RESEARCH ARTICLE

# Nutritional fulfillment for anaemia prevention in female adolescents: Perceived benefits, barriers and commitment

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## Abstract

**Objective:** To identify the correlation of preventive nutrition for anaemia with perceived benefits, perceived barriers and commitment among young females.

**Method:** The correlational, cross-sectional study was conducted from June to July 2022 in Surabaya, East Java, Indonesia, and comprised young females. The independent variables were perceived benefits, perceived barriers, and commitment. The dependent variable was preventive nutrition for anaemia. Data was collected online using Google Form. Data was analysed using a software SPSS version 23

**Results:** There were 112 females with mean age 19.63±1.501 years. There were 101(90.2%) aged 18-24 years, and 100(89.3%) were in senior high school. Perceived benefits ($p$=0.021; $r$=0.218), perceived barriers ($p$=0.002; $r$=-0.286) and commitment ($p$=0.000; $r$=0.345) had a significant relationship with preventive nutrition for anaemia.

**Conclusion:** Perceived benefits and high commitment to increase preventive nutrition against anaemia was seen in female adolescents. However, high perceived barrier could suppress their preventive nutrition.

**Keywords:** Adolescent behaviour, Anaemia, Diet, Health promotion, Nutritional status. (JPMA 74: S-59 [Suppl. 5]; 2024)

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## Introduction

Anaemia is a serious health problem that affects young people. According to the World Health Organisation (WHO) Global Health Observatory (GHO) in 2019, women of reproductive age were prone to anaemia (29.6%).[1] Southeast Asia was the region with the highest incidence of anaemia.[2] A high prevalence of anaemia cases were found in women of childbearing age in Indonesia (31.2%).[3] Anaemia often occurs due to a wrong diet pattern, such as reducing the intake of animal protein sources.[4] As young girls do not care about their nutritional status, they tend to consume risky diet, like consuming snacks with low nutrition, eating a lot of fast food, and skipping breakfast.[5] Most adolescents also rarely consume vegetables and fruit as part of their daily diet.

Anaemia in young females is also related to the monthly menstrual cycle.[7] Menstrual disorders, such as longer menstrual periods, menorrhagia, and dysmenorrhoea, are some of the health issues in young females that result in excessive iron expenditure and changes in food appetite.[8,9] Besides, poor preventive nutrition is an indirect cause of anaemia.[10] Intake of vegetables and fruits that contain vitamin C can prevent anaemia because the vitamin absorbs iron.[11] Young females are not high on consuming protein from animal sources, such as meat, which contains high iron.[12,13]

A person is influenced by various aspects, such as individual perception and self-efficacy, when deciding a diet pattern. Perceived benefits and barriers can influence commitment in one's behaviour. An adolescent will be committed to being healthy if people around him/her set a good example and behaviour.[14]

The current study was planned to identify the correlation of preventive nutrition for anaemia with perceived benefits, perceived barriers and commitment among young females.

## Subjects and Methods

The correlational, cross-sectional study was conducted from June to July 2022 in Surabaya, East Java, Indonesia, after approval from the ethics review committee of the Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia. The sample size was calculated using G *Power.[15] The sample was raised using non-probability purposive sampling technique. Those included were young women who had experienced menstruation and were living with their parents.

The independent variables were perceived benefits, perceived barriers, and committment,, while the dependent variable was preventive nutrition for anaemia. Data was collected online by distributing questionnaires using Google Form. Informed consent was obtained from the all the participants, and those not willing to participate were excluded.

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**Table-1:** Characteristics of the study subjects (n=112).

| Characteristics | n (%) | Mean±SD |
|---|---|---|
| **Age** (years) | | |
| 14-17 | 11 (9.8) | 19.63±1.501 |
| 18-24 | 101 (90.2) | |
| **Education** | | |
| Junior high school | 2 (1.8) | |
| Senior high school | 100 (89.3) | |
| University | 10 (8.9) | |
| **Monthly pocket money** | | |
| <Rp. 500.000.- | 59 (52.7) | |
| Rp.500.000-Rp. 1.000.000.- | 53 (47.3) | |
| **Total** | 112 (100) | |

SD: Standard deviation.

**Table-2:** Factors influencing nutritional fulfillment for anaemia prevention.

| Variables | Anaemia prevention behaviour | | | Total | Spearman Rho test |
|---|---|---|---|---|---|
| | Poor | Moderate | Good | | |
| | n (%) | n (%) | n (%) | n (%) | |
| **Perceived benefits** | | | | | |
| Poor | 9 (8) | 5 (4.5) | 0 (0) | 14 (12.5) | p=0.021 |
| Moderate | 6 (5.4) | 32 (28.6) | 20 (17.9) | 58 (51.8) | r=0.218 |
| Good | 3 (2.7) | 26 (23.2) | 11 (9.8) | 40 (35.7) | |
| **Total** | 18 (16.1) | 63 (56.3) | 31 (27.7) | 112 (100) | |
| **Perceived barriers** | | | | | |
| Poor | 1 (0.9) | 8 (7.1) | 9 (8) | 18 (16.1) | p=0.002 |
| Moderate | 12 (10.7) | 50 (44.6) | 22 (19.6) | 84 (75) | r=-0.286 |
| Good | 5 (4.5) | 5 (4.5) | 0 (0) | 10 (8.9) | |
| **Total** | 18 (16.1) | 63 (56.3) | 31 (27.7) | 112 (100) | |
| **Commitment** | | | | | |
| Poor | 0 (0) | 2 (1.8) | 0 (0) | 2 (1.8) | p=0.000 |
| Moderate | 10 (8.9) | 24 (21.4) | 5 (4.5) | 39 (34.8) | r=0.345 |
| Good | 8 (7.1) | 37 (33) | 26 (23.2) | 71 (63.4) | |
| **Total** | 18 (16.1) | 63 (56.3) | 31 2(7.7) | 112 (100) | |

Data was collected using 4 questionnaires. All the questionnaires were self-designed in the light of literature and were found to be valid and reliable.[10,16,17] Perceived benefit 8 questions, perceived barrier 8 questions, commitment 10 questions and preventive nutrition 10 questions. The validity of the all the questionnaires was >0.514, while reliability was 0.878 for perceived benefit, 0.651 for perceived barrier, 0.840 for commitment, and 0.691 for the nutritional fulfilment questionnaire.

Data was analysed using a software SPSS version 23. Spearman Rho test was used for comparing the relationship between benefits and barriers for preventive nutrition. P<0.05 was taken as significant.

## Results

There were 112 females with mean age 19.63±1.501 years. There were 101(90.2%) aged 18-24 years, and 100(89.3%) were in senior high school (Table 1). Perceived benefits ($p$=0.021; $r$=0.218), perceived barriers ($p$=0.002; $r$ =-0.286) and commitment ($p$=0.000; $r$=0.345) had a significant relationship with preventive nutrition for anaemia (Table 2).

## Discussion

Perceived benefits of actions are positive perceptions or reinforcing consequences to adopt certain health behaviours. Perceived benefits can increase individual commitment to healthy behaviour.[18] A person will choose to take an action if there is something considered beneficial for them.[19]

In the current study, the highest mean score on perceived benefits was in the statement, "Consumption of plant-based iron sources (dark green vegetables and nuts) will increase fitness". This shows that young women understood that the consumption of green vegetables and beans would increase their level of nutritional status and fitness. This finding is in line with previous research showing a relationship between the consumption of green leafy vegetables and an increase in haemoglobin (Hb).[20] Another study found an association between animal-based iron-rich foods and the incidence of anaemia.[21]

The lowest mean score on perceived benefits was found in the statement, "Regular consumption of iron tablets will improve learning achievement". This shows that the young women did not understand the relationship between iron tablet intake and learning achievement. A good Hb level will make adolescents better at learning. For example, those with good Hb level will have good concentration, and, thus, will be able to improve their learning achievement. Research shows that anaemia in adolescents is related to iron level in the body. Hence, the adequacy of iron level from consuming food and iron supplements is very important for adolescents.[22]

Perceived barriers are difficulties and costs required to adopt certain health behaviours.[18] The possibility of individuals taking preventive behaviour depends directly on perceived threats and perceived benefits or loss.[23] The highest perceived barrier was found in the statement, “I rarely consume animal sources of iron (meat, fish, liver, and poultry) because they are expensive”. Foods with high animal protein tend to be expensive. This forces the young to opt for food that is high in carbohydrates but low in protein. This finding is consistent with previous research.[24] Financial adequacy determines how a family meets the needs of high-iron food. Family income affects the purchasing power of food, and thus low family income will make one pay less attention to healthy and nutritious food choices.[25] Many young women do not understand that there are various choices of food sources high in carbohydrates, protein, iron, and vitamin C at affordable prices.

Commitment in the current study was defined as a strong intention of young women accompanied by a plan of action to carry out preventive behaviour against anaemia. Committed young women continue to prevent anaemia even though they face obstacles. For example, drugs commitment is measured by intentions and actions to take preventive measures.[26] The lowest mean score on commitment was in the statement, "I take iron tablets at the time suggested by the teacher". This shows that many young women still do not have access to iron food sources. Perceived barriers about side effects of iron tablet intake will reduce compliance to medication if one does not have a strong commitment. Some side effects of iron tablet consumption usually experienced by women include nausea, vomiting, diarrhoea, dizziness and abdominal pain.[27] Low mean score on commitment was also found in the statement, "I monitor my weight in a week". This shows that young women do not understand the importance of monitoring their weight regularly. As a result, they will lose their weight due to unhealthy diet patterns. The findings is in line with previous research.[28] Education about the importance of preventive nutrition is necessary to increase knowledge about daily diet to avoid anaemia, which is influenced by the lack of iron and protein levels in the body.[29] Food choices need to be balanced with sufficient knowledge about healthy nutrition intake to meet the nutritional needs of the body.

## Conclusion

Preventive nutrition for anaemia in young females could be improved by increasing perceived benefits and a high commitment to preventive behaviour. However, perceived barriers may reduce preventive nutrition and potentially increase the risk of anaemia. Health promotion regarding preventive nutrition is important to prevent anaemia in young females.

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