

EVALUATION OF THE EARLY INTERVENTION PROGRAM FOR ARI IN TODDLERS TO SUPPORT THE SDG's HEALTH TARGETS AT THE PRIMARY SERVICE LEVEL IN GORONTALO REGENCY

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Abstract

Acute Respiratory Infection (ARI) remains one of the leading causes of morbidity and mortality in toddlers in Indonesia. Based on data from the Ministry of Health, the prevalence of ARI in the last three years has shown a fluctuating trend. In 2022, approximately 8.5% of the total population experienced ARI, this figure increased to 9.2% in 2023, and decreased slightly to 8.8% in 2024. This study aims to evaluate the implementation of the early intervention program for ARI in toddlers in primary health care facilities using the CIPP (Context, Input, Process, Product) evaluation model, as a comprehensive approach to assess the program and its contribution to achieving SDG's target 3.2. The research method uses a mixed approach (*mixed methods*) with data collection through surveys, in-depth interviews, and FGDs. Respondents consisted of health workers, cadres, and parents of toddlers in Gorontalo Regency. The results of the study showed that in the general context, early intervention programs for ISPA according to regional needs. From the perspective of input, there are limitations in human resources, infrastructure, and suboptimal budget support. The program implementation process has been ongoing through early detection, community education, and standardized procedures, but still faces obstacles in monitoring and reporting. The program has contributed to reducing ISPA cases in toddlers, although achieving the SDG targets still requires strengthening prevention and program sustainability. Overall, the study results indicate that the ISPA early intervention program has a good initial foundation, but needs to be strengthened through ongoing education to achieve SDG target 3.2, namely reducing infant mortality due to preventable diseases.

Keywords: Infant HFMS, CIPP Method, SDG's

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INTRODUCTION

Acute Respiratory Tract Infection (ARI) is one of the main causes of morbidity and mortality in children under five in Indonesia.[1]. Based on data from the Indonesian Ministry of Health in 2022, more than 20% of visits to health facilities by children under five were caused by ARI.[2][3] Based on data from the 2018 Basic Health Research (Riskesdas), the prevalence of Acute Respiratory Tract Infection (ARI) in

Gorontalo Province reached 9.54%. From 2019 to 2021, there were 5,785 sufferers, and from 2022 to 2024 there were 62,993 cases of ARI. Based on data from the Gorontalo Provincial Health Office, the number of cases in 2022 was 23,660 (37%), in 2023 there were 21,652 (34%) cases, and in 2024 there were 17,681 (28%) cases of ARI and always ranked in the top 5 out of 10 other diseases. Of the five districts/cities in Gorontalo Province, Gorontalo Regency has the

highest frequency of ARI at 15.52%, followed by North Gorontalo Regency with 10.49%, and the lowest in Boalemo Regency which reached 4.51%. ARI, especially in toddlers, often develops rapidly and can cause serious complications if not treated early [4]. Therefore, early intervention at the primary care level is very important as part of a promotive and preventive strategy [5]. The government has implemented various ARI control programs through early intervention approaches, such as growth monitoring, parental education, home environment monitoring, and the involvement of health cadres [6]. However, implementation in the field is not optimal, marked by the still high incidence of ISPA in several regions [7][8]. In line with the Sustainable Development Goals (SDGs) target 3.2 agenda which focuses on reducing preventable infant mortality, this study presents a comprehensive evaluative approach to the implementation of ISPA early intervention programs in toddlers at the primary health care level using the CIPP (Context, Input, Process, Product) model [9]. In contrast to previous studies which generally emphasize risk factors or ISPA incidence, this study integrates a mixed methods approach through surveys, in-depth interviews, and Focus Group Discussions (FGDs) to gain a more comprehensive understanding of program implementation from the perspective of health workers, cadres, and toddler parents [10].

Based on the above background, the researchers were interested in conducting a study

evaluating the Early Intervention Program for ISPA in Toddlers to Support the SDGs Health Targets at the Primary Care Level. This research is expected to produce contextual, regionally-based recommendations to support the achievement of child health targets in Gorontalo Regency.

METHOD

This study uses a descriptive, evaluative design with a mixed-methods approach (a combination of qualitative and quantitative). The evaluation model used is CIPP (Context, Input, Process, Product) to assess the relevance of the program, availability of resources, implementation of activities, and the results/achievements of the ISPA early intervention program for toddlers at the primary service level. Context to see the relevance of the program to community needs, regional policies, and health SDG targets (reducing under-five mortality). Input: Availability of resources (human resources, infrastructure, SOP, funding). Process: Quality of implementation (education, screening, referrals, return visits). Product: Program achievements (reduction in ISPA/pneumonia cases, intervention coverage, treatment compliance).

The determination of respondents and informants for the study was conducted using a purposive sampling technique, namely selecting subjects based on criteria that are in accordance with the research objectives. Respondents in the quantitative study were parents of toddlers in the

working areas of seven community health centers in Gorontalo Regency who had received services or were involved in the early intervention program for ISPA. Meanwhile, informants in the qualitative study consisted of the Head of the Community Health Center, the person in charge of the ISPA program, health cadres, and Posyandu cadres who were considered to have knowledge and experience related to the implementation of the early intervention program for ISPA. The selection of informants was carried out to obtain in-depth information regarding

aspects of the context, input, process, and results of the program.

RESULTS AND DISCUSSION

A. Quantitative Data

The research results begin with a frequency distribution of respondents, in this case parents of toddlers residing in the seven community health centers that served as the research locations. The following frequency distribution results are presented in the following table:

Table 1. Frequency Distribution of Respondents Based on the Variables Studied in the Work Area of the Gorontalo Regency Health Center

Variable	Category	N	%
Age	30 years	1	14,3
	30-35 Years	4	57,1
	36-40 Years	2	28,6
Gender	Man	1	14,3
	Woman	6	85,7
Last education	Elementary School	4	57,1
	Senior High School	2	28,6
	Bachelor	1	14,3
Work	Housewife	5	71,4
	Farmer	1	14,3
	Village Cadres	1	14,3
Program Intervention	Fulfil	5	71,4
Coverage	Not Fulfilling	2	28,6
Compliance	Obey	6	85,7
	Not Compliant	1	14,3
Quality of Service	Good	7	100
	Not enough	0	0

Source: Primary Data, 2025

Based on table 1 above, it is found that the distribution of respondents in this case, the parents of toddlers are mostly female, with 6 people (85.7%), and the least

distributed among male parents is 1 person (14.3%). Based on the distribution of age, the most distributed are at the age of 30-35 years, with 4 people (57.1%), and the least distributed are at the age of > 30 years, with

1 person (14.3%). Based on the distribution of the last education, the most distributed are at the elementary school level, with 4 people (57.1%), and the least distributed are at the undergraduate level, with 1 person (14.3%). Based on the distribution of jobs, the most distributed are housewives, with 5 people (71.4%), and the least distributed are farmers and posyandu cadres, with 1 person each (14.3%). Based on the distribution of intervention program coverage, the most distributed are in the fulfilling category, with 5 people (71.4%), and the least distributed are in the not fulfilling category, with 2 people (28.6%). Based on the distribution of compliance, the most distributed were in the compliant category, as many as 6 people (85.7%), and the least distributed were in the non-compliant category, as many as 1 person (14.3%). Based on the distribution of service quality, the most distributed were in the good service quality category, as many as 7 people (100%).

B. Qualitative Data

The results of the subsequent research were collected through interviews using key informants (Head of the Community Health Center and Person in Charge of the ISPA Program) and Ordinary Informants (Health Cadres and Posyandu Cadres). Based on

interviews using the CIPP evaluation model (Context, Input, Process, Product) with the informants, the following interview results were obtained:

1. Context

The results of research from 7 Community Health Centers in Gorontalo Regency, namely Dungaliyo Community Health Center, Tibawa Community Health Center, West Limboto Community Health Center, Telaga Jaya Community Health Center, Telaga Biru Community Health Center, Limboto Community Health Center, and Bongomeme Community Health Center, show that this program is very relevant to the SDG's, especially in the context of reducing infant mortality due to preventable diseases. The Community Health Centers have contributed and are proven by data that in the Gorontalo Regency area itself in 2024 there were no cases of deaths due to ISPA in infants and toddlers. Meanwhile, for the policy, all community health centers refer to the policy of the local government, in this case the Health Office, which has established a priority program for early intervention for ISPA as part of the RPJMD and Renstra of the Health Office. In addition, this intervention program received support from village governments and NGOs in the form

of the installation of smoke-free area billboards in several community health center work areas and even from parents of toddlers, especially in the implementation of health counseling and socialization of the ISPA intervention program.

2. Input

The results of research from 7 Community Health Centers in Gorontalo Regency, namely Dungaliyo Community Health Center, Tibawa Community Health Center, West Limboto Community Health Center, Telaga Jaya Community Health Center, Telaga Biru Community Health Center, Limboto Community Health Center and Bongomeme Community Health Center show that in terms of resources, especially health workers in the community health centers, in this case the program manager, doctors and nurses have basic competencies in handling ISPA, but for health cadres and integrated health posts (Posyandu) have never received training related to handling ISPA itself. Technical guidelines from the Ministry of Health regarding ISPA handling have been socialized to all staff, even to cleaning staff, as an initial step in preventing ISPA for those with toddlers as early prevention. The availability of medicines and examination tools at the community health centers has been provided but is still not

optimal in some inaccessible locations. While the budget for this program comes from the APBD and BOK is available, its use is less focused on promotive and preventive aspects.

3. Process

Research results from 7 Community Health Centers in Gorontalo Regency, namely Dungaliyo Community Health Center, Tibawa Community Health Center, West Limboto Community Health Center, Telaga Jaya Community Health Center, Telaga Biru Community Health Center, Limboto Community Health Center, and Bongomeme Community Health Center, show that the implementation of intervention programs carried out through MTBS (Integrated Management of Sick Toddlers), early screening of ISPA, parent education, and home visits by health workers has been running consistently. Where the community health centers monitor and administer medication both when ISPA patients seek treatment at the community health center and during home visits. Cross-sector coordination (health, education, and villages) has been running and has even received full support from the village so that health promotion efforts can reach all levels of society. For the implementation of this intervention program, monitoring and evaluation are always carried

out both at the community health center level and at the health office level. Although this program has been running, it has not actively involved the community as partners in disseminating ISPA information and maintaining a healthy environment.

4. Product

The results of research from 7 Community Health Centers in Gorontalo Regency, namely Dungaliyo Community Health Center, Tibawa Community Health Center, West Limboto Community Health Center, Telaga Jaya Community Health Center, Telaga Biru Community Health Center, Limboto Community Health Center, and Bongomeme Community Health Center, show that the results and impact of this ISPA intervention program are a decrease in the incidence of ISPA in toddlers, thus contributing to the SDGs target. The Community Health Centers submit monthly reports, which are then submitted to the health office, both monthly and annual reports regarding the number of ISPA cases in the Community Health Center so that the health office also has a reference in making further policies related to the intervention program. The counseling carried out by the Community Health Center, it helps increase the knowledge of parents of toddlers, which

is marked by changes in behavior in caring for children when ISPA symptoms appear. The impact of the program on reducing hospitalizations and referrals due to ISPA is starting to be seen, but is not yet significant overall, and the program's contribution to achieving SDGs, especially target 3.2, is quite positive but still needs strengthening in aspects of quality of implementation and community involvement.

C. FGD Results

Research results based on Focus Group Discussion (FGD) using the CIPP method with parents of toddlers showed that:

1. Context

Most parents are aware of ARI as a common illness in toddlers, but consider it harmless without a high fever. Some parents are unaware of the early signs of ARI, such as a dry cough, shortness of breath, and rapid breathing. Despite receiving health education about ARI, some parents forget the signs and symptoms themselves. They hope that education activities will be conducted routinely every month during village health posts (Posyandu) using simple, easy-to-understand language.

2. Input

Parents rarely take their children to health facilities when symptoms of an acute respiratory infection (ARI) appear, preferring to use over-the-counter medicines or traditional remedies. This is due to the difficulty of distinguishing between symptoms of an acute respiratory infection (ARI) and a common cough. Several respondents expressed difficulties with transportation costs, even though services at community health centers are free.

3. Process

Parents reported that outreach activities at integrated health posts (Posyandu) were irregular and often limited to weighing children. They felt they were not involved enough in activities like mother-to-toddler classes or direct education provided by staff. Some parents were also unaware of the ISPA intervention program, having never received an invitation or notification. In some areas, there are active health cadres, but the information provided is limited to general guidelines, such as "maintain cleanliness," without detailed action steps. This is because most parents have never received training in ISPA prevention and detection.

4. Product

Parents who have participated in counseling stated that they take their children to health facilities more quickly when they experience acute respiratory infections (ARI), rather than waiting until the condition becomes severe. Smoking in the home remains high, and most parents do not understand its impact on acute respiratory infections (ARI). There has been an increase in understanding regarding diet and immunization, although not specifically regarding ARI prevention. Parents expressed a desire for more active involvement in the program, as well as regular supervision by officers or cadres in their homes.

DISCUSSION

1. Quantitative Data

Based on the research results, the dominance of female respondents indicates that mothers are still the primary decision-makers in the utilization of infant health services. This finding is consistent with research conducted in Indonesia and several developing countries that show that mothers play a central role in recognizing disease symptoms, seeking treatment, and complying with health care provider recommendations. High maternal involvement can support the success of early

intervention programs for ARI because they are the parties who interact most frequently with children on a daily basis [11]. However, the low involvement of fathers indicates that the program approach still focuses on mothers as the primary target of education [12]. However, recent research shows that paternal support contributes to the accuracy of children's health decisions, including in seeking health services and treatment adherence. Therefore, health promotion strategies need to be developed more inclusively by involving both parents in efforts to prevent and treat ARI in infants.

2. Qualitative Data

Context (Context)

Research conducted at seven community health centers (Puskesmas Dungaliyo, Tibawa, West Limboto, Telaga Jaya, Telaga Biru, Limboto, and Bongomeme) demonstrated that the early intervention program for ARI strongly aligned with community needs and the direction of national and global health policies. This alignment is crucial because the effectiveness of a health program is strongly influenced by its ability to address community-priority health issues. These findings align with a World Health Organization report that places respiratory

tract infections as a leading cause of morbidity and mortality among children under five in developing countries. Research in various Asian and African countries also demonstrates that strengthening primary health care services through early detection, family education, and community health promotion is an effective strategy for reducing the impact of ARI on children under five. Support from regional policies integrated with SDG's 3.2 further strengthens the program's sustainability by providing the legal basis, resource support, and monitoring mechanisms necessary to maintain the quality of program implementation [13].

b. Input (Input)

The availability of competent health workers is a crucial factor in the success of early intervention programs for acute respiratory infections (ARI). Research findings indicate that health workers in community health centers (Puskesmas) have adequate basic capacity to handle ARTI cases, but the capacity of health cadres and integrated health post (Posyandu) staff still needs to be strengthened through more structured training. This situation is similar to research findings in several developing countries, which show that the success of early detection of childhood illnesses is

greatly influenced by the competence of community health workers as the frontline of primary health care. Limited training for cadres has the potential to reduce the effectiveness of case identification at the household level and delay the referral of cases requiring further treatment. In addition to human resources, the uneven distribution of facilities and logistics indicates that there are still challenges in ensuring equal access to services for all communities [14]. These findings indicate that strengthening the capacity of cadres and improving the logistics distribution system need to be a priority in future program development.

c. Process (Process)

The consistent implementation of the early intervention program for ISPA through the Integrated Management of Sick Children (IMCI) approach, early screening, parent education, and home visits, demonstrates that primary health care services have carried out promotive, preventive, curative, and rehabilitative functions in an integrated manner. Consistent implementation of this program is important because early detection and treatment are key strategies in reducing morbidity and mortality due to ISCI in toddlers. The findings of this study align with various international studies that report that

the implementation of IMCI and strengthening primary health care contribute to increased early detection of childhood illnesses, accurate case management, and reduced complications due to respiratory tract infections in the toddler age group.

The role of parent education and home visits found in this study also supports previous research showing that improving family health literacy influences parents' ability to recognize warning signs of ARI and seek medical help more quickly [15]. Research in several developing countries has shown that family- and community-based approaches can improve health-seeking behavior and compliance with health care provider recommendations, thereby preventing delays in treating pneumonia and ARI in children. These findings are also in line with research in Indonesia which reported that the success of ARI control programs is determined not only by the availability of health services, but also by the active involvement of health cadres, integrated health posts (Posyandu), and families in the early detection process and public health education. The involvement of various community elements strengthens the program's reach down to the household level and allows for faster case identification before it develops into a more severe condition.

In addition, the collaboration between the health sector, village government, and education sector found in this study demonstrates the implementation of the Health in All Policies (HiAP) approach, an approach that places health as a shared responsibility across sectors [16]. These results are consistent with various recent studies that emphasize that the success of child health programs is greatly influenced by multi-sectoral support, especially in efforts to create a healthy environment, increase public awareness, and expand access to health information and services. Therefore, strengthening cross-sector partnerships needs to be maintained to support the achievement of the Sustainable Development Goals (SDGs) 3.2 target of reducing preventable infant mortality.

d. Results (Product)

Research findings show a downward trend in the incidence of ARI in toddlers following the implementation of an early intervention program. These results indicate that the combination of early detection strategies, health education for parents, and home visits by health workers contributed to increasing family awareness in recognizing early symptoms of ARI and expediting the seeking of medical attention. These findings align with various international studies reporting

that primary health care-based interventions and family empowerment are effective in increasing early case detection and reducing the incidence of respiratory infections in children. Research published in BMC Pediatrics and Frontiers in Public Health shows that ongoing health education can increase parental knowledge of the danger signs of ARI and encourage faster health-seeking behavior, thereby minimizing the risk of complications and disease severity.

The results of this study are also consistent with several studies in Indonesia showing that strengthening the role of community health centers (Puskesmas), integrated health posts (Posyandu), and health cadres contributes to increasing early detection coverage and the success of ISPA control programs in toddlers. Active community involvement in promotive and preventive activities has been shown to increase parental compliance with health worker recommendations and improve child care practices at home. Thus, the success of the program is determined not only by the quality of health services, but also by the program's ability to build community awareness and participation [17].

Furthermore, the implementation of routine reporting by community health centers to the Health Office indicates that the

program's monitoring and evaluation system is running well. A structured reporting system allows for the availability of accurate and sustainable data as a basis for developing evidence-based policies. This finding aligns with World Health Organization recommendations emphasizing the importance of a robust surveillance and monitoring system to support decision-making in child health programs. Therefore, strengthening the reporting system, optimal data utilization, and regular evaluations are necessary to ensure program sustainability and support the achievement of Sustainable Development Goal (SDG) 3.2 target of reducing preventable infant mortality.

4. Results Focus Group Discussion (FGD)

The results of the Focus Group Discussion (FGD) showed that there are still various challenges in implementing early intervention programs for ISPA in toddlers, especially related to community knowledge, access to health services, implementation of education, and environmental factors. In terms of context, the low level of parental understanding of the danger signs of ISPA indicates that the health information provided has not been fully able to form an appropriate risk perception. This finding is in line with various studies showing that health literacy of parents, especially mothers, has a

significant impact on fulfilling family nutrition, access to health services, and recognizing symptoms and implementing preventive measures in children (18). Low parental health literacy is one of the factors that contributes to the delay in recognizing ISPA symptoms and seeking medical help in children. Research published in BMC Public Health and Frontiers in Public Health In recent years, it has been reported that repeated health education, using simple language and in accordance with the cultural context of the community, is more effective in increasing parental knowledge and awareness of infectious diseases (19). Similar findings have also been reported by several studies in Indonesia, which show that health education through integrated health posts (Posyandu) plays an important role in increasing mothers' understanding of the prevention and early detection of ISPA.

In terms of input, parents' tendency to self-medicate before taking their children to a health facility indicates persistent barriers to the utilization of formal health services. This finding is consistent with research in various developing countries showing that distance, transportation, indirect costs, and perceived disease severity influence families' decisions to seek health care. Although basic health services are free, geographic

accessibility remains a challenge, potentially leading to delays in the treatment of acute respiratory infections (ARI). Research in Indonesia also indicates that limited access to transportation and poor knowledge of disease warning signs are key factors contributing to delays in toddlers' visits to health facilities.

In terms of process, the research results show that the implementation of outreach and dissemination of program information has not been optimal and equitable. This situation indicates a gap between program implementation at the community health center level and the reception of information by the community. This finding aligns with recent research showing that the effectiveness of public health programs is greatly influenced by the quality of health communication (20), community involvement (21), and the capacity of health cadres as a liaison between health facilities and the community. The lack of specific training on ISPA for health cadres in this study is also in line with the findings of several studies which reported that increasing the competence of cadres contributes significantly to the success of early detection of diseases in toddlers, increasing the coverage of health education, and strengthening community-based referral systems.

In terms of product, the behavioral changes observed by some parents in responding to early symptoms of acute respiratory infections (ARI) indicate that the program has had a positive impact on increasing public health awareness. These results support international research reporting that family education-based interventions can improve appropriate treatment-seeking behavior and accelerate the management of respiratory illnesses in children. However, the persistent high prevalence of indoor smoking suggests that behavioral changes related to environmental risk factors have not been optimally implemented. This finding aligns with various studies that place indoor cigarette smoke exposure as a major risk factor for acute respiratory infections (ARI) in toddlers. The community's aspiration for more active involvement in the program, along with the expectation of regular visits from health workers, demonstrates that the community empowerment approach still has significant potential for development. Active community involvement in the planning, implementation, and evaluation of health programs has been shown to increase the effectiveness of public health interventions and their long-term sustainability.

CONCLUSION

Overall, the research results indicate that the early intervention program for acute respiratory infections (ARI) has a good initial foundation, but needs to be strengthened through ongoing education, cadre training, equitable information dissemination, and active community involvement. Limited knowledge, low risk perception, and access barriers are key challenges that must be addressed for the program to achieve maximum results and contribute more significantly to achieving SDG 3.2, namely reducing under-five mortality due to preventable diseases.

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