ISSN: 2709-5215 Volume 5, Issue 1, 2024
DOI: 10.48173/jwh.v5i1.283 page 017-025
Journal Wetenskap Health

Effectiveness of IEC on the Care of Pregnant Women and Children During the First 1000 Days of Life in Reducing the Prevalence of Stunting in Simoro Village, Sigi Regency, Central Sulawesi

Rosmala Nur[1], Muh Jusman Rau[1], Rahma Dwi Larasati[1], Stefiani Bengan Laba[1], Muh Rusydi H[2], Rahmawati[3], Jamaluddin[4], Muh Zainuddin Badollahi[5]

[1]Department of Public Health, Faculty of Public Health, Universitas Tadulako, Palu, Indonesia. Address: Jl. Soekarno Hatta, KM 9, 90417
[2]Department of Geo Physics, Faculty of Mathematics and Natural Science, Universitas Tadulako,
[3]Department of Geographic Education, Faculty of Teacher Training and Education, Universitas Tadulako
[4]Department of Pharmacy, Faculty of Mathematics and Natural Science, Universitas Tadulako
[5]Anthropology Study Program, Universitas Tadulako, Indonesia

Abstract

Backgrounds: The prevalence of stunting in Central Sulawesi remains high at 27.2%, surpassing the national prevalence of stunting. In Sigi Regency, the prevalence of stunting reaches 26.4% (1). This figure is still far from the Indonesian presidential target of reducing stunting prevalence to 14% by 2024. One strategy to reduce stunting is to carry out applied research aimed at increasing mothers' knowledge and attitudes about the first 1000 days of life. This research aims to analyze the effectiveness of Information, Education, and Communication (IEC) programs on the care of pregnant women and children during the first 1000 days of life, including antenatal care (ANC) visits, iron (Fe) tablet supplementation, colostrum provision, exclusive breastfeeding, and continued breastfeeding up to 2 years, on the knowledge, attitudes, and behaviors of respondents. Method: This pre-experimental research used a one-group pretest-posttest design and was carried out in Simoro Village, Sigi Regency, from June to July 2024. The research population included all pregnant women and mothers of children under two years (Baduta) in the area. A sample of 40 respondents was selected using purposive sampling based on inclusion and exclusion criteria. The IEC intervention on the first 1000 days of life used lectures, question-and-answer sessions, demonstrations, and leaflets. Pretests and posttests were administered using questionnaires to measure the knowledge, attitudes, and behaviors of the respondents regarding the first 1000 days of life. Data were analyzed using the Wilcoxon test. Results: The Wilcoxon test results showed significant improvements in the knowledge ($p = 0.002$), attitudes ($p = 0.008$), and behaviors ($p = 0.037$) of the respondents. Conclusion: The IEC intervention on the care of pregnant women and children during the first 1000 days of life positively influenced the knowledge, attitudes, and behaviors of the respondents. Routine IEC activities using varied methods should be carried out to improve the knowledge, attitudes, and behaviors of pregnant women and mothers of children under two years (Baduta) as a strategy to prevent stunting.

Article Info:
Received: October 2, 2024
Revised: November 21, 2024
Accepted: December 17, 2024

Keywords: Stunting, IEC on the First 1000 Days Of Life, Knowledge, Attitudes, behav

Introduction

The prevalence of stunting in Central Sulawesi remains high at 27.2%, surpassing the national prevalence of stunting (Kementerian Kesehatan RI, 2023). In Sigi Regency, the prevalence of stunting reaches 26.4% Kementerian Kesehatan RI, 2022). This figure is still far from the Indonesian presidential target of reducing stunting prevalence to 14% by 2024. This constitutes a significant national health problem, as it surpasses the 20% threshold (Kementerian Kesehatan RI, 2023). Indonesia ranks fifth in the world for the number of children affected by stunting (Kementerian Kesehatan RI, 2023). Stunting data in Central Sulawesi Province by regency/city, based on the 2024 Indonesian Health Survey, is presented in the following Table 1.

Table 1. Prevalence of Stunting by Regency/City in Central Sulawesi Province 2024

No.	Regency/City	Prevalence
1	Donggala	34.1
2	Boo	30.0
3	Banggai	29.1
4	Tolitoli	29.0
5	Parimo	28.5
6	Banggai Islands	27.2
7	Poso	26.5
8	Sigi	26.5
9	Morowali	26.0
10	Banggai Laut	25.6
11	North Morowali	24.7
12	Hammer	22.1
13	Touna	21.3

Source: Primary Data, 2024

Several factors influence the incidence of stunting, particularly care during the first 1000 days of life, which includes pregnancy (280 days) and the first 2 years of the child's life (720 days) (Hidayati et al., 2022). Research Nur et al. (2021) shows that low levels of antenatal care visits and poor compliance with iron (Fe) tablet supplementation during pregnancy are significant factors contributing to the incidence of stunting in infants. Besides that, research (Kementerian Kesehatan RI (2022) shows that the rates of colostrum provision, exclusive breastfeeding, and continued breastfeeding up to 2 years are still low. In 2021, the average percentage of coverage for colostrum provision in Central Sulawesi Province was only 21.8%, exclusive breastfeeding was 23.91%, and continued breastfeeding up to 2 years was 22.7%. These figures fall short of the 2021 Minimum Service Standards targets, which aim for 80% coverage for colostrum provision, exclusive breastfeeding, and continued breastfeeding up to 2 years (Dinas Kesehatan Provinsi Sulawesi Tengah, 2022). Based on data from the Sigi Biromaru District Health Service (2021), coverage for colostrum provision was 39.2%, exclusive breastfeeding was 41.44%, and continued breastfeeding up to 2 years was 40.3%. In Simoro Village, coverage for colostrum provision was 20.4%, exclusive breastfeeding was 20.96%, and continued breastfeeding up to 2 years was 20.8%. These figures are still far from the national targets, indicating that care during the first 1000 days of

life is inadequate, significantly influencing the incidence of stunting in Sigi Biromaru Regency.

The high prevalence of stunting, combined with inadequate care during the first 1000 days of life, is a serious issue that requires alternative solutions (Hadi et al., 2021).

Recognizing this, it is necessary to carry out Information, Education, and Communication (IEC) research on the care during the first 1000 days of life for pregnant women and breastfeeding mothers in an effort to reduce the prevalence of stunting in Simoro Village, Sigi Regency, Central Sulawesi. Even though many previous researchers have carried out research on stunting, the focus has primarily been on health cadres, mothers, and partners of childbearing age. In contrast, IEC research specifically targeting care from pregnancy to the child's second year, or the first 1000 days of life, is relatively new in Sigi Regency and could lead to significant reductions in stunting.

Methods

This research is a quantitative study using a pre-experimental, one-group pretest-posttest design. It was carried out in Simoro Village, Gumbasa District, Sigi Regency, from June to July 2024.

The research population included all pregnant women and mothers of children under two years (Baduta) residing in Simoro Village. A sample of 40 respondents was selected using purposive sampling based on inclusion and exclusion criteria. The inclusion criteria were pregnant women and mothers of children under two years who were willing to participate in the entire research process. The exclusion criteria were pregnant women and mothers of children under two years who were unwilling to participate in the research.

The independent variable in this research is IEC on the care during the first 1000 days of life. The dependent variables are knowledge, attitudes, and behaviors. The data were measured using a ratio scale, with knowledge assessed using the Guttman scale and attitudes and behaviors assessed using the Likert scale. Scores for knowledge, attitudes, and behaviors were then categorized as poor or good.

The intervention consisted of IEC on the care during the first 1000 days of life, using lectures, question-and-answer sessions, demonstrations, and leaflets which covered material including care and nutrition during pregnancy, childbirth, the postpartum period, and the care of newborns, infants, and toddlers. Pre-tests and post-tests were administered before and after the intervention to assess the knowledge, attitudes, and behaviors of the respondents. The research instrument was a questionnaire on the first 1,000 days of life, containing 30 questions: 10 for the knowledge variable, 10 for the attitude variable, and 10 for the behavior variable. For the knowledge variable, respondents were given true or false statements, with correct answers scoring one point and incorrect or unanswered questions scoring zero. For the attitude variable, respondents indicated agreement or disagreement with given statements, and for the behavior variable, respondents answered yes or no to the statements. The research data underwent univariate analysis using frequency distribution tables and bivariate analysis using the Wilcoxon test to assess differences in the respondents' knowledge, attitudes, and behaviors before and after being given the intervention.

Results and Discussion

The results of this research include a description of the characteristics of the respondents, as well as their levels of knowledge, attitudes, (and behaviors) before and after the IEC intervention and leaflets distribution. Respondents were classified based on age,

education level, and number of children. The following is the frequency distribution based on the characteristics of the respondents.

Univariate Analysis

The univariate analysis aims to determine the distribution and frequency of each research characteristic and variable. The results of the univariate analysis in this research are as follows:

Age

The distribution of respondents based on the age of pregnant women and breastfeeding mothers (mothers of children under two years (Baduta)) in Simoro Village is presented in the following Table 2:

Table 2. Distribution of respondents based on the age of pregnant women and breastfeeding mothers in Simoro Village

Age	N	%
17-22 years old	7	17.5
23-28 years old	9	22.5
29-34 years old	9	22.5
35-40 years old	7	17.5
41-46 years old	6	15
47-52 years old	1	2.5
≥ 53 years old	1	2.5
Total	**40**	**100**

Source: Primary Data, 2024

Based on Table 2, it shows that the highest age groups of respondents are 23-28 years and 29-34 years, each with 9 people (22.5%). The lowest age groups are 47-52 years and ≥ 53 years, each with 1 person (2.5%)

Education level

The distribution of respondents based on the education level of pregnant women and breastfeeding mothers (mothers of children under two years (Baduta)) in Simoro Village is presented in the following Table 3:

Table 3. Distribution of respondents based on the education level of pregnant women and breastfeeding mothers in Simoro Village

Last education	N	%
Elementary school	4	10
Junior high school	11	27.5
Senior high school	25	62.5
Total	**40**	**100**

Source: Primary Data, 2024

Based on Table 3, it shows that the highest distribution of respondents based on their level of education was at the high school level with 25 people (62.5%). The lowest level of education was at the elementary school level, with 4 people (10%).

Knowledge

The distribution of respondents based on the knowledge of pregnant women and breastfeeding mothers (mothers of children under two years (Baduta)) in Simoro Village is presented in the following Table 4:

Table 4. Distribution of respondents based on the knowledge of pregnant and breastfeeding women in Simoro Village

Knowledge	N	%
Poor	5	12.5
Good	35	87.5
Total	**40**	**100**

Source: Primary Data, 2024

Based on Table 4, it shows that the highest distribution of respondents based on knowledge consists of pregnant and breastfeeding women with good knowledge, with 35 people (87.5%). The lowest distribution consists of pregnant and breastfeeding women with poor knowledge, with 5 people (12.5%).

Attitudes

The distribution of respondents based on the attitudes of pregnant women and breastfeeding mothers (mothers of children under two years (Baduta)) in Simoro Village is presented in the following Table 5:

Table 5. Distribution of respondents based on the attitudes of pregnant women and breastfeeding mothers in Simoro Village

Attitudes	N	%
Poor	1	2.5
Good	39	97.5
Total	**40**	**100**

Source: Primary Data, 2024

Based on Table 5, it shows that the highest distribution of respondents based on attitudes consists of pregnant and breastfeeding women with a good attitude, with 39 people (97.5%). The lowest distribution consists of pregnant and breastfeeding women with a poor attitude, with 1 person (2.5%).

Behaviors

The distribution of respondents based on the behaviors of pregnant women and breastfeeding mothers (mothers of children under two years (Baduta)) in Simoro Village is presented in the following Table 5:

Table 6. Distribution of respondents based on the behaviors of pregnant women and breastfeeding mothers in Simoro Village

Behaviors	N	%
Poor	3	7.5
Good	37	92.5
Total	**40**	**100**

Source: Primary Data, 2024

Based on Table 6, it shows that the highest distribution of respondents based on behaviors consists of pregnant and breastfeeding women with a good behavior, with 37 people (92.5%). The lowest distribution consists of pregnant and breastfeeding women with a poor behavior, with 3 person (7.5%).

Bivariate Analysis

The bivariate analysis in this research aims to assess differences in the variables of knowledge, attitudes, and behavior of pregnant women and breastfeeding mothers (mothers of children under two years (Baduta)) before and after the intervention. The results of the bivariate analysis are presented in the following Table 7:

Table 7. Wilcoxon Test Results on Independent Variables

Variable	Mean	P-Value
Knowledge		
Pre	10,12	0.002
Post	11.43	
Attitude		
Pre	51.24	0.008
Post	54.65	
Behavior		
Pre	48.83	0.037
Post	52.78	

Source: Primary Data Analysis Results, 2024

Based on Table 7, it shows that the average pre-test knowledge score was 10.12, while the average post-test knowledge score was 11.43, resulting in an increase of 1.31. The analysis revealed a p-value of 0.002, indicating a significant improvement in knowledge among pregnant women and breastfeeding mothers (mothers of children under two years (Baduta)) before and after the IEC intervention on the first 1000 days of life.

For attitudes, it shows that the average pre-test attitude score was 51.24, and the average post-test attitude score was 54.65, resulting in an increase of 3.41. The analysis revealed a p-value of 0.008, indicating a significant difference in attitudes among pregnant women and breastfeeding mothers (mothers of children under two years (Baduta)) before and after the IEC intervention on the first 1000 days of life.

In addition, for behaviors, it shows that the average pre-test behavioral score was 48.83, and the average post-test behavioral score was 52.78, resulting in an increase of 3.95. The analysis revealed a p-value of 0.037, indicating a significant improvement in behaviors among pregnant women and breastfeeding mothers (mothers of children under two years (Baduta)) before and after the IEC intervention on the first 1000 days of life.

Discussion

Knowledge is crucial in health promotion because knowledge is one of the supporting factors for achieving healthy behavior (Baroroh, 2022). The Wilcoxon test results showed a p-value of 0.000, indicating a significant difference in knowledge about the first 1,000 days of life before and after the intervention. This suggests that the IEC intervention significantly improved the knowledge of pregnant women and mothers of children under two years (Baduta). This is in line with research Nur et al. (2020) which reveals that there is a significant influence of implementing education for pregnant women on increasing their

knowledge about the first 1,000 days of life. Similarly, Pratama et al. (2024) reveals that there is an influence of providing balanced nutrition education in the first 1,000 days of life on respondents' knowledge and attitudes.

Research Nur et al. (2016) shows that nutritional education on the first 1000 days of life (HPK) for couples of childbearing age significantly increases their knowledge and understanding of the importance of the first 1000 days of life both in terms of meaning, targets, and impacts and consequences. This is consistent with findings Nur et al. (2021) showing that there is an increase in mothers' knowledge about the first 1000 days of life movement after being given health education (p=0.001).

In this research, there was an increase in respondents' attitudes towards a better direction. This is reflected in the better post-test scores. Improved knowledge about the first 1,000 days of life positively influenced attitudes. This research is in line with research Atamou et al. (2023), which revealed nutrition education with media leaflets significantly influenced the attitudes of pregnant women regarding the first 1000 days of life nutrition, which was characterized by changes in attitudes before and after education (p=0.000). Additionally, Yani et al. (2023) has also proven that health education about anemia with media leaflets significantly influenced young women's attitudes towards consuming iron tablets (p=0.001). Research Nur et al. (2016) also showed that there was an increase in respondents' support for the first 1000 days of life movement after being given health education (p=0.001).

Apart from that, research by Indonesia (2020) also stated that mothers' attitudes improved significantly after receiving health education about preventing stunting, with a p-value of 0.002. Increased maternal knowledge contributes to more positive attitudes. Research Nur et al. (2020) also stated that there was an increase in knowledge and attitudes among respondents after going through counseling using lecture and audio-visual methods regarding the first 1,000 days of life, with a p-value of 0.000.

Using leaflets as a medium for delivering information is a strategy that aligns with local problems, norms, and rules (Nur et al., 2021). The benefit of using leaflets in the first 1,000 days of life intervention is that it is an evidence- and research-based process that uses information media to promote behaviors leading to improved health outcomes Andreas et al. (2020). Increasing attitude scores can positively impact the first 1,000 days of life movement. Women of childbearing age will better understand the importance of the first 1,000 days of life and be able to implement these practices, ultimately improving the nutritional status of future generations (Rahmadhita, 2020; Wiliyanarti et al., 2022).

Besides providing information and education, knowledge and attitudes can also be influenced by other factors such as age, education level, occupation, and community culture (Atamou et al., 2023). In this research, respondents were grouped based on age, education level, and number of children. Age is related to the experience a person has. The respondents in this study were in the productive age category, between 20-35 years, and were considered to have basic knowledge and experience that were not significantly different. This research found no differences in knowledge and attitudes between younger and older respondents.

In this research, there was an increase in respondents' behaviors towards a better direction. This is reflected in the better post-test scores. Improved knowledge about the first 1,000 days of life positively influenced behaviors. This research is in line with research (Nurfatimah et al., 2021), which revealed that pregnancy care behavior is one of the factors that really needs to be considered to prevent complications, stunting and even death during

childbirth and even death during childbirth and for the health and growth of the fetus (Yanti & Nurrohmah, 2023). Pregnancy care behaviors that need attention include self-care (skin, oral teeth, nail care), breast care, immunizations, pregnancy exercises, prenatal check-ups, and nutrition for fetal development (Andriani et al., 2022). Pregnancy care behaviors are influenced by predisposing, supporting, and reinforcing factors, such as the knowledge gained through understanding pregnancy care (Peahl et al., 2020).

Conclusion

Based on the results of this research, it can be concluded that there was an influence of the IEC intervention on the first 1000 days of life on the knowledge and attitudes of women of childbearing age (pregnant women and mothers of children under two years (Baduta)). The IEC intervention on the first 1000 days of life must be carried out regularly using varied media to increase public knowledge and attitudes as a prevention effort of stunting and other nutritional problems. It is hoped that more intervention programs will be developed to improve pregnant women and mothers of children under two years (Baduta) knowledge, attitudes, (and behaviors) on the 1000 days of life as an effort to prevent stunting as early as possible.

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