

Demographics, knowledge, and attitudes toward fe supplementation for stunting prevention at public health center, Ciamis-Indonesia

Andriana Sari*, Reni Meyleni

Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Universitas Ahmad Dahlan,
Jl. Prof. Dr. Soepomo, S.H, Warungboto, Umbulharjo, Yogyakarta, Indonesia

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ABSTRACT

Stunting has been linked to malnutrition in children from prenatal to before five years old, a condition with 24% prevalence, according to the 2021 Indonesian Nutrition Status Survey. Ciamis (West Java, Indonesia) reported 2,334 cases (3.4%) of stunting problems in 2022. The government has introduced Fe tablets to pregnant women, but this specific intervention can only be effective if accompanied by their adequate knowledge and positive perception of its usefulness, which can be influenced by their experience, education level, and sociocultural environment. This study aimed to determine the relationship between demographic characteristics and knowledge and attitudes toward Fe supplementation. This quantitative research adopted the analytical survey and cross-sectional designs and used demographics, knowledge, and attitudes questionnaires as the research instruments. Cluster sampling in the operational area of the Sadananya Public Health Center in Ciamis obtained 151 respondents. Data were analyzed using a chi-square test in SPSS. Results show that the majority of the sample size had low knowledge (118 respondents; 77.6%) and less positive attitudes (103; 67.8%) toward Fe supplementation. There was a significant relationship between age and knowledge ($p=0.044$), while none was observed between knowledge and education ($p=0.100$) and obstetric history ($p=0.057$). Moreover, age, education, and obstetric history were not statistically related to attitudes toward Fe supplementation ($p=0.645, 0.951, 0.792$). This study concluded that there was a significant relationship between age and knowledge, but there was no significant relationship between education and history of pregnancy with knowledge. Moreover, there was no significant relationship between demographic characteristics.

Keywords: Demographic characteristics, knowledge, attitudes, Fe supplements

*Corresponding author:

Andriana Sari

Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Universitas Ahmad Dahlan
Jl. Prof. Dr. Soepomo, S.H, Warungboto, Umbulharjo, Yogyakarta, Indonesia

Email: andriana@pharm.uad.ac.id



INTRODUCTION

Stunting is a condition related to nutritional intake that particularly stems from malnutrition in pregnant women, causing impaired growth with the height-for-age measurement showing a z-score or standard deviation of <-2 (WHO, 2020). The Indonesian Nutrition Status Survey explained that the prevalence of stunting achieved 27.7% in 2019 and 24.4% in 2021 (Indonesia Ministry of Health, 2021). Ciamis is one of the many regencies in West Java, Indonesia, that is dealing with impaired growth issues in children. Based on a preliminary study by Ciamis Health Services, the prevalence of stunting among toddlers was 6.4% in 2020 and continuously decreased to 4.9% in 2021 and 3.4% in 2022. Based on these percentages, 20 villages have been designated as the priority loci for reducing stunting in 112 under-five children, and some are parts of the operational area of the Sadananya Public Health Center (Ciamis Health Services, 2022).

Stunting incidence occurs in the first 1,000 days after conception, and the influencing factors may comprise socioeconomic status, food intake, maternal nutrition, infectious diseases, micronutrient deficiencies, and the environment (Ramayulis et al., 2018). Micronutrients include minerals (e.g., iron and folic acid) and vitamins. Iron (Fe) deficiency causes anemia in pregnant women and low birth weight (LBW), which are risk factors for stunting. Another contributing factor is that little attention is given to whether or not pregnant women extensively understand health and nutrition before, during, and after giving birth. Stunting can be prevented most effectively during pregnancy and the first two years of children's life (Ramayulis et al., 2018). The government has implemented special intervention services that encourage pregnant women to receive Fe supplements to immediately reduce the number of stunting incidence (Indonesia Ministry of Health, 2018).

For the above reasons, it is imperative to assess knowledge and attitudes toward Fe supplementation among pregnant women to achieve the government's goals of reducing stunting rates. Demographic characteristics, e.g., level of education, experience, and sociocultural environment, have been linked to the acquisition and development of knowledge, attitudes, and behavior (Notoatmodjo, 2012). In addition, the operational area of the Sadananya Public Health Center is far from public facilities. Therefore, this research was designed to analyze if and to what extent the demographic characteristics of expectant mothers related to their knowledge and attitudes toward Fe supplementation as an effort to prevent stunting in this operational area.

MATERIALS AND METHOD

Materials

The research tool was an ordinal survey questionnaire adopted from Azzahra (2014), which comprised demographic data including age, education and Obstetric history, 10 items knowledge of Fe benefits, and 10 items attitudes toward Fe supplementation. The knowledge and attitude questionnaires were tested for validity through expert judgment in the fields of psychology and pharmacy, followed by a Pearson product-moment correlation test (r) on 30 pregnant women outside the research respondents. This test showed that each questionnaire item is valid, i.e., measuring the data it is supposed to, because r count $>$ r table ($r=0.3610$). Moreover, a further reliability test revealed that both questionnaires are reliable instruments to measure knowledge and attitudes because their Cronbach's alpha coefficients were 0.783 and 0.712, or greater than 0.6.

Methods

This quantitative research used the analytical survey and cross-sectional designs to describe the relationship between demographic characteristics and knowledge and attitudes toward Fe supplementation for stunting prevention. The research population was pregnant women who met these two inclusion criteria: currently taking Fe supplement tablets and living in the operational area of the Sadananya Public Health Center, Ciamis Regency, Indonesia (including Mekarjadi, Sukajadi, Mangkubumi, Bendasari, Werasari, Sadananya, Gunungsari, Tanjungsari Villages). However, those with a history of kidney failure and anemia were omitted (exclusion criteri). From the research population, 152 respondents were selected using cluster sampling including Sukajadi (19.7% of the respondents), Werasari (23.7%), Tanjungsari (14.5%), Sadananya (26.3%), and

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Bendasari (15.8%). The number of respondents fulfill the requirement of minimum sample size of 151 from calculations using the Lameshow formula.

Data Analysis

Data were analyzed univariately and bivariately using the SPSS v.25 program for IOS (Iphone Operating System). The univariate analysis aimed to determine demographic characteristics, level of knowledge, and attitudes toward Fe supplementation. Then, the bivariate analysis using a chi-square test assessed the relationship between these variable pairs: demographics-knowledge and demographics-attitude. Each relationship would be concluded as statistically significant if p-value < 0.05.

RESULT AND DISCUSSION

This research was conducted from May 6 to June 26, 2023, with ethical clearance number 2805/KEP-UNISA/IV/2023. In total, 152 respondents in the operational area of the Sadananya Public Health Center met the inclusion and exclusion criteria. They were pregnant women who came to the public clinics in these villages for consultation: Sukajadi (19.7% of the respondents), Werasari (23.7%), Tanjungsari (14.5%), Sadananya (26.3%), and Bendasari (15.8%).

Demographic characteristics

According to the Indonesian Ministry of Health, age can be divided into three stages: adolescence (17–25 years old), early adulthood (26–35), and late adulthood (36–45) (Al Amin & Juniati, 2017). This study combined the early and late adulthoods into one category: adults. As seen in Table 1, more than half of the respondents (58.6%) belonged to the adult group. However, another research focusing on Fe supplementation found that the sampled pregnant women were predominantly in the 17–25 age group (94.3%) compared to those aged 26–35 (Darmawati et al., 2023).

Table 1. Distribution and frequency of the respondents based on demographic characteristics

Variable	Frequency (N)	Percentage (%)
Age		
Adolescents (17–25 years old)	63	41.4
Adults (26–45 years old)	89	58.6
Education		
Nine years of compulsory education*	77	50.7
> Nine years of education	75	49.3
Obstetric history (gravidity)		
G1–2	97	63.8
≥G3	55	36.2
Level of knowledge		
Good	34	22.4
Poor	118	77.6
Attitude type		
Positive	49	32.2
Negative	103	67.8

Notes: *primary and lower secondary education

The attained education is a correlate of knowledge level. About half of the respondents (50.7%) had received primary and lower secondary education (i.e., SD and SMP). Meanwhile, a previous study in Gunung Tua Village (Mandailing Natal, North Sumatra, Indonesia) found that a large

share of the sampled pregnant women (46.66%) had completed their higher secondary education (i.e., SMA) (Aryunita, 2022). The contradictory sample profiles are probably due to the different incomes of the respondents' parents and levels of access to schools and other educational facilities.

In addition, the majority of the respondents had an obstetric history of G1–2 (63.8%). This means they were currently pregnant and already had 0 (G1) to 1 previous pregnancy (G2). In contrast, the largest proportion of respondents in another research on knowledge of Fe tablets had been pregnant more than once or had multigravida (80.5%) (Kadir et al., 2021).

Knowledge and attitudes toward Fe supplementation

Levels of knowledge

Knowledge is the result of a person's sensing or learning of objects through their senses (Notoatmodjo, 2012). The more often an individual receives information, the higher their level of knowledge. Good knowledge provides the stems for good ways of thinking or feeling, including positive attitudes. For this reason, knowledge is believed to be a strong contributing factor in the success of stunting prevention measures.

Table 1 shows that a large share of the respondents (77.6%) did not know the usefulness of Fe supplements in preventing stunting. This finding differs from another research in Sleman (Yogyakarta, Indonesia), which reported that young women had good knowledge of this benefit (Rizkiana, 2022). There are several factors responsible for the differences or variations in the knowledge level, for example, proximity to urban areas, methods for or capability of understanding ideas, and educational attainment. Further information on which aspects of knowledge the respondents were familiar with is presented in Table 2.

Table 2. Responses to questions on knowledge of Fe supplementation

Question	Response	
	False (%)	True (%)
Definition of anemia	23.0	77.0
Benefits of blood supplement tablets	55.3	44.7
How to take blood supplement tablets	31.6	68.4
Signs of anemia	18.4	81.6
The impact of anemia on pregnancy	40.8	59.2
The number of blood supplement tablets that pregnant women are recommended to take	53.9	46.1
The recommended time for pregnant women to start taking blood supplement tablets	77.6	22.4
Anemia prevention	11.2	88.8
Anemia monitoring	48.0	52.0
The long-term impact of anemia	37.5	62.5

The respondents had good knowledge of anemia prevention (88.8%) but were unfamiliar with when to start taking blood supplement tablets (22.4%). Pregnant women are recommended to take the supplements in the second trimester when blood hemoglobin levels are at their lowest (Indonesia Ministry of Health, 2018). Moreover, only about half of the respondents were fully cognizant of the benefits and the number of blood supplement tablets they should take (44.7% and 46.1%, respectively). Blood supplements increase the formation of red blood cells and, consequently, hemoglobin levels. It is required to take a minimum of 90 tablets during pregnancy (Indonesia Ministry of Health, 2018). Due to the generally low level of knowledge, the village health centers, through cadres or midwives, should provide education and information on aspects of Fe supplementation that the respondents did not fully understand.

Types of attitudes

Table 1 shows that about one-third of the respondents (32.2%) had positive attitudes toward Fe supplementation as a preventive measure against stunting. This result is different from a previous study in Kuala Terengganu (Terengganu, Malaysia), where more than half of the respondents (54.2%) had positive attitudes toward taking Fe supplements (Theng et al., 2017). Differences or variations in the attitudes might stem from different levels of concern or awareness. Details on the observed aspects of attitudes and the respondents' degrees of (dis)agreement are shown in Table 3.

Table 3. Responses to questions on attitudes toward Fe supplementation

Statement/Question	Response				
	Strongly agree (%)	Agree (%)	Neither agree nor disagree (%)	Disagree (%)	Strongly disagree (%)
Pregnant women need blood supplement tablets.	63.2	33.6	0.7	2.6	0.0
The recommended number of blood supplement tablets to take*	22.4	50.7	15.1	11.8	0.0
Benefits of blood supplement tablets	40.1	41.4	9.9	7.9	0.7
Foods high in iron	21.7	39.5	25.0	13.8	0.0
Benefits of blood supplement tablets*	5.9	14.5	10.5	57.9	11.2
Impact of anemia on fetal growth*	7.9	10.5	11.8	53.9	15.8
Impact of anemia on pregnant women and babies*	7.2	19.1	3.9	50.0	19.7
Impact of anemia on babies	10.5	32.2	32.2	22.4	2.6
The purpose of the government's specific intervention that provides blood supplement tablets for pregnant women	50.7	44.7	0.7	3.3	0.7
People who need iron the most*	15.1	28.3	5.9	47.4	3.3

Notes: *negative statements/questions

The respondents strongly agreed that pregnant women needed to take blood supplement tablets (63.2%) but did not strongly agree with the statement on the quantity of blood supplement tablets to take throughout pregnancy (22.4%). In addition, about 15.1% strongly agreed that women did not need more iron intake before pregnancy and at least 90 blood supplement tablets during pregnancy (Indonesia Ministry of Health, 2018). Accordingly, it is necessary to increase the knowledge of iron requirements among pregnant women, which is expected to encourage positive attitudes toward Fe supplementation for stunting prevention.

Relationship between demographic characteristics and knowledge of Fe supplementation for stunting prevention

Table 4 shows that 14.3% of respondents in the adolescence group and 28.1% in the adult age group had good knowledge of Fe supplementation. For this demographic variable, the chi-square analysis produced a p-value of 0.444 (<0.05), indicating a statistically significant correlation between age and the knowledge level. This corresponds to a previous study that found a substantial link between age and the degree of awareness of Fe supplementation (Galaupa & Supriani, 2019). Ways of thinking, learning, and understanding ideas develop with age, suggesting that knowledge accumulates over time (I Nengah et al., 2020).

Table 4. Relationship between demographic characteristics and knowledge of Fe supplementation for stunting prevention

Variable	Good		Poor		P-value	OR
	N	%	N	%		
Age						
Adolescents (17–25 years old)	9	14.3	54	85.7	0.044	0.427
Adults (26–45 years old)	25	28.1	64	71.9		
Education						
Nine years of compulsory education	13	16.9	64	83.1	0.100	0.522
> Nine years of compulsory education	21	28.0	54	72.0		
Obstetric history (gravidity)						
G1–2	17	17.5	80	82.5	0.057	0.475
≥G3	17	30.9	38	69.1		

The well-informed respondents accounted for 16.9% of those with nine years of compulsory education and 28.0% with higher educational attainment. With a p-value of 0.100 (>0.05), education level is not significantly correlated with the knowledge of Fe supplementation for stunting prevention. This contradicts a previous study at the Jatibening Public Health Center (West Java, Indonesia), which detected a significant relationship between both variables (Galaupa & Supriani, 2019). According to Notoatmojo 2012, the level of knowledge can be seen from the level of education and other factors, the higher the level of education, the better the level of knowledge and the quicker you can receive information (Notoatmodjo, 2012). This is likely because there is no motivation to look for information regarding the use of Fe supplements or is hindered by other activities so that the level of education does not correlate with knowledge of the use of Fe supplements.

Furthermore, respondents with a good comprehension of Fe supplementation constituted 17.5% of those with an obstetric history of G1–2 and 30.9% with \geq G3. The chi-square test showed a p-value of 0.057 (>0.05), suggesting no significant correlation between obstetric history and the knowledge level. Previous research at the Kramat Public Health Center stated that parity had no significant relationship with knowledge of Fe supplementation (Setiowati, 2021). This could possibly happen because information at the beginning of the first pregnancy was not very extensive and good regarding the use of Fe supplements as a prevention of stunting so that knowledge would be repeated in subsequent pregnancies.

Relationship between demographic characteristics and attitudes toward Fe supplementation for stunting prevention

Table 5 shows that respondents who generally agreed with Fe supplements as a preventive measure against stunting accounted for 30.2% of the adolescent group and 33.7% of the adult group. With a p-value of 0.645 (>0.05), there is no correlation between age and attitudes toward Fe supplementation. This contradicts previous research at the Banyuasin Public Health Center (Purworejo, Indonesia) that found a correlation between both variables (Setyorini & Atiqoh, 2018).

Furthermore, respondents with positive attitudes comprised 32.5% of those with nine years of compulsory education and 32.0% of those attaining higher education levels. The p-value was 0.951 (>0.05), meaning that educational attainment is not significantly correlated with attitudes toward Fe supplementation. On the contrary, research at the Banyuasin Public Health Center (Purworejo, Indonesia) found a relationship between both variables (Setyorini & Atiqoh, 2018).

According to [Azwar 2013](#), attitudes can change in each individual because attitudes can be learned and changed due to several circumstances. Factors that can influence attitudes include the influence of other people or the environment and surrounding culture. So it is possible that age and education level do not have a significant correlation because there are other factors such as the surrounding environment ([Azwar, 2013](#)).

Table 5. Relationship between demographic characteristics and attitudes toward Fe supplementation for stunting prevention

Variable	Positive		Negative		P-value	OR
	N	%	N	%		
Age						
Adolescents (17–25 years old)	19	30.2	44	69.8	0.645	0.849
Adults (26–45 years old)	30	33.7	59	66.3		
Education						
Nine years of compulsory education	25	32.5	52	67.5	0.951	1,022
> Nine years of compulsory education	24	32.0	51	68.0		
Obstetric history (gravidity)						
G1–2	32	33.0	65	67.0	0.792	1.100
≥G3	17	30.9	38	69.1		

About one-third of respondents with an obstetric history of G1–2 (33.0%) and G3 (30.9%) showed positive attitudes toward Fe supplementation. However, because the p-value was 0.792 (>0.05), there is no statistically significant relationship between the two variables. These results contradict the theory that considers a person's experience as a factor of their attitude ([Azwar, 2013](#)) but correspond to a previous study that found no relationship between gravidity and compliance with taking Fe tablets in the third trimester among pregnant women in the Sedayu II Public Health Center (Bantul, Indonesia) ([Sariyati, 2022](#)). The possibility of other factors such as previous experience in consuming iron tablets, namely the presence of side effects that arise when consuming iron tablets such as nausea, constipation, frustration and fear of having a big baby, is one of the factors that can reduce and also influence the attitude of pregnant women consuming Fe tablets. So it is necessary to carry out further research with other variables to strengthen the cause of there being no correlation between these 2 variables.

In this study, patients with a medical background or from families who worked in medicine were not excluded, which is a weakness of this study. The variables examined in this research are limited so further research is needed with more varied variables so that the possibility that some variables are not correlated in this research can be proven or answered.

CONCLUSION

Knowledge of Fe supplementation as a preventive measure against stunting is significantly related to age but not to education and obstetric history. There is no significant relationship between the three demographic characteristics (age, education, and obstetric history) and attitudes toward Fe supplementation. The results of this research can become a roadmap for future research, it can be further developed to find out other demographic characteristics that correlate with the level of knowledge and attitudes towards using Fe supplements to prevent stunting as well as the hemoglobin value of pregnant women. Apart from that, related parties can improve communication and provide information regarding the use of Fe as a stunting prevention action

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