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## The Relationship Between Nutrition and Infertility Menarche

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ARTICLE INFO	ABSTRACT
<p><b>Entered</b> March 02, 2024</p> <p><b>Revised</b> April 22, 2024</p> <p><b>Accepted</b> May 25, 2024</p> <p><b>Published</b> May 28, 2024</p>	<p>Emotional well-being is crucial for leading a fulfilling life, encompassing mood stability, stress coping abilities, and positive interpersonal relationships. This state is intricately linked to hormonal balance within the body, where hormones regulate various emotional and psychological aspects. Disruption in hormonal equilibrium, often influenced by dietary factors, can lead to mood swings and difficulty in managing stress. Therefore, understanding the nexus between diet, nutrition, and hormonal balance is imperative for optimal emotional well-being. This paper delves into the relationship between nutrition and emotional health, emphasizing the impact of diet on hormonal regulation and subsequent emotional states. Through quantitative research involving 500 participants from diverse backgrounds, it was found that while most individuals possess basic nutrition knowledge, translating this into dietary practice remains a challenge. Consumption of fast food correlated with higher stress levels, while increased intake of fruits and vegetables was associated with lower stress levels. Interestingly, demographic factors such as age and gender did not significantly influence this relationship. Moving forward, interventions integrating nutrition education and behavioral strategies are crucial for promoting healthier dietary habits and enhancing emotional well-being in individuals.</p>

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**Keywords:**

Nutrition; Hormone Balance;  
Emotional Wellbeing

### INTRODUCTION

Reproductive health is an important aspect of individual and population well-being. Adolescent reproductive health is related to the quality of Indonesian people in the future. (Rahmawati, 2023) Two major issues related to women's reproductive health are infertility and menarche (the age at which a woman experiences her first period). Nutritional factors significantly influence both of these aspects. Infertility, characterized by the inability to achieve a clinical pregnancy after 12 months of unprotected intercourse, is often associated with poor nutritional



status. Nutritional deficiencies or excesses can affect hormonal function, egg quality, and overall reproductive ability, increasing the risk of infertility.



Menarche, an important indicator of sexual development and reproductive health, is also influenced by nutritional status. Menarche that is too early or too late can have long-term health consequences, including the risk of cardiovascular disease, osteoporosis, and other reproductive disorders. An unbalanced diet and deficiencies in micronutrients such as iron, vitamin D, and folic acid have been shown to influence the age of menarche.

Infertility is a problem faced by many couples worldwide. Infertility is a condition characterized by the inability to achieve a clinical pregnancy after 12 months of regular unprotected sexual intercourse, or is caused by a disturbance in the reproductive capacity of the individual or their partner.(Arwa Salsabil & Andriani, 2024). Factors that can affect infertility, age factor (the older a woman gets, the more her fertility decreases), sports and activity factors (excessive sports), lifestyle (smoking, drugs, alcohol), environmental factors (phthalate / dioxin pollutants), depression (the presence of psychological stress can result in an increase in corticotropin releasing hormone which has a negative effect on reproductive hormones), nutritional status is one of the factors that affect infertility. Good nutrition is the basis for optimal reproductive health, zigi status has a significant influence on health, good reproductive health requires optimal nutritional status because nutritional deficiencies or excesses can affect reproductive function(Jelmila et al., 2023)However, many people don't realize how much nutritional intake affects their ability to conceive. Inadequate nutritional status, whether in the form of nutritional deficiencies or excesses, can negatively impact hormonal function, egg and sperm quality, and the ovulation and implantation processes.

It is important to understand how nutrition can influence infertility and menarche, and to identify interventions that can help improve nutritional status to support optimal reproductive health. This article aims to explore the relationship between nutrition and infertility and menarche, provide insights into the mechanisms underlying this relationship, and suggest practical steps to improve nutritional health for the prevention and management of reproductive problems.

## **DISCUSSION**

### **The Relationship Between Nutrition and Menarche**

Menarche is the first menstruation and is a hallmark of maturity in a healthy, non-pregnant woman. Adequate nutrition, good nutritional status (protein, carbohydrates, fats, vitamins, minerals, water according to needs), balanced nutrition and exercise will reduce complaints during menarche such as pain, discomfort and abdominal bloating. Hormones that influence menarche: estrogen (regulates the menstrual cycle) and progesterone (reduces contractions during menstruation). Menarche generally occurs at the age of 10-15 years. The incidence of menarche is related to the nutritional status of adolescents. The better the status of an adolescent, the earlier the occurrence of menarche; the worse the nutritional status of adolescents, the later the occurrence of menarche. The nutritional status of adolescents can be determined by measuring the upper arm circumference (MUAC) or by measuring the body mass index (BMI). Good nutritional status is MUAC above 23.5 cm and BMI 18.5-25. Assessment of adolescent nutritional status is carried out

at least once a year to determine the nutritional status of adolescents and the development of the adolescent reproductive system as it should.

Menstruation is the period, bleeding from the uterus as a sign that the reproductive organs are functioning, occurring every month in healthy, non-pregnant adult women. Menstruation occurs due to the shedding of the ischemic endometrium due to hormonal influences. The shedding of the endometrium is accompanied by menstrual bleeding between 2-8 days. After the menstrual period ends, the endometrium grows back (proliferates) to be ready to receive the ovum and be ready for fertilization in preparation for pregnancy. If pregnancy does not occur, lysis occurs and menstruation returns. The relationship between nutrition and menstruation. An adequate diet for adolescents is a varied and balanced diet, including sufficient carbohydrates, protein, fat, vitamins, minerals, and water. With an adequate diet, the nutritional status of adolescent girls will be good, and they will achieve maximum health, estrogen and progesterone hormone function will also be maximized, so that menstruation is smooth every month.

1. Menstrual cycle is influenced by diet (food)
  - a. Vegetarian diets cause less regular menstrual cycles than non-vegetarian diets. Women who consume vegetarian diets experience an increased frequency of menstrual cycle disorders. The prevalence of menstrual irregularities is 26.5% in vegetarians and 4.9% in non-vegetarians.
  - b. Young women need to maintain good nutritional status by consuming a balanced diet, as this is especially important during menstruation. Nutritional needs increase during the luteal phase. If this is neglected, it can lead to discomfort during the menstrual cycle.
  - c. Nutrition during menstruation is necessary to replace lost blood components: iron. During menstruation, women should consume 3,000 calories to meet their daily iron requirement of 18 mg/day.
2. Premenstrual syndrome
  - a. Premenstrual syndrome (PMS) is a combination of symptoms that occur before menstruation and disappear after menstruation. The main symptoms are headache, fatigue, backache, breast enlargement and tenderness, and abdominal bloating (a feeling of fullness).
3. Diet Principles for PMS Sufferers
  - a. Efforts to reduce premenstrual syndrome include limiting consumption of sugar, salt, meat, animal fat, alcohol, coffee and increasing consumption of fish, poultry, bread, nuts, complex carbohydrates, green vegetables and cereals.
  - b. A low-fat, high-carbohydrate diet can help reduce breast swelling during PMS. A high-carbohydrate, low-protein diet can improve feelings of discomfort (serotonin in the brain).

### **The Relationship Between Nutrition and Infertility**

The concept of infertility

Infertility is the failure of a married couple to conceive after having regular intercourse without contraception for one year. The causes can be multifactorial, both the wife and husband will contribute 40%, and the other 20% is caused by uncertain factors. Nutrition in food is

necessary for fertility, the goal is to have children. If there is a lack of nutrition in food, it will have an impact on the decline in reproductive function. For example: someone who suffers from anorexia nervosa, experiences weight loss which causes hormonal changes related to the function of the hypothalamus in the body, this results in changes in the ovulation and menstrual cycles.

1. Factors that can influence infertility,

Age factors (the older a woman gets, the more her fertility decreases), Sports and activity factors (excessive exercise), Lifestyle (smoking, drugs, alcohol), Environmental factors (phthalate/dioxin pollutants), Depression (the presence of psychological stress can result in an increase in corticotropin releasing hormone which has a negative effect on reproductive hormones), Nutritional status

2. Causes of Infertility

- a. Pelvic inflammatory disease (chlamydia, gonorrhea, bacterial vaginosis, tuberculosis)
- b. Endometriosis
- c. Polycystic ovary syndrome
- d. Precocious menopause < 40 years or premature ovarian failure
- e. Hyperprolactinemia
- f. Other factors such as thyroxine disorders, epilepsy, intestinal infections, drug use, ectopic pregnancy

3. Diagnostic stages in the management of female infertility

- a. Anamnesis
- b. Determining the presence of ovulation
- c. Reproductive hormone examination
- d. Ultrasonography and hysterosalpingography examination
- e. Other examinations (laparoscopy, chromosome and genetic examinations)

4. Fertility-supporting nutrients

- a. Carbohydrate
- b. Fat
- c. Protein
- d. Vitamins (vit A, B complex: B1, B2, niacin, biotin, B6, B12, and folate, vitamin C)

5. The relationship between nutrition and fertility

Nutritional deficiencies leading to low body weight or malnutrition can cause hormonal changes in the form of disruption of the ovulation cycle and this can trigger disruption of fertility.

6. Therapy for nutritional deficiencies is:

- a. Increase nutritional intake to maintain normal body weight and avoid obesity
- b. Administration of GRH hormone (gonadotropin relating hormone) to maintain a normal ovulation cycle

7. The role of nutrients for fertility

Fertility-supporting nutrients are for preventing infertility

- a. Research shows that low birth weight has an impact on adult fertility. Babies with low birth weight have abnormally small testicles and ovaries.
  - b. Overnutrition/obesity can lead to menstrual cycle disorders, anovulation, infertility, and polycystic ovary syndrome (lack of egg production). High levels of fat in obesity lead to increased levels of the hormone leptin, leading to polycystic ovary syndrome (lack of egg production). Obesity increases luteinizing hormone (LH) secretion. Excessive LH secretion disrupts follicle maturation, resulting in infertility or anovulation.
  - c. Poor nutritional status (anorexia) causes changes in steroid hormones, increases testosterone, and disrupts the ovulatory cycle. Poor nutritional status can result in amenorrhea (absence of menstruation), and iron deficiency can also cause infertility.
8. How to prevent fertility:
- a. Healthy sex patterns
  - b. Healthy lifestyles
  - c. Sufficient vitamins and minerals
  - d. Do not smoke
  - e. Don't drink alcoholic beverages

## CONCLUSION

The relationship between nutrition and infertility and menarche highlights the important role of nutrition in women's reproductive health. Infertility, a complex problem influenced by a number of factors, including nutrition, demands a thorough understanding of the relationship between nutritional intake and reproductive function. Nutritional deficiencies or excesses can disrupt hormonal balance, egg quality, and reproductive processes, which in turn increase the risk of infertility. Furthermore, menarche, a critical milestone in women's reproductive development, is also closely linked to nutritional status. A balanced diet and adequate nutritional intake play a crucial role in determining a healthy age at menarche. Delayed or early onset of menarche can have long-term impacts on a woman's reproductive health and well-being. By understanding the relationship between nutrition and infertility and menarche, steps can be taken to improve optimal nutritional intake, both for the prevention and treatment of reproductive problems. Through a holistic approach that includes nutrition education, appropriate dietary interventions, and behavioral changes, we can promote better reproductive health for women worldwide.

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