since the beginning of her pregnancy.

Mrs. R's excessive weight can be effectively managed through regular exercise. According to Barakat *et al*., (2019), exercising during pregnancy can lower the chances of excessive weight gain and gestational diabetes. Additionally, (Champion & Harper, 2020) state that gaining excessive weight during pregnancy is linked to various negative outcomes for both the mother and the baby, such as fetal growth issues, preterm birth, cesarean delivery, gestational diabetes, hypertensive disorders of pregnancy, infant mortality, and long-term metabolic health problems.

Mrs. R's weight gain has surpassed the typical benchmark for weight gain during pregnancy. As to the US Institute of Medicine, it is advised that women with a pre-pregnancy weight within the normal range (BMI 18.5-24.9) should aim to gain between 11.5 and 16 kg during pregnancy. Individuals with a body mass index (BMI) below 18, indicating being underweight, are advised to augment their weight by 12.5 to 18 kilos. Meanwhile, individuals who have a body mass index (BMI) between 25 and 29.9, indicating overweight, are advised to aim for a weight rise of 7 to 11.5 kilograms. Pregnant individuals with obesity (BMI > 29.9) should aim to gain a weight of 5 to 9 kg during their pregnancy. (Tsai *et al*., 2015).

Pregnancy Ultrasound Examination

Throughout her pregnancy, Mrs. R underwent 2-dimensional and 3-dimensional ultrasounds performed by specialized obstetrics-gynaecology doctors during the second and third trimesters. However, research suggests that the accuracy of ultrasound in assessing foetal development cannot solely rely on 2-dimensional and 3-dimensional ultrasounds (Yu *et al*., 2022). Nevertheless, it is crucial to integrate it with a 4-dimensional ultrasound assessment. These findings align with the results of a study conducted by Zhang & Jin, (2023) on a sample of 160 pregnant women. The study concluded that the most accurate ultrasound examination method was the 4-dimensional ultrasound examination. Mrs. R was unable to get a 4-dimensional ultrasound test due to restricted access and financial constraints. Consequently, the early detection of congenital defects in her baby was not possible.

Oxytocin Massage

Oxytocin massage is a therapeutic treatment performed to induce the secretion of the hormone oxytocin within the body. Oxytocin is a hormone that plays a crucial role in a range of physiological and mental processes, particularly in the context of delivery and breastfeeding. Oxytocin massage is commonly employed as a means of providing assistance during childbirth or enhancing the connection between a mother and her new-born following delivery (Dağli & Çelik, 2022; Purnamasari & Hindiarti, 2021).

During labour, the woman's body naturally produces oxytocin to induce uterine contractions, facilitating the passage of the baby through the delivery canal. Nevertheless, oxytocin massage can serve as a supplementary technique in certain circumstances to enhance uterine contractions and expedite the process of birth. This massage technique is typically administered by a midwife or doula who possesses expertise in the practice of massage specifically for pregnancy and labour (Domínguez-Solís *et al*., 2021; Triansyah *et al*., 2021).

An oxytocin massage helps alleviate tension and stress experienced during delivery, while also enhancing maternal comfort. Furthermore, oxytocin stimulation is believed to contribute to the enhancement of the maternal-infant attachment following childbirth, as well as the promotion of lactation (Mustika Dewi *et al*., 2022; Nufus, 2019; Sri Wahyuningsih *et al*., 2022). Nevertheless, oxytocin massage is also applicable during pregnancy. This technique is suitable for pregnant women with uncomplicated pregnancies, gestational age beyond 36 weeks, and those who are in good health and do not have placenta previa (Dağli & Çelik, 2022; Nufus, 2019; Purnamasari & Hindiarti, 2021):

This condition aligns with Mrs. R's condition, which is classified as a typical pregnancy. The oxytocin massage was performed when Mrs. R was at 40 weeks of gestation. According to the examination results, Mrs. R was in a healthy physical state and did not have placenta previa.

CONCLUSION

Precise and cautious diagnosis of Anemia during pregnancy is crucial, as it has significant implications for both the mother and the developing foetus. An incorrect diagnosis can result in mismanagement, underscoring the importance of enhancing access to comprehensive Anemia diagnosis for pregnant women in Indonesia. This necessitates the implementation of appropriate policies and allocation of sufficient budgetary resources.

REFERENCES

- Abd-El-Fattah, M. E., Dessouki, A. A., Abdelnaeim, N. S., & Emam, B. M. (2021). Protective effect of Beta vulgaris roots supplementation on anemic phenylhydrazine-intoxicated rats. *Environmental Science and Pollution Research*, *28*, 65731-65742. https://doi.org/10.1007/s11356-021-15302-6.
- Andriani, H., Rachmadani, S. D., Natasha, V., & Saptari, A. (2022). Continuum of care in maternal, newborn and child health in Indonesia: Evidence from the Indonesia Demographic and Health Survey. *Journal of Public Health Research*, *11*(4), 22799036221127619.
- Arifin, I. F., & Prasasti, C. I. (2017). Faktor yang berhubungan dengan kasus difteri anak di Puskesmas Bangkalan tahun 2016. *Jurnal Berkala Epidemiologi*, *5*(1), 26-36. https://doi.org/10.20473/jbe.v5i1.2017.26-36.
- Barakat, R., Refoyo, I., Coteron, J., & Franco, E. (2019). Exercise during pregnancy has a preventative effect on excessive maternal weight gain and gestational diabetes. A randomized controlled trial. *Brazilian journal of physical therapy*, *23*(2), 148-155. https://doi.org/10.1016/j.bjpt.2018.11.005.
- Champion, M. L., & Harper, L. M. (2020). Gestational weight gain: update on outcomes and interventions. *Current diabetes reports*, *20*, 1-10. https://doi.org/10.1007/s11892-020-1296-1.
- Chaparro, C. M., & Suchdev, P. S. (2019). Anemia epidemiology, pathophysiology, and etiology in low-and middle-income countries. *Annals of the new York Academy of Sciences*, *1450*(1), 15-31. https://doi.org/10.1111/nyas.14092.
- Dagli, E., & Celik, N. (2022). The effect of oxytocin massage and music on breast milk production and anxiety level of the mothers of premature infants who are in the neonatal intensive care unit: A self-controlled trial. *HEALTH CARE FOR WOMEN INTERNATIONAL*, *43*(5), 465-478. https://doi.org/10.1080/07399332.2021.1947286.
- Denny, H. M., Laksono, A. D., Matahari, R., & Kurniawan, B. (2022). The determinants of four or more antenatal care visits among working women in Indonesia. *Asia Pacific Journal of Public Health*, *34*(1), 51-56. https://doi.org/10.1177/10105395211051237.
- Dewi, I. M., Wulandari, A., & Basuki, P. P. (2022). pengaruh pijat oksitosin terhadap produksi ASI pada ibu post partum. *Jurnal Keperawatan*, *14*(1), 53-60. http://journal.stikeskendal.ac.id/index.php/Keperawata.
- Domínguez-Solís, E., Lima-Serrano, M., & Lima-Rodriguez, J. S. (2021). Non-pharmacological interventions to reduce anxiety in pregnancy, labour and postpartum: A systematic review. *Midwifery*, *102*, 103126. https://doi.org/10.1016/j.midw.2021.103126.
- Downe, S., Finlayson, K., Tunçalp, Ö., &

Gülmezoglu, A. M. (2019). Provision and uptake of routine antenatal services: a qualitative evidence synthesis. *Cochrane Database of Systematic Reviews*, (6). https://doi.org/10.1002/14651858.CD012392.pub2. www.cochranelibrary.com.

- Fadlilah, S. H., Suhartomo, D. M., Yusan, R. T., & Yudhawan, I. (2023). BEETROOT (Beta vulgaris L.) AND ITS POTENTIAL AS AN ANEMIA TREATMENT IN PREGNANCY. *Medical and Health Journal*, *3*(1), 114. https://doi.org/10.20884/1.mhj.2023.3.1.9070.
- Finkelstein, J. L., Kurpad, A. V., Bose, B., Thomas, T., Srinivasan, K., & Duggan, C. (2020). Anaemia and iron deficiency in pregnancy and adverse perinatal outcomes in Southern India. *European journal of clinical nutrition*, *74*(1), 112-125. https://doi.org/10.1038/s41430-019-0464-3.
- Kemenkes, R. I. (2022). Profil Kesehatan Indonesia 2021. In *Pusdatin.Kemenkes.Go.Id*.
- Kumar, A., Sharma, E., Marley, A., Samaan, M. A., & Brookes, M. J. (2022). Iron deficiency anaemia: pathophysiology, assessment, practical management. *BMJ open gastroenterology*, *9*(1). https://doi.org/10.1136/bmjgast-2021-000759
- Manikam, N. R. M. (2021). Known facts: iron deficiency in Indonesia. *World Nutrition Journal*, *5*(S1), 1-9. https://doi.org/10.25220/wnj.v05.s1.0001
- Newhall, D., Oliver, R., & Lugthart, S. (2020). *Anemia: una enfermedad o síntoma*. *78*(3), 104–110. https://pubmed.ncbi.nlm.nih.gov/32332184/
- Nufus, H. (2019). Efektivitas Pijat Oksitosin Terhadap Produksi Asi. *Jurnal Borneo Cendekia*, *3*(2), 223–227. https://doi.org/10.54411/jbc.v3i2.217
- Nurdiana, A., & Nurlailasari, E. (2020). Antenatal care quality measurement conducted by midwives in Karawang, Indonesia. *Journal of Health Technology Assessment in Midwifery*, *3*(1), 8–17. https://doi.org/10.31101/jhtam.1278
- Pradhan, N., Tamrakar, S. R., & Karmacharya, S. B. (2021). Effect of Anemia in Pregnancy and its Perinatal Outcome : A Prospective Cohort Study. *Journal of Lumbini Medical College*, *9*(2). https://doi.org/10.22502/jlmc.v9i2.445
- Purnamasari, K. D., & Hindiarti, Y. I. (2021). Metode Pijat Oksitosin, Salah Satu Upaya Meningkatkan Produksi ASI Pada Ibu Postpartum. *JURNAL KESEHATAN PERINTIS (Perintis's Health Journal)*, *7*(2), 1–8. https://doi.org/10.33653/jkp.v7i2.517
- Saapiire, F., Dogoli, R., & Mahama, S. (2022). Adequacy of antenatal care services utilisation and its effect on Anemia in pregnancy. *Journal of Nutritional Science*, *11*, 1–8. https://doi.org/10.1017/jns.2022.80
- Sari, R. K., Astuti, S. P., Sari, M., & Nafi, R. (2022). Profil Kesehatan Ibu dan Anak Tahun 2022. In *Badan Pusat Statistik* (Vol. 1, Issue 1).
- Sebayang, S. K., Efendi, F., & Astutik, E. (2019). Women's empowerment and the use of antenatal care services: analysis of demographic health surveys in five Southeast Asian countries. *Women and Health*, *59*(10), 1155–1171. https://doi.org/10.1080/03630242.2019.1593282
- Sri Wahyuningsih, Hayati, N., Musviro, & Agustina, R. (2022). Oxytocin Massage Stramlining Breast Milk: Literature Riview. *Nursing and Health Sciences Journal (NHSJ)*, *2*(4), 367–373. https://doi.org/10.53713/nhs.v2i4.160
- Stanley, A. Y., Wallace, J. B., Hernandez, A. M., & Spell, J. L. (2022). Anemia in pregnancy: Screening and clinical management strategies. *MCN The American Journal of Maternal/Child Nursing*, *47*(1), 25–32. https://doi.org/10.1097/NMC.0000000000000787
- Stone, J., & Eddleman, K. A. (2015). *Your New Pregnancy Bible* (5th ed.). Octopus Publishing Group.
- Tim Ayo Sehat. (2020). *Gizi Seimbang untuk Ibu Hamil*. Kemenkes RI. https://ayosehat.kemkes.go.id/1000-hari-pertama-kehidupan/home#:~:text=Pada ibu hamil normal diperlukan,mencapai 30 gram per hari.
- Triansyah, A., Indarty, A., Tahir, M., Sabir, M., Nur, R., Basir-Cyio, M., ... & Rusydi, M. (2021). The effect of oxytocin massage and breast care on the increased production of breast milk of breastfeeding mothers in the working area of the public health center of Lawanga of Poso District. *Gaceta Sanitaria*, *35*, S168-S170. https://doi.org/10.1016/j.gaceta.2021.10.017.
- Tsai, Y. L., Chen, L. C., Seow, K. M., & Chong, K. M. (2015). The recommendations of the American Institute of Medicine (IOM) for normal and underweight women to reduce the risk of low birth weight. *Taiwanese Journal of Obstetrics and Gynecology*, *54*(1), 1-7. https://doi.org/10.1016/j.tjog.2014.11.007.
- Verma, A., Kumar, A., Adhikari, T., Delhi, N., & Kaur, P. (2023). *How dietary protein and vitamin C affect anemia and not iron alone : early pregnancy data from a North Indian Hospital* . *October*.
- Wiesenack, C., Meybohm, P., Neef, V., & Kranke, P. (2023). Current concepts in preoperative anemia management in obstetrics. *Current Opinion in Anaesthesiology*, *36*(3), 255. https://doi.org/10.1097/ACO.0000000000001252.
- Wulandari, R. D., Laksono, A. D., & Rohmah, N. (2021). Urban-rural disparities of antenatal care in South East Asia: a case study in the Philippines and Indonesia. *BMC Public Health*, *21*(1), 1–9. https://doi.org/10.1186/s12889-021-11318-2
- Yu, X., Liu, F., Gao, W., Shi, X., Lu, R., & Pan, L. (2022). Diagnostic Value and High-Risk Factors of Two-Dimensional Ultrasonography Combined with Four-Dimensional Ultrasonography in Prenatal Ultrasound Screening of Fetal Congenital

Malformations. *Computational and Mathematical Methods in Medicine*, *2022*. https://doi.org/10.1155/2022/7082832

- Zhang, L., & Jin, T. L. (2023). Predictive value and accuracy of prenatal four-dimensional color ultrasound for fetal abnormal development. *Medicine (United States)*, *102*(32), E34553. https://doi.org/10.1097/MD.0000000000034553.

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