Analysis Of Pharmacist Intervention In Anaemic Pregnant Women In Stunting Prevention

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Abstract.

Accelerating stunting reduction is a national priority in realizing healthy, intelligent and productive human resources. Multi-dimensional factors cause stunting, so multi-sectors are responsible for handling it. To optimize stunting prevention, health workers such as pharmacists have an essential role to play. As part of change agents and competence, pharmacists should optimize their role in providing information and education and as caregivers. Pharmacists are expected to play a role in diet and nutrition management, increasing adherence to therapy, and monitoring drug side effects in pregnancy. This study aims to get an overview of the effect of pharmacist intervention in preventing anaemia in pregnant women in supporting the treatment of stunting. This type of research was a quasi-experimental study with a cohort study design before and after the intervention was carried out on anaemic pregnant women receiving blood supplement therapy in Pandeglang District, Banten Province. The clinical outcome assessment was measured based on the Hb value and the pregnant woman's weight. The level of adherence was assessed using the Medication Adherence Report Scale (MARS-5). The results showed increased adherence to using Iron Tablets after pharmacist intervention (99.47%). The MARS-5 score showed an average increase of 24.99 ± 0.07. The average patient's Hb increased after the intervention and showed a significant difference in Hb levels ($p<0.05$). The decrease in the number of patients with anaemia in pregnant women reached 91.8%. Pregnant women's weight increased monthly, showing a significant difference ($p <0.05$). Based on these results, it can be concluded that there was a significant increase in adherence to the consumption of Blood Supplement Tablets, Hb levels, and body weight in pregnant women after pharmacists intervened in Pandeglang Regency, Banten Province.

Keywords: Stunting, Anemia, Compliance, and Pharmacist.

I.   INTRODUCTION

Human Resources (HR) is a nation's capital to create inclusive and equitable national development in Indonesia. One of the indicators related to the creation of quality human resources is the fulfilment of goals and targets in the health sector; one of the indicators is the decline in the prevalence of stunting in Indonesia. Accelerating the reduction of stunting is one of the national priority agendas to realize healthy, intelligent and productive human resources in achieving sustainable development goals. Following Indonesian Presidential Regulation (Perpres) Number 72 of 2021 concerning Accelerating the Reduction of Stunting, there are five pillars in the National Strategy (Stranas) to Accelerate the Reduction of Stunting [1, 2]. During the 2019-2021 period, the prevalence of stunting at the national level decreased by 3.27%, from 27.67% (Indonesian Toddler Nutrition Status Survey, 2019) to 24.4% in 2021 Despite the decline, stunting is still a challenge because the target for the prevalence of stunting in the 2020-2024 National Medium-Term Development Plan (RPJMN) is 14% in 2024. 1.6% per year and must be increased to 3.4% per year. Supervision and coordination, synchronization and control from the centre to the village level are the keys to success in reducing stunting [3,4,5]. Stunting is caused by multi-dimensional factors, so that multi-sectors can tackle it, in another sense, not only in the health sector. Based on the explanation of the facts above, the problem of stunting is big in Indonesia, especially in the world of health.

The problem of stunting is not only the government's responsibility but also the responsibility of the Indonesian people who care about health. In this case, the pharmaceutical world is also taking part in handling stunting that occurs in Indonesia. To optimize stunting prevention, health workers, especially pharmacists, have an essential role to play in this matter. Pharmacists, as part of the agents of change, to achieve the 2020-2024 RPJMN targets for the treatment of tuberculosis (TB), immunization, and stunting,

should optimize their role by providing information and education to patients on the correct use of drugs, especially in TB elimination, immunization and stunting prevention programs. Pharmacists with competence as caregivers are expected to play a role in diet and nutrition management, increasing adherence to Blood Supplement Tablet therapy in preventing anaemia and monitoring its side effects in pregnancy [6,7,8,10] This study aims to get an overview of the effect of pharmacist intervention in diet and nutrition management and increasing adherence to Blood Supplement Tablet therapy in preventing anaemia in pregnant women as the pharmacist's active role in supporting stunting management programs.

II.   METHODS

This type of research is a quasi-experimental study with a cohort study design before and after the intervention. The study was conducted on anaemic pregnant women who received blood supplement therapy and met the inclusion criteria. This study is a quasi-experimental study with a pretest and posttest research design using a prospective approach, namely a longitudinal (continuous) study by following the course of the disease in the future based on a time sequence. This research was conducted in Pandeglang Regency, Banten Province, involving 124 pharmacists working in 34 Community Health Centers and several hospitals and clinics in Pandeglang Regency the total number of anaemic pregnant women who were given an intervention by pharmacists was 374 patients who received iron supplements and monitored their blood levels. Hb during October 2022 - January 2023 who were screened for anaemia with Hb levels below 11 gr/dL.

Assessment of clinical outcomes in pregnant women is measured based on the Hb value and weight of pregnant women. The level of adherence to blood supplement consumption was assessed using the Medication Adherence Report Scale (MARS-5) method, a questionnaire developed by Horne and Weinman [10]. Inclusion criteria are the general characteristics of the research sample from a target population to be studied. The study population is the target population that meets the inclusion criteria [11]. The target population is pregnant women who are domiciled or live in Pandeglang Regency, Banten Province. The sample inclusion criteria in this study were pregnant women with below-normal Hb values and pregnant women who were taking Blood Supplement Tablets. The data were then analyzed statistically using the Wilcoxon, and Friedman tests in the SPSS V 21.0 program.

III.   RESULT AND DISCUSSION

Characteristics of Anemia Pregnant Women Respondents

They monitored pregnant women diagnosed with anaemia with Hb levels below 11 gr/dL. The characteristics of the respondents collected in this study included age and last education. The characteristics of the respondents in this study can be seen in Table 1.

Table 1. Characteristics of respondents who are anaemic pregnant women

Variable	Frequency (N=374)	Percentage (%)
Age (Years)		
15-20	41	10.96
21-25	116	31.02
26-30	104	27.81
31-35	60	16.04
36-40	38	10.16
>40	15	4.01
Last Education		
Elementary school	111	29.68
Junior High School	109	29.14
High school / vocational high school	141	37.7
Diploma	1	0.27
Bachelor	12	3.21

Based on the data table on the characteristics of the respondents above, it can be seen that the average age of pregnant women who experience anaemia in the Pandeglang Regency is 27.71 years, with a gestational age of 4.50 months. Furthermore, the majority were in the age range of 21-25 years (31.02%),

followed by 26-30 years of age (27.81%) with high school/vocational high school education (37.70%). All respondents came from health centres in the working area of the Pandeglang District Health Office. There were 34 Community Health Centers that were used as research sites. However, there were no pregnant women diagnosed with anaemia in 5 Health Centers, namely Banjar, Cikedal, Mekarjaya, Pagelaran, Perdana, Pulosari, and Sobang Health Centers. The highest number of patients with anaemia pregnant women were in Cimanuk Health Center (17.11%), Cimanggu (56%), and Sindangresmi (40%). In detail can be seen in Table 2.

Table 2. Distribution of anaemic pregnant women

Number	Name of Health Center	Frequency (N)	Percentage (%)
1	Cimanuk	64	17.11
2	Cimanggu	56	14.97
3	Sindangresmi	40	10.7
4	Saketi	29	7.75
5	Cibaliung	26	6.95
6	Panimbang	25	6.68
7	Munjul	18	4.81
8	Sumur	17	4.55
9	Cadasari	14	3.74
10	Carita	12	3.21
11	Kaduhejo	12	3.21
12	Picung	11	2.94
13	Mandalawangi	9	2.41
14	Bojong	5	1.34
15	Cibitung	5	1.34
16	Cikupa	5	1.34
17	Cipeucang	4	1.07
18	Pandeglang	4	1.07
19	Cigeulis	3	0.8
20	Cikeusik	3	0.8
21	Labuan	3	0.8
22	Bangkonol	2	0.53
23	Cisata	2	0.53
24	Jiput	2	0.53
25	Angsana	1	0.27
26	Pagadungaan	1	0.27
27	Patia	1	0.27
	TOTAL	**374**	**100**

From these data, as many as 374 pregnant women suffering from anaemia underwent pharmacist intervention in the form of counselling on the use of blood supplement tablets according to the dose prescribed by the doctor, namely Ferrous Fumarate 60 mg and Folic Acid 0.40 mg once a day before going to bed and also related Information and Education Counseling. Nutritious foods that pregnant women should consume to increase Hb levels.

Level of compliance of respondents before and after the intervention

Pharmaceutical care by pharmacists to increase patient adherence to Blood Supplement Therapy. Pharmaceutical care is a form of optimizing the role pharmacists play for patients in carrying out medical therapy to improve the patient's health status. Pharmacists play a role in providing counselling, information, and education (IEC) related to patient therapy, directing patients to adopt a healthy lifestyle so that it supports the success of treatment can be achieved, and monitoring the results of treatment therapy that has been carried out by patients and collaborating with other health professions which indeed aims to improve the quality of life of patients. This confirms the pharmacist's role in interacting more with patients, being more patient-oriented and changing the work orientation of pharmacists from being drug-oriented and behind the scenes to a profession that interacts directly and is responsible for patients. Compliance with the use of Blood Supplement Tablets in anaemic pregnant women before and after the intervention can be seen in Table 3.

Table 3. Analysis of the level of adherence before and after the intervention

Observation	Compliance				Mean MARS Score	Wilcoxon Test (*Asymp.Sig*)	Friedman Test (*Asymp.Sig*)
	High		Medium				
	n	%	n	(%)			
Pretest	54	14.44	320	85.56	22.75 ± 1.49	0,000	
Follow up I	359	95.99	15	4.01	24.94 ± 0.23	0,001	0,000
Post test	372	99.47	2	0.53	24.99 ± 0.07	0,000	

Based on Table 3, it can be seen that there was an increase in adherence to the use of Blood Supplement Tablets in pregnant women who experienced anaemia after pharmacist intervention. The high adherence rate increased to 99.47%. The MARS-5 score showed increased adherence before and after the intervention, an average of 22.75 ± 1.49 before the intervention was carried out and then increased to 24.99 ± 0.07 after the pharmacist's intervention. The MARS-5 adherence level consists of 5 items assessing non-adherence behaviour (forgetting, changing, stopping, skipping, and taking less medication than prescribed) [10]. Respondents' compliance level was assessed by looking at the frequency of answers to each question, where a score of 25 was a high level of compliance, and a score of 6-24 indicated a moderate level of compliance. From the results of the analysis carried out, there was an increase in the MARS score in patients every month, which showed an increase in patient compliance in consuming the Blood Supplement Tablet after the pharmacist intervention; patient compliance increased significantly every month and overall based on the Friedman test analysis also experienced a significant increase (p-value = 0.000). In this study, data were obtained that respondents did not adhere to medication because of several side effects, such as nausea, vomiting and constipation. The side effects experienced by respondents in using iron tablets can be seen in Table 4.

Table 4. Distribution of side effects from using Blood Supplement Tablets

Side Effects	Frequency (n)	Percentage (%)
Nausea	76	20.32
Nausea and vomiting	2	0.53
Nausea and constipation	5	1.33
Nausea and dizziness	7	1.87
None	284	75.93
Total	**374**	**100**

Based on Table 4, the most common side effect was nausea (20.32%), and as many as (75.93%) experienced no side effects. Another study was conducted in the Ismailia area by Ahmed et al. to determine what factors influence pregnant women's adherence to iron tablets and what side effects are among the influential factors. The study used a sample of 100 pregnant women. Side effects experienced by pregnant women are constipation, nausea, vomiting, heartburn, abdominal pain, and dizziness. Of the several side effects, the most commonly felt is constipation, with a percentage of 35%.In contrast to the results obtained by Ahmed, the research was conducted by Ugwu et al. in the city of Enugu, Nigeria, with a sample size of 420 respondents. Of the several side effects of iron tablets (constipation, diarrhoea, nausea, vomiting, heartburn, stomach pain and dizziness), the most common complaint is heartburn. Side effects themselves cause non-compliance with a percentage of 23.8% [12].

Hb Levels in Anemia Pregnant Women Before and After Intervention

The Hb level is not average if it is less than 11 gr/dl. The average Hb levels in anaemic pregnant women before and after intervention by pharmacists can be seen in Table 5.

Table 5. Hb Levels in Anemia Pregnant Women

Observation Hb Level	Average Hb Level	Wilcoxon Test (*Asymp.Sig*)	Friedman Test (*Asymp.Sig*)
Pretest	9.76 ± 0.04	0,000	
Follow up I	10.43 ± 0.85	0,000	0,000
Follow up II	11.24 ± 0.87	0,000	
Post test	11.97 ± 0.89	0,000	

Table 5 shows that the average Hb of patients at the time of the pretest or before the pharmaceutical intervention was measured, namely 9.76 ± 0.04, indicating that pregnant women had moderate anaemia. While the average Hb level of patients who had received the intervention was 10.43 ± 0.85 during follow-up I, which was included in the mild anaemia category, 11.24 ± 0.87 during follow-up II, and 11.97 ± 0.89, when the post-test had reached the target level Hb in pregnant women is above 11 g/dl. This shows that regular Iron Blood tablet consumption and nutritious food can increase Hb levels within two months. The Wilcoxon test analysis showed a significant difference in Hb levels during the pretest and follow-up I; follow-up I with follow-up II, follow-up II with post-test, and pretest with a post-test.

This can be seen from the significance value, which shows the value of $p <0.05$. The significance value of $p <0.05$ means that there is a significant difference between the Hb levels of pregnant women during the pretest and follow-up I; follow-up I with follow-up II; follow-up II with post-test; pretest with post-test. The results of the Friedman test analysis also showed that there was a significant difference in overall Hb levels.This study also carried out reducing the number of anaemic pregnant women before and after the intervention. Table 6 shows the percentage decrease in pregnant women who experience anaemia. The number of anaemia-free pregnant women after pharmacist intervention was 341 (91.8%) of the initial 374 anaemic pregnant women; this shows that pharmacist intervention can reduce the number of anaemic pregnant women.

Table 6. Number of anaemic pregnant women before and after the intervention

Observation	Number of Anaemia-Free Pregnant Women		Number of Anaemia Pregnant Women				Total Decrease			
			Mild Anaemia		Moderate Anaemia		Mild Anaemia		Moderate Anaemia	
	n	%	n	%	n	%	n	%	n	%
Pretest	0	0	213	56.95	161	43.05		-		
Follow up I	103	27.54	176	47.05	95	25.41	37	17.37	66	40.99
Follow up II	274	73.26	74	19.79	26	6.95	139	65.26	135	83.85
Post test	341	91.18	23	6.15	10	2.67	190	89.2	151	93.79

Hb is a parameter widely used to determine the prevalence of anaemia. If the Hb level of a pregnant woman is <11 gr%, then the Hb level of the pregnant woman is said to be abnormal/anaemia [13, 14]. Generally, in Indonesia, low Hb levels are caused by iron deficiency. Iron deficiency can cause interference or obstacles to the growth of the fetus, both cells and body and brain cells. Abnormal Hb levels can result in fetal death in the womb, abortion, congenital disabilities, LBW, and abnormal Hb levels in babies born; this causes significantly higher maternal morbidity and mortality and perinatal death. Pregnant women with abnormal Hb levels can increase the risk of morbidity and mortality of the mother and baby; the possibility of giving birth to babies with premature LBW is also greater [15]. Prevention and treatment of anaemia in pregnant women is an essential effort in preventing stunting and is an effort to prepare babies to be born healthy. Research conducted by Hastuti in 2020 stated that pregnant women who are anaemic have three times the risk of experiencing stunting in toddlers compared to pregnant women who are not anaemic. In this study, it was found that there was a significant relationship between stunting status and a history of anaemia during pregnancy seen from p-value = 0.0003 and OR 3.215 (95% CI; 1.55 – 6.65), which means that pregnant women with anaemia have a risk of 3, 2 times as likely to have a stunted child [16].In line with previous studies that found that the Hb level of pregnant women is related to the length of the baby to be born, the higher the Hb level, the longer the size of the baby to be born. Iron is a substance that plays a role in bone formation. Iron plays a role as an oxygen carrier for all body tissues.

If oxygenation to the bones is reduced, the bones will not grow optimally. Iron deficiency will severely impact bones, affecting bone mineral density, mineral content in bones and femur strength. A study conducted by Angeles et al. in 1993 in Indonesia regarding iron supplementation in children aged 2-5 years showed a significant change in height and height-forage Z-score after iron supplementation [17]. Rachmawati (2006), in her research in Aceh Besar after the 2004 tsunami, also stated that anaemic pregnant women had a 3.74 times greater risk of giving birth to babies with LBW [18]. Various studies, including Ricci and Becker in the Philippines in 1996, Chopra in South Africa in 2003, Taguri et al. in Libya in 2008

and Ergin et al. in Turkey in 2007, stated that low birth weight (LBW) babies have a greater risk of causing stunting than babies born with average weight. According to this study, birth weight is related to stunting with a P-value of 0.042 [19].In general, the causes of anaemia in pregnant women are malnutrition, lack of iron in the food consumed, poor absorption and chronic diseases (such as tuberculosis, lung, intestinal worms, and malaria). Anaemia in pregnant women is associated with increased preterm birth, maternal and child mortality and infectious diseases. Anaemia can affect the growth and development of the fetus/infant during and after pregnancy.

Weight of Pregnant Women Before and After Intervention

Based on Table 7, it can be seen that there is an increase in the average weight of pregnant women every month. The Wilcoxon test showed a significant difference in the weight of pregnant women during the pretest and follow-up I; follow-up I with follow-up II; follow-up II with post-test; pretest with a post-test. This can be seen from the significance value, which shows the value of p <0.05. Friedman's test analysis results also show a significant difference in overall body weight.

Table 7. Pregnant Women's Weight Before and After Intervention

Clinical Outcome Parameters (Body Weight)	Average Body Weight (Kg)	Wilcoxon Test (*Asymp.Sig*)	Friedman Test (*Asymp.Sig*)
Pretest	52.98 ± 8.50	0,000	
Follow up I	53.52 ± 8.50	0,000	0,000
Follow up II	53.86 ± 8.50	0,000	
Post test	54.62 ± 8.56	0,000	

According to Sukmawati's research (2018), there is a link between the mother's nutritional status and the incidence of stunting. Another thing that also influences stunting is the baby's length at birth and weight at birth. Weight gain in the mother is caused by an enlargement of the mother's uterus and breast enlargement, an increase in the amount of maternal blood volume and an increase in extracellular fluid. Another cause is caused by changes in the mother's metabolism during pregnancy; it can cause an increase in cellular water volume and an increase in fat and new proteins that accumulate. The increase or increase in body weight for the mother is around 1 kg when the mother is in the first trimester of pregnancy. The weight of pregnant women typically increases by 1 kg every month [20].

IV. CONCLUSION

Pharmacists' application of pharmaceutical care to primary health care, especially for pregnant women, is one of the efforts to prevent and treat anaemia in pregnant women. Pharmacist interventions for pregnant women contribute positively to efforts to reduce stunting. Based on the research, data management, and analysis carried out, it can be concluded that there was a significant increase in adherence to the consumption of Blood Supplementary Tablets, Hb levels, and body weight in pregnant women (p-value = 0.000) after pharmacist intervention in Pandeglang Regency, Province Banten.

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